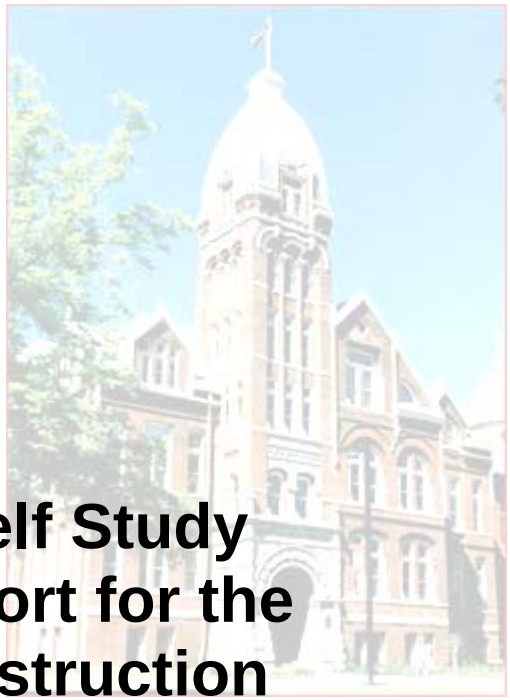
Central Washington University



A Self Study Report for the Construction Management Program

American Council for Construction Education
Fall 2014
Volume 2

Central Washington University
LEARN. DO. LIVE.

X. Appendices (Volume II)

A. Faculty Resumes

B. Course Outlines

C. Interim Report

1. Three-year Interim Report Dated February 9, 2012 and response from ACCE

D. Student Advising Handbook Construction Management 2014-2015

E. Students and Advising

1. Advising Worksheet
2. Permit to Substitute for a Required Course
3. Basic and Breadth (General Education) Requirements
4. Major Course Checklists
5. Sample Washington Community College Transfer Equivalency Guide, Bellevue CC
6. Sample Evaluation of Instruction Results, CMGT 450 Fall 2013

F. Industry Relations and Advisory Council

1. "Building Times" Newsletters
2. Advisory Council Agendas, Minutes and Treasury Report

G. Assessment

1. Assessment of Student Learning Report, Fall 2013
2. Course Quality Improvement Plan Example, CMGT 450
3. 2014 CWU Construction Management Employer Survey Results

A. Faculty Resumes

P. Warren Plugge, Ph.D.

Vita

Education

Ph.D. (2007)	Education and Human Resource Studies Interdisciplinary Studies Concentration: Civil Engineering and Construction Management Colorado State University, Fort Collins, Colorado Dissertation Title: *An Evidenced-Based Comparison of Construction Project Delivery*
M.S. (2003)	Construction Management Colorado State University, Fort Collins, Colorado Thesis Title: *A Qualitative Comparison of Risk Communication and Management Factors Associated With Large Design-Build Infrastructure Projects: I-25 (TREX) Denver, Colorado and I-15 Salt Lake City, Utah*
B.S. (1994)	Construction Management Colorado State University Fort Collins, Colorado

Professional Experience

Higher Education

6/2012- Present

Associate Professor and
Construction Management Program Coordinator
Central Washington University, Ellensburg, Washington
Primary instructor for construction blueprint reading and construction graphics, construction competition preparation, introduction to civil construction, civil construction means and methods, heavy civil estimating temporary structures, heavy civil utilities, civil construction contract law, heavy civil project management, civil land surveying (lab instructor) and pavement design and construction. Coordinate scheduling of construction management courses, lab safety, company recruiting, program development, program assessment and new student orientation and advising.

9/2006- 6/2012

Assistant Professor
Central Washington University, Ellensburg, Washington
Primary instructor for construction blueprint reading and construction graphics, construction competition preparation, introduction to civil construction, civil construction means and methods, heavy civil estimating temporary structures, heavy civil utilities, civil construction contract law, heavy civil project management, civil land surveying (lab instructor), pavement design and construction and the American Institute of Constructors (AIC) certification preparation course.

7/2001- 5/2006

Graduate Teaching Assistant
Colorado State University, Fort Collins, Colorado
Primary instructor for Primavera "Expedition" Project Administration software. Assist professor by teaching under-grad and graduate students the basic elements of construction project management, based on personal field experience. Wrote the "Expedition Tutorial" to reflect new teaching modules and goals in project administration. Developed curriculum for teaching Primavera Expedition, Excel, HTML, Microsoft Project, and Microsoft Frontpage to be used as construction management project administration tools.

Construction Industry

Kittitas County Public Works, Ellensburg, Washington

6/2011-9/2011

Engineering Technician, Ellensburg, Washington
Provided project engineering and management support to the county construction manager as a survey technician, coordinating document control and consulting with engineering sub-consultants.

Granite Construction Company, Everett, Washington

2/2009-9/2009

Project Engineer, Everett, Washington
Provided project engineering support coordinating self performed and subcontracted work on the removal and rehabilitation airport runways and installation of drainage structures on Snohomish County's Paine Field Runway Rehabilitation and Expansion Project in Everett, Washington.

6/2008-9/2008	***Project Engineer, Everett, Washington*** Supported the project management team by providing field oversight through managing quality, daily quantities, subcontractor and supplier management on the demolition of the Tolt River Bridge and the 92nd Ave to 5th Street I-5 Soundwall projects. Additional duties included maintaining schedule, budget, safety, and environmental correspondence with representatives of the Washington Department of Transportation (WSDOT).
6/2007-8/2007	***Project Engineer, Everett, Washington*** Provided quantitative analysis and tracking for $5.5 Million pavement replacement project on U.S. 2 West Stevens Pass. Responsible for tracking daily costs, site coordination, and field inspection.
6/2006-8/2006	***Estimator, Everett, Washington*** Assisted lead estimator in quantitative takeoffs on heavy civil road and bridge and city municipal projects ranging in project value from $50 million to $700,000.
9/2003-8/2006	**Self Employed** ***Claims Engineer, Fort Collins, Colorado*** Team member responsible for managing, collecting, processing, and synthesizing project data for use in construction claims cases.
6/1997-4/2001	**PCL Civil Constructors**
	Representative Responsibilities on Projects
4/2000-4/2001	***Project Engineer, Lutz, Florida,*** Assisted Project Manager and Superintendent on the construction of a $25 million dollar roadway and bridge expansion project for the Florida Department of Transportation. Tracked and maintained daily production reports used to manage the project budget by upper level management. Managed permanent materials and reported quantity information to subcontractors, engineers, and upper level management. Estimated and managed change orders and extra work orders. Prepared daily reports of construction activities for upper level management. Closed out project on schedule and budget.
12/1999-4/2000	***Assistant Estimator, Tempe, Arizona*** Provided quantitative estimates for road and bridge, wastewater treatment plant, and pump station projects ranging in value from $9 million to $50 million dollars.

12/1998-12/1999 ***Project Engineer and Field Engineer, Glendale and Phoenix, Arizona***
Managed and distributed costs and production reports to upper level management for the construction of a $17 million dollar waste water treatment plant and a $15 million dollar effluent wastewater treatment plant upgrade. Prepared weekly production reports, documented and controlled jobsite correspondence, coordinated subcontracts, submittals, shop-drawings, and requests for information between subcontractors and engineers.

6/1998-12/1998 ***Field Engineer and Materials Coordinator, Mooresville, Indiana***
Procured material, equipment, and services from suppliers and company-owned resources during the pre-construction phase of a $50 million dollar amusement park. Updated and controlled project record drawings. Established a labor and quantity tracking system. Co-wrote the project construction plan to establish policies on safety, payment, and general construction procedures.

6/1997-6/1998 ***Field Engineer, Denver, Colorado***
Documented and controlled submittals and project documentation for construction of a $9 million, 900 car parking garage. Responsible for verifying all shop drawing information with construction documents and submitting them to the architect and engineer. Documented field quantity takeoff and production rate information for cost reporting, labor distribution, and cost projection.

7/1996-3/1997 **The Neenan Company**

Representative Responsibilities on Projects
Field Engineer, Denver, Colorado
Assisted with the management of subcontractors and carpenters during the successful completion of 3 commercial/light industrial projects ranging in value up to $20 million dollars. Responsible for verifying performance of subcontractors, coordinating drawing documentation, providing take-off information for procurement of materials, providing survey points, documenting daily site activities, and insuring employee safety on the job site.

1/1995-7/1996 **Rocky Mountain Prestress**

Manufacturing Responsibilities

7/1995-7/1996 ***Production Controller, Denver, Colorado***

Documented and controlled the issue and consumption of production material (concrete, strand, and mesh) for multiple projects. Projects ranged in value up to $20 million. Responsible for tracking and communicating progress of production schedules for drawings to all production departments in the architectural and structural plants. Tracked and communicated quantity takeoff information to the steel shop, wood shop, quality control, and production. Provided engineering support to production by calculating stressing for all stressed concrete beds.

1/1995-7/1995 ***Quality Control Inspector, Denver, Colorado***

Responsible for finished product (structural double-tees, wall panels, beams, and AASHTO girders) quality. Conducted pre-pour and post-pour inspections, updated and maintained shop drawings, conducted tests of all concrete batches for consistency, air content, strength, and unit weight. Programmed concrete beds via computer model to maximize unit strength. Prepared performance data reports for management.

1/1989-8/1994 **McKinney Construction**

Carpenter, Ridgecrest, California

Performed labor and carpentry on speculation built and custom built homes for construction activities in framing, roofing, insulation, demolition, finish carpentry, painting, and ceramic tile.

1/1985-8/1994 **Baskin Robbins**

Customer Service, Ridgecrest, California

Responsible for customer service and performed maintenance on equipment within the store.

Publications

Refereed Journal

Moore, J.M. & Plugge, P.W. (May 2008). Perceptions and Expectations: Implications for Construction Management Internships. *International Journal of Construction Education and Research.*4, 82-96.

Moore, J.M. & Plugge, P.W. (2006). Employer Perceptions of Student Internships: Implications for Building an Internship Program. *Journal of Construction Education* Associated Schools of Construction. April 2006, Colorado State University, Fort Collins, Colorado.

Refereed Proceedings

Plugge, P.W., Bender, B. & Martin, D.W. (2014). Integrated Project Delivery Games for the Classroom. *Proceedings at the 50th Associated Schools of Construction (ASC) International Conference* (In Progress).

Carns, D. & Plugge, P.W. (2014). Making, Curing, Testing Concrete Cylinders in a Senior Level Construction Management Course. *Proceedings at the 50th Associated Schools of Construction (ASC) International Conference* (In Progress).

Bender, B, Plugge, P.W. & Rajendran, S. (2014). Construction Safety Laboratory. *Proceedings at the 50th Associated Schools of Construction (ASC) International Conference,* Virgina Tech., Washington D.C. March 23, 2014 (In Progress).

Bender, B, Plugge, P.W., Whelan, M.W. (2013). Sustainable Design Strategies That Succeed II. *Proceedings at the 49th Associated Schools of Construction (ASC) International Conference*, Cal Poly San Luis Obispo, Obispo, California April 9, 2013.

Carns, D. & Plugge, P.W (2010). Creating and Utilizing a "Working Model Heat Pump" to Enhance Student Learning in a Construction Management Program. *Proceedings at the 46th Associated Schools of Construction (ASC) International Conference*, Boston, Massachusetts April 7, 2010.

Plugge, P. W., DeMiranda, M.A., & Hauck, A.J. (2003). Qualitative Comparison of Two Design-Build Infrastructure Projects. *Proceedings of the International Conference on Information Systems in Engineering and Construction* (ISEC 2003) June 12, 2003, Cocoa Beach, Florida.

Refereed Abstracts

Plugge, P. W. & Carns, D. (2013). Creating and Utilizing a Working Refrigeration Model to Enhance Student Learning in a Construction Management Program. *Symposium on University Research and Creative Expression (SOURCE),* May 16, 2013, Ellensburg, WA.

Plugge, P.W. & Martin, D. (2013). Collaboration & Negotiation: Rethinking paradigms in construction through active learning. *Symposium on University Research and Creative Expression (SOURCE),* May 16, 2013, Ellensburg, WA.

Plugge, P.W. & Carns, D. (2013). Making, Curing, and Testing Concrete Cylinders in a Senior Level Construction Management Course. *Symposium on University Research and Creative Expression (SOURCE),* May 16, 2013, Ellensburg, WA.

An Analysis of Experiential Learning in Construction Management. *Program and Proceedings at the 16th Annual Symposium on University Research and Creative Expression* at Central Washington University, Ellensburg, Washington May 19, 2011

Analysis of Green Technology in Utility Construction. *Program and Proceedings at the 16th Annual Symposium on University Research and Creative Expression* at Central Washington University, Ellensburg, Washington May 19, 2011

Frontend Loader vs. Hydraulic Excavator: Battle of the Earthmovers. Program and Proceedings at the 16th Annual Symposium on University Research and Creative Expression at Central Washington University, Ellensburg, Washington May 19, 2011

Creating and Utilizing a "Working Model Heat Pump" to Enhance Student Learning in a Construction Management Program. *Proceedings at the Associated Schools of Construction (ASC) International Conference*, Boston, Massachusetts April 7, 2010.

Employer Perceptions and Expectations: Implications for Construction Management Internships. *Associated Schools of Construction (ASC) International Conference*, Poster Session, University of Cincinnati, Cincinnati, Ohio, April 6, 2005.

Employer Perceptions and Expectations: Implications for Construction Management Internships. *Associated Schools of Construction (ASC) International Conference*, Poster Session, University of Cincinnati, Cincinnati, Ohio, April 6, 2005.

Comparison of Risk Communication and Management Factors Associated With Large Design-Build Infrastructure Projects. *Associated Schools of Construction (ASC) International Conference*, Poster Session, Brigham Young University, Provo, Utah, June 9, 2004.

A Qualitative Comparison of Risk Communication and Management Factors Associated With Large Design-Build Infrastructure Projects: I-25 (TREX) Denver, Colorado and I-15 Salt Lake City, Utah. *Colorado State University Construction Management Masters Symposium* (2003) April 9, 2003, Fort Collins, Colorado.

Qualitative Comparison of Two Design-Build Infrastructure Projects. Presentation to the Third International *Conference on Information Systems in Engineering and Construction (ISEC 2003)*. June 12, 2003, Cocoa Beach, Florida.

Professional Articles

Plugge, P.W. (2006). Wilder Partners with Central Washington University. Streetbeat, *Granite Employee Development*. Volume 5, issue 3, August 2006.

Presentations

International

Bender, B, Plugge, P.W., Whelan, M.W. (2013). Sustainable Design Strategies That Succeed II. *Proceedings at the Associated Schools of Construction (ASC) International Conference*, Cal Poly San Luis Obispo, Obispo, California April 9, 2013.

Role of Construction Management in Organizing the Building of NAWAPA. North American Water & Power Alliance (NAWAPA), Ellensburg, Washington November 19, 2010. Web presentation at: http://www.larouchepac.com/node/16607

Managing & Reducing Construction Costs. *Conference Speaker for Bridge Knowle Events* in Dubai, United Arab Emirates, October 25 & 26, 2010.

Creating and Utilizing a "Working Model Heat Pump" to Enhance Student Learning in a Construction Management Program. *Proceedings at the Associated Schools of Construction (ASC) International Conference*, Boston, Massachusetts April 7, 2010.

Employer Perceptions of Student Internships: Implications for Building an Internship Program. *Presentation at the Associated Schools of Construction (ASC) International Conference* at Colorado State University, Fort Collins, Colorado April 7, 2006.

Qualitative Comparison of Two Design-Build Infrastructure Projects. *Presentation to the Third International Conference on Information Systems in Engineering and Construction (ISEC 2003).* June 12, 2003, Cocoa Beach, Florida.

National

Central Washington University's Construction Management Program Overview. *American Public Works Association Annual Meeting for the East Washington. Region.*June 7, 2013, Ellensburg, WA.

Plugge, P. W. & Carns, D. (2013). Creating and Utilizing a Working Refrigeration Model to Enhance Student Learning in a Construction Management Program. *Symposium on University Research and Creative Expression (SOURCE),* May 16, 2013, Ellensburg, WA.

Plugge, P.W. & Martin, D. (2013). Collaboration & Negotiation: Rethinking paradigms in construction through active learning. *Symposium on University Research and Creative Expression (SOURCE),* May 16, 2013, Ellensburg, WA.

Plugge, P.W. & Carns, D. (2013). Making, Curing, and Testing Concrete Cylinders in a Senior Level Construction Management Course. *Symposium on University Research and Creative Expression (SOURCE),* May 16, 2013, Ellensburg, WA.

Analysis of Green Technology in Utility Construction. *Symposium on University Research and Creative Expression (SOURCE)*, May 19, 2011, Ellensburg, WA.

An Analysis of Experiential Learning in Construction Management. *Symposium on University Research and Creative Expression (SOURCE)*,May 19, 2011, Ellensburg, WA.

Central Washington University's Construction Management Program. *Washington Asphalt Pavement Association Annual Meeting*, May 19, 2011, Coeur d'Alene, Idaho.

A Qualitative Comparison of Risk Communication and Management Factors Associated With Large Design-Build Infrastructure Projects: I-25 (TREX) Denver, Colorado and I-15 Salt Lake City, Utah. *Colorado State University Construction Management Masters Symposium* (2003) April 9, 2003, Fort Collins, Colorado.

Poster Sessions

Active Learning in the Project Management Topics of Collaboration, Negotiation and Lean Construction. *Construction Industry Research Conference (CIRC) hosted by the Pacific Northwest Center for Construction Research and Education*, Poster Session, University of Washington, Seattle, Washington, April 19, 2013.

Employer Perceptions and Expectations: Implications for Construction Management Internships. *Associated Schools of Construction (ASC) International Conference*, Poster Session, University of Cincinnati, Cincinnati, Ohio, April 6, 2005.

Comparison of Risk Communication and Management Factors Associated With Large Design-Build Infrastructure Projects. *Associated Schools of Construction (ASC) International Conference*, Poster Session, Brigham Young University, Provo, Utah, June 9, 2004.

Service

University

September 2009 to Present Gladmar Research Park Building Committee

September 2009 to June 2011 Appointed to Central Washington University's Faculty Development & Research Committee. Purpose of this committee is to recommend policies and programs of faculty development, and recommend research awards to the Dean for Graduate Studies & Research.

May 2009 to June 2011 Central Washington University's Faculty Senate Executive Council Representative and Parliamentarian

May 2008 to May 2009 Senator on Central Washington University's Faculty Senate

College, Department and Program

September 2013 to Present – New Construction Management Faculty Search Committee Chair

September 2011 to Present – Construction Management Assistant Program Coordinator

September 2011 to June 2012 – New Construction Management Faculty Search Committee Chair

2009 to Present Central Washington University Industry Board Events Committee Chair

2008 to Present, Appointed Faculty Advisor to the student chapter of Sigma Lambda Chi Construction Honor Society.

September 2007 to June 2011 Appointed to the Hogue Technology Building Committee Representative

2006 to Present Central Washington University Construction Management Industry Advisory Board Member and Events Committee Chair

2006 to Present Central Washington University Civil Construction Management Coach – Heavy Civil Team

2005 to 2006, President of the Graduate Student Council of Construction Management, at Colorado State University.

Professional

2013 to Present American Council for Construction Education Construction Management Program Review Trainee.

2013, June 7 Coordinated Annual Meeting at Central Washington University for the American Public Works Association Annual Meeting for the East Washington Region, Ellensburg, WA

2008 to Present, Reviewer for the International Journal of Construction Education and Research

2003 to Present, Member of Associated Schools of Construction Research Committee

2003 to 2006 Member of the Society of American Military Engineers (SAME) for Construction Education

2001 to 2006 Graduate Student Member of the Construction Management Association of America (CMAA) in Denver, Colorado.

1996 to 2006 Member of the American Association of Cost Engineers (AACE) in Denver, Colorado.

2005 Assistant Coach for the Colorado State University Design Build Construction Competition Team.

President and Secretary of Associated Builders and Contractors student club at Colorado State University, 1993 and 1994.

Honors and Awards

2013 3rd Place Coach of Central Washington University's Heavy Civil Construction Management Team at the Associated Schools of Construction Region 6 and 7 Construction Management Competition, Reno, Nevada.

2012 1st Place Coach of Central Washington University's Heavy Civil Construction Management Team at the Associated Schools of Construction Region 6 and 7 Construction Management Competition, Reno, Nevada.

2010 Outstanding Service Award within the Industrial Engineering and Technology Department by the College of Education and Professional Studies at Central Washington University

2009 2nd Place Coach of Central Washington University's Heavy Civil Construction Management Team at the Associated Schools of Construction Region 6 and 7 Construction Management Competition, Reno, Nevada.

2008 3rd Place Coach of Central Washington University's Heavy Civil Construction Management Team at the Associated Schools of Construction Region 6 and 7 Construction Management Competition in Reno, Nevada.

2007 2nd Place as Coach of Central Washington University's Heavy Civil Construction Management Team at the Associated Schools of Construction Region 6 and 7 Construction Management Competition in Reno, Nevada.

2007 Outstanding Research Award with the Industrial Engineering and Technology Department by the College of Education and Professional Studies at Central Washington University

2003 Recipient of the Rocky Mountain Design Build Institute of America Scholarship Award.

2002 Recipient of Colorado State University's International Management Concept Management Scholarship Award.

Inducted into Sigma Lambda Chi (construction leadership honor society) 1994.

Awarded Letter of Achievement from President Al Yates of Colorado State University for participation in the construction of the Vietnam Era Memorial Bridge at Colorado State University, 1992.

Professional Development

2013, October Teaching Naked: How Moving Technology Out of Your College Classroom Will Improve Student Learning, Central Washington University, Ellensburg, WA

2013 Kiewit National Professor Tour, Denver, CO

2013 American Council For Construction Education Visiting Team Training, Hartford, Connecticut.

2013 Kiewit Regional Professor Tour, Vancouver, WA

2012 Kiewit Regional Professor Tour Seattle, WA

2011 Completed Training on Preventing Sexual Harassment Training

2011 Kiewit National Professors Tour Dallas/Fort Worth, Texas

2010 HCSS Training Program in Heavy Bid and Heavy Job, Sugarland, Texas.

Participant in the Associated Schools of Construction (ASC) Construction Management Graduate Competition in Reno, Nevada, 2002, 2003, and 2004.

2002 Completed Primavera's Scheduling P3 Train the Trainer Program, San Francisco, California.

2001 Completed Primavera's Expedition 7.5 Project Management Train the Trainer Program Modules, San Francisco, California including:

Module 202A- Using Expedition for Contract Administration
Module 202B- Contract Management with Expedition
Module 203- Using Primavera Expedition with Infomaker 6.5

Completed Autocad 2000 training in Tempe, Arizona from Mesa State Community College.

Career Vita
for

MICHAEL L. WHELAN

Communication Points:

USPS: 400 East University Way
Ellensburg, WA 98926-7584

Phone: (509) 963-3544 (office)

E-mail: mwhelan@cwu.edu

Educational Background:

Doctor of Philosophy (Engineering Valuation) – Iowa State University. Dissertation: "The Estimation of Declining Operation Returns for Industrial Property" (May, 1981)

Master of Science (Construction Management) – University of New Mexico. Plan B (Nonthesis) Paper: "Value Engineering in Construction" (May, 1971)

Bachelor of Science in Civil Engineering – University of New Mexico (January, 1970)

Major Areas of Study:

Construction Engineering (contract documents, estimating, scheduling, heavy construction equipment management, project management, construction accounting and cost control))

Engineering Valuation (replacement analysis, industrial property valuation, engineering economics)

Honor Societies:

Tau Beta Pi – Engineering Honorary (faculty inductee)
Sigma Lambda Chi - Construction Honorary (faculty inductee)
Chi Epsilon - Civil Engineering Honorary
Sigma Tau - Engineering Honorary

Present Position:

Associate Professor, Construction Management Program, Department of Engineering Technologies, Safety, & Construction, Central Washington University (Sep, 2007 – Present); Department Chair (Jun, 2009 – Feb, 2012)

Positions Previously Held:

Primary Positions:

Visiting Professor, Department of Building Construction Management, University of North Florida (Jan, 2006 – May, 2007)

Associate Professor of Construction Engineering Technology (CET), Department of Civil Engineering, Montana State University; Program Coordinator, CET, and Assistant Department Head, Department of Civil Engineering (Jan, 2000 – July, 2005)

Associate Professor of Civil Engineering, Department of Civil and Architectural Engineering, University of Wyoming, Laramie, WY (July, 1980 – Jan, 2000); Coordinator, Construction Engineering Option (July, 1980 – Jun, 1988)

Instructor and Assistant Professor of Construction Engineering, Department of Civil Engineering, Iowa State University, Ames, IA (November, 1974 – July, 1980)

Estimator, Field Engineer, and Office Engineer, Hunt Building Corporation, El Paso, TX (August, 1971 – November, 1974)

Other Professional Positions:

Residential contractor, Bozeman, MT (President, Aardvark Construction Company, Inc.) (May, 2004 – December, 2005)

Associate Professor of Construction, Department of Construction, Arizona State University, Tempe, AZ (on leave of absence from the University of Wyoming); Coordinator, Graduate Program (January – August, 1991)

Visiting researcher, U.S. Army Construction Engineering Research Laboratory, Champaign, IL (sabbatical leave from the University of Wyoming) (September, 1988 – August, 1989)

Slipform Inspector, Todd and Sargent, Inc., Ames, IA (July, 1981 & July, 1982)

Field Engineer, J. P. Cullen and Sons, Inc., Janesville, WI (June – August, 1975)

Highway Designer, T. T. Burnett Engineering, Albuquerque, NM (June – October, 1969)

Surveyor, Electrical Inspector, and Pile-driving Inspector, New Mexico State Highway Department, Santa Fe, NM (June – August, 1966, 1967, and 1968)

Professional Activities:

Professional Engineer Registration:

P.E. 3819	Wyoming	(inactive)
P.E. 8388	Iowa (Civil)	(inactive)
EIT 919	New Mexico	

Professional Affiliations:

Association of Technology, Management, and Applied Engineering (2011 – present)
American Society of Engineering Educators (1998-2004)
American Society of Civil Engineers (1987-2004)
American Public Works Association (1986-1995)
National Society of Professional Engineers - past member (1975-78)
Iowa Engineering Society - past member (1975-78)

Summarized List of Technical Meeting Attendance/Participation:

ATMAE Annual Conferences (Cleveland, OH – 2011, Nashville, TN – 2012)

ABET Annual Conference (Baltimore, MD – 2011)

NAHB Annual Convention (Orlando, FL – 2011)

"Developing Wind Power in the Northwest", The Seminar Group (Seattle, WA – 2010)

American Council for Construction Education (Schaumburg, IL - July, 2008; Columbus, OH – July, 2009)

ABET Assessment Workshop (Lake Tahoe, NV – 2007)

Timberline Consultants, Trainers, and Educators Conference (Las Vegas, NV – 2003)

ABET TC2K Workshop (Redmond, WA – 2001)

Timberline Precision Estimating School (Beaverton, OR – 2000)

ABET EC2000 Workshop (Seattle, WA – 1999)

Fifth International Symposium on Cold Regions Development – ISCORD'97 (Anchorage, AK - 1997)

"Construction Simulation Workshop", Division of Construction Engineering & Management, Purdue University (West Lafayette, IN - 1992)

A/E/C Systems '89 - International computer and high tech exposition and conference (Anaheim, CA - 1989)

Third North American Masonry Conference, The Masonry Society, University of Texas - Arlington (Arlington, TX - 1985)

World of Concrete '85 International Exposition and Conference on Construction with Concrete (Las Vegas, NV - 1985)

American Society of Engineering Educators (5 regional and national conferences)

American Society of Civil Engineers (5 specialty conferences, forums, and conventions)

Associated Schools of Construction (14 regional and national conferences, 10 regional and national student competitions)

Associated General Contractors of America (7 national conventions, 13 state conventions)

Associated Builders and Contractors (4 national conventions, 4 state conventions)

Teaching Activities:

Awards:

"Faculty Advisor of the Year" award, Department of Building Construction Management, University of North Florida (2007)

"Outstanding CET Professor" award, Department of Civil Engineering, Montana State University (2002)

"Outstanding CET Professor" award, College of Engineering, Montana State University (2001)

"Excellence in Advising" award, University of Wyoming (1996, 1998)

"1995-96 ASCE Outstanding Faculty Member", Department of Civil Engineering, University of Wyoming (1996)

Undergraduate Student Advising:

Central Washington University: minimum of **35 to 105** maximum
Montana State University: minimum of **35 to 55** maximum
University of Wyoming: minimum of **15 to 55** maximum
Iowa State University: minimum of **35 to 65** maximum

Course/Curriculum Development:

Central Washington University

Co-authored "A Self Study Report for the Construction Management Program" (June, 2008) – required for the American Council of Construction Education accreditation visit in November, 2008. (CMGT curriculum was subsequently reaccredited by ACCE for 6 years)

Developed and implemented significant changes to CMGT 245 (Light Commercial Construction), CMGT 346 (Construction Methods & Materials), and CMGT 485 (Construction Accounting, Finance, & Contemporary Topics)

Montana State University

Proposed and obtained approval for numerous course changes and realignments for the CET program including creation of 5 new courses, elimination of 5 courses, and significant modification of 7 existing courses.

Primary author of "TC2K Part I – Self-Study Report for Construction Engineering Technology" (July, 2002) required for the Accreditation Board for Engineering Technology visit in November, 2002. (Subsequent action by ABET was to reaccredit the CET curriculum for 6 years)

University of Wyoming

Developed & implemented the Construction Engineering Option. Development included formulation of the curriculum, approval of the new curriculum by all levels of the University, and creation & approval of eight new 3 semester credit courses (1980-1986)

Proposed and developed CE 3190 – Introduction to Construction Contracting as a University Studies second level writing course for civil & architectural engineering students.

Iowa State University

Developed Con.E. 460 - Senior Study Project, as a capstone to the Construction Engineering Curriculum

Courses Taught:

Central Washington University (# of sections)

Light Commercial Construction (CMGT 245) (2)
Plane Surveying (CMGT 267, CMGT 267LAB, & CMGT 267LABHC) (1)
Construction Estimating I (CMGT 343 & CMGT 343LAB) (1)
Construction Methods and Materials (CMGT 346) (6)
Codes, Contracts, and Specifications (CMGT 444) (7)
Principles of Construction Management (CMGT 455) (2)
Principles of Heavy Construction Management (CMGT 456) (1)
Construction Accounting, Finance, and Contemporary Topics (CMGT 485) (6)
Construction Management Competition Preparation (CMGT 495) (1)
Engineering Project Cost Analysis (IET 301) (5)
Statics (IET 311) (1)
Alternative Energy Resources and Technology (IET 442) (1) (team taught)
Cooperative Education (IET 290, IET 490, & SHM 490) (28 students)

University of North Florida (# of sections)

Construction Cost Estimating (BCN 3611) (3)
Advanced Construction Estimating (BCN 4612) (3)
Construction Documents and Contracts (BCN 4708) (1)
Construction Safety (BCN 4730) (2)
Construction Law (BCN 6748) (1)

Montana State University (# of sections)

Soils and Foundations (CET 302) (1)
Introduction to Construction Engineering (CE 309) (5)
Computerized Estimating and Scheduling (CET 402) (5)
Heavy Construction Equipment & Methods (CE 404) (5)
Construction Project Planning & Scheduling (CE 405) (8)
Estimating and Scheduling (CE 407) (2)
Structural Systems (CET 412) (2)
Internship (CE/CET 476) (5 summers)
Quality Assurance/Risk Management in Construction (CE 505) (4)
Safety Management Systems (CE 555) (1)

Arizona State University (# of sections)

Introduction to Computer-Aided Engineering (ECE 106L) (1)
Construction Management and Safety (CON 371) (1)
Construction Estimating (CON 383) (1)

University of Wyoming (# of sections)

Orientation to Engineering Study (ES 1000) (2)
Statics (ES 401/ES 2110) (12)
Mechanics of Materials (ES 2210) (1)
Building Materials & Construction Methods (ARE 420) (1)
Introduction to Construction Contracting/Engineering (ConE 590/CE 519/3190/3100) (31)
Construction Contract Documents (ConE 532) (5)
Construction Cost Engineering (ConE 612/CE 611/CE 4110) (15)
Heavy Construction Equipment & Methods (ConE 624/CE 612/CE 4120) (9)
Contractor Organization & Management (ConE 644) (5)
Construction Project Management (ConE 646) (4)
Design and Construction of Temporary Support Structures (ConE 664) (4)
Construction Planning and Scheduling (ConE 652/CE 715/CE 5150) (11)
Senior Research Paper (CE 691) (1)
Engineering Economics & Professional Ethics (CE 3900) (9)
Wyoming D.O.T. Design Squad Cooperative Experience (CE 4920/CE 4970) (6)
Calculus I, II, & III (MATH 2200, 2205, & 2210) (1 each)

Iowa State University (# of sections)

Technical Lecture (Con E 100) (3)
Materials & Methods of Building Construction (Con E 241) (6)
Construction Contract Documents (Con E 245) (7)
Construction Cost Estimating (Con E 246) (11)
Contractor Organization & Management (Con E 371) (2)
Concrete Forms & Formwork Design (Con E 440) (2)
Construction Planning & Scheduling (Con E 441) (9)
Senior Study Project (Con E 460) (1)

Short Courses, Seminars, and Workshops Offered:

"Introduction to Critical Path Method of Scheduling" – eight hour workshop taught to newly hired management staff for a heavy/civil contractor headquartered in Bozeman, MT. (June, 2003)

"Project Management Software: An Overview" - one hour seminar presented at the Wyoming Engineering Society 77th Annual Convention (February, 1997)

"Project Management: Time Management Aspects" - four hour compressed video seminar presented through the Office of Conferences & Institutes, School of Extended Studies & Public Services, University of Wyoming (March, 1996)

"The Many Faces of Construction Scheduling" - two hour seminar presented at the Wyoming Engineering Society 75th Annual Convention (February, 1995)

"An Overview of Construction Scheduling" - half day seminar presented to select Wyoming Department of Transportation personnel (December, 1994)

"Project Management" - four hour compressed video seminar presented through the Office of Conferences and Institutes, School of Extended Studies and Public Services, University of Wyoming (November, 1994)

"Construction Management" and "Route Surveying" - three week short courses sponsored by USAID-VITA and presented to Afghan engineers and technicians in Peshawar, Pakistan (March, 1992)

"Welcome to the World of Construction" - two day short course on highway construction contract documents and cost estimating techniques for Wyoming DBE-MBE-WBE contractors (March, 1985)

Miscellaneous Teaching Related Activities:

Central Washington University

Accompanied student team to NAHB Construction Management Competition in Orlando, FL (team received "Rookie of the Year" award) (Jan, 2011)
Faculty advisor for NAHB Student Chapter (2009 – 2012)

University of North Florida

Coached student teams for regional ASC Construction Management Competitions in Charlotte, NC (2006) and national ASC Construction Management Competition in Reno, NV (2007)

Montana State University

Faculty advisor for AGC Student Chapter (2000 – 2003)
Coached student teams for regional ASC Construction Management Competitions in Reno, NV (2000-04) and national ASC-AGC Construction Management Competitions in Las Vegas, NV (2002) and Dallas, TX (2003)
Faculty advisor for Sigma Lambda Chi Construction Honorary (2004)

University of Wyoming

Faculty advisor for Associated General Contractors Student Chapter (1981-88)
Accompanied students on AGC Student Chapter trips to Denver, CO; Seattle & Tacoma, WA; Bozeman, MT; and Lincoln, NB
College of Engineering Junior High Visitation Program (1981-83)
Engineering Summer Program (ESP) instructor (1988, 1990, & 1992-97)
High School Teacher Engineering Program (HiSTEP) instructor (1992 & 1993)
Faculty advisor for Tau Beta Pi (1999-2000)

Iowa State University

Accompanied construction students on AGC Student Chapter trips to Des Moines, IA; Chicago, IL; Peoria, IL; and Dallas, TX.
Honors student advisor
Faculty advisor for ISU Weightlifting Club
Faculty advisor for ISU Trap and Skeet Club

Graduate Committee Memberships:

Central Washington University

4 – MSET students

Montana State University

26 – MCEM students (major professor of record for all 26)

University of Wyoming

8 - M.S. students in the Colleges of Engineering & Business (major professor for 3 of the 8)

1 - Ph.D. student in the College of Engineering

1 - Ed.D. student in the College of Education

Research Activities:

Grants Received:

"Data Collection and Analysis for the Pacific Northwest Smartgrid Demonstration Project", Department of Energy-Battelle Memorial Institute-City of Ellensburg (November, 2011 - $72,000)

"Design Considerations and Economic Impacts of Near-Freezing Soil Temperatures on Soil Compaction", Mountain-Plains Consortium (1995 - $26,031)

"Pavement Overlay Design", Mountain-Plains Consortium (1992 - $77,129, 1993 - $37,600) with K. Ksaibati, co-principal investigator)

SFRC grant continuation for TCMS project, U. S. Army CERL (1990 - $1,840).

IPA grant continuation for TCMS project, U. S. Army CERL (1990 - $6,636).

Short Form Research Contract (SFRC) to provide student support for the TCMS project, U. S. Army CERL (1989 - $2,760).

IPA grant to support work on the Theater Construction Management System (TCMS), U.S. Army CERL (1989 - $5,309).

Intergovernmental Personnel Act (IPA) grant for sabbatical leave at the U.S. Army Construction Engineering Research Lab (CERL), Champaign, IL (1988 - $37,884).

College of Engineering Faculty Development Award to purchase microcomputer hardware and software (1986 - $2,500).

"Elemental Masonry Unit Shape Modification to Improve Productivity of Placement," Faculty Grant-in-Aid, University of Wyoming (1983 - $2,495).

The William A. Klinger Memorial Award, Associated General Contractors Education and Research Foundation, Washington, D.C. (1983 - $15,000).

Continued support for implementation of the Construction Engineering Option at the University of Wyoming, Wyoming Construction Advancement Program, Casper, Wyoming (1981 - $25,000).

"A Comparison of Production Rates for Union and Nonunion Masons in Central Iowa," Engineering Research Institute, Iowa State University (1979 - $1,425).

"Valuation of Manufacturing Equipment for Ad Valorem Tax Purposes - Phase II," Varied Industries Group, Iowa (1978 - $14,062) (with H. A. Cowles, Ph.D. major professor).

Publications:

Refereed Publications and Proceedings:

Rajendran, Sathy, Brian Clarke, and Michael L. Whelan, "Contract Issues and Construction Safety Management," Professional Safety, Journal of the American Society of Safety Engineers, Vol. 58, No. 9. (September, 2013).

Bender, W., Plugge, P. W., and Whelan, M. L., "Sustainable Design Strategies That Succeed II," International Proceedings of the Associated Schools of Construction of the 49th Conference, San Luis Obispo, CA (April, 2013).

Whelan, M., Knoll, P., Jost, D., and Rabern, D., "Outcome Assessment of Construction Engineering Technology Programs Using the Constructor Qualification Examination Level I," Proceedings of the Pacific Northwest Region Meeting, ASEE, Bozeman, MT (May, 2000).

Whelan, Michael L., and Stahl, Sandy, "The Impact of Near Freezing Soil Temperatures on Soil Compaction," Proceedings of the Fifth International Symposium on Cold Region Development, Anchorage, AK (May, 1997).

Ksaibati, K., Burczyk, J. M., and Whelan, M. L., "Effect of Selecting Subgrade Resilient Modulus Values on Asphalt Overlay Design Thickness," Transportation Research Record No. 1473 (July, 1995).

Cowles, H. A., and Whelan, M. L., "Estimation of Declining Operation Returns," Engineering Economist, Vol. 31, No. 2 (Winter, 1986).

Suprenant, B. A., and Whelan, M. L., "Equipment Requirements for Concrete Recycling," Proceedings of the ASCE Specialty Conference on Earthmoving and Heavy Equipment, Tempe, AZ (1986).

Whelan, M. L., "Concrete Formwork Design: Using the Computer to Shorten the Problem," Proceedings of the 3rd National Conference on Microcomputers in Civil Engineering, Orlando, FL (November, 1985).

Whelan, M. L., "Hollow Concrete Masonry Unit Shape Modification to Improve Productivity of Placement: Results of the Preliminary Research Effort," Proceedings of the Third North American Masonry Conference, The Masonry Society (June, 1985).

Whelan, M. L., "Construction Engineering: The Wyoming Experience," Civil Engineering Education, American Society of Engineering Educators (March, 1984).

Other Publications:

Stephens, J., Whelan, M., and Johnson, D., "Use of Performance Based Warranties on Roadway Construction Projects", technical report prepared for the State of Montana Department of Transportation Research Bureau, (November, 2002)

Ksaibati, K., Whelan, M., Burczyk, J., and Farrar, M., "Selection of Subgrade Modulus for Pavement Overlay Design Procedures," a final report, MPC Report No. 94-34, Mountain-Plains Consortium (August, 1994).

Ksaibati, K., Whelan, M., Burczyk, J., and Farrar, M., "Factors Influencing the Determination of a Subgrade Resilient Modulus Value," a research report, MPC-19, Mountain-Plains Consortium (1993).

Farrar, M., Ksaibati, K., Beamer, A., and Whelan, M. L., "Selection of Subgrade Modulus for the Revised AASHTO Pavement Overlay Design Procedures," Proceedings of the First Falling Weight Deflectometer User's Group Meeting, Maplewood, MN (1992).

Carson, Marvin, and Whelan, Michael, "Construction Network Bulletin Board System CNET User's Manual", Department of Construction, Arizona State University, Tempe, AZ (August, 1991).

Whelan, M. L., Puckett, J. A., and Edgar, T. V., "The Ozone Bridge Research Project: Measurement and Comparison of Labor Productivity Levels", technical report, Department of Civil Engineering, University of Wyoming, Laramie, WY (January, 1990).

Crawford, K. H., Gerber, CPT R. A., Whelan, M. L., and Shihayed, W., "Functional Requirements for the Theater Construction Management System (TCMS)", USACERL Technical Report P-90/02, U.S. Army CERL, Champaign, IL (October, 1989).

Cowles, H. A., and Whelan, M. L., "Final Report: The Estimation of Declining Operation Returns," ERI Project 1375, Engineering Research Institute, Iowa State University, Ames, IA (September, 1981)

Whelan, M. L., The Estimation of Declining Operation Returns for Industrial Property, Ph.D. Dissertation, Iowa State University, Ames, IA (April, 1981), (unpublished manuscript).

Papers Presented without Publication:

Whelan, Michael L., "Hydraulic Excavators vs. Frontend Loaders: Battle of the Earthmovers," 2012 ATMAE Annual Conference, Nashville, TN (November, 2012). (refereed abstract)

Whelan, Michael L., "A Construction Bidding Simulation: Tips About Variations That Work and Variations That Don't," 2012 ATMAE Annual Conference, Nashville, TN (November, 2012). (refereed abstract)

Johnson, C., Whelan, M., and Pringle, C., "Engineering Project Management and Entrepreneurship in Mechanical Engineering Technology," 2012 Pacific Northwest – American Society of Engineering Educators Section Meeting (PNW-ASEE), Portland, OR (August, 2012).

Davis, N., Pringle, C., Beardsley, R., and Whelan, M., "Ellensburg Renewable Energy Park Project: What Becomes of All That Data Generated by the Smart-Grid Research Project?," SOURCE 2012, Central Washington University, Ellensburg, WA (May, 2012). (refereed abstract)

Fuhrman, Darryl and Whelan, Michael L., "The Ellensburg Renewable Energy Park: A Proposed Display of Renewable Energy Technologies for Public Education," SOURCE 2012, Central Washington University, Ellensburg, WA (May, 2012). (refereed abstract)

Olson, Darren and Whelan, Michael L., "Delivering a Master of Science Program in Engineering Technology to Cohorts of Chinese Nationals: An Analysis of the Challenges, the Benefits, and the Pursuit of Continuous Improvement," 2011 ATMAE Annual Conference, Cleveland, OH (November, 2011). (refereed abstract)

Whelan, Michael L. and Cattin, William, "Acid Test: Detecting One Student's Dishonest Submittal of Another's Work," SOURCE 2011, Central Washington University, Ellensburg, WA (May, 2011). (refereed abstract)

Whelan, Michael L., "Frontend Loader vs. Hydraulic Excavator: Battle of the Earthmovers," SOURCE 2011, Central Washington University, Ellensburg, WA (May, 2011). (refereed abstract)

Whelan, Michael L., "Design of Concrete Wall Formwork with the Aid of a Microcomputer," Associated Schools of Construction, North Central Region Conference, Kansas State University, Manhattan, KS (1985). (refereed abstract)

Whelan, Michael L., "Construction Engineering Education in the U.S.," University of Wyoming, Laramie, WY (1979). (refereed abstract)

Whelan, Michael L., "Construction Cost Estimating," Managers of Environmental Services Conference, Iowa State University, Ames, IA (1977).

Service Activities:

Departmental Level:

Central Washington University

Assistant Chair, Dept. of Engineering Technologies, Safety, & Construction (2012 – 13)
Chair, Department of Industrial and Engineering Technology (2009 – 12)
Construction Management Industry Advisory Council (2007 – Present)

Montana State University

CET Faculty Search Committee, Chair (2004)
Assistant Head, Department of Civil Engineering (2003-04)
Civil Engineering Scholarship Committee (2003-04)
Civil Engineering Strategic Planning Committee (2000)
Civil Engineering Curriculum Committee (2000 – 2003)
Director, Masters of Construction Engineering Management program (2000-04)
Program Coordinator for Construction Engineering Technology (2000-04)

Arizona State University

Graduate Programs Coordinator (1991)

University of Wyoming

Department Head Search Committee (1994)
Approved Degree Checks for the Department of Civil Engineering (1989-91, 1992-98)
Civil Engineering Graduate Committee (1989-91)
Civil Engineering ABET Accreditation Committee (1984-85)
Civil Engineering Curriculum Committee (1980-88, 1989-91, 1991-2000; Chair, 1986-88, 1990-91, 1992-98)
Wyoming Industry Advisory Board for Construction Engineering (1980-86; Chair, 1980-86)
Coordinator, Construction Engineering Option (1980-86)

Iowa State University

Construction Engineering Research Advisory Committee (1979-80)
Student Affairs Committee (1976-80; Chair, 1977-80)
Extension and Continuing Education Committee (1975-77)
Construction Engineering Curriculum Committee (1974-79)
Liaison with Hawkeye Chapter, Associated Builders & Contractors (1975-80)

College Level:

Central Washington University

CEPS Executive Council (2009 – 12)

Montana State University

Curriculum Development and Accreditation Committee (2003-04)
TC2K Accreditation Committee (2001)
Pre-professional Program Development Committee (2001)
Curriculum Committee (2000-03)

Arizona State University

Safety Committee (1991)

University of Wyoming

Budget Reduction Committee (1995-96)
Faculty Workload Committee (1993-96; Chair, 1993-94)
Faculty Development Committee (1992-95)
Ad Hoc Teacher Evaluation Committee (1985-86)
Ad Hoc Engineering Building Renovation Committee (1983)
Engineering College Curriculum Committee (1981-84, 87, 92-96; Chair, 1992-96)

Iowa State University

Promotion and Tenure Review Committee (1977)
Student Affairs Committee (1976-80)

University Level:

Central Washington University

Outdoor Reception Center Master Planning Project (2012 – present)
Library Ad-Hoc Personnel Committee (2010)
Faculty Senate Academic Affairs Committee (2009 – present; Chair, 2012 – present)
Associated Department Chairs Organization (ADCO) (2009 – 12)
Library Advisory Committee (2009 – 12)
Parking Design Committee (2009 – 11)
STEP Advisory Board (2009)
Alternative Energy Committee (2009)
SOURCE 2008 (Judge, Session 17) (2008) (Judge, Poster Session) (2013)
Faculty Senate (2008 – 10) (Alternate 2012 – present)

University of Wyoming

Physical Education Requirements Subcommittee (University Studies Committee) (1997)
Facilities Planning Office Review Team (1996-97)
University Course Review Committee (1994-96)
University Studies Committee (1991-94)
Faculty Senate (alternate: 1990, member: 1995-1998)
University of Wyoming - National Park Service Research Center Steering Committee (grant review committee; 1983-86)
Campus Planning Committee (1981-84)
University Academic Planning Committee (1982-83)
University Course Committee (1981-83; Chair, 1982-83)

Iowa State University

Faculty Council Executive Committee (1978-79)
Physical Facilities Committee (1977-79)
Athletic Council (1977-78)
Faculty Council (1977-79)
All University Council on Student Affairs (1977)

David W. Martin, CPC, PSP, GACR

Central Washington University
Department of Engineering Technologies, Safety, & Construction
400 E. University Way
Ellensburg, WA 98926
dwmartin@cwu.edu

Certified Professional Constructor with twelve years professional experience in civil and construction project management encompassing over $100,000,000 worth of vertical and horizontal construction. An additional ten years involved in college level construction management instruction and administration including contract and project management techniques, estimating, disputes resolution practices, planning and scheduling, safety engineering, engineering practices, and quality control. Quality oriented with a strong sense of integrity and a desire to continue doctoral studies.

Principle Areas of Interests

Construction management techniques, construction education, construction project leadership and innovation, project controls techniques, integrated project delivery and other collaborative project delivery systems, Building Information Modeling, construction project organizational behavior and culture, covenant based contracts, and alternative disputes resolution.

Education

Master of Science; Civil Engineering, Virginia Tech, 2004; Blacksburg, VA.
Master of Arts; Business Management, Regent University, 2000; Virginia Beach, VA.
Bachelor of Science; Construction Management, University of Cincinnati, 1992; Cincinnati, OH.

Certifications/Training

OSHA502 (2012); Occupational Safety and Health Administration.
Certified Professional Constructor (2010); American Institute of Constructors.
Green Advantage Environmental Certification for Commercial and Residential Construction (2010); Green Advantage.
OSHA500 (2009); Occupational Safety and Health Administration.
Planning & Scheduling Professional (2008); Association for the Advancement of Cost Engineering.
Certified Technician in Asphaltic Concrete, Hydraulic Cement Concrete, Soils and Aggregate, Pavement Marking, & Nuclear Safety (2001-2005); Virginia Department of Transportation.
Erosion & Sediment Control Practices & Procedures (2002); Dept. of Conservation & Resources.

Academic Experience

2012-Present Central Washington University Ellensburg, WA
Associate Professor – Construction Management

Professor – Developed and taught courses in construction project management, cost estimating, project control techniques, contract document reading, and means and methods of concrete construction. Implemented the use of Primavera Project Management (P6) and NAVISWORKS into the curriculum. Member of the graduate faculty. Averaged 4.06/5.00 on student evaluations.

Competition Coach - Coaching student teams competing in the Associated Schools of Construction Region VII competition.

2008-2012 Western Carolina University Cullowhee, NC
Visiting Assistant Professor - Construction Management

Professor – Programming curriculum and accreditation development and teaching various construction management and engineering courses. Utilizing various construction software packages including Primavera Project Management (P6), Project Planner (P3), Suretrak, Microsoft Project, Prolog, and Revit in classroom settings. Averaged 3.1/4.0 on student evaluations. Averaged 3.3/4.0 2010 – 2011.

Student Advisor – Advising an average of twenty-six students on academic requirements and expectations from application to graduation and professionally beyond graduation.

Student Organization & Industry Liaison Advisor – Guiding student club officers and providing aid to attract industry involvement with the organization. Establishing and maintaining charter memberships with the Associated General Contractors of America, Associated Builders and Contractors of the Carolinas, and the National Home Builders Association.

Competition Coach - Coaching student teams competing in the Associated Schools of Construction Region II competition, the National Associated Builders and Contractors Student Competition, and the National Association of Home Builders Student Competition.

2005-2008 Eastern Kentucky University Richmond, KY

Assistant Professor - Construction Management

Professor – Developed and taught courses in construction project management, cost estimating, project control techniques, contract document reading, and means and methods. Averaged 4.1 out of 5.0 from student course evaluations.

Events Coordinator – Planned, organized, and directed the Construction Management Recognition Banquet. Solicited and procured contracting companies to sponsor the event.

Student Organization Advisor – Guiding student club officers and providing aid to attract industry involvement with the organization. Helped establish two affiliations with the Kentuckiana Chapter of the Associated Builders and Contractors of America and the Home Builders Association of Kentucky.

Competition Coach – Coaching student teams competing in the Associated Schools of Construction, Region III Student Competition, Chicago, IL.

Recruiter – Acted as the primary recruiter and recruiting organizer for the Department of Technology.

1997-2001 Ivy Tech Community College Richmond, IN

Program Chair, Construction Technology

Program's primary instructor, academic coordinator, curricula developer, recruiter, student advisor, budget manager, and leader among adjunct faculty and coordination with other programs.

Taught construction and project management to college students including construction materials and methods, construction contract documents, quantity surveying and cost estimating, and construction industry overview.

Created corporate and professional development courses targeted for several local businesses through Ivy Tech's Business and Industry Training Division.

Developed, coordinated, and conducted on-line and distance technology courses for the construction technology program.

Established two articulation agreements with area high schools.

Implemented a strong advisory committee consisting of representatives from the local construction industry to encourage appropriate changes to the program.

Professional Industry Experience

2005-Present Construction Services and InstructionEllensburg, WA

Independent Consultant

Providing construction management services including planning and scheduling development and maintenance and reconciliation of billed verses in-place materials.

Providing educational training in construction management techniques including critical path method scheduling, quantity takeoff, cost estimating, documentation, safety, contract document reading, and earned value management.

2001-2005 MBP Construction Engineering and Management Roanoke, VA

Senior Engineer

Administered over $50,000,000 worth of construction contracts between owners, architects/engineers, and general contractors for educational and hospitality construction at a major university over a two year period.

Investigated disputed contract issues on a variety of construction projects ranging in value from $250,000 to $17,000,000 on behalf of owners and contractors. Reviewed project documents to determine cause and effect and presented findings to clients.

Inspected civil, structural, and mechanical components of transportation and building projects. Maintained project documentation and informed clients of project progress and budget status.

Developed and critiqued CPM schedules on several multi-phase, multi-building projects for contractors and owners. Acted as the Roanoke Branch CPM scheduling expert.

Created independent conceptual, preliminary, and detailed budget cost estimates for educational facilities, administrative offices, and maintenance operation facilities.

1998-1999 Towne of Centerville, Indiana Centerville, IN

Building and Zoning Inspector

Reviewed and approved building permit applications in accordance with the International Building Code.

Ensured compliance of commercial and residential construction with local zoning and building codes.

1996-1997 County of Butler, Ohio Hamilton, OH

Zoning and Storm Water Management Administrator

Ensured compliance with storm water management code requirements for new residential and commercial development projects.

Administered flood plain and flood way protection initiatives.

1995-1996 Maddox Building Systems of Ohio, Inc. Dayton, OH

Quality Control / Safety Engineer

Ensured compliance of submittals and in-place construction with the contract and resolved conflicts between contract documents.

Conducted pre-installation, coordination, and safety meetings.

Established and maintained project budget, reviewed change orders associated with contractual conflicts, and coordinated subcontractor interface.

Estimated, procured, and coordinated interior framing and finish materials in a superintendent role as a part of subcontracted work beyond quality control position.

1993-1995 Dugan & Meyers Construction Company Cincinnati, OH

Project Engineer / Estimator

Performed several construction management operations including estimating, value engineering, scheduling, budget development, and tracking cash flow.

On-site duties involved coordinating material arrival, subcontractor interfacing, and approving submittals for several tenant finish projects.

1990-1991 Paul Hemmer Construction Company Ft. Mitchell, KY

Assistant Superintendent / Project Engineer

Performed several construction management operations including estimating, value engineering, scheduling, budget developing, and tracking cash flow.

On-site duties involved coordinating material arrival, subcontractor interfacing, and approving submittals for several tenant finish projects.

Refereed Publications

Martin, David & Songer, Anthony (2004) *Contracts Verses Covenants in Collaborative Project Delivery Systems.* Construction Information Quarterly. Vol. 6, Issue 2.

Refereed Conference Proceedings

Plugge, Phillip, Martin, David, & Bender, William (2014) *Integrated Project Delivery Games for the Classroom.* Associated Schools of Construction 50th Annual International Conference, March 2014.

Martin; Songer; Hawdon: *A Construction Sociological Systems Model to Relational Contracting.* American Society of Civil Engineers Specialty Conference on Leadership and Management in Construction, May 2006.

Martin and Songer: *Contracts Verses Covenants in Integrated Project Delivery Systems – A Case Study.* American Society of Civil Engineers Conference on Leadership and Management in Construction, March 2004.

Funded Research

Program Manager; *Student Energy Internship and Fellowship Program*; North Carolina Department of Commerce – Energy Division. January, 2011 – December, 2011. $250,000 grant providing sixteen internships sponsored through the American Recovery and Reinvestment Act.

Invited Presentations

Foundation for Private Enterprise Education, Ellensburg, WA, July 2013: Invited Lecturer – Provided blueprint reading training for the Energy Week Program.

Kimmel and Associates, Asheville, North Carolina, June, 2011: Invited Lecturer – Presented "*A Day in the Life of a Construction Project Manager*" to company personnel that recruit construction professionals.

University of Kentucky – Small Business Administration; Minority and Women Construction Training Program, Lexington, Kentucky, December 2005 – March 2007: Invited Lecturer – Provided construction and project management training to local DBE contractors including topics such as construction cost estimating, CPM scheduling, construction contracts, construction safety, and construction contract document reading. Contact: Dee Dee Harbut, Lexington Area Small Business Development Center, Central Library Building, 4th Floor, 140 E. Main Street, Lexington, KY 40507-1376, (859) 257-7667.

GJ Hopkins, Inc., Roanoke, Virginia, December, 2001: Invited Lecturer – Instructed mechanical and electrical crafts-persons on the reading and understanding of Critical Path Method Scheduling. Presented common methods and practices including activity sequencing, resource and cost loading schedules, and common mistakes in many schedules. Contact: Paul Lee, McDonough Bolyard Peck Construction Engineering, 711 D 5th Street NE, Roanoke, VA, 24016, (540) 985-9453.

Professional Associations

American Institute of Constructors
Associated General Contractors – Faculty Member
Associated Schools of Construction
Association for the Advancement of Cost Engineering
Chi Epsilon – National Civil Engineering Society
International Council for Research and Innovation in Building and Construction TG64 Leadership in Construction.
National Association of Home Builders – Faculty Member

Courses Taught

Construction Project Management and Administration
Construction Planning and Scheduling
Means, Methods, and Materials of Construction Wood, Steel, Concrete, Masonry, Soils, & Finishes
Safety Management and Human Factors in Construction
Statics and Strengths of Materials
Introduction to Construction
Facilities Management
Quantity Surveying and Construction Cost Estimating
Computer Applications for Technology

Other Academic Experience

Southwestern Community College, Sylva, North Carolina, Adjunct Professor: Taught construction estimating.

Chandler University (formally the Institute of Construction Management and Technology), Scottsdale, Arizona, Adjunct Professor On-line; Construction Management – Taught part-time construction management course to domestic and international on-line university students including construction basics, land development, building codes, safety, soils and foundations, statics and strength of materials, and structural analysis.

Chandler University (formally the Institute of Construction Management and Technology), Scottsdale, Arizona, Curricula Developer; Developed on-line curricula for the Construction Management program

for courses on the subjects of: construction soils and foundations, statics and strengths of materials, and temporary construction systems.

University, College, & Department Service

Central Washington University, Ellensburg, Washington
September, 2014 – Present: ETSC Department Head Search Committee.

Central Washington University, Ellensburg, Washington
September, 2013 – Present: University Board of Academic Appeals.

Central Washington University, Ellensburg, Washington
September, 2013 – Present: University Investment Council.

Central Washington University, Ellensburg, Washington
March, 2013 – Present: ETSC Scholarship Committee.

Central Washington University, Ellensburg, Washington
January, 2013 – May, 2013: Safety & Health Management Faculty Search Committee.

Western Carolina University, Cullowhee, North Carolina.
August, 2011 - July, 2013: Curriculum Committee – Two-year appointment; Solicited input from the industry advisory board in the development of curricula revisions.
March, 2011 – April 2011: Competition Coach; Associated Builders and Contractors, Student Competition Edcon and Expo National Student Competition in San Antonio, Texas.
October 2010: Competition Coach; Associated Schools of Construction, Region II Student Competition, Birmingham, Alabama.
August, 2010 – July, 2012: Dean's Advisory Council – Two-year appointment.
2008 - 2009: American Council of Construction Education (ACCE) Accreditation Committee. Helped achieve full accreditation status for the construction management program.
October, 2008 – January, 2009: Competition Coach; National Association of Home Builders International Builder's Show Student Competition –International Builders Show in Las Vegas, Nevada.
August, 2008 – October, 2011: Construction Management Review Board.

Eastern Kentucky University, Richmond, Kentucky
March 2008: Second Annual Construction Management Recognition Banquet – Solicited and coordinated the Second Annual Construction Management Recognition Banquet funding efforts.
April 2007: Committee Chair; Inaugural Construction Management Recognition Banquet – Developed, organized, solicited, and coordinated the Inaugural Construction Management Recognition Banquet. Arranged for dinner, presentations, awards, and sponsorships for over one hundred patrons including students, faculty, school administrators, and contractors.
August, 2006 – July, 2008: Academic Services Committee.
August, 2006 – July, 2008: Construction Management Review Board.

Industry and Professional Service

Associated Schools of Construction (ASC), Washington DC, April 2014: Peer Reviewer - Proceedings of the 50th Annual Conference.

American Council on Education, Fort Leonard Wood, Missouri, January, 2012: Provided review services of educational curriculum for the United States Marine Corps. Resulted in recommendations for college credit of courses provided.

American Council on Education, Annapolis, Maryland, November, 2010: Provided review services of educational curriculum for BOMI International; an international educational institution in Facilities Management. Resulted in recommendations for college credit of courses provided.

Associated Schools of Construction (ASC), Flagstaff, Arizona, April 2007: Peer Reviewer - Proceedings of the 43rd Annual Conference.

American Society of Civil Engineers (ASCE), Freeport, Bahamas, May 2006: Peer Reviewer - Specialty Conference on Leadership and Management in Construction.

Associated Schools of Construction (ASC), Ft. Collins, Colorado, April 2006: Peer Reviewer - Proceedings of the 42nd Annual Conference.

Community Service

Boy Scouts of America, Ellensburg, WA, September 2012 – Present: Assistant Scoutmaster, Troop 413.

Boy Scouts of America, Cullowhee, North Carolina, September 2010 - Present: Webelos Den Leader, Pack 914.

Boy Scouts of America, Cullowhee, North Carolina, April 2010 – September 2010: Assistant Scoutmaster, Troop 914.

Construction Project Vitae

Project Management/Inspection

Virginia Tech Alumni / Continuing Education Center / Hotel Complex, Blacksburg, Virginia, April 2003 – July 2005: Construction Manager - Providing full-time construction and project administration services for a $32.5 million 193,000 square foot, multi-level, multi-purpose steel and masonry framed hollow core pre-cast concrete plank facility with university (Hokie) stone veneer and decorative pre-cast concrete trim. Due to the high visibility of the project, communication between all parties involved took on an added importance. Contact: Dale Leidich, MTFA Architecture, Inc., 2311 Wilson Boulevard, Arlington, VA 22201-3307, (703) 524-6616.

Virginia Tech Agriculture & Natural Resources Research Lab Facility, Blacksburg, Virginia, July 2003 – July 2005: Construction Manager - Providing full-time construction and project administration services for a $21 million 84,000 square foot multi-level concrete framed educational and research facility with university (Hokie) stone veneer and decorative pre-cast concrete trim. Due to the extensive impact that construction had on the operations of adjoining facilities, communication between all parties involved took on an added importance. Contact: Bruce Ferguson, Virginia Tech - Capital Design & Construction, 90 Sterrett Facilities Complex, Blacksburg, VA 24061, (540) 231-6449.

Blue Ridge Behavioral Health Commission – Burrell Center Renovation; Roanoke Virginia, February 2003 – December 2003: Project Manager – Providing construction and project administration services for a $5 million health care facility renovation to a historically sensitive project. Worked with project contractor in developing CPM schedule, reviewing change order proposals, and maintaining historic integrity to the structure. Provided leadership to on-site inspectors as required.

Commonwealth of Virginia Department of Transportation – I-81 Exits 150 and 168 Acceleration and Deceleration Lanes; Salem, Virginia, April 2002 – October 2002: Inspector – Inspected construction of roadways, engineered structural fill, placement of asphalt, underground communication line installation, erosion and sediment control operations, erection of guardrail and road signs. Maintained project documentation for payment to contractor and keeping project engineer informed of the project's progress and the budget's status.

Commonwealth of Virginia Department of Transportation – I-81 Exits 109 and 114 Acceleration and Deceleration Lanes; Christiansburg, Virginia, September 2001 – October 2001: Inspector – Inspected construction of roadways, engineered structural fill, placement of asphalt and erection of guardrail and road signs. Prepared as-built plans and documentation control.

Commonwealth of Virginia Department of Transportation – Plum Creek Bridge; Radford, Virginia, September 2001 – October 2001: Inspector - Responsible for bridge inspection of an integral backwall, 2 lane bridge over Plum Creek, including steel driven piles, steel beams, reinforcing steel, concrete bridge deck.

U.S. Army Corps of Engineers - Defense Construction and Supply Center, Child Development Center; Columbus, Ohio, April 1995 – July 1996: Quality Control/Safety Engineer – Responsible for ensuring compliance with contract documents, managing, reviewing, and approving subcontractor submittals, resolving conflicts between drawings and specifications, conducting pre-construction, coordination, and safety meetings, enforcing safety guidelines, and coordinating subcontractor interface for a 16,000 square foot $1.36 million child center.

Dinsmore & Shohl, LLC; Cincinnati, Ohio, July 1993 – December 1993: Superintendent - On site duties involved coordinating material arrival, subcontractor interfacing and approving submittals for several tenant finishes for a $236,000 interior office retrofit.

Q-Source; Miamisburg, Ohio, May 1990 – September 1990: Project Engineer - Responsible for updating project schedule and as-built drawings, reviewing and submitting payment applications, building layout, enforcing safety guidelines and ensuring the timely coordination of sub-contractors from initial site work through structural steel erection of this $1.67 million project.

Eli Lilly; Indianapolis, Indiana, December 1989 – April 1990: Project Engineer - Responsible for updating project schedule and as-built drawings, reviewing and submitting payment applications, foundation layout, equipment handling, enforcing safety guidelines and ensuring the timely coordination of sub-contractors for the foundation construction of the a major tunnel on the Indianapolis campus.

Estimating/CPM Scheduling

Western Carolina University - **Leatherwood & Helder Residence Halls, Phase I**, Cullowhee, North Carolina, February 2009 – March 2009: Scheduler – Updated 13 month old baseline schedule to reflect work completed to date and then established a recovery schedule to make up for four months of delay for this $20 million new multi-phase construction project to be occupied by Honors Program students. Provided training to on-site personnel to continue with updates once the schedule was appropriately designed. CPM recovery schedule provided to project contractor, architect, and owner for project control, resource allocation, determining impact analyses, and contract negotiations. Contact Robert Halcomb, Rentenbach Constructors, Inc., 2400 Sutherland Ave., Knoxville, TN 37939, 865-546-2440.

Western Carolina University - **Leatherwood & Helder Residence Halls, Phase II**, Cullowhee, North Carolina, February 2009 – March 2009: Scheduler – Developed Critical Path Method (CPM) schedule for this $20 million new multi-phase construction project to be occupied by Honors Program students. Provided training to on-site personnel to continue with updates once the schedule was appropriately designed. CPM schedules provided to project contractor, architect, and owner for control, resource allocation, determining impact analyses, and contract negotiations.

Wilson Middle School, Fishersville, Virginia, April 2004 – July 2005: Senior Engineer - Developed and maintained Critical Path Method (CPM) schedule for new school construction project. CPM schedules provided to project contractor, architect, and owner for project control, resource allocation, determining impact analyses, and contract negotiations. Contact Ed Greer, Thor, Inc., 3313 Plantation Road, P.O. Box 13127, Roanoke, VA 24031-3127, 540-563-0567

Radford University – Floyd Hall Renovation, December 2001: Lead Engineer – Developed Critical Path Method (CPM) schedule for multi-phase, quick turnaround renovation project. $1.3 million renovation to existing four-story residence hall to be completed while vacated during the summer school break. CPM schedule provided for project contractor to aid in contract negotiations with owner to determine true impact of owner caused delays and to provide an effective base for project control.

Virginia Polytechnic Institute and State University – Career Services Building, Blacksburg, Virginia, January 2002: Lead Engineer – Created independent budgetary cost estimate on owner's behalf. $3,133,000 new office/classroom building for professional development classrooms and administrative offices. Estimate scope consisted of site work, caissons, concrete foundation, steel and masonry superstructure, interior finishes, and electrical and mechanical systems. Offered independent analysis of costs for each construction division.

Maryland Department of Transportation – MD 28 from Riffle Ford Road to Great Seneca Highway, Montgomery County, Maryland, May 2002: Lead Engineer – Reviewed construction documents and performed CPM schedule review and update analysis for the construction of a 3.5 mile road improvement.

Virginia Polytechnic Institute and State University – Chemistry & Physics Building, Blacksburg, Virginia, February 2002: Lead Engineer – On the owner's behalf, reviewed construction project drawings and specifications and critiqued prime contractor's preliminary and final CPM schedule for the construction of a new instructional building. Worked in conjunction with the prime contractor in developing a final CPM schedule.

Commonwealth of Virginia Department of Transportation – Route 687 Blackberry Creek Bridge, August 2001: Lead Engineer – Performed post-construction review of project plans, specifications, contracts, project documentation, and materials invoices to verify the accuracy and validity of these records for preparation of the final pay estimate at contract close-out. Prepared correspondence noting changes to project documentation.

Commonwealth of Virginia Department of Transportation – Route 210 Interchange, County of Amhearst, August 2001: Engineer Aide – Performed post-construction review of project plans, specifications, contracts, project documentation, and materials invoices to verify the accuracy and validity of these records for preparation of the final pay estimate at contract close-out. Prepared correspondence noting changes to project documentation and established strong working relationship with client.

Virginia Polytechnic Institute and State University – Cheatham Hall Addition and Renovation, Blacksburg, Virginia, March 2002: Lead Engineer – Created independent cost estimate on owner's behalf. $1,350,000 addition and renovation for new educational classrooms and administrative offices. Estimate scope consisted of site work, concrete foundation and structure, interior finishes, and electrical and mechanical work. Offered independent analysis of costs for each construction division.

Roanoke Development & Housing Authority - Lincoln 2000 Phase II Renovations, May 2001 – December 2001: Lead Engineer – Developed Critical Path Method (CPM) schedule for multi-phase, multi-building renovation project. CPM schedule provided to project contractor, architect, and owner for project control, resource allocation, determining impact analyses, and contract negotiations.

Fidelity Investments - New Headquarters Landscaping Package; Ft. Wright, Kentucky, August 1994: Lead Estimator – Negotiated contract responsible for developing project budget and estimate, procuring sub-contractor commitments, cost coding, and defining scopes of work for a $275,000 landscaping package.

Fidelity Investments - New Headquarters Parking Garage; Ft. Wright, Kentucky, March 1994: Estimator – Successful competitive bidder responsible for detailed quantity survey and pricing for concrete preparation, formwork, re-steel, concrete, finishing and curing, procuring sub-contractor commitments, and defining scopes of work for a two story 50,000 square foot parking garage. On-site duties included developing and updating project schedule, maintaining as-built drawings, and structural layout and surveying.

Cedar Village Retirement Home; Mason, Ohio, June 1994: Estimator – Successful competitive/negotiated bidder responsible for developing detailed estimates on all concrete and interior finish work. Also responsible for soliciting bids from sub-contractors, defining scopes of work, and buying out the project on a $20 million retirement home.

University of Cincinnati - College of Design, Architecture, Art, & Planning; Cincinnati, Ohio August 1993: Estimator – Successful competitive bidder responsible for developing detailed estimate on all concrete and interior finish work. Also responsible for soliciting bids from sub-contractors, defining scopes of work, and buying out the project on a $26 million addition.

Northgate Mall – Parking Lot Demolition, Reconstruction, and Rerouting; Cincinnati, Ohio, April 1994: Estimator – Negotiated contract responsible for developing estimate for all asphalt pavement, pavement marking, site utilities, and other peripheral equipment for the rerouting of traffic required due to parking garage expansion. Approximately 60,000 square feet of construction.

YMCA Addition; Landen, Ohio, April 1994: Estimator – Responsible for developing a conceptual estimate for a 12,000 square foot swimming pool and shower room addition. Acted on behalf of the owner to develop a conceptual estimate for budgetary purposes.

Claims Analysis/Disputes Resolution

U.S. Army Corps of Engineers – Replace Military Housing, Columbus Air Force Base, Mississippi, July 2002 – March 2003: Lead Engineer - Performed investigation and technical analysis of $17,000,000 request for equitable adjustment. Analyzed disputed issues and delays on behalf of the U.S. Army Corps of Engineers. Proposed contract value of $23,300,000 for the demolition of existing housing units and the design and construction of an additional 200 military family housing units and associated site development. Reviewed project documents to determine cause and effect, interviewed Government personnel, developed As-Built schedule, analyzed delays and entitlement, and presented findings to the Army Corps of Engineers.

U.S. Army Corps of Engineers – Munitions Maintenance Facility, Hurlburt Field, Florida, November 2002 – February 2003: Lead Engineer - Performed investigation and technical analysis of $1,600,000 Settlement Proposal. Analyzed disputed issues and delays on behalf of the U.S. Army Corps of Engineers. Proposed contract value of $1,899,000 for the construction of a new Munitions Maintenance Building and a Magazine Storage Facility and associated site development. Reviewed project documents to determine cause and effect, interviewed Government personnel, developed As-Built schedule, analyzed delays, and presented findings to the Army Corps of Engineers.

New Hanover County Jail & Sheriff's Administration, July 2002 – September 2002: Lead Engineer - Provided investigation and technical analysis of schedule updates and delays on behalf of New Hanover County. $47 million project to construct a new medium security jail with 600 beds and Sheriff's Administration Offices using multiple prime contractors for site work, site utilities, pile foundations, precast cell blocks, and building construction bid packages. Work included 228,000sf. of new construction, including precast cell blocks, exterior walls, and elevated floor panels. Project was over six months behind schedule and less than 50% complete when analysis began. Reviewed project documentation, interviewed County personnel, developed As-Built schedule, analyzed delays and entitlement, and presented findings to County management.

PGI Non-Wovens Textile Mill Expansion, N. Little Rock, Arkansas and Benson, North Carolina, October 2001 – December 2001: Lead Engineer - Performed investigation and technical analysis for $12.9 million claim on behalf of the design-build contractor. Fast-track $49 million project called for the renovation of 164,898 square-feet of existing plant and new construction of 85,780 square-feet new metal building for the addition of two new non-woven textile lines at existing textile plant. Contractor installed owner-furnished production equipment as well as most of the supporting systems, including platforms, process ductwork, water systems, electrical power equipment (transformers, switchgear, buses, panels), under the direct supervision of the owner-furnished equipment vendors. Contractor also designed, furnished and installed the metal building additions, building foundations, foundations for the owner-furnished equipment, and some supporting utility systems such as secondary electrical distribution, steam, city water, and instrument air, and structural supports for owner-furnished ductwork, piping and equipment. Contractor also designed and installed the building HVAC systems, including a special Air Wash system to clean and condition air for the main process areas.

City of Raleigh, North Carolina – City of Raleigh Business and Technology Center, May 2001 – June 2001: Engineer - Performed investigation and technical analysis of contractor's $237,000 claim on behalf of the City of Raleigh. $1.17-million project for construction of one new building. Reviewed project documents and performed impact analyses.

U.S. Army Corps of Engineers – Education Center & Library, MacDill Air Force Base, Florida, June 2001 – September 2001: Lead Engineer - Performed investigation and technical analysis on behalf of the U.S. Army Corps of Engineers. $4,800,000 project for construction of one new educational center and library. Reviewed project documents to determine cause and effect, developed As-Built schedule to analyze delays and entitlement, and consolidated issues and analysis into report format.

David W. Carns
(509) 963-1762
carnsd@cwu.edu

Vita

Rank: Professor, Industrial and Engineering Department, College of Education and Professional Studies.

Education: 1986 Master of Science in Civil Engineering, Oregon State University, Corvallis, OR Major: Structural Mechanics; Minor: Construction Engineering Management
1974 Bachelor of Science in Civil Engineering, Oregon State University, Corvallis, OR

Professional Experience: 1985 Engineer, Weyerhaeuser Co., Paperboard Division, Springfield OR. Project design and contract administration.

1984 Engineer, Weyerhaeuser Co. Lumber Products Division, Raymond, WA. Project design and contract administration.

1976-1984 Licensed general contractor, Corvallis, OR. Residential and small commercial projects. 1975-76 Civil Engineer, U.S. Forest Service, Corvallis, OR. Building and facilities design and contract administration.

1974-75 Project Engineer, Weyerhaeuser Co., Pulp and Paperboard Division, Longview, WA. Project design, estimating, scheduling and contract supervision.

Courses Taught and Quarter Credits:

Fall 2013	Winter 2014	Spring 2014
	CMGT 442, Building Service Systems (3 credits, 3 contact hours)	0.5 FTE No workload spring quarter
CMGT 450, Soils and Foundations (4 credits, 7 contact hours)	CMGT 441, Wood and Steel Construction (4 credits, 4 contact hours)	
CMGT 495, Competition Preparation (1 credit, 2 contact hours)	CMGT 488, Professional Certification (1 credit, 1 contact hour)	

David W. Carns
(509) 963-1762
carnsd@cwu.edu

Teaching Awards:

IET Department Award
"Most Valuable Professor" award for teaching excellent, May 2006.

Distinguished Professor in Teaching, Spring 2003
I am honored to be the recipient for the "Distinguished Professor in Area Teaching for Central Washington University".

This award is certainly an indication of the confidence that fellow faculty, students, alumni and industry professionals have in my teaching efforts and abilities.

Presidential Award, Center for Excellence in Leadership 2003-2004, June 2004
Presented by President Jerilyn McIntyre on behalf of the Center for Excellence in Leadership to recognize my contributions to teaching, service and scholarship at CWU.

Associated General Contractors of Washington Excellence in Teaching Award
Presented in January 2004 as recognition for contribution to construction education.

Most Inspirational Educator
On May 22, 2003 I was presented with the "Most Inspirational Educator" award by the Center for Excellence in Leadership at Central Washington University.

Award for Teaching
On May 28, 2002 I received an award from the College of Education and Professional Studies for excellence in teaching within the Industrial and Engineering Technology Department.

Scholarship:

Publications:

"Creating and Utilizing a 'Working Model Heat Pump' to Enhance Student Learning in a Construction Management Program", David W. Carns and P .Warren Plugge, peer-reviewed and published in the 46th Annual Associated Schools of Construction International Conference, Boston, Massachusetts, April 2010.

David W. Carns
(509) 963-1762
carnsd@cwu.edu

"Construction of a Wind Farm and Case Study", David W. Carns and William J. Bender, peer-reviewed and published in the 44th Annual Associated Schools of Construction International Conference, Auburn, AL, April 2008.

"Developing a Laboratory for a Soils and Foundations Course in a Construction Management Program", peer-reviewed and published in the 42rd Annual Associated Schools of Construction Conference, April 2006.

"Certification Preparation Class", David W. Carns and William J. Bender, peer-reviewed and published in the 38th Annual Associated Schools of Construction Conference proceedings, April 2002.

Concrete Curing, P. 19-22, Vol. II, No. 6, March 1993. The Journal of Light Construction.

The Critical Path Method of Scheduling, p. 137-142, August 1992, "Managing the Small Construction Business." The Builderburg Group, Inc., Richmond, VT.

Introduction to Critical Path Scheduling, p. 38-41, Vol. 9, No. 12, September, 1991. The Journal of Light Construction.

Foundation Layout By Transit, p. 16-18, Vol. 9, No. 6, March, 1991. The Journal of Light Construction.

Seismic Response of an Elevated Steel Water Pipe, p. 574-579, Vol. 116, No. 4 Jul/Aug, 1990. Journal of Transportation Engineering, American Society of Civil Engineers.

Grants Received:

2010 and 2011. Worked with CEPS Development Officer Michoan Spoelstra and Dr. Bender to secure two significant grants that resulted in room naming opportunities for the new Hogue Technology Building addition. The first was from the Mechanical Contractors Association of Western Washington (MCAWW) in the amount of $50,000 and the second was from Allan and Inger Osberg, also in the amount of $50,000.

June 2004 to 2007. Assisted Dr. Bender in acquiring a $250,000 state match to create an endowed faculty position in the Construction Management program. I was very instrumental in raising the $250,000 in private donations over the last few years that allowed CWU to secure this state funding.

David W. Carns
(509) 963-1762
carnsd@cwu.edu

Summer 2006. $3340. National Science Foundation grant participant. ILAP project in cooperation with Dr. Lundin of the Math Department, "Writing Equations for Deflected Beam Shapes", August 2006.

June 2005. $186 from the CWU Instructional/Research Equipment Committee to purchase surveying equipment for the CMGT 267, Plane Surveying course.

September 2004. Assisted CMGT students in raising over $10,000 from industry to help fund their trip to the Associated Schools of Construction competition to be held in February of 2005.

June 2004. $4925 grant from the Mechanical Contractors Association of America to construct a working model heat pump display to incorporate into the CMGT 442, Building Service Systems course.

May 2004. $612 from the CWU Instructional/Research Equipment Committee to purchase lab equipment for the CMGT 450, Soils and Foundations course.

November 2002. $4774 in the form of a brand new heat pump from the Carrier Corporation for instructional use in conjunction with the CMGT 442, Building Service Systems, class.

April 2002. $1272 from the Instructional/Research Committee for the purchase of two surveying instruments for use in several Construction Management courses.
September 2002. $3,826 from Associated General Contractors of Washington for microcomputers used in the Construction Management program.

September 2001. $1572 from the Associated General Contractors of Washington Education Foundation for the purchase of two new self-leveling levels for use in the CMGT 267, Plane Surveying course.

September 2000. $10,350 from the Associated General Contractors of Washington Education Foundation to supplement the 2000 fiscal year budget of the CMGT Advisory Council.

September 1998. $8860 from the Associated General Contractors of Washington Education Foundation. Funds to supplement the 1999 fiscal year budget of the CMGT Advisory Council.

June 1997. $7,182 from the Associated General Contractors of Washington Education Foundation for computers for the microcomputer lab for Construction Management students.

July 1996. $11,970 from Microsoft Corporation in the form of a software license and support for Microsoft Project for use in the microcomputer lab for the Construction Management program.

David W. Carns
(509) 963-1762
carnsd@cwu.edu

September 1995. $15,000 from the AGC of Washington Education Foundation for the microcomputer lab for the Construction Management program.

September 1994. $5,000 from the AGC Education Foundation for operating funding for the Construction Management program.

September 1992. $12,500 from the AGC of Washington Education Foundation for computer workstations and digitizers.

September 1990. $70,000 from the Associated General Contractors of Washington to assist in hiring a new tenure track faculty for the Construction Management program.

Text and Course Reviews

January 2008. Course review: "Construction Technology" component for "High School Introduction to Engineering Curriculum". For the Research and Development Center for the Advancement of Student Learning, Colorado State University.

August 2006. "Advanced Project Control and Scheduling", John Wiley.

March 2003. Vector Mechanics for Engineers, Statics, by Beer and Johnson, McGraw Hill, Burr Ridge, Illinois.

June 1999. "Wall and Roof Details", International Thompson Publishing.

September 1997. Reading Building Plans, Delmar Publishers, Albany, N.Y.

August 1997. Managing Waste at the Home Construction Site, Delmar Publishers, Albany, N.Y.

December 1995. Construction Contract Administration and Jobsite Management, Delmar Publishers, Albany, NY.

February 1993. Construction Materials by William P. Spence (21 chapter text), West Education Publishing, Highland Park, IL.

Seminars and Presentations:

April 2011. Taught an introductory blueprint reading course for the Associated General Contractors of Washington Education Foundation.

David W. Carns
(509) 963-1762
carnsd@cwu.edu

July 2008. Taught an introductory blueprint reading course for the Associated General Contractors of Washington.

June 4, 2008. "Working Together to Increase Student Interest in the Mechanical Contracting Industry", MCA luncheon presentation, Seattle, WA.

July 2007. Taught a component of "Washington Construction Week" on concrete mix design and concrete utilization to high school students.

May 2006. Taught a class for industry professionals, "Introduction to Scheduling" for the AGC of Washington.

May 2005. "Developing a Working Relationship between Mechanical Contractors in Washington and Central Washington University", MCA luncheon presentation, Seattle, WA.

March 2005. Presented a short course entitled "Scheduling, Communicating the Construction Plan" to 25 construction industry professionals at the Associated General Contractors of Washington in Yakima, WA.

January 7, 2004. AGC Leadership Breakfast speech/presentation at the Washington Athletic Club.

October 2003. "Developing a Working Relationship between Mechanical Contractors in Washington and Central Washington University", MCA luncheon presentation, Seattle, WA.

October 2002. "Developing a Working Relationship between Mechanical Contractors in Washington and Central Washington University", MCA luncheon presentation, Seattle, WA.

October, 2001. "Developing a Working Relationship between Mechanical Contractors in Washington and Central Washington University", MCA luncheon presentation, Seattle, WA. This presentation led directly to the formation of an MCA student chapter on campus and the establishment of an annual scholarship for students interested in mechanical contracting.

March 7, 2001. "Developing a Working Relationship between Mechanical Contractors in Washington and University Construction Management Programs", Mechanical Contractors Association of Washington (MCA), Seattle, WA.

November 6, 2000. Delivered a short presentation to The Associated General Contractors of Washington and the AGC Education Foundation to welcome new CWU President Jerilyn McIntyre and to highlight the accomplishments of the CMGT program at Central, Seattle, WA.

David W. Carns
(509) 963-1762
carnsd@cwu.edu

February 1995. Delivered a presentation to Foushee and Associates, a Seattle area general contractor, on Construction Scheduling.

May 11, 1993, May 10, 1994, Coordinated two seminars: A Practical Approach to Concrete Pumping, on CWU Campus.

November 1990. Coordinated "Construction Risk Management - Minimizing Your Exposure", on Central Washington University campus.

March 16 and 17 1990. Delivered "Job Planning, A CPM Approach", CWU Campus.

Service:

Internal:

Member IET Department Personnel Committee.

Chairman Construction Management Search Committee, 2005/2006 and 2006/2007. Member Construction Management Search Committee, 2011/2012.

Member ETSC Art Selection Committee, 2011/2012.

Faculty advisor to the Associated General Contractors Student Chapter.

Faculty advisor to the Mechanical Contractors Association Student Chapter.

Chair Safety and Health Management Faculty Search Committee, November 2004-June 2005.

Member CEPS Salary Equity Adjustment Committee, Plan B, Spring 2004.
Associate Member, Graduate Faculty, 2001-present, attended a number of master's examination presentations as a representative of the Graduate Council. Served as a committee member for:

- Connie Kolokotrones, M.A., An Interior Design program in Family and Consumer Sciences at Central Washington University, May 2006.
- Miwa Aoki, M.S., Effects of 9/11 on Flight Training, December 2005.

Member, College of Education and Professional Studies Scholarship Incentive Committee (mini-grants), 2002.

Member Academic Appeals, Academic Standing Committee, 1999-2003.

David W. Carns
(509) 963-1762
carnsd@cwu.edu

Chairman Construction Management Search Committee, fall 1997-spring 1998.

Member Flight Technology Search Committee, 1998.

Past Faculty Senate Representative for the IET Department.

Past member Faculty Senate Executive Committee.

External:
Member of the American Council for Construction Education (ACCE). Served as a full member of a visiting accrediting team to review the Construction Management Program at Colorado State University in Fort Collins, CO. in April 2002.

Member of the ACCE Development Committee.

Member of the Associated General Contractors of Washington Education Foundation.

Chairman of the Building Appeals Board, City of Ellensburg.

Registered Professional Engineer in Oregon and Washington.

CURRICULUM VITAE
for
Sathyanarayanan (Sathy) Rajendran

Assistant Professor and Program Coordinator
Safety and Health Management Program
Engineering Technologies, Safety, and Construction Department
Central Washington University
400 E University Way, Ellensburg, WA 98926-7584
Tel.: (509) 963-1152
rajendrans@cwu.edu

ACADEMIC BACKGROUND

Ph.D. (2007) School of Civil and Construction Engineering, Oregon State University
Construction Engineering and Management Program
Minor: Environmental Health and Occupational Safety Management
Dissertation: *Sustainable Construction Safety and Health Rating System*

M.S. (2004) School of Civil and Construction Engineering, Oregon State University
Construction Engineering and Management Program
Minor: Transportation Engineering
Thesis: *Solid Waste Generation in Asphalt and Reinforced Concrete Roadway Life Cycle*

B.E. (2002) College of Engineering, Anna University, India
Civil Engineering Program
Thesis: *Modeling of Groundwater Pollution due to Adyar River using Visual Mod Flow*

PROFESSIONAL EXPERIENCE

Program Coordinator 2011 – Present	Assistant Professor, Safety and Health Management Program Engineering Technologies, Safety and Construction Department Central Washington University, Ellensburg, WA
EHS Program Mgr. 2010 - 2011	Intel D1X Base Build Construction Project (Hillsboro, OR) Hoffman Construction Company of Oregon, Portland, OR Responsibilities: Develop and implement the overall construction environmental, health, and safety program for the multi-billion dollar mega project.
Safety Manager 2009 - 2010	Legacy Emanuel Children's Hospital Construction Oregon Health and Science University C-Wing Expansion Hoffman Construction Company of Oregon, Portland, OR Responsibilities: Develop and implement the safety and health program for the 10 story hospital project.

Safety Manager 2009	Port of Portland Headquarters Building Hoffman Construction Company of Oregon, Portland, OR *Responsibilities:* Assist in the implementation of the site safety program.
Safety Manager 2007 - 2009	Genentech Hillsboro Fill Finish Pharmaceutical Facility Hoffman Construction Company of Oregon, Portland, OR *Responsibilities:* Develop and implement the overall construction environmental, health, and safety program for the pharmaceutical project.
Safety Engineer 2006 - 2007	The Nines Hotel; Pollock Condo; Park 5 Garage, and The Civic Condo Hoffman Construction Company of Oregon, Portland, OR *Responsibilities:* Assist in the implementation of the site safety program by doing periodic audits.
Safety Intern Summer 2006	Parsons Corporation, Pasadena, CA/Oregon State University *Responsibilities:* Evaluation of the effectiveness of Parsons Corporation's Safety, Health and Risk Program manual across all Global Business Units of the company
Research Assistant 2003 - 2006	School of Civil and Construction Engineering, Oregon State University, Corvallis, OR Projects: • *Forensic Investigation of Pavement Failure due to Moisture damage* Oregon Department of Transportation, SPR Project 637 • *Development of Part 645 – Construction Inspection of the NRCS National Engineering Handbook*, U.S. Department of Agriculture (USDA), National Resources Conservation Service (NRCS) • *Optimum Illumination for Nighttime Flagger Operations* Oregon Department of Transportation, SPR Project 617
Teaching Assistant 2003 - 2006	School of Civil and Construction Engineering, Oregon State University, Corvallis, OR *Courses: Heavy Civil Construction Management; Structures; Contracts and Specifications*
Teaching Assistant 2004 - 2006	College of Public Health and Human Sciences, Oregon State University, Corvallis, OR *Course: Safety and Health Standards and Laws*
Safety Intern Summer 2005	OHSU Patient Care Facility; OHSU River Campus; The Meriwether Condo Hoffman Corporation, Portland, OR *Responsibilities:* Assist in the development of several safety and health management tool as part of Hoffman's corporate safety program.

PROFESSIONAL CERTIFICATIONS

CSP (2010), *Certified Safety Professional,* Board of Certified Safety Professionals, *(CSP N0. 21517)*
LEED AP (2009), LEED *Accredited Professional*, United States Green Building Council
CRIS (2009), *Construction Risk and Insurance Specialist,* International Risk Management Institute

PROFESSIONAL SOCIETY MEMBERSHIPS

American Society of Safety Engineers (ASSE), Professional Member, 2004 – present
American Society of Civil Engineers (ASCE), Associate Member, 2004 – present
National Fire Protection Association (NFPA), Member, 2013 – present
American Conference of Governmental Industrial Hygienists (ACGIH), Voting Member, 2013 - present
American Industrial Hygiene Association (AIHA), Member, 2013 – present
The Risk Management Society (RIMS), Educational Member, 2013 - present

HONORS AND AWARDS

2014 Outstanding Service Award, Engineering Technologies, Safety, and Construction Department, Central Washington University, Ellensburg, WA
2013 Outstanding Scholarship Award, Engineering Technologies, Safety, and Construction Department, Central Washington University, Ellensburg, WA
2012 Outstanding Service Award, Engineering Technologies, Safety, and Construction Department, Central Washington University, Ellensburg, WA
2002 Osmania University, AP, India, Student Technical Paper Contest, Third Place
Rajendran, S. and Kamalesh, A.P. (2002). "Solid Waste Management"
2000 Jawaharlal Nehru Tech. Univ., AP, India, National Student Technical Paper Contest, Third Place
Rajendran, S. and Kamalesh, A.P. (2000). "Utilization of Fly ash in Roadway Construction"

AREAS OF EXPERTISE

Construction worker safety and health; Construction sustainability

BOOK AND BOOK CHAPTERS

1. Clarke, B and **Rajendran, S.** (2014). "Steel Erection." Revised chapter for 2nd Edition of *Construction Safety Management & Engineering*, Edited by Darryl C. Hill. Des Plaines, IL: American Society of Safety Engineers (ASSE).

PEER-REVIEWED JOURNAL ARTICLES PUBLISHED OR ACCEPTED

1. Wanberg, J., Harper, C., Hallowell, M., and **Rajendran, S.** (2013). "Relationship between Construction Safety and Quality Performance." *Journal of Construction Engineering and Management*, ASCE, 139(10), 04013003.
2. **Rajendran, S.,** Clarke, B., and Whelan, M. (2013). "Contract Issues: Improving Construction Safety Management." *Professional Safety*, Journal of the American Society of Safety Engineers (ASSE), 58(9), 56-61.

3. **Rajendran, S.** (2013). "Stretching and Flex Programs: Perceptions of Construction Specialty Firms" *Journal of Safety, Health and Environmental Research,* ASSE, 8(3), 81-87.
4. **Rajendran, S.** (2013). "Enhancing Construction Worker Safety Performance Using Leading Indicators." *Periodical on Structural Design and Construction*, ASCE, 18 (1), 45-51.
5. **Rajendran, S.** and Gambatese, J.A. (2013). "Risk and Financial Impacts of Prevention through Design Solutions." *Periodical on Structural Design and Construction*, ASCE, 18 (1), 67-72.
6. **Rajendran, S.**, Clarke, B. and Andrews, R. (2012). "The Expanding Role of Construction Safety Professionals: Field Construction Quality Management." *Professional Safety*, Journal of the American Society of Safety Engineers (ASSE), 57(11), 37-42.
7. Gambatese, J.A. and **Rajendran, S.** (2012). "Flagger Illumination during Nighttime Construction and Maintenance Operations." *Journal of Construction Engineering and Management*, ASCE, 138 (2), 250-257.
8. **Rajendran, S.** and Clarke, B. (2011). "Building Information Modeling - Construction Safety Benefits and Opportunities." *Professional Safety*, Journal of the American Society of Safety Engineers (ASSE), 56(10), 44-51.

---

9. Gambatese, J.A. and **Rajendran, S.** (2011). "Assessment of Nighttime Flagger Illumination Practices." *Periodical on Structural Design and Construction*, ASCE, 16(3), 95-105.
10. **Rajendran, S.** and Clarke, B. (2011). "Construction Hoist Safety Program." *Professional Safety*, Journal of the American Society of Safety Engineers (ASSE), 56(7), 28-34.
11. **Rajendran, S.** and Gambatese, J.A. (2009). "Impacts of Green Design and Construction on Construction Worker Safety and Health." *Journal of Construction Engineering and Management*, ASCE, 135 (10), 1058-1066.
12. **Rajendran, S.** and Gambatese, J.A. (2009). "Development and Initial Validation of Sustainable Construction Safety and Health Rating System." *Journal of Construction Engineering and Management*, ASCE, 135 (10), 1067-1075.
13. Gambatese, J.A., Behm, M., and **Rajendran, S.** (2008). "Design's Role in Construction Accident Causality and Prevention: Perspectives from an Expert Panel." *Safety Science*, Special issue for selected papers from the CIB W99 *International Conference on Global Unity for Safety & Health in Construction*, Beijing, China, June 28-30, 2006. Elsevier, 46, 675-691.
14. Gambatese, J.A., **Rajendran, S.**, and Behm, M.G. (2007). "Green Design & Construction: Understanding the Effects on Construction Worker Safety and Health." *Professional Safety*, Journal of the American Society of Safety Engineers (ASSE), 52 (5), 28-35.
15. **Rajendran, S.** and Gambatese J.A. (2007). "Solid Waste Generation in Asphalt and Reinforced Concrete Roadway Life Cycles." *Journal of Infrastructure Systems*, ASCE, 13(2), 88-96.
16. **Rajendran, S.** (2007). "Constructability – A Review of Literature." *Constructability Concepts and Practice*, Construction Institute, ASCE, Reston, VA. (Gambatese, J.A., Pocock, J.B., and Dunston, P.S., Editors).

PEER-REVIEWED CONFERENCE PROCEEDINGS

1. **Rajendran, S.** and Gambatese, J.A. (2014). "Additional Evidence of the Sustainable Construction Safety and Health (SCSH) Rating System's Effectiveness." *Achieving Sustainable Construction Health and Safety*, sponsored by the International Council for Research and Innovation in Building and Construction (CIB) W99 Working Commission and Lund University, Lund, Sweden, June 2-3, 2014.

2. Choi, S. and **Rajendran, S.** (2014). "Construction Workers' Perception of Stretch and Flex Program Effectiveness in Preventing Work-related Musculoskeletal Disorders." *Proceedings of the XXVI Annual Occupational Ergonomics and Safety Conference,* El Paso, TX, June 5-6, 2014.
3. **Rajendran, S.,** Plugge, W., and Bender, B. (2014). "Construction Safety Laboratory." 50th *Associated Schools of Construction Annual International Conference Proceedings*, Washington, D.C., March 26-28, 2014.

---

4. **Rajendran, S.** and Gambatese, J.A. (2007). "Sustainable Construction Safety and Health Rating System: A Feasibility Study." *Proceedings of the 2007 ASCE Construction Research Congress*, ASCE, Grand Bahama Island, Bahamas, May 6-8, 2007.
5. Gambatese, J.A., Behm, M., and **Rajendran, S.** (2006). "Additional Evidence of Design's Influence on Construction Fatalities." *International Conference on Global Unity for Safety & Health in Construction*, sponsored by the International Council for Research and Innovation in Building and Construction (CIB) W99 Working Commission and Tsinghau University, Beijing, China, June 28-30, 2006.
6. Gambatese, J.A. and **Rajendran, S.** (2005). "Sustainable Roadway Construction: Energy Consumption and Material Waste Generation of Roadways." *Proceedings of the Construction Research Congress 2005*, San Diego, CA, April 5-7, 2005. Reston, VA: ASCE, 104-110.

REPORTS, THESES, AND DISSERTATIONS

1. Scholz, T.V. and **Rajendran, S.** (2009). "Investigating Premature Pavement Failure due to Moisture," *Research Project SPR 632 Report.* Oregon Department of Transportation (ODOT) and U.S. Department of Transportation, Federal Highway Administration (FHWA), Report No. FHWA-OR-RD-10-02, July 2009.
2. **Rajendran, S.** (2006). "Sustainable Construction Safety and Health Rating System." *Doctor of Philosophy Dissertation*, Oregon State University, Corvallis, Oregon, December 2006.
3. **Rajendran, S.** and Gambatese, J.A. (2006). "Sustainable Construction Safety and Health." *Means, Methods, and Trends*, on-line journal of the Architectural Engineering Institute (AEI) and Construction Institute (CI) of ASCE. <www.mmtmagazine.org/fall_2005_6_raj.html>, Jan. 5, 2006.
4. **Rajendran, S.** (2004). "Sustainable Roadway Construction-A study of the Material Waste Generation in the Life Cycle of Roadways." *Master of Science Thesis*, Oregon State University, Corvallis, Oregon, March 2004.

CONFERENCE PROCEEDINGS/INVITED SCHOLARLY PRESENTATIONS

1. **Rajendran, S.** and Vermillion, C. (2014). "Encouraging Safety Innovations by Construction Workers." *Proceedings of the ASSE Professional Development Conference*, Orlando, Florida, June 8-11, 2014.
2. **Rajendran, S.** (2014). "Don't Leave Ergonomics Out of Your Construction Safety Program." *Central Washington University's The Symposium on University Research and Creative Expression (SOURCE) 2014*, Ellensburg, WA, May 15, 2014.
3. **Rajendran, S.** (2013). "Next Generation of Safety Professionals: A perspective of Future Safety Professionals." Inland Northwest Chapter of the American Society of Safety Engineers (ASSE), December 9, 2013.

4. **Rajendran, S.** (2013). "Recruiting and Retaining the Next Generation of Safety Professionals." Associated General Contractors of California & San Diego Joint Safety and Health Conference, Riverside, California, July 9, 2013.
5. Clarke, B and **Rajendran, S.** "Safety Professionals' Role in Preventing Construction Safety Contract Issues." *Proceedings of the ASSE Professional Development Conference*, Las Vegas, Nevada, June 24-27, 2013.
6. **Rajendran, S.** (2013). "Effectiveness of Stretch and Flex Programs in Preventing Work-Related Musculoskeletal Disorders in Construction." *Central Washington University's The Symposium On University Research and Creative Expression (SOURCE) 2013*, Ellensburg, WA, May 16, 2013.
7. **Rajendran, S.** (2013). "Student Sections – How to be Successful – Startup to Section of the Year & Engaging Faculty to Sponsor Sections." American Society of Safety Engineers (ASSE), Region 1 Operating Committee Meeting, Seattle, WA, April 19, 2013.
8. **Rajendran, S.** and Clarke, B. (2013). "Building Information Modeling" *Oregon Governor's Occupational Safety and Health Conference*, Portland, OR, March 4-7, 2013.
9. **Rajendran, S.,** Vailencour, J., and Crosbie, C. (2013). "Smart Phone Apps in Safety and Health Management." *Oregon Governor's Occupational Safety and Health Conference*, Portland, OR, March 4-7, 2013.
10. **Rajendran, S.** and Furman, T. (2013). "Impact of Safety Resources on Safety Performance." American Society of Safety Engineers (ASSE), Puget Sound Chapter, Seattle, WA, February 20, 2013.
11. **Rajendran, S.** (2012). "LEED and Safety: Is it leading anywhere?" American Industrial Hygiene Association (AIHA) Fall Conference, San Antonio, Texas, October 27-31, 2013.
12. **Rajendran, S.** (2012). "Sustainable Construction Safety and Health Rating System." American Society of Safety Engineers (ASSE), Lower Columbia Basin Chapter, Richland, WA, October 3, 2012.

---

13. **Rajendran, S.** (2011). "Prevention through Design (PtD) Practice Issues – PtD and Construction Project Safety Rating System" *Prevention through Design – A New Way of Doing Business: Report on the National Initiative*, sponsored by the National Institute for Occupational Safety and Health (NIOSH), Washington, DC, Aug. 22-24, 2011.
14. **Rajendran, S.** (2009). "Impacts of Green Building Design and Construction on Worker Safety and Health." Health and Safety in Green Construction. *CPWR 2009 Training Enhancement Conference,* Portland, Sep 28-30, 2009.
15. **Rajendran, S.** (2007). "Impacts of Green Design on Worker Safety and Health." *Northwest Occupational Health Conference, Seaside,* October 18, 2007.
16. Gambatese, J.A., **Rajendran, S.**, and Behm, M.G. (2006). "Building toward Sustainable Safety and Health." *Proceedings of the ASSE Professional Development Conference*, Seattle, WA, June 11-14, 2006.

MEDIA CITATIONS

1. *The Daily Journal of Commerce*, "LEED-like Program for Safety Created by Oregon Researchers" July 8, 2011.
2. *Professional Safety, Journal of American Society of Safety Engineer*, "Sustainable Construction Safety and Health (SCSH) Rating System now online." October 2011, p 22.

3. *Engineering News Record*, "A Step toward a New Engineer, and the Pitfalls that May Prevent It –, August 2011, Special editorial mention on the SCSH Rating System.
4. *National Safety Council, Safety + Health Magazine*, "Rating System evaluates Construction Safety." July 20, 2011.
5. *Safety & Health Practitioner,* The Official Magazine of IOSH, "New Online Tool Rates Construction Safety Performance, July 14, 2011.
6. *Archinect,* "Sustainability of Workers' Rights." May 29, 2011.
7. *EHS Today*, "AIHce: Green Construction and Safety Don't Always Go Hand in Hand, by Laura Walter." May 18, 2011.
8. ASSE *Professional Safety*, "Sustainable Design & Construction: Incorporating Worker Safety, Rajendran and Gambatese interview." February 2011.
9. *InsideHealthPolicy.com,* "Stakeholders Push Construction Safety Tailored to 'Green' Building, by Kristina Sherry." Inside Washington Publishers May 18, 2010.
10. *Hazards Magazine, International Trade Union Confederation (ITUC),* "Green Construction is no Safer." April 22, 2010.

OTHER PROFESSIONAL PRESENTATIONS/LECTURES

1. "Construction Site Safety Assessment." *Department of Public Health*, Oregon State University, Corvallis, OR, May 2009 (~100 attendees)
2. "Construction Worker Safety Training." *Department of Public Health,* Oregon State University, Corvallis, OR, May 2008 (~100 attendees)
3. "Construction Worker Safety and Health Management Tool for LEED Projects." *American Society of Safety Engineers*, Columbia-Willamette Chapter, Portland, OR, February 2007. (~30 attendees)
4. "Building Towards Sustainable Construction Safety and Health." *American Society of Safety Engineers Professional Development Conference & Exposition*, Seattle, WA, June 12-14, 2006.
5. "Construction Hazards and Prevention.", *Department of Public Health*, Oregon State University, Corvallis, OR, May 2006 (~ 100 attendees)
6. "Concept of Sustainable Construction Safety and Health." *School of Civil and Construction Engineering*, Oregon State University, Corvallis, OR, February, 2006. (~80 attendees)
7. "Sustainable Roadway Construction: Energy Consumption and Material Waste Generation of Roadways." American Society of Civil Engineers, Construction Research Congress 2005, San Diego, CA, April 5-7, 2005.
8. "Mold Prevention during Construction." *School of Civil and Construction Engineering,* Oregon State University, Corvallis, OR, 2005
9. "Sustainable Roadway Construction: Material Waste Generation." *Sustainable Engineering Expo*, Oregon State University, Corvallis, OR, May 2004.

FUNDED GRANTS AND CONTRACTS

1. "Development of Construction Project Safety Management Best Practices Handbook." Safety and Health Investment Projects (SHIP), Division of Occupational Safety and Health (DOSH), Washington State Department of Labor and Industries, Project Number 2013ZH00237, $113,565, February 2014 to May 2015.
2. "Development of Occupational Safety and Health Administration (OSHA) 30 Training Program." G.E.W. LLC. $1.350. July – August 2012.

3. "Acquisition of Work zone Safety Simulator for CWU's SHM lab." Centennial Contractors Enterprises, Inc. $800. June 2012.
4. "Acquisition of Lock out and Tag out Safety Training Simulator for CWU's SHM lab." Mechanical Contractors Association of Western Washington. June 2012.

TEACHING

Central Washington University:

SHM 351 – Incident Analysis (4 qtr. crs; spring 2014); **SEOI: 5.0/5.0**
SHM 481 – Professional Safety Today (1 qtr. crs; spring 2014); **SEOI: 4.9/5.0**
SHM 485 – Safety and Health Management Capstone (4 qtr. crs; spring 2014); **SEOI: 4.9/5.0**
SHM 474 – Safety and Health Management Systems (4 qtr. crs; winter 2014); **SEOI: 4.9/5.0**
SHM 323 – Construction Safety (3 qtr. crs; winter 2014-001); **SEOI: 4.9/5.0**
SHM 323 – Construction Safety (3 qtr. crs; winter 2014-002); **SEOI: 4.6/5.0**
SHM 301 – Fundamentals of Safety and Health Management (3 qtr. crs; fall 2013); **SEOI: 4.96/5.0**
SHM 485 – Safety and Health Management Capstone (4 qtr. crs; spring 2013); **SEOI: 4.7/5.0**
SHM 201 – Introduction to Safety and Health Management (1 qtr. crs; spring 2013); **SEOI: 4.7/5.0**
SHM 323 – Construction Safety (3 qtr. crs; spring 2013); **SEOI: 4.7/5.0**
SHM 481 – Professional Safety Today (1 qtr. crs; spring 2013); **SEOI: 4.6/5.0**
SHM 323 – Construction Safety (3 qtr. crs; winter 2013); **SEOI: 4.8/5.0**
SHM 351 – Incident Analysis (4 qtr. crs; winter 2013); **SEOI: 4.7/5.0**
SHM 474 – Safety and Health Management Systems (4 qtr. crs; winter 2013); **SEOI: 4.6/5.0**
SHM 351 – Incident Analysis (4 qtr. crs; fall 2012); **SEOI: 4.9/5.0**
SHM 323 – Construction Safety (3 qtr. crs; fall 2012); **SEOI: 4.8/5.0**
SHM 201 – Introduction to Safety and Health Management (1 qtr. crs; spring 2012); **SEOI: 4.7/5.0**
SHM 481 – Professional Safety Today (1 qtr. crs; spring 2012); **SEOI: 4.5/5.0**
SHM 485 – Safety and Health Management Capstone (4 qtr. crs; spring 2012); **SEOI: 4.8/5.0**
SHM 474 – Safety and Health Management Systems (4 qtr. crs; winter 2012); **SEOI: 4.8/5.0**
SHM 351 – Incident Analysis (4 qtr. crs; winter 2013); **SEOI: 4.9/5.0**
SHM 351 – Incident Analysis (4 qtr. crs; fall 2011); **SEOI: 4.8/5.0**

Oregon State University:

H 385 - Safety and Health Standards and Laws (3 qtr. crs.; ~ 90 students; Spring 2006)

SERVICE ACTIVITIES

Industry and Professional Service

ABET Program Evaluator, *Applied Science Accreditation Commission, American Society of Safety Engineers (ASSE)* (2014 – present)
Judge, *Build Washington Awards,* Associated General Contractors of Washington, Seattle, WA, May, 2014.
Manuscript Reviewer, Program Committee Member, Construction Research Congress 2014, Georgia Institute of Technology, Atlanta, GA, USA May 19-21, 2014
Manuscript Reviewer, Taylor and Francis, *International Journal of Construction Education and Research (*2013 – present)
Manuscript Reviewer, American Society of Civil Engineers (ASCE) *Journal of Construction Engineering & Management (*2009 – present)

Manuscript Reviewer, American Society of Safety Engineers (ASSE) Journal of Safety, Health & Environmental Research (2010 – present)

Manuscript Reviewer, Taylor and Francis, *Journal of Construction Management and Economics* (2010 – present)

Manuscript Reviewer, International Council for Research and Innovation in Building and Construction (CIB) W99 *Achieving Sustainable Construction Health and Safety Conference*, Lund, Sweden, June 2014.

Judge, *Build Washington Awards,* Associated General Contractors of Washington, Seattle, WA, May, 2013.

Judge, *Build Washington Awards,* Associated General Contractors of Washington, Seattle, WA, May 2012.

Graduate Thesis Committee Member

Master of Science Project Committee Member, *Dana Bednarik (MS):* Engineering Technology, 2011-2012, Central Washington University, "Safety & Health Management Lab Development"

Doctorate Degree Committee Member, *Behzad Esamaeli (PhD):* Civil Engineering, 2011-12, Univ. of Colorado- Boulder, "Identifying and Quantifying Const. Safety Risks at the Attribute Level"

University and College Service

Executive Committee Member, College of Education and Professional Studies Representative, Central Washington University Faculty Senate (2013 – present)

Faculty Senator, Engineering Technologies, Safety and Construction Department, College of Education and Professional Studies, Central Washington University (2012 – present)

Department and Program Service

Program Coordinator, Safety and Health Management Program, Engineering Technologies, Safety and Construction Department, Central Washington University (2011 – present)

Chair, Hogue Technology Building Safety Committee, Engineering Technologies, Safety and Construction Department, Central Washington University (2011 – present)

Secretary, Safety and Health Management Program Industry Advisory Council, Engineering Technologies, Safety and Construction Department, Central Washington University (2011 – present)

Member, Development Committee, Safety and Health Management Program Industry Advisory Council, Engineering Technologies, Safety and Construction Department, Central Washington University (2011 – present)

Faculty Advisor, American Society of Safety Engineers (ASSE) Central Washington University Student Section (2011- Present)

Committee Member, Tenure/Tenure Track Faculty Search Committee, Technology Education Program, Engineering Technologies, Safety, and Construction Department, Central Washington University (2013-2014)

Chair, Tenure/Tenure Track Faculty Search Committee, Safety and Health Management Program, Engineering Technologies, Safety, and Construction Department, Central Washington University (2012-2013)

Committee Member, Tenure/Tenure Track Faculty Search Committee, Construction Management Program, Engineering Technologies, Safety, and Construction Department, Central Washington University (2011-2012)

Community Service

Team Lead, National Safety Council (NSC) Safety Ambassador, American Society of Safety Engineers (ASSE) Central Washington University Student Section (2011- present)

Co-Founder, Sustainable Construction Safety and Health Website, www.sustainablesafetyandhealth.org
A free online rating tool created and maintained by Dr. Sathy Rajendran and Dr. John Gambatese to assist the construction community to enhance jobsite safety.

SELECTED PROFESSIONAL DEVELOPMENT ACTIVITIES

ABET Program Evaluator Training, ABET, Baltimore, MD, March 26-27, 2014.

Additional Insured Issues, Construction Risk and Insurance Specialist, Re-certification Course, International Risk Management Institute, Richardson, TX, March 16, 2014

Trench and Excavation Safety, Kiewit Infrastructure Co, Ellensburg, WA, October 10, 2013

OSHA 500 Occupational Safety and Health Standards for the Construction Industry Train the Trainer Course, University of Washington OSHA Training Institute Education Center & United States Department of Labor Occupational Safety and Health Administration, Seattle, WA, August 12 – 15, 2013.

Contractors Pollution Liability, Construction Risk and Insurance Specialist, Re-certification Course, International Risk Management Institute, Richardson, TX, April 17, 2013

ABET Symposium and Program Assessment Workshop, ABET, Portland, OR, April 12-14, 2013.

OSHA 510 Occupational Safety and Health Standards for the Construction Industry Course, University of South Florida OSHA Training Institute Education Center & United States Department of Labor Occupational Safety and Health Administration (26 hour online class, April 20 – May 20, 2012.

Design-Build Risks and Insurance, Construction Risk and Insurance Specialist, Re-certification Course, International Risk Management Institute, Richardson, TX, March 29, 2012

Jing by Tech Smith, Online Learning at Central Washington University (CWU): Faculty Workshops, January 25, 2012

Adobe Presenter, Online Learning at Central Washington University (CWU): Faculty Workshops, January 25, 2012

Introduction to Blackboard Collaborate, Online Learning at Central Washington University (CWU): Faculty Workshops, January 18, 2012

Certificate of Compliance, ANSI Z87.1 + 2010, Edge Safety Eyewear, Wolf Peak International, Ellensburg, WA November 2011.

Rigging Safety, Certificate of Attendance, Industrial Training International, Portland, OR, September, 2010

Mobile Crane Management Training, Certificate of Completion, Travelers Insurance Workshop, Wilsonville, OR, April 8, 2010

Lock out/Tag out and Machine safeguarding, 4-hr Workshop, Oregon Department of Consumer and Business Services, Oregon Occupational Safety and Health Administration Workshop, 2008

Occupational Safety and Health Administration (OSHA) 30 Certificate, Certificate of Course Completion, www.oshacampus.com, September 27, 2007

Fixed Scaffold & Aerial Work Platform Safety, Certificate of Completion, Construction Safety Summit, American Society of Safety Engineers, August, 29, 2007

Fall Protection Workshop, Certificate of Completion, Construction Safety Summit, American Society of

Safety Engineers, May 22, 2007

OR-OSHA 30-hr Safety and Health Training Series, Oregon Department of Consumer and Business Services, Oregon Occupational Safety and Health Administration, 2005

- *Hazard Identification and Control*
- *Accident Investigation*
- *Safety Committee Operations*
- *Safety and Health Management*
- *Ergonomic Awareness*
- *Hazard Communication Program*
- *Personal Protective Equipment*

--End--

MICHAEL J. ANDLER
415 South 27th Avenue
Yakima, WA 98902
509.304.4068 Cellular
mandler@cwu.edu
andlerm@gmail.com

EDUCATION

Associate in Risk Management (ARM) — Anticipated Summer 2015
Risk Management Society

Construction Health and Safety Technician (CHST) — Anticipated Summer 2015
Board of Certified Safety Professionals

Construction Risk and Insurance Specialist (CRIS) — August 2013
International Risk Management Institute, Incorporated

M.S. Engineering Technology, Central Washington University — Spring 2008
Project: Design/Build a lightweight camping travel trailer for rising fuel costs (Dr. Bender)

B.S. Industrial Technology, Central Washington University — Spring 2006
Specialization: Wood Composites
Project: Design/Build a high tech retro-style teardrop camping trailer goes (Prof. S. Calahan) high-tech; published in *Popular Mechanics* Magazine.

B.S. Safety and Health Management, Central Washington University — Summer 2006
Specialization: Risk Management

WORK RELATED EXPERIENCE

Senior Lecturer: Department of Industrial and Engineering Technology — Fall 2013-Present
Central Washington University, Ellensburg, WA

Courses Taught:

IET 101, Modern Technology	IET 161, Architectural CAD
CMGT 245, Light Commercial Construction	SHM 323, Construction Safety
SHM 353, Risk and Insurance	SHM 490, Cooperative Education

Lecturer: Department of Industrial and Engineering Technology — Fall 2007-Spring 2013
Central Washington University, Ellensburg, WA

Courses Taught:

IET 101, Modern Technology	IET 161, Architectural CAD
CMGT 245, Light Commercial Construction	CMGT 265, Blueprint Reading
SHM 323, Construction Safety	

Graduate Teaching Assistant: Department of Industrial and Engineering Technology
Central Washington University, Ellensburg, WA — Academic Years 2006-2007
Taught IET 101, Modern Technology and assisted with various courses — 2007-2008

Forestry Technician: United States Department of Agriculture Forest Service
Cle Elum Ranger District, Cle Elum, WA — Summers 2003-2009

SPECIAL QUALIFICATIONS

Wildland Fire Fighter II	Forest Protection Law Enforcement Officer (SEC II)
Chainsaw (B-Faller)	Off-road dirt bike
Fleet vehicle driving	First Aid & CPR

ORV MAINTENACE CREW SAFETY OFFICER

Assessed crew tasks and recommended proper safety techniques and PPE use.
Followed OSHA regulations

ORV MAITENANCE CREW FOREMAN

Maintained and designed new trails for ORV use. Designed and made trail bridges for loads to carry foot traffic to 4x4 vehicles.

OVERHEAD SUPPORT TO NATIONAL WILDLAND FIRES

Has responded to support 15+ wildland fires throughout Washington, Oregon, and Idaho

Duties included: Initial attack fire fighter
Security Specialist
-assisting local state and federal law enforcement entities

SERVICE TO CENTRAL WASHINGTON UNIVERSITY

SAFETY AND HEALTH MANAGEMENT ADVISORY COUNCIL Fall 2013-Present

CENTRAL REGION CABINETMAKING CONTEST Winters 2013 & 2014
Held at Central Washington University; six regional high schools.
Volunteered as a judge

SPECIAL PROJECT FOR CONSTRUCTION MANAGEMENT PROGRAM
Customized one utility trailer to house tools for CMGT courses Spring 2007

HUMAN POWERED PAPER VEHICLE (HPPV) COMPETITON Winter 2006 & 2007
Assisted club advisor and students with the design and construction of a paper bicycle
Competition at Eastern Washington University
Industrial Technology Club

CREATED THE INDUSTRIAL TECHNOLOGY CLUB Fall 2005
Held the office of President Academic Years 2005 & 2006
Coordinated special projects

WASHINGTON STATE TECHNOLOHY STUDENT ASSOCIATION (TSA) CONFERENCE
300+ Washington State high school students involved in the many facets of technology came to Central Washington University for a state-wide competition.
Assisted with coordination of activities Spring Break 2006
Volunteered as a judge

TEACHING ASSISTANT TO PROFESSOR DAVID BORKOWSKI
Taught an introductory IET Department 101 level course Winter 2006
Created lectures, exams, handouts, activities, and lead tours to IET Department laboratories

AMERICAN SOCIETY OF SAFETY ENGINEERS
Held the office of Vice-President — Academic Year 2005-2006
Held the office of Senator — Academic Year 2003-2004

Assisted with the coordination of 12 safety students to attend the national safety conference in Seattle; June '06

SAFETY AND HEALTH MANAGEMENT ADVISORY COUNCIL
Only student member — Academic Year 2005-2006
Created a letter to keep in contact with alumni

WASHINGTON STATE MATHEMATICS COUNCIL (WSMC) COMPETITION
400+ Washington State high school students involved in the many facets of mathematics came to Central Washington University for a state-wide competition.
Assisted with coordination of activities — Winter 2005
Volunteered as a judge
CWU Department of Mathematics; Dr. Mark Oursland, Professor, & Coordinator

MAJORS FAIR REPRESENTING IET DEPARTMENT PROGRAMS
Safety and Health Management, Industrial Technology, Mechanical Engineering and Technology Education — Fall 2005, 2006, 2007

COLORADO STATE UNIVERSITY

ENGINEERING AND TECHNOLOGY CURRICULM ASSESSMENT PROJECT
Assisted with reviewing new curricula for teaching technology and engineering in the 9th and 10th grade levels. — Winter 2008

School of Education and College of Engineering; Dr's. De Miranda and Siller, project coordinators

PUBLICATIONS, PRESENTATIONS, & CONFERENCES ATTENDED

AGC SAFETY AND HEALTH COMMITTEE MEETING — July 2014
Portland, Oregon

"Old Relic Goes High Tech" M. Andler and S. Calahan. "Project of the Month" July 2006, *Popular Mechanics Magazine*

WASHINGTON STATE TECHNOLOGY EDUCATION ASSOCIATION CONFERENCE
Co-presented the processes of an MET 345 (Production Tech) class project to technology teachers from Washington State in Wenatchee, WA — Winter 2006

PROFESSIONAL MEMBERSHIPS

AMERICAN SOCIETY OF SAFETY ENGINEERS — 2003-Present
PUGET SOUND CHAPTER

NORTHWEST MOTORCYCLE ASSOCIATION — 2009-Present
WASHINGTON STATE CHAPTER

DARRYL FUHRMAN, EIT

(509) 607-9299

604 W. 7th Ave., Ellensburg, WA 98926
email: darrylfuhrman@hotmail.com
www.linkedin.com/in/darrylfuhrman

MECHANICAL ENGINEER

EDUCATION AND LICENSE

Master of Science - Engineering Technology-*Central Washington University,* 4.0 GPA, Ellensburg, WA 2012
Engineer-in-Training (**EIT**) - *Registration in State of Washington* 2012
Bachelor of Science - Mechanical Engineering-*Texas A&M University,* 2.35 GPA, College Station, TX 1987

SOFTWARE SKILLS

Word, Excel, Access, Outlook, PowerPoint, Project, AutoCAD.

WORK HISTORY

Professor, Central Washington University, Ellensburg, WA Jan 2014 - current

- Statics
  Analysis of forces and force reactions resulting in static equilibrium.
- Dynamics
  Analysis of forces causing acceleration, and the geometric aspects of the resulting motion.
- Strength of Materials
  The behavior of structural members under complex loads.
- Engineering Economic Analysis
  Time value of money analysis applied to engineering projects.
- Renewable Energy Systems
  A study of energy systems derived from renewable and sustainable resources.

Field Service Technician, Mike's Water Systems, Ellensburg, WA (509) 856-4005 2010-2014

- Perform installation and repair of sprinkler systems by assembling pipe, fittings and valves.

Maintenance Supervisor, Sunwest Management, Inc., Ellensburg, WA 2007-2010

- Performed troubleshooting, repair and maintenance; emergency backup generator, fire suppression system, plumbing, refrigeration, HVAC system, lighting; exercised safety at all times.
- Saved $4,000 on emergency nurse call system replacement project.
- Used construction blueprints to troubleshoot, repair mechanical, electrical and plumbing systems.
- Directed safety committee, implemented safety training.
- Compiled and maintained equipment service logs, maintenance records, vendor service schedules.
- Reviewed and analyzed contractor proposals; scheduled and monitored contractor work.
- Trained staff, performed employee reviews, maintained parts inventory, and managed expenses.

Conference Center Manager, City of Ellensburg, Ellensburg, WA 1996-2006

- Implemented continuous improvements to streamline office procedures, and reduced data errors by 95%.
- Integrated Word, Excel, Access, Outlook and Visual Basic to increase efficiency of reservations tracking process.
- Trained employees, performed employee reviews, developed and managed budgets, wrote production reports.
- Developed excellent customer service skills.

Program Coordinator, Ellensburg Community Television, Ellensburg, WA 1994-1996

- Planned and conducted workshops for camera skills, audio, lighting and editing.
- Coordinated crews and delegated production assignments
- Managed equipment inventory and check-out.

CAD Engineer, Irwin Research and Development, Yakima, WA 1993-1994

- Revised and maintained CAD drawings.

Test Engineer, Boeing Seattle, WA 1991-1993

- Evaluated project documents to determine integration and test requirements for avionic components.
- Wrote installation and test procedures for Shop and QA to follow to support successful integration of avionics components into test aircraft.

- Supported test completion and wrote test reports.
- Coordinated with USAF supply line to rotate active-duty avionics components into lab for modification and test.
- Ensured test equipment maintained in calibration and certification.
- Controlled access to test labs according to Boeing and Dept. of Defense mandatory requirements.

Manufacturing Engineer, Boeing, Seattle, WA 1987-1991

- Evaluated designs and wrote manufacturing plans for production and assembly of avionics components.
- Recommended design changes for ease of manufacturing, cost reduction and quality improvement.
- Maintained and closed change records so final design drawings matched as-built configurations.
- Liaison to Engineering, Manufacturing and Quality Control to maintain and improve workflow.
- Reviewed aircraft maintenance documents and wrote maintenance procedures for Shop and QA.
- Created flowcharts of manufacturing workflow to collaborate on Product Development team and increase production efficiency.

ADDITIONAL PART TIME WORK

Owner/Producer/Editor, Event Video, Ellensburg, WA 1998-2003

- Designed and built editing studio for audio and video production.
- Created educational videos, commercials, weddings and special occasions.

Research Technician, Hydroacoustic Technology Inc., Wanapum Dam, WA 1995-1995

- Analyzed data to support research project on the survival rate of salmon smolt through dam turbines.

VOLUNTEER

Board of Directors, Jazz in the Valley Music Festival, Ellensburg, WA 2000-2012
Backcountry Volunteer, Kittitas County Search and Rescue, Ellensburg, WA 2000-2013
Fire Lookout, United States Forest Service, Cle Elum, WA 2000-2013

GRADUATE SCHOOL

- ENERGY SYSTEMS:
  Thermodynamics, Fluid Flow, Steam Power, Rankine Cycle Analysis, Fuels and Combustion, Gas Turbines, Otto Cycle Analysis, Vapor Compression Refrigeration, Psychrometrics.
- RENEWABLE ENERGY SYSTEMS:
  Solar, Wind, Hydrogen Fuel Cell, Wave, Tidal, Dams.
- RESEARCH METHODS:
  Design of experiments (DOE), Analysis of Variance (ANOVA)
- PROJECT MANAGEMENT:
  Project Planning, Leadership, Conflict Management, Risk Identification and Mitigation.
- ENGINEERING ECONOMIC ANALYSIS:
  Present Worth, Future Worth, Cash Flow, Rate of Return, Benefit-Cost Ratio Analysis, Payback Period.
- QUALITY CONTROL:
  Statistical Process Control, Gage R&R, Six Sigma, Cost of Quality, FMEA, PDCA.
- PRODUCT DESIGN AND DEVELOPMENT:
  Concurrent Engineering, Planning-Development-Production Life Cycle, Design for Manufacture/Assembly.
- SYSTEM ANALYSIS AND SIMULATION:
  Analyze layout of equipment and workspace for maximum efficiency.
- EMERGING TECHNOLOGIES:
  Product Development Strategies, Competitive Advantage Strategies.
- FINITE ELEMENT ANALYSIS:
  Manually solved stiffness matrices to predict displacements. Used SolidWorks FEA to predict displacements.
- GRADUATE PROJECT:
  Created university level lessons on solar photovoltaic system design.
  Taught the lessons as guest lecturer.
  Measured, analyzed and reported on student performance.

B. Course Outlines

SHM 323 – Construction Safety and Health

Section 002, 3 Credits, Winter Quarter 2014, T/TH, 5:00 p.m. - 6:15 p.m., Hogue 229

This syllabus is intended to provide a guideline for the course. It describes the planned course content and schedule, learning objectives, assignments, quizzes, examinations, group project, and grading. Listed course topics will be covered to the extent allowed by the schedule. The topics covered and course schedule may change as a result of student readiness and learning abilities, time conflicts and limitations, or other unforeseen circumstances.

Instructor: Dr. Sathyanarayanan (Sathy) Rajendran
Tel.: 509-963-1152 Office: Hogue 300K
E-mail: rajendrans@cwu.edu
Office Hrs: M/TH 10:00 a.m. - 11:00 a.m. or by appointment

Text: 29 CFR 1926 Construction Regulations @ www.osha.gov

Course Description/Blackboard:
This is a comprehensive course that covers the safety and health regulations and practices pertaining to the construction industry. The syllabus, schedule, specific information on assignments, quizzes, exams, and announcements will be posted on ***Blackboard***.

Prerequisites:
SHM 301 or CMGT 265

Course objectives:
The course is a lecture course designed to teach the student about the hazard recognition and control in the construction industry.

Outcome	Assessment Strategy
Students will demonstrate their ability to identify and describe the fundamental aspects of construction safety (SHM-L).	The students will complete a written test on construction industry fundamentals and safety **(Quiz # 1).**
Students will demonstrate their ability to anticipate, recognize, evaluate, and develop control strategies for hazardous conditions and work practices in the construction industry. (ABET-1; SHM-M).	The students will complete a pre-task plan assignment for five real world scenarios. **(Assignment # 3)**
Students will demonstrate their ability to identify and apply applicable standards, regulations, and codes in the construction safety and health discipline. (ABET-6; SHM-O).	The students will complete a comprehensive test on construction safety and health regulations **(Final exam and Assignment # 1).**
Students will demonstrate their ability to use the techniques, skills, and modern scientific and technical tools necessary for professional practice in the safety and health discipline. (ABET-i; SHM-T)	The students will successfully participate in an in-class and outside the class PPE exercise **(Assignment # 2).**

Assignments: Homework assignments will be posted on the blackboard, typically a week before the assignment is due. The assignments are to be done individually, except when noted. Homework solutions must be presented in a neat and well-organized manner, and turned in at the beginning of class on the date the assignment is due. ***No assignments will be accepted or graded after the due date.***

Assigned Reading: The course schedule lists the subparts in the OSHA standard 29 CFR 1926 related to the lecture topics. The readings will help reinforce the material taught in the lectures. Completing the assigned readings before the lectures will help you come prepared for the lectures and get more out of the lectures. Due to time constraints, lectures may not cover all the material in the assigned readings.

Examinations: The examinations and quizzes will be short answer, multiple choices, true-false and matching with material coming from lecture notes, the OSHA standard 29 CFR 1926, and handouts. The course will include **ONE** comprehensive final examination, covering the full quarter. All exams will be closed book/closed notes, unless otherwise noted, and are to be done individually.

Quizzes: **FOUR** short quizzes will be given during the course. Each quiz will focus on a specific assigned readings and lecture topics. Quizzes will be similar in format to the examinations. Students should come prepared to take the quizzes.

Class Participation / Attendance: Each student is expected to participate in the class. Class participation includes, but is not limited to, attending class lectures, individual participation in whole class and small group discussions and other short class presentations. If you miss class, it is your responsibility to get materials and information from that session. ***Attendance will be taken every day with the use of a sign-up sheet, and attendance/participation points will be granted proportionate to attendance/participation.***

Academic Dishonesty: Academic dishonesty is defined in the proscribed conduct section of the student judicial code in the current catalog. Academic dishonesty in any form will result in a failing grade for the course. Refer the SHM program's advising handbook for code of professional conduct specific to SHM Majors/Minors.

Professional Development - Extra Credits: The instructor **may** provide opportunities for extra credits for participation in program related professional development activities such as ASSE section activities, etc, up to a maximum of 8 points (2.0%) out of 400 points.

Electronic Devices: Please turn off and put away any cell phones, iPods, iPads, laptops, and other similar electronic devices prior to entering class - the use of personal electronic devices during class time is strictly **prohibited**.

Grading:

Assessment Category	Points	Weightage (%)
Attendance and class participation:	20	5
Assignments (3):	80	20
Group Project (1):	80	20
Quizzes (4):	120	30
Final Exam:	100	25
Total	**400**	**100**

Section 002

Grading Scale:
This is a straight grading scale. The percentage represents points earned out of total possible points. For the SHM majors "C" is the passing grade.

Level of Achievement	Grade Range		
Exceeded Expectations	A 94-100%	A- 90-93%	--
Meets Expectations	B+ 87-89%	B 83-86%	B- 80-82%
Meets Most Expectations	C+ 77-79%	C 70-76%	--
Did Not Meet Expectations	C- 67-69%	D+ 64-66%	D 59-63%
	D- 56-58%	F <56%	--

ADA Statement:
Students with disabilities who wish to set up academic adjustments in this class should send me their "Accommodation Request" as soon as possible. We will then discuss how the approved adjustments will be implemented in this class. Students without this, but in need of requesting services should contact Disability Services at the email: *cds@cwu.edu* or 509-963-1202 to set up services. *Website: http://www.cwu.edu/disability-support/home*

Course Schedule:
See the tentative schedule. The instructor reserves the right to change the tentative schedule due to unforeseen circumstances or to improve the educational quality of this course.

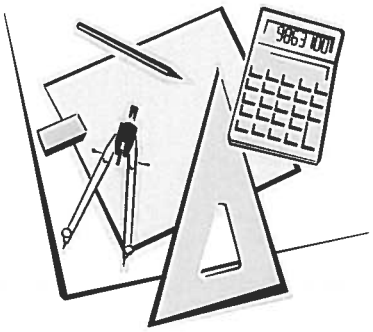
Date	Day	Topic	Quiz	HW	Subpart	OSHA10*
Jan. 7	T	**No Class** – Dr. Rajendran Conference	--	--	--	--
9	TH	Class Introduction/ Industry Fundamentals	--	--	--	--
14	T	Industry Fundamentals	--	--	--	--
16	TH	Introduction to OSHA	--	--	--	X
21	T	Introduction to OSHA	--	--	--	X
23	TH	Introduction to OSHA	--	--	--	X
28	T	Personal Protective & Lifesaving Equipment (PPE)	1	--	E	X
30	TH	Excavations	--	--	P	X
Feb. 4	T	Focus Four Hazards: Caught-In or Between	--	--	--	X
6	TH	Focus Four Hazards: Struck-By	2	--	--	X
11	T	Focus Four Hazards: Fall Protection	--	--	M	X
13	TH	Steel Erection & Concrete Construction	--	--	Q,R	X
18	T	Stairs & Ladders	3	--	X	X
20	TH	Pre-task Plan	--	1	--	--
25	T	Activity Assignment	--	2	--	X
27	TH	Scaffolds	--	--	L	--
Mar. 4	T	Health Hazards in Construction	--	2	--	X
6	TH	Focus Four Hazards: Electrocution	4	--	K	X
11	T	Confined Space	--	3	--	--
13	TH	Review Day	--	--	--	--
Mar. 17	M	**Final Exam (Noon to 6.00 pm) Hogue 229**	--	GPR	--	--

** I will use this course to issue OSHA 10 card to you. In order to receive the OSHA 10 card, you have to attend all the lectures marked "X" on the schedule. In addition, OSHA requires a $5 card to issue the card.*

Sample Rubric:

Pre-task Plan Assignment Rubric						
	PP	**PE**	**Exceeded Expectations (6)**	**Meets Expectations (4)**	**Meets Most Expectations (2)**	**Did Not Meet Expectations (0)**
Following Guidelines	6		Followed assignment guidelines, and attempted to improve the assignment where appropriate.	Followed assignment guidelines.	Attempted to follow guidelines.	Did not follow assignment guidelines.
Style and Mechanics	6		There were no errors in grammar, sentence structure and spelling.	There were minor errors in grammar, sentence structure or spelling.	There were multiple errors in grammar, sentence structure or spelling.	There were substantial errors in grammar, sentence structure or spelling.
Steps of Task	6		PTP lists all the steps required to complete the task.	PTP lists most of the steps required to complete the task.	PTP lists some of the steps required to complete the task.	PTP fails to list a substantial number of steps required to complete the task.
Potential Hazards	6		PTP identifies all hazards associated with steps listed.	PTP identifies most of the hazards associated with steps listed.	PTP identifies some of the hazards associated with steps listed	PTP fails to identify a substantial number of hazards associated with steps listed.
Hazard Control Methods	6		PTP proposed control measures for all the hazards identified and uses applicable OSHA standards. Identified hazards were thoroughly mitigated.	PTP proposed control measures for most of the hazards identified and uses applicable OSHA standards.	PTP proposed control measures for some of the hazards identified and uses applicable OSHA standards.	PTP fails to propose control measures for a substantial number of hazards identified and does not use applicable OSHA standards. Identified hazards were not mitigated.
Score	**30**		**Comments:**			

Course Syllabus
IET 161.01 Architectural CAD
Fall Quarter 2014



Instructor: Mike Andler
Course: Architectural CAD; IET 161.01
Class Hour: MWTh 2:00 PM – 3:50 PM

Room: Hogue Hall 120
E-mail: mandler@cwu.edu

Office: 300l Hogue Technology Building
Office Hours: Tues. & Thurs. 9-11 & By Appointment
Required Text: Autodesk Revit Architecture 2015 No Experience Required , Wing, Eric. Wiley & Sons Publishing, Inc.

COURSE DESCRIPTION:
This course is an introduction to architectural design and Building Information Modeling (BIM) using Autodesk Revit Architecture, in an architectural and construction related format. Create an architectural model/design project and give an in-class presentation at the end of the quarter.

TIME:
Approximately 2 hours of lecture with 4 hours of laboratory in-class work, and allow 4-6 hours outside of class per week.

TOOLS:
4GB or larger thumb drive.

ATTENDANCE:
Attendance will be taken throughout the quarter and is required. Missing class is **not** "OK". Discussion questions and instruction are all valuable and should not be missed. Demonstrations and technique will not be given over.

ADA Statement:
Students who have special needs or disabilities that may affect their ability to access information and or material presented in this course are encouraged to contact the instructor or the Director, ADA Affairs and Student Assistance at 963-2171 for additional disability related educational accommodations.

ASSIGNMENTS
The material in this course is accumulative and it is highly recommended to stay-up with the class schedule. There will be a total 18 individual assignments that will coincide with the assigned chapter material.

EXAMS
There will be two exams, in addition to the final exam given this quarter. They will consist of two parts; written and design. The written portion will be composed of short answer, multiple choice, matching, and true/false. The design portion will involve a small project design. Both parts of the exam will be completed in one 2-hour class period, and their points will be evenly split.
A study guide will be provided for each exam.

COMPLETED TEXTBOOK MODEL
It is expected for you to stay-up with the class's progress with the assigned chapter material. You need to follow along and complete the step-by-step examples in the assigned text. Please print-off/place three drawings per chapter in total (one plan view at the end of the chapter, one elevation view of your choice, and one drawing of your choice, for three total). These drawings are then to be placed into a 3-ring binder (in sequential order). This will be due for submission on the last day of our regular class (12/4).

MODEL PROJECT & PRESENTATION
Details to follow.

Outcome	Assessment Strategy
1. To gain a working knowledge in the production of architectural computer models and design documents using standard presentation formats and dimensioning techniques.	Design assignments, in-class activities, examinations, and the Final Project.
2. Demonstrate the ability to understand basic concepts and terminology as explained in lecture and the textbook.	Course assignments, examinations & Final Project.
3. Demonstrate the ability to produce basic design documents under a time constraint.	Course assignments, examinations, and final project.

Please ask questions if assignments are unclear. The final responsibility for misunderstandings and late work rests with the student.

Points will be assigned for each student's work. The total points obtained throughout the course will then be evaluated according to the following chart:

A	100-93%	A-	90-92%		
B+	88-89%	B	82-87%	B-	80-81%
C+	78-79%	C	72-77%	C-	70-71%
D+	68-69%	D	62-67%	D-	60-61%

All submitted work will be stapled in the upper left-hand corner.

Appointments can be directly made with the instructor or via E-Mail.

"Close" grades will be determined by enthusiasm and willingness to learn.

Evaluation/Grading:

Attendance	29 points
Assignments (18 total)	180 points total (10 pts each)
Completed Textbook Model	50 points
Exams	100 points each (2 total)
Model Project & Presentation	150 points
Final Exam	200 points
Total	**809 points**

TENTATIVE SCHEDULE

Date	Material	Chapter
Wednesday, September 24	Course Introduction	1
Thursday, September 25	Assignment 1 Assigned	1
Monday, September 29	Assignment 1 Due Assignment 2 Assigned	2
Wednesday, October 1	Assignment 2 Due Assignment 3 Assigned	2
Thursday, October 2	Assignment 3 Due Assignment 4 Assigned	3
Monday, October 6	Assignment 4 Due Assignment 5 Assigned	3
Wednesday, October 8	Assignment 5 Due	4
Thursday, October 9	**Exam 1**	**1-4**
Monday, October 13	Assignment 6 Assigned	5
Wednesday, October 15	Assignment 6 Due Assignment 7 Assigned	6
Thursday, October 16	Assignment 7 Due Assignment 8 Assigned	7
Monday, October 20	Assignment 8 Due Assignment 9 Assigned	8
Wednesday, October 22	Assignment 9 Due Assignment 10 Assigned	9
Thursday, October 23	Assignment 10 Due Assignment 11 Assigned	9
Monday, October 27	Assignment 11 Due Assignment 12 Assigned	10
Wednesday, October 29	Assignment 12 Due Assignment 13 Assigned	10
Thursday, October 30	Assignment 13 Due	11
Monday, November 3	**Exam 2**	**5-11**

Wednesday, November 5	Assignment 14 Assigned Model Assignment Assigned	12
Thursday, November 6	Assignment 14 Due Assignment 15 Assigned	17
Monday, November 10	Veteran's Day	No Class
Wednesday, November 12	Assignment 15 Due Assignment 16 Assigned	17
Thursday, November 13	Assignment 16 Due Assignment 17 Assigned	18
Monday, November 17	Assignment 17 Due	18
Wednesday, November 19	Assignment 18 Assigned	19
Thursday, November 20	Assignment 18 Due Model Assignment In-class Work Time	
Monday, November 24	Model Assignment In-class Work Time	
Wednesday, November 26	Thanksgiving Recess	
Thursday, November 27	Thanksgiving Recess	
Monday, December 1	Presentations	
Wednesday, December 3	Presentations	
Thursday, December 4	Completed Textbook Model Due Presentations	
Comprehensive Final Exam	As scheduled during Finals Week	

Caveat: Instructor reserves the right to make any alteration to the course syllabus and course material, depending upon class progress.

IET 301 (Engineering Project Cost Analysis)
MTWTh 10:00 - 10:50 am
102 Hogue Hall
Fall, 2014

Dr. Michael L. Whelan
300D Hogue Hall
(509) 963-3544
mwhelan@cwu.edu

COURSE SYLLABUS

COURSE DESCRIPTION: Techniques of economic cost analysis applied to engineering projects: interest, present value, annual equivalence, rate-of-return, payout criteria, and breakeven modeling.

OBJECTIVES: Primary course objectives are: 1) introduce students to the concepts of economic equivalence and time value of money, 2) learn to use mathematical equations associated with interest calculations, 3) present the most commonly used techniques for comparing economic alternatives, and 4) explore some advanced engineering economics topics.

TEXT: **ENGINEERING ECONOMIC ANALYSIS**, 12th Edition; by Donald G. Newnan, Jerome P. Lavelle, & Ted G. Eschenbach; Oxford University Press, 2014.

OUTCOME AND ASSESSMENT:

LEARNER OUTCOMES - Students will be able to:	**ASSESSMENT STRATEGIES** - Each student will:
1. demonstrate an understanding of the theoretical and conceptual basis upon which the practice of financial project analysis is built.	1. be assessed through class discussions, homework, Excel assignments, and exams.
2. demonstrate a proficiency in using Microsoft Excel to solve engineering economics problems.	2. demonstrate through assignments the proficient use of Excel in solving economic problems.
3. demonstrate a basic knowledge of project cost analysis tools.	3. demonstrate the usage of analysis tools to arrive at correct solutions to homework problems, test questions, and Excel projects.

CLASS SESSION TOPICS:

Date	Session	Topic	Reading Assignment
SEP 24	1	Course Introduction	- - - - - - - - - -
25	2	Making Economic Decisions	Chapter 1
29	3	Engineering Costs and Cost Estimating	Chapter 2
30	4	Interest and Equivalence	Chapter 3
OCT 1	5	Interest and Equivalence	
2	6	Interest and Equivalence	
6	7	Equivalence for Repeated Cash Flows	Chapter 4
7	8	Equivalence for Repeated Cash Flows	
8	9	Equivalence for Repeated Cash Flows	
9	10	Present Worth Analysis	Chapter 5
13	11	Present Worth Analysis	
14	12	Present Worth Analysis	
15	H	**PROFESSIONAL DEVELOPMENT DAY – no classes**	
16	13	**EXAM #1**	**Chapters 1 – 4**
20	14	Annual Cash Flow Analysis	Chapter 6
21	15	Annual Cash Flow Analysis	
22	16	Annual Cash Flow Analysis	
23	17	Rate of Return Analysis	Chapter 7
27	18	Rate of Return Analysis	
28	19	Rate of Return Analysis	
29	20	Choosing the Best Alternative	Chapter 8
30	21	Choosing the Best Alternative	
NOV 3	22	Choosing the Best Alternative	
4	23	Other Analysis Techniques	Chapter 9
5	24	Other Analysis Techniques	
6	25	**EXAM #2**	**Chapters 5 – 8**
10	26	Depreciation	Chapter 11
11	H	**VETERAN'S DAY – no classes**	
12	27	Depreciation	
13	28	Depreciation	
17	29	Depreciation	
18	30	Income Taxes	Chapter 12
19	31	Income Taxes	
20	32	Income Taxes	
24	33	Replacement Analysis	Chapter 13
25	34	**EXAM #3**	**Chapters 9, 11 & 12**
26	H	**THANKSGIVING EVE – no classes**	
27	H	**THANKSGIVING DAY – no classes**	
DEC 1	35	Replacement Decisions	
2	36	Inflation and Price Change	Chapter 14
3	37	Inflation and Price Change	
4	38	Wrap-up the Course	

FINAL EXAM: Currently scheduled for 8:00 – 10:00 am, Monday, December 8th – So please don't make airline reservations, accept wedding invitations, commit to start a job, or incur similar obligations that will conflict with the time set for the final exam in this course – nor should you let anyone else obligate you either!!!

MISCELLANEOUS, BUT IMPORTANT, NOTES:

OFFICE HOURS: **MTWTh @ 11:00 – 12:00 pm** (Other times available by appointment or drop-in.)

GRADE BREAKDOWN:

Assignments	35%
Exams (3 @ 15% each)	45%
Final Exam	20%
TOTAL	100%

100%→ 92% → 90% → 87% → 82% → 80% → 76% → 70% → 68% → 66% → 62% → 60% → 0%
/ A / A– / B+ / B / B– / C+ / C / C– / D+ / D / D– / F /

READING ASSIGNMENTS: Should be done before class (class presentations are more understandable, learning is much easier, and grades will improve).

ASSIGNMENTS:

1. Assignments are an essential part of this course if you expect to gain an understanding of the material. Assignments are due at **the beginning of class**. Neatness and organization count!

3. Late assignments **will not be accepted** for credit. If you can't make it to class on time, then turn your assignments in early. Solutions will be posted if necessary.

4. Makeup assignments **will not be available** for students missing in-class exercises.

3. **All** assignments shall meet the following guidelines:
   a. All work should be in **pencil**.
   b. Use a straightedge where appropriate.
   c. Neatness and organization (still) count!
   d. Print name, course number, and due date at the top of the first page, and page number/total pages in the upper right hand corner of all pages.
   e. All assignments must be done **single sided**. **Engineering paper is suggested** for hand solutions; spiral notebook paper torn out of the notebook is most certainly not acceptable.
   f. All problems must be laid out with the GIVEN, FIND, and SOLUTION sections clearly identified. The GIVEN portions should not be a complete restatement of the problem!
   g. All solutions must show an adequate amount of work, and **final answers are to be boxed**.
   h. All **cashflow diagrams must be neatly** drawn, and must be shown for all problems as is appropriate.

EXAMS: Examinations will include 3 - one hour Exams given during regularly scheduled class periods and 1 cumulative Final Exam at the scheduled exam time during final exam week. Availability of makeup exams for any missed exams is at the discretion of the instructor, and will be considered only after consultation with the student about the reason(s) for missing an exam.

ATTENDANCE: Not mandatory, but strongly recommended - particularly if you expect to do well. You are responsible for any and all announcements, corrections, schedule changes, and additional information presented during regularly scheduled class periods. We will miss your smiling face in class if you are not here!!!

CLASSROOM BEHAVIOR:

1. Students are expected to be in their seats and ready to go to work by the scheduled start of class. Normal rules of courtesy and respect will prevail during class periods.

2. Electronic devices (cell phones, digital readers & players, gaming devices, etc.) are to be off, inactive, or in a silent mode during class. Electronic devices may be used for taking notes only – email, texting, game playing, web-surfing, video watching, or other similar diversionary activities are **NOT** permitted during class.

3. Work completed for this course (assignments and exams) is expected to be solely your own. Unless otherwise specified, group solutions are not acceptable for any assignment. Likewise, plagiarism of information from other sources or copying of another person's work is also not acceptable. If detected, you will fail the assignment with no opportunity to make up the work. Your attention is directed to Appendix B of the current CWU Catalog for additional information regarding this topic.

4. Your attention is also directed to Appendix A of the current CWU Catalog for the University's policies regarding Equal Opportunity, Affirmative Action, Gender Equity, and Sexual Harassment matters.

ADA STATEMENT: If you have a disability and require accommodations for this course, please speak with me privately as soon as possible so that necessary arrangements can be made. If you have not already done so, you will need to register with Disability Services (DS). DS is located in Bouillon 140. Alternatively, you may contact DS by email at ds@cwu.edu or by phone at (509) 963-1202 for more information.

CHANGES: Changes to the course SYLLABUS will be made as necessary and will be announced in class.

5. Apply the method of joints and sections to determine the forces in a truss's members. Obtain the ability to determine joint reactions of simple frames or machines.	Demonstrate these principles in classroom exercises, homework problems and examinations based on applying knowledge to solve analytical problems.
6. Students will understand the concept of friction and analyze rigid bodies subjected to dry friction.	Demonstrate these principles in classroom exercises, homework problems and examinations based on applying knowledge to solve analytical problems.
7. Understand the concepts of center of gravity, center of mass, and the centroid. Be able to calculate the center of gravity and centroid of shapes.	Demonstrate these principles in classroom exercises, homework problems and examinations based on applying knowledge to solve analytical problems.
8. Be able to conceptualize fluid pressure and calculate hydrostatic forces.	Demonstrate these principles in classroom exercises, homework problems and examinations based on applying knowledge to solve analytical problems.

GRADED WORK SUMMARY

Student Assessment Criteria

3 Exams and Final	55%
Homework	15%
Classroom Exercises	15%
Report Assignment	15%
Total	**100%**

Homework: Homework will be assigned on a regular basis and the due date will be announced at the time the assignment is given. The format will be presented in class.

Homework is due before the beginning of the class period on the due date or it will be considered late.

If your homework is turned in after class starts, you will receive a 20% grade reduction. Homework turned in after I leave on the due date may be slipped under my office door and will receive a 50% grade reduction. Homework will not be accepted after the next homework due date.

Classroom Exercises: Individual and group exercises will take place during the lecture hour. Quizzes will also be a part of this course. You must be present to participate and turn your work in for a grade. There will not be any make-up opportunity for classroom activities.

Exceptions:

1. medical emergency supported by Doctor's note.

2. pre-arranged absences for university sponsored field trips with supporting evidence.

Constructive Participation: Participation in classroom discussion and course related activity is necessary and important. Students are expected to actively engage in assigned activities,

investigate, understand and share subject matter, and contribute thoughtful and original opinions of their own related to the course of study.

Report Assignment: You will apply your static analysis skills to a real world application. MET students will be paired with a senior student working on a Senior Project from which to produce their analysis. All other students will select a part of a structure to produce their analysis ie:, a crane, a piece of heavy machinery, a bridge, a tower, a manlift.
Details of this assignment will be presented in class.

Final Examination: The final exam is cumulative.

GRADES

Letter grades will be assigned as follows based on the total points earned during the quarter:

0% to 59% = F
60% to 62% = D-
63% to 66% = D
67% to 69% = D+
70% to 72% = C-
73% to 76% = C
77% to 79% = C+
80% to 82% = B-
83% to 86% = B
87% to 89% = B+
90% to 92% = A-
93% to 96% = A
97% to 100% = A+

SYLLABUS
IET 311 – STATICS
FALL 2014

DRAFT SCHEDULE

Week	Date	Subject Covered	Reading
1	9/24	Intro, General Principles Force Vectors	Chapter 1 Chapter 2
2	9/29	Force Vectors	Chapter 2
3	10/6	Force System Resultants Exam 1 (Ch. 1 and 2)	Chapter 3
4	10/13	Force System Resultants Equilibrium of a Rigid Body	Chapter 3 Chapter 4
5	10/20	Equilibrium of a Rigid Body	Chapter 4
6	10/27	Equilibrium of a Rigid Body	Chapter 4
7	11/3	Structural Analysis Exan 2 (Ch. 3 and 4)	Chapter 5
8	11/10	Structural Analysis Veterans Day Center of Gravity, Centroid and Moment of Inertia	Chapter 5 Chapter 6
9	11/17	Center of Gravity, Centroid and Moment of Inertia	Chapter 6
10	11/24	Center of Gravity, Centroid and Moment of Inertia Thanksgiving	Chapter 6
11	12/1	Center of Gravity, Centroid and Moment of Inertia Exam 3 (Ch. 5 and 6)	Chapter 6
12	12/8	Finals	All Chapters

IET 311 – 01 (Statics)
MTWTh 9:00 – 9:50 am
102 Hogue Hall
Winter, 2014

Dr. Michael L. Whelan
300D Hogue Hall
(509) 963-3544
mwhelan@cwu.edu

COURSE SYLLABUS

CATALOG DESCRIPTION: Introductory statics including forces and equilibrium. Principles of structures including trusses, beams, frames, machines, and friction. Prerequisites: PHYS 111 or 181 & MATH 173.

TEXT: Statics and Mechanics of Materials, 4th ed., by R. C. Hibbeler, Pearson Prentice-Hall Publishing, 2014 (ISBN-13:978-0-13-345160-3).

ADDITIONAL RESOURCES: MasteringEngineering Course ID: **MEWHELAN35536**
Link: **http://www.masteringengineering.com/**

OUTCOME AND ASSESSMENT:

LEARNER OUTCOMES - Students will be able to…	**ASSESSMENT STRATEGIES** - Each student will…
1) …solve engineering mechanics problems using U. S. Customary or SI units and applying appropriate analytical problem solving techniques.	1) …demonstrate these principles in classroom exercises, homework problems, & exams by applying learned knowledge to solve analytical problems.
2) …demonstrate an understanding of what vectors are and how to add or resolve vectors in two and three dimensions.	2) …demonstrate these principles by applying learned knowledge to solve analytical problems.
3) …draw a free-body diagram, and use that diagram to solve for unknown forces or moments for particle and rigid body systems.	3) …demonstrate these principles by applying learned knowledge to solve analytical problems.
4) …use vector operations of Dot Product and Cross Product to solve for unknown forces and moments in two or three dimensional systems.	4) …demonstrate these principles by applying learned knowledge to solve analytical problems.
5) …determine joint reactions for pin-connected structural systems with two-force (e.g., trusses) and multi-force (e.g., frames & machines) members.	5) …demonstrate these principles by applying learned knowledge to solve analytical problems.

6) ...explain the concept of friction and analyze rigid body force systems subjected to dry friction.	6) ...demonstrate these principles by applying learned knowledge to solve analytical problems.
7) ...explain the concepts of center of gravity, center of mass, and centroid, and calculate the location of each of these for geometric shapes.	7) ...demonstrate these principles by applying learned knowledge to solve analytical problems.
8) ...explain concepts associated with fluid pressures and calculate hydrostatic forces for simple situations.	8) ...demonstrate these principles by applying learned knowledge to solve analytical problems.

MISCELLANEOUS, BUT IMPORTANT, NOTES:

OFFICE HOURS: **MTWTh – 10:30 to 11:30 am** or by appointment. Help sessions specifically for IET 311 will be available @ **9:00 am Friday** in **Hogue 102.** Tutoring by undergraduate assistants at a TBA day and time is expected to be available later in the term.

GRADE BREAKDOWN:

Assignments	20 %	
Hour Exams	48 %	(3 exams @ 16% each)
Final Exam	32 %	
TOTAL	100 %	

100% → 92% → 90% → 87% → 82% → 80% → 76% → 70% → 68% → 66% → 62% → 60% → 0%
/ A / A– / B+ / B / B– / C+ / C / C– / D+ / D / D– / F /

READING ASSIGNMENTS: Should be done before class (class presentations are more understandable, learning is much easier, and your grade should improve dramatically).

ASSIGNMENTS:

1. Will be listed on Blackboard.
2. Are due at the beginning of the class following the corresponding material's presentation (due date will be confirmed in class).
3. Will **NOT** be accepted late (unless approved before the due date, and then not for full credit).
4. Will have solutions posted if needed.
5. **Must be completed using the required format.** (See information and example below.)
6. **Will** (probably) **occur during the last week of classes.**

FORMAT REQUIREMENTS:

ASSIGNMENTS: Neat, complete, organized, legible, and professionally presented to avoid grade penalty or to be acceptable for submission. Assignments must meet the following criteria:

1. Use engineering paper (front side only) and write with a pencil (not too hard, not too soft).

2. Date submitted, course number, your name, and sheet # over total # of sheets in the assignment at the top of each sheet.

3. Neatly lettered with neat sketches. Use a straightedge or compass where appropriate.

4. Provide a **GIVEN:**, **FIND:**, and **SOLUTION:** for each problem. Place the problem number immediately before the **GIVEN:** information statement. Summarize known parts of the problem in the **GIVEN:** statement; do not copy the problem verbatim.

5. Show your work. Begin each solution step by writing the equation you will use next without numbers inserted. Include units in all steps of the problem solution where appropriate (e.g., in the first population of equations with numbers, as needed for solution clarity, with intermediate and final answers, etc.). Use standard units.

6. Clearly identify your answers (box, double underline, arrow), and include proper units.

7. Unless the problems are uncharacteristically short, one problem per sheet is enough.

8. See the attached example for further information.

EXAMS: Format will be somewhat similar to Assignments, except that problems will normally be worked on the exam sheet, so heading requirements are not meaningful. The need for neatness and clarity, however, still exists.

QUIZZES: Quizzes covering previously presented material or assigned reading materials may be given at any time during class. **If you miss a quiz because you are late, you leave early, or you are absent altogether, then you have missed that quiz.** Quiz grades will be included in the Assignments portion of the course grade.

EXAMS: Examinations will include 3 one hour exams given during regularly scheduled class periods and a final exam given at the regularly scheduled time during final exam week. Availability of makeup exams for any missed exams is at the discretion of the instructor, and will be considered only after consultation with the student about the reason(s) for missing the scheduled exam. Timely notification of the course instructor is mandatory if problems arise with regard to exam attendance.

ATTENDANCE: Not mandatory, but strongly recommended - particularly if you expect to do well. You are responsible for any and all announcements, corrections, schedule changes, and additional information presented during regularly scheduled class periods. Makeup assignments will not be available for students missing in-class exercises. In addition, we will miss you!!!

CLASSROOM BEHAVIOR:

1. Students are expected to be in their seats and ready to go to work by the scheduled start of class. Normal rules of courtesy and respect will prevail during class periods.

2. Electronic devices (cell phones, digital readers and players, gaming devices, etc.) are to be off, inactive, or in a silent mode during class. Electronic devices may be used for taking notes and textbook access only – email checks, social media use, game playing, web-surfing, video watching, or other similarly distracting activities are **NOT** permitted during class.

3. Work completed for this course (assignments, quizzes, and exams) is expected to be yours and yours alone. Unless otherwise specified, group solutions are not acceptable for any assignment, and neither is plagiarism of information from other sources or copying of another person's work. Copying of problem solutions from the solutions manual for this course's textbook is not acceptable. If detected, you will receive a failing grade for the assignment or exam in question with no opportunity to make up the work. Your attention is directed to Appendix B of the current CWU Catalog for additional information regarding this topic.

4. Your attention is also directed to Appendix A of the current CWU Catalog for the University's policies regarding Equal Opportunity, Affirmative Action, Gender Equity, and Sexual Harassment matters.

ADA STATEMENT: If you have a disability and require accommodations for this course, please speak with me privately as soon as possible so that necessary arrangements can be made. If you have not already done so, you will need to register with Disability Services (DS). DS is located in Bouillon 140. Alternatively, you may contact DS by email at ds@cwu.edu or by phone at (509) 963-1202 for more information.

CHANGES: Changes to the COURSE OUTLINE will be made as necessary and will be announced in class.

CLASS SESSION TOPICS:

Date		Session	Topic	Reading Assignment
JAN	6	1	Course Topic (General Principles) Introduction	1.1 – 1.6
	7	2	Scalars, Vectors, and Vector Addition	2.1 – 2.3
	8	3	Addition of System of Coplanar Forces	2.4
	9	4	Cartesian Vectors and Their Addition	2.5 & 2.6
	13	5	Position Vectors & Force Vector Directed along a Line	2.7 & 2.8
	14	6	Dot Products	2.9
	15	7	Dot Products	2.9
	16	8	Moment of a Force - Scalar Form. & Cross Products	3.1 & 3.2
	20		**MLK DAY – no classes**	
	21	9	Moment of a Force - Vector Formulation	3.2 & 3.3
	22	10	**EXAM #1 (1.1 – 2.9)**	
	23	11	Principle of Moments & Moment about a Specified Axis	3.4 & 3.5
	27	12	Moment of a Couple	3.6
	28	13	Simplification of a Force and Couple System	3.7 & 3.8
	29		**PROFESSIONAL DEVELOPMENT DAY – no classes**	
	30	14	Conditions for Rigid Body Equilibrium	4.1
FEB	3	15	Free-Body Diagrams	4.2
	4	16	Equations of Equilibrium and 2 & 3 Force Members	4.3 & 4.4
	5	17	More Free-Body Diagrams	4.5
	6	18	More Equations of Equilibrium	4.6
	10	19	Characteristics of Dry Friction	4.7
	11	20	Problems Involving Dry Friction	4.8
	12	21	**EXAM #2 (3.1 – 4.6)**	
	13	22	More Problems Involving Dry Friction	4.8
	17		**PRESIDENT'S DAY – no classes**	
	18	23	Frictional Forces on Flat Belts & Screws	4.9 & 4.10
	19	24	Simple Trusses	5.1
	20	25	Method of Joints & Zero-Force Members	5.2 & 5.3
	24	26	Method of Sections	5.4
	25	27	Frames & Machines	5.5
	26	28	Machines & Frames	5.5
	27	29	Center of Gravity, Center of Mass, & the Centroid of a Body	6.1
MAR	3	30	Composite Body Centroids	6.2
	4	31	Resultant of a Distributed Loading	6.3
	5	32	**EXAM #3 (4.7 – 5.5)**	
	6	33	Fluid Pressures	- - - - - - -
	10	34	Fluid Pressures	- - - - - - -
	11	35	Moments of Inertia for an Area	6.4
	12	36	Parallel-Axis Theorem for an Area	6.5
	13	37	Moments of Inertia for Composite Areas	6.6

FINAL EXAM: Currently scheduled for **8:00 – 10:00 am, Monday, March 17th –** So please don't make airline reservations, accept wedding invitations, commit to start a job, or incur similar obligations that will conflict with the time set for the final exam in this course – nor should you let anyone else obligate you either!!!

Course IET 312 Strength of Materials , 4 credits

Class: Monday – Thursday 11:00 – 11:50 AM, Hogue 226

Instructor: Darryl Fuhrman
Email: fuhrmand@cwu.edu
Department Phone: (509) 964-1756,
http://www.cwu.edu/engineering

Office Hours: Monday – Thursday, 2:00 – 3:00 PM

Resources: Required Text: Statics & Strength of Materials, 4th Ed., by Hibbeler; Prentice Hall Publ., 2012. ISBN: 9780133455410,
MasteringEngineering Course ID: MEFUHRMAN75636 at
http://www.masteringengineering.com/
Software: internet access, word processing, and spreadsheet capabilities.

Description: Mechanics of materials, including stress analysis of axially loaded members, torsional members, beams, and indeterminate structures.
Prerequisite: IET 311.

Rational: Mechanics of materials is a fundamental course in engineering mechanics that will lead to an understanding of how specific structural materials such as steel, wood, aluminum, and concrete behave under applied loads. This course forms the foundation for more advanced studies of specific structural applications including buildings, bridges, vehicle components, and machines. A variety of stresses will be studied, as well as how these stresses combine, interact, and lead to deformations in specific materials. These subjects will be examined analytically with the intent of having the student develop the ability to analyze a stated problem in a simple, logical manner, and present a clear, concise, and detailed solution report.

Course Objectives and Assessment

Learning Outcomes	Assessment
1. Demonstrate an understanding of internal forces and moments within a loaded member and calculate these forces and moments.	Students shall be assessed through written homework assignments and examinations.
2. Properly identify and calculate both normal and shear stress and strain in axial and torsion members.	Students shall be assessed through written homework assignments and examinations.
3. Demonstrate an understanding of the stress-strain relationship and Poisson's ratio.	This will be evaluated through homework and examinations
4. Draw a shear and moment diagram for a	This shall be assessed through homework

Learning Outcomes	Assessment
variety of loaded beams using a variety of methods, including integration of an equation for a load diagram.	assignments and examinations.
5. Demonstrate the ability to calculate beam deflections, including writing equations for the deflected shape of an elastic beam.	This shall be assessed through homework assignments and examinations.
6. Properly construct Mohr's circle for any given state of stress and demonstrate the ability to utilize Mohr's circle to determine the state of stress at various orientations within the material.	This shall be assessed through homework assignments and examinations.
7. Demonstrate an understanding of combined loading and column buckling using Euler's buckling theory.	This shall be assessed through homework assignments and examinations.
8. Demonstrate an understanding of forces and stresses in statically indeterminate members loaded axially and in torsion.	This shall be assessed through homework assignments and examinations.

Grading: Exams 80%
Homework 10%
Quizzes 10%

Letter grades will be assigned as follows based on the total points earned during the quarter:

100% ←	92% ←	90% ←	88% ←	82% ←	80% ←	78% ←	72% ←	70% ←	68% ←	62% ←	60% ←	0%
A	A–	B+	B	B–	C+	C	C–	D+	D	D–	F	

Quizzes: Quizzes will cover content of assigned reading and other course related subject matter. There are no make-up quizzes without prior approval.

Homework: For most students, this course introduces a new way of looking at the physical world. It introduces a new way of thinking. It introduces new analysis tools to predict how structures will behave under various loading conditions. For example, will it bend under load and return to it's original shape when the load is removed? Will it stretch but still carry the load? How much will it support before it fails? Making such predictions requires special knowledge. The price for this knowledge is the practice and discipline required to gain it. Homework assignments are your opportunity to practice and drill with the tools which are necessary to answer these kinds of questions. It will be assigned on a regular basis and the due date will be announced at the time the assignment is given.

Homework Grading: You are expected to complete neat and readable work. Use a straight-edge. If your work is so tiny or sloppy that the instructor cannot read it, then you will get zero credit for your work. Most homework problems are available in Mastering

Engineering and you are expected to use it as a tool to help you work through the problems. Complete your work on engineering paper in pencil only, with writing on the front of each page only. Start a new problem on a new page. Pages with multiple problems on them will receive zero credit for those problems. Staple pages together prior to class. Unstapled homework will receive zero credit. Place the staple in the upper left hand corner in a way which does not cover the problem numbers. You are responsible for ensuring that your answers are correct and that you understand the details of arriving at the correct answer. (Exam problems will test your understanding). Homework grading will be focused on your ability to present your analysis clearly and in a disciplined format as follows (see the example problem pages below):

1. (1 point) Header:
   On each page write (a) the problem number, (b) your name, (c) the course number, (d) the date, (e) the page number/total number of pages.
2. (1 point) Graphic and Problem Statement:
   A copy of the problem statement and graphic, neatly taped to the upper right hand corner of the first page of each problem. Hand drawn sketches do not satisfy this requirement.
3. (1 point) Format:
   Use the Given:, Find:/Req'd:, and Sol'n: format for engineering problems. Writing "G:", "F:", and "S:" does not satisfy this requirement for this class.
4. (1 point) Free Body Diagrams (FBD) and Sketches:
   Most problems require a free body diagram to properly solve the problem. Our definition of "free body diagrams" will be expanded in this course to include the internal forces and moments which are exposed when we "slice into" a member. FBD's must be drawn in accordance with Ch. 4 and Ch. 7 of your text. Most problems require multiple FBD's as you work through the stages of the solution. Many problems also require additional sketches to clearly show cross sectional areas or otherwise prove how your logic is valid. In general terms: if the book example or my in-class example uses a sketch at a particular point in a solution, then you should too.
5. (1 point) Equations of Equilibrium:
   Write your equations of equilibrium in proper form. Always show your assumed positive direction to the left of the Σ symbol. Some problems will require multiple application of the equations as you work through the stages of the solution.
6. (3 points) Units:
   Reduce units to base units as described in Chapter 1 of your text. Include units throughout every equation in your solution. Show how you cancel and combine them to arrive at your answer.
7. (1 point) Formulas:
   Every problem requires a mathematical equation and most require multiple equations. Write the appropriate equation in symbol form before you apply it as you proceed through the stages of the solution.

8. (1 point) The Answer:
   Most problems involve calculating intermediate answers which are key in the process of arriving at the final answer. I suggest that these key parts of the solution be circled or otherwise identified to make them easy to locate on the page. For this class, your final answer must be clearly identified by drawing a box around it.

Late work: If your homework is turned in after class begins, you will receive a 20% grade reduction. Homework which is turned in after the instructor leaves on the due date will receive a 50% grade reduction. Homework will not be accepted if it is turned in after the next homework due date.

Final: The final examination is cumulative.

ADA: Students who have special needs or disabilities that may affect their ability to access information and/or material presented in this course or fully participate in the activities included in this course are encouraged to contact the instructor or the Disability Support Services Office, Bouillon 205 or dssrecept@cwu.edu or 963-2171 for additional accommodation.

Participate: Participation in classroom discussion and course related activity is necessary and important. Students are expected to actively engage in assigned activities, understand and share subject matter, and to contribute thoughtful and original opinions of their own related to the course of study.

Conduct: Students are to conduct themselves in accordance with Student Rights and Responsibilities Policy of the University Catalog (Refer to online catalog (http://catalog.acalog.cwu.edu/) Policies and Proceedures link).
Electronic devices (e.g. cell phones, PDAs, laptops, tablets) are not to be used during class time without express permission of the instructor.

Attendance will be taken the first three days of the quarter in accordance with university policy. You are expected to attend all seesions of the class and be awake, engaged and ready to participate.

The instructor is a facilitator. Class time will be used for presenting material, solving problems, taking quizzes and exams.

The student is an active learner. This role demands personal responsibility for your learning. Strive to optimize your learning skills, and keep track of your outcomes. Be prepared to participate in all activities. You are expected to read the appropriate textbook sections before each class.

Ethics

Plagiarism is the appropriation of any other person's work and the unacknowledged incorporation of that work in one's own work offered for credit. Work completed for this course (assignments and exams) is expected to be yours and yours alone. Unless otherwise specified, group solutions are not acceptable for any assignment, and neither is plagiarism of information from other sources or copying of another person's work. This doesn't mean that you shouldn't study together. Group study is encouraged if it is helpful to you, but the work you turn in must be your own. If plagiarism is detected, you receive a failing grade of zero value. Your attention is directed to Appendix B of the current CWU Catalog for additional information regarding this topic.

DRAFT SCHEDULE

Week	Subject Covered	Reading
1	Intro Stress Strain	 Chapter 7 Chapter 7
2	Strain Mechanical Properties of Materials	Chapter 7 Chapter 8
3	Mechanical Properties Axial Load	Chapter 8 Chapter 9
4	**Exam 1** Torsion	**Ch. 7-9** Chapter 10
5	Torsion Bending	Chapter 10 Chapter 11
6	Transverse shear **Exam 2**	Chapter 12 **Ch. 10-12**
7	Combined Loading	Chapter 13
8	Combined Loading Stress Transformation-Mohr's circle	Chapter 13 Chapter 14
9	Stress Transformation-Mohr's circle Deflection of Beams and Shafts	Chapter 14 Chapter 16
10	Deflection of Beams and Shafts Buckling of Columns **Exam 3**	Chapter 16 Chapter 17 **(Chapters 13, 14, 16)**
11	Finals Week	All Chapters

Changes relating to assignments and exams will only be made in case of emergency or if arranged with the instructor at least one week prior to the scheduled date. Please contact me as soon as possible.

Final Words from the Instructor

Pre arrange your absences and email if you are sick (before class). If you notify the Dean of Student Success (deanstudentsuccess@cwu.edu) via email or call 509-963-1515, they will notify all your instructors.

Emails will be responded to as quickly as is possible. When you email me, include the class number (ie. 312) in the subject line or I cannot guarantee that it will be responded to.

Extended absence is grounds for a failing grade. I reserve the right to adjust grades accordingly.

SHM 323 – Construction Safety

Section 001, 3 Credits, Fall Quarter 2014, M/W, 4:00 – 5:15PM, Hogue 229

Instructor: Mike Andler
Office: Hogue 300l
E-mail: mandler@cwu.edu
Office Hrs: Tu TH 9:00 AM – 11:00 AM or by appointment

Text: www.osha.gov
29 CFR 1926 Construction Regulations

Course Description/Canvas:
A comprehensive course that covers the safety and health regulations and practices pertaining to the construction industry. The syllabus, schedule, specific information on assignments, quizzes, exams, and announcements will be posted on ***Canvas***.

Prerequisites:
None

Course objectives:
The course is a lecture course designed to teach the student about the hazard recognition and control in the construction industry.

Outcome	Assessment Strategy
Students will demonstrate their ability to identify and describe the fundamental aspects of construction safety (SHM-L).	The students will complete a written test on construction industry fundamentals and safety **(Quiz # 1).**
Students will demonstrate their ability to anticipate, recognize, evaluate, and develop control strategies for hazardous conditions and work practices in the construction industry. (ABET-1; SHM-M).	The students will complete a pre-task plan assignment for five real world scenarios. **(Assignment # 3)**
Students will demonstrate their ability to identify and apply applicable standards, regulations, and codes in the construction safety and health discipline. (ABET-6; SHM-O).	The students will complete a comprehensive test on construction safety and health regulations **(Final exam and Assignment # 1).**
Students will demonstrate their ability to use the techniques, skills, and modern scientific and technical tools necessary for professional practice in the safety and health discipline. (ABET-i; SHM-T)	The students will successfully participate in an in-class and outside the class PPE exercise **(Assignment # 2).**

Students Responsibilities:

- **Assignments:** Homework assignments will be posted on Canvas on the dates shown in the course schedule, and typically will be due the following week. The assignments are to be done individually, except when noted. Homework solutions must be presented in a neat and well-organized manner, and turned in at the beginning of class on or before the date due. *No assignments will be accepted or graded after the due date, unless prior arrangements are made.*

- **Assigned Reading:** The course schedule lists the standards from the osha.gov related to the course topics. The readings will help reinforce the material taught in the lectures. Completing the assigned readings before the lectures will help you come prepared for the lectures and get more out of the lectures. Due to time constraints, lectures may not cover all the material in the assigned readings.

- **Quizzes:** ***Four*** quizzes will be given during the course. Each quiz will focus on a specific assigned reading/lecture topic. Students should come prepared to take the quizzes.

- **Exams:** The course will include **one** comprehensive final exam. All exams will be closed book/closed notes, unless otherwise noted, and are to be done individually.

- **Class Participation/attendance:** Each student is expected to participate in the class. Participation includes, but is not limited to, attending class lectures and participating in class discussions. If you miss class, it is your responsibility to get materials and information from that session. Students will sign-in their name using the signup sheet every class. ***Attendance will be taken every day, and attendance points will be granted proportionate to attendance.***

- **Group Project:** Students will form a team of ***3 or 4*** and visit a construction site and shadow a construction safety professional (Prof. Andler will help you find a safety professional) for a minimum of 3 hours and present the findings in a report. Instructions will be posted on the Canvas during the second week of class.

- **Academic Dishonesty:** Academic dishonesty is defined in the Proscribed Conduct section of the Student Judicial Code in the current catalog. Academic dishonesty in any form will result in failing grade for the course.

- **Extra Credit:** The instructor may provide opportunities for extra credits for participation in program related activities such as open house and ASSE club meeting attendance.

- **Electronic Devices:** Turn off and put away all electronic devices such as cell phones, iPods, etc. during class time.

Grading:

Attendance and Class Participation	20 points (5%)
Homework Assignments (2):	60 points (15%)
Group Project (1):	100 points (25%)
Quizzes (4):	120 points (30%)
Final Exam:	100 points (25%)
Total	**400 points (100%)**

Grading Scale:
This is a straight grading scale. The percentage represents points earned out of total possible points.

A	95-100%	**A-**	90-94%		
B+	87-89%	**B**	83-86%	**B-**	80-82%
C+	77-79%	**C**	73-76%	**C-**	70-72%
D+	67-695	**D**	63-66%	**D-**	60-62%
F	< 60%				

Grading Rubric for Group Project and Homework Assignments:

Levels of Achievement		
Professional	**Needs Improvement**	**Unacceptable**
2	**1**	**0**
All report requirements (format) are extremely well done.	All report requirements (format) were met with few errors.	All report requirements (format) were met but had many errors
All report requirements (technical) are extremely well done.	All report requirements (technical) were met with few errors.	All report requirements (technical) were met but had many errors
All relevant OSHA standards have been identified.	Only few relevant OSHA standards have been identified.	Many OSHA standards have not been identified.
The report is cohesive, complete, and well integrated	The report is complete but is not completely cohesive.	The report organization is lacking and some elements of integration are missing
Overall the writing is excellent	Overall the writing is acceptable.	Overall, the writing is poor.

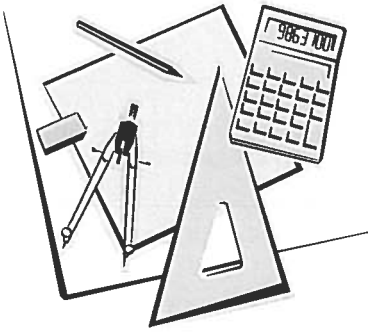
ADA Statement:
Students with disabilities who wish to set up academic adjustments in this class should give me a copy of their "Confirmation of Eligibility for Academic Adjustments" from the Disability Services Office as soon as possible so we can discuss how the approved adjustments will be implemented in this class. Students without this form should contact the Center for Disability Services, Ellensburg and Eastside University Centers @ cdsrecept@cwu.edu or 509-963-2171. Website: http://www.cwu.edu/~dss/cms/

Course Schedule:
The instructor reserves the right to change the tentative schedule due to unforeseen circumstances or to improve the educational quality of this course.

Date	Day	Topic	Quiz	HW	Reading/ Subpart
Sept. 24	W	Class Introduction – Construction life cycle	--	--	--
29	M	Introduction to OSHA	--	--	Osha.gov
Oct. 1	W	OSHA Focus 4	--	--	M,K
6	M	OSHA Focus 4	--	--	M,K
8	W	OSHA Focus 4	1	--	M,K
13	M	Personal Protective and Lifesaving Equipment ***(HW1 post)***	--	--	E
15	W	Excavations	--	--	P
20	M	Steel Erection & Concrete Construction	--	1	Q,R
22	W	Stairs and Ladders	2	--	X
27	M	Scaffolds	--	--	L
29	W	Material Handling, Storage and Housekeeping ***(HW2 post)***	--	--	H
Nov. 3	M	Pre-task Planning; Safety Manager's Role	--	--	--
5	W	Cranes	3	--	CC
10	M	Motor Vehicles/Mechanized Equipment	--	--	O
12	W	Cutting and Welding	--	2	J
17	M	Health Hazards in Construction	--	--	--
19	W	Demolition	4	--	T
24	M	Fire Protection & Prevention	--	--	F
26	**W**	**No Class Thanksgiving Break**			
Dec. 1	M	Tools – Hand and Power **&** Confined Space	--	--	I
3	W	Tools – Hand and Power **&** Confined Space			I

Course Syllabus
CMGT 245 Light Commercial Construction
Spring Quarter 2014

Instructor: Mike Andler



Course: Light Commercial Construction, CMGT 245, 5 Credits
Class Hours: M W F 2:00 PM – 4:50 PM
Room: Hogue Technology 226
Jobsite: To Be Announced

E-mail: mandler@cwu.edu
Office: 300i Hogue Technology Building
Office Hours: TuWTh 10-11 AM & By Appointment

COURSE DESCRIPTION:
Construction of building foundations, commercial carpentry, and enclosing of wood- framed structures. Students participate in construction of a building. Prerequisite: CMGT 265 or permission of instructor.

REQUIRED:
Tool belt, hammer, utility knife, measuring tape (25' min.), safety glasses, speed square, pencil, hardhat (may be available for checkout if you don't otherwise have one), gloves, appropriate footwear, and a lab book.

TEXT:
CARPENTRY, 6th Edition; by Floyd Vogt; Thomson-Delmar Learning,
ISBN 9781133607366

(OPTIONAL ITEMS)
Chalk line, pliers, multi-tip screwdriver, cat's paw or nail bar, hearing protection. Please do not bring personal power tools due to damage and/or loss.

OBJECTIVES:
Primary course objectives are: 1) introduce students to construction techniques for simple concrete foundations and wood framed structures, 2) impress on students the need for safety, quality, and planning in the operation of construction projects, and 3) develop the ability to either lead teams or work as a contributing team member in a construction setting.

ADA STATEMENT:
Students with disabilities who wish to set up academic adjustments in this class should give me a copy of their "Confirmation of Eligibility for Academic Adjustments" from the Disability Support Services (DSS) Office as soon as possible so we can discuss how the approved adjustments will be implemented in this class. Students without this form should contact the DSS Office (Bouillon 205, dssrecept@cwu.edu, or 963-2171) immediately.

CHANGES:
Changes to the COURSE OUTLINE will be made as necessary and will be announced in class.

LEARNER OUTCOMES Students will be able to:	ASSESSMENT STRATEGIES Each student will:
1. Demonstrate the ability to layout a simple building and get the corners square within 1/4" (measuring diagonals).	1. Be able to describe the procedure for building layout on a test and participate in the layout of a building in class.
2. Demonstrate the ability to construct footing and foundation wall forms and place concrete	2. Participate in the construction of a building foundation as part of the class project.
3. Demonstrate the ability to frame a simple wood frame building.	3. Participate in the construction of a small wood frame building.
4. Demonstrate the ability to install siding, roofing, doors, and windows.	4. Participate in enclosing the shell of a small building.
5. Estimate the required quantities of construction materials for a simple building within 5%.	5. Answer test questions about material quantities and prepare quantity surveys for the class project in the log book.

GRADE BREAKDOWN:	
Daily diary (0.50 % / day)	14 %
Daily log (1 % / day)	5 %
Building layout	5 %
Quantity survey	5 %
Quizzes (8 @ 2.50 % each)	20 %
Final Exam	18 %
Attendance (1 % / day)	28 %
Participation and Attitude	5 %
Total Points Possible	100 %

GRADING SCALE:

100	92	90	87	82	80	77	72	70	67	62	60	0
A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F	

READING ASSIGNMENTS:

Should be completed before class. However, please note that assigned reading may or may not synchronize well with planned onsite work activities.

ASSIGNMENTS:

1. Each student will keep a **Daily Diary** for the course. This diary will include start and finish times for each day, a summary of participation during each class session, and other similar information. Any problems that may have occurred and how they were resolved should also be noted. Diaries will be turned in for checking at least 4 randomly selected times during the term, so keep diary up to date at all times! Please use a lab book (available in the bookstore for about $2.00).

2. Each crew foreman will complete and turn in a **Daily Log** for the work performed by his/her crew on that day. Daily Log forms will be provided by the course instructor.

3. The **Building Layout** assignment will be handed out and completed at a later date.

4. Each student will complete a **Quantity survey** of the following work items: a) footing concrete, b) foundation wall concrete, c) SOG concrete, d) wall framing materials including lumber and sheathing, and e) roof decking. Quantity survey results, including all calculations, should be presented in the lab book. A summary of each estimated quantity must be turned in at least one week before the respective materials are scheduled to be installed.

5. Assignments may continue into the **final week of classes**.

6. **Late assignments** will generally not be accepted without a legitimate excuse. In all cases, late assignments will be penalized.

QUIZZES:
Quizzes will be given on Blackboard over the assigned reading material for that week. Quiz dates and accompanying reading assignments are listed above. Makeup quizzes (should you miss class) will generally not be available.

EXAMS:
In addition to the eight quizzes, there will be a Final Exam given at the regularly scheduled time during Final Exam Week. Taking the Final Exam at a time other than scheduled will be at the discretion of the instructor, and will be considered only after consultation with the student about the reason(s) for not being available for an exam at the scheduled time.

ATTENDANCE:
Not mandatory, but strongly recommended - particularly if you expect to do well. You are responsible for any and all announcements, corrections, schedule changes, and additional information presented during regularly scheduled class periods. Makeup assignments will not be available for students missing in-class exercises and you will miss out on the attendance points for each day missed.

JOBSITE/CLASSROOM BEHAVIOR:

1. Students are expected to be onsite (or in their seats if in the classroom) and ready to go to work by the scheduled start of class. Normal rules of courtesy and respect will prevail during class periods.

2. Electronic devices (cell phones, blackberries, MP3 players, gaming devices, etc.) are to be off, inactive, or in a silent mode during class. Laptop computers will not be needed onsite during work periods. Nor will radios, CD players, or similar devices be blaring in the background during class. Use of cell phones, except in an emergency, is not acceptable.

3. Work completed for this course (assignments and exams) is expected to be your-own. Unless otherwise specified, group solutions are not acceptable for any assignment, and neither is plagiarism of information from other sources or copying of another person's work. If detected, you will fail the assignment with no opportunity to make up the work. Your attention is directed to Appendix B of the current CWU Catalog for additional information regarding this topic.

4. Your attention is also directed to Appendix A of the current CWU Catalog for the University's policies regarding Equal Opportunity, Affirmative Action, Gender Equity, and Sexual Harassment matters.

COURSE SCHEDULE

Date	Session	Topic	Chapter Readings
April 2	1	Course Intro.	
April 4	2	Safety Orientation; Crew Set-up; Building Layout	22
April 7	3	Floor Plans / Sections and Elevations	23 & 24
April 9	4	Plot / Foundation Plans, Building Codes and Regs.	25 & 26
April 11	5	Concrete Foundations **(QUIZ #1 CH. 22-29) Due 4/14 at the beginning of class**	29
April 14	6	Jobsite Safety and Construction Aids	20
April 16	7	Scaffolds	21
April 18	8	**(QUIZ #2 CH. 20-24) Due 4/21 at the beginning of class**	23 & 24
April 21	9	Wood & Lumber	1 - 3
April 23	10	Engineered Panels & Lumber Products	4 - 8
April 25	11	Fasteners **(QUIZ #3 CH. 1-10) Due 4/28 at the beginning of class**	9 & 10
April 28	12	Hand Tools	11 & 12
April 30	13	Hand & Portable Power Tools	13 & 14
May 2	14	Portable Power Tools **(QUIZ #4 CH. 11-16) Due 5/5 at the beginning of class**	15 & 16
May 5	15	Stationary Power Tools	17 - 19
May 7	16	Wood Framing	34 & 35
May 9	17	Wood Framing **(QUIZ #5 CH. 17-19,34-37) Due 5/12 at the beginning of class**	36 & 37
May 12	18	Roofs & Roof Trusses	41-46
May 14	19	Roofing	51-53
May 16	20	Windows **(QUIZ #6 CH. 41-46, 51-55) Due 5/19 at the beginning of class**	54-55
May 19	21	Doors	56-58
May 21	22	Siding	59 & 60
May 23	23	Siding **(QUIZ #7 CH. 56-64) Due 5/28 at the beginning of class**	61-64
May 26	**No Class**	**Memorial Day**	
May 28	24	Stairway Design	47
May 30	25	Stairway Layout **(QUIZ #8 CH. 47- 48) Due 6/2 at the beginning of class**	48
June 2	26	Finish-up Project	
June 4	27	Desperate dash to complete the projects	
June 6	28	Clean-up and punchlist items completed	

FINAL EXAM: **6 hours of work during finals week TBA**

Please do not make airline reservations, accept wedding invitations, commit to start a job, agree to go on a family cruise or vacation, or incur similar obligations that will conflict with the time set for the final exam in this course - nor should you let anyone else obligate you either!!!

School of Engineering Technologies, Safety, & Construction

CMGT 265 Blueprint Reading & Construction Graphics
Fall Quarter 2014

Class Hour: MTWR 9:00-9:50 AM
Room: Hogue Technology 227
Credits: 4

Instructor: David W. Martin
Email: dwmartin@cwu.edu
Office: 300E Hogue Technology
Office Phone: (509) 963-1770
Office Hours: MTWR 10:00-11:30AM, R 1:00-3:00PM, or by appointment

Course Materials:

- **Hogue Technology Building Construction Drawings**: Available for purchase in the University Store.
- **Woodscreek Bridge Engineering Drawings:** Available for purchase (~$8.25+tax) from *The Copy Shop* across the street from CWU's campus on University Way. Each student will need prints for class exercises and tests.
- **Calculator**
- **Architects scale**
- **Engineers scale**
- **Green engineering paper**

Bring to each class a calculator and green engineering paper.

Prerequisites:
High school drafting or permission from the instructor. Not open to students with credit in CMGT 266.

Catalog Description:
Introduction to plan reading, construction terminology and the construction process.

Course Description: The purpose of this course is to help beginning construction management students develop the skills necessary to identify, understand, and interpret construction terminology commonly found in construction documentation (drawings, specifications, etc.). Skills and knowledge developed in class will be the foundation for other courses in construction management including estimating, scheduling, and project management.

Instructional Methodology:
This course will meet four hours a week. The majority of the coursework will be based in class with some outside activities based on the current lecture/lab material presented. The coursework will be based on the various readings and activities utilizing construction documents. Use of Canvas and Internet resources will support the learning process. **Students should be prepared to spend at 3-4 hours per-week outside of class time working with the construction documents, outside readings, etc.**

Learner Outcomes (Course Objectives):

Outcome	Assessment Strategy
1. Demonstrate an understanding of the construction process, including basic contract systems, the parties involved and contract documents.	Students shall work with a variety of contract documents from real projects and demonstrate proficiency on homework assignments and exams.
2. Demonstrate an understanding of multi-view drawings, pictorial drawings and auxiliary views and how these are used to create plans for the construction process.	Students shall work on their own to complete several multi-view orthographic projection and auxiliary view exercises
3. Accurately identify construction materials and methods as they pertain to commercial and engineering projects	Students shall work with plans of significant scope and demonstrate proficiency on homework assignments and examinations.
4. Describe how the construction process is influenced by codes and public and private land use controls.	Explain in detail, on an examination and/or homework, the role of the UBC, NEC, UMC, State Energy Code and local zoning.
5. Demonstrate knowledge of construction industry organizations.	Describe in writing the role of ABC, AGC, NAHB, ACCE, AIC, MCA and many other active organizations.
6. Demonstrate in-depth knowledge of construction terminology and symbols as they relate to construction drawings.	This will be demonstrated through numerous homework exercises and several written examinations.
7. Demonstrate a working knowledge of plans and minor applications of quantity takeoff. These will include plans for large commercial projects involving architectural, structural, mechanical and electrical divisions.	This will be assessed through class work exercises with construction plans, including documents published on the world wide web, a variety of homework exercises and written examinations.

Course Requirements:

1. Each student is responsible for completing the assigned plan review and readings prior to each class meeting. Although there are many readings, most are not extremely lengthy yet each **requires considerable attention to assure the student is prepared and familiar with the readings, construction documents (plans, specifications, etc.) and chapter activities for the class**.

2. Due to the nature of the activities in this course, it is required that students attend each lecture. Much like an absence on the construction site, if you should have to miss class it is your responsibility to contact the instructor prior to your departure via email. If you miss class due to a personal or family emergency and cannot use the internet; please call the instructor's office or the main office and leave a message. Information that is not acquired from the student due to their absence from class should be acquired through another student or from the instructor during regularly scheduled office hours.

3. Grades in the course will be based on a series of assignments/quizzes/reports/exams, student demonstrations of proficiency using construction documents, and student participation in class.

ADA Statement: Students who have special needs or disabilities that may affect their ability to access information and or material presented in this course are encouraged to contact the instructor or ADA Compliance Officer, Director, ADA Affairs and Students Assistance on campus at 963-2171 for additional disability related educational accommodations. Students requesting to take tests at the test center must contact the instructor at one week prior to the test to assure your test will be delivered at the correct time.

Method of Evaluation:

Homework & Projects	250 points
Two Exams	250 points
Final Exam	200 points
In-class Assign/Quiz	200 points
Attendance	100 points
Total	**1000 points**

Grade Scale (%)

A	100-93	**A-**	92-90		
B+	89-88	**B**	87-82	**B-**	81-80
C+	79-78	**C**	77-72	**C-**	71-70
D+	69-68	**D**	67-62	**D-**	61-60
F	59-0				

Homework:
Homework assignments will be given on a regular basis and will pertain to the lectures and actual construction documents. Assignments will also be given that involve drawing or sketching. General requirements that pertain to homework are:

- **All work must be your own.**
- Each homework assignment will have a computer generated cover sheet to be provided by the instructor. You are to download from Canvas and provide the required information.
- Unless specified, perform all your work sketches in pencil on green engineering paper. ***Include in the upper right hand corner of the first sheet your name, date and course number. Each following page must include your initials and page number of number of pages. All pages will have a clean cut edge on all four sides (no exceptions will be taken).*** Staple pages in the upper left-hand corner.
- Please write neatly!! All work must be neatly lettered. **Unprofessional, sloppy, or late work will not be accepted**. *If you are unsure of what I expect feel free to ask, I will be more than happy to answer your questions.*
- If for some reason you **cannot attend a class** or **will be absent** when a homework assignment is due you are required to make the necessary arrangements to turn the assignment in prior to your departure with the instructor.
- *In construction, bids are due at a specific time and place. Bids that are turned in after the stated time are not accepted. We will take this same approach with all homework and assignments. Any homework or assignment turned in after the stated time will not be accepted. Homework will be due at the beginning of the class period or as announced.*

Sketches:
Throughout the quarter, you will submit freehand sketches of an object or series of objects to be specified by the professor in a certain topic area. You are to provide the sketch on an 8 1/2" x 11" sheet of green engineering paper.

In class Assignments:
The instructor reserves the right to give unannounced assignments at any time. Material eligible for assignments will be any material previously covered during a lecture or lab, details in the construction documents, homework, or current reading material. Please come prepared to each class. If class is missed, in-class assignments may not be made up.

Exams:
The two mid-term exams will be given during the regularly scheduled class meetings as indicated on the attached class schedule. The final exam will be given during finals week and will be comprehensive. Details pertaining to material covered on each exam, exam format, etc. will be discussed in class immediately prior to each exam.

Academic Honesty:
You are about to enter a profession which values character, integrity, honesty, and a sense of fairness. While these traits may not always be demonstrated by all practitioners in this field, you will quickly become known by your reputation for professionalism - positive or

negative. Given the importance of a reputation for honesty, an expressed policy on academic honesty for this class should be unnecessary. However, to make this very clear, there will be absolutely no tolerance for any violation of the *intent* of university policies on plagiarism, cheating, copying, or in any way representing the work of any past or current student as your own. Any evidence of such a violation will result in an immediate failing grade and dismissal from this course.

Caveat:
Instructor reserves the right to make any alteration to the course syllabus and course material, solely depending upon class progress.

Company Presentations:
Companies will be making presentations on their companies and recruiting for summer internship positions. For the purposes of this class you are *strongly encouraged* to attend these presentations. These presentations will provide conceptual overview of the work each construction company performs within their respected industry. As you attend these informational seminars you can receive 5 points of extra credit for each presentation up to 50 points to be applied to your grade for each presentation you attend. Additional benefits to attending these presentations include free food, drink, and company freebies.

Companion Web Site

Canvas class resources, handouts, information sheets, and web links.

CMGT265 Blueprint Reading & Construction Graphics
Fall 2014 Classroom Schedule

Week	Date	Subject Covered
1	9/24	Construction Management Program Information & Application
1	9/25	Introduction to Course & Engineering Feats
2	9/29	Resume Basics
2	9/30	Construction Industry *Lydig Construction Presentation*
2	10/1	Construction Organizations & Construction Specifications Institute *MCA Night*
2	10/2	Construction Materials – Reinforced Concrete *PCL Resume Workshop*
3	10/6	Construction Materials – Reinforced Concrete *Sellen Construction Presentation*
3	10/7	Construction Materials – Woods & Metals *Adolf & Peterson Presentation*
3	10/8	Construction Materials – Woods & Metals *Hensel Phelps Presentation*
3	10/9	Construction Management Principles – The Players
4	10/13	Construction Management Principles – Estimating Basics
4	10/14	Construction Management Principles – Construction Contracts *Turner Construction*
4	*10/15*	*Professional Development Day – No Class*
4	10/16	**Exam 1 – Program, Industry, Materials, & CM Basics** *Applications to CMGT Program Due – Mortenson Construction*
5	10/20	Background Principles of Construction Graphics - Terminology Projections & Understanding 2 & 3 Dimensional Orthographic Views *Abbott Construction*
5	10/21	Sketching in 2 Dimensions *Granite Construction*
5	10/22	Sketching in 2 Dimensions *IMCO Construction*
5	10/23	Sketching in 3 Dimensions *JH Kelley Mechanical Contractors*
6	10/27	Sketching in 3 Dimensions
6	10/28	Sketching in 3 Dimensions
6	10/29	Construction Documents - Architectural Drawings

6	10/30	Construction Documents - Architectural Drawings
7	11/3	Construction Documents - Architectural Drawings *BNB Builders*
7	11/4	Construction Documents - Structural Drawings *Exxel Pacific*
7	11/5	Construction Documents - Structural Drawings *Lease Crutcher Lewis*
7	11/6	Construction Documents - Civil Drawings – E&S, Stormwater, Pavement, & Details *ETSC Career Fair*
8	11/10	Construction Documents - Piping & Plumbing Drawings
8	*11/11*	*Veteran's Day – No Class*
8	11/12	Construction Documents - HVAC Drawings, Electrical Drawings
8	11/13	Construction Documents - Project Manual & Specifications
9	11/17	Construction Documents - Project Manual & Specifications *Walsh Construction*
9	11/18	Construction Ethics Class Activity
9	11/19	**Exam 2 – Sketching & Hogue Drawings & Specs**
9	11/20	Engineering Drawings – Layout
10	11/24	Engineering Drawings – Erosion, Drainage, & Lane closures
10	11/25	Engineering Drawings – Structural Bridge
11	12/1	Engineering Drawings – Structural Bridge
11	12/2	Highway Specification Standards
11	12/3	Construction Equipment
11	12/4	Construction Equipment
12	**12/9**	**Final Exam – Comprehensive – 8:00AM**

CMGT 267 (Plane Surveying)
MWF 9:00 - 9:50 am
227 Hogue Hall
Spring, 2014

Dr. Michael L. Whelan
300D Hogue Hall
(509) 963-3544
mwhelan@cwu.edu

COURSE SYLLABUS

COURSE DESCRIPTION: General surveying theory and practice pertaining to distance, elevation, and angle measurement. Includes traverse calculations and an emphasis on construction applications. Co-requisites: CMGT 267LAB or 267LABHC. Prerequisites: MATH 154 and CMGT 265.

TEXTBOOK: **SURVEYING WITH CONSTRUCTION APPLICATIONS**, 8th Ed.; by Barry F. Kavanagh & Dianne K. Slattery; Pearson/Prentice Hall; 2014.

SUPPLIES: "Rite-in-the-Rain" transit book (***Item No. 303, spiral bound, plastic cover***) or (***Item No. 301, staple bound, waterproof paper cover)*** and a 3H pencil. Transit books are available at Jerrol's Book & Office Supply or the Wildcat Bookstore.

OUTCOME AND ASSESSMENT:

LEARNER OUTCOMES - Students will be able to…	**ASSESSMENT STRATEGIES** - Each student will…
1. …properly account for surveying errors and error propagation, and demonstrate an understanding of distance, angle, direction measurement, and units.	1. …demonstrate proficiency on homework exercises and on exam problems and questions.
2. …explain surveying instrument components, and demonstrate a working knowledge of and ability to properly care for these instruments.	2. …demonstrate proper use of tapes, rods, self-leveling levels, transits, theodolites, and total stations during weekly outdoor laboratory exercises.
3. …complete a 1500 foot level loop within fourth order accuracy.	3. …complete a laboratory exercise using a self-leveling level and a Philadelphia leveling rod.
4. …complete a five sided closed traverse and corresponding calculations to third order accuracy, and perform calculations for traverse closure and area.	4. …complete laboratory exercises using steel surveying tapes, transits, theodolites, and total stations, and demonstrate calculation proficiency on homework problems and exams.
5. ...perform specific applications of surveying techniques and calculations pertaining to grade staking, earthwork volume calculations, and building layout.	5. …successfully complete laboratory exercises with related calculations, create appropriate computer spreadsheets, and complete related homework and exam problems.
6. …complete a field survey and create a site and topographic map.	6. …demonstrate the ability to perform a field survey and produce a site and topographic site map.
7. …demonstrate the ability to accurately and neatly record field work.	7. …keep proper field notes during all laboratory exercises.

CLASS SESSION TOPICS:

DATE		TOPIC	REFERENCE
APR	2	Course Introduction	Appendix C
	4	Surveying Fundamentals	Chapter 1
	7	Surveying Mathematics	Chap. 2 & Appendix A
	9	Tape Measurements – Introductory Information	Chapter 3
	11	More Tape Measurements – Corrections to Taping	Chapter 3
	14	Leveling	Chapter 4
	16	More Leveling	Chapter 4
	18	Still More Leveling	Chapter 4
	21	Electronic Distance Measurement	Chapter 5
	23	Introduction to Total Stations and Theodolites	Chapter 6
	25	Introduction to Total Stations and Theodolites	Chapter 6
	28	**EXAM #1**	**Chaps. 1 – 5**
	30	Total Stations	Chapter 7
MAY	2	Total Stations	Chapter 7
	5	Traverse Surveys and Computations	Chapter 8
	7	Traverse Surveys and Computations	Chapter 8
	9	Traverse Surveys and Computations	Chapter 8
	12	Traverse Surveys and Computations	Chapter 8
	14	Machine Guidance and Control	Chapter 12
	16	Highway Construction Surveys	Chapter 14
	19	**EXAM #2**	**Chaps. 6 – 8**
	21	Pipeline and Tunnel Construction Surveys	Chapter 16
	23	Building Construction Surveys	Chapter 18
	26	**MEMORIAL DAY HOLIDAY** – no classes	
	28	Building Construction Surveys	Chapter 18
	30	Quantity and Final Surveys	Chapter 19
JUN	2	Quantity and Final Surveys	Chapter 19
	4	Quantity and Final Surveys	Chapter 19
	6	Demobilize Course	- - - - - - - - -
JUN	11	**FINAL EXAM**	**Chaps 1-8, 12, 14, 16, 18, & 19**

FINAL EXAM: The final exam is scheduled for 8:00 – 10:00 am, Wednesday, June 11th – So please don't make airline reservations, accept wedding invitations, commit to start a job, agree to go on a family cruise or vacation, or incur similar obligations that will conflict with the time set for the final exam in this course – nor should you let anyone else obligate you either!!!

LAB SESSION TOPICS:

DATE		TOPIC	DATE		TOPIC
APR	3	[NO LAB]	MAY	6/8	Traverse Leveling
APR	8/10	Instrument Familiarization	MAY	13/15	Horizontal Closure
APR	15/17	Taping/Chaining	MAY	20/22	Slope & Grade Stakes
APR	22/24	Differential Leveling	MAY	27/29	Structure Layout
APR/MAY	29/1	Angle Measurements	JUN	3/5	Earthwork Volumes

MISCELLANEOUS, BUT IMPORTANT, NOTES:

GRADE BREAKDOWN:				
Various assignments	20%	Lab books	50%
Hour Exams (2@25% each)	50%	Spreadsheet assignments	25%
Final Exam	30%	Maps & earthwork assignments	25%
CLASS TOTAL	100%	LAB TOTAL	100%

100	92	90	87	82	80	76	70	69	67	62	60	0
A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F	

OFFICE HOURS: **1:30 – 3:00 pm, M-W-Th (or by appointment)**

READING ASSIGNMENTS: Should be done before class (class presentations are more understandable, learning is much easier, and grades will be better).

ASSIGNMENTS:
1. Are due as announced when the assignment is made.
2. Will **NOT** normally be accepted late. Penalty points will be deducted from assignments accepted late.
3. Will have solutions posted only if needed.
4. Must be presented in **a clear, complete, and professional manner**.
5. Must be **neat, well organized, and legible** as a part of every assignment's grade.
6. Must use **engineering paper only**. Write only on the front (non-grid) side of the sheets.
7. Name, course designation, date and page/number of pages (in that order left to right) should be clearly listed at the top of the first page of the assignment. **T**he following pages should have your name and the page/number of pages at the top. **Use the assignment sheet as a coversheet for the assignment.**
8. Must have appropriate **Given**, **Find**, and **Solution** statements. Solutions must clearly document the solution procedures, and final answers must be **boxed**.
9. Will include a **sketch, drawing,** or **diagram** where appropriate – use a **straightedge** for straight lines – no freehand sketches or tables.
10. May not include run-on equations that become inequalities.
11. Must have units indicated where appropriate (suggested minimum – first and final lines of your solutions).
12. Must not have numbers that mysteriously appear in a problem solution without adequate backup indicating where they came from, what they are, or how they were computed. **T**his includes numbers computed later in the problem and brought back to an earlier step.
13. **Will occur during the final week of classes** unless otherwise announced.

FIELD (LAB) EXERCISES: Students are expected to attend each and every lab. **Dress appropriately for the weather. Open-toed shoes are not acceptable. If you arrive for lab with open-toed shoes you will be asked to leave and return with proper shoes.** If you miss a lab exercise you will be required to make up the exercise and 20 points will be deducted from your lab score. If you arrive to the lab more than 10 minutes late, but less than 20 minutes late you may join your lab group and participate in the exercise, but 10 points will be deducted from your lab score. Arriving more than 20 minutes late will be considered missing an exercise. Please arrive on time!!

EXAMS: Examinations will include 2 Exams given during regularly scheduled class periods and a Final Exam given at the regularly scheduled time during final exam week. Availability of makeup exams for any missed exams is at the discretion of the instructor, and will be considered only after consultation with the student about the reason(s) for missing the scheduled exam.

ATTENDANCE: Not mandatory, but strongly recommended - particularly if you expect to do well. You are responsible for any and all announcements, corrections, schedule changes, and additional information presented during regularly scheduled class periods. Makeup assignments will not be available for students missing in-class exercises. Besides, we will miss you in class!!!

CLASSROOM BEHAVIOR:

1. Students are expected to be in their seats and ready to go to work by the scheduled start of class. Normal rules of courtesy and respect will prevail during class periods.

2. Electronic devices (cell phones, digital readers and players, gaming devices, etc.) are to be off, inactive, or in a silent mode during class. Electronic devices may be used for taking notes, textbook reference, or internet access related to class only – no email, game playing, web-surfing, video watching, or other similar activities are permitted during class. Cell phone use during class, except for emergencies or activities related to the course, is **NOT** permitted.

3. Work completed for this course (assignments, papers, and exams) is expected to be yours and yours alone. Unless otherwise specified, group solutions are not acceptable for any assignment, and neither is plagiarism of information from other sources or copying of another person's work. If detected, you will fail the assignment with no opportunity to make-up the work. Repeated occurrences will lead to stronger responses. Your attention is directed to Appendix B of the current CWU Catalog for additional information regarding this topic.

4. Your attention is also directed to Appendix A of the current CWU Catalog for CWU's policies regarding Equal Opportunity, Affirmative Action, Gender Equity, and Sexual Harassment matters.

ADA STATEMENT: If you have a disability and require accommodations for this course, please speak with me privately as soon as possible so that necessary arrangements can be made. If you have not already done so, you will need to register with Disability Services (DS). DS is located in Bouillon 140. Alternatively, you may contact DS by email at ds@cwu.edu or by phone at (509) 963-1202 for more information.

CHANGES: Changes to the COURSE OUTLINE (made as necessary) will be announced in class.

School of Engineering Technologies, Safety, & Construction

CMGT343 Construction Estimating I
Winter Quarter 2014

Class Hour: TR 1:00-2:15PM; W 1:00-1:50 or 2:50PM
Room: Hogue Technology 227
Credits: 4

Instructor: David W. Martin
Email: dwmartin@cwu.edu
Office: 300E Hogue Technology
Office Phone: (509) 963-1770
Office Hours: MTWR 8:30-10:00 am, M 1:30-3:00 pm or by appointment

Catalog Description: An introductory course to build estimating skills and determine the resource requirements for bid preparation with a focus light commercial construction projects. Use of estimating databases, methods of assembly, specifications, and MS Excel will be covered. Prerequisites: CMGT 265.

Textbook:

1. Construction Estimating Using Excel, 2nd ed. by Steven J. Peterson, Pearson
2. RS Means On-Line.
3. Architects and Engineers scale, Three ring notebook, and Calculator.

General Comments on Course Content: Estimating a construction project's resources is fundamental to the construction management profession. This course is designed as an introductory course to develop student's skills in estimating the resources required in building construction projects. Additionally students will be exposed to various construction techniques and methods to gain an understanding of how projects are built.

Learner Outcomes (Course Objectives):

Outcome	Assessment Strategy
1. Able to identify the resource requirements required (materials, labor, equipment, time and money) to build construction projects.	The student will experience several laboratories that provide a "hands on" learning experience. The laboratories will require various types and levels of detailed estimates.
2. Able to reference safety items, understand how safety concerns are addressed at the job site, and how it must be planned for during an estimate.	The student will provide a 2-3 minute safety lecture or write a one page synopses based on Washington State Labor and Industries Construction Safety Standards.
3. Understand how to apply costs associated with the required resources to build construction projects.	Students will demonstrate construction knowledge with estimating assignments, and examinations.
4. Demonstrate the ability to work in teams and estimate an entire commercial project.	Work in teams to develop a project that estimates the materials, equipment, labor and time required to build a small commercial project.

Grading:

Homework / Labs	600 points
Two Exams, 150 points each	300 points
Attendance	100 points
Total	1000 points

Letter grades will be assigned based on the percentage of total points that each student earns during the quarter:

A	100-94	**A-**	93-90		
B+	89-87	**B**	86-84	**B-**	83-80
C+	79-77	**C**	76-74	**C-**	73-70
D+	69-67	**D**	66-64	**D-**	63-60
F	59-0				

Homework/Lab:
The assignments will be based on reading from the texts and subjects discussed in class. These assignments and their due dates will be announced throughout the quarter. It is the student's responsibility to complete homework in a professional manner and make sure that it is submitted on time. The format for the homework is as follows:

- **All work must be your own.**
- *In construction, bids are due at a specific time and place. Bids that are turned in after the stated time are not accepted. We will take this same approach with all homework and assignments. Any homework or assignment turned in after the stated time will not be accepted. Homework will be due at the beginning of the class period or as announced.*
- Each hard copy homework assignment will have a computer generated cover sheet to be provided by the instructor. You are to download from Blackboard and provide the required information.
- Unless specified, perform all your work in pencil on green engineering paper or on the estimating forms. Whichever is more appropriate. ***Include in the upper right hand corner of the first sheet your name, date and course number. Each following page must include your initials and page number of number of pages. All pages will have a clean cut edge on all four sides (no exceptions will be taken).*** Staple pages in the upper left-hand corner.
- Please write neatly!! All work must be neatly lettered. **Unprofessional, sloppy, or late work will be reflected in your grade**. *If you are unsure of what I expect feel free to ask, I will be more than happy to answer your questions.*

Attendance Policy: If for some reason you cannot attend a class or will be absent when a homework assignment is due you are required to make the necessary arrangements to turn the assignment in prior to your departure with the instructor. Each day of unexcused non-attendance carries with it a full percentage deduct from the final grade. 1 unexcused absence = 1% deduct from final grade; 2 = 2%, 3 = 3, and 4 = 4%, Each additional unexcused absence following 4 unexcused absence = an additional 5% deduct.

Academic Honesty Policy: Students are clearly expected to do their own work and not copy the work of others. Evidence of copying, including any computer files, cheating or using writings of others without proper citations will result in a failure for the specific assignment. Successive evidence of copying, including any computer files, cheating or using writings of others without proper citations during the curriculum of the Construction Management program will result in loss of a student's major status. Your attention is directed to Appendix B of the CWU Catalog for additional information regarding this topic.

ADA Statement: Students who have special needs or disabilities that may affect their ability to access information and/or material presented in this course are encouraged to contact the instructor or ADA Compliance Officer, Director, ADA Affairs and Students Assistance on campus at 963-2171 for additional disability related educational accommodations.

Caveat:
Instructor reserves the right to make any alteration to the course syllabus and course material, solely depending upon class progress.

CMGT 343 Estimating I Winter 2014

Class Schedule

Date	Subject Covered	Reading
1/7	Introduction	Chapter 1
1/8	Intro to Excel	Chapter 3
1/9	Estimating & Bidding	Chapter 2
1/14	Quantity Takeoff Fundamentals	Chapter 4
1/15	Excel Spreadsheet Development	
1/16	Concrete – Materials & Labor	Chapter 5
1/21	Concrete – Rebar	
1/22	RSMeans intro	
1/23	Concrete – Formwork	
1/28	Excel & Concrete	
1/29	*Faculty Development Day – No Class*	
1/30	***No Class – Battle in Seattle***	
2/4	Masonry – Rebar, Grout, Mortar, Block & Brick	Chapter 6
2/5	*Reno Trip – No Class*	
2/6	*Reno Trip – No Class*	
2/11	Metals	Chapter 7
2/12	Excel & Masonry	
2/13	**Exam 1 – Quantity Takeoff, Concrete, Masonry**	
2/18	Sitework Improvements – Asphalt, Sidewalks, Curbs	Chapter 17
2/19	RS Means & Excel	

2/20	Exam Review	
2/25	Earthwork – Shrink/Swell, Average End Area	Chapter 16
2/26	Excel & Cost Estimating	
2/27	Earthwork – Geometric	
3/4	Earthwork – Cross-Sectional	
3/5	Excel & Cost Estimating	
3/6	Utilities – Excavation	Chapter 18
3/11	Utilities – Bedding & Backfill	
3/12	Excel & Cost Estimating	
3/13	Exam Review	
3/17	**Final Exam – 2:00 – 4:00**	

School of Engineering Technologies, Safety, & Construction

CMGT344 Construction Estimating II
Spring Quarter 2014

Class Hour: MWF 8:00-8:50AM; T 8:00-9:50AM
Room: Hogue Technology 227
Credits: 4

Instructor: David W. Martin
Email: dwmartin@cwu.edu
Office: 300E Hogue Technology
Office Phone: (509) 963-1770
Office Hours: MTW 10:00-11:30 am, R 1:00-2:30 pm or by appointment

Catalog Description: A second course to build estimating skills and determine the resource and cost requirements and costs for bid preparation with a focus on commercial construction projects. Use of estimating handbooks, methods of assembly, specifications, MS Excel, subcontractor evaluation and bid documents will be covered. Prerequisites: CMGT 343.

Textbook:

1. Construction Estimating Using Excel, 2nd ed. by Steven J. Peterson, Pearson
2. RS Means On-Line.
3. Architects and Engineers scale, Three ring notebook, and Calculator.
4. Complete Hogue Addition Educational plans (or use full size in classroom), these plans are required. You will use them during the class, for exams and next term in scheduling.

General Comments on Course Content: Estimating a construction project's resources and costs are fundamental to the construction management profession. This course is designed as an advanced course to develop student's skills in estimating the resources and costs required in building construction projects. Additionally students will be exposed to various construction techniques and methods to gain an understanding of how projects are built.

Learner Outcomes (Course Objectives):

Outcome	Assessment Strategy
1. Able to identify the resource requirements required (materials, labor, equipment, time and money) to build construction projects.	The student will experience several laboratories that provide a "hands on" learning experiences. The laboratories will require various types and levels of detailed estimates.
2. Able to reference safety items, understand how safety concerns is addressed at the job site, and how it must be planned for during an estimate.	The student will provide a 2-3 minute safety lecture or write a one page synopses based on Washington State Labor and Industries Construction Safety Standards.
3. Understand how to determine and develop costs associated with the required resources to build construction projects.	Students will demonstrate construction knowledge with estimating assignments, examinations and a final project.
4. Demonstrate the ability to work in teams and estimate an entire commercial project.	Work in teams to develop a project that estimates the materials, equipment, labor and time required to build a small commercial project.

Grading:

Homework, bid packages, projects	500 points
Two Exams, 200 points each	400 points
Attendance	100 points
Total	1000 points

Letter grades will be assigned based on the percentage of total points that each student earns during the quarter:

A	100-93	**A-**	92-90		
B+	89-88	**B**	87-82	**B-**	81-80
C+	79-78	**C**	77-72	**C-**	71-70
D+	69-68	**D**	67-62	**D-**	61-60
F	59-0				

Homework:
The assignments will be based on reading from the texts, videos and subjects discussed in class. These assignments and their due dates will be announced throughout the quarter. It is the student's responsibility to complete homework in a professional manner and make sure that it is submitted on time. The format for the homework is as follows:

- **All work must be your own.**
- Each homework assignment will have a computer generated cover sheet to be provided by the instructor. You are to download from Blackboard and provide the required information.
- Unless specified, perform all your work in pencil on green engineering paper or on the estimating forms. Whichever is more appropriate. ***Include in the upper right hand corner of the first sheet your name, date and course number. Each following page must include your initials and page number of number of pages. All pages will have a clean cut edge on all four sides (no exceptions will be taken).*** Staple pages in the upper left-hand corner.
- Please write neatly!! All work must be neatly lettered. **Unprofessional, sloppy, or late work will be reflected in your grade**. *If you are unsure of what I expect feel free to ask, I will be more than happy to answer your questions.*
- If for some reason you **cannot attend a class** or **will be absent** when a homework assignment is due you are required to make the necessary arrangements to turn the assignment in prior to your departure with the instructor.
- *In construction, bids are due at a specific time and place. Bids that are turned in after the stated time are not accepted. We will take this same approach with all homework and assignments. Any homework or assignment turned in after the stated time will not be accepted. Homework will be due at the beginning of the class period or as announced.*

Academic Honesty Policy: Students are clearly expected to do their own work and not copy the work of others. Evidence of copying, including any computer files, cheating or using writings of others without proper citations will result in a failure for the specific assignment. Successive evidence of copying, including any computer files, cheating or using writings of others without proper citations during the curriculum of the Construction Management program will result in loss of a student's major status. Your attention is directed to Appendix B of the CWU Catalog for additional information regarding this topic.

Attendance Policy: If for some reason you cannot attend a class or will be absent when a homework assignment is due you are required to make the necessary arrangements to turn the assignment in prior to your departure with the instructor. One unexcused absence is allowed without penalty. Each additional day of unexcused non-attendance carries with it a full percentage deduct from the final grade. 2 unexcused absence = 2% deduct from final grade; 3 = 3%, and 4 = 4%. Each additional unexcused absence following 4 unexcused absence = an additional 2% deduct up to a total of 10%.

ADA Statement: Students who have special needs or disabilities that may affect their ability to access information and/or material presented in this course are encouraged to contact the instructor or ADA Compliance Officer, Director, ADA Affairs and Students Assistance on campus at 963-2171 for additional disability related educational accommodations.

Caveat:
Instructor reserves the right to make any alteration to the course syllabus and course material, solely depending upon class progress.

CMGT 344 Spring 2014
Class Schedule

Week	Date (Monday)	Subject Covered	
1	March 31	Introduction, estimating forms, framing	Chapter 8
2	April 7	Framing, thermal & moisture, openings	Chapters 9-10
3	April 14	Finishes	Chapter 11
4	April 21	Mechanical/Electrical/Plumbing **(Exam I)**	Chapters 12-15
5	April 28	Labor productivity and rates, equipment costs, materials pricing	Chapters 19-22
6	May 5	Subcontracts, scopes of work	Chapter 24
7	May 12	Project and office overhead, markup, pricing strategies	Chapters 25-26
8	May 19	Developing concrete bid packages **(Exam II)**	
9	May 26	Developing masonry bid package	Chapters 27-28
10	June 2	Bid day scenario, project buyout, ethics	Chapters 29-31
11	June 9	**Finals Week – Estimate Proposal Due**	

Department of Engineering Technologies, Safety and Construction
Course Outline for CMGT 345
Estimating II- Heavy Civil Estimating
Class: M&W 7:30-8:45, AM Hogue Hall RM 226 **Lab:** Thur 8:00 – 9:50, AM Hogue Hall 118
Spring 2014

P. Warren Plugge, Ph.D.
Associate Professor
Construction Management
School of Industrial Engineering and Technology
E-mail: wplugge@cwu.edu
Web: http://www.cwu.edu/~iet/faculty/plugge.html

Telephone: 509-963-2427
Office: Hogue Hall 300C
Office Hours: By appointment or see open door policy

Credits: 3

Prerequisites:
CMGT 343; co-requisite CMGT 345 LAB.

Catalog Description: Advanced estimating techniques and bid preparation for heavy and highway construction.

Course Description: The purpose of this course is to advance and focus a student's knowledge and skills in estimating for civil construction. Students will be exposed to various construction techniques and methods to gain an understanding of how civil projects are estimated and built.

Learner Outcomes:

Outcome	Assessment Strategy
1. Students should understand resource requirements required (materials, labor, equipment, cost, and schedule) to build heavy civil projects.	Students will experience several laboratories that provide a "hands on" learning experience to civil construction estimating. The laboratories will require various types and levels of detailed estimates.
2. Students will be able to identify and reference safety items, understand how safety concerns are addressed at the job site, and how they must be planned for during the estimate.	The student will provide a 2-3 minute safety lecture or write a one page synopsis based on Washington State Labor and Industries Construction Safety Standards. .
3. Students will develop a basic understanding on general heavy civil and highway construction techniques, means, and methods.	Students will demonstrate their understanding of general heavy and civil construction through estimating actual heavy civil construction projects.
4. Students will work in teams and estimate and present to a bid review panel an entire heavy civil project.	Students will work in teams to develop a project that estimates the materials, equipment, labor, and time required to build a heavy civil project.
5. Students will obtain general knowledge in a version of heavy civil estimating software package.	Laboratory assignments will be performed in Microsoft Excel and Heavy Bid (HCSS). If time permits students will be exposed to digitizing equipment and techniques used in civil construction takeoffs.

6. Students shall have general knowledge of ethical standards and issues related to heavy civil estimating.	Students will demonstrate their understanding of ethics in heavy civil estimating through course discussion and assignments.

Course Requirement:
1. Each student is responsible for review of readings, course material, and assignments. Although there are many readings, most are not extremely lengthy yet each **requires considerable attention to assure the student is prepared and familiar with the material required for each class section**.

2. Due to the nature of the activities in this course, it is required that students attend each lecture and lab assigned to the course. Much like an absence on the construction site, if you should have to miss class, it is your responsibility to contact the instructor prior to your departure ***via email.*** If for some reason you miss class due to a personal or family emergency please and cannot use the internet please call the instructor's office or the main office and leave a message. Information that is not acquired from the student due to their absence from class should be acquired through another student or from the instructor during regularly scheduled office hours or by appointment.

"If you have a severe respiratory or influenza-like illness (ILI) (high fever, aches, chills, cough) you should not come to class until you are without fever for 24 hours without the aid of fever-reducing medication. If your absences are related to a severe respiratory or flu-like illness, you will be given the opportunity to make up your assignments and class content without penalty. *It is YOUR responsibility to notify your instructor, in advance, when absent due to sickness. Faculty is under no obligation to excuse class absences related to sickness.* You should utilize the following precautions to prevent exposure to sicness: 1) Frequent hand washing and carry a bottle of alcohol-based hand sanitizer with you at all times. 2) Cough etiquette (grab your shoulder and cough into your elbow). 3) Place used tissues immediately in the trash, followed by washing your hands. 4) Use CDC-approved disinfectants on shared surfaces such as doorknobs, desks, etc. 4) **Stay home if you have a severe respiratory or flu-like illness.** If you are concerned you may have severe respiratory or flu-like illnesses, notify student health (Melody S. Madlem, Ph.D., CHES, Director of Public Health Education, Central Washington University)."

3. Grades in the course will be based on a series of problems/projects, student participation in class, quizzes, two exams, and an estimate for an entire civil construction project. **Grades will not be posted on blackboard. If the student is interested in their standing within the course, feel free to contact the instructor via email or during office hours.**

Instructor reserves the option of making adjustments to this syllabus and course requirements and will notify students of such changes should they become necessary.

Instructional Methodology:
This course will meet approximately two hours and thirty minutes a week for lecture, one hour and fifty minutes of lab each week. The majority of the coursework will be based in class with outside activities based on the current lecture/lab material presented. The coursework will be project based on the various readings and activities centered on civil estimating. Use of Canvas and Internet resources will support the learning process. **Students must be prepared to spend at least 3-4 hours per-week outside of class time working on various problems, plan review, estimating and other outside readings.**

Student Behavior:
Students will be held accountable for their behavior in class pursuant to the Central Washington University student conduct code (**Chapter 106-120 WAC - Student Conduct Code).** Students not following these policies will be reported immediately without reservation or warning.

In addition to the conduct code, if a student has a question, dispute or grievance on how something as been graded on homework, exams or assignments it is the student's responsibility to contact the instructor individually to discuss the problem. Specifically for tests and quizzes, it is required that if there is a discrepancy in how something was graded, the student shall circle the item on the test or quiz and report their justification on the front of the test. Individual test questions and discrepancies will not be discussed in class as a whole.

Mode of Delivery:
Classroom instruction and computer lab time. Support materials and additional discussion time will be supported via Canvas. Classroom discussion and course assignments are discussed at the beginning of each class period. Students are strongly encouraged to attend each class meeting and participate in classroom activities and discussions for which they will receive participation credit.

Classroom Decorum: Due to the nature of the instructional environment, **be it known that any cell phone use during class or laboratory time will result in said phone being confiscated**. Cell phone use is any auditory or other ring, vibration, call out, etc. You will also be removed from the class or laboratory for that period, thus constituting an unexcused absence and lose points towards the final grade. If you leave the classroom to use a cell phone do not return to the classroom.

> Since the lab portion of the class is held in a computer laboratory, because each computer is an open access machine, students are to refrain from printing documents, reading and sending private email, playing video games, and surfing the web during the lecture portion of the class.

Also, due to the professional nature of the course and type of profession the student has chosen, students will not be able to wear hats during the course at any time. This means during the lecture and lab. If hats are worn during the class time period, points will be deducted for each incidence.

Departmental policy states that *Tobacco Products* are NOT permitted in the classroom. Use or attempted use will result in loss of one letter grade for the term per occurrence.

ADA Statement: Students who have special needs or disabilities that may affect their ability to access information and or material presented in this course are encouraged to contact the instructor or ADA Compliance Officer, Director, ADA Affairs and Students Assistance on campus at 963-2171 for additional disability related educational accommodations. Should students need additional time on tests, students with special needs or disabilities need to contact the instructor via email and approved documentation one week prior to the exam dates to confirm scheduled exam time and location.

Method of Evaluation:

Evaluation	**Points**
Homework @ 10-20 pts	200
Three exams @ 75 pts	225
Quizzes	50
Participation (see above)	6% Approx.
Group Project and Presentation	100
Class Speaker and Additional Ass.	50
Total	**625**

Grade Scale (%)

A	100-94	**A-**	93-90		
B+	89-87	**B**	86-94	**B-**	83-80
C+	79-77	**C**	76-74	**C-**	73-70
D+	69-67	**D**	66-64	**D-**	63-60
F	59-0				

Explanation of Grades:
Grade of A = All requirements were exceptionally completed. Creativity and clear idea presentation were evidenced. Instructional content and use of technology were integrated to enhance instructional effectiveness.
Grade of B = One or more of the listed requirements is missing or not adequately completed. The assignment was completed in at above average standards.
Grade of C = Average level of accomplishment. Assignment was completed at a minimal level.
Grade of D = The assignment was turned in, but was below quality standards.

Office Hours:
Any student who is having difficulty with the course content as it has been presented is strongly encouraged to meet with the instructor during normal office hours. Since office hours vary, students are encouraged to make appointments via email or phone with the instructor to clarify questions regarding course content.

Assignments and Projects:
Homework assignments will be given on a regular basis and will pertain to text reading and estimating topics. Assignments will also be given that involve calculations and drawings or sketches. General requirements that pertain to homework and projects are:

- All work must be your own.
- Each homework assignment a cover sheet to be provided by the instructor as stated within the submittal guidelines on the assignment.
- Unless specified, perform all your work in pencil on ***green*** engineering paper (specifications for "green engineering paper" will be provided in class) ***(no spiral bound pages will be accepted)***. Format for name, course, and date will be provided in class and will pertain to all assignments using green sheets***. Each following page must include your initials and page number. Staple pages in the upper left-hand corner parallel to the direction of the fold (Please staple prior to class, I do not carry a stapler!)*** *If pages are not stapled the assignment will not be accepted resulting in a 0 for the assignment.*
- For each problem clearly state the "Given, Find, and Solution." All answers will be clearly identified by double underlining the answer.
- Please write neatly!! All work must be neatly lettered. **Unprofessional, sloppy, or late work will not be accepted**. *If you are unsure of what I expect feel free to ask, I will be more than happy to answer your questions.*
- If for some reason you **cannot attend a class** or **will be absent** when a homework assignment is due you are required to make the necessary arrangements to turn the assignment in prior to your departure with the instructor.
- For all writing assignments, standard guidelines set by the CMGT department will apply. If you need a copy of these they will be posted on Blackboard. *Special note: When using the works of others, the work cited within your manuscript will have a citation.*
- ***In construction, bids are due at a specific time and place. Bids turned in after the stated times are not accepted. We will take this same approach with all assignments and projects. Any assignment turned in after the stated time will not be accepted. Assignments will be due at the beginning of the class period or as announced.***

Participation:
Due to the content provided in class all students are required to attend class each day to participate in each of the lectures. As stated previously if a student must miss class for any reason, the student must email the instructor prior to the missed class. Participation means that all students will attend on time and be prepared for the lectures. For attending class on time 1

point will be added to the overall course score. If a student is late, they will get ½ of the participation points for the day. If the student attends class 100% of the time there will be a bonus point value added to the final score, which can be up to 20% of the total points for participation. If a student misses more than 1 day of an unexcused absence one point will be deducted from the final participation points accumulated for each day missed.

Quizzes:
The instructor reserves the right to give unannounced and announced quizzes at any time. Material eligible for quizzes will be any material previously covered during lecture and other related course material. See exam policy below for administration of quizzes.

Exams:
The two exams will be given during the regularly scheduled class meetings as on the attached class schedule. There will also be a final exam- format TBD. While exams are important to assess the knowledge gained during the course, grades are confidential. Answers to the test will be provided after the exams are graded. However, discussion of individual problems and answers will NOT be discussed in front of the entire class. If a student has a problem with a discrepancy on the exam versus the answer provided constituting an adjustment in points, they are required to circle the answer and write the question/problem on the front of the exam and the professor will review the student's answer individually. If the student still has not received resolution to the answer discrepancies please see the instructor during normal office hours or by appointment.

Academic Honesty:
You are about to enter a profession which values character, integrity, honesty, and a sense of fairness. While these traits may not always be demonstrated by all practitioners in this field, you will quickly become known by your reputation for professionalism - positive or negative. Given the importance of a reputation for honesty, an expressed policy on academic honesty for this class should be unnecessary. However, to make this very clear, there will be absolutely no tolerance for any violation of the *intent* of university policies on plagiarism, cheating, copying, or in any way representing the work of any past or current student as your own. Any evidence of such a violation will result in an immediate failing grade and dismissal from this course.

Syllabus:
At any point in time the instructor reserves the right to change this syllabus to reflect the actual progress of the course. Students are responsible for keeping up to date with any changes that might occur to any portion of this syllabus. Students will be informed of these changes through regularly scheduled classes, blackboard, and laboratory sessions.

Course Materials:
Calculator, engineering and architects scales, green engineering paper (see instructor for specifications on "green engineering paper").

Petersen, S.J. (2011). *Construction Estimating Using Excel.* Upper Saddle River, NJ: Prentice Hall **(Required)**

Nunnally, S.W. (2008) *Construction Methods and Management.* Upper Saddle River, NJ: Prentice Hall. ***(Required)***

Caterpillar (2014). Caterpillar Performance Handbook Edition 42. CAT Publication by Caterpillar Inc., Peoria, Illinois. ***(Required-from CMGT 347)***

WSDOT, (2014). Standard Specifications for Road, Bridge, and Municipal Construction. M41-10. ***(Online)***

Bartholomew, S.H., (2000). *Estimating and Bidding for Heavy Construction.* Upper Saddle River, NJ: Prentice Hall. ***(Not Required- for reference)***

Balboni, B. (2013). *2011 Means Heavy Construction Cost Data*. RS Means Engineering ***(Suggested)***

Balboni, B. (2013). *2011 Means Building Construction Cost Data*. RS Means Engineering ***(Suggested)***

Copies of civil plans and specifications (TBD) will be provided at the Copy Shop on University Way or provided online ***(Required)***.

CMGT 345 (Lecture) Schedule

The following schedule is subject to change, students are responsible for obtaining schedule updates.

Week	Date	Subject Covered	Reading/Ass.
1	3-31-14	Introduction Reading Engineering/Civil Drawings Overview (Plans- Woodscreek Bridge)	WSDOT Div 1 (Section 02 only pgs 1-7 to 1-14)
2	4-7-14	Ethics and Estimating Review	WSDOT Div 2
3	4-14-14	Earthwork Load and Haul (CAT Book)	WSDOT Div 3 BI's Due _____
4	4-21-14	Concrete	WSDOT Div 5 BI's Due _____
5	4-28-14	Highway Pavements	**EXAM I** BI's Due _____
6	5-5-14	Piping- Water & Sewer Systems	WSDOT Div 7 BI's Due _____
7	5-12-14	Indirect Costs and Direct Costs	WSDOT Div 4 BI's Due _____
8	5-19-14	Equipment Adjustments	**EXAM II** WSDOT Div 6 BI's Due _____
9	5-26-14	Pricing the Bid Form & Bid Spread Guest Presentation	WSDOT Div 8 BI's Due _____
10	6-2-14	Bid Closeout Final Exam Distribution	BI's Due _____
Final	6-9-14	June 9, 2014 Monday, 8:00 – 10:00 AM Rm 226	**FINAL EXAM**

CMGT 345 (Lab) Schedule

Week	Date	Subject Covered	Reading/Ass.
1	3-31-14	Estimating Skills and Reading Engineering Drawings	LAB – RM 118
2	4-7-14	North Wall Lab – Green, White, Top Sheet Intro Reading Engineering Drawings- Woods Creek Bridge	
3	4-14-14	Bid Spreadsheet: Pipe Estimating	
4	4-21-14	Concrete Form Estimating	
5	4-28-14	Heavy Bid - Demonstration	
6	5-5-14	Item Take Off and White Sheets Highway Pavements	
7	5-12-14	Item Take Off and White Sheets Misc. Items	
8	5-19-14	Item Take Off and White Sheets Heavy Bid	
9	5-26-14	Item Take Off and White Sheets Heavy Bid	
10	6-2-14	Bid Day Simulation	
Final	6-9-14	June 9, 2014 Thursday, 8:00 – 10:00 AM Rm 226	

CMGT 345 Estimating II - Heavy Civil Estimating (Lecture & Lab)

Since you have *completely read and understand the syllabus*, please complete the form below and turn into the instructor at the beginning of class on the first day during the second week of class. A signature below acknowledges the fact that the student has read and understands the requirements for this course. Due Monday, April 7, 2014 at the beginning of class. Be sure to read through the entire syllabus.

		Date:
Student Name (Printed):		
Student Signature:		
Instructor Signature		

CMGT 346 (Construction Methods & Materials)
MTWTh 8:00 - 8:50 pm
227 Hogue Hall
Winter, 2014

Dr. Michael L. Whelan
300D Hogue Hall
(509) 963-3544
mwhelan@cwu.edu

COURSE SYLLABUS

COURSE DESCRIPTION: Materials commonly used and the various methods employed in construction. Introduction to materials testing. Prerequisite: CMGT 265.

OBJECTIVES: Primary course objectives are: 1) introduce students to construction materials commonly used in commercial building projects, 2) familiarize students with the processes, standards, and methods used to manufacture and install construction materials, and 3) provide a working knowledge of material properties, performance characteristics, and selection criteria associated with the most widely used construction materials.

TEXT: **FUNDAMENTALS OF BUILDING CONSTRUCTION – Materials and Methods**, 6th Edition; by Edward Allen and Joseph Iano; John Wiley & Sons, Inc.

OUTCOME AND ASSESSMENT:

LEARNER OUTCOMES - Students will be able to...	**ASSESSMENT STRATEGIES** - Each student will...
1. ...demonstrate an understanding of basic soil properties including moisture content, unit weights, compaction theory and processes, and shrink/swell characteristics.	1. ...be assessed through several written homework problems and examination questions.
2. ...demonstrate an understanding of construction equipment operating characteristics, selection criteria, and terminology, as well as procedures for estimating anticipated cycle times, production rates, and unit costs.	2. ...be assessed through several written homework problems and examination questions.
3. ...properly identify construction materials used in building and other structures, including significant properties, strengths and weaknesses associated with selection, and recommended installation procedures.	3. ...a) research a selected building material topic, then write a paper that will be graded for both content and composition, b) make a graded oral presentation in class about a construction technique or method, and c) be assessed through several written homework problems and examination questions.
4. ...research a selected topic related to the course material, and write a seven page, correctly formatted, technical paper about that topic.	4. ...submit a technical paper that will be evaluated based on an established grading scale.
5. ...research, prepare, and deliver (including proper use of visual aids) a 20-minute oral presentation on an assigned topic to a group of peers.	5. ...be evaluated by the instructor and peers based on an established point system. Results of the evaluation, including comments, will be made available to the student after each presentation.

MISCELLANEOUS, BUT IMPORTANT, NOTES:

ADA STATEMENT: Students with disabilities who choose to arrange for academic adjustments in this class should contact the Center for Disability Services (CDS) Office for a "Confirmation of Eligibility for Academic Adjustments" as soon as possible. Appropriate adjustments for the class can then be determined and implemented. The CDS Office, located in 140 Bouillon Hall, can be contacted in person, by email (cdsrecept@cwu.edu), or by phone (963-2171).

OFFICE HOURS: **MTWTh @ 10:30 – 11:30 am** (Other times available by appointment or drop-in.)

GRADE BREAKDOWN:

Assignments	30	%
Quizzes (20 @ 1%)	20	%
Exams (2 @ 15%)	30	%
Final Exam	20	%
TOTAL	100	%

100%→ 92% → 90% → 87% → 82% → 80% → 76% → 70% → 68% → 66% → 62% → 60% → 0%
/ A / A– / B+ / B / B– / C+ / C / C– / D+ / D / D– / F /

READING ASSIGNMENTS: Should be done before class (class presentations are more understandable, learning is much easier, and grades improve).

ASSIGNMENTS:
1. Are due at the beginning of class on the date announced when the assignment is made.
2. **Will not** be accepted late for credit. If you can't make it to class on time, then turn your assignments in early.
3. Will have solutions posted as needed.
4. Must be presented in a clear, complete, and professional manner.
5. Must be neat, well organized, and legible as a part of every assignment's grade.
6. **Will be due during the final week of classes** unless otherwise announced.

QUIZZES: Quizzes will be given as noted on the "CLASS SESSION TOPICS" section of this syllabus. Each quiz will be based on material in the reading assignment for that day. Twenty-six quizzes are scheduled; the best twenty-two grades will be included in the course grade computation. **NO MAKE-UP QUIZZES WILL BE GIVEN REGARDLESS OF THE REASON FOR YOUR ABSENCE.**

EXAMS: Examinations will include 2 Exams given during regularly scheduled class periods and a Final Exam given at the regularly scheduled time during final exam week. Availability of makeup exams for any missed exam(s) is at the discretion of the instructor, and will be considered only after consultation with the student about the reason(s) for missing the scheduled exam.

ATTENDANCE: Not mandatory, but strongly recommended - particularly if you expect to do well. You are responsible for any and all announcements, corrections, schedule changes, and additional information presented during regularly scheduled class periods. Makeup work will NOT be available for students missing in-class exercises or quizzes. Finally, we will miss your smiling face in class!!!

CLASSROOM BEHAVIOR:

1. Students are expected to be in their seats and ready to go to work by the scheduled start of class. (This is particularly important given the starting time of this course and the prevalence of quizzes at the start of class Normal rules of courtesy and respect will prevail during class periods.

2. Electronic devices (cell phones, digital readers & players, gaming devices, etc.) are to be off, inactive, or in a silent mode during class. Electronic devices may be used for taking notes and textbook access only – email, texting, game playing, web-surfing, video watching, or other similarly distracting activities are **NOT** permitted during class.

3. Work completed for this course (assignments, quizzes, and exams) is expected to be yours and yours alone. Unless otherwise specified, group solutions are not acceptable for any assignment, and neither is plagiarism of information from other sources or copying of another person's work. If detected, you will fail the assignment with no opportunity to make up the work. Your attention is directed to Appendix B of the current CWU Catalog for additional information regarding this topic.

4. Your attention is also directed to Appendix A of the current CWU Catalog for the University's policies regarding Equal Opportunity, Affirmative Action, Gender Equity, and Sexual Harassment matters.

CHANGES: Changes to the COURSE SYLLABUS will be made as necessary and will be announced in class.

CLASS SESSION TOPICS:

Date	Session	Topic	Reading Assignment	
JAN 6	1	Course Introduction	- -	
7	2	Topic Introduction	- -	
8	3	Earth, Rock, Soil, & Dirt	Chap. 1 & 2 (pp. 1 – 30)	**QUIZ #1**
9	4	Earth, Rock, Soil, & Dirt	Chap. 2 (pp. 31 – 82)	**QUIZ #2**
13	5	Earth, Rock, Soil, & Dirt	Chap. 13 (pp. 527 – 564)	**QUIZ #3**
14	6	Equipment Rate Computations	Chap. 14 (565 – 600)	**QUIZ #4**
15	7	Equipment Rate Computations	Chap. 14 (pp. 601 – 620)	**QUIZ #5**
16	8	Equipment Productivity Computations	Chap. 15 (pp. 621 – 660)	**QUIZ #6**
20	9	**MARTIN LUTHER KING DAY – no classes**		
21		Equipment Productivity Computations		**QUIZ #7**
22	10	Foundations	Chap. 8 (pp. 309 – 348)	**QUIZ #8**
23	11	Foundations	Chap. 9 (pp. 349 – 386)	**QUIZ #9**
27	12	Concrete Construction	Chap. 10 (pp. 387 – 420)	**QUIZ #10**
28	13	Concrete Construction	Chap. 11 (pp. 421 – 451)	**QUIZ #11**
29		**FACULTY DEVELOPMENT DAY – no classes**		
30	14	SKYSCRAPER – PART 1 – PAPER & ROCK	**(7:45 am START)**	
3	15	Cast-in-Place Concrete	Chap. 11 (pp. 451 – 498)	**QUIZ #12**
FEB 4	16	Precast Concrete	Chap. 12 (pp. 499 – 526)	**QUIZ #13**
5	17	SKYSCRAPER – PART 2 – BRICKS & MORTAR	**(7:45 am START)**	
6	18	**EXAM #1 (Chap. 1 & 2 and Class Material on Soil, Equip. Rates, & Prod. Rates)**		
10	19	Masonry – Bricks	Chap. 3 (pp. 83 – 128)	**QUIZ #14**
11	20	Masonry – Stone & CMUs	Chap. 3 & 4 (pp. 128 – 170)	**QUIZ #15**
12	21	Masonry Construction	Chap. 5 (pp. 171 – 218)	**QUIZ #16**
13	22	SKYSCRAPER – PART 3 – STEEL & GRANITE	**(7:45 am START)**	
17		**PRESIDENT'S DAY – no classes**		
18	23	Steel Frame Construction	Chap. 5 & 6 (pp. 219 – 264)	**QUIZ #17**
19	24	Steel Frame Construction	Chap. 6 & 7 (pp. 265 – 308)	**QUIZ #18**
20	25	SKYSCRAPER – PART 4 – COPPER & DIAMOND	**(7:45 am START)**	
24	26	Light Gauge Steel Frame Construction	Chap. 16 (pp. 661 – 687)	**QUIZ #19**
25	27	Wood as a Material	Chap. 16 (pp. 688 – 716)	**QUIZ #20**
26	28	Framing with Wood	Chap. 17 (pp. 717 – 754)	**QUIZ #21**
27	29	**EXAM #2 (Chap. 8 – 15)**		
MAR 3	30	Interior & Exterior Finishes – Wood	Chap. 18 (pp. 755 – 790)	**QUIZ #22**
4	31	Roofing	Chap. 19 (pp. 791 – 816)	**QUIZ #23**
5	32	Roofing	Chap. 22 & 23 (pp. 877 – 900)	**QUIZ #24**
6	33	Interior Finishes	Chap. 23 (pp. 900 – 930)	**QUIZ #25**
10	34	Interior Finishes	Chap. 24 (pp. 931 – 965)	**QUIZ #26**
11	35	PRESENTATIONS		
12	36	PRESENTATIONS		
13	37	PRESENTATIONS		

FINAL EXAM: Currently scheduled for 8:00 – 10:00 am, Wednesday, March 19th – So please don't make airline reservations, accept wedding invitations, commit to start a job, or incur similar obligations that will conflict with the time set for the final exam in this course – nor should you let anyone else commit you to an obligation either!!!

Department of Engineering Technology, Safety and Construction
Course Outline for CMGT 347
Heavy Civil Methods and Materials
M,T,W,TR 8:00-8:50, AM
Hogue Hall 226
Winter 2014

P. Warren Plugge, Ph.D.
Associate Professor of Construction Management
Construction Management Program
E-mail: wplugge@cwu.edu
Web: http://www.cwu.edu/~iet/faculty/plugge.html

Telephone: 509-963-2427
Office: Hogue 300C
Office Hours: TBD and by appointment.

Credits: 4

Prerequisites: CMGT 265

Catalog Description:
Introduction to materials commonly used and the various methods employed with an emphasis on heavy civil, marine, and highway construction.

Course Description: The purpose of this course is to familiarize the construction management student with the basic skills necessary to design, coordinate, estimate, and manage the materials and methods commonly found in heavy civil construction management. Applied knowledge and techniques acquired from this course can be applied in many facets of heavy civil, marine, and highway construction.

Learner Outcomes (Course Objectives):

Outcome	Assessment Strategy
1. Demonstrate an understanding of asphalt paving materials and equipment and the basic engineering properties of soil, including moisture content, densities and compaction.	Students will be assessed through written homework, problems, and examinations.
2. Properly identify construction materials and methods used in civil construction, including their properties, advantages, disadvantages and installation.	Students will be required to research a selected topic and write a research paper. An oral presentation on a different topic is also required. This outcome will also be assessed through written examinations.
3. Accurately research a selected topic and write a five to seven page research paper on this topic, including a bibliography.	Students are required to submit their paper, which will be evaluated based on an established grading scale.
4. Efficiently research, prepare and deliver a 20-minute oral presentation on an assigned topic, including proper use of visual aids, to a group of peers.	Each student's presentation will be evaluated by the instructor and peers based on an established point system. Results of the evaluation, including comments, will be made available to the student after each presentation.

NOTE: The instructor reserves the option of making adjustments to this syllabus and course requirements and will notify students of such changes should they become necessary.

Course Requirement:
1. Each student is responsible for review of readings, course material, and assignments. Although there are many readings, most are not extremely lengthy yet each **requires considerable attention to assure the student is prepared and familiar with the material required for each class section**.

2. Due to the nature of the activities in this course, it is required that students attend each lecture and activity assigned to the course. *Much like an absence on the construction site, if you should have to miss class it is your responsibility to contact the instructor prior to your departure via email.* If for some reason you miss class due to a personal or family emergency and cannot use the internet please call the instructor's office or the main office and leave a message. Information that is not acquired from the student due to their absence from class should be acquired through another student or from the instructor during regularly scheduled office hours or by appointment.

"If you have a severe respiratory or influenza-like illness (ILI) (high fever, aches, chills, cough) you should not come to class until you are without fever for 24 hours without the aid of fever-reducing medication. If your absences are related to a severe respiratory or flu-like illness, you will be given the opportunity to make up your assignments and class content without penalty. *It is YOUR responsibility to notify your instructor, in advance, when absent due to sickness. Faculty is under no obligation to excuse class absences related to sickness.* You should utilize the following precautions to prevent exposure to sicness: 1) Frequent hand washing and carry a bottle of alcohol-based hand sanitizer with you at all times. 2) Cough etiquette (grab your shoulder and cough into your elbow). 3) Place used tissues immediately in the trash, followed by washing your hands. 4) Use CDC-approved disinfectants on shared surfaces such as doorknobs, desks, etc. 4) **Stay home if you have a severe respiratory or flu-like illness.** If you are concerned you may have severe respiratory or flu-like illnesses, notify student health (Melody S. Madlem, Ph.D., CHES, Director of Public Health Education, Central Washington University)."

3. Grades in the course will be based on a series of problems/projects, student participation in class, quizzes, two exams, and a comprehensive final examination associated with temporary structures.

Instructional Methodology:
This course will meet approximately four hours a week. One hour of lecture/lab four days per week. The majority of the coursework will be based in class with some outside activities based on the current lecture/lab material presented. The coursework will be project based from various readings and activities centered on Heavy Civil Means and Methods of work. Use of Blackboard and Internet resources will support the learning process. **Students must be prepared to spend at least 3-4 hours per-week outside of class time working on various problems, research, and other outside readings on temporary structures.**

Student Behavior:
Students will be held accountable for their behavior in class pursuant to the Central Washington University student conduct code (Chapter 106-120 WAC - Student Conduct Code). Students not following these policies will be reported immediately without reservation.

In addition to the conduct code, if a student has a question, dispute or grievance on how something as been graded on homework, exams or assignments it is the student's responsibility to contact the instructor individually to discuss the problem. Specifically for tests and quizzes, it is required that if there is a discrepancy in how something was graded, the student shall circle the

item on the test or quiz and report their justification on the front of the test. Individual test questions and discrepancies will not be discussed in class as a whole.

Mode of Delivery:
Classroom instruction and computer lab time. Support materials and additional discussion time will be supported via Blackboard. Classroom discussion and course assignments are discussed at the beginning of each class period. Students are encouraged to attend each class meeting and participate in classroom activities and discussions for which they will receive participation credit.

Classroom Decorum: Due to the nature of the instructional environment, be it known that any cell phone (including text messaging) or iPod/iPad/iAnything use during class or laboratory time will result in said iDevice being confiscated. Cell phone use is any auditory or other ring, vibration, call out, text messaging, etc. iPod/iDevice use is the use of any auditory (includes ear buds, headphones, etc.) or visual devise (iPod video) used during lecture or lab. If you leave the classroom to use a cell phone do not return to the classroom. If you use a cell phone or iDevice during class the professor will ask that you leave the class or laboratory for that period, thus constituting an unexcused absence with a point deduction from your final score in the class.

> If class is held in a computer laboratory, because each computer is an open access machine, students are to refrain from printing documents, reading and sending private email, playing video games, and surfing the web during the lecture portion of the class.

Departmental policy states that *Tobacco Products* are NOT permitted in the classroom. Use or attempted use will result in loss of one letter grade for the term per occurrence.

ADA Statement: *If you have a disability and require accommodations for this course, please speak with me privately as soon as possible so that your needs may be appropriately met. If you have not already done so, you will need to register with Disability Services (DS). DS is located in Bouillon 140. Call (509) 963-2102 or email cds@cwu.edu for more information. Additional information about Disability Services can be found at this website http://www.cwu.edu/disability-support/.*

Use of Facilities:
Hogue Hall is a new building, please refrain from defacing the facility and equipment (i.e. desks, lab equipment, etc.) to allow future students the same opportunity you have been given with a clean facility and equipment. If caught defacing the any portion of the facility or equipment the guilty party will result in a deduction of their final grade. Also, report any misuse of the facility and its equipment to the instructor. If for some reason a group or individual students need to use a classroom for study purposes please contact the instructor. There are student study areas located throughout the building for student use at any time. Designated faculty conference rooms and lounge areas are NOT for use by any student. When completed with your task within the study areas please clean up and dispose waste in the designated areas. Additional information about the facilities is posted on the Engineering, Technology, Safety and Construction Website at http://www.cwu.edu/engineering/engineering-technologies-safety-and-construction-formerly-iet.

Method of Evaluation:

Note: All values provided below are an approximation.

Evaluation	Points
Homework @ 10 pts	100
Three exams @ 75 pts	225
Final Exam	100
Participation	50
Group Project (Paper)	50
Group Presentation	25
Class Speaker/Field Trips	20
Total	**570**

Grade Scale (%)

A	100-94	**A-**	93-90		
B+	89-87	**B**	86-94	**B-**	83-80
C+	79-77	**C**	76-74	**C-**	73-70
D+	69-67	**D**	66-64	**D-**	63-60
F	59-0				

Explanation of Grades:

Grade of A = All requirements were exceptionally completed. Creativity and clear idea presentation were evidenced. Instructional content and use of technology were integrated to enhance instructional effectiveness.
Grade of B = One or more of the listed requirements is missing or not adequately completed. The assignment was completed in at above average standards.
Grade of C = Average level of accomplishment. Assignment was completed at a minimal level.
Grade of D = The assignment was turned in, but was below quality standards.

Homework, Papers, and Projects:

Homework assignments will be given on a regular basis and will pertain to text reading and actual construction documents. Assignments will also be given that involve calculations, drawing or sketching. General requirements that pertain to homework, papers, and projects are:

- ***All work must be your own!***
- Each homework assignment will have a computer generated cover sheet to be provided by the instructor. You are to download from Blackboard and provide the required information.
- Unless specified, perform all your work in pencil on ***green*** engineering paper (no spiral bound pages will be accepted). ***Include in the upper right hand corner of the first sheet your name, date and course number. Each following page must include your initials and page number. Staple pages in the upper left-hand corner (Please staple prior to class, I do not carry a stapler!).*** A folded corner to bundle the homework will result in a 0 grade.
- For each problem clearly state the "Given, Find, and Solution." All answers will be clearly identified by double underlining the answer.
- **Please write neatly!!** All work must be neatly lettered. **Unprofessional, sloppy, or late work will not be accepted.**
- ***If you are unsure of what I expect feel free to ask, I will be more than happy to answer your questions.***
- If for some reason you **cannot attend a class** or **will be absent** when a homework assignment is due you are required to make the necessary arrangements to turn the assignment in prior to your departure with the instructor.
- Any paper or project requiring research into articles, journals, or other scholarly documents shall be properly listed within a bibliography or works cited. ***Students may not use dictionary.com, wikipedia.com as a reference for any homework, paper, or project (if reference to wikipedia.com is used, your assignment grade will suffer serious deductions or result in a 0 for the assignment).*** Although Wikipedia is a resource, it is *not* considered as in depth scholarly citation.

- **In construction, bids are due at a specific time and place. Bids that are turned in after the stated time are not accepted. We will take this same approach with all homework and assignments. Any homework or assignment turned in after the stated time will not be accepted. *Homework will be due at the beginning of the class period or as announced.***

Quizzes:
The instructor reserves the right to give unannounced quizzes at any time. Material eligible for quizzes will be any material previously covered during lecture and other related course material.

Exams:
The three exams will be given during the regularly scheduled class meetings as on the attached class schedule.

Academic Honesty:
You are about to enter a profession which values character, integrity, honesty, and a sense of fairness. While these traits may not always be demonstrated by all practitioners in this field, you will quickly become known by your reputation for professionalism - positive or negative. Given the importance of a reputation for honesty, an expressed policy on academic honesty for this class should be unnecessary. However, to make this very clear, there will be absolutely no tolerance for any violation of the *intent* of university policies on plagiarism, cheating, copying, or in any way representing the work of any past or current student as your own. Any evidence of such a violation will result in an immediate failing grade and dismissal from this course.

Course Materials:
Nunnally, S.W. (2010). *Construction Methods and Management.* 8th Ed. New York: Prentice Hall. Note: Earlier Editions may be used but the instructor is not responsible for the accuracy of the information or assignments.

All students will be required to purchase the CMGT 347 Caterpiller Performance Handbook #43. *This book will be used in several of your other courses. This book can be purchased from the The Copy Shop on University Way.* Note: Earlier Editions may be used but the instructor is not responsible for the accuracy of the information or assignments.

Other course material will be provided as needed. You will also find additional course material posted on Blackboard.

Companion Websites (CWS):

The caterpillar website will be used frequently to access equipment data on specific machines. **www.cat.com**

Curriculum Review
We are in a program review cycle. Some students may be asked to use their work as examples of work performed in this class. If this is the case, the students will be randomly selected. The instructor will photo copy the students work for review by the accreditation team in 2015. If the student is one of the chosen students, your work will be kept confidential only to be viewed by faculty members and the accreditation team.

Help!
Asking questions is the way we learn; a question not asked is a piece of knowledge yet to be understood (Anonymous). If you should need help at any point in this course, feel free to contact the instructor at the end of class or via email to set an appointment. The instructor maintains an open door policy, if he is available please step in and we will work to find a solution to the problem or issue.

Office Hours:
A set time frame for office hours will be identified later within the quarter. It is **strongly** recommended that students email the professor to arrange for office hours. In the email please specify an option for times to meet.

Writing Help:
Each student will be required to do some writing as a requirement for this course. Should you need help outside of class in writing the student may contact the writing center. The website for the writing center is: http://www.cwu.edu/learning-commons/university-writing-center . Follow this link to access the location and times the writing center is open.

CMGT 347 Course Schedule

The following schedule is subject to change, students are responsible for obtaining schedule updates through class announcements or via blackboard.

Week	Date	Subject Covered	Reading/Ass.	Due
1	1-6-14	Introduction Earthmoving Materials and Operations	Ch 1 HW: Q's 1-10 Ch 2 HW: Q's 1-10	1-10-14 1-16-14
2	1-13-14	Excavating and Lifting **Due: Paper and Presentation Topic (Thursday)**	Ch 3 HW: Q's 1-10	1-23-14
3	1-20-14	Loading and Hauling **(No Class 1/20- MLK Day)**	Ch 4 HW: Q's 1-10 Cat Handbook	1-30-14 5:00 pm
4	1-27-14	Compacting and Finishing Rock Excavation **Exam 1: 1/30/14 – Ch's 1, 2, 3** **(No Class 1/29- Faculty Development Day)**	Ch 5 HW: Q's 1-10 Ch 6 HW: TBD Cat Handbook	TBD TBD
5	2-3-14	CAT Book Productions	Cat Handbook Asst: Online	 TBD
6	2-10-14	Production of Aggregate, Concrete, and Asphalt Mixes Paving and Surface Treatments **Exam 2 Ch 4, 5, 6 (Tues 2/4)** **RENO- (No class 2/5 and 2/6) See alternate assign**	Ch 7 & 8: HW TBD Cat Handbook	TBD
7	2-17-14	Compressed Air and Water Systems Foundations **No class 2/17- Pres. Day**	Ch 9 HW: Q's 1-10 Ch 10 HW: TBD	TBD TBD
8	2-24-14	Concrete Forms Design **Exam 3 (CAT BOOK)**	Ch 12 &13 HW: TBD	TBD
9	3-3-14	**Presentations**	Ch 17 HW: TBD Ch 20 HW: TBD	TBD
10	3-10-14	Construction Economics Productivity and Performance Final Exam Preparation		
Finals Week	3-17-14	**Final Exam- Wednesday, March 19, 2014- 8:00 am** Group Project Due		

- NOTE: If a field trip should take place, they will be scheduled on a Friday and will take about 3 hours. The time includes travel and presentation time during the field trip. The instructor will notify the class in plenty of time so you may plan your schedules accordingly. If you should need a note from the professor due to a conflict with another course during this time, send an email to the professor with the class name, contact, and professor's email and a note will be provided.

CMGT 347 – Heavy Civil Means and Methods (Lecture)

Since you have *completely read and understand the syllabus*, please complete the form below and turn into the instructor on Thursday, January 9, 2014 at the beginning of class. A signature below acknowledges the fact that the student has read and understands the requirements for this course.

		Date:
Student Name (Printed):		
Student Signature:		
Instructor Signature		

Department of Engineering Technology, Safety, and Construction
Course Outline for CMGT 440
Temporary Structures
M,T,W,TR 9:00-9:50 AM
Hogue Hall RM 223
Winter 2014

P. Warren Plugge, Ph.D.
Associate Professor of Construction Management
Construction Management Program
Email: wplugge@cwu.edu
Web: http://www.cwu.edu/~iet/faculty/plugge.html

Telephone: 509-963-2427
Office: Hogue 300C
Office Hours: TBD and by appointment.

Credits: 4

Prerequisites:
IET 312 and CMGT 346 or 347.

Catalog Description: Introduction to the materials, methods, and techniques associated with temporary construction facilities such as false work, scaffolding, formwork, and cofferdams.

Course Description: The purpose of this course is to familiarize the construction management student with the basic skills necessary to design, estimate, and construct common temporary structures found in construction. Applied knowledge and techniques acquired from this course can be useful in all facets of the construction industry including civil, commercial, industrial, and residential construction.

Learner Outcomes (Course Objectives):

Outcome	Assessment Strategy
1. Students will demonstrate an ability to design vertical and horizontal formwork and shoring.	Demonstrate these principles through homework assignments and examinations.
2. Students will be able to identify different types of scaffolding. They will be able to develop a project scaffolding layout including a safety plan.	Demonstrate these principles through homework assignments and examinations based on applying knowledge to construction plans and specifications.
3. Students will be able to demonstrate an ability to calculate the various forces required to construct cofferdams and earth retaining structures.	Demonstrate these principles through homework assignments and examinations.
4. Students will be able to demonstrate knowledge of site dewatering methods.	Demonstrate these principles through homework assignments and examinations.
5. Students will be able to identify the materials and techniques available to construct temporary structures.	Demonstrate these principles through homework assignments and examinations.

NOTE: The instructor reserves the option of making adjustments to this syllabus and course requirements and will notify students of such changes should they become necessary.

Course Requirement:
1. Each student is responsible for review of readings, course material, and assignments. Although there are many readings, most are not extremely lengthy yet each **requires considerable attention to assure the student is prepared and familiar with the material required for each class section**.

2. Due to the nature of the activities in this course, it is required that students attend each lecture and activity assigned to the course. *Much like an absence on the construction site, if you should have to miss class it is your responsibility to contact the instructor prior to your departure via email.* If for some reason you miss class due to a personal or family emergency and cannot use the internet please call the instructor's office or the main office and leave a message. Information that is not acquired from the student due to their absence from class should be acquired through another student or from the instructor during regularly scheduled office hours or by appointment.

"If you have a severe respiratory or influenza-like illness (ILI) (high fever, aches, chills, cough) you should not come to class until you are without fever for 24 hours without the aid of fever-reducing medication. If your absences are related to a severe respiratory or flu-like illness, you will be given the opportunity to make up your assignments and class content without penalty. *It is YOUR responsibility to notify your instructor, in advance, when absent due to sickness. Faculty is under no obligation to excuse class absences related to sickness.* You should utilize the following precautions to prevent exposure to sicness: 1) Frequent hand washing and carry a bottle of alcohol-based hand sanitizer with you at all times. 2) Cough etiquette (grab your shoulder and cough into your elbow). 3) Place used tissues immediately in the trash, followed by washing your hands. 4) Use CDC-approved disinfectants on shared surfaces such as doorknobs, desks, etc. 4) **Stay home if you have a severe respiratory or flu-like illness.** If you are concerned you may have severe respiratory or flu-like illnesses, notify student health (Melody S. Madlem, Ph.D., CHES, Director of Public Health Education, Central Washington University)."

3. Grades in the course will be based on a series of problems/projects, student participation in class, quizzes, two exams, and a comprehensive final examination associated with temporary structures.

Instructional Methodology:
This course will meet approximately four hours a week. One hour of lecture/lab four days per week. The majority of the coursework will be based in class with some outside activities based on the current lecture/lab material presented. The coursework will be project based on the various readings and activities centered on temporary structures. Use of Blackboard and Internet resources will support the learning process. **Students must be prepared to spend at least 3-4 hours per-week outside of class time working on various problems, research, and other outside readings on temporary structures. Time spent outside of class will better prepare you for class discussions on the subject.**

Mode of Delivery:
Classroom instruction and computer lab time. Support materials and additional discussion time will be supported via Blackboard. Classroom discussion and course assignments are discussed at the beginning of each class period. Students are encouraged to attend each class meeting and participate in classroom activities and discussions for which they will receive participation credit.

Classroom Decorum: Due to the nature of the instructional environment, be it known that any cell phone (including text messaging) or iPod/iPad/iAnything use during class or laboratory time will result in said iDevice being confiscated. Cell phone use is any auditory or other ring, vibration, call out, text messaging, etc. iPod/iDevice use is the use of any auditory (includes ear buds, headphones, etc.) or visual devise (iPod video) used during lecture or lab. If you leave the

classroom to use a cell phone do not return to the classroom. If you use a cell phone or iDevice during class the professor will ask that you leave the class or laboratory for that period, thus constituting an unexcused absence with a point deduction from your final score in the class.

> If class is held in a computer laboratory, because each computer is an open access machine, students are to refrain from printing documents, reading and sending private email, playing video games, and surfing the web during the lecture portion of the class.

Departmental policy states that *Tobacco Products* are NOT permitted in the classroom. Use or attempted use will result in loss of one letter grade for the term per occurrence.

ADA Statement: *If you have a disability and require accommodations for this course, please speak with me privately as soon as possible so that your needs may be appropriately met. If you have not already done so, you will need to register with Disability Services (DS). DS is located in Bouillon 140. Call (509) 963-2102 or email cds@cwu.edu for more information. Additional information about Disability Services can be found at this website http://www.cwu.edu/disability-support/.*

Use of Facilities:
Hogue Hall is a new building, please refrain from defacing the facility and equipment (i.e. desks, lab equipment, etc.) to allow future students the same opportunity you have been given with a clean facility and equipment. If caught defacing the any portion of the facility or equipment the guilty party will result in a deduction of their final grade. Also, report any misuse of the facility and its equipment to the instructor. If for some reason a group or individual students need to use a classroom for study purposes please contact the instructor. There are student study areas located throughout the building for student use at any time. Designated faculty conference rooms and lounge areas are NOT for use by any student. When completed with your task within the study areas please clean up and dispose waste in the designated areas. Additional information about the facilities is posted on the Engineering, Technology, Safety and Construction Website at http://www.cwu.edu/engineering/engineering-technologies-safety-and-construction-formerly-iet.

Method of Evaluation:

Note: All point values below are an approximation.

Evaluation	Points
Homework @ 10 pts	100
Three exams @ 100 pts	300
Final Exam	100
Participation	50
Final Project	100
Class Speaker (s)	20
Total	**670**

Grade Scale (%)

A	100-94	**A-**	93-90		
B+	89-87	**B**	86-94	**B-**	83-80
C+	79-77	**C**	76-74	**C-**	73-70
D+	69-67	**D**	66-64	**D-**	63-60
F	59-0				

Explanation of Grades:
Grade of A = All requirements were exceptionally completed. Creativity and clear idea presentation were evidenced. Instructional content and use of technology were integrated to enhance instructional effectiveness.
Grade of B = One or more of the listed requirements is missing or not adequately completed. The assignment was completed in at above average standards.
Grade of C = Average level of accomplishment. Assignment was completed at a minimal level.
Grade of D = The assignment was turned in, but was below quality standards.

Homework, Papers, and Projects:
Homework assignments will be given on a regular basis and will pertain to text reading with other outside references to journals. Assignments will also be given that involve calculations, drawing or sketching. General requirements that pertain to homework, papers, and projects are:

- All work must be your own.
- Each homework assignment will have a computer generated cover sheet to be provided by the instructor. You are to download from Blackboard and provide the required information.
- Unless specified, perform all your work in pencil on ***green*** engineering paper (no spiral bound pages will be accepted). ***Include in the upper right hand corner of the first sheet your name, date and course number. Each following page must include your initials and page number. Staple pages in the upper left-hand corner (Please staple prior to class, I do not carry a stapler!)***
- For each problem clearly state the "Given, Find, and Solution." All answers will be clearly identified by double underlining the answer.
- Please write neatly!! All work must be neatly lettered. **Unprofessional, sloppy, or late work will not be accepted**. *If you are unsure of what I expect feel free to ask, I will be more than happy to answer your questions.*
- If for some reason you **cannot attend a class** or **will be absent** when a homework assignment is due you are required to make the necessary arrangements to turn the assignment in prior to your departure with the instructor.
- Any paper or project requiring research into articles, journals, or other scholarly documents shall be properly listed within a bibliography or works cited. ***Students may not use wikipedia.com or dictionary.com as a reference for any homework, paper, or project (if reference to wikipedia.com or dictioinary.com is used, your assignment grade will suffer serious deductions or result in a 0 for the assignment).*** Although Wikipedia and dictionary.com are resources, they are *not* considered as an in depth scholarly citation, if used your grade will result in a 0.
- **In construction, bids are due at a specific time and place. Bids that are turned in after the stated time are not accepted. We will take this same approach with all homework and assignments. Any homework or assignment turned in after the stated time will not be accepted. *Homework will be due at the beginning of the class period or as announced.***

Quizzes:
The instructor reserves the right to give unannounced quizzes at any time. Material eligible for quizzes will be any material previously covered during lecture and other related course material.

Fieldtrips:
If any fieldtrips or site tours are taken all students will be responsible their personal protective equipment (PPE). Therefore, all students will wear boots, jeans, high visibility vests, gloves, safety glasses, and a hardhat.

Exams:
The three exams will be given during the regularly scheduled class meetings as on the attached class schedule with a final during finals week (see times on the attached schedule).

Academic Honesty:
You are about to enter a profession which values character, integrity, honesty, and a sense of fairness. While these traits may not always be demonstrated by all practitioners in this field, you will quickly become known by your reputation for professionalism - positive or negative. Given the importance of a reputation for honesty, an expressed policy on academic honesty for this class should be unnecessary. However, to make this very clear, there will be absolutely no tolerance for any violation of the intent of university policies on plagiarism, cheating, copying, or in any way representing the work of any past or current student as your own. Any evidence of such a violation will result in an immediate failing grade and dismissal from this course.

Course Materials and Suggested Reading:
Suggested Reading: Handbook of Temporary Structures in Construction. 2nd Edition by Robert Ratay. McGraw Hill. 1996. *This is not a required textbook.*

Other course material will be provided as needed. You will also find additional course material posted on Blackboard.

Curriculum Review
We are in a program review cycle. Some students may be asked to use their work as examples of work performed in this class. If this is the case, the students will be randomly selected. The instructor will photo copy the students work for review by the accreditation team in 2015. If the student is one of the chosen students, your work will be kept confidential only to be viewed by faculty members and the accreditation team.

Help!
Asking questions is the way we learn; a question not asked is a piece of knowledge yet to be understood (Anonymous). If you should need help at any point in this course, feel free to contact the instructor at the end of class or via email to set an appointment. The instructor maintains an open door policy, if he is available please step in and we will work to find a solution to the problem or issue.

Office Hours:
A set time frame for office hours will be identified later within the quarter. It is **strongly** recommended that students email the professor to arrange for office hours. In the email please specify an option for times to meet.

Writing Help:
Each student will be required to do some writing as a requirement for this course. Should you need help outside of class in writing the student may contact the writing center. The website for the writing center is: http://www.cwu.edu/learning-commons/university-writing-center . Follow this link to access the location and times the writing center is open.

CMGT 440 Course Schedule

The following schedule is subject to change, students are responsible for obtaining schedule updates.

Week	Date	Subject Covered	Reading/Ass.
1	1-6-14	Introduction Codes, Standards, and Regulations	TBD
2	1-13-14	Loads Created by Construction Equipment	TBD
3	1-20-14	Cofferdams **(No Class 1/20- MLK Day)**	TBD
4	1-27-14	Earth Retaining Structures **Exam 1** **(No Class 1/29- Faculty Development Day)**	TBD
5	2-3-14	Scaffolding **RENO- (No class 2/5 and 2/6) See alternate assign.**	Articles & BB
6	2-10-14	Temporary Bridges	BB
7	2-17-14	Formwork **Exam 2** **No Class 2/17- Pres. Day**	BB
8	2-24-14	Formwork- Cont.	BB
9	3-3-14	Falsework- Shoring **Exam 3**	BB
10	3-10-14	Steel in Temporary Construction **Temporary Bridge Loading**	TBD
Finals Week	3-17-14	**Final Exam- Monday, March 17, 2014: 8:00-10:00 am** Final Project Due	

- NOTE: If a field trip should take place, they will be scheduled on a Friday and will take about 3 hours. The time includes travel and presentation time during the field trip. The instructor will notify the class in plenty of time so you may plan your schedules accordingly. If you should need a note from the professor due to a conflict with another course during this time, send an email to the professor with the class name, contact, and professor's email and a note will be provided.

CMGT 440 – Heavy Civil Temporary Structures (Lecture)

Since you have *completely read and understand the syllabus*, please complete the form below and turn into the instructor on Thursday, January 9, 2014 at the beginning of class. A signature below acknowledges the fact that the student has read and understands the requirements for this course.

		Date:
Student Name (Printed):		
Student Signature:		
Instructor Signature		

CMGT 441
Wood and Steel Construction
Winter 2014

Catalog Description: CMGT 441. Wood and Steel Construction (4). Prerequisites, IET 312, CMGT 346. A comprehensive study of the materials, design and erection of wood and steel structures.

Texts: Wood Design Package (ASD/LRFD), 2012 Edition, American Wood Council.

Two Course Packs (available at the Copy Shop): 1. From the Steel Construction Manual, Allowable Stress Design (ASD), AISC, Ninth Edition and 2. Snow Load Information and International Building Code Information.

Engineered Wood Construction Guide, APA-Engineered Wood Association. This booklet will be provided by the Engineered Wood Association.

Other: Optional Reference Materials: Structural Wood Design, A Practice-Oriented Approach Using the ASD Method, Aghayere and Vigil, John Wiley and Sons, 2007. Western Lumber Span Tables from Western Wood Products Association (WWPA).

Instructor: Dave Carns
Hogue Technology, Room 300A
Phone: 963-1762 E-mail: carnsd@cwu.edu

Office Hours: Monday through Thursday 11 am and 2 pm or by appointment.

Learner Outcomes (Course Objectives):

Outcome	Assessment Strategy
1. Accurately draw shear and moment diagrams and calculate beam deflections.	Students shall be assessed on both homework assignments and written exams.
2. Understand allowable stresses for wood and steel members using the AISC manual and NDS and how these stresses relate to physical structures.	Students shall work individually to build and test a balsa wood bridge using the principles of statics and types of stress developed in wood members, including connections. Assessment will also involve written homework and exam problems.
3. Calculate applied dead, live, snow and wind loads as determined by the International Building Code.	Students shall be assessed on written homework and exams.

4. Design simple beams, columns, tension members, shear walls and connections for both steel and wood structures.	Assessment will involve construction and testing of a balsa bridge, utilization of Woodworks software and written assignments and exams.
5. Become proficient with the use of the NDS LRFD and AISC ASD Steel manual.	Assessment involves in class exercises and written homework and exams.
6. Develop a working knowledge of Woodworks software.	Assessment will involve in class exercises in the computer lab and a number of homework assignments.

Grading:
Student work will be assigned points as follows:

Homework (includes bridge)	140 pts
Exam No. 1	100 pts
Exam No. 2	100 pts
Final Exam	120 pts
Total Points	460 pts

Letter grades will be assigned based on the percentage of total points that each student earns during the quarter:

92-100%	A
90-91%	A-
88-89%	B+
82-87%	B
80-81%	B-
78-79%	C+
72-77%	C
70-71%	C-
68-69%	D+
62-67%	D
60-61%	D-

Exams: The two exams, as indicated on the syllabus, will be given during the regularly scheduled class period. The final exam will be comprehensive. All exams will be open book and notes. Details pertaining to exam format and material covered will be discussed in class prior to each exam.

Homework: Homework will be assigned on a regular (weekly) basis during the class period. The due date will be announced at the time the assignment is made. Homework **must** meet the following:

- **No late homework will be accepted.**
- Engineering paper, pencil only. Write only on the front side of each sheet.
- Name, page number/number of pages must be indicated on ***each sheet***.
- Given, Find, Solution must be clearly indicated for each problem.
- ***Show all your work. Write equations prior to using numbers to solve the problems. Include units in all steps of the problem solution.***
- Neatly lettered and neat sketches. Quality work is important, especially at the senior level, and a portion of the homework grade will be based upon the neatness and presentation of your work. If you can't draw a straight line freehand please use a straightedge.
- Answers must be clearly indicated by **underlining, boxing or circling.**

Software: The American Forest and Paper Association (AFPA) makes available to construction programs a Windows based software package called "Design Office", which includes "Sizer". This software allows the user to size all the main structural elements of a building: joists, beams (sawn and glue-lam) and columns. This software is available on some of the computers in Hogue Technology computer labs.

Academic Honesty Policy: Students are clearly expected to do their own work and not copy the work of others. Evidence of copying, including any computer files, cheating or using writings of others without proper citations will result in a failure for the specific assignment. Successive evidence of copying, including any computer files, cheating or using writings of others without proper citations during the curriculum of the Construction Management program will result in loss of a student's major status. Your attention is directed to Appendix B of the current CWU Catalog for additional information regarding this topic.

ADA Statement: Students who have documented disabilities that may affect their ability to access information and/or material presented in this course are encouraged to contact the Center for Disability Services (CDS) office so that appropriate academic adjustments and accommodations can be provided. Students who have not documented their disabilities and wish to arrange for academic adjustments and accommodations, as well as students who require additional information should contact the Center for Disability Services in Bouillon Hall, Room 205 or telephone 963-2171 (TDD 963-2143).

Instructor's Policy for CDS Testing: If you qualify and choose to take exams at the CDS office in Bouillon Hall I am more than happy to accommodate this request. However, I am asking that you ***notify me 24 hours in advance*** of the exam in writing (email is fine) so that I have time to deliver the exam to DSS and to avoid any confusion about where you will be taking the exam.

CMGT 441
Class Schedule - Winter 2014

Week	Date	Subject Covered	Reading
1	Jan 6, 2014	Introduction, Shear and Moment Diagrams Review	AISC Beam Diagrams
2	Jan 13, 2014	**Wood:** Design Loads and Behavior of Structures	NDS Parts I and II
3	Jan 20, 2014	**Martin Luther King's Birthday**	NDS Part IV
4	Jan 27, 2014	Properties of Wood and Lumber Grades Beams	NDS Part III
5	Feb 3, 2014	Beams and Columns **Exam 1**	NDS Parts III and IV
6	Feb 10, 2014	Panel Products and Connections	APA Design and Construction Guide
7	Feb 17, 2014	**Presidents' Day**	NDS Parts 8.1, 8.8, 8.10
8	Feb 24, 2014	Tension Members and Beams	AISC Parts 1 and 2
9	Mar 3, 2014	Columns and Connections **Exam 2**	AISC Part 3
10	March 10, 2014	Connections; Bolts and Welds Bridge Testing	AISC Part 4
11	March 17, 2014	**Finals Week** **Final Exam-Monday March 17 8-10 am**	

CMGT 442
Building Service Systems
Winter 2014

Catalog Description: CMGT 442, Building Service Systems (3). Prerequisite CMGT 344. An introduction to building service systems. Study the interfaces and specifications of mechanical and plumbing systems in buildings construction. Topics include; plumbing, fire suppression, storm drainage, heat gain/loss, heating and cooling systems and elevators.

Texts: J. Trost, Heating, Ventilating and Air Conditioning, Volume II, Prentice-Hall.

Choudury and Trost, Water and Plumbing, Efficient Building Design Series, Volume III, Prentice-Hall.

Other: Website: www.opus.mcerf.org

Instructor: Dave Carns
Hogue Technology Room 300A
Phone: 963-1762
E-mail: carnsd@cwu.edu

Office Hours: Monday through Thursday, 11 am and 2 pm or by appointment

Learner Outcomes (Course Objectives)

Outcome	Assessment Strategy
1. Properly identify items and terms related to building mechanical systems, including HVAC components, plumbing systems and site drainage systems.	Students shall be assessed through written homework assignments and examinations.
2. Demonstrate an understanding of the principles of heat loss and gain in a building and properly calculate these values.	Students shall be assessed through homework, team projects and evaluations that require and understanding of these principles and the corresponding calculations.
3. Demonstrate an understanding of design criteria for modern HVAC systems and an ability to create a schematic of an HVAC and refrigeration system.	Students shall demonstrate this knowledge through project assignments, homework, lab exercises and examinations.
4. Demonstrate the ability to create a functional design for a building plumbing system and a building site drainage system.	Students shall demonstrate this knowledge on homework assignments and examinations.
5. Gain an in-depth understanding of one specific topic related to building service systems and express this understanding using written communications skills.	Each student will research a selected topic and write a short paper.
6. Demonstrate the ability to work on building service systems projects as a team player.	Each student will develop and present projects as part of a team and will be assessed by both the instructor

	and other team members.
7. Develop a basic understanding of the code requirements for mechanical systems.	This shall be assessed through homework assignments and examinations.

Grading: Grading for this course is based on a point system. Points will available for the following course activities:

Activity	Points
Homework assignments, including lab points	100 pts
Two exams, 75 points each	150 pts
Comprehensive final exam	100 pts
Total	**350 pts**

Letter grades will be assigned based on the percentage of total points each student earns during the quarter:

92-100%	A
90-91%	A-
88-89%	B+
82-87%	B
80-81%	B-
78-79%	C+
72-77%	C
70-71%	C-
68-69%	D+
62-67%	D
60-61%	D-

Exams: The two exams, as indicated on the class schedule, will be given during the regularly scheduled class period. The final will be comprehensive. Details pertaining to exam content and format will be discussed in class.

Homework: Homework will be assigned and collected on a regular basis. Each student is responsible for performing his/her own work and submitting each assignment in **pencil** on **engineering paper** in the following format (unless otherwise noted):

- Name, date, course and page/(number of pages) in the upper right hand corner of the first page. Assignment number to be indicated on the first page.
- Name and page/(number of pages) is to appear on each additional sheet.
- Each problem is to be neatly presented with a **Given:** Brief statement of problem and sketch, if applicable, **Find:** What the problem is asking to find and **Solution:** A neat and orderly presentation of the solution, including proper units. **Underline or box** your answer! If you are using an equation, write out the equation with symbols first and then re-write and solve the equation using numbers. If you can't draw a straight line freehand, please use a straightedge.

It is the policy of the instructor that late homework will **not be accepted** without prior approval.

Academic Honesty Policy: Students are clearly expected to do their own work and not copy the work of others. Evidence of copying, including any computer files, cheating or using writings of others without proper citations will result in a failure for the specific assignment. Successive evidence of copying, including any computer files, cheating or using writings of others without proper citations during the curriculum of the Construction Management program will result in loss of a student's major status. Your attention is directed to Appendix B of the current CWU Catalog for additional information regarding this topic.

ADA Statement: Students who have documented disabilities that may affect their ability to access information and/or material presented in this course are encouraged to contact the Center for Disability Services (CDS) office so that appropriate academic adjustments and accommodations can be provided. Students who have not documented their disabilities and wish to arrange for academic adjustments and accommodations, as well as students who require additional information should contact the Center for Disability Services in Bouillon Hall, Room 205 or telephone 963-2171 (TDD 963-2143).

Instructor's Policy for CDS Testing: If you qualify and choose to take exams at the CDS office in Bouillon Hall I am more than happy to accommodate this request. However, I am asking that you ***notify me 24 hours in advance*** of the exam in writing (email is fine) so that I have time to deliver the exam to DSS and to avoid any confusion about where you will be taking the exam.

CMGT 442 Building Service Systems
Class Schedule – Winter 2014

Week	Date (Monday)	Subject Covered	Reading
1	Jan 6, 2014	Background, Terminology, Psychrometrics	Chapter 1, Trost
2	Jan 13, 2014	Heat Loss Calculations	Chapter 1, 2
3	Jan 20, 2014	**Martin Luther King's Birthday** Heat Gain Calculations	Chapter 2
4	Jan 27, 2014	Heating and Cooling Equipment **Exam No. 1**	Chapter 3
5	Feb 3, 2014	Heating and Cooling Equipment, Continued	Chapter 3, 4
6	Feb 10, 2014	Air Distributions Systems	Chapter 5
7	Feb 17, 2014	**Presidents' Day** Mechanical Contracting	
8	Feb 24, 2014	Building Water Supply **Exam No. 2**	Choudury and Trost Chapters 1 and 3
9	Mar 3, 2014	Building Water Supply (cont.) Building Drain, Waste and Vent Systems	Choudury and Trost Chapters 1 and 3
10	Mar 10, 2014	Building Drain Systems (cont.) Storm Drain and Site Utilities	Choudury and Trost Chapter 2, 4
11	March 17, 2014	**Finals Week** **Final Exam, Thursday March 20 8-10am**	

Department of Engineering Technologies, Safety and Construction
Course Outline for CMGT 443
Heavy Civil Utilities
Lecture - Mon & Wed 3:00 to 4:15, PM
Hogue Hall 227
Spring 2014

P. Warren Plugge, Ph.D.
Associate Professor
Construction Management
School of Industrial Engineering and Technology
E-mail: wplugge@cwu.edu
Web: http://www.cwu.edu/~iet/faculty/plugge.html

Telephone: 509-963-2427
Office: Hogue Hall 300C
Office Hours: By appointment or see open door policy

Credits: 3

Prerequisites:
CMGT 346 or 347

Catalog Description: An introduction to the materials, equipment, methods, and safety requirements for construction of underground and aboveground utilities including water, sewer, natural gas, and electrical systems.

Course Description: The purpose of this course is to expose the student to the construction processes, engineering concepts, and management techniques to build and manage the construction of civil infrastructure utilities specific to the areas in clean water, power, storm water, gas, sewer, and alternative energy and utilities.

Learner Outcomes:

Outcome	Assessment Strategy
1. Develop familiarity with the types of utility systems and industry terminology.	Students shall demonstrate proficiency on homework exercises and on exam problems and questions.
2. Develop familiarity with the types of materials used in utility systems.	Students will develop a technical library for the products based upon individual and team research.
3. Understand the types of construction techniques utilized in utility installations.	Students shall demonstrate proficiency on homework exercises and on exam problems and questions.
4. Understand the safety considerations associated with utility construction.	Students shall obtain certification in the Competent Person training program to include both trench safety and confined space.
5. Demonstrate ability to read and apply contract documents, plans and specifications in the construction of utility systems.	Students shall demonstrate proficiency on homework exercises and on exam problems and questions.

6. Demonstrate the ability to estimate the cost of utility construction.	Students shall demonstrate proficiency on homework exercises and on exam problems and questions.
7. Understand the unique management considerations for utility construction.	Students shall demonstrate proficiency on homework exercises and on exam problems and questions. Homework will routinely include technical writing and presentations.

Course Requirement:
1. Each student is responsible for review of readings, course material, and assignments. Although there are many readings, most are not extremely lengthy yet each **requires considerable attention to assure the student is prepared and familiar with the material required for each class section**.

2. Due to the nature of the activities in this course, it is required that students attend each lecture and lab assigned to the course. Much like an absence on the construction site, if you should have to miss class, it is your responsibility to contact the instructor prior to your departure ***via email.*** If for some reason you miss class due to a personal or family emergency and cannot use the internet please call the instructor's office or the main office and leave a message. Information that is not acquired from the student due to their absence from class should be acquired through another student or from the instructor during regularly scheduled office hours or by appointment.

"If you have a severe respiratory or influenza-like illness (ILI) (high fever, aches, chills, cough) you should not come to class until you are without fever for 24 hours without the aid of fever-reducing medication. If your absences are related to a severe respiratory or flu-like illness, you will be given the opportunity to make up your assignments and class content without penalty. *It is YOUR responsibility to notify your instructor, in advance, when absent due to sickness. Faculty is under no obligation to excuse class absences related to sickness.* You should utilize the following precautions to prevent exposure to sicness: 1) Frequent hand washing and carry a bottle of alcohol-based hand sanitizer with you at all times. 2) Cough etiquette (grab your shoulder and cough into your elbow). 3) Place used tissues immediately in the trash, followed by washing your hands. 4) Use CDC-approved disinfectants on shared surfaces such as doorknobs, desks, etc. 4) **Stay home if you have a severe respiratory or flu-like illness.** If you are concerned you may have severe respiratory or flu-like illnesses, notify student health (Melody S. Madlem, Ph.D., CHES, Director of Public Health Education, Central Washington University)."

3. Grades in the course will be based on a series of problems/projects, student participation in class, quizzes, two exams, and an estimate for an entire civil construction project. **Grades for the course will NOT be posted on blackboard, if the student is interested in their grade they can stop by the instructors office during office hours to inquire about their grade.**

Instructional Methodology:
This course will meet approximately three hours a week, one hour of lab each week. The majority of the coursework will be based in class with outside activities based on the current lecture/lab material presented. The coursework will be project based on the various readings and activities centered on civil estimating. Use of Blackboard and Internet resources will support the learning process. **Students must be prepared to spend at least 3-4 hours per-week outside of class time working on various problems, plan review, estimating, and other outside readings.**

Student Behavior:
Students will be held accountable for their behavior in class pursuant to the Central Washington University student conduct code (**Chapter 106-120 WAC - Student Conduct Code).** Students not following these policies will be reported immediately without reservation or warning.

In addition to the conduct code, if a student has a question, dispute or grievance on how something as been graded on homework, exams or assignments it is the student's responsibility to contact the instructor individually to discuss the problem. Specifically for tests and quizzes, it is required that if there is a discrepancy in how something was graded, the student shall circle the item on the test or quiz and report their justification on the front of the test. Individual test questions and discrepancies will not be discussed in class as a whole.

Mode of Delivery:
Classroom instruction and computer lab time. Support materials and additional discussion time will be supported via Blackboard. Classroom discussion and course assignments are discussed at the beginning of each class period. Students are encouraged to attend each class meeting and participate in classroom activities and discussions for which they will receive participation credit.

Classroom Decorum: Due to the nature of the instructional environment, **be it known that any cell phone use during class or laboratory time will result in said phone being confiscated.** Cell phone use is any auditory or other ring, vibration, call out, etc. You will also be removed from the class or laboratory for that period, thus constituting an unexcused absence. If you leave the classroom to use a cell phone do not return to the classroom.

> Since the lab portion of the class is held in a computer laboratory, because each computer is an open access machine, students are to refrain from printing documents, reading and sending private email, playing video games, and surfing the web during the lecture portion of the class.

Also, due to the professional nature of the course and type of profession the student has chosen, students will not be able to wear hats during the course at any time. This means during the lecture and lab. If hats are worn during the class time period, points will be deducted for each incidence.

Departmental policy states that *Tobacco Products* are NOT permitted in the classroom. Use or attempted use will result in loss of one letter grade for the term per occurrence.

ADA Statement: Students who have special needs or disabilities that may affect their ability to access information and or material presented in this course are encouraged to contact the instructor or ADA Compliance Officer, Director, ADA Affairs and Students Assistance on campus at 963-2171 for additional disability related educational accommodations. Should students need additional time on tests, students with special needs or disabilities need to contact the instructor via email and approved documentation one week prior to the exam dates to confirm scheduled exam time and location.

Method of Evaluation:

Evaluation	**Points**
Homework @ 10 pts	100
Three exams @ 75 pts	225
Quizzes	50
Project and Presentation	100
Participation	6%-10%
Class Speaker and Additional Ass.	50
Total	**525**

Grade Scale (%)

A	100-94	**A-**	93-90		
B+	89-87	**B**	86-94	**B-**	83-80
C+	79-77	**C**	76-74	**C-**	73-70
D+	69-67	**D**	66-64	**D-**	63-60
F	59-0				

Explanation of Grades:
Grade of A = All requirements were exceptionally completed. Creativity and clear idea presentation were evidenced. Instructional content and use of technology were integrated to enhance instructional effectiveness.
Grade of B = One or more of the listed requirements is missing or not adequately completed. The assignment was completed in at above average standards.
Grade of C = Average level of accomplishment. Assignment was completed at a minimal level.
Grade of D = The assignment was turned in, but was below quality standards.

Office Hours:
Any student who is having difficulty with the course content as it has been presented is encouraged to meet with the instructor during normal office hours. Since office hours vary, students are encouraged to make appointments via email or phone with the instructor to clarify questions regarding course content. If my door is open feel free to stop in.

Assignments and Projects:
Homework assignments will be given on a regular basis and will pertain to text reading and estimating topics. Assignments will also be given that involve calculations and drawings or sketches. General requirements that pertain to homework and projects are:

- All work must be your own.
- Each homework assignment a cover sheet to be provided by the instructor as stated within the submittal guidelines on the assignment.
- Unless specified, perform all your work in pencil on ***green*** engineering paper (specifications for "green engineering paper" will be provided in class) ***(no spiral bound pages will be accepted)***. Format for name, course, and date will be provided in class and will pertain to all assignments using green sheets***. Each following page must include your initials and page number. Staple pages in the upper left-hand corner parallel to the direction of the fold (Please staple prior to class, I do not carry a stapler!)*** *If pages are not stapled the assignment will not be accepted resulting in a 0 for the assignment.*
- For each problem clearly state the "Given, Find, and Solution." All answers will be clearly identified by double underlining the answer.
- Please write neatly!! All work must be neatly lettered. **Unprofessional, sloppy, or late work will not be accepted**. *If you are unsure of what I expect feel free to ask, I will be more than happy to answer your questions.*
- If for some reason you **cannot attend a class** or **will be absent** when a homework assignment is due you are required to make the necessary arrangements to turn the assignment in prior to your departure with the instructor.

- For all writing assignments, standard guidelines set by the CMGT department will apply. If you need a copy of these they will be posted on Blackboard. *Special note: When using the works of others, the work cited within your manuscript will have a citation.*
- ***In construction, bids are due at a specific time and place. Bids turned in after the stated times are not accepted. We will take this same approach with all assignments and projects. Any assignment turned in after the stated time will not be accepted. Assignments will be due at the beginning of the class period or as announced.***

Participation:
Due to the content provided in class all students are required to attend class each day to participate in each of the lectures. As stated previously if a student must miss class for any reason, the student must email the instructor prior to the missed class. Participation means that all students will attend on time and be prepared for the lectures. For attending class on time 1 point will be added to the overall course score. If a student is late, they will get ½ of the participation points for the day. If the student attends class 100% of the time there will be a bonus point value added to the final score, which can be up to 20% of the total points for participation. If a student misses more than 1 day of an unexcused absence one point will be deducted from the final participation points accumulated for each day missed.

Quizzes:
The instructor reserves the right to give unannounced and announced quizzes at any time. Material eligible for quizzes will be any material previously covered during lecture and other related course material. See exam policy below for administration of quizzes.

Exams:
The two exams will be given during the regularly scheduled class meetings as on the attached class schedule. There will also be a final exam- format TBD. While exams are important to assess the knowledge gained during the course, grades are confidential. Answers to the test will be provided after the exams are graded. However, discussion of individual problems and answers will NOT be discussed in front of the entire class. If a student has a problem with a discrepancy on the exam versus the answer provided constituting an adjustment in points, they are required to circle the answer and write the question/problem on the front of the exam and the professor will review the student's answer individually. If the student still has not received resolution to the answer discrepancies please see the instructor during normal office hours or by appointment.

Site Visits:
If the class participates in a site visit all students are required to abide by the site safety rules and regulations as defined by the company or site supervisor. **At all site visits each student will be required to wear Occupational Health and Safety Administration (OSHA) approved safety glasses, hardhat, Class I high visibility vests, and boots. If any student does not have the required personal protective equipment (PPE) the student will not be allowed to participate in the site visit and this will count against their class participation grade.**

Academic Honesty:
You are about to enter a profession which values character, integrity, honesty, and a sense of fairness. While these traits may not always be demonstrated by all practitioners in this field, you will quickly become known by your reputation for professionalism - positive or negative. Given the importance of a reputation for honesty, an expressed policy on academic honesty for this class should be unnecessary. However, to make this very clear, there will be absolutely no tolerance for any violation of the *intent* of university policies on plagiarism, cheating, copying, or in any way representing the work of any past or current student as your own. Any evidence of such a violation will result in an immediate failing grade and dismissal from this course.

Syllabus:

At any point in time the instructor reserves the right to change this syllabus to reflect the actual progress of the course. Students are responsible for keeping up to date with any changes that might occur to any portion of this syllabus or course. Students will be informed of these changes through regularly scheduled classes, Canvas and laboratory sessions.

Course Materials:

Handouts and online reading.

Utility Contractors Association - http://www.nuca.com/i4a/pages/index.cfm?pageid=1

Utility Contractors of Washington - http://www.ucaw.org/

CMGT 443 (Lecture) Schedule

The following schedule is subject to change, students are responsible for obtaining schedule updates.

Week	Date	Subject Covered	Reading/Ass.
1	3-25-14	Introduction and Overview	
2	4-7-14	Above Ground and Below Ground Utilities	
3	4-14-14	Water and Wastewater	
4	4-21-14	Stormwater **Treatment Plant Tour**	
5	4-28-14	Power	
6	5-5-14	Gas Plans and Specifications	
7	5-12-14	Trench Safety	
8	5-19-14	Engineering, Construction and Installation Techniques	
9	5-26-14	Alternative Utilities – wind, solar, hydro, etc. **No class 5/26 Memorial Day**	
10	2-2-14	Special Topics	
Final	6-9-14	June 12, 2014 - Thursday, 12:00 – 2:00 PM Rm 227 See note below!	**FINAL EXAM**

As part of this class each student will be sitting for the competent person training. In order to receive the competent person training students must pay a $30 fee to the Construction Management Foundation. Costs for this course are typically are over $400. All monies for this course will be collected prior to allowing the student to sit for the training. This training is required to complete this course.

The final date provided by the university is a university requirement (this means that Dr. Plugge has no control over the date or time designation of the final exam), which means that we must meet on this date and time. If you are planning to leave for summer break on this day, please plan to leave after the final exam as scheduled above. If you are planning to meet family for graduation, please inform them you will meet them after the final exam. No exceptions will be taken for taking the final on an alternative date.

This page was left blank intentionally.

Since you have *completely read and understand the syllabus*, please complete the form below and turn into the instructor at the beginning of class on the first day during the second week of class. A signature below acknowledges the fact that the student has read and understands the requirements for this course. Read the syllabus carefully and submit this sheet on Monday, April 7, 2014 at the beginning of class.

		Date:
Student Name (Printed):		
Student Signature:		
Instructor Signature		

CMGT 444 (Codes, Contracts, and Specifications)
MTWTh 8:00 - 8:50 am
227 Hogue Hall
Fall, 2014

Dr. Michael L. Whelan
300D Hogue Hall
(509) 963-3544
mwhelan@cwu.edu

COURSE SYLLABUS

COURSE DESCRIPTION: Construction contracts and liability, bonding, arbitration, specifications, and building codes administration. Prerequisites: CMGT 343, BUS 241, and ENG 102.

OBJECTIVES: Primary course objectives are: 1) introduce students to a wide range of construction documents, 2) familiarize students with the processes and relationships controlled by construction documents and building codes, and 3) provide a working knowledge of construction contract law and building codes.

TEXT: **Smith, Currie & Hancock LLP's COMMON SENSE CONSTRUCTION LAW: A Practical Guide for the Construction Professional**, 4th Edition; edited by Thomas J. Kelleher, Jr. & G. Scott Walters; John Wiley & Sons, Inc.

OUTCOME AND ASSESSMENT:

LEARNER OUTCOMES - Students will be able to…

ASSESSMENT STRATEGIES - Each student will…

1. …a) understand the importance of construction contract language, and b) apply critical thinking and express a contract position based on principles of construction contract law in both oral and written formats.

    1. ...demonstrate competency of these principles through assignments and examinations based on applying knowledge to construction scenarios.

2. …a) understand basic contract law behind the formation of a construction contract, b) apply this knowledge to fundamental principles used in the construction arena, c) distinguish between different types of contract configurations and payment types, as well as understand the advantages and disadvantages of various options, d) know the potential duties and responsibilities of various parties to a construction contract, and e) work with typical construction documents and understand the importance of maintaining extensive documentation.

    3. ...demonstrate competency of these principles through assignments and examinations based on applying knowledge to construction scenarios.

3. …demonstrate competency of these principles through examinations and assignments based on applying knowledge to construction scenarios.

    3. …a) understand, work with, and apply some of the most important construction contract clauses dealing with changes, differing site conditions, matters of time, construction safety, and environmental compliance, b) understand the magnitude, duties, and responsibilities associated with changes and differing site condition clauses, c) understand the time related matters of liquidated damages, constructive and directed acceleration, critical and noncritical delays, the importance of scheduling and extended overhead, and d) effectively apply safety and environmental clauses.

4. …a) distinguish what circumstances justify submitting a claim, b) quantify a claim in terms of time and money by applying tools of cost accounting and cost engineering, and c) apply guides to avoid and/or resolve claims and disputes.

    4. …a) demonstrate competency of these principles through examinations and assignments based on applying knowledge to construction scenarios.

5. …distinguish between ethical and unethical behavior at applied to construction situations.

    5. …participate in small groups that will analyze separate ethical case studies and present their findings to the class.

6. …a) identify common types of construction surety bonds and explain the need for those bonds, b) know the purposes of and responsibilities associated with liens, the Miller Act, and sureties, c) explain owner's and contractor's rights and responsibilities when applying warranty clauses, and d) differentiate between types of insurance and apply that knowledge to selecting appropriate insurance coverage.

    6. …demonstrate competency of these principles through examinations and assignments based on applying knowledge to construction scenarios.

7. …demonstrate a working knowledge of construction building codes.

    7. ...demonstrate use of a building code such as the International Building Code with an out-of-class assignment and as part of the final exam.

MISCELLANEOUS, BUT IMPORTANT, NOTES:

OFFICE HOURS: **MTWTh @ 11:00 – 12:00 pm** (Other times by appointment are available.)

GRADE BREAKDOWN:

Assignments	20	%
Exams (4 @ 20% each)	80	%
TOTAL	100	%

100%→92%→90%→87%→82%→80%→76%→70%→68%→66%→62%→60%→ 0%
/ A / A– / B+ / B / B– / C+ / C / C– / D+ / D / D– / F /

ASSIGNMENTS:
1. Are due at **the beginning of class** on the date listed on the assignment.
2. Late assignments **will not** be accepted for credit. If you can't make it to class on time, then turn your assignments in early.
3. Must be presented in a clear, complete, and professional manner.
4. Must be neat, well organized, and legible.
5. Probably **will occur during the final week of classes**.

READING ASSIGNMENTS: Should be done before class to receive maximum benefit.

EXAMS: Four examinations will occur during three regularly scheduled class periods and the scheduled final exam time. Availability of makeup exams for any missed exams is at the discretion of the instructor, and will be considered only after consultation with the student about the reason(s) for missing the scheduled exam.

ATTENDANCE: Not mandatory, but strongly recommended - particularly if you expect to do well. You are responsible for all announcements, corrections, schedule changes, guest speaker presentations and additional information presented during regularly scheduled class periods. Besides, we will miss you!!!

CLASSROOM BEHAVIOR:

1. Students are expected to be in their seats and ready to go to work by the scheduled start of class. (This is particularly important given the starting time of this course.) Normal rules of courtesy and respect will prevail during class periods.

2. Electronic devices (cell phones, digital readers & players, gaming devices, etc.) are to be off, inactive, or in a silent mode during class. Electronic devices may be used for taking notes only – email, texting, game playing, web-surfing, video watching, or other similar diversionary activities are **NOT** permitted during class.

3. Work completed for this course (assignments and exams) is expected to be solely your own. Unless otherwise specified, **group solutions are not acceptable** for any assignment. Likewise, plagiarism of information from other sources or copying of another person's work is also not acceptable. If detected, you will fail the assignment with no opportunity to make up the work. Your attention is directed to Appendix B of the current CWU Catalog for additional information regarding this topic.

4. Your attention is also directed to Appendix A of the current CWU Catalog for the University's policies regarding Equal Opportunity, Affirmative Action, Gender Equity, and Sexual Harassment matters.

ADA STATEMENT: If you have a disability and require accommodations for this course, please speak with me privately as soon as possible so that necessary arrangements can be made. If you have not already done so, you will need to register with Disability Services (DS). DS is located in Bouillon 140. Alternatively, you may contact DS by email at ds@cwu.edu or by phone at (509) 963-1202 for more information.

CHANGES: Changes to the COURSE OUTLINE will be made as necessary and will be announced in class.

CLASS SESSION TOPICS:

Date	Session	Topic	Reading Assignment
SEP 24	1	Course & Topic Introduction	- - - - - - -
25	2	Legal Context of Construction	Chap. 1
29	3	Construction Documents – Advertisements & Instructions	- - - - - - -
30	4	Construction Documents – Bid Forms & Addenda	Chap. 2
OCT 1	5	Construction Documents – Agreement & Conditions	- - - - - - -
2	6	Construction Documents – Plans & Specifications	Chap. 3
6	7	Contract Alternatives	- - - - - - -
7	8	Impact of State Laws Impacts on Construction Contracts	Chap. 4
8	9	**T.B.D.**	- - - - - - -
9	10	Obtaining the Work – Competitive Bidding	Chap. 5
13	11	Contract Interpretation	- - - - - - -
14	12	Design Professional Considerations	Chap. 7
15	H	**PROFESSIONAL DEVELOPMENT DAY – no classes**	
16	13	**EXAM #1**	**Ch. 1 – 5**
20	14	Subcontract Administration and Dispute Avoidance	Chap. 8
21	15	Contract Changes in General	Chap. 9
22	16	Differing Site Conditions	Chap. 10
23	17	Contract Time Aspects	Chap. 11
27	18	Acceptance and Warranties	Chap. 12
28	19	Risk Management	Chap. 13
29	20	Payment Bonds and Mechanics Liens	Chap. 14
30	21	**EXAM #2**	**Ch.** (1 – 5) & **7 – 12**
NOV 3	22	Performance Bonds	Chap. 15
4	23	Proving Costs & Damages	Chap. 16
5	24	Insurance	Chap. 18
6	25	Labor Issues in Construction	Chap. 19
10	26	Resolution of Disputes	Chap. 21
11	H	**VETERAN'S DAY – no classes**	- - - - - - -
12	27	**T.B.D.**	- - - - - - -
13	H	**T.B.D.**	- - - - - - -
17	28	Professional Ethics Presentation/Exercise	- - - - - - -
18	29	Professional Ethics Presentation/Exercise	- - - - - - -
19	30	**T.B.D.**	- - - - - - -
20	31	**EXAM #3**	**Ch.** (1 – 12) & **13 - 21**
24	32	Building Codes and Code Administration	- - - - - - -
25	33	Building Codes and Code Administration	- - - - - - -
26	H	**THANKSGIVING EVE – no classes**	
27	H	**THANKSGIVING DAY – CWU closed**	
1	34	Building Codes and Code Administration	- - - - - - -
2	35	Building Codes and Code Administration	- - - - - - -
3	36	Building Codes and Code Administration	- - - - - - -
4	37	Building Codes and Code Administration	- - - - - - -

EXAM #4: Currently scheduled for 8:00 – 10:00 am, Thursday, December 11th – So please don't make airline reservations, accept wedding invitations, commit to start a job, or incur similar obligations that will conflict with the time set for the final exam in this course – nor should you let anyone else obligate you either!!!

School of Industrial Engineering and Technology
Course Outline for CMGT 445
Heavy Civil Contract Law
M,Tu,W,Th 8:00-8:50 AM
Hogue Hall 223
Fall 2014

P. Warren Plugge, Ph.D.
Associate Professor of
Construction Management
School of Industrial Engineering and Technology
E-mail: wplugge@cwu.edu
Web: http://www.cwu.edu/~iet/faculty/plugge.html

Telephone: 509-963-2427
Office: Hogue 300C
Office Hours: By appointment, email to set a time.

Credits: 4

Prerequisites:
CMGT 344 or CMGT 345 and BUS 241

Catalog Description:
Construction contracts, liability, bonding, arbitration and heavy civil highway specifications.

Course Description: The purpose of this course is to help students develop a basic understanding of contracts, contract clauses, bonding, specifications, subcontracts, ethics, warranties, arbitration, and mediation as they pertain to heavy civil construction.

Learner Outcomes (Course Objectives):

Outcome	Assessment Strategy
1. Students will be able to understand the importance and nuances involved in construction contract language. Then apply critical thinking and express a contract position based on principles of construction contract law, both orally and in writing.	Given a case study on a construction claim, the student will analyze the facts, apply construction contract law knowledge, develop a position, and express it in writing and orally in a presentation to the class. This will be demonstrated through the students re-enactment of court cases
2. Understand the basic contract law behind the formation of a contract particularly as applied to construction. Students will be able to apply this knowledge to fundamental principles used in the construction arena. Then distinguish between different types of contracting vehicles and payment types and understand the advantages and disadvantages of the various options. Students will know the potential duties and responsibilities of various parties to a construction contract. Students will be able to work with typical construction documents and understand the importance of maintaining extensive documentation.	Demonstrate these principles through case study scenarios, written assignments, and examinations.
3. Able to understand, work with and apply some of the most important construction contract clauses of; "changes", "differing site conditions", matters of time, construction safety, ethics, and environmental compliance. Understand the magnitude, duties and responsibilities associated with the changes and differing site condition clauses. Students will be able to understand the time related maters of liquidated damages, constructive and directed acceleration, critical and non-critical delays, importance of scheduling and extended overhead. Able to apply safety and environmental clauses effectively.	Demonstrate these principles through case study scenarios, written assignments, and examinations. Students will also participate in small group exercises to analyze complicated delay case studies and present findings to the class.

4. Students will be able to distinguish what constitutes a claim, how to quantify it in terms of time and money by applying tools of cost accounting and cost engineering. Students will be able to apply guides to avoid and/ or resolve claims.	Demonstrate these principles through case study scenarios, written assignments, and examinations. Students will also participate in small group exercises to analyze complicated delay case studies and present findings to the class.
5. Students will be able to distinguish between ethical and non ethical behavior as applied to construction situations.	Demonstrate these principles through case study scenarios, written assignments, and examinations. Students will also participate in small group exercises to analyze complicated delay case studies and present findings to the class.
6. Understand the need for and identify Bid, Payment, and performance bonds. Know the reasons behind and responsibilities for liens, the Miller act and use of sureties. Understand owners and contractors rights and responsibilities when applying warranty clauses. Be able to differentiate between the different types and apply knowledge to obtain the appropriate insurance.	Demonstrate these principles through examinations based on applying knowledge to construction scenarios.
7. Obtain a basic working knowledge of standard specifications by the Washington Department of Transportation (WSDOT) specifications.	The student will demonstrate their use of the WSDOT specifications by interpreting case studies and through homework assignments.

Instructor reserves the option of making adjustments to this syllabus and course requirements and will notify students of such changes should they become necessary.

Course Requirements:

1. Each student is responsible for completing the assigned case study review and section/chapter readings prior to each class meeting. Although there are many readings, most are not extremely lengthy yet each **requires considerable attention to assure the student is prepared and familiar with the readings and chapter activities for the class**.

2. Due to the nature of the activities in this course, it is required that students attend each lecture and lab activity period assigned to the course. Much like an absence on the construction site, if you should have to miss class it is your responsibility to contact the instructor prior to your departure via email. If for some reason you miss class due to a personal or family emergency and cannot use the internet call the instructor's office or the main office and leave a message. Information that is not acquired from the student due to their absence from class should be acquired through another student, from the instructor during regularly scheduled office hours or via the use of Blackboard.

"If you have a severe respiratory or influenza-like illness (ILI) (high fever, aches, chills, cough) you should not come to class until you are without fever for 24 hours without the aid of fever-reducing medication. If your absences are related to a severe respiratory or flu-like illness, you will be given the opportunity to make up your assignments and class content without penalty. *It is YOUR responsibility to notify your instructor, in advance, when absent. Faculty is under no obligation to excuse class absences related to sickness.* If you are pregnant, work with your instructor to prevent exposure these flu like symptoms. You should utilize the following precautions to prevent exposure: 1) Frequent hand washing and carry a bottle of alcohol-based hand sanitizer with you at all times. 2) Cough etiquette (grab your shoulder and cough into your elbow). 3) Place used tissues immediately in the trash, followed by washing your hands. 4) Use CDC-approved disinfectants on shared surfaces such as doorknobs, desks, etc. 4) **Stay home if you have a severe respiratory or flu-like illness.**

3. Grades in the course will be based on a series of problems/projects, student analysis of various construction cases, participation in class, quizzes, two exams, and a comprehensive final examination.

Instructional Methodology:
This course will meet approximately four hours a week. One hour of lecture/lab four days per week. A portion of the coursework will be based in class with some outside activities based on the current lecture/lab material presented. The coursework will be project based on the various readings and activities to demonstrate a student understands of various contract laws. Use of Blackboard and Internet resources will support the learning process. **Students must be prepared to spend at least 3-4 hours per-week outside of class time reading construction cases, WSDOT specifications, and outside readings pertaining to contract law.**

Student Behavior:
Students will be held accountable for their behavior in class pursuant to the Central Washington University student conduct code (Chapter 106-120 WAC - Student Conduct Code) and guidelines as stated within the CMGT Student Handbook. Students not following these policies will be reported immediately without reservation.

In addition to the conduct code, if a student has a question, dispute or grievance on how something as been graded on homework, exams or assignments it is the student's responsibility to contact the instructor individually to discuss the problem. Specifically for tests and quizzes, it is required that if there is a discrepancy in how something was graded, the student shall circle the item on the test or quiz and report their justification on the front of the test. Individual test questions and discrepancies will not be discussed in class as a whole.

Mode of Delivery:
Classroom instruction and computer lab time. Support materials and additional discussion time will be supported via Blackboard. Classroom discussion and course assignments are discussed at the beginning of each class period. Students are encouraged to attend each class meeting and participate in classroom activities and discussions for which they will receive participation credit based on the instructor's observation.

Classroom Decorum: Due to the nature of the instructional environment, be it known that any cell phone (including text messaging) or iPod/iPad/iAnything use during class or laboratory time will result in said iDevice being confiscated. Cell phone use is any auditory or other ring, vibration, call out, text messaging, etc. iPod/iDevice use is the use of any auditory (includes ear buds, headphones, etc.) or visual devise (iPod video) used during lecture or lab. If you leave the classroom to use a cell phone do not return to the classroom. If you use a cell phone or iDevice during class the professor will ask that you leave the class or laboratory for that period, thus constituting an unexcused absence with a point deduction from your final score in the class.

> If class is held in a computer laboratory, because each computer is an open access machine, students will NOT print documents, read and send private email, play video games, check sports scores, facebook and surf the web during the lecture portion of the class.

Departmental policy states that *Tobacco Products* are NOT permitted in the classroom. Use or attempted use will result in loss of one letter grade for the term per occurrence.

ADA Statement: *If you have a disability and require accommodations for this course, please speak with me privately as soon as possible so that your needs may be appropriately met. If you have not already done so, you will need to register with Disability Services (DS). DS is located in Bouillon 140. Call (509) 963-2102 or email cds@cwu.edu for more information. Additional information about Disability Services can be found at this website http://www.cwu.edu/disability-support/.*

Use of Facilities:
Hogue Hall is a new building, please refrain from defacing the facility and equipment (i.e. desks, lab equipment, etc.) to allow future students the same opportunity you have been given with a clean facility and equipment. If caught defacing the any portion of the facility or equipment the guilty party will result in a deduction of their final grade. Also, report any misuse of the facility and its equipment to the instructor. If for some reason a group or individual students need to use a classroom for study purposes please contact the instructor. There are student study areas located throughout the building for student use at any time. Designated faculty conference rooms and lounge areas are NOT for use by any student. When

completed with your task within the study areas please clean up and dispose waste in the designated areas. Additional information about the facilities is posted on the Engineering, Technology, Safety and Construction Website at http://www.cwu.edu/engineering/engineering-technologies-safety-and-construction-formerly-iet.

Method of Evaluation:

Evaluation	Points
Homework and Case Studies	100
WSDOT Questions	100
Exams and unannounced quizzes	450
Presentations, ICA's	100
Participation	50
Total	**800**

Grade Scale (%)

A	100-94	**A-**	93-90		
B+	89-87	**B**	86-84	**B-**	83-80
C+	79-77	**C**	76-74	**C-**	73-70
D+	69-67	**D**	66-64	**D-**	63-60
F	59-0				

Explanation of Grades:
Grade of A = All requirements were exceptionally completed. Creativity and clear idea presentation were evidenced. Instructional content and use of technology were integrated to enhance instructional effectiveness.
Grade of B = One or more of the listed requirements is missing or not adequately completed. The assignment was completed in at above average standards.
Grade of C = Average level of accomplishment. Assignment was completed at a minimal level.
Grade of D = The assignment was turned in, but was below quality standards.

Homework:
Homework assignments will be given on a regular basis and will pertain to text reading and construction case study information. General requirements that pertain to homework are:

- **All work must be your own.**
- Unless otherwise specified, perform all your work in pencil on green engineering paper. ***Include in the upper right hand corner of the first sheet your name, in the center shall be the course number and title (Ex. CMGT 445 Heavy Civil Contracts..), on the left side of the page will include the date. Each following page must include your initials and page number. All pages will have a clean cut edge on all four sides (no exceptions will be taken).*** Staple pages in the upper left-hand corner.
- Please write neatly!! All work must be neatly lettered. **Unprofessional, sloppy, or late work will not be accepted**. *If you are unsure of what I expect feel free to ask, I will be more than happy to answer your questions.*
- For problems involving calculations, each problem will be clearly stated with the "Given, Find, and Solution." All answers will be clearly identified by double underlining or boxing out the answer.
- If for some reason you **cannot attend a class** or **will be absent** when a homework assignment is due you are required to make the necessary arrangements to turn the assignment in prior to your departure with the instructor.
- *In construction, bids are due at a specific time and place. Bids that are turned in after the stated time are not accepted. We will take this same approach with all homework and assignments. Any homework or assignment turned in after the stated time will not be accepted. Homework will be due at the beginning of the class period or as announced.*

Case Studies and Court Research:
During this course you will be provided information based on actual legal problems that have occurred in construction. You will be required to analyze each situation utilizing your book, internet, and other outside resources. You are encouraged to utilize the library resources.

Quizzes:
The instructor reserves the right to give unannounced quizzes at any time. Each day you can expect to receive a quiz. Material eligible for quizzes will be any material previously covered during a lecture or lab, details in the construction documents, homework, or current reading material. Please, come prepared to each class. If class is missed, quizzes may not be made up.

Exams:
The three chapter exams and WSDOT test will be given during the regularly scheduled class meetings as indicated on the attached class schedule. The final exam will be given during finals week and will be comprehensive. Details pertaining to material covered on each exam, exam format, etc will be discussed in class immediately prior to each exam. Exams will be cumulative meaning that information from prior chapters will be tested on the current exam.

Academic Honesty:
You are about to enter a profession which values character, integrity, honesty, and a sense of fairness. While these traits may not always be demonstrated by all practitioners in this field, you will quickly become known by your reputation for professionalism - positive or negative. Given the importance of a reputation for honesty, an expressed policy on academic honesty for this class should be unnecessary. However, to make this very clear, there will be absolutely no tolerance for any violation of the intent of university policies on plagiarism, cheating, copying, or in any way representing the work of any past or current student as your own. Any evidence of such a violation will result in an immediate failing grade and dismissal from this course.

Course Materials:
Text. Ansley, R.B., Kelleher, T.J., & Lehman, A.D. (2009).*Smith, Currie & Hancock LLP's: Common Sense Construction Law.* 4th Edition. John Wiley & Sons: New York, NY. The text is also available electronically through Coursesmart (www.coursesmart.com). Students will need to set up an account.

Washington Department of Transportation (2012) *Standard Specifications: For road, bridge, and municipal construction* (WSDOT Publication No. M 41-10). Olympia, WA: Author. (Note: if you have a copy of these specifications please bring them, if not a soft copy is provided online, you should have a copy of Division 1 in class at all times). Each week we will discuss specific topics within each section stated per week. http://www.wsdot.wa.gov/publications/manuals/fulltext/m41-10/ss2012.pdf

Companion Web Site (CWS)

Posted on Canvas will be handouts, information sheets, and web links.

Curriculum Review
We are in a program review cycle. Some students may be asked to use their work as examples of work performed in this class. If this is the case, the students will be randomly selected. The instructor will photo copy the students work for review by the accreditation team in 2015. If the student is one of the chosen students, your work will be kept confidential only to be viewed by faculty members and the accreditation team.

Help!
Asking questions is the way we learn; a question not asked is a piece of knowledge yet to be understood (Anonymous). If you should need help at any point in this course, feel free to contact the instructor at the end of class or via email to set an appointment. The instructor maintains an open door policy, if he is available please step in and we will work to find a solution to the problem or issue.

Office Hours:
A set time frame for office hours will be identified later within the quarter. It is **strongly** recommended that students email the professor to arrange for office hours. In the email please specify an option for times to meet.

Writing Help:
Each student will be required to do some writing as a requirement for this course. Should you need help outside of class in writing the student may contact the writing center. The website for the writing center is: http://www.cwu.edu/learning-commons/university-writing-center . Follow this link to access the location and times the writing center is open.

CMGT 445 Course Schedule

The following schedule is subject to change, students are responsible for obtaining schedule updates.

Week	Date	Subject Covered	Reading/HW
0	9-22-14	Intro, Bidding the Contract	Ch. 1 M41-10- 01
1	9-29-14	Bidding the Contract Library- TBD Article: Specially Drafted Terms Prevail	Ch. 2,3 M41-10- 01 & 02 **(10/2)** Syllabus Contract **Due 9/29/14**
2	10-6-14	Contracting and Payment Methods Ethics **Exam 1 (Ch 1,2,3,4)**	Ch. 3,4 M41-10- 03 & 04 **(10/9)**
3	10-13-14	Interpreting the Contract Authority of A/E	Ch. 5,7 M41-10- 05 **(10/16)**
4	10-20-14	Subcontracts & Dispute Avoidance Environmental	Ch. 8, 13 Ch. 17 M41-10- 06 **(10/23)**
5	10-27-14	Changes Differing Site Conditions **Exam 2 (Ch 5, 7, 8, 9, 10)**	Ch. 9,10 M41-10- 07 **(11/6)**
6	11-3-14	Matters of Time Delays **CMGT and IET Career Fair (Exam 2 Th. 11/6)**	Ch.11 M41-10 07 & 08 **(10/30)**
7	11-10-14	Claims Resolution	Ch. 16, 21 M41-10 09 & 10 **(11/6)**
8	11-17-14	Warranty Bonds **Exam 3 (Court Cases Brief)**	Ch. 12, 14, 15 Guest Speaker
9	11-24-14	Insurance, Liens Managing Workers **WSDOT Test Online– Open Book (Monday 11/24)** **Thanksgiving Break (NO CLASS W and TH)** **Happy Thanksgiving!!!**	Ch 18, 19
10	12-1-14	Court is in session! Court Case Study Presentations Final Review	Presentations
Finals	12-8-14	**Final Exam- 8:00-10:00 am –Thursday! 12/11/14.**	

The final on Thursday 12/11/2014, this is a University requirement. Please do NOT plan to be out of town on this day.

CMGT 445 – Heavy Civil Contract Law (Lecture)

Since you have *completely read and understand the syllabus*, please complete the form below and turn into the instructor on Monday, September 29, 2014 at the beginning of class. A signature below acknowledges the fact that the student has read and understands the requirements for this course.

		Date:
Student Name (Printed):		
Student Signature:		
Instructor Signature		

School of Engineering Technologies, Safety, & Construction

CMGT 447 Construction Planning, Scheduling, & Control
Fall Quarter 2014

Class Hour: MW 2:00-3:15PM
Lab: T 1:00-1:50PM or 2:00-2:50PM
Room: Hogue Technology 227/118
Credits: 4

Instructor: David W. Martin
Email: dwmartin@cwu.edu
Office: 300E Hogue Technology
Office Phone: (509) 963-1770
Office Hours: MTWR 10:00-11:30 PM, R 1:00-3:00PM, or by appointment

Catalog Description: CMGT 447. Construction Planning, Scheduling and Control. Project scheduling and evaluation using network scheduling techniques, including critical path scheduling. Includes short interval scheduling and cash flow forecasting. Prerequisites, CMGT 343 and IT 101.

Textbooks: Required: Mubarak, Saleh. Construction Project Scheduling and Control, Second Edition, Wiley, 2010.

Prerequisites:
CMGT343 – Construction Estimating I.

Course Requirements:
Each student is responsible for completing the assignments and chapter readings prior to each class meeting. Although there are many readings, most are not extremely lengthy yet each requires considerable attention to assure the student is prepared and familiar with the readings and chapter activities for the class.

Due to the nature of the activities in this course, it is required that students attend each lecture and lab. Much like an absence on the construction site, if you should have to miss class it is your responsibility to contact the instructor prior to your departure via email. If for some reason you miss class due to a personal or family emergency and cannot use the internet; please call the instructor's office or the main office and leave a message. Information that is not acquired from the student due to their absence from class should be acquired through another student or from the instructor during regularly scheduled office hours.

Grades in the course will be based on a series of problems/projects, student demonstrations of proficiency using computer software, student participation in class, quizzes, and exams.

Instructional Methodology:
This course will meet for three lecture hours and one lab hour each week. The majority of the coursework will be based in class with some outside activities based on the current lecture/lab material presented. The coursework will be project based on the various readings and activities. Use of Canvas and Internet resources will support the learning process. **Students must be prepared to spend at least 3-4 hours per-week outside of class time working with the construction documents, outside readings, etc.**

Computer Laboratory: This course will incorporate Primavera Project Management (P6) to complement the lectures and manual scheduling applications. Regularly scheduled classroom time will be spent in the computer lab learning and applying. Homework assignments and projects will also incorporate the software.

Learner Outcomes (Course Objectives):

Outcome	Assessment Strategy
1. Define project activities & work breakdown structure (WBS) for a commercial building or heavy civil project by considering equipment, subcontracts, material requirements and event sequencing.	Students shall demonstrate this knowledge on homework assignments and by creating a list of at least 100 activities and WBS for an actual commercial project.
2. Define sequential logic on a network diagram, including finish to start, start to start, and finish to finish logic, with lag and lead times identified.	This shall be assessed through extensive work on a project, in the computer lab, on exams and on homework assignments.
3. Manually perform forward and backward passes on activity on node diagrams, identify critical path, early/late starts/finishes, and total & free float for activities.	This will be assessed through class participation, homework and project assignments and written exams.
4. Demonstrate an understanding of network scheduling as it relates to contract provisions, delay claims and dispute resolution for a project.	Students shall work with a variety of contract documents and real schedules for commercial projects and demonstrate proficiency on homework assignments.
5. Demonstrate a working knowledge of resource considerations, including resource histograms and resource leveling, cash flow and earned value for a project.	This shall be demonstrated through an assigned commercial project, homework and written examinations.
6. Properly utilize project cost reports and predictive models including earned value management.	This shall be demonstrated on homework and written examinations.
7. Accurately and quickly perform several of the items identified above on Primavera P6 scheduling software, including proper use of reports and graphics.	Each student will be required to attend a weekly computer lab session and complete a variety of assignments. A schedule for a commercial building project with resource considerations shall be completed using the software. Quizzes pertaining to the software may also be given in the labs.

Grading:
Student work shall be assigned points as follows:

Homework	200 points
Mid-Term Exam	200 points
Final Exam	250 points
Group Pres/Project	250 points
Attendance	100 points
Total	**1000 points**

Letter grades will be assigned based on the percentage of total points that each student earns during the quarter. Note that the course grade incorporates work performed in the computer lab:

A	100-93	**A-**	92-90		
B+	89-88	**B**	87-82	**B-**	81-80
C+	79-78	**C**	77-72	**C-**	71-70
D+	69-68	**D**	67-62	**D-**	61-60
F	59-0				

Exams: The mid-term exam will be given during a regularly scheduled class meeting as indicated on the class schedule. The final exam will be comprehensive. Details pertaining to exam format, material covered; etc. will be discussed in class prior to each exam.

Homework: Homework will be assigned on a regular basis and will pertain to the reading and to the material covered in the lectures. You are expected to complete your work on time. The policy for this course is that ***no late work will be accepted.*** Homework must meet the following criteria:

- Use engineering paper, if applicable
- Use pencil, neatly lettered and organized
- Use a straightedge for drawing network schedules, Gantt charts, etc.
- Computer printouts shall be titled and neatly organized

Academic Honesty Policy: Students are clearly expected to do their own work and not copy the work of others. Evidence of copying, including any computer files, cheating or using writings of others without proper citations will result in a failure for the specific assignment. Successive evidence of copying, including any computer files, cheating or using writings of others without proper citations during the curriculum of the Construction Management program will result in loss of a student's major status. Your attention is directed to Appendix B of the current CWU Catalog for additional information regarding this topic.

ADA Statement: Students who have special needs or disabilities that may affect their ability to access information and or material presented in this course are encouraged to contact the instructor or ADA Compliance Officer, Director, ADA

Affairs and Students Assistance on campus at 963-2171 for additional disability related educational accommodations. Students requesting to take tests at the test center must contact the instructor at one week prior to the test to assure your test will be delivered at the correct time.

CMGT 447 Construction Planning, Scheduling and Control
Fall 2014
Classroom Schedule

Week	Date	Subject Covered	Reading
1	9/29	Introduction to Planning / Scheduling / Control Continuum, Grand Plan, Scheduling History & Methods	Chapters 1&2
1L	*9/30*	*Work Breakdown Structure, Tasks, Events*	
1	10/1	Network (Logic) Diagrams, Activity on Node	Chapter 3
2	10/6	Activity Durations, CPM Calculations	Chapter 4
2L	*10/7*	*Creating a project, linking tasks, headers, footers, notes and saving files*	
2	10/8	CPM Calculations	
3	10/13	CPM Calculations (continued), Floats, Lag and Lead Times	Chapter 5
3L	*10/14*	*Adding, deleting tasks. Creating task dependencies.*	
3	*10/15*	*Faculty Development Day*	*No Class*
4	10/20	CPM Calculations (continued), Floats, Lag and Lead Times	
4L	*10/21*	*Adding, deleting tasks. Creating task dependencies.*	
4	10/22	Outlining a project, WBS, organizing tasks	
5	10/27	Other Floats and Scheduling Constraints	
5L	*10/28*	*Outlining a project, WBS, organizing tasks*	
5	10/29	**Mid-Term Exam**	
6	11/3	Resource Allocation and Leveling	Chapter 6
6L	*11/4*	*Defining and assigning resources*	
6	11/5	Cost Allocation & Cash Flow Projections	
7	11/10	Cost Allocation & Cash Flow Projections	

7L	*11/11*	*Veterans Day – No Lab*	
7	11/12	Project Cost Reports	
8	11/17	Project Cost Reports	
8L	*11/18*	*Calendars, scheduling with resources*	
8	11/19	CPM in Dispute Resolution Guest Speaker – Steve Sunich	
9	11/24	Developing Final Project Requirements	
9L	*11/25*	*Project Monitoring and Control, Schedule Updating, Target Schedules*	*Chapter 7*
9	*11/26*	*Thanksgiving – No Class*	
10	12/1	Schedule Acceleration	Chapter 8
10L	*12/2*	*Complete Final Project*	
10	12/3	Schedule Acceleration	
12	**12/8**	**Final Exam, noon-2pm**	

CMGT 450
Soils and Foundations
Fall 2014

Catalog Description: CMGT 450. Soils and Foundations (4). An introduction to soil mechanics and analysis and design of both shallow and deep foundations. Prerequisites, IET 312 and CMGT 346 and GEOL 101, GEOL 101LAB or GEOL 108.

Textbook: Soils and Foundations. Eighth Edition, Liu and Evett. Pearson, 2014.

Other: Laboratory Manual and Geotechnical Reports. Packages are available at the Copy Shop. ***Safety glasses and closed-toe shoes*** must be worn in the soils lab at all times.

Instructor: Dave Carns
Hogue Technology, Room 300A, Phone: 963-1762
E-mail address: carnsd@cwu.edu, Home e-mail address: dwcarns@yahoo.com

Office Hours: Monday, Tuesday and Wednesdays 9:00-10:00 am and 2:00-3:00 pm and Thursday 9:00-10:00 am or by appointment.

Learner Outcomes (Course Objectives)

Outcome	Assessment Strategy
1. Identify and describe sources of soils, how these soils are deposited and their physical engineering properties as they relate to the Unified Classification System.	Students will work in groups in the soils laboratory to classify soils per the Unified Classification System, including the Atterberg limits and sieve analysis tests. Students will also demonstrate proficiency on written exams.
2. Properly calculate engineering properties of soils, including water flow through soil using Darcy's equation, moisture content, densities and void ratio, based on information obtained from reading a soil boring log.	Students shall demonstrate proficiency on written homework assignments and exams. Students shall also perform some of these tests and calculations in the laboratory.
3. Demonstrate an understanding of soil compaction and the relationship of soil density to moisture content.	Perform the Standard and Modified Proctor tests in the laboratory and demonstrate proficiency on exams and homework assignments.
4. Properly calculate stress distribution in soils beneath both a point and distributed foundation load using influence coefficients, the Boussinesq Equation and chart and a Newmark chart.	Students shall demonstrate proficiency on homework assignments and written exams.

5. Properly calculate consolidation and settlement of a foundation over a clay stratum, as a function of time, using an "e log p curve".	Students shall demonstrate proficiency on both exams and written homework assignments.
6. Demonstrate an understanding of soil strength due to cohesion and internal friction, the tests used to determine this strength and how this relates to the ability of the soils to support a variety of structures.	Students shall demonstrate proficiency on both exams and written homework assignments.
7. Properly analyze and design both shallow and deep foundations, including spread footings, piling and piers. Also, properly determine at rest, active and passive lateral soil stress on earth retaining structures.	Proficiency shall be demonstrated by designing both shallow concrete footings and deep piling on homework assignments and exams. Lateral forces due to soil and water on retaining walls shall also be determined in homework assignments and on exams.

Grading:

Student work will be assigned points as follows:

Homework (including lab assignments and projects)	120 pts
Exam No. 1	100 pts
Exam No. 2	100 pts
Final Exam	120 pts
Total Points	440 pts

Letter grades will be assigned based on the percentage of total points that each student earns during the quarter:

92-100%	A
90-91%	A-
88-89%	B+
82-87%	B
80-81%	B-
78-79%	C+
72-77%	C
70-71%	C-
68-69%	D+
62-67%	D
60-61%	D-

Homework:

1. Homework will be assigned on a weekly basis and will be typically due the following week. All work shall be done in pencil on engineering paper, using standard engineering format, unless otherwise noted. This format includes:
   - Name, date, course and assignment number on the FIRST sheet. Name and page number/total number of pages on EACH additional sheet.
   - **Given:** A brief statement of the problem, including a sketch if appropriate. If you can't draw a straight line use a straightedge.
   - **Find:** A statement indicating what the problem is asking to find.
   - **Solution:** A neat step-by-step solution to the problem, including diagrams, units and an **underlined or boxed** answer.

2. Professional work is imperative at the senior level, and a portion of your homework grade will be based on appearance of the assignments.

3. Assignments are due at the beginning of the class period and ***no*** late work will be accepted.

4. Some homework assignment may not be graded.

Exams:
Exams will be given as indicated on the attached schedule.

Laboratory: This course includes a series of laboratory exercises that will be conducted primarily in the soils lab located in Hogue Room 105. These exercises are designed to complement the classroom information presented in this course by providing a "hands-on" learning environment. All students using the lab must follow proper safety procedures at all times. **No open-toed shoes will be allowed in the lab**. Please refer to the separate lab handout for more information. Some lab times may be used as a recitation period to work problems and answer questions.

Classroom Behavior and Academic Honesty: Students are expected to be in their seats and ready to go to work by the scheduled start of class. (This is particularly important given the starting time of this course and the prevalence of quizzes at the start of class.) Normal rules of courtesy and respect will prevail during class periods.

Electronic devices (cell phones, digital readers & players, gaming devices, etc.) are to be off, inactive, or in a silent mode during class. Electronic devices may be used for taking notes and textbook access only – email, texting, game playing, web-surfing, video watching, or other similarly distracting activities are **NOT** permitted during class.

Work completed for this course (assignments, quizzes, and exams) is expected to be yours and yours alone. Unless otherwise specified, group solutions are not acceptable for any assignment, and neither is plagiarism of information from other sources or copying of another person's work. If detected, you will fail the assignment with no opportunity to make up the work. Successive evidence of copying, including any computer files, cheating or using writings of others without

proper citations during the curriculum of the Construction Management program will result in loss of a student's major status. Your attention is directed to Appendix B of the current CWU Catalog for additional information regarding this topic.

Your attention is also directed to Appendix A of the current CWU Catalog for the University's policies regarding Equal Opportunity, Affirmative Action, Gender Equity, and Sexual Harassment matters.

Disability Services: If you have a disability and require accommodations for this course, please speak to me privately as soon as possible so that your needs may be appropriately met. If you have not already done so, you will need to register with Disability Services (DS). DS is located in Bouillon 140. Call (509) 963-1202 or email ds@cwu.edu for more information.

CMGT 450 Soils and Foundations
Fall 2014

Week	Date (Week)	Subject Covered	Reading
1	9-22-14	Introduction Engineering Properties of Soils	Ch 1 Ch 2
2	9-29-14	Engineering Properties of Soils Soil Exploration Lab: Soil Moisture Content	Ch 2 Ch 3
3	10-6-14	Soil Compaction and Stabilization Water in Soil Lab: In-place Soil Density	Ch 4 Ch 5
4	10-13-14	Seepage and Flow Nets Stress Distribution in Soil Lab: Soil Sieve Analysis	Ch 5 Ch 6
5	10-20-14	**Exam No. 1** Stress Distribution in Soil (cont.)	Ch 6
6	10-27-14	Consolidation and Settlement of Soils Lab: Atterberg Limits, Liquid Limit Test	Ch 7
7	11-3-14	Shear Strength of Soils Lab: Atterberg Limits, Plastic Limit Test	Ch 8
8	11-10-14	**Veterans Day (Tuesday)** Shallow Foundations **Exam No. 2**	Ch 9
9	11-17-14	Deep Foundations: Piles and Pile Groups Lab: Standard and Modified Proctor Tests	Ch 10
10	11-24-14	Lateral Earth Pressure **Thanksgiving Break**	Ch 11
11	12-1-14	Retaining Structures	Ch 12
12	12-8-14	**Final Exam TBA**	

Note: Safety glasses and closed-toe (provided by the student) must be worn in the soils lab at all times.

CMGT 452 Leadership in Energy and Environmental Design (LEED) in Sustainable Construction
Central Washington University Win 2014

1. Course Hogue room 227, T, Th 3-4:50

2. Faculty Member Information:

Professor: William J. Bender Ph.D., PE, LEED AP
Office: Hogue 300B, Office hours: M, T, W & Th, 1-2PM or by appointment
Office phone: 963-3543, E-mail: benderw@cwu.edu

3. Course Description: CMGT 452 4 credits. — Process of using LEED for sustainable construction. The course covers the benefits of green building, cost analysis, and professional problem solving.

4. Course Rationale: Provide a broad foundation to sustainable building. Course will also help students be able to describe and interpret green building techniques and apply the LEED process of measurement.

5. Textbook and other required materials for the course:

a. LEED Reference Guide…LEED 2009 Green Building Design And Construction Reference Guide. A PDF is available on BlackBoard (BB).
b. USGBC LEED Green Associate Study Guide and Green Building & LEED Core Concepts Guide. PDFs are available on BB.

6. Instructional Methods and Activities

The primary student learning activity will be individual, team, and laboratory learning. Students will perform individually and as team members' to work on homework or projects.

7. ADA Statement

Students who have special needs or disabilities that may affect their ability to access information and or material presented in this course are encouraged to contact me or, the ADA Compliance Officer, Director, ADA Affairs and Students Assistance on campus at 963-2171 for additional disability related educational accommodations.

Tobacco products are NOT allowed in the Hogue Tech Building
Turn OFF cell phones do not send/ read texts in class

8. CMGT 452 Specific Learner Outcomes:

Learner Outcomes	Assessment Strategies
1. Able to identify, reference and apply the LEED criteria.	The student will be assigned in class, homework, quizzes, and exams on the LEED criteria.
2. Able to tabulate costs for green building elements. Compare cost to benefits of sustainable construction alternatives.	The student will provide costs for alternatives to deliver sustainable construction in the form of homework and projects.
3. Demonstrate the ability to work in teams and estimate an entire commercial project.	Work in teams to develop a project that develops a sustainable project using the LEED criteria.
4. Apply reference guide	Become a Green Associate

9. Grading:

A "C" grade indicates that a student has a marginal mastery of the objectives of the courses. The grades above a "C" are used for those students who have demonstrated some degree of superiority. An "I" means the student was not able to complete the course by the end of the term, but has satisfactorily complete a sufficient portion of it and can be expected to finish without having to re-enroll in it. See the University Catalog for more details.

A > 88 %, on total points available. And take the LEED Green Associate exam or be scheduled to take the exam by the end of the March 2013.

B+ > 88 %, B > 84 %, B- > 80 % on total points available and not take the green associates exam.

C+ > 78 %, C > 74 %, C- > 70 % on total points available.

D+> 68 %, D> 64 %, D-> 60 % on total points available.

F Less than 60%

Approximate Points available:

About 10 homework assignments each about 10 points (some are in class)	100pts
Quiz's about 10 at about 5 pts	50 pts
Exam I	50 pts
Exam II	50 pts
Final Team Project	50 pts
All points count the same	300 pts

10 Assignments

- Assignments: All materials must be submitted on a time. Exceptions will only be made for medical emergencies. Part of professional development is providing reports and other materials on time. Each assignment should be considered as a "Bid" either it is on time or it will not be accepted. If you know you will be unable to attend class or have a prior engagement, early assignments are acceptable. If you are a few minutes late for class don't bother turning an assignment in, late is late…late assignments will result not be scored.
- Students will earn an I grade if they miss final project during the final exam period.
- I will leave graded, unreturned assignments in a box in room 227. If you object this practice, you must E-mail me to hold your papers out.

12. Bibliography - References:

(1) CWU library has several texts on sustainable construction, www.USGBC.org, Green building design and construction reference guide, 2009 edition, on BB

13. Schedule

This is a tentative schedule students are responsible for changes as announced in class.

Week	Item	Reading	Assignment
1/6	Intro	Ref Guide i-xxv	
1/13	Green Building assessment/ process		
1/20	Sustainable sites		
1/27	Water Efficiency		
2/3	Energy and Atmosphere	Exam I	
2/11	Energy and Atmosphere		
2/17	Energy and Atmosphere		
2/24	Environmental Quality		
3/3	Environmental Quality	Exam II	
3/10	Final Project Presentations	Final Project Presentations	2 teams 3/11 2 teams 3/13
3/17	Final time if needed	2PM 3/18	**2PM 3/18**

Tobacco products are NOT allowed in the Hogue Tech Building
Turn OFF cell phones do not send/ read texts in class

School of Engineering Technologies, Safety, & Construction

CMGT 455 Principles of Construction Management
Winter Quarter 2014

Class Hour: MTWR 11:00-11:50AM
Room: Hogue Technology 227
Credits: 4

Instructor: David W. Martin
Email: dwmartin@cwu.edu
Office: 300E Hogue Technology
Office Phone: (509) 963-1770
Office Hours: MTWR 8:30-10:00 PM, M 1:30-3:00PM, or by appointment

Catalog Description: CMGT455. Principles of Construction Management - Methods to build, manage and control a project's construction process are introduced. A project will be estimated, scheduled and marketing, safety plans, jobsite layout, meetings, quality control plans, progress payments, and changes will be exercised on this project. Prerequisites, CMGT 343 and IT 101.

Textbooks: Required: Construction Jobsite Management 3rd edition by William R. Mincks & Hal Johnson, 2011, Delmar Publishers

Prerequisites:
CMGT447 – Construction Planning, Scheduling, & Control.

Course Requirements:
Each student is responsible for completing the assignments and chapter readings prior to each class meeting. Although there are many readings, most are not extremely lengthy yet each requires considerable attention to assure the student is prepared and familiar with the readings and chapter activities for the class.

Due to the nature of the activities in this course, it is required that students attend each lecture. Much like an absence on the construction site, if you should have to miss class it is your responsibility to contact the instructor prior to your departure via email. If for some reason you miss class due to a personal or family emergency and cannot use the internet; please call the instructor's office or the main office and leave a message. Information that is not acquired from the student due to their absence from class should be acquired through another student or from the instructor during regularly scheduled office hours.

Grades in the course will be based on a series of problems/projects, student demonstrations of proficiency using computer software, student participation in class, quizzes, active learning exercises, and exams.

Instructional Methodology:
This course will meet for four lecture hours each week. The majority of the coursework will be based in class with some outside activities based on the current lecture material presented. The coursework will be project based on the various readings and activities. Use of Blackboard and Internet resources will support the learning process. **Students must be prepared to spend at least 3-4 hours per-week outside of class time working with the construction documents, outside readings, etc.**

Computer Laboratory: This course will incorporate Prolog to complement the lectures. Regularly scheduled classroom time will be spent in the computer lab learning and applying. Homework assignments and projects will also incorporate the software.

Learner Outcomes (Course Objectives):

Outcome	Assessment Strategy
Define the various project delivery systems employed in the US construction industry.	Students shall demonstrate this knowledge on homework assignments and by identifying the various systems on exams.
Understand appropriate documentation methods commonly used for construction projects	This shall be assessed through extensive work on exams and on homework assignments.
Interpret contract specifications and construction drawings and the hierarchy of precedence.	This will be assessed through class participation, homework and project assignments and written exams.
Employ methods of contract administration, jobsite management, and project close-out procedures.	This will be assessed through class participation, homework, computer software, project assignments and written exams
Understand applicable labor, quality and safety management, and environmental management in construction.	This shall be demonstrated through group presentations and written examinations.
Learn change order procedures. Effectively negotiate claims and disputes and employ methods to objectively analyze conditions	This will be assessed through real life case study analysis
Effectively communicate project information to project participants.	This shall be demonstrated on homework and written examinations.
Effectively manage project costs, schedule, & progress payments through projections and Earned Value Management.	This shall be assessed through extensive work on exams and on homework assignments.

Grading:
Student work shall be assigned points as follows:

Homework	300 points
Chapter Exercises	150 points
Mid-Term Exams	200 points
Final Exam	150 points
Active Learning Exercises	100 points
Attendance	100 points
Total	**1000 points**

Letter grades will be assigned based on the percentage of total points that each student earns during the quarter. Note that the course grade incorporates work performed in the computer lab:

A	100-94	**A-**	93-90		
B+	89-87	**B**	86-84	**B-**	83-80
C+	79-77	**C**	76-74	**C-**	73-70
D+	69-67	**D**	66-64	**D-**	63-60
F	59-0				

Attendance Policy: If for some reason you cannot attend a class or will be absent when a homework assignment is due you are required to make the necessary arrangements to turn the assignment in prior to your departure with the instructor. Each day of unexcused non-attendance carries with it a full percentage deduct from the final grade. 1 unexcused absence = 1% deduct from final grade; 2 = 2%, 3 = 3, and 4 = 4%, Each additional unexcused absence following 4 unexcused absence = an additional 5% deduct.

Homework: Homework will be assigned on a regular basis and will pertain to the reading and to the material covered in the lectures. You are expected to complete your work on time. The policy for this course is that ***no late work will be accepted.*** Homework must meet the following criteria:

- Each homework assignment will have a computer generated cover sheet to be provided by the instructor. You are to download from Blackboard and provide the required information.
- Use engineering paper, if applicable
- Use pencil, neatly lettered and organized
- Use a straightedge for drawing diagrams, etc.
- Computer printouts shall be titled and neatly organized

Exams: The mid-term exams will be given during a regularly scheduled class meeting as indicated on the class schedule. The final exam will be comprehensive and will be held during finals week. Details pertaining to exam format, material covered; etc. will be discussed in class prior to each exam.

Active Learning Exercises: At various times during the quarter, the entire class will participate in active learning exercises that demonstrate project management principles. Attendance is mandatory during these sessions to receive credit. Each exercise and their associated tasks are worth 50 points.

Academic Honesty Policy: Students are clearly expected to do their own work and not copy the work of others. Evidence of copying, including any computer files, cheating or using writings of others without proper citations will result in a failure for the specific assignment. Successive evidence of copying, including any computer files, cheating or using writings of others without proper citations during the curriculum of the Construction Management program will result in loss of a student's major status. Your attention is directed to Appendix B of the current CWU Catalog for additional information regarding this topic.

ADA Statement: Students who have special needs or disabilities that may affect their ability to access information and or material presented in this course are encouraged to contact the instructor or ADA Compliance Officer, Director, ADA Affairs and Students Assistance on campus at 963-2171 for additional disability related educational accommodations. Students requesting to take tests at the test center must contact the instructor at one week prior to the test to assure your test will be delivered at the correct time.

CMGT 455 Principles of Construction Management
Winter 2014
Classroom Schedule

Week	Date	Subject Covered	Reading
1	1/6	Introduction – Syllabus	pp. 1-12
1	1/7	Construction Project Players	pp. 13-40
1	1/8	Project Delivery Systems	
1	1/9	Construction Documents	pp. 41-72
2	1/13	Submittals, Samples, & Shop Drawings	pp. 73-94
2	1/14	Submittals, Samples, & Shop Drawings	
2	1/15	Daily Diary & Reports, Weekly Reports	pp. 95-116
2	1/16	Request for Information & Correspondance	pp. 117-137
3	*1/20*	*Martin Luther King Day*	
3	1/21	Job Site Layout – Material Handling, Layout, Security	pp. 139-178
3	1/22	Job Site Layout – Labor & Equipment Productivity	
3	1/23	Project Meetings – Pre-Construction, Progress, & Pre-Installation	pp. 179-191
4	1/27	Job Site Layout Presentations	
4	1/28	**Exam 1 (Chapters 1-7)**	

4	1/29	***No Class – Faculty Development Day***	
4	1/30	***No Class – Battle in Seattle***	
5	2/3	Exam Review	
5	2/4	***No Class – Lean M/U***	
5	*2/5*	***No Class – Lean M/U & Reno***	
5	*2/6*	***No Class – Lean M/U & Reno***	
6	2/10	Project Cost Control – Cost Coding & Budgeting, Cost Reports	
6	2/11	Project Cost Control – Earned Workhour Report, Labor Cost Report	
6	2/12	Project Cost Control – Project Summary Report	
6	2/13	Project Cost Control – Earned Value Management	
7	*2/17*	***No Class - President's Day***	
7	2/18	Active Learning – Prisoner's Dilemma	
7	2/19	Negotiation Methods	pp. 192-198
7	2/20	**Exam 2 (Cost Control)**	
8	2/24	Active Learning - $20 Game	
8	2/25	**Group Presentations – Labor Relations**	pp. 199-220
8	2/26	**Group Presentations - Personnel & Safety Management**	pp. 221-256
8	2/27	Change Orders & Claims – CO Processes	pp. 383-404
8	***2/28***	***Lean Construction Workshop (10:00 – 2:00)***	
9	3/3	Change Orders & Claims – Time Extensions & Compensation	
9	3/4	Active Learning – Parade of Trades	
9	3/5	**Group Presentations - Project Quality Management**	pp. 287-310

9	3/6	**Group Presentations – Waste & Environmental Management**	pp. 339-354
10	3/10	Progress Reports – Pay Applications & Schedule of Values	pp. 405-438
10	3/11	Progress Reports – Pay Applications & Schedule of Values	
10	3/12	Project Close-out – Punch List, Substantial Completion, Final Completion	pp. 439-460
10	3/13	Project Close-out – Commissioning, As-builts, Warranties, Lien release	
11	**3/18**	**Final Exam – 8:00-10:00 (Chapters 8, 9, 11,13,15,16,17)**	

Department of Engineering Technology, Safety and Construction
Course Outline for CMGT 456
Principles of Heavy Civil Construction Management
M,T,W,TR 11:00-11:50 AM
Hogue Hall Rm 223
Winter 2014

P. Warren Plugge, Ph.D.
Associate Professor of Construction Management
Construction Management Program
E-mail: wplugge@cwu.edu
Web: http://www.cwu.edu/~iet/faculty/plugge.html

Telephone: 509-963-2427
Office: Hogue 300C
Office Hours: TBD and by appointment.

Credits: 4

Prerequisites: CMGT 447, and either CMGT 344, or 345

Catalog Description: Fundamental tools of heavy civil highway construction project management. Topics include contract management, scheduling, cost estimating, cost control, conflict management, negotiating, team building, quality control, safety, and a capstone project.

Course Description: Heavy civil construction project management is a requirement for any project. This course is designed to be an introductory course to develop students' skills in planning, managing, organizing, and controlling a project to be within budget and schedule and meet quality and safety standards required for any project.

Learner Outcomes:

Outcome	Assessment Strategy
1. Plan, organize, manage, control, and document heavy civil highway and infrastructure job site activities.	The student will use a small civil project that provides a "hands on" learning experience. Students will develop an estimate, schedule, budget, submittals, and other documents associated with the management of a civil construction project.
2. Understand and be able to develop the following type of documentation: RFI'S, shop drawings, cost control, jobsite layout plan, meeting minutes, safety plans, quality plan, change orders, and payment schedule.	The student will perform required documentation as part of a small civil project development.
3. Understand the jargon and rational behind civil construction project management.	Students will demonstrate construction project knowledge with project assignments and quizzes.
4. Demonstrate the ability to review an actual project and identify good and bad project management techniques.	Review a case study, write a paper, and present the findings to the class.

NOTE: The instructor reserves the option of making adjustments to this syllabus and course requirements and will notify students of such changes should they become necessary.

Course Requirement:
1. Each student is responsible for review of readings, course material, and assignments. Although there are many readings, most are not extremely lengthy yet each **requires considerable attention to assure the student is prepared and familiar with the material required for each class section**.

2. The format for this course will require students to take detailed notes during lecture. If there is a powerpoint developed for the topic of the day, the slides WILL NOT be available for download and use by the student. If the student chooses to not take notes, it will be up to the student to find another classmate acquire the notes on the daily subject.

3. Due to the nature of the activities in this course, it is required that students attend each lecture and activity assigned to the course. Much like an absence on the construction site, if you should have to miss class it is your responsibility to contact the instructor prior to your departure via email. If for some reason you miss class due to a personal or family emergency and cannot use the internet please call the instructor's office or the main office and leave a message. Information that is not acquired from the student due to their absence from class should be acquired through another student or from the instructor during regularly scheduled office hours or by appointment.

"If you have a severe respiratory or influenza-like illness (ILI) (high fever, aches, chills, cough) you should not come to class until you are without fever for 24 hours without the aid of fever-reducing medication. If your absences are related to a severe respiratory or flu-like illness, you will be given the opportunity to make up your assignments and class content without penalty. *It is YOUR responsibility to notify your instructor, in advance, when absent due to sickness. Faculty is under no obligation to excuse class absences related to sickness.* You should utilize the following precautions to prevent exposure to sicness: 1) Frequent hand washing and carry a bottle of alcohol-based hand sanitizer with you at all times. 2) Cough etiquette (grab your shoulder and cough into your elbow). 3) Place used tissues immediately in the trash, followed by washing your hands. 4) Use CDC-approved disinfectants on shared surfaces such as doorknobs, desks, etc. 4) **Stay home if you have a severe respiratory or flu-like illness.** If you are concerned you may have severe respiratory or flu-like illnesses, notify student health (Melody S. Madlem, Ph.D., CHES, Director of Public Health Education, Central Washington University)."

4. Grades in the course will be based on a series of problems/projects, student participation in class, quizzes, two exams, and a comprehensive final examination associated with Civil Project Management.

Instructional Methodology:
This course will meet approximately four hours a week. One hour of lecture/lab four days per week. The majority of the coursework will be based in class with some outside activities based on the current lecture/lab material presented. The coursework will be project based on the various readings and activities centered on Civil Project Management. Use of Blackboard and Internet resources will support the learning process. **Students must be prepared to spend at least 3-4 hours per-week outside of class time working on various problems, research, and other outside readings on civil construction project management (2 hrs per unit/per week). Time spent outside of class will better prepare you for class discussions on the subject.**

Mode of Delivery:
Classroom instruction and computer lab time. Support materials and additional discussion time will be supported via Blackboard. Classroom discussion and course assignments are discussed at the beginning of each class period. Students are encouraged to attend each class meeting and participate in classroom activities and discussions for which they will receive participation credit.

Classroom Decorum: Due to the nature of the instructional environment, be it known that any cell phone (including text messaging) or iPod/iPad/iAnything use during class or laboratory time will result in said iDevice being confiscated. Cell phone use is any auditory or other ring, vibration, call out, text messaging, etc. iPod/iDevice use is the use of any auditory (includes ear buds, headphones, etc.) or visual devise (iPod video) used during lecture or lab. If you leave the classroom to use a cell phone do not return to the classroom. If you use a cell phone or iDevice during class the professor will ask that you leave the class or laboratory for that period, thus constituting an unexcused absence with a point deduction from your final score in the class.

> If class is held in a computer laboratory, because each computer is an open access machine, students are to refrain from printing documents, reading and sending private email, playing video games, and surfing the web during the lecture portion of the class.

Departmental policy states that *Tobacco Products* are NOT permitted in the classroom. Use or attempted use will result in loss of one letter grade for the term per occurrence.

ADA Statement: *If you have a disability and require accommodations for this course, please speak with me privately as soon as possible so that your needs may be appropriately met. If you have not already done so, you will need to register with Disability Services (DS). DS is located in Bouillon 140. Call (509) 963-2102 or email cds@cwu.edu for more information. Additional information about Disability Services can be found at this website http://www.cwu.edu/disability-support/.*

Use of Facilities:
Hogue Hall is a new building, please refrain from defacing the facility and equipment (i.e. desks, lab equipment, etc.) to allow future students the same opportunity you have been given with a clean facility and equipment. If caught defacing the any portion of the facility or equipment the guilty party will result in a deduction of their final grade. Also, report any misuse of the facility and its equipment to the instructor. If for some reason a group or individual students need to use a classroom for study purposes please contact the instructor. There are student study areas located throughout the building for student use at any time. Designated faculty conference rooms and lounge areas are NOT for use by any student. When completed with your task within the study areas please clean up and dispose waste in the designated areas. Additional information about the facilities is posted on the Engineering, Technology, Safety and Construction Website at http://www.cwu.edu/engineering/engineering-technologies-safety-and-construction-formerly-iet.

Method of Evaluation:

All point values are approximations

Evaluation	**Points**
Homework @ 10 pts	100
10 Quizzes @ 10 pts	100
Tests	200
Case Study	50
Project Notebook	25
Total	**475**

Grade Scale (%) – See University catalog for further description of grades.

A	100-94	**A-**	93-90		
B+	89-87	**B**	86-94	**B-**	83-80
C+	79-77	**C**	76-74	**C-**	73-70
D+	69-67	**D**	66-64	**D-**	63-60
F	59-0				

Explanation of Grades:
Grade of A = All requirements were exceptionally completed. Creativity and clear idea presentation were evidenced. Instructional content and use of technology were integrated to enhance instructional effectiveness.
Grade of B = One or more of the listed requirements is missing or not adequately completed. The assignment was completed in at above average standards.
Grade of C = Average level of accomplishment. Assignment was completed at a minimal level.
Grade of D = The assignment was turned in, but was below quality standards.

Homework, Papers, and Projects:
Homework assignments will be given on a regular basis and will pertain to text reading with other outside references to journals. Assignments will also be given that involve calculations, drawing or sketching. General requirements that pertain to homework, papers, and projects are:

- All work must be your own.
- Each homework assignment will have a computer generated cover sheet to be provided by the instructor. You are to download from Blackboard and provide the required information.
- Unless specified, perform all your work in pencil on ***green*** engineering paper (no spiral bound pages will be accepted). ***Include in the upper right hand corner of the first sheet your name. In the middle will be the course number and in the left corner will be the date. Each following page must include your initials and page number. Staple pages in the upper left-hand corner (Please staple prior to class, I do not carry a stapler!). Any other binding device will result in a 0 grade for the assignment.***
- For each problem clearly state the "Given, Find, and Solution." All answers will be clearly identified by double underlining the answer.
- Please write neatly!! All work must be neatly lettered. **Unprofessional, sloppy, or late work will not be accepted**. *If you are unsure of what I expect feel free to ask, I will be more than happy to answer your questions.*
- If for some reason you **cannot attend a class** or **will be absent** when a homework assignment is due you are required to make the necessary arrangements to turn the assignment in prior to your departure with the instructor.
- Any paper or project requiring research into articles, journals, or other scholarly documents shall be properly listed within a bibliography or works cited. ***Students may not use wikipedia.com or dictionary.com as a reference for any homework, paper, or project (if reference to wikipedia.com or dictionary.com is used, your assignment grade will suffer serious deductions or result in a 0 for the assignment).***
- **In construction, bids are due at a specific time and place. Bids that are turned in after the stated time are not accepted. We will take this same approach with all homework and assignments. Any homework or assignment turned in after the stated time will not be accepted. *Homework will be due at the beginning of the class period or as announced.***

Quizzes:
There will be periodic quizzes during the quarter. At no point can a quiz be taken early or made up. It is up to the student to attend each class and be ready for the quiz. Material eligible for quizzes will be any material previously covered during lecture, within the book and other related course material (even the material you have been given the day prior to the quiz). The time limit for each quiz will be less than 10 minutes. Once time is called students are required to stop working and turn in the quiz. Quiz forms can be a combination of short answer, multiple choice, matching, or fill in the blank.

Exams:
The three exams will be given during the regularly scheduled class meetings as on the attached class schedule with a final during finals week (see times on the attached schedule).

Fieldtrips and Guest Speakers:
If any fieldtrips or site tours are taken all students will be responsible their personal protective equipment (PPE). Therefore, all students will wear boots, jeans, high visibility vests, gloves, safety glasses, and a hardhat. If there are any guest speakers to supplement the knowledge within the course you are required to take notes and ask questions. Information provided by the guest speakers will be quizzable material.

Academic Honesty:
You are about to enter a profession which values character, integrity, honesty, and a sense of fairness. While these traits may not always be demonstrated by all practitioners in this field, you will quickly become known by your reputation for professionalism - positive or negative. Given the importance of a reputation for honesty, an expressed policy on academic honesty for this class should be unnecessary. However, to make this very clear, there will be absolutely no tolerance for any violation of the intent of university policies on plagiarism, cheating, copying, or in any way representing the work of any past or current student as your own. Any evidence of such a violation will result in an immediate failing grade and dismissal from this course.

Course Materials and Suggested Reading:
Minks & Johnston (2011). *Construction Jobsite Management 3rd Edition.* Delmar Cengage Learning, Clifton Park: New York.

MC 41-10 WSDOT Standard Specifications – can be downloaded online.

Completed estimates and project plans and specifications from CMGT 345 Heavy Civil Estimating.

Other course material will be provided as needed. You will also find additional course material posted on Blackboard.

Curriculum Review
We are in a program review cycle. Some students may be asked to use their work as examples of work performed in this class. If this is the case, the students will be randomly selected. The instructor will photo copy the students work for review by the accreditation team in 2015. If the student is one of the chosen students, your work will be kept confidential only to be viewed by faculty members and the accreditation team.

Help!
Asking questions is the way we learn; a question not asked is a piece of knowledge yet to be understood (Anonymous). If you should need help at any point in this course, feel free to contact the instructor at the end of class or via email to set an appointment. The instructor maintains an open door policy, if he is available please step in and we will work to find a solution to the problem or issue.

Office Hours:
A set time frame for office hours will be identified later within the quarter. It is **strongly** recommended that students email the professor to arrange for office hours. In the email please specify an option for times to meet.

Writing Help:
Each student will be required to do some writing as a requirement for this course. Should you need help outside of class in writing the student may contact the writing center. The website for the writing center is: http://www.cwu.edu/learning-commons/university-writing-center . Follow this link to access the location and times the writing center is open.

CMGT 456 Course Schedule

The following schedule is subject to change, students are responsible for obtaining schedule updates.

Week	Date	Subject Covered	Reading (pgs)	Ass. & Quiz
1	1-6-14	Ch.1 Introduction to Project Management	1-11	TBD
2	1-13-14	Ch. 2 The Project Team Ch. 3 Use of Construction Documents on the Jobsite	13-71	TBD
3	1-20-14	Ch. 4 Submittals, Samples, and Shop Drawings Ch. 5 Documentation and Record Keeping on the Jobsite **(No Class 1/21- MLK Day)**	73-137	TBD
4	1-27-14	Ch. 6 Jobsite Layout and Control Ch. 7 Meetings, Negotiations and Dispute Resolution **EXAM 1** **(No Class 1/29- Faculty Development Day)**	139-198	TBD
5	2-3-14	Ch. 8 Jobsite Labor Relations and Control Ch. 9 Personnel and Safety Management **RENO- (No class 2/5 and 2/6) See alternate assign.**	199-255	TBD Construction PM Games Prisoners Dilema 2/3
6	2-10-14	Ch. 10 Subcontracting and Purchasing Ch. 11 Project Quality Management	257-336	TBD
7	2-17-14	Ch. 12 Time and Cost Control Ch. 13 Waste and Environmental Management and Sustainable Practices (Civil Environmental Site Management) **Exam 2** **No Class 2/17- Pres. Day**	311-354 See BB SWPP Plan	TBD Turbidity Testing
8	2-24-14	Ch. 14 Computerized Project Administration	355-381	TBD $20 Game 2/24
9	3-3-14	Ch. 15 Changes and Claims Ch. 16 Progress Payments **Exam 3**	383-437	TBD Parade of Trades 3/4
10	3-10-14	Ch. 17 Project Closeout Case Study Presentations	439-460	TBD
Finals Week	3-17-14	**Final Exam- Wednesday, March 19, 2014: 8:00am-10:00am** Case Study Presentations		

CMGT 456 – Principles of Heavy Civil Construction Management (Lecture)

Since you have *completely read and understand the syllabus*, please complete the form below and turn into the instructor on Thursday, January 9, 2014 at the beginning of class. A signature below acknowledges the fact that the student has read and understands the requirements for this course.

		Date:
Student Name (Printed):		
Student Signature:		
Instructor Signature		

School of Engineering Technologies, Safety, & Construction

CMGT460 Concrete Construction
Spring Quarter 2014

Class Hour: MW 1:00-1:50PM; T 1:00-2:50PM
Room: Hogue Technology 103
Credits: 4

Instructor: David W. Martin
Email: dwmartin@cwu.edu
Office: 300E Hogue Technology
Office Phone: (509) 963-1770
Office Hours: MTW 10:00-11:30 am, R 1:00-2:30 pm or by appointment

Catalog Description: CMGT 460. Concrete Construction (4). Manufacturing and testing of concrete, field practices and formwork. Prerequisites: CMGT 346 or 347, CMGT 440 or 441, IET312.

Textbook: Design and Control of Concrete Mixtures, 14th Edition, Portland Cement Association, 2002, plus various handouts.

General Comments on Course Content: This course is intended to introduce students to one of the most widely used building materials available, portland cement concrete. Concrete ingredients and properties of both fresh and cured concrete will be studied in detail. In addition special attention will be given to what it takes to ensure good quality concrete, as well as some of the common problems with concrete and how to best avoid these problems.

A "hands on" approach to this course will include at least two sessions in the concrete lab, guest speakers, as well as field trips to local job sites and a concrete batch plant.

Learner Outcomes (Course Objectives):

Outcome	Assessment Strategy
1. Describe the components of portland cement concrete, including the five types of portland cement and their chemical components, their proportions and their purpose.	Students shall demonstrate this knowledge through homework assignments and exams, as well as through a laboratory exercise using mixes with different water to cement ratios.
2. Demonstrate an understanding of liquid and mineral admixtures, their function, advantages and disadvantages.	Exams shall be used to demonstrate this understanding.
3. Explain in detail how concrete is batched, mixed, transported, properly placed, consolidated and cured and the problems that can develop if proper procedures are not followed.	This shall be demonstrated on exams and through homework assignments.
4. Accurately design a concrete mix for a particular application using the volume method, including proper moisture adjustments for aggregates.	Homework assignments and exams shall be used to assess this knowledge.
5. Accurately calculate anticipated shrinkage crack spacing in an un-reinforced concrete slab on grade and accurately calculate the required reinforcing steel to prevent such cracking.	Homework exercises and exams shall be used to demonstrate this knowledge.

6. Accurately calculate lateral pressures of concrete placed in column and wall forms and design these forms.	Homework exercises and exams shall be used to demonstrate this knowledge.
7. Demonstrate the ability to physically perform a laboratory slump test, complete a laboratory report on a slump test and properly prepare a concrete compression test cylinder. Also cap a test cylinder and properly conduct a compression test of the concrete cylinder.	Knowledge and techniques shall be demonstrated through laboratory exercises and through submission of a formal lab report.

Grading:

Homework, lab summaries, projects, contest	300 points
Synopses, four total	100 points
Two Exams, 250 points each	500 points
Attendance	100 points
Total	1000 points

Letter grades will be assigned based on the percentage of total points that each student earns during the quarter:

A	100-93	**A-**	92-90		
B+	89-88	**B**	87-82	**B-**	81-80
C+	79-78	**C**	77-72	**C-**	71-70
D+	69-68	**D**	67-62	**D-**	61-60
F	59-0				

Homework:

The assignments will be based on reading from the texts, videos, field trips and subjects discussed in class. These assignments and their due dates will be announced throughout the quarter. It is the student's responsibility to complete homework in a professional manner and make sure that it is submitted on time. The format for the homework is as follows:

- **All work must be your own.**
- Each homework assignment will have a computer generated cover sheet to be provided by the instructor. You are to download from Blackboard and provide the required information.
- Unless specified, perform all your work in pencil on green engineering paper. ***Include in the upper right hand corner of the first sheet your name, date and course number. Each following page must include your initials and page number of number of pages. All pages will have a clean cut edge on all four sides (no exceptions will be taken).*** Staple pages in the upper left-hand corner.
- Please write neatly!! All work must be neatly lettered. **Unprofessional, sloppy, or late work will be reflected in your grade**. *If you are unsure of what I expect feel free to ask, I will be more than happy to answer your questions.*
- If for some reason you **cannot attend a class** or **will be absent** when a homework assignment is due you are required to make the necessary arrangements to turn the assignment in prior to your departure with the instructor.
- *In construction, bids are due at a specific time and place. Bids that are turned in after the stated time are not accepted. We will take this same approach with all homework and assignments. Any homework or assignment turned in after the stated time will not be accepted. Homework will be due at the beginning of the class period or as announced.*

Academic Honesty Policy: Students are clearly expected to do their own work and not copy the work of others. Evidence of copying, including any computer files, cheating or using writings of others without proper citations will result in a failure for the specific assignment. Successive evidence of copying, including any computer files, cheating or using writings of others without proper citations during the curriculum of the Construction Management program will result in loss of a student's major status. Direct

your attention to Appendix B of the CWU Catalog for additional information regarding this topic.
Attendance Policy: If for some reason you cannot attend a class or will be absent when a homework assignment is due you are required to make the necessary arrangements to turn the assignment in prior to your departure with the instructor. One unexcused absence is allowed without penalty. Each additional day of unexcused non-attendance carries with it a full percentage deduct from the final grade. 2 unexcused absence = 2% deduct from final grade; 3 = 3%, and 4 = 4%. Each additional unexcused absence following 4 unexcused absence = an additional 2% deduct up to a total of 10%.

ADA Statement: Students who have special needs or disabilities that may affect their ability to access information and/or material presented in this course are encouraged to contact the instructor or ADA Compliance Officer, Director, ADA Affairs and Students Assistance on campus at 963-2171 for additional disability related educational accommodations.

Caveat:
Instructor reserves the right to make any alteration to the course syllabus and course material, solely depending upon class progress.

CMGT 460 Spring 2014
Class Schedule

Week	Date (Monday)	Subject Covered	Reading
1	March 31	Introduction, Concrete Fundamentals	Chapter 1
2	April 7	Desirable Properties of Concrete, Aggregate	Chapters 2, 6
3	April 14	Aggregate, Water, Portland Cement **Lab #1 – Sieve Analysis**	Chapter 3, 5
4	April 21	Portland Cement, Concrete Admixtures, Air-entrainment **Lab #2 - Slump Test**	Chapter 4, 7
5	April 28	Reinforcing Steel **Lab #3 – Concrete Cylinders** **Exam #1**	Chapter 8
6	May 5	Concrete Properties **Lab #4 - Field Trip – ECP - Rob**	Chapter 9-11
7	May 12	Placing & Finishing, Paving, & Mix Design **Guest Speaker – Jim Tobin – Begin Lab#5**	Chapter 12-15
8	May 19	Flatwork, Pre-stressed & Post-tensioned Concrete **Exam #2** **Guest Speaker – Mike Poppoff**	Chapter 16-18
9	May 26	Management & planning concrete work NavisWorks **Lab#6 – Damon Socha**	
10	June 2	Management & planning concrete work NavisWorks **Lab#6 – Damon Socha**	
11	June 9	**Finals Week – Break Beams (5) & Cylinders (3)** Final Lab Reports & Synopsis Due	

Department of Engineering Technologies, Safety and Construction
Course Outline for CMGT 461
Pavement Design and Construction
Lecture- M and W 1:00-1:50 PM, Hogue Hall 226
Lab- Thursday 1:00 – 2:50 PM, Hogue Hall 105
Spring 2014

P. Warren Plugge, Ph.D.
Associate Professor
Construction Management
School of Industrial Engineering and Technology
E-mail: wplugge@cwu.edu
Web: http://www.cwu.edu/~iet/faculty/plugge.html

Telephone: 509-963-2427
Office: Hogue Hall 300C
Office Hours: TBD and by appointment.

Credits: 4

Prerequisites:
CMGT IET 312, 346 or 347.

Catalog Description: An introduction to flexible and rigid pavement design and construction including pavement types, materials, construction methods, and maintenance concerns.

Course Description: The purpose of this course will be to provide a general knowledge on hot mix asphalt materials, mixture design, construction, and maintenance concerns.

Learner Outcomes:

Outcome	Assessment Strategy
1. Students will be able to describe different pavement types and explain the circumstances for which they are best suited.	Demonstrate these principles through homework assignments and examinations based on applying knowledge to construction plans and specifications.
2.Students will be able to apply pavement design basic to an actual construction situation.	Demonstrate these principles through homework assignments and examinations based on applying knowledge to construction plans and specifications.
3. Students will be able to identify the physical properties of pavement materials and how they impact performance and construction.	Demonstrate these principles through homework assignments and examinations based on applying knowledge to construction plans and specifications.
4. Students will be able to identify pavement construction techniques for various pavement types.	Demonstrate these principles through homework assignments and examinations.
5. Students will examine and analyze highway pavement maintenance and rehabilitation techniques.	Demonstrate these principles through homework assignments and examinations.

Course Requirement:
1. Each student is responsible for review of readings, course material, and assignments. Although there are many readings, most are not extremely lengthy yet each **requires considerable attention to assure the student is prepared and familiar with the material required for each class section**.

2. Due to the nature of the activities in this course, it is required that students attend each lecture and lab assigned to the course. Much like an absence on the construction site, if you should have to miss class, it is your responsibility to contact the instructor prior to your departure ***via email.*** If for some reason you miss class due to a personal or family emergency please and cannot use the internet please call the instructor's office or the main office and leave a message. Information that is not acquired from the student due to their absence from class should be acquired through another student or from the instructor during regularly scheduled office hours or by appointment.

"If you have a severe respiratory or influenza-like illness (ILI) (high fever, aches, chills, cough) you should not come to class until you are without fever for 24 hours without the aid of fever-reducing medication. If your absences are related to a severe respiratory or flu-like illness, you will be given the opportunity to make up your assignments and class content without penalty. *It is YOUR responsibility to notify your instructor, in advance, when absent due to sickness. Faculty is under no obligation to excuse class absences related to sickness.* You should utilize the following precautions to prevent exposure to sicness: 1) Frequent hand washing and carry a bottle of alcohol-based hand sanitizer with you at all times. 2) Cough etiquette (grab your shoulder and cough into your elbow). 3) Place used tissues immediately in the trash, followed by washing your hands. 4) Use CDC-approved disinfectants on shared surfaces such as doorknobs, desks, etc. 4) **Stay home if you have a severe respiratory or flu-like illness.** If you are concerned you may have severe respiratory or flu-like illnesses, notify student health (Melody S. Madlem, Ph.D., CHES, Director of Public Health Education, Central Washington University)."

3. Grades in the course will be based on a series of problems/projects, student participation in class, quizzes, two exams, and a estimate for an entire construction project. **Grades will not be posted to Blackboard, if a student is interested in their grade they may contact the instructor during office hours or by appointment to inquire about their grade.**

Instructor reserves the option of making adjustments to this syllabus and course requirements and will notify students of such changes should they become necessary.

Instructional Methodology:
This course will meet approximately two hours of lecture a week, with one hour and fifty minutes of lab each week. The majority of the coursework will be based in class with outside activities based on the current lecture/lab material presented. The coursework will be project based on the various readings and activities centered on civil estimating. Use of Blackboard and Internet resources will support the learning process. **Students must be prepared to spend at least 3-4 hours per-week outside of class time working on various problems, plan review, estimating, and other outside readings.**

Mode of Delivery:
Classroom instruction and computer lab time. Support materials and additional discussion time will be supported via Blackboard. Classroom discussion and course assignments are discussed at the beginning of each class period. Students are encouraged to attend each class meeting and participate in classroom activities and discussions for which they will receive participation credit.

Classroom Decorum: Due to the nature of the instructional environment, **be it known that any cell phone use during class or laboratory time will result in said phone being confiscated**. Cell phone use is any auditory or other ring, vibration, call out, etc. You will also be removed

from the class or laboratory for that period, thus constituting an unexcused absence. If you leave the classroom to use a cell phone do not return to the classroom.

> Since the lab portion of the class is held in a computer laboratory, because each computer is an open access machine, students are to refrain from printing documents, reading and sending private email, playing video games, and surfing the web during the lecture portion of the class.

Also, due to the professional nature of the course and type of profession the student has chosen, students will not be able to wear hats during the course at any time. This means during the lecture and lab. If hats are worn during the class time period, points will be deducted for each incidence.

Departmental policy states that *Tobacco Products* are NOT permitted in the classroom. Use or attempted use will result in loss of one letter grade for the term per occurrence.

ADA Statement: Students who have special needs or disabilities that may affect their ability to access information and or material presented in this course are encouraged to contact the instructor or ADA Compliance Officer, Director, ADA Affairs and Students Assistance on campus at 963-2171 for additional disability related educational accommodations.

Method of Evaluation:

Evaluation	Points
Homework and Quizzes	100
Two exams @ 75 pts each	150
Participation	6%
Group Project	100
Final Exam	125
Labs	200
Class Speaker/Field Trips	50
Total	**725**

Grade Scale (%)

A	100-94	**A-**	93-90		
B+	89-87	**B**	86-84	**B-**	83-80
C+	79-77	**C**	76-74	**C-**	73-70
D+	69-67	**D**	66-64	**D-**	63-60
F	59-0				

Explanation of Grades:
Grade of A = All requirements were exceptionally completed. Creativity and clear idea presentation were evidenced. Instructional content and use of technology were integrated to enhance instructional effectiveness.
Grade of B = One or more of the listed requirements is missing or not adequately completed. The assignment was completed in at above average standards.
Grade of C = Average level of accomplishment. Assignment was completed at a minimal level.
Grade of D = The assignment was turned in, but was below quality standards.

Homework:
Homework assignments will be given on a regular basis and will pertain to text reading and asphalt construction. Assignments will also be given that involve calculations and drawings or sketches. General requirements that pertain to homework are:

- All work must be your own.
- Each homework assignment will have a computer generated cover sheet to be provided by the instructor. You are to download from Blackboard and provide the required information.

- Unless specified, perform all your work in pencil on ***green*** engineering paper ***(no spiral bound pages will be accepted). Include in the upper right hand corner of the first sheet your name, date and course number. Each following page must include your initials and page number. Staple pages in the upper left-hand corner parallel to the fold (Please staple prior to class, I do not carry a stapler!)*** If pages are not stapled it will be an automatic 10% reduction in your grade for that homework assignment.
- For each problem clearly state the "Given, Find, and Solution." All answers will be clearly identified by double underlining the answer.
- Please write neatly!! All work must be neatly lettered. **Unprofessional, sloppy, or late work will not be accepted**. *If you are unsure of what I expect feel free to ask, I will be more than happy to answer your questions.*
- If for some reason you **cannot attend a class** or **will be absent** when a homework assignment is due you are required to make the necessary arrangements to turn the assignment in prior to your departure with the instructor.
- For all writing assignments, standard guidelines set by the CMGT department will apply. If you need a copy of these they will be posted on Blackboard. *Special note: When using the works of others, the work cited within your manuscript will have a citation.*
- ***In construction, bids are due at a specific time and place. Bids that are turned in after the stated time are not accepted. We will take this same approach with all homework and assignments. Any homework or assignment turned in after the stated time will not be accepted. Homework will be due at the beginning of the class period or as announced.***

Site Visits:
If the class participates in a site visit all students are required to abide by the site safety rules and regulations as defined by the company or site supervisor. **At all site visits each student will be required to wear Occupational Health and Safety Administration (OSHA) approved safety glasses, hardhat, Class I high visibility vests, and boots. If any student does not have the required personal protective equipment (PPE) the student will not be allowed to participate in the site visit and this will count against their class participation grade.**

Participation:
Due to the content provided in class all students are required to attend class each day to participate in each of the lectures. As stated previously if a student must miss class for any reason, the student must email the instructor prior to the missed class. Participation means that all students will attend on time and be prepared for the lectures. For attending class on time 1 point will be added to the overall course score. If a student is late, they will get ½ of the participation points for the day. If the student attends class 100% of the time there will be a bonus point value added to the final score, which can be up to 20% of the total points for participation. If a student misses more than 1 day of an unexcused absence one point will be deducted from the final participation points accumulated for each day missed.

For lab participation, a*lthough there may not be a lab every week, participation is mandatory in each scheduled laboratory session, if labs are missed 10% on the overall grade will be deducted for each lab missed.*

Quizzes:
The instructor reserves the right to give unannounced quizzes at any time. Material eligible for quizzes will be any material previously covered during lecture and other related course material. See exam policy below for administration of quizzes.

Exams:
The two exams will be given during the regularly scheduled class meetings as on the attached class schedule. There will also be a final exam- format TBD. While exams are important to assess the knowledge gained during the course, grades are confidential. Answers to the test will be provided after the exams are graded. However, discussion of individual problems and answers will NOT be discussed in front of the entire class. If a student has a problem with a discrepancy on the exam versus the answer provided constituting an adjustment in points, they are required to

circle the answer and write the question/problem on the front of the exam and the professor will review the student's answer individually. If the student still has not received resolution to the answer discrepancies please see the instructor during normal office hours or by appointment.

Academic Honesty:
You are about to enter a profession which values character, integrity, honesty, and a sense of fairness. While these traits may not always be demonstrated by all practitioners in this field, you will quickly become known by your reputation for professionalism - positive or negative. Given the importance of a reputation for honesty, an expressed policy on academic honesty for this class should be unnecessary. However, to make this very clear, there will be absolutely no tolerance for any violation of the *intent* of university policies on plagiarism, cheating, copying, or in any way representing the work of any past or current student as your own. Any evidence of such a violation will result in an immediate failing grade and dismissal from this course.

Course Materials:
Book: Plugge, P.W. (2014). CMGT 461: Pavement Design & Construction 2nd Edition (Required)

WSDOT Pavement Guide (Course Website)
http://www.cwu.edu/~wplugge/WSDOT/Pavement-Guide-Interactive

Washington Asphalt Pavement Association (WAPA) *Recommended Website*
http://www.asphaltwa.com/wapa_web/index.htm

Pavement Interactive
http://www.pavementinteractive.org/

National Asphalt Pavement Association
http://www.hotmix.org/

Washington Pavement Association
http://www.asphaltwa.com/

Transportation Northwest
http://www.transnow.org/

WSDOT Pavement Publications
http://www.wsdot.wa.gov/LocalPrograms/LTAP/PavementPubs.htm

Kosmatka, S.H., Beatrix, Kerkhoff, B., & Panarese, W.C. (2010). **Design and Control of Concrete Mixtures**. Portland Cement Association

CMGT 461 (Lecture) Schedule

The following schedule is subject to change, students are responsible for obtaining schedule updates. Tests dates will be determined as content is covered. All chapter homework will come from the course book Plugge (2014).

Week	Date	Subject Covered	Reading/Ass./Hw
1	3-31-14	Welcome and Introduction Portland Cement Concrete	
2	4-7-14	Concrete Mix Designs	Mods 1&2
3	4-14-14	Concrete Testing	Mods 3 Synopsis 1
4	4-21-14	Aggregates and Materials	Mods 4
5	4-28-14	Asphalt	Mods 5&6 Synopsis 2
6	5-5-14	Mix Design **Test 1**	Mods 7&8
7	5-12-14	Structural Design & Construction **Senior Lunch 5/15/2014 11:30 AM**	Mods 9 Synopsis 3
8	5-19-14	Paving and Surface Treatments	Mods 10
9	5-26-14	QA & Specifications Pavement Evaluation **Test 2**	Mods 11 Synopsis 4
10	6-2-14	Pavement Management Presentations	Final Asphalt Lab Report Due Friday, June 5, 2014 5:00pm
Final	6-9-14	**Wednesday, June 11, 2014, 12:00-2:00 PM Hogue Hall RM 226**	**Final Exam**

Online- Module Quiz (MOD)- Due each Wednesday at the beginning of class, no exceptions taken. Be sure to take notes on the questions, test questions will come from these quizzes.

http://www.cwu.edu/~wplugge/WSDOT/Pavement-Guide-Interactive

Note: On the top of each module quiz in the right corner write your name, date module quiz was taken and module quiz number. Example below:

Ian P. Freely
April 1, 2014
Module # 3

CMGT 461 (LAB) Schedule

Labs will be comprised of fieldtrips, in class assignments, and lectures provided by industry.
Meet in Hogue Hall Rm 105

Week	Date	Subject Covered	Reading/Ass.
1	3-31-14	Lab - Meet in classroom	
2	4-7-14	Concrete Testing (Slump Test)	Pgs – 1-52 p. 202-207
3	4-14-14	Concrete Cylinders	Pgs – 1-52 p. 208-218
4	4-21-14	Aggregate Testing	Pgs – 55-92 p. 190-201
5	4-28-14	Aggregate Blending	Pgs – 147-155 Handout
6	5-5-14	Granite Construction- Selah **Plant Tour** Meet at lab – board van	Pgs – 55-92 Handout
7	5-12-14	Asphalt Puck Construction Concrete Paving Presentation	Pgs – 135-168 p. 223-224
8	5-19-14	Granite Construction – Selah Plant **Lab Tour** Meet at lab – board van	Pgs – 170-179 p. 221-230
9	5-26-14	Asphalt Specific Gravity	p. 225-228
10	6-2-14	Puck Testing	p. 229-230

All plant tours are tentatively scheduled – confirmation of times and dates will be announced in class.

Lab Safety: Safety is important to provide the best educational experience for all participants in the lab. While working in the lab it is a departmental policy that all safety precautions will be taken including proper personal protective equipment (PPE) and conduct. If these policies are not followed the student will be removed from the daily lab activity and not be allowed to complete the lab. Policies regarding each lab can be found in the lab writup's instructions. Each student is responsible for knowing all safety precautions as designed for the particular lab.

CMGT 461 – Pavement Design and Construction (Lecture and Lab)

Since you have *completely read and understand the syllabus*, please complete the form below and turn into the instructor at the beginning of class on the first day during the second week of class. A signature below acknowledges the fact that the student has read and understands the requirements for this course. Submit this sheet on Monday, April 7, 2014 at the beginning of class. Be sure to read the entire syllabus.

		Date:
Student Name (Printed):		
Student Signature:		
Instructor Signature		

CMGT 485 (Construction Accounting, Finance, & Contemporary Topics)
MTWTh 11:00 - 11:50 am
227 Hogue Hall
Spring, 2014

Dr. Michael L. Whelan
300D Hogue Hall
(509) 963-3544
mwhelan@cwu.edu

COURSE SYLLABUS

COURSE DESCRIPTION: Project cost accounting principles, applications and impact on profitability. Includes principles of activity based costing; WBS, earned value, cash management, value engineering and contemporary topics. Prerequisite: CMGT 444.

RESOURCES: **CONSTRUCTION COST ACCOUNTING AND FINANCIAL MANAGEMENT**, 3rd Ed.; by Steven J. Peterson; Pearson/Prentice Hall; 2013.

OUTCOME AND ASSESSMENT:

LEARNER OUTCOMES - Students will be able to:	**ASSESSMENT STRATEGIES** - Each student will:
1. systematically plan, organize, manage, control, and document construction accounting and cash flow activities.	1. demonstrate a knowledge of the content and interrelationships of construction accounting functions through graded assignments and exam questions.
2. understand and be able to develop the following types of documentation: Schedule of Values, periodic payment requests, S-curves, cost control reports, and cash flow projections.	2. create and explain the use and purpose of cost accounting related documents through graded assignments and exam questions.
3. understand the concepts, terminology, and rationale behind earned value; cost and schedule management; labor burden, general overhead, and profit determination; and accounting applications related to construction.	3. demonstrate construction accounting knowledge through a series of project assignments and exam questions.
4. evaluate the validity of management techniques, perspectives, and experiences presented by a variety of guest speakers and/or video resources.	4. attend and participate in the discussions, then write a short reaction paper about specific management topics presented to the class.
5. demonstrate the ability to identify and learn about new technologies that are applicable to the construction industry.	5. research a contemporary construction topic using one or more archival construction journal articles, then write an informative paper about that topic.

CLASS SESSION TOPICS:

DATE		TOPIC	REFERENCE
APR	2	Contemporary Topic Presentation – Communication – Hensel-Phelps	
	3	Introductory Information	Preface & Chapter 1
	7	Construction Accounting Systems (Review)	Chapter 2
	8	Accounting Transactions	Chapter 3
	9	More Accounting Transactions	Chapter 4
	10	Depreciation (Review)	Chapter 5
	14	Analysis of Financial Statements (financial ratios)	Chapter 6
	15	Analysis of Financial Statements (financial ratios)	Chapter 6
	16	Managing Costs	Chapter 7
	17	Managing Costs	Chapter 7
	21	**EXAM #1**	**Chapters 1 – 6**
	22	Labor Burden Determination	Chapter 8
	23	Managing General Overhead Costs	Chapter 9
	24	Managing General Overhead Costs	Chapter 9
	28	Setting Profit Margins for Bidding	Chapter 10
	29	Profit Center Analysis	Chapter 11
	30	Profit Center Analysis	Chapter 11
MAY	1	Project Cash Flows	Chapter 12
	5	Projecting Income Taxes	Chapter 13
	6	Projecting Income Taxes	Chapter 13
	7	Contemporary Topic Presentations	- - - - - - - - -
	8	**EXAM #2**	**Chapters 7 – 11**
	12	Contemporary Topic Presentations	- - - - - - - - -
	13	Cash Flows for Construction Companies	Chapter 14
	14	Time Value of Money (Review)	Chapter 15
	15	Contemporary Topic Presentations	- - - - - - - - -
	19	Contemporary Topic Presentations	- - - - - - - - -
	20	Financing a Company's Financial Needs	Chapter 16
	21	Financing a Company's Financial Needs	Chapter 16
	22	Contemporary Topic Presentations	- - - - - - - - -
	26	**MEMORIAL DAY HOLIDAY** – no class	
	27	Contemporary Topic Presentations	- - - - - - - - -
	28	Contemporary Topic Presentations	- - - - - - - - -
	29	**EXAM #3**	**Chapters 12 – 16**
JUN	2	Tools for Making Financial Decisions	Chapter 17
	3	Income Taxes and Financial Decisions	Chapter 18
	4	Contemporary Topic Presentations	- - - - - - - - -
	5	Contemporary Topic Presentations	- - - - - - - - -
	12	**FINAL EXAM**	**Chapters 1-18 + Contemporary Topics**

FINAL EXAM: Currently the final exam is scheduled for 8:00 – 10:00 am, Thursday, June 12th – So please don't make airline reservations, accept wedding invitations, commit to start a job, agree to go on a family cruise or vacation, or incur similar obligations that will conflict with the time set for the final exam in this course – nor should you let anyone else obligate you either!!!

MISCELLANEOUS, BUT IMPORTANT, NOTES:

OFFICE HOURS: **1:30 – 3:00 pm, M-W-Th (or by appointment)**

GRADE BREAKDOWN:

Various assignments	35%
Hour Exams (3@15% each)	45%
Final Exam	20%
TOTAL	100%

100	92	90	87	82	80	76	70	69	67	62	60	0
A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F	

READING ASSIGNMENTS: Should be done before class (class presentations are more understandable, learning is much easier, and grades improve).

ASSIGNMENTS:
1. Are due as announced when the assignment is made.
2. Will **NO**T normally be accepted late.
3. Will have solutions posted only if needed.
4. Must be presented in a clear, complete, and professional manner.
5. Must be neat, well organized, and legible as a part of every assignment's grade.
6. **Will occur during the final week of classes** unless otherwise announced.

EXAMS: Examinations will include 3 Exams given during regularly scheduled class periods and a Final Exam given at the regularly scheduled time during final exam week. Availability of makeup exams for any missed exams is at the discretion of the instructor, and will be considered only after consultation with the student about the reason(s) for missing the scheduled exam.

ATTENDANCE: Not mandatory, but strongly recommended - particularly if you expect to do well. You are responsible for any and all announcements, corrections, schedule changes, and additional information presented during regularly scheduled class periods. Makeup assignments will not be available for students missing in-class exercises. Besides, we will miss your smiling face in class!!!

CLASSROOM BEHAVIOR:

1. Students are expected to be in their seats and ready to go to work by the scheduled start of class. Normal rules of courtesy and respect will prevail during class periods.

2. Electronic devices (cell phones, digital readers and players, gaming devices, etc.) are to be off, inactive, or in a silent mode during class. Electronic devices may be used for taking notes, textbook reference, or internet access related to class only – no email, game playing, web-surfing, video watching, or other similar activities are permitted during class. Cell phone use during class, except for emergencies or activities related to the course, is **NOT** permitted.

3. Work completed for this course (assignments, papers, and exams) is expected to be yours and yours alone. Unless otherwise specified, group solutions are not acceptable for any assignment, and neither is plagiarism of information from other sources or copying of another person's work. If detected, you will fail the assignment with no opportunity to make-up the work. Your attention is directed to Appendix B of the current CWU Catalog for additional information regarding this topic.

4. Your attention is also directed to Appendix A of the current CWU Catalog for CWU's policies regarding Equal Opportunity, Affirmative Action, Gender Equity, and Sexual Harassment matters.

ADA STATEMENT: If you have a disability and require accommodations for this course, please speak with me privately as soon as possible so that necessary arrangements can be made. If you have not already done so, you will need to register with Disability Services (DS). DS is located in Bouillon 140. Alternatively, you may contact DS by email at ds@cwu.edu or by phone at (509) 963-1202 for more information.

CHANGES: Changes to the COURSE OUTLINE will be made as necessary and will be announced in class.

CMGT 488
Professional Certification
Winter 2014

Catalog Description: CMGT 488. Professional Certification (1). Prerequisite CMGT 444 or CMGT 445. A comprehensive review of professional construction management principles and technical skills in preparation for a national certification exam.

Texts: AIC Handbook and Review Package (obtained upon registering for the exam):

Other: Students **must** register for and take the American Institute of Constructors (AIC) Associate Constructor (CPC) Exam, Level 1. Obtaining certification is the hallmark of a true construction professional. This course provides the student with the information necessary to take the first step in becoming a Certified Professional Constructor.

Website: http://www.professionalconstructor.org/certification

Instructor: Dave Carns
Hogue Technology, Room 300A
Phone: 963-1762
E-mail: carnsd@cwu.edu

Office Hours: Monday through Thursday 11 am and 2 pm, or by appointment.

Learner Outcomes (Course Objectives):

Outcome	Assessment Strategy
1. Demonstrate knowledge in the technical construction-related fields of surveying, statics, strength of materials and wood and steel construction.	The student will demonstrate proficiency by preparing weekly questions related to these topics and discussing the questions in class. In addition each student will demonstrate proficiency on the AIC Associate Constructor Level 1 Exam.
2. Demonstrate knowledge in the construction sciences, including estimating, scheduling, construction materials and methods, electrical and mechanical construction and equipment utilization.	The student will demonstrate proficiency by preparing weekly questions related to these topics and discussing the questions in class. In addition each student will demonstrate proficiency on the AIC Associate Constructor Level 1 Exam.
3. Demonstrate knowledge in construction management, including contracts, principles of management, budgeting, cost control, accounting and project administration.	The student will demonstrate proficiency by preparing weekly questions related to these topics and discussing the questions in class. In addition each student will demonstrate proficiency on the AIC Associate Constructor Level 1 Exam.

Grading: This course will be graded as Satisfactory (S) or Unsatisfactory (U). In order to receive an "S" grade each student must:

- **Attend each class period.** More than one class missed will result in an "I" grade. Exceptions to this requirement must be discussed with the instructor **prior** to the scheduled class period.
- **Complete the CPC Level I Exam on April 5, 2014 with a score of 60% or better (70% is passing).** You must have proof of registering for this exam. The **cutoff date** for registration is March 5, 2014, with a $25 late fee after March 5.
- "I" grades will be change to "S" grades upon successfully scoring 60% on the CPC exam. If a student chooses to ignore the requirements of this class the "I" grade will be changed to a "U".

Instructional Methods and Activities: The primary student learning activity will be individual study. Self-graded quizzes will be part of most class periods and sample review questions are available in the CPC handbook.

Academic Honesty Policy: Students are clearly expected to do their own work and not copy the work of others. Evidence of copying, including any computer files, cheating or using writings of others without proper citations will result in a failure for the specific assignment. Successive evidence of copying, including any computer files, cheating or using writings of others without proper citations during the curriculum of the Construction Management program will result in loss of a student's major status. Your attention is directed to Appendix B of the current CWU Catalog for additional information.

ADA Statement: Students who have special needs or disabilities that may affect their ability to access information and or material presented in this course are encouraged to contact the instructor or ADA Compliance Officer, Director, ADA Affairs and Students Assistance on campus at 963-2171 for additional disability related educational accommodations.

If you need special accommodations for the AIC exam please contact the American Institute of Constructors as soon as possible. They will work in coordination with the Testing office at Central Washington University to make sure the accommodations are met.

CMGT 488
Class Schedule - Winter 2014

Week	Date	Subject Covered	Reading
1	January 6, 2014	Communication, Test Taking	CPC Review Materials (pdf file upon registration)
2	Jan 13, 2014	Surveying	CPC Review Materials
3	Jan 20, 2014	**Martin Luther King's Birthday**	CPC Review Materials
4	Jan 27, 2014	Soils and Concrete	CPC Review Materials
5	Feb 3, 2014	Statics, Strength of Materials, Mathematics Remember, deadline for registration for the exam is likely to be **February 1, 2014**	CPC Review Materials
6	Feb 10, 2014	Mechanical, Electrical and Plumbing	CPC Review Materials
7	Feb 17, 2014	**Presidents' Day**	CPC Review Materials
8	Feb 24, 2014	Estimating	CPC Review Materials
9	March 3, 2104	Safety, Materials and Methods	CPC Review Materials
10	March 10, 2014	Project Administration, Budget, Cost Control, Scheduling, Contract Law	CPC Review Materials
11	March 17, 2014	Note: There **Will Not** be Class During Finals Week	
	April 5, 2014 Saturday	Exam Date; details will be announced	

CMGT 495 Construction Management Competition Preparation Fall 2014
Associated Schools of Construction Region VII, Mixed-Use Division
28th Annual Student Competition

Web address: **www.asc67.org** **February 4-7, 2015**

John Ascuaga's Nugget
1100 Nugget Ave.
Sparks, Nevada 89431
Reservations: 800.648.1177

Catalog Description: CMGT 495. Construction Management Competition Preparation (1). Prerequisite, CMGT 344. Students work in teams to prepare for Construction Management competition. Teams develop cost, schedule, site layout and safety plans for a major construction project. Students will compete in the Associated Schools of Construction. Grade will be S or U. May be repeated to a maximum of 3 credits.

Instructor:
Dave Carns Hogue Room 300A
Phone: 963-1762 Cell: 859-2523
Email: carnsd@cwu.edu

Office Hours: Monday, Tuesday, Wednesday and Thursday 9:00-10:00 am and Tuesday and Wednesday 2:00-3:00 pm, or by appointment.

Team Members:

Name	Title	Phone	E-Mail
David Halseth		206 330-6557	halsethd@cwu.edu
Rachel Evans		206 516-9374	Revans7589@yahoo.com
Andrew Gunkel		509 494-4893	gunkela@cwu.edu
Brian Merris		360 961-7801	merrisb@cwu.edu
Kindra Scobba		360 601-4736	kindrascobba@gmail.com
Cale Snider		253 370-2795	Cale.snider@gmail.com
Jeremy Winter **Steve Schneider** **Greg Linnell** **Walsh Construction**	Contractor Mentors	(206) 406-5512 (206) 547-4008	jwinter@walshconstructionwa.com sschneider@walshconstructionwa.com glinnell@walshconstructionwa.com
Dave Carns	Faculty Advisor	963-1762	carnsd@cwu.edu

Learning Outcomes (Course Objectives):

Outcome	Assessment
1. Each student shall be able to plan, schedule and estimate a small commercial project given a set of construction drawings and contract documents.	Submit a written estimate, bid, plan and CPM schedule for a small commercial project using appropriate software for the estimate and schedule.
2. Prepare and present a group presentation to a panel of industry experts. The presentation shall summarize the construction estimate, schedule, construction sequence and costs of the project.	A "capstone" presentation shall be made to a panel prior to the competition. The panel shall assess the presentation and provide immediate feedback and suggestions to the students.
3. Develop the ability to define team responsibilities and work in a team environment.	The team shall prepare a written description of the responsibility of each member. The panel and instructor shall evaluate the team and offer suggestions for improvement prior to the competition.
4. Demonstrate the ability to summarize record and evaluate information pertaining to a competition and present it in a format that will be useful for teams in the upcoming years.	The team shall collect information relevant to the competition and organize it in a binder. Each student shall also write a one-page summary of the strengths and weaknesses of their team and offer suggestions for future competitors. In addition the team shall make a group summary presentation to their classmates.

Grading:
This course will be graded on an S/U basis. Students completing the assignments in a professional manner will be given a satisfactory grade.

Disability Services: If you have a disability and require accommodations for this course, please speak to me privately as soon as possible so that your needs may be appropriately met. If you have not already done so, you will need to register with Disability Services (DS). DS is located in Bouillon 140. Call (509) 963-1202 or email ds@cwu.edu for more information.

CMGT 495. Construction Management Competition Preparation

Assignments are listed below. Due dates will be announced as the class progresses.

Part I General Preparation:

1. Each team member is to prepare and submit a resume, as required by the competition.
2. The team is to review the typewritten list of items to be taken to the competition.
3. The team is to prepare a three ring binder prior to the competition (see binder from last year), complete with index tabs.
4. The team is to decide the duties and responsibilities of each team member and submit these in typewritten format.
5. The team is to discuss how to best spend their time while at the competition and is submit a tentative time schedule.
6. Prepare and submit standard forms that you may use at the competition. These may include but are not limited to:
   - Telephone conversation record
   - Subcontractor evaluation form
   - Company memo form
   - RFI or questions pending form

7. The team is to review and evaluate the point grading criteria from last year.

Part II Practice Project and Presentation:

The pretense is that the team is currently working for a construction company specializing in large residential development projects and wishes to undertake the project in question. The team members must estimate, plan and schedule the project and convince upper the project's owner that they are capable of running this project in a manner that will be beneficial and profitable to the owner.

1. Prepare and submit a complete estimate on Excel or Timberline.
2. Prepare a cash flow diagram for the project.
3. Prepare a site work plan for the project, including material and equipment storage, haul routes, traffic control, sediment control, etc. Include this on a site plan of the project.
4. Prepare a CPM schedule using software. Include at least 50 activities and important milestones. Activity durations should be based on crew and equipment selection and productivity (be able to justify activity durations). Identify the critical path and portions of the project that are of the greatest concern. Consider the contract documents when preparing this schedule.

5. Prepare a staffing report for the project and identify the roles that team members will play on this project. This should be related to the organizational structure of your company.
6. Prepare a one-page safety plan for the project.
7. Prepare one value engineering proposal for this project, including cost, and be prepared to present it to upper management.
8. Prepare a 20-minute group presentation. You may use Power Point, although some of the judges like to see this type of "high-tech" material kept to a minimum. All members' roles must be identified and all members must participate in the presentation. Be prepared to answer questions presented by the panel at the end of your presentation.

Part III Post-Competition

1. Each team member is to prepare a one page typewritten assessment of the team performance and suggestions for future teams.
2. The team is to compile a three-ring binder notebook for use by future teams. It shall include, in an organized manner, all work prepared during the competition, the self-assessment, list of items needed, resumes, etc.

The team is to share with classmates in a presentation format their experience during the competition. This shall be arranged either through a regularly scheduled class or through an AGC Student Chapter meeting.

Course Schedule, Fall 2014:

Week	Date	Subject Covered
1	9-22-14	
2	9-29-14	Pick up plans and documents
3	10-6-14	Review plans and documents
4	10-13-14	Presentation and RFI session on plans and documents.
5	10-20-14	Contractor presentations
6	10-27-14	Submit answers to questions pertaining to plans and documents, **Presentation to Panel**
7	11-3-14	Contractor presentations
8	11-10-14	TBA
9	11-17-14	Contractor presentations
10	11-24-14	TBA
11	12-1-14	Pick up second project
12	12-8-14	**Final Presentation to Panel**

School of Industrial Engineering and Technology
Course Outline for CMGT495
Construction Management Competition Preparation
Associated Schools of Construction Region Seven
Heavy/Civil Division
Suggested Meeting Time: Tuesday 4:00 PM
Fall 2013

John Ascuaga's (J.A. Nugget) Sparks, NV
Web address: **www.asc67.org**
February 5-9, 2014

Catalog Description: CMGT 495. Construction Management Competition Preparation (1). Prerequisite, CMGT 344. Students develop cost, schedule, site layout and safety plans for a major civil construction project. Students will compete at the Associated Schools of Construction competition in Reno, Nevada. Grade will be S or U. May be repeated to a maximum of 3 credits.

Instructor:
P. Warren Plugge, Room 300C
Phone: 963-2427 Home: 970-481-8948 (cell)
Email: wplugge@cwu.edu

Office Hours: By appointment.
Note: I do have an open door policy, if I am in my office feel free to ask questions.

Team Members:

Name	Title	E-Mail
Grant Maskal	Mr.	maskalg@cwu.edu
Eduardo Sanchez	Mr.	sancheze@cwu.edu
Zane J. Shaut	Mr.	shautz@cwu.edu
David C. Reeder	Mr.	Reederd@cwu.edu
Joel Greear	Mr.	greearj@cwu.edu
Cale Snider	Mr.	sniderc@cwu.edu
Nick Lupo **Granite Construction**	Contractor Mentor	Nick.lupo@gcinc.com
P. Warren Plugge	Faculty Advisor	wplugge@cwu.edu

Learning Outcomes (Course Objectives):

Outcome	Assessment
1. Each student shall be able to plan, schedule and estimate a small commercial project given a set of construction drawings and contract documents.	Submit a written estimate, bid, plan and CPM schedule for a small heavy/civil project using appropriate software for the estimate and schedule.
2. Prepare and present a group presentation to a panel of industry experts. The presentation shall summarize the construction estimate, schedule, construction sequence and costs of the project.	A "capstone" presentation shall be made to a panel prior to the competition. The panel shall assess the presentation and provide immediate feedback and suggestions to the students.
3. Develop the ability to define team responsibilities and work in a team environment.	The team shall prepare a written description of the responsibility of each member. The panel and instructor shall evaluate the team and offer suggestions for improvement prior to the competition.
4. Demonstrate the ability to summarize, record and evaluate information pertaining to a competition and present it in a format that will be useful for teams in the upcoming years.	The team shall collect information relevant to the competition and organize it in a binder. Each student shall also write a one-page summary of the strengths and weaknesses of their team and offer suggestions for future competitors. In addition the team shall make a group summary presentation to their classmates.

Grading:
This course will be graded on an S/U basis. Students completing the assignments in a professional manner will be given a satisfactory grade.

ADA Statement:
Students who have special needs of disabilities that may affect their ability to access information and or material presented in this course are encouraged to contact the instructor or ADA Compliance Officer, Director, ADA Affairs and Students Assistance on campus at 963-2171 for additional disability related educational accommodations.

CMGT 495. Construction Management Competition Preparation

Assignments are listed below. Due dates will be announced as the class progresses.

Part I General Preparation:

1. Each team member is to prepare and submit a resume, as required by the competition.
2. The team is to review the typewritten list of items to be taken to the competition.
3. The team is to prepare a three ring binder prior to the competition (see binder from last year), complete with index tabs.
4. The team is to decide the duties and responsibilities of each team member and submit these in typewritten format.
5. The team is to discuss how to best spend their time while at the competition and is submit a tentative time schedule.
6. Prepare and submit standard forms that you may use at the competition. These may include but are not limited to:
   - Telephone conversation record
   - Subcontractor evaluation form
   - Company memo form
   - RFI or questions pending form
7. Each team member is to become familiar with the software Excel formatted bid preparation sheets and prepare a practice estimate using the software.
8. The team is to review and evaluate the point grading criteria from last year.

Part II Practice Project and Presentation:

The pretense is that the team is currently working for a construction company specializing in heavy/civil work and wishes to undertake the project in question. The team members must estimate, plan and schedule the project and convince upper management that they are capable of running this project in a manner that will be beneficial and profitable to the company.

1. Prepare and submit a complete estimate on Excel. This must be accomplished by selecting equipment and work crews, **not** by using a parameter-estimating guide such as Means.
2. Prepare a site work plan for the project, including material and equipment storage, haul routes, traffic control, sediment control, etc. Include this on a site plan of the project.
3. Prepare a CPM schedule using software. Include at least 50 activities and important milestones. Activity durations should be based on crew and equipment selection and productivity (be able to justify activity durations). Identify the critical path and portions of the project that are of the greatest concern. Consider the contract documents when preparing this schedule.
4. Prepare a staffing report for the project and identify the roles that team members will play on this project. This should be related to the organizational structure of your company.
5. Prepare a one-page safety plan for the project.
6. Prepare one value engineering proposal for this project, including cost, and be prepared to present it to upper management.

7. Prepare a 20-minute group presentation. You may use Power Point, although the judges like to see this type of "high-tech" material kept to a minimum. All members' roles must be identified and all members must participate in the presentation. Be prepared to answer questions presented by the panel at the end of your presentation.

Part III Post Competition

Note: No grade will be administered until all of the following requirements are met.

1. Each team member is to prepare a one page typewritten assessment of the team performance and suggestions for future teams.
2. The team is to compile a three-ring binder notebook for use by future teams. It shall include, in an organized manner, all work prepared during the competition, the self-assessment, list of items needed, resumes, company address lists, fund raising letter, etc.
3. Once the final competition is complete, the box will be stored in an organized manner with a list of items used and needed for next years purchase.

The team is to share with classmates in a presentation format their experience during the competition. This shall be arranged either through a regularly scheduled class or through an AGC Student Chapter meeting. We will meet in Hogue Tech Rm 105 on Tuesdays at 4:00 pm.

Course Schedule, Fall 2013:

Week	Subject Covered
1	No Meeting
2	General Meeting
3	Mini-estimate
4	Fund Raising/White Sheets
5	Practice Problem – Start Later
6	TBA- Project
7	TBA
8	TBA
9	TBA
10	No Meeting – T-Day
11	**Final Presentation to Panel**
12	Evaluation and Wrap-up

*New schedule to follow once Winter quarter commences.

SYLLABUS
IET 311 – STATICS
FALL 2014

Description: Prerequisites, PHYS 111 or 181 and MATH 173 or permission of instructor. Introductory statics including forces and equilibrium. Principles of structures including trusses, beams, frames, machines and friction.

Rational: This course is intended to provide the student with basic analytical problem solving skills in engineering mechanics, specifically statics, including simple structures. Upon completion of this course the student will be able to draw free-body diagrams and solve for unknown forces using a vector approach.

Class:

Section	Days	Start Time	End Time	Room	Campus
95051	M – Th	9:00 AM	9:50 AM	HOGUE 102	EBURG
90966	M – Th	12:00 PM	12:50 PM	HOGUE 102	EBURG

Resources: Required Text: Statics & Strength of Materials, 4th Ed., by Hibbeler; Pearson, ISBN: 978-0-13-345160-3

Instructor: Darryl Fuhrman
email: fuhrmand@cwu.edu

When you email, type **Statics 311 in the subject line** so that I can filter by subject, otherwise your message may get lost in the clutter.

Office Hours: M-TH 1:00 – 2:00 P.M. or whenever door is open. Other times by appointment.

ADA: Students who have special needs or disabilities that may affect their ability to access information and/or material presented in this course or fully participate in the activities included in this course are encouraged to contact the instructor or call 963-2171 for additional accommodation.

Conduct: Students are to conduct themselves in accordance with Appendix B: Student Rights and Responsibilities Policy of the University Catalog.

Turn off Phones / Text messaging
No Tobacco Products are allowed in the classroom

Chew policy 1st offense verbal, 2nd meeting with dept chair, 3rd dropped from class

Pre-arrange any absence from class. Otherwise points missed due to an unexcused absence are not recoverable except due to a medical emergency supported by a Doctors note.

SYLLABUS
IET 311 – STATICS
FALL 2014

Ethics

Plagiarism will not be tolerated:
Plagiarism which shall mean the appropriation of any other person's work and the unacknowledged incorporation of that work in one's own work offered for credit. Anyone not familiar with how to paraphrase, quote, or cite is encouraged to seek assistance from the Writing Lab on campus. Any assignment evident of plagiarism will result in a failing grade of zero value. CWU Policy (Appendix B in the Catalog) is enforced.

This includes cheating or copying on assignments and exams. Working together on assignments is good, but there is a fine line between helping another student and cheating. Working together includes: asking another student if you calculated the same answer, short verbal explanations. For example, "by analyzing joint F for the horizontal components of force, I calculate force A = 20. lbs." When I see several papers that look the same, or very similar, this looks like students are copying each other or the solutions manual. A zero is assigned for that work and I make a copy of it. If it happens a second time, it results in an F in the course and your name goes to the university so that if it happens again, you are expelled.

OBJECTIVES

Learning Outcomes	Assessment
1. Students will understand the relationships between metric and US units and have the ability to work in both arenas. A foundation for problem solving techniques is developed and students will be able to apply analytical skills in engineering statics, the study of forces on objects at rest.	Demonstrate these principles in classroom exercises, homework problems, examinations, and final report based on applying knowledge to solve analytical problems.
2. Demonstrate an understanding of vectors and be able to express and resolve vectors in two and three dimensions.	Demonstrate these principles in classroom exercises, homework problems and examinations based on applying knowledge to solve analytical problems.
3. Draw a free body diagram and solve for unknown forces in two and three dimensions for particle and rigid body systems. Demonstrate analytical skills by solving for unknown forces.	Demonstrate these principles in classroom exercises, homework problems, examinations, and final report based on applying knowledge to solve analytical problems.
4. Students will be able to perform vector operations of dot and cross product and use these principals to solve for unknown forces in three dimensions. Demonstrate the ability to use the concepts of moments and couples in qualitative and quantitative applications.	Demonstrate these principles in classroom exercises, homework problems and examinations based on applying knowledge to solve analytical problems.

C. Interim Report

1. Three-year Interim Report Dated February 9, 2012 and response from ACCE

Three-Year Progress Report
Submitted to
The American Council for Construction Education
From
The Construction Management Program at Central Washington University

Date: February 9, 2012

Weaknesses: There was one weaknesses identified in the Visiting Team Report

<u>Weakness No. 1.</u> ADMG 385, Business Communication and Report Writing is classified as a "General Education, written communication" course rather than a "Business and Management" course. This leaves the curriculum 5 quarter credits short in the "Business and Management" category (Document 103, Section III, 3.3.2). This issue was discussed in Section III.B.4 of this report.

<u>Response:</u>

This weakness has been eliminated, as detailed in the First Year Progress Report, dated February 23, 2010. A curriculum change was proposed in October of 2009 to bring the course requirements in line with the ACCE requirements as indicated in the ACCE Visiting Team Report. After progressing through the appropriate university channels the changes were approved by the full CWU Faculty Senate on February 10, 2010. In summary, the changes replace ADMG 385, Business Communication and Report Writing with a choice of courses that fall within the ACCE "Business and Management" category.

With the new curriculum changes the courses in the "Business and Management" category appear as follows:

BUSINESS and MANAGEMENT

COURSE NO.	COURSE TITLE or ELECTIVE DESIGNATION	credits	required
ECON 201	Principles of Economics Micro	5	
BUS 241	Legal Environment of Business	5	
ACCT 301	Financial Accounting Analysis	5	
Two of the following: HRM 381 (5) or MGT 380 (5) or MKT 360 (5) or ADMG 201 (3) and ADMG 372 (3)	Management of Human Resources, or Organizational Management, or Principles of Marketing or Introduction to Business AND Leadership and Supervision	10 or 11	
IET 301	Engineering Project Cost Analysis (2 of 4 credits here)	2	
	CATEGORY TOTAL	**27-28**	**27**

- A complete copy of the approved changes was included in Appendix A of the First Year report.

Concerns: There were four concerns identified.

Concern No. 1. The student faculty ratio for the CM is the highest in the Department, and significantly higher than that for EET and MET. It is not clear whether the workload model adequately addresses the implications with respect to advising requirements. All advising of CM students is by CM faculty, with no staff resources available. As faculty workload increases, it becomes more difficult to maintain quality. Increased student enrollment or additional faculty duties without commensurate investment in resources could lead to a Weakness with respect to document 103, Section IV.4.2.

Response:

There are no plans to increase the number of students admitted into the CM major (currently 36 new students are admitted each academic year). This decision has been supported by the CM faculty, the Industrial and Engineering Technology Department Chair, the Dean of the College of Education and Professional Studies and the CM Industry Advisory Council. The advising workload for CM faculty is currently recognized in the workload model; a description follows: Each CM faculty is required to submit a "workload plan" for the following academic year. This plan, which must be approved by the Chair and Dean, totals 45 "workload units". Faculty with approved workloads beyond 45 units must be paid for an overload. For most faculty members, the class teaching workload comprises approximately 36 of the 45 units (two to three courses per quarter) and the remaining workload units are divided between the "scholarship" and "service" categories. Currently the CM faculty all have 1.0 workload unit for advising in their workload plans under the "service" category. This is equivalent to giving each faculty member credit for approximately 10 hours of time per quarter spent advising students.

Plan and Timeline: For the next workload plan cycle, the 2010/2011 academic year, all CM faculty will submit a workload plan listing 2.0 units of credit for student advising. This will reduce the each faculty member's time spent on instructional activity, scholarship or service. It should be noted that the current advising system, while requiring a rather large amount of "up-front" time with the students, makes subsequent advising much easier for both the students and faculty advisors.

Concern No. 2. The introduction of the Heavy/Civil option, which has been very popular with students and industry, places a heavy load on a recently hired, untenured faculty member. It is not clear that the workload model recognizes this additional effort of starting and refining this option. If the workload becomes so great that contributions in the area of scholarship are not possible, a good faculty member could be lost in the promotion and tenure process, resulting in a Weakness with respect to Document 103, Section IV.4.1 and/or Section IV.4.2.

Response:

Changes have been made to reduce the workload for the faculty member who teaches most of the heavy/civil curriculum. An adjunct was hired to help by teaching CMGT 443, Heavy Civil Utilities and the teaching assignments have been adjusted to lessen this faculty member's class preparation workload by having him teach multiple sections of the CMGT 265, Blueprint Reading class. In addition, this faculty member's teaching workload was reduced by on four-credit class during the 2009/2010 academic year.

Plan and Timeline: Senior CM faculty members are continuously working with this faculty member to help him with his courses and scholarship activity. Specifically, time was spent on additional course development in CMGT 440, Temporary Structures and CMGT 267, Plane Surveying. Also, a senior CM faculty member co-authored a paper with this faculty member. The paper was accepted for publication in the ASC Proceedings and will be presented in April at the ASC Conference in Boston, MA. The faculty member has also successfully obtained grants to assist the program and has maintained an ongoing record of scholarship and service activity. Continual efforts will be maintained to mentor this faculty member to assure progress toward tenure and promotion.

Concern No. 3. The existing 20-work-station lab is the only lab on campus with all software used by CM students. When the lab is used for course instruction, it is not available for students working on homework. As a result there is a limitation with respect to student access. Although the current situation is workable, any increase in IET enrollment or any deterioration of facilities could lead to a "facilities" Weakness with respect to Document 103, Section VI.6.1.

Response:

This concern is being addressed with a two-phase project. Phase I consists of the construction of the new 56,000 square foot Hogue Technology Building addition. The contract for this phase was awarded in the fall of 2009 and construction is currently underway, with a scheduled completion date of April 2011. Phase II consists of the renovation of the existing 36,000 square foot Hogue Technology Building. The renovation will provide one 20-work-station computer laboratory and one 30-work-station laboratory, both complete with construction software. One lab will be designated for classes and the other will be open for student use. Funding for Phase II has not been officially secured, however because bids for Phase I were significantly lower than the engineer's estimate for the project, the University is currently seeking approval from the state Office of Financial Management to use the cost savings from Phase I to complete Phase II. This would eliminate the need to seek additional funding from the state. If this does not occur, a capital funding request for Phase II will be submitted for the next biennium funding cycle.

Plan and Timeline: The existing situation, with one lab, is workable but not ideal. The current plan includes construction of two new computer lab spaces when the existing Hogue Technology Building is renovated. The completion date for this project is approximately spring of 2012.

Concern No. 4. Attendance for the current Industry Advisory Council meetings has been inconsistent. Since it appears that geography and the transient nature of construction projects are legitimate factors, the Council should look to a different organizational approach or greater use of available technology to complete its mission as the primary conduit for industry-program communication and support. Industry supporters are making substantial voluntary contributions of time, effort and money. If feelings of frustration or underutilization of precious time were to develop, strong industry support could be threatened, potentially leading to a Weakness with respect to Document 103, Section VII.7.1.

Response:

This concern has been alleviated with the recent reorganization and revitalization of the Construction Management Industry Advisory Council in the fall of 2009. Bylaws have been adopted, membership has been increased, committees have been created and meeting dates have been established. All council members have been assigned to a committee and given very meaningful roles to assist the program.

In summary:

Membership: Twelve members, six of whom must be alumni

Committees: Each committee has been assigned a faculty coordinator and each committee has selected a committee chair from among its members.

1. Membership Committee
2. Events/Outreach Committee
3. Curriculum Review Committee
4. Scholarship Committee

Meetings: Two meetings per year: The fall meeting is the second Thursday of October in the Puget Sound area. The spring meeting is the second Thursday of May on campus in Ellensburg. Construction Management students, likely AGC Student Chapter officers, will be present at the spring meeting.

These changes have already led to more active and meaningful roles for members of the industry advisory council, as 10 of the 12 members, plus four faculty members and the Development Officer from Central were in attendance at the October 8, 2009 fall meeting. Although industry support for the program has always been extremely strong, these recent changes will help formalize and better manage industry interaction with the Construction Management program.

Plan and Timeline: The plan has been implemented, as mentioned above. Continuous effort will be dedicated to assure ongoing interaction between the program and the industry advisory council.

- A copy of the council bylaws is included in Appendix B of this report.
- A copy of the council executive membership is included in Appendix C of this report.

- A copy of the October 8, 2009 meeting minutes is included in Appendix D of this report.

Additional Information Pertaining to the Construction Management Program at Central Washington University.

There have been a few positive changes to the CMGT Program at Central Washington University that have occurred since the time the ACCE visiting team was on campus. These are included with this report and are listed below:

- Investment income from the "Heavy/Civil" endowment fund ($500,000) was used for the first time in the spring of 2009 to hire an adjunct faculty member from industry (who is also a member of the Advisory Council) to develop and teach CMGT 443, Utility Construction.

- The student team from Central took first place in the "Commercial" construction division of the Associated Schools of Construction Region VII competition in Sparks, NV in February of 2009. The same team then went on to take second place at the National Student Competition, in San Diego, CA in April of 2009.

- Construction of the new Hogue Technology Addition has begun. This project is being utilized in current courses for plan-reading exercises, productivity exercises, management exercises, estimating exercises and for field trips. In addition, since the building is scheduled to be LEED Platinum, many of the green building concepts are being incorporated into existing courses, specifically CMGT 452, LEED in Sustainable Construction.

- The Industry Advisory Council has taken a leadership role and addressed one of the "Undeveloped Potentials" listed in the Visiting Team Report. The Council has created a new Construction Management Scholarship, funded with $35,000 from the CWU Council Foundation Account, with the idea of improving the diversity of the CM student enrollment.

- A copy of the scholarship agreement for the new scholarship is included in Appendix E of this report.

Appendices

A. ***Recently Approved Curriculum (as it will appear in the University Catalog)***

B. ***Industry Advisory Council Bylaws***

C. ***Industry Advisory Council Executive Membership***

D. ***Advisory Council Meeting Minutes, October 8, 2009***

E. ***Construction Management Scholarship Agreement***

Appendix A

Recently Approved Curriculum (as it will appear in the University Catalog)

Construction Management

Advisors

David Carns, MS (Coordinator)
William Bender, PhD
P. Warren Plugge, PhD
Michael Whelan, PhD

This major prepares the graduate for management positions in the construction industry. Students must be accepted into the major prior to taking upper-division CMGT courses. See www.cwu.edu/~iet/programs/cmgt.html for details. Students pursuing this degree should work closely with their program advisor to assure that prerequisites for entry into the major have been satisfied.

Construction management students have the choice to concentrate on one of two different construction types; general building or heavy civil construction.

Exit Requirements
Students are required to complete the Associate Constructor exam administered by American Institute of Constructors and achieve a minimum score of 60 percent to graduate with a BS in construction management.

Required Courses

- ACCT 301 - Financial Accounting Analysis Credits: (5)
- ~~ADMG 385 - Business Communications and Report Writing Credits: (5)~~
- BUS 241 - Legal Environment of Business Credits: (5)
- CMGT 265 - Blueprint Reading and Construction Graphics Credits: (4)
- CMGT 320 - Electrical Systems Design Credits: (3)
- CMGT 343 - Construction Estimating I Credits: (3)
- CMGT 343LAB - Construction Estimating I Laboratory Credits: (1)
- CMGT 346 - Construction Methods and Materials Credits: (4)
- OR
- CMGT 347 - Heavy Civil Methods and Materials Credits: (4)
- CMGT 440 - Temporary Structures Credits: (4)
- OR
- CMGT 441 - Wood and Steel Construction Credits: (4)
- CMGT 442 - Building Service Systems Credits: (3)
- OR
- CMGT 443 - Heavy Civil Utilities Credits: (3)
- CMGT 444 - Codes, Contracts and Specifications Credits: (4)
- OR
- CMGT 445 - Heavy Civil Contract Law Credits: (4)
- CMGT 447 - Construction Planning, Scheduling and Control Credits: (4)
- CMGT 450 - Soils and Foundations Credits: (4)
- CMGT 455 - Principles of Construction Management Credits: (4)
- OR
- CMGT 456 - Principles of Heavy Civil Construction Management Credits: (4)
- CMGT 460 - Concrete Construction Credits: (4)
- OR
- CMGT 461 - Pavement Design and Construction Credits: (4)

- CMGT 485 - Construction Accounting, Finance and Contemporary Topics Credits: (4)
- CMGT 488 - Professional Certification Credits: (1)
- COM 345 - Business and Professional Speaking Credits: (4)
- ECON 201 - Principles of Economics Micro Credits: (5)
- IET 161 - Architectural Computer Aided Design Credits: (3)
- IET 301 - Engineering Project Cost Analysis Credits: (4)
- IET 311 - Statics Credits: (4)
- IET 312 - Strength of Materials Credits: (4)
- ~~IT 101 - Computer Applications Credits: (3)~~
- ~~IT 258 - Spreadsheet Applications Credits: (3)~~
- ~~OR~~
- ~~IT 268 - Database Applications Credits: (3)~~
- ~~OR~~
- ~~CMGT 452 - LEED in Sustainable Construction Credits: (3)~~
- ~~OR~~
- ~~IET 490 - Cooperative Education Credits: (1-12)~~
- ~~Take 3 credits of IET 490~~
- MATH 172 - Calculus I Credits: (5)
- MATH 173 - Calculus II Credits: (5)
- PHYS 181 - General Physics Credits: (4)
- PHYS 181LAB - General Physics Laboratory Credits: (1)
- SHM 323 - Construction Safety Credits: (3)

Select Either

- CMGT 245 - Light Commercial Construction Credits: (5)
- OR
- CMGT 452 – LEED in Sustainable Construction Credits: (4)
- ~~CMGT 480 - Heavy, Civil, and Highway Construction Credits: (4)~~
- OR
- IET 490 - Cooperative Education Credits: (1-12)
- (IET 490 must be taken for four credits.)

Select Either

- CHEM 111 - Introduction to Chemistry Credits: (4)
- OR
- CHEM 181 - General Chemistry I Credits: (4)

Select Either

- CHEM 111LAB - Introductory Chemistry Laboratory Credits: (1)
- OR
- CHEM 181LAB - General Chemistry Laboratory I Credits: (1)

Select from the Following - Credits: 5

- GEOL 101 - Physical Geology Credits: (4)
- and
- GEOL 101LAB - Physical Geology Laboratory Credits: (1)

- OR
- GEOL 108 - Introduction to Environmental Geology Credits: (5)

~~Select Either~~

Select Two of the Following

- HRM 381 - Management of Human Resources Credits: (5)
- OR
- MGT 380 - Organizational Management Credits: (5)
- OR
- MKT 360 – Principles of Marketing Credits: (5)
- OR
- ADMG 201 – Introduction to Business Credits: (3) AND ADMG 372 – Leadership and Supervision Credits: (3)

Select from the Following - Credits: 4

- CMGT 267 - Plane Surveying Credits: (3)
- and
- CMGT 267LAB - Plane Surveying Field Session Credits: (1)
- OR
- CMGT 267LABHC - Heavy Civil Highway Field Session Credits: (1)

Select from the Following - Credits: 4

- CMGT 344 - Construction Estimating II Credits: (3)
- and
- CMGT 344LAB - Construction Estimating II Laboratory Credits: (1)
- OR
- CMGT 345 - Heavy Civil Estimating II Credits: (3)
- and
- CMGT 345LAB - Heavy Civil Estimating II Laboratory Credits: (1)

Total Credits: ~~137 to 138~~
131-133

Appendix B

Industry Advisory Council Bylaws

Construction Management Industry Advisory Council
Central Washington University

Bylaws for Operation
Adopted October 8, 2009

Mission

The primary mission of the Construction Management Program is to provide the highest possible quality general construction education to undergraduate students who are preparing for careers in the construction industry.

The secondary mission is to maintain ongoing contact with the construction industry and to provide support for this industry.

Membership and Chair

1. The Council shall consist of 12 members from industry, with a minimum of 6 alumni of the CMGT program, plus the CMGT faculty and any other ex-officio members, such as representatives from the AGC Education Foundation, university administration, etc. All industry members shall serve on at least one committee. The goal is to have the council represent a diverse cross-section of the industry, including geographic area in the state, type of work, size of company, etc. Select students in the Construction Management program should also be strongly encouraged to work with the Council.

2. The Chair shall be selected from the 12 members and the Chair's term shall be 4 years.

3. The term for all council members shall be 4 years. This will mean that 3 positions will become vacant (and filled) each year. Members can reapply for another 4 year term if they choose. The membership committee will assume the task of establishing details of this process.

Meetings

1. Two meetings per year (with an ad hoc summer meeting immediately prior to the golf tournament, as necessary):
    - Spring meeting: Campus meeting: Second Thursday of May
    - Fall meeting: West side meeting: Second Thursday of October

Committees

The following committees shall each elect a chair and shall conduct business as needed. Each committee chair shall report to the Council Chair.

1. **Membership Committee**

   Charge: Establish a procedure for indentifying and selecting council members. Make recommendations to the council at the spring meeting for approval.

2. **Events/Outreach Committee**

   Charge: Plan and complete council events:

   - Golf tournament (summer)
   - Alumni gathering (fall)
   - Other events

3. **Curriculum Review Committee**

   Charge: Take responsibility to make sure that core CMGT courses in the program are reviewed by industry on a three-year cycle. The committee will be responsible for locating reviewers, obtaining the review and reporting to the Chair at the fall meeting. The reviews will be utilized by faculty to make changes to the courses and curriculum.

4. **Scholarship Committee**

   Charge: Establish criteria, raise funds from industry, collect applications and award (an) annual scholarship(s) to promising CMGT student(s).

Appendix C

Industry Advisory Council Executive Membership

Central Washington University
Executive Council
Construction Management Advisory Council

Allison Bujacich, Chair Manager of Capital Development University of Puget Sound 1500 North Warner Street Tacoma, WA 98416-8622	(253) 879-3489 FAX (253) 879-3537 cell: (253) 579-6654 abujacich@ups.edu
Pete Barlow, Principal Contech Services, Inc. P.O. Box 84886 Seattle, WA 98124	(206) 763-9877 FAX (206) 763-9970 pete@contechserviceswa.com
Bill Bender IET Department CWU 400 East University Way Ellensburg, WA 98926-7584	(509) 963-3543 FAX (509) 963-1795 benderw@cwu.edu
Phil Bogardus Manager of Construction Granite Construction Company 1525 E. Marine View Drive Everett, WA 98201-1927	(425) 551-3100 FAX (425) 551-3116 cell: (425) 508-2998 phil.bogardus@gcinc.com
Rick Cadwell, Principal Drury Construction Co., Inc. 19302 Powder Hill Place, Suite 100 Poulsbo, WA 98370	(360) 394-6000 FAX (360) 394-6005 rick@druryconstruction.com
Dave Carns IET Department CWU 400 East University Way Ellensburg, WA 98926-7584	(509) 963-1762 FAX (509) 963-1795 carnsd@cwu.edu
Tom Cole, Chief Estimator Lydig Construction 12100 Northrup Way Bellevue, WA 98005	(425) 885-3314 FAX (425) 881-2903 cell: (425) 591-4846 tcole@lydig.com
Brandon Drexler, Principal Belsaas & Smith Construction PO box 926 103 East 4th Ave Suite 209 Ellensburg WA 98926	(509)-925-9747 brandon@belsmith.com

Jim Gebhardt, P.E. Strider Construction Co. Inc. 4721 Northwest Dr. Bellingham, WA 98226	(360) 380-1234 FAX (360) 380-3456 cell: (360) 319-7308 jimg@striderconstruction.com
Troy Goodreau, Regional Manager Greenberry P.O. Box 506 (235 North Hill Blvd.) Burlington, WA 98233	(360) 707-5638 x603 FAX (360)707-5639 cell: (360) 305-7481 troodreau@greenberryinc.com
Jason Goetz, Project Manager PCL Construction Services, Inc. 600 108th Avenue NE, Suite 522 Bellevue, WA 98004	(425) 732-4301 FAX (425) 732-4329 cell : (206) 255-7427 jgoetz@pcl.com
David Hull, V.P. of Operations MRM Construction, Inc. P.O. Box 838 Ellensburg, WA 98926	(509) 925-6000 FAX (509) 925-6180 cell : (509) 929-1249 dhullmrm@fairpoint.net
Marshall McKean Skanska 221 Yale Avenue North, Suite 400 Seattle, WA 98109	(206) 726-8000 FAX (206) 328-9235 cell: (206) 940-8030
Michoan Spoelstra Development Officer College of Education and Professional Studies CWU 400 East University Way Ellensburg, WA 98926-7415	(509) 963-1423 FAX (509) 963-1049 Cell: (509) 899-1394 spoelsm@cwu.edu
P. Warren Plugge IET Department CWU 400 East University Way Ellensburg, WA 98926-7584	(509) 963-2427 FAX (509) 963-1795 wplugge@cwu.edu
Doug Watt Northwest Cascade P.O. Box 73399 Puyallup, WA 98373	(253) 848-2371 FAX (253) 848-2545 doug@nwcascade.com
Michael Whelan IET Department CWU 400 East University Way Ellensburg, WA 98926-7584	(509) 963-3544 FAX (5090 963-1795 mwhelan@cwu.edu

Appendix D

Advisory Council Meeting Minutes, October 8, 2009

Central Washington University Construction Management Program
Advisory Board Meeting Minutes
Thursday, October 8, 2009
Lydig Construction Inc Office, Bellevue, Washington
Attendees
Member Company
Jim Gebhardt, Strider Construction
Tom Cole, Lydig Construction
Rick Cadwell, Drury Construction
Marshall McKean, Skanska USA
Troy Goodreau, Greenberry
Jason Goetz, PCL
David Hull, MRM Construction
Pete Barlow, Contech Services
Philip Bogardus, Granite Construction
Brandon Drexle,r Belsaas-Smtih (not present)
Allison Bujacich, University of Puget Sound
(called in)
Dave Carns, CWU CMGT Professor
Michael Whelan, CWU CMGT Professor
Warren Plugge, CWU CMGT Professor
Bill Bender, CWU CMGT Professor
Michoan Spoelstra, CWU Development

Tom Cole called to order the meeting to order at 3:30 pm

Introductions and welcome to new members

Reviewed & approved minutes from the July 14th meeting
Treasurer's report by Dave Carns
Reaccredidation team report by Dave & Bill with discussion teams findings and suggestions
Reviewed and approved suggested bylaws as follows:

Bylaws:
1. Council shall consist of **12 members** from industry, with a minimum of 6 alumni of the CMGT program, plus the CMGT faculty and any other ex-officio members, such as representatives from the AGC Education Foundation, university administration, etc. All industry members shall serve on at least one committee. It was decided that the industry members should represent a diverse cross-section of the industry, including geographic area in the state, type of work, size of company, etc. It was also decided that a select group of CMGT students should be "assigned" to the Council to work with committee members. Details were not finalized.

2. Chair shall be selected from the 12 members and the Chair's term shall be 4 years.

3. The term for all council members shall be **4 years.** This will mean that 3 positions will become vacant (and filled) each year. Members can reapply for another 4 year term if they choose. **The membership committee will assume the task of figuring out the details and have their recommendations ready by end of January for review and consideration/discussion ahead of the spring meeting at which time they will be adopted.**

4. **Two meetings per year (with an ad hoc summer meeting immediately prior to the golf tournament, as necessary**):

- **Spring meeting**: Second Thursday of May on campus (next meeting, May 13, 2010).
- **Fall meeting:** West side meeting: The second Thursday of October (next meeting; October 14,2010 location TBD)

Committees:

Standing Committees

1. Membership Committee

•Establish a brief procedure for identifying and selecting council members. Make recommendations to the council at the Spring meeting for approval. This will likely involve creating a very simple application process; perhaps submission and review of a resume.

•The AB membership application was distributed for use;
Everyone should fill out and submit so contact info is on file.

2. Events/Outreach Committee: Plan and complete council events:

- Golf tournament (summer)
- Alumni gathering (fall)
- Other events determined

3. Curriculum Review Committee: Take responsibility to make sure that core CMGT courses in the program are reviewed by industry on a three year cycle. The committee will be responsible for locating reviewers, reviews will be utilized by faculty to make changes to the courses and curriculum

4. Scholarship Committee: This would be a new committee formed with the idea of establishing criteria, raising funds from industry, collecting applications and awarding an annual scholarship to one (or eventually more?) promising CMGT student. Thoughts are to establish a women/minority scholarship to help recruit/retain women and minorities in the program (this was an opportunity that was identified by members of the American Council for Construction Education (ACCE) visiting team when they were recently on campus for a re-accreditation visit).
It was agreed that students should be assigned to each committee for assisting in the respective committee responsibilities as a way to build interest and program support for present and future.

The advisory board members to serve on these committees, are as follows:

Committee Volunteers

Committee	Volunteers
Membership	Marshall McKean, Tom Cole, Troy Goodreau, Michael Whelan
Events	Allison Bujacich, Jim Gephardt, Pete Barlow, Warren Plugge, Michoan Spoelstra
Curriculum Review	Tom Cole, Marshall McKean, David Hull, Jim Gephardt, Brandon Drexler, Dave Carns
Scholarship	Allison Bujacich, Rick Cadwell, Jason Goetz, Phil Bogardus, Michoan Spoelstra, Bill Bender

Timeline: Each committee will select a chairperson and develop a task order and have initial draft of action items ready for distribution by early February 2010. this includes scholarship guidelines, selection process as well as applications.
The summer golf event. A response to the reaccredidation team suggestions (this is partially complete with the reformation of the AB.
AB membership terms, selecting students for participation; and refinement of by laws as adopted.

5:30pm Tom adjourned the meeting.

Appendix E

Construction Management Scholarship Agreement

Annual Scholarship Gift Agreement between
Construction Management Advisory Council and the CWU Foundation
Construction Management Scholarship

The Intent of the Construction Management Advisory Council (CM AC) Scholarship is to provide two multi-year scholarships to students in the Construction Management program. The department and the CM AC have collected funds over the years through direct solicitation and fundraising events. Sufficient funds have been collected at this time to start awarding student scholarships. The scholarship fund will start with $35,000 that has been transferred from the CMAC fund (10555). During the 2009 accreditation, the American Council for Construction Education (ACCE) visiting team noted that Central Washington University (CWU) has an opportunity to increase the overall diversity of the students in the Construction Management program. The goal of this scholarship is to help pay for tuition for two students for two years in the construction management program. The scholarship recipients will each receive up to $3,000 per year for a maximum of two years.

Purpose:

The CM AC annual scholarship is a way to award monetary support for well deserving students and potentially increase diversity amongst the students majoring in the Construction Management (CM) program.

Scholarship Requirements:

1. Student(s) must be enrolled fulltime at CWU
2. Student(s) must be a Construction Management **pre-major** as defined by CWU with the intent to be accepted into the major.
3. Students (s) must have a minimum grade point of **2.8.**
4. **Criteria for award will be based on GPA, construction experience, need, outside activities and members of a minority population as defined below.**
5. Preference will be given to student(s) who identify with a **minority population** (defined as : Women, **Native American** [American Indian, Eskimo, Aleut or Native Hawaiian], a US citizen whose origins are, **Asian-Indian** [India, Pakistan or Bangladesh], **Asian-Pacific** [Japan, China, Taiwan, Korea, Vietnam, Laos, Cambodia, Philippines, Samoa and the US Trust Territories of the Pacific or Northern Marianas], **African American or Black** [Black racial groups of Africa], **Hispanic** [Spanish-speaking areas of Latin America or the regions of Mexico, Central America, South America or the Caribbean Basin], also included are veterans and nontraditional aged students.
6. If in the future it is the judgment of the Foundation that **all or part of the** income of this fund cannot be usefully applied to the purpose described above, it may be used for any related purpose that the Foundation Board of Directors believes will most nearly accomplish wishes of the donors.
7. Scoring of applicants is as shown in the attached scoring matrix.
8. Student(s) must submit a letter addressing how the requirements have been met and why they want to major in construction management.

9. Alumni and industry will be encouraged to add to this scholarship fund at any time.

Distribution of funds:

If a student is a pre-major when applying for the scholarship, one third of the award will be given until the student has been accepted into the major. Once enrolled as a CM major the students will receive the remainder of the scholarship for each quarter. If the student withdrawals from the construction management program or is not in good academic standing, the scholarship funding will end.

The CM AC scholarship committee will act in the advisory capacity and coordinate with the department's scholarship committee to award the scholarships to the students fulfilling the scholarship requirements.

To be considered for this scholarship completion of the scholarship requirements must be submitted to the scholarship office.

The undersigned agree to the terms of this agreement.

Donor:

Allison Bujacich
Construction Management
Industry Advisory Board Chair

Department:

Michael Whelan
Industrial Engineering Technology Department Chair
Associate Professor, Construction Management

CWU Foundation

Jen Gray
Assistant Vice President for Development

D. Student Advising Handbook

Construction Management 2014-2015

STUDENT ADVISING HANDBOOK

Construction Management

Engineering Technologies, Safety and Construction Department
Central Washington University

2014-2015

2014 Senior Class

Construction Management Program

I Introduction

Welcome to the Industrial and Engineering Technology Department and to the Construction Management program. This guide was prepared as a supplement to information found in the Undergraduate/Graduate Catalog and the class schedule and is intended to assist students in planning and completing a Bachelor of Science Degree in Construction Management.

The information contained in this guide is not a substitute for the catalog or class schedule. It should be noted that it is the student's responsibility to become familiar with important dates, deadlines, regulations and rules contained in the catalog and class schedule. An electronic version of the CWU catalog is available on Central's web site: www.cwu.edu. A schedule of classes can be viewed on line.

II The Program

The four-year Bachelor of Science Degree in Construction Management is one of a number of degrees offered through the Engineering Technologies, Safety and Construction (ETSC) Department, which is part of the College of Education and Professional Studies (CEPS). The program is housed in the Hogue Technology Building, and most of the CMGT courses meet in Hogue.

The program has averaged between 125 and 175 students, with approximately 36 graduating each year. Smaller class size allows individual attention and a broad range of exposure to all aspects of construction.

Also, additional information may be obtained by visiting the Construction Management web site at http://www.cwu.edu/~iet/programs/cmgt/cmgt.html

ACCE Accreditation

The Construction Management program at Central Washington University was fully accredited in 1992 by the American Council for Construction Education, and reaccredited in 1997, 2003 and 2009. Central is currently one of approximately 65 baccalaureate construction programs nationwide accredited by ACCE.

Career Opportunities

Recent CMGT graduates have found employment with local, national and international construction firms, with design firms and material suppliers. Others are currently working for public agencies, performing inspection, supervision and contract administration. Typical job titles include project engineer, estimator, project coordinator and assistant project manager.

You can also visit Central's Career Services website for upcoming interviews and events:

http://www.cwu.edu/career/

Curriculum

In ***addition*** to the University General Education requirements students must complete the following course work. It should be noted that many courses require prerequisites. It is imperative that each student meet with his or her assigned faculty advisor each quarter prior to registration. Note that there are two options within the program; the "General Construction" and "Heavy/Civil Construction" options.

General Construction Option

CMGT Curriculum, General Construction Option

These are required courses in the major, which must be taken **in addition to** the University's general education requirements. Note that there is some flexibility with respect to when the following courses may be taken. **Discuss this with your academic advisor.**

Freshman			Credits
	Math 172	Calculus	5
	Math 173	Calculus	5
	IET 161	Architectural CAD	3
	GEOL 101 or GEOL 108	Physical Geology Environmental Geology	5

Sophomore			Credits
	CMGT 245 or CMGT 452* or IET 490*	Light Commercial Construction LEED in Sustainable Construction Cooperative Education *Taken junior or senior year	5 (4) (4)
	CMGT 265	Blueprint Reading	4
	CMGT 267	Plane Surveying with lab	4
	SHM 323	Construction Safety	3
	CHEM 111 or CHEM 181	Chemistry with lab	5
	PHYS 181	General Physics with lab	5
	ECON 201	Micro Economics	5
	BUS 241	Business Law	5

Junior			Credits
	IET 301	Project Cost Analysis	4
	IET 311	Statics	4
	IET 312	Strength of Materials	4
	CMGT 320	Electrical Systems Design	3
	CMGT 343	Construction Estimating I	4
	CMGT 344	Construction Estimating II	4
	CMGT 346	Construction Materials & Methods	4
	COM 345	Business and Professional Speaking	4
	Choose minimum of 10 credits from the following:		
	HRM 381 MGT 380 MKT 360 ADMG 201 ADMG 372	Management of Human Resources Organizational Management Principles of Marketing Introduction to Business Leadership and Supervision	5 5 5 3 4

Senior			Credits
	CMGT 441	Wood and Steel Construction	4
	CMGT 442	Building Service Systems	3
	CMGT 444	Codes, Contracts and Specifications	4
	CMGT 447	Construction Scheduling	4
	CMGT 450	Soils and Foundations	4
	CMGT 452 or IET 490	LEED in Sustainable Construction Cooperative Education (if CMGT 245 is not chosen)	4 (4)
	CMGT 455	Principles of Construction Management	4
	CMGT 460	Concrete Construction	4
	CMGT 485	Construction Accounting and Finance	4
	CMGT 488*	Professional Certification	1
	ACCT 301	Financial Accounting Analysis	5

*CMGT 488 requires the student obtain a minimum score of 60% on a national exam in order to obtain credit for the course and to graduate from the program. There is a fee for the exam.

Heavy Civil Option

CMGT Curriculum, Heavy Civil Option

These are required courses in the major, which must be taken **in addition to** the University's general education requirements. Note that there is some flexibility with respect to when the following courses may be taken. **Discuss this with your academic advisor.**

Freshman			Credits
	Math 172	Calculus	5
	Math 173	Calculus	5
	IET 161	Architectural CAD	3
	GEOL 101 or GEOL 108	Physical Geology Environmental Geology	5

Sophomore			Credits
	CMGT 245 or CMGT 452* or IET 490*	Light Commercial Construction LEED in Sustainable Construction Cooperative Education *Taken junior or senior year	5 (4) (4)
	CMGT 265	Blueprint Reading	4
	CMGT 267	Plane Surveying with Heavy Civil lab	4
	SHM 323	Construction Safety	3
	CHEM 111 or CHEM 181	Chemistry with lab	5
	PHYS 181	General Physics with lab	5
	ECON 201	Micro Economics	5
	BUS 241	Business Law	5

Junior			Credits
	IET 301	Project Cost Analysis	4
	IET 311	Statics	4
	IET 312	Strength of Materials	4
	CMGT 320	Electrical Systems Design	3
	CMGT 343	Construction Estimating I	4
	CMGT 345	Heavy Civil Estimating II	4
	CMGT 347	Heavy Civil Methods and Materials	4
	COM 345	Business and Professional Speaking	4
	Choose minimum of 10 credits from the following:		
	HRM 381 MGT 380	Management of Human Resources Organizational Management	5 5

	MKT 360	Principles of Marketing	5
	ADMG 201	Introduction to Business	3
	ADMG 372	Leadership and Supervision	4

Senior			Credits
	CMGT 440	Temporary Structures	4
	CMGT 443	Heavy Civil Utilities	3
	CMGT 445	Heavy Civil Contract Law	4
	CMGT 447	Construction Scheduling	4
	CMGT 450	Soils and Foundations	4
	CMGT 452 or IET 490	LEED in Sustainable Construction Cooperative Education (if CMGT 245 is not chosen)	4 (4)
	CMGT 456	Principles of Heavy Civil Construction Management	4
	CMGT 461	Pavement Design and Construction	4
	CMGT 485	Construction Accounting and Finance	4
	CMGT 488*	Professional Certification	1
	ACCT 301	Financial Accounting Analysis	5

*CMGT 488 requires the student obtain a minimum score of 60% on a national exam in order to obtain credit for the course and to graduate from the program. There is a fee for the exam.

III Admission to the Program

Admission to the university does not assure admission to the CMGT program.

Rationale: Requirements for admission to the program as a major have been established to assure that incoming students have an adequate background in mathematics, English composition and blueprint reading. The intent is to increase the chance of success of students once they enter the program and to manage limited program resources, such as computer workstations and laboratory equipment.

Requirements and Procedure: Admission to the program is typically a two-step process. The first step is to become a Construction Management **pre-major** and the second a Construction Management **major**.

A pre-major student generally has freshman or sophomore standing or is a recent transfer from a community college or another university. A pre-major has not completed the required coursework and applied for acceptance as a major. Pre-major students, with advisor permission, are eligible to enroll in 100 or 200 level CMGT courses and any non-CMGT course for which they have the prerequisites. Students ***may apply at any time*** for pre-major status by contacting their advisor and completing a pre-major application form.

A major in the Construction Management program is a student who has completed the coursework and accompanying requirements stated below and has been accepted into the major. Majors are eligible to register for upper level (300 and 400 level) CMGT courses with advisor approval.

- Deadline: Applications will be accepted and reviewed once a year. The deadline is 3:00 pm on **October 15 (if Oct 15 falls on a weekend applications are due on Monday).**
- Applications must be submitted to the Hogue Technology office, room 101A.
- Admission to the program is limited to 36 students per year.
- Although waivers may be considered, students must complete the following prior to **applying** for the major:

  English 101 and 102 (or equivalent) with a grade of "C" or better
  Math 153 and 154 (or equivalent) with a grade of "C" or better
  CMGT 265 or the course must be in progress, with a grade of "B-" or better.

  Note: If a student is admitted to the major prior to the completion of CMGT 265 the student must obtain a minimum grade of "B-" in CMGT 265 to remain in the major.

Application Process: If applying for entry into the major, each student is required to submit the following by the application deadline:

1. A completed checklist, available near the end of this handbook.

2. A completed application for major form, available near the end of this handbook.

3. Unofficial copies of all transcripts, including transcripts indicating coursework taken at other institutions (A CAPS report may be used for the CWU transcript). The student **must highlight** all completed courses and corresponding grades on the transcripts that *pertain to entrance requirements for the major.* The latest CWU transcript must indicate that the student is in good academic standing, as defined by the catalog.

4. A specific, realistic academic plan prepared in table format and signed by the student's academic advisor that includes a quarter-by-quarter list of **ALL** remaining courses that will lead to graduation (a template is available near the end of this handbook, as well as a list of course offerings).

5. A current resume.

6. A Work Experience Detail form, available near the end of this handbook.

7. A signed business letter, no more than one page in length, addressed to the Construction Management Major Selection Committee, detailing the student's work experience, their academic goals and objectives and explaining why the student wishes to enter the CMGT program. The letter should also address the student's time to completion of the degree.

   Construction Management Major Selection Committee
   c/o "your advisor's name"
   ETSC Department
   Central Washington University
   400 East University Way
   Ellensburg, WA 98926-7584

Selection Criteria: Using the following objective criteria the CMGT selection committee will determine the top 36 students for acceptance into the CMGT program each academic year. If not successful, students may retake classes and reapply the following year.

Construction Management Major Application Score Sheet

Course	Credits	Grade (e.g. 3.0, 3.3, etc.)	Credits x Grade x 2
MATH			
MATH			
ENG 101			
ENG 102			
			Sum/(credits); **8.00 pts possible**

Note: The math scores will be taken as the highest two grades in pre-calculus and calculus classes.

Time to Completion of Degree	**Possible Score**	**Score**
Three years	0	
Two years plus fall and winter quarter	0.25	
Two years plus one fall quarter	1.25	
Two years	1.50	
		1.50 pts possible

Work Experience (Include Work Experience Detail Form)	**Possible Score**	**Score**
No experience	0.00	
One summer, not construction related	0.25	
One summer construction-related experience, not with a construction company	0.75	
Two or more summers construction-related summer experience., not with a construction company	1.00	
One summer construction experience	1.25	
One summer construction experience plus one summer construction-related experience	1.50	
Two summers construction experience	1.75	
Six months or more continuous construction experience or three or more summers	2.00	
		2.00 pts possible

Letter	**Possible Score**	**Score**
No letter	0	
Unprofessional letter	0.10	
Three or more errors (unsigned, not dated, spelling/grammar)	0.20	
Two errors (unsigned, not dated, spelling/grammar)	0.30	
One error (unsigned, not dated, spelling/grammar)	0.40	
Excellent letter with no grammar/spelling errors	0.50	
		0.50 pts possible

Summary of Scoring

Item	**Possible Score**
GPA (in four courses above) x 2	8.00
Time to Completion of Degree	1.50
Work Experience	2.00
Letter	0.50
Total	**12.00**

Maintaining Major Status: In addition to meeting the academic standards of Central Washington University, once admitted to the CMGT program students are expected to meet the following standards specific to the program:

- A GPA of 2.50 (overall) must be maintained in all CMGT courses
- A "C" grade or better must be achieved in CMGT 343, Construction Estimating I, in order to take CMGT 344, Construction Estimating II or CMGT 345, Heavy Civil Estimating II.
- A "C" grade or better must be obtained in CMGT 346 or CMGT 347, Construction Materials and Methods, in order to take 400 level CMGT courses.
- If a CMGT major withdraws from Central for more than one quarter he/she must reapply to re-enter the program the following October.
- A serious breach of ethical conduct may result in a student being dropped from the major.

IV Advising and Assistance

Who will be your advisor?
Students interested in the CMGT program are assigned a faculty advisor based on the first letter of the student's last name:

Student Last Name	Advisor	Office	Phone
A-F	Dave Carns	Hogue 300A	963-1762
G-L	Michael Whelan	Hogue 300D	963-3544
M-R	David Martin	Hogue 300E	963-1770
S-Z	Warren Plugge	Hogue 300C	963-2427

When, where and how will you arrange to meet with your advisor?
The same faculty advisor will likely advise each student as long as that student remains interested in the CMGT program. As soon as the class schedule becomes available each quarter, usually about two weeks prior to pre-registration, advisors will post a list of sign-up times for advising on their office door. Students are responsible for meeting with their advisor **each quarter** to develop an academic plan that will meet the requirements of the University and of this major. It is the responsibility of the student, rather than the advisor, to continuously audit his/her program for successful completion of the requirements. It should be noted that students must obtain permission codes (numbers) from their faculty advisor in order to register for any CMGT course.

V Academic Performance

In addition to the section on "Maintaining Major Status" (above), academic performance by Construction Management majors is governed by the standards set forth in the University Catalog. Each student should become familiar with University policies pertaining to study load, withdrawal from a course, grade point average, repetition of courses, incomplete grades and scholastic standards. It should be noted that all required courses in the CMGT major (except CMGT 488 and IET 490) must be taken for a letter grade. If you have questions see your faculty advisor.

VI Student Ethics and Conduct

Ethical conduct is an integral part of construction education and students in the Construction Management major are expected to take full personal responsibility to comply with those aspects of the profession that are applicable to students. The dignity of the classroom setting is important to learning. **Classroom Behavior and Academic Honesty:** Students are expected to be in their seats and ready to go to work by the scheduled start of class. Normal rules of courtesy and respect will prevail during class periods.

Electronic devices (cell phones, digital readers & players, gaming devices, etc.) are to be off, inactive, or in a silent mode during class. Electronic devices may be used for taking notes and textbook access only – email, texting, game playing, web-surfing, video watching, or other similarly distracting activities are **NOT** permitted during class.

Work completed for all courses (assignments, quizzes, and exams) is expected to be yours and yours alone. Unless otherwise specified, group solutions are not acceptable for any assignment, and neither is plagiarism of information from other sources or copying of another person's work. If detected, you will fail the assignment with no opportunity to make up the work. Successive evidence of copying, including any computer files, cheating or using writings of others without proper citations during the curriculum of the Construction Management program will result in loss of a student's major status. Your attention is directed to Appendix B of the current CWU Catalog for additional information regarding this topic.

Your attention is also directed to Appendix A of the current CWU Catalog for the University's policies regarding Equal Opportunity, Affirmative Action, Gender Equity, and Sexual Harassment matters. Smoking or use of other tobacco products is not permitted in the Hogue Technology Building at any time.

VII Student Organizations and Summer Employment

Students are strongly encouraged to become involved with one or more of the student organizations representing the CMGT program:

The Association of Construction Managers
This is the student chapter of the Associated General Contractors of America (AGC) and is sponsored by the AGC of Washington. The club's activities include guest speakers, field trips and community projects. Annual scholarships are also available to members of this organization. Professor Carns serves as the faculty advisor.

The HomeBuilders
This student organization is the student chapter of the National Association of Home Builders and is sponsored by the Master Builders Association of King and Snohomish Counties. Activities include regular meetings with guest speakers, community projects and field trips to construction sites. Annual scholarships are made available to members. Professor Whelan serves as the faculty advisor.

The Mechanical Contractors Association (MCA)
The recently formed student chapter of the Mechanical Contractors Association, sponsored by the Mechanical Contractors Association of Western Washington (MCAWW) is open to any student with an interest in the mechanical contracting industry. Students have the opportunity to attend luncheons in the Seattle area, take field trips to job sites and apply for scholarships offered through MCAWW. Professor Carns serves as the faculty advisor.

Sigma Lambda Chi
This is an international honorary fraternity that recognizes outstanding students in construction programs. Sigma Lambda Chi offers recognition to these students and is involved with the community through local service projects. Professor Plugge serves as the faculty advisor.

The American Institute of Constructors
The American Institute of Constructors is a national organization dedicated to enhancing and promoting the profession of "constructor"; an individual involved in the construction industry on a professional level. The AIC is one of the few organizations created specifically for individuals, as opposed to industry groups, and students enrolled in the Construction Management Program have the opportunity to join AIC for a small annual membership fee, which includes a newsletter. Membership applications are available on-line.

Although not specifically required by the major, students are strongly encouraged to gain practical construction experience over the summer months. Not only will this complement their classroom education it will also help to bolster their resume when seeking permanent employment upon graduation. Employment opportunities, both for summer and permanent positions, will be announced in class and will be posted on the construction bulletin board located in the Hogue Technology Building. Students are also encouraged to establish a placement file with Career Services, located in Bouillon room 206 (phone: 963-1921 or 963-2404, email: career@cwu.edu).

VIII Use of Facilities

The Hogue Technology Building is open Monday through Thursday and on Sunday evenings. Students are encouraged to fully utilize the facilities that it has to offer. Several student areas are available as a study and break areas. Please keep them clean.

The computer labs, located in Hogue 118 and 120, are used as a classroom regularly during the week. All construction students may use the lab for construction applications, provided that a class is not in session at the time. Absolutely no food, drinks or hats are allowed in the room. Students must have approval of an instructor prior to using the plotter.

The woods lab is located on the first floor and students must obtain approval prior to using the lab. The concrete soils and asphalt lab, located in room 105 and the mechanical-electrical lab, located in room 104, may be available to students for special applications (outside the classroom) with approval of Professors Bender, Plugge, Martin, Whelan or Carns.

IX Scholarships

Numerous scholarships are available each year for students majoring in Construction Management. The Education Foundation of the Associated General Contractors of America, the Education Foundation of the Associated General Contractors of Washington, The Master Builders Association of King and Snohomish Counties, the Mechanical Contractors Association of Western Washington and The National Association of Women in Construction all have annual scholarships. The Construction Management Industry Advisory Council for the program has established two scholarships for incoming students and Fisher Companies offers an annual scholarship to students in the program. Applications will be made available through faculty members in the program and deadlines for application will be announced in class and posted on the bulletin boarding Hogue. All students are encouraged to apply for any scholarship for which they may be eligible. You can also refer to Central's Scholarship website: http://www.cwu.edu/scholarships/ and search under the ETSC Department.

X Program and Student Assessment

A comprehensive assessment program has been developed to measure how well the Construction Management Program is meeting its mission and how well the students in the program are meeting the stated intended student outcomes of the program.

Program Mission

The primary mission of the Construction Management Program is to provide the highest possible quality general construction education to undergraduate students who are preparing for careers in the construction industry.

The secondary mission is to maintain ongoing contact with the construction industry and to provide support for this industry.

Intended Student Outcomes

1. Graduates shall be able to identify and describe the legal and social aspects of the construction industry, the construction process and the construction contract systems.
2. Graduates shall demonstrate analytical skills in the area of structures, construction materials and construction finance and cost analysis.
3. Graduates shall be able to estimate, plan and schedule a small commercial/residential project using microcomputers and appropriate software.
4. Students graduating from the program shall be able to communicate clearly and effectively, both orally and in writing.
5. Graduates shall obtain employment as construction professionals in entry-level positions and shall also possess the skills, knowledge, attitude and behavior to advance within the industry.

Assessment

Instruments that are being used to measure both student and program effectiveness include the following:

AIC Certified Professional Constructor

The first step in becoming recognized as a Certified Professional Constructor (CPC) is to qualify for and pass the Constructor Qualification Examination Level 1. This is an eight-hour comprehensive written national exam has been developed by the American Institute of Constructors (AIC) and is offered at various locations nationally in April and in November each year. Central currently serves as a test site for the April exam. This exam is required of all graduating seniors in the CMGT program as part of the CMGT 488 course. **Note that this course is graded on an "S/U" basis. In order to receive an "S" grade and pass the course a student must obtain a minimum score of 60% on the CPC exam.** The exam is closed book and notes and is mostly multiple-choice, although it does contain a writing component that is subjectively graded. If students pass the exam and go on to gain additional experience and then pass the level II Constructor Qualification Examination they become certified as a professional "Constructor", a title that is likely to become much more recognized in next several years. Because the exam is comprehensive students are strongly encouraged to keep their textbooks, notes and homework from each course as they progress through the major. Past experience indicates that students who keep and organize their course material perform relatively well on the exam. The purpose of the exam is to document that students leaving the major possess the general knowledge necessary to succeed in the construction industry, in correlation with the primary mission of the program. The results of the exam are available to the program in summary form only, are kept confidential and will be used to identify weak areas within a particular course or group of courses so that action can be taken to continuously improve the educational experience.

Exit Interview

An exit interview will be administered by the ETSC Department Chair or associate dean of CEPS as each student graduates from the program. This process, which includes both a written questionnaire and a focus group session, will address the general quality of the program, including course offerings, instruction, and administration, availability of industry contact and general departmental and university facilities. The exit interview results will be used in a confidential manner to identify weak and strong areas within the program and the university as a whole, as it relates to students in the CMGT program.

Alumni Survey

Alumni who have graduated within the past five years are invited to participate in a survey that is used to identify strengths and weaknesses in the program. This information is used to make program improvements in the area of curriculum, industry and alumni relations, etc.

XI Buying a Computer

Since the construction industry has become very dependent upon the use of computers and computer software it is ***highly recommended*** that each student in the Construction Management program make the initial investment in a computer as soon as they enter the program. A recommended system is:

PC platform that will support a Windows operating system
High-resolution monitor
A color inkjet-type printer
A good windows-based spreadsheet and word processing software package (Excel & Word)
Laptops or tablets will also serve this purpose

XII General University Requirements

In order to assist you in meeting the requirements for Central Washington University, outside of the Construction Management major, a website for the online catalog listing the general education requirements follows (see the online catalog for details). Feel free to discuss the general education requirements with your academic advisor at any time.
General Education Requirements can be viewed in PDF format by going to:
http://www.cwu.edu/~catalogs and then selecting the most catalog and then "General Education Program".

XIII Program Applications

A pre-major application follows, along with a major application checklist, major application form, Work Experience Detail form and academic plan of study worksheet. Please see your advisor if you have questions pertaining to these applications or the checklist.

Central Washington University

College of Education and Professional Studies
Engineering Technologies, Safety and Construction

Bachelor of Science
Construction Management Pre-Major Application

(comapre)

Name:	Date:
Student Identification Number:	Class Level: FR SO JR SR PB
Home Address:	Phone: ( )
Campus Address:	Phone: ( )
Do you already have a bachelor's degree? yes	no
Are you withdrawing from a major/specialization? yes	no What?
Double major? What is your other major:	

You will be withdrawn from a previously declared major if you do not specify double major.

▶	I understand I am required to meet with my advisor each quarter after acceptance into this pre-major program and that acceptance as a pre-major does not guarantee acceptance into the major.
▶	I cannot take upper division CMGT courses (300 and 400 level) until I am accepted into the CMGT program as a major.
▶	To apply for the program I must complete ENG 101, ENG 102, MATH 153 and MATH 154 with a grade of at least a "C". In addition, CMGT 265 must be either completed or in progress with a grade of "B-" or better.
▶	Application for the CMGT major is due October 15 of each year.

Student Signature: _____

Advisor Signature: _____

2014-2015

Construction Management Major Application Checklist

Application is Due by 3:00 pm October 15, 2014 to Hogue Room 101A

Last Name	**First Name**	**Middle Initial**	**Student ID Number**

Advisor

	Math Requirement	**Grade**	**Term Taken**	**Institution**
	Math 153 with a "C" minimum			
	Math 154 with a "C" minimum			

	English Requirement	**Grade**	**Term Taken**	**Institution**
	ENG 101 with a "C" minimum			
	ENG 102 with a "C" minimum			

	Blueprint Reading Requirement	**Grade**	**Term Taken**
	CMGT 265 or in progress with "B-" minimum		

	Other Requirements (Include these with your application in the following order)
	This completed checklist
	Business Letter to Construction Management Selection Committee
	Resume
	Work Experience Detail form
	Application for Major Form, completed and signed by student (advisor will sign later)
	CWU Transcript (unofficial or Course History available on Safari is acceptable; *highlight courses noted above*)
	All Other Transcripts
	Academic Plan listing all courses leading to graduation, **signed by your advisor**

Construction Management Program
Detail of Work Experience

Include all relevant experience ***after*** high school graduation

Dates (include month and year). List most recent first	Company, location and type of work	Full-time or part time? Hours/week?	Duties and Responsibilities Supervised any employees?

CWU | Central Washington University

Engineering Technologies, Safety, and Construction

Bachelor of Science
Major/Minor/Pre-Major Application Form

Description of programs: http://www.cwu.edu/engineering/

Name:	Date:
Student Identification Number:	Class Level: FR SO JR SR PB
Do you already have a bachelor's degree? yes no	

Major or Pre-Major **Form available on-line or Hogue 101**

- Construction Management (COMA, COMAP)
  See CMGT Handbook http://www.cwu.edu/engineering/construction-management
- Construction Management Pre-Major
- Electronics Engineering Technology (EET, EETP)
- Industrial Technology (INTEBS, OMTEBSP)
- Mechanical Engineering Technology (MET, METP)
- Safety and Health Management (SHM, SHMP)
- Safety and Health Management Pre-Major (SHMPRE)
- Technology Education* (TEED, TEEDP)
- Technology Education Broad Area* (TEBA, TEBAP)

Minor

- Construction Safety (IETMINCS IETMINCSP)
- Industrial Technology (IETMININT)
- Occupational Safety Technology (IETMINOST, IETMINOSTP)
- Safety and Health Management (SHMMIN SHMMINP)
- Traffic Safety Education (SHMMINTSE, SHMMINTSEP)

I understand I am to meet with my advisor each quarter.

Signature:

IET Advisor Signature:

All Teacher Education candidates must see an Education advisor.
*To be completed by the Department of Educational Foundations and Curriculum. Black Hall, Room 101-8
Student is accepted into Professional Education

Education Advisor Signature:

Construction Management Academic Plan of Study

Student Name: _____

Student ID Number: _____

Fall 2014		**Winter 2015**		**Spring 2015**	
Course Name and Number	Credits	Course Name and Number	Credits	Course Name and Number	Credits
Total Credits		Total Credits		Total Credits	

Fall 2015		**Winter 2016**		**Spring 2016**	
Course Name and Number	Credits	Course Name and Number	Credits	Course Name and Number	Credits
Total Credits		Total Credits		Total Credits	

Fall 2016		**Winter 2017**		**Spring 2017**	
Course Name and Number	Credits	Course Name and Number	Credits	Course Name and Number	Credits
Total Credits		Total Credits		Total Credits	

Advisor Signature: _____ Date: _____

Construction Management Course Offerings

Note: This table is provided to indicate which CMGT and IET courses are typically offered during specific quarters. Students should be aware that most courses have prerequisites and that there are other courses that must be taken to complete the major. Students should consult with their academic advisor. For example, students must complete math up through MATH 173, PHYS 181, BUS 241 etc.

Fall		Winter		Spring	
Course Name and Number	**Credits**	**Course Name and Number**	**Credits**	**Course Name and Number**	**Credits**
		CMGT 343	4	CMGT 245	5
		CMGT 346/347	4	CMGT 267	4
IET 311	4	IET 311	4	CMGT 344/345	4
		IET 312	4	IET 312	4
SHM 323	3	SHM 323	3	SHM 323	3
CMGT 265	4	CMGT 265	4		
IET 301	4	CMGT 320* *subject to change to spring	3	IET 301	
IET 161	3	IET 161	3	IET 161	3
		CMGT 452	4		

Fall		Winter		Spring	
Course Name and Number	**Credits**	**Course Name and Number**	**Credits**	**Course Name and Number**	**Credits**
CMGT 444/445	4	CMGT 440/441	4	CMGT 443	3
CMGT 447	4	CMGT 442	3	CMGT 460/461	4
CMGT 450	4	CMGT 455/456	4	CMGT 485	4
		CMGT 488	1		

E. Students and Advising

1. Advising Worksheet
2. Permit to Substitute for a Required Course
3. Basic and Breadth (General Education) Requirements
4. Major Course Checklists
5. Sample Washington Community College Transfer Equivalency Guide, Bellevue CC
6. Sample Evaluation of Instruction Results, CMGT 450 Fall 2013

Construction Management Advising Worksheet

Dates:	

Name:	ID: ______________________
Previous Schools:	Date Started at CWU:
	Other:

Fall ____________	cr.	Winter ____________	cr.	Spring ______________	cr.
Total		Total		Total	

Fall ____________	cr.	Winter ____________	cr.	Spring ______________	cr.
Total		Total		Total	

Fall ____________	cr.	Winter ____________	cr.	Spring ______________	cr.
Total		Total		Total	

Summer ____________	cr.

Substitutions	cr.			cr.

		For		
		For		
		For		
		For		
		For		
		For		

Comments:

CENTRAL WASHINGTON UNIVERSITY

Degree Checkout, Mitchell Hall MS 7464

Permit to Substitute for Required Undergraduate Course in Major Plan, Minor Plan, Specialization, or Professional Ed. Sequence

Printed Last Name	Printed First Name	M.I.	Student ID # (Required)
Hansen	Adam	W	

Phone/Cell #	CWU Email (Required)
	hanseada@cwu.edu

Major Dept Plan: Construction Management Catalog Year_____Minor Dept Plan: _____ Catalog Year_____

This substitution is for my: x Major ☐ Minor ☐ Professional Ed. Sequence

This substitution is for my Bachelor's in: ☐ Arts ☐ Arts in Ed x Science ☐ Music ☐ Fine Arts ☐ Applied Science

Please substitute the following accredited college course(s) to meet CWU course requirements. Non-transferable courses cannot be used for substitutions. Please review the Transfer Credit Summary Report for additional information. Processing of substitutions by Degree Checkout may take four weeks from the time the form is received in our office.

	Course & Credits Being Used For Course Substitution					CWU REQUIRED COURSE		
	Course Prefix and Course #	College or University where course completed	Course Title	Qtr/Sem # of Credits		CWU Dept. & Course #	Course Title	Quarter # of Credits
1	MKT 362	CWU	Essential Marketing Concepts	5	=	MKT 360	Principles of Marketing	5
2					=			
3					=			
4				5	=			5

*** Credit deficiencies in transfer course substitutions will lead to additional credits being added to your major and/or minor plan. The additional credits, if required, will be fulfilled through department approved elective credits.**

	Printed Name	Signature	Date
Student	Adam W. Hansen		
Advisor *	David W. Carns		February 25, 2014
Dept. Chair *	Lad Holden		
School Dean **			

***Note: Signatures Required**

**** Note**:Substitutions in the Teacher Education Program must have the Dean of the College of Education and Professional Studies signature.

CWU General Education Requirements Worksheet, 2013-2014

Basic Skills Requirements		Completed
1. **Academic Advising Seminar:**	University 101(1)	
2. **English Comp I:**	English 101(4) (min. of a C- is required in ENG 101 before taking ENG 102).	
3. **English Comp II:**	English 102(4)	
4. **Mathematics:**	**Pick ONE:** MATH 101 or 153 or 154 or 164 or 170 or 172	
5. **Reasoning:**	**Pick ONE:** MATH 102 or 130 or PHIL 201 or Computer Science 105(4)	
6. **Computer Fundamentals:**	**Pick ONE:** Information Technology 101(3) or Computer Science 101(4)	
7. **Foreign Language:**	2-yrs. High School or 1-yr. College	

NOTES

75 Credit Rule

All students must meet the Basic Skills Requirements by the end of the quarter in which they complete 75 credits.

Breadth Requirements

1. *Choose **NINE** classes total, one from each category (all classes are 5 credits unless otherwise indicated).*
2. *Within those nine classes take **FOUR** writing content courses indicated by a (W).*
3. *You must choose from three **DIFFERENT** departments in each column.*

WRITING COURSES TO COMPLETE: _____

I. Arts & Humanities

A. Literature & the Humanities

Africana & Black Studies 110
English 105(W), 247(W), or 347(W)
Humanities 101(W), 102(W), or 103(W)

To enroll in the above classes, you must have already taken ENG 101 and passed with a C- or better.

B. The Aesthetic Experience

Art 101 or 102
Film & Video Studies 250(W)
Music 101 or 102
Physical Education 161 (4)
Theater 101(4), 107(W)(4), 375(W), or 382(W)(4)

C. Philosophy & Cultures of the World

Foreign Language 151, 152, or 153
Must be different than foreign language taken in high school. May not be used to also satisfy the basic skills foreign language requirement.
Foreign Language 251, 252, or 253,
Philosophy 101(W), 115(W), 202(W), 209(W), 210(W), 306(W),or 378(W),
Religious Studies 101(W) or 201(W)

II. Social & Behavioral Science

A. Perspectives on the Cultures and Experiences of the United States

American Indian Std 101(W),102(W), or 103(W)
Economics 101 or 201
Ethnic Studies 101(W)
History 143(W) or 144(W)
Law and Justice 102
Political Science 210
Sociology 101(W) or 305(W)
Women and Gender Studies 201(W)

B. Perspectives on World Cultures

Anthropology 130
Asian Studies 102(W)(3)
Communication 302(W)(4)
Economics 102(W)
Geography 101
History 101(W), 102(W), or 103(W)
Latino & Latin American St 102(W)
Political Science 270(W)

C. Foundations of Human Adaptations and Behavior

Anthropology 107 or 120 (W)
Family & Cons Sci. 310 (W)(4) or 337(4)
Geography 108
Health Education 101(4)
Political Science 101(W)
Psychology 101 or 205(W)
Sociology 107(W)

III. Natural Sciences

A. Fundamental Disciplines of Physical & Biological Sciences

Biology 101 (L)
Chemistry 111/111(L) or
181/181(L) Strongly recommend high school chemistry and qualification for MATH 153.
Geology 101/101 (L)
Physics 106(L), or 111/111(L), or
181/181(L) Pre- or Co-requisite, MATH 172.

B. Patterns & Connections in the Natural World

Anthropology 110
Biology 200(W) (L), 201, or 300
Environmental Studies 201
Geography 107
Geology 103/101(L), 107, or 302(4)
Physics 101(L) or 102(L)(4)

C. Applications of Natural Science

Anthropology 314(4)
Biology 302
Chemistry 101(L)
Environmental Studies 202 or 310(W)
Geography 273
Geology 108
Industrial Engineering Tech 101
Nutrition 101
Physics 103/103(L) (W), or 108 (L) (4)
STEP 101(2) & 102 (2) & 103 (1)(W)

General Construction Option

CMGT Curriculum, General Construction Option

These are required courses in the major, which must be taken **in addition to** the University's general education requirements. Note that there is some flexibility with respect to when the following courses may be taken. **Discuss this with your academic advisor.**

Freshman			Credits
	Math 172	Calculus	5
	Math 173	Calculus	5
	IET 161	Architectural CAD	3
	GEOL 101 or GEOL 108	Physical Geology Environmental Geology	5

Sophomore			Credits
	CMGT 245 or CMGT 452 IET 490	Light Commercial Construction LEED in Construction Cooperative Field Experience	5 or 4 or 4 cr
	CMGT 265	Blueprint Reading	4
	CMGT 267	Plane Surveying with lab	4
	SHM 323	Construction Safety	3
	CHEM 111 or CHEM 181	Chemistry with lab	5
	PHYS 181	General Physics with lab	5
	ECON 201	Micro Economics	5
	BUS 241	Business Law	5

Junior			Credits
	IET 301	Project Cost Analysis	4
	IET 311	Statics	4
	IET 312	Strength of Materials	4
	CMGT 320	Electrical Systems Design	3
	CMGT 343	Construction Estimating I	4
	CMGT 344	Construction Estimating II	4
	CMGT 346	Construction Materials & Methods	4
	COM 345	Business and Professional Speaking	4
	HRM 381 MGT 380 MKT 360 ADMG 201 ADMG 372	Management of Human Resources Organizational Management Principles of Marketing Introduction to Business Leadership and Supervision	10-11 cr total from this category

Senior			Credits
	CMGT 441	Wood and Steel Construction	4
	CMGT 442	Building Service Systems	3
	CMGT 444	Codes, Contracts and Specifications	4
	CMGT 447	Construction Scheduling	4
	CMGT 450	Soils and Foundations	4
	CMGT 455	Principles of Construction Management	4
	CMGT 460	Concrete Construction	4
	CMGT 485	Construction Accounting and Finance	4
	CMGT 488*	Professional Certification	1
	ACCT 301	Financial Accounting Analysis	5

Heavy Civil Option

CMGT Curriculum, Heavy Civil Option

These are required courses in the major, which must be taken **in addition to** the University's general education requirements. Note that there is some flexibility with respect to when the following courses may be taken. **Discuss this with your academic advisor.**

Freshman			Credits
	Math 172	Calculus	5
	Math 173	Calculus	5
	IET 161	Architectural CAD	3
	GEOL 101 or GEOL 108	Physical Geology Environmental Geology	5

Sophomore			Credits
	CMGT 245 or CMGT 452 or IET 490	Light Commercial Construction LEED in Construction Cooperative Field Experience	5 or 4 or 4 cr
	CMGT 265	Blueprint Reading	4
	CMGT 267	Plane Surveying with Heavy Civil lab	4
	SHM 323	Construction Safety	3
	CHEM 111 or CHEM 181	Chemistry with lab	5
	PHYS 181	General Physics with lab	5
	ECON 201	Micro Economics	5
	BUS 241	Business Law	5

Junior			Credits
	IET 301	Project Cost Analysis	4
	IET 311	Statics	4
	IET 312	Strength of Materials	4
	CMGT 320	Electrical Systems Design	3
	CMGT 343	Construction Estimating I	4
	CMGT 345	Heavy Civil Estimating II	4
	CMGT 347	Heavy Civil Methods and Materials	4
	COM 345	Business and Professional Speaking	4
	HRM 381 MGT 380 MKT 360 ADMG 201 ADMG 372	Management of Human Resources Organizational Management Principles of Marketing Introduction to Business Leadership and Supervision	10-11 credits total from this category

Senior			Credits
	CMGT 440	Temporary Structures	4
	CMGT 443	Heavy Civil Utilities	3
	CMGT 445	Heavy Civil Contract Law	4
	CMGT 447	Construction Scheduling	4
	CMGT 450	Soils and Foundations	4
	CMGT 456	Principles of Heavy Civil Construction Management	4
	CMGT 461	Pavement Design and Construction	4
	CMGT 485	Construction Accounting and Finance	4
	CMGT 488*	Professional Certification	1
	ACCT 301	Financial Accounting Analysis	5

Bellevue College

2013-2014

Bellevue			CWU	
ANTH	208	⇨	ANTH	180
ARAB	101	⇨	WL	OT1-1
ARAB	102	⇨	WL	OT1-2
ARAB	103	⇨	WL	OT1-3
ARAB	121	⇨	WL	OT2-1
ARAB	122	⇨	WL	OT2-2
ARAB	123	⇨	WL	OT2-3
ART	105	⇨	ART	101
ART	110	⇨	ART	170
ART	112	⇨	ART	171
ART	120 or 121	⇨	ART	150
ART	150,151 or 252	⇨	ART	225
ART	201	⇨	ART	235
ART	202	⇨	ART	236
ART	203	⇨	ART	237
ART	205	⇨	ART	102
ART	221	⇨	ART	250
ART	225	⇨	Arts & Humanities - B	
ART	240	⇨	ART	260
ART	260 or 261	⇨	ART	265
ASTR	201	⇨	PHYS	101, 101Lab
BA	240	⇨	BUS	221
BIOL	162	⇨	BIOL	101 w/Lab
BIOL&	211	⇨	BIOL	182
BIOL&	212,213	⇨	BIOL	181, 183
BOTAN	110	⇨	BIOL	200
BTS	110	⇨	IT	248
BTS	161	⇨	IT	101
BTS	163	⇨	IT	204
BTS	165	⇨	IT	258
BTS	168	⇨	IT	268
BTS	189	⇨	IT	248
CES	100	⇨	Social Behavioral - A	
CES	109	⇨	WGS	201
CES	115	⇨	Arts & Humanities - B	
CES	152	⇨	AST	102
CJ&	101	⇨	LAJ	300
CMST	141	⇨	COM	208
CMST	280	⇨	COM	302
CS	101	⇨	CS	101
CS	210	⇨	CS	110
CS	211	⇨	CS	111
DANCE	115	⇨	PED	141
DANCE	131	⇨	PED	142
DANCE	140	⇨	PED	104
DANCE	141	⇨	PED	105
DRMA	151	⇨	TH	144
DRMA	210	⇨	TH	267
ECED	191,192 or 193	⇨	EDEC	292

Bellevue			CWU	
ECON	100	⇨	ECON	101
ENGL	115	⇨	Arts & Humanities - B	
ENGL	131	⇨	ENG	105
ENGL	201 or 271	⇨	ENG	102
ENGR	200	⇨	IET	160 or 161
ENVS	110	⇨	Natural Science - C	
FS	201	⇨	EMS	250, 250Lab
GEOG	102	⇨	GEOG	101
GEOG	205	⇨	GEOG	107
GEOG	250	⇨	GEOG	355
GEOG	258	⇨	GEOG	203
GEOL	103	⇨	GEOL	200
HIST	101	⇨	HIST	101
HIST	102	⇨	HIST	102
HIST	103	⇨	HIST	103
HIST	120	⇨	Social Behavioral - B	
HLTH	250	⇨	HED	101
HLTH	292	⇨	EMS	245
INTST	204	⇨	Social Behavioral - B	
IT	101	⇨	Computing Fundamental	
ITAL	121	⇨	WL	OT1-1
ITAL	122	⇨	WL	OT1-2
ITAL	123	⇨	WL	OT1-3
MATH	099	⇨	MATH	100C
MATH	130	⇨	BUS	221
MATH	138	⇨	MATH	153
MATH	208	⇨	MATH	265
MATH	238	⇨	MATH	376
METR	101	⇨	Natural Science - C	
METR	211	⇨	Natural Science - B	
MUSC	113	⇨	MUS	372
MUSC	114	⇨	MUS	373
MUSC	115	⇨	MUS	101
MUSC	116	⇨	Arts & Humanities - B	
MUSC	117	⇨	Arts & Humanities - B	
MUSC	120	⇨	MUS	154B
MUSC	135	⇨	MUS	154H
MUSC	140, 143, 240 or 243	⇨	MUS	171
OCEA	110	⇨	Natural Science - C	

Central Washington University
Fall 2013 - Form A

Course: CMGT450.001 : Soils and Foundations

Instructor: David Carns *

1 - To what extent do you agree or disagree that David Carns...

a. fostered a fair and respectful learning environment?

Response Option	Weight	Frequency	Percentage
Strongly agree	(5)	6	85.71%
Agree	(4)	1	14.29%
Neutral	(3)	0	0.00%
Disagree	(2)	0	0.00%
Strongly disagree	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Means: 4.86 (Question), 4.27 (Dept), 4.54 (College)

Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
7/31 (22.58%)	4.86	0.38	5.00	384	4.27	1.12	5.00	2,827	4.54	0.81	5.00

1 - To what extent do you agree or disagree that David Carns...

b. seemed genuinely concerned with whether you learned?

Response Option	Weight	Frequency	Percentage
Strongly agree	(5)	6	85.71%
Agree	(4)	1	14.29%
Neutral	(3)	0	0.00%
Disagree	(2)	0	0.00%
Strongly disagree	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Means: 4.86 (Question), 4.15 (Dept), 4.45 (College)

Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
7/31 (22.58%)	4.86	0.38	5.00	384	4.15	1.17	5.00	2,818	4.45	0.91	5.00

1 - To what extent do you agree or disagree that David Carns...

c. clearly communicated and enforced standards of behavior?

Response Option	Weight	Frequency	Percentage
Strongly agree	(5)	6	85.71%
Agree	(4)	1	14.29%
Neutral	(3)	0	0.00%
Disagree	(2)	0	0.00%
Strongly disagree	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Means: 4.86 (Question), 4.29 (Dept), 4.44 (College)

Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
7/31 (22.58%)	4.86	0.38	5.00	382	4.29	1.05	5.00	2,812	4.44	0.88	5.00

Central Washington University
Fall 2013 - Form A

Course: CMGT450.001 : Soils and Foundations

Instructor: David Carns *

1 - To what extent do you agree or disagree that David Carns...

d. met class at scheduled times unless otherwise arranged?

Response Option	Weight	Frequency	Percentage
Strongly agree	(5)	6	85.71%
Agree	(4)	1	14.29%
Neutral	(3)	0	0.00%
Disagree	(2)	0	0.00%
Strongly disagree	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Means: 4.86 4.56 4.63 (Question, Dept, College)

Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
7/31 (22.58%)	4.86	0.38	5.00	378	4.56	0.82	5.00	2,789	4.63	0.71	5.00

2 - Did you seek help from David Carns outside of class during the course?

Response Option	Weight	Frequency	Percentage
Yes	(1)	3	50.00%
No	(2)	3	50.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Means: 1.50 1.28 1.45 (Question, Dept, College)

Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
6/31 (19.35%)	1.50	0.55	1.50	372	1.28	0.45	1.00	2,759	1.45	0.50	1.00

3 - If YES, was David Carns available to provide help?

Response Option	Weight	Frequency	Percentage
Strongly agree	(5)	3	75.00%
Agree	(4)	0	0.00%
Neutral	(3)	1	25.00%
Disagree	(2)	0	0.00%
Strongly disagree	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Means: 4.50 4.29 4.41 (Question, Dept, College)

Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
4/31 (12.9%)	4.50	1.00	5.00	301	4.29	0.99	5.00	1,779	4.41	0.89	5.00

Central Washington University
Fall 2013 - Form A

Course: CMGT450.001 : Soils and Foundations

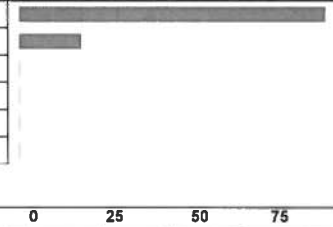
Instructor: David Carns *

4 - To what extent do you agree or disagree that the...
David Carns

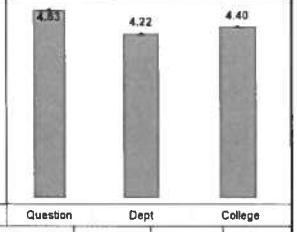
a. course objectives were clearly communicated?

Response Option	Weight	Frequency	Percentage
Strongly agree	(5)	5	83.33%
Agree	(4)	1	16.67%
Neutral	(3)	0	0.00%
Disagree	(2)	0	0.00%
Strongly disagree	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses



Means



Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
6/31 (19.35%)	4.83	0.41	5.00	382	4.22	1.07	5.00	2,818	4.40	0.89	5.00

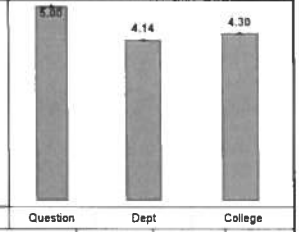
4 - To what extent do you agree or disagree that the...
David Carns

b. overall course content was presented in an understandable sequence?

Response Option	Weight	Frequency	Percentage
Strongly agree	(5)	6	100.00%
Agree	(4)	0	0.00%
Neutral	(3)	0	0.00%
Disagree	(2)	0	0.00%
Strongly disagree	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses

Means



Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
6/31 (19.35%)	5.00	0.00	5.00	381	4.14	1.09	4.00	2,812	4.30	0.97	5.00

Central Washington University
Fall 2013 - Form A

Course: CMGT450.001 : Soils and Foundations

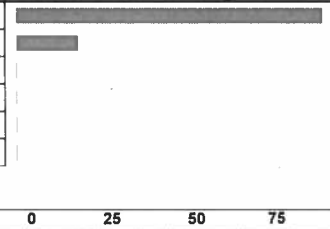
Instructor: David Carns *

4 - To what extent do you agree or disagree that the...
David Carns

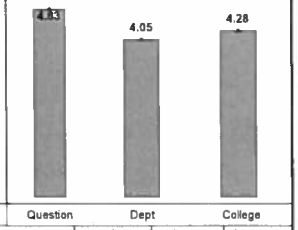
c. instructor used a variety of methods, as needed, to make content clear?

Response Option	Weight	Frequency	Percentage
Strongly agree	(5)	5	83.33%
Agree	(4)	1	16.67%
Neutral	(3)	0	0.00%
Disagree	(2)	0	0.00%
Strongly disagree	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses



Means



Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
6/31 (19.35%)	4.83	0.41	5.00	382	4.05	1.18	4.00	2,811	4.28	1.01	5.00

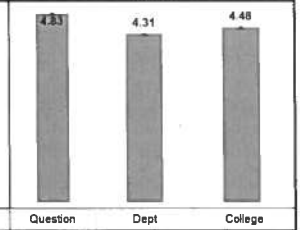
4 - To what extent do you agree or disagree that the...
David Carns

d. assignments and tests were connected to course content?

Response Option	Weight	Frequency	Percentage
Strongly agree	(5)	5	83.33%
Agree	(4)	1	16.67%
Neutral	(3)	0	0.00%
Disagree	(2)	0	0.00%
Strongly disagree	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses

Means



Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
6/31 (19.35%)	4.83	0.41	5.00	382	4.31	1.01	5.00	2,820	4.48	0.80	5.00

Central Washington University
Fall 2013 - Form A

Course: CMGT450.001 : Soils and Foundations

Instructor: David Carns *

4 - To what extent do you agree or disagree that the...
David Carns

e. evaluation and grading techniques were clearly explained?

Response Option	Weight	Frequency	Percentage
Strongly agree	(5)	6	100.00%
Agree	(4)	0	0.00%
Neutral	(3)	0	0.00%
Disagree	(2)	0	0.00%
Strongly disagree	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Means: 5.00 (Question), 4.09 (Dept), 4.28 (College)

Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
6/31 (19.35%)	5.00	0.00	5.00	382	4.09	1.19	5.00	2,818	4.28	1.03	5.00

4 - To what extent do you agree or disagree that the...
David Carns

f. instructions for class activities were clearly communicated?

Response Option	Weight	Frequency	Percentage
Strongly agree	(5)	6	100.00%
Agree	(4)	0	0.00%
Neutral	(3)	0	0.00%
Disagree	(2)	0	0.00%
Strongly disagree	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Means: 5.00 (Question), 4.08 (Dept), 4.29 (College)

Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
6/31 (19.35%)	5.00	0.00	5.00	382	4.08	1.16	4.00	2,813	4.29	0.99	5.00

Central Washington University
Fall 2013 - Form A

Course: CMGT450.001 : Soils and Foundations

Instructor: David Carns *

4 - To what extent do you agree or disagree that the...
David Carns

g. instructor provided useful feedback on student work?

Response Option	Weight	Frequency	Percentage
Strongly agree	(5)	6	100.00%
Agree	(4)	0	0.00%
Neutral	(3)	0	0.00%
Disagree	(2)	0	0.00%
Strongly disagree	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Means: 5.00, 3.93, 4.23 — Question, Dept, College

Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
6/31 (19.35%)	5.00	0.00	5.00	381	3.93	1.31	4.00	2,817	4.23	1.07	5.00

4 - To what extent do you agree or disagree that the...
David Carns

h. instructor provided timely feedback on student progress?

Response Option	Weight	Frequency	Percentage
Strongly agree	(5)	6	100.00%
Agree	(4)	0	0.00%
Neutral	(3)	0	0.00%
Disagree	(2)	0	0.00%
Strongly disagree	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Means: 5.00, 3.93, 4.22 — Question, Dept, College

Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
6/31 (19.35%)	5.00	0.00	5.00	381	3.93	1.33	4.00	2,815	4.22	1.10	5.00

Central Washington University
Fall 2013 - Form A

Course: CMGT450.001 : Soils and Foundations

Instructor: David Carns *

4 - To what extent do you agree or disagree that the...
David Carns

i. class sessions were well organized?

Response Option	Weight	Frequency	Percentage
Strongly agree	(5)	6	100.00%
Agree	(4)	0	0.00%
Neutral	(3)	0	0.00%
Disagree	(2)	0	0.00%
Strongly disagree	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Means: 5.00 (Question), 4.19 (Dept), 4.30 (College)

Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
6/31 (19.35%)	5.00	0.00	5.00	381	4.19	1.02	4.00	2,814	4.30	0.98	5.00

4 - To what extent do you agree or disagree that the...
David Carns

j. out-of-class work was useful in understanding course content?

Response Option	Weight	Frequency	Percentage
Strongly agree	(5)	6	100.00%
Agree	(4)	0	0.00%
Neutral	(3)	0	0.00%
Disagree	(2)	0	0.00%
Strongly disagree	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Means: 5.00 (Question), 4.20 (Dept), 4.32 (College)

Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
6/31 (19.35%)	5.00	0.00	5.00	381	4.20	1.08	5.00	2,811	4.32	0.94	5.00

Central Washington University
Fall 2013 - Form A

Course: CMGT450.001 : Soils and Foundations

Instructor: David Carns *

4 - To what extent do you agree or disagree that the...
David Carns

k. instructor encouraged students to connect course content to issues beyond the university classroom?

Response Option	Weight	Frequency	Percentage
Strongly agree	(5)	6	100.00%
Agree	(4)	0	0.00%
Neutral	(3)	0	0.00%
Disagree	(2)	0	0.00%
Strongly disagree	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Means: 5.00 (Question), 4.27 (Dept), 4.50 (College)

Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
6/31 (19.35%)	5.00	0.00	5.00	381	4.27	0.99	5.00	2,809	4.50	0.78	5.00

4 - To what extent do you agree or disagree that the...
David Carns

l. course activities challenged students to think critically?

Response Option	Weight	Frequency	Percentage
Strongly agree	(5)	6	100.00%
Agree	(4)	0	0.00%
Neutral	(3)	0	0.00%
Disagree	(2)	0	0.00%
Strongly disagree	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Means: 5.00 (Question), 4.34 (Dept), 4.40 (College)

Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
6/31 (19.35%)	5.00	0.00	5.00	377	4.34	0.96	5.00	2,794	4.40	0.88	5.00

5 - How would you compare this course with other courses of similar credits at this level (i.e., 100, 200, 300, etc.) taken at CWU? Was the...

a. amount of work OUTSIDE of class

Response Option	Weight	Frequency	Percentage
Much more than most courses?	(5)	0	0.00%
More than most courses?	(4)	3	50.00%
About average?	(3)	3	50.00%
Less than most courses?	(2)	0	0.00%
Much less than most courses?	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Means: 3.50 (Question), 3.64 (Dept), 3.40 (College)

Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
6/31 (19.35%)	3.50	0.55	3.50	379	3.64	0.87	4.00	2,749	3.40	0.87	3.00

Central Washington University
Fall 2013 - Form A

Course: CMGT450.001 : Soils and Foundations

Instructor: David Carns *

5 - How would you compare this course with other courses of similar credits at this level (i.e., 100, 200, 300, etc.) taken at CWU? Was the...

b. level of engagement/active learning IN class

Response Option	Weight	Frequency	Percentage
Much more than most courses?	(5)	0	0.00%
More than most courses?	(4)	5	83.33%
About average?	(3)	1	16.67%
Less than most courses?	(2)	0	0.00%
Much less than most courses?	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Means: Question 3.83 | Dept 3.52 | College 3.53

Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
6/31 (19.35%)	3.83	0.41	4.00	374	3.52	0.96	4.00	2,711	3.53	0.95	3.00

5 - How would you compare this course with other courses of similar credits at this level (i.e., 100, 200, 300, etc.) taken at CWU? Was the...

c. intellectual challenge presented to you

Response Option	Weight	Frequency	Percentage
Much more than most courses?	(5)	2	33.33%
More than most courses?	(4)	4	66.67%
About average?	(3)	0	0.00%
Less than most courses?	(2)	0	0.00%
Much less than most courses?	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Means: Question 4.33 | Dept 3.75 | College 3.48

Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
6/31 (19.35%)	4.33	0.52	4.00	373	3.75	0.90	4.00	2,697	3.48	0.91	3.00

6 - For this class, about how many hours outside of class did you spend in a typical 7-day week studying, reading, conducting research, writing, doing homework or lab work, analyzing data, rehearsing, and other academic activities?

Response Option	Weight	Frequency	Percentage
0 hours per week	(1)	0	0.00%
1-3 hours per week	(2)	1	16.67%
4-6 hours per week	(3)	2	33.33%
7-10 hours per week	(4)	1	16.67%
11-15 hours per week	(5)	2	33.33%
16-20 hours per week	(6)	0	0.00%
21+ hours per week	(7)	0	0.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Means: Question 3.67 | Dept 3.54 | College 3.04

Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
6/31 (19.35%)	3.67	1.21	3.50	379	3.54	1.21	3.00	2,763	3.04	1.12	3.00

Central Washington University
Fall 2013 - Form A

Course: CMGT450.001 : Soils and Foundations

Instructor: David Carns *

7 - Why did you take this course?

Response Option	Weight	Frequency	Percentage
Major requirement	(1)	6	100.00%
Minor requirement	(2)	0	0.00%
Certificate requirement	(3)	0	0.00%
Fulfills General Education requirement	(4)	0	0.00%
Reputation of instructor	(5)	0	0.00%
Time of day	(6)	0	0.00%
General interest	(7)	0	0.00%
Other	(8)	0	0.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Return Rate	6/31 (19.35%)

8 - What is your class standing?

Response Option	Weight	Frequency	Percentage
Freshman (0-44 credits)	(1)	0	0.00%
Sophomore (45-89 credits)	(2)	0	0.00%
Junior (90-134 credits)	(3)	0	0.00%
Senior (135 credits)	(4)	5	100.00%
Graduate	(5)	0	0.00%
Other (e.g. post-baccalaureate)	(6)	0	0.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Means: 4.00 (Question), 3.61 (Dept), 3.32 (College)

Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
5/31 (16.13%)	4.00	0.00	4.00	372	3.61	0.89	4.00	2,746	3.32	1.03	3.00

9 - What grade do you expect to earn in this class?

Response Option	Weight	Frequency	Percentage
A	(6)	3	50.00%
B	(5)	3	50.00%
C	(4)	0	0.00%
D	(3)	0	0.00%
F	(2)	0	0.00%
Other (Pass/Fail, etc.)	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses: 0 25 50 75 100

Means: 5.50 (Question), 5.22 (Dept), 5.58 (College)

Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
6/31 (19.35%)	5.50	0.55	5.50	380	5.22	0.98	5.00	2,758	5.58	0.71	6.00

Central Washington University
Fall 2013 - Form A

Course: CMGT450.001 : Soils and Foundations

Instructor: David Carns *

10 - What aspects of the teaching or content in this course do you feel were especially good?	
Return Rate	3/31 (9.68%)

- The guest speakers were helpful to understand how the industry works.

- Good lectures and it was obvious that he wanted us to understand material. carns does a good job to make sure we have all the materials needed to understand the work.

- In class examples that related to the homework

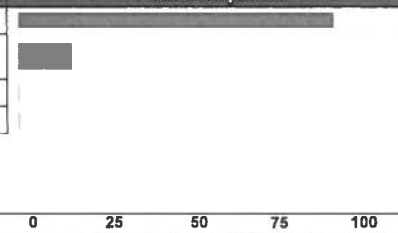
11 - What changes could be made to improve learning in this course?	
Return Rate	1/31 (3.23%)

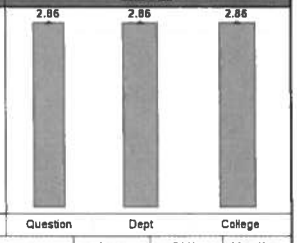
- N/A

12 - Guest Speakers CMGT 450

ItemChoice 1 Karl Liliquist

Response Option	Weight	Frequency	Percentage
Option 1 Very Relevant and Informative	(3)	6	85.71%
Option 2 Somewhat Relevant and Informative	(2)	1	14.29%
Option 3 Not Relevant and Informative	(1)	0	0.00%
	(0)	0	0.00%



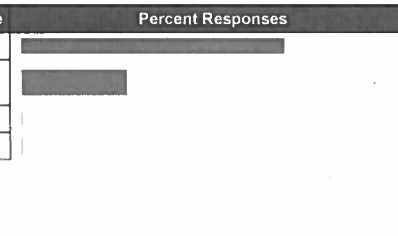


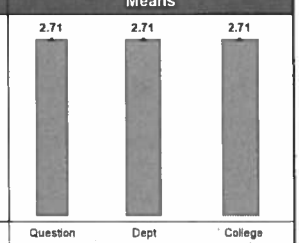
Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
7/31 (22.58%)	2.86	0.38	3.00	7	2.86	0.38	3.00	7	2.86	0.38	3.00

12 - Guest Speakers CMGT 450

ItemChoice 2 Mark Sikkema and Kirk Skinner

Response Option	Weight	Frequency	Percentage
Option 1 Very Relevant and Informative	(3)	5	71.43%
Option 2 Somewhat Relevant and Informative	(2)	2	28.57%
Option 3 Not Relevant and Informative	(1)	0	0.00%
	(0)	0	0.00%





Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
7/31 (22.58%)	2.71	0.49	3.00	7	2.71	0.49	3.00	7	2.71	0.49	3.00

Central Washington University
Fall 2013 - Form A

Course: CMGT450.001 : Soils and Foundations

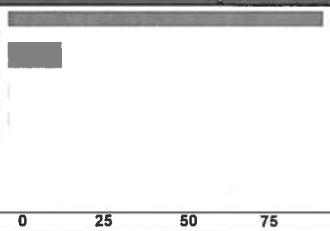
Instructor: David Carns *

12 - Guest Speakers CMGT 450

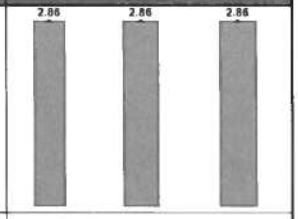
ItemChoice 3 Scott Hannah

Response Option	Weight	Frequency	Percentage
Option 1 Very Relevant and Informative	(3)	6	85.71%
Option 2 Somewhat Relevant and Informative	(2)	1	14.29%
Option 3 Not Relevant and Informative	(1)	0	0.00%
	(0)	0	0.00%

Percent Responses



Means



Return Rate	Mean	STD	Median	Dept	Mean	STD	Median	College	Mean	STD	Median
7/31 (22.58%)	2.86	0.38	3.00	7	2.86	0.38	3.00	7	2.86	0.38	3.00

F. Industry Relations and Advisory Council

1. "Building Times" Newsletters
2. Advisory Council Agendas, Minutes and Treasury Report

BUILDING TIMES

CENTRAL WASHINGTON UNIVERSITY
CONSTRUCTION MANAGEMENT PROGRAM

Fall 2013

STUDENT NEWS

ASC Reno Teams

2013 3rd Place/Heavy Civil Team

2013 Heavy/Civil Team took 3rd place in this year at the annual Associated Schools of Construction (ASC) competition in Sparks, Nevada. This year's Heavy/Civil team included Top Row (L to R) Grant Maskal, Malcolm George, Jacob Lukins, Nick LaBorde, Dr. Warren Plugge (Faculty Coach). Bottom Row (L to R) Sean Dunlop, Reyna Perez (Alternate), Greg Gebhard. The two other teams that competed in this year's competition included the Commercial and Mixed-Use team. The commercial team included Mason LeMay, Daniel Kathman, Austen Kartic, Jason Aldrich, Andrew Von Rotz, Michael Pleger, Brian Piper and Dan Smith with faculty coaches Dr. Bill Bender and David Martin. The Mixed-Use team included Nathan Messner, Zachary Lunden, Ryan Kemp, Bradley Hayes, Adam Hansen, Abel Jara and Carmelo Chavez with faculty coach David Carns. Thanks to our industry sponsor coaches for each of the teams including KNIK Construction, Granite Construction, Active Construction Inc., Gary Merlino Construction, Sellen Construction and Walsh Construction. Your input and critique play a major role in the teams' success.

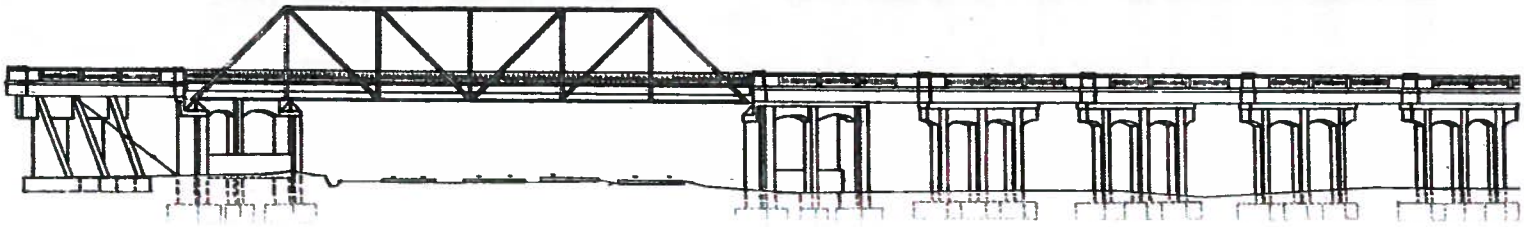
The students will head to Reno February 5-8, 2014 to compete in four categories including Commercial, Heavy/Civil, Marine and Mixed-Use. We look forward to your support for the Reno 2014 teams. For more information on how you can support our teams contact Michoan Spoelstra at 509-963-1423, spoelstm@cwu.edu or Warren Plugge at 509-963-2427, wplugge@cwu.edu.

MCA Student Chapter

CWU team members accept the Merit Award from MCAA Career Development Committee Chairman Troy Aichele.

The student chapter has been REALLY busy! Congratulations to the MCA Student Chapter on the Merit Award from MCAA! The MCA Student Chapter at CWU competed against twenty-five other chapters in the 2012-2013 Mechanical Contractors Association of America (MCAA) National Student Chapter Competition. Each chapter submitted a proposal on a project involving the installation of HVAC and plumbing systems in the Space Exploration Center Building at the NASA Research Park in Cape Canaveral, Florida. Students first learned of the project during their trip to the MCAA Student Chapter Summit in Kansas City, Missouri in October, 2012. The team, led by Mason LeMay, then had until mid-December to complete the proposal.

The CWU Chapter proposal placed in the top ten nationally and the team received a Merit Award at the MCAA National convention in San Antonio, Texas in March. Mason LeMay, David Halseth and David Smith attended the Convention to accept the award. In addition to the Merit Award, Mason LeMay, David Halseth and David Smith were recognized locally and each received a check for $200 from the Mechanical Contractors Association of Western Washington for their hard work on the MCAA Competition proposal. Students who participated in this competition do this outside their normal class and work with industry. Way to go MCA students!



MCA of Western Washington

This summer the MCA of Western Washington (MCAWW) held a golf tournament at Druids Glen golf course to raise money for the college student chapters in the state of Washington. The golf tournament raised $6,530. The proceeds were then split between the three major Universities in the state of Washington. CWU's student chapter received $2,176.67. The student chapter would like to thank the board for allowing them to participate in the event. The MCAWW board includes: Mike Shinn, President (Shinn Mechanical), Jerry Bush, Vice President (University Mechanical Construction, Inc.), Mark Webster, Secretary/Treasurer (MacDonald-Miller Facilities Solutions), Stacy Johnson, Director (Auburn Mechanical), Jeff White, Director (Holmberg Company), Jack Cheetham, Immediate Past President (McKinstry Company) and Tamara Butler (Programs Coordinator for MCA of Western Washington).

MCAWW Wine Tasting

MCAWW also held a Wine Tasting Event where Randy McLeod (Safety and Health Management student), David Halseth and Mason LeMay networked with contractors, promoted auction items and sold raffle tickets to raise funds for student organizations. This event was the highest grossing fundraising event for MCAWW which raised over $14,000. The MCA student chapter received $4,671.67 to assist the student members for travel to local, regional and national events.

MCA Student Members -Randy McLeod (Safety and Health Management student), Mason LeMay and David Halseth.

Senior Luncheon

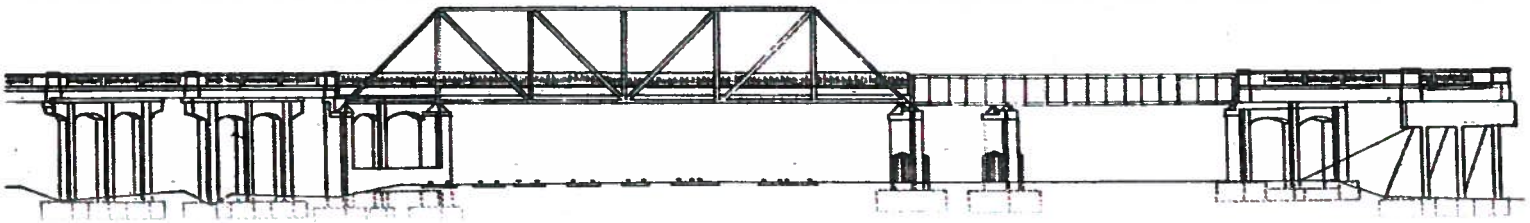
Ed Barry (Class of 1981)

Each year the Construction Management program holds a Senior Luncheon to acknowledge students for their achievements. This year's keynote speaker was Ed Barry (Class of 1981) who serves as a member on the Construction Management Advisory Council. He also is recently retired from the Washington State Department of Transportation (WSDOT) and now volunteers his time to the Kittitas Valley Veterans Coalition. His career stories and words of wisdom were well received by the new CM graduates. Congratulations to Sean Dunlop for receiving the award for the Highest GPA within the Construction Management Program and to Nathan Messner, who received the Golden Hardhat Award for his efforts in coordinating the AGC Student club this year. Both students received $100 and a certificate for their accomplishments. Dean Connie Lambert also congratulated the students on their graduation from Central. Students inducted into the Sigma Lambda Chi construction honor society were also recognized for their academic achievements.

2013 Sigma Lambda Chi Students

- Andrew Von Rotz
- David Reeder
- Sean Dunlop
- Jason Aldrich
- Kenji Norwood
- Austen Kartic
- Michael Porter

Sigma Lambda Chi recognizes a top percentage of students in the program with the highest combined GPA.



Scholarships

The AGC of Washington Education Foundation awards scholarships to students each year. This year they awarded $32,121 to students from Central Washington University, Washington State University and University of Washington. The selection committee was comprised of Chair: Art Solbakken (Abbott Construction), Bob Adams (Guy F. Atkinson Construction), Bob Barrett (Sellen Construction), Jim Elliott (GLY Construction), Curt Gimmestad (Absher Construction), Jason Goetz (PCL Construction), Mac Gray (Gray Lumber Company), John McGowan (Abbott Construction), Allan Osberg (Osberg Construction), Britt Slone (Foushee & Associates, Inc.). Congratulations to the CWU students who received scholarships this year, Kindra Scobba, Grant Maskal, Eduardo Sanchez, Jason Aldrich, Zachury Lunden, and Andrew Von Rotz.

In addition to the AGC Scholarships, students below were awarded over $16,000 in individual scholarships. The CMGT program would like to thank the donors for their contribution and congratulate the award recipients:

Recipient	Scholarship	Award
Zach Lunden	Tri-Cities Construction Council	$10,000
Andrew Von Rotz	Fisher Companies	$1000
Christopher Farias	CMGT Advisory Council	$2000
Kindra Scobba	CMGT Advisory Council	$3000

Kindra Scobba

- Betcher Family Foundation Scholarship
- Hugh S. Ferguson Endowment

$2,500.00

Grant Maskal

- Chester H. & Elizabeth N. Johnson Memorial Scholarship
- Employees of GLY Construction

$2,500.00

Eduardo Sanchez

- AGCEF – Investing in Leaders Scholarship

$1,500.00

Jason Aldrich

- Employees of J.R. Abbott Construction Training & Education Fund
- James P. Crutcher Endowment

$1,000.00

Zachury Lunden

AGCEF – Investing in Leaders Scholarship

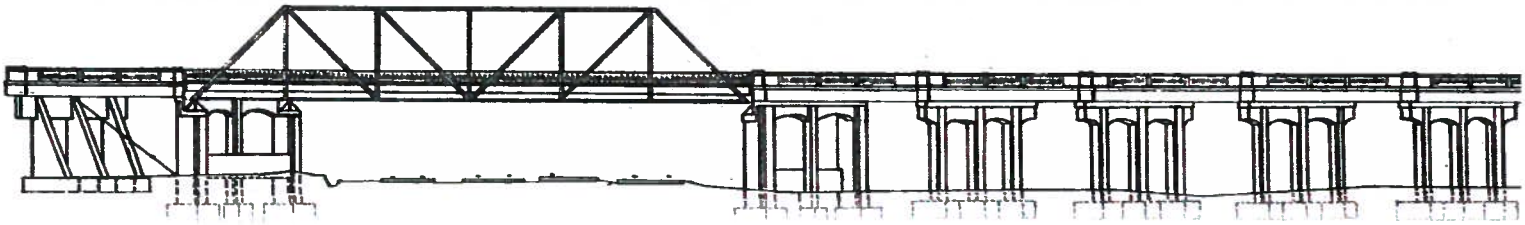
$1,000.00

Andrew Von Rotz

- Larry Johnson/ Prime Construction Endowment Fund

$1,000.00

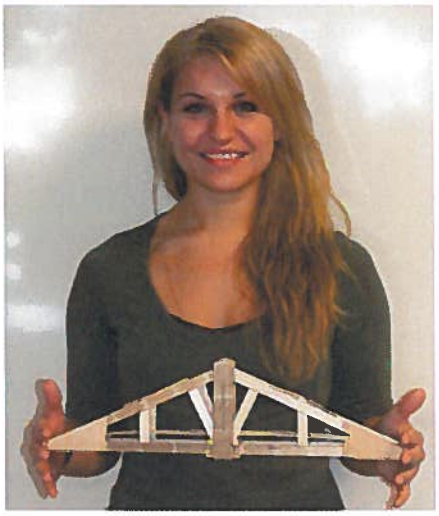
CWU | Central Washington University



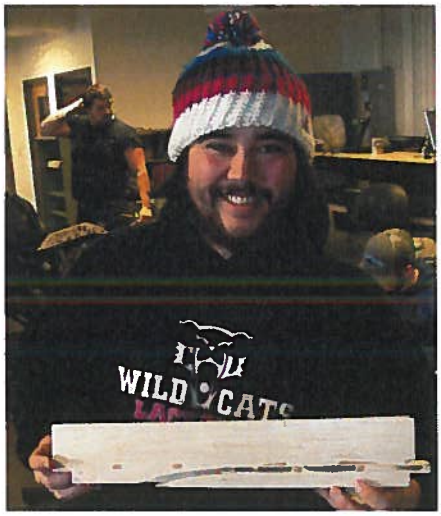
Class Competitions

Each year the CMGT 440 Heavy Civil Temporary Structures, CMGT 441 Wood and Steal Construction, CMGT 460 Concrete Construction and CMGT 461 Pavement Design and Construction hold contests to test balsa wood bridges and concrete beams.

Balsa Wood Bridge Competition Winners



Dasha Klyuchko
Commercial: 210 lbs

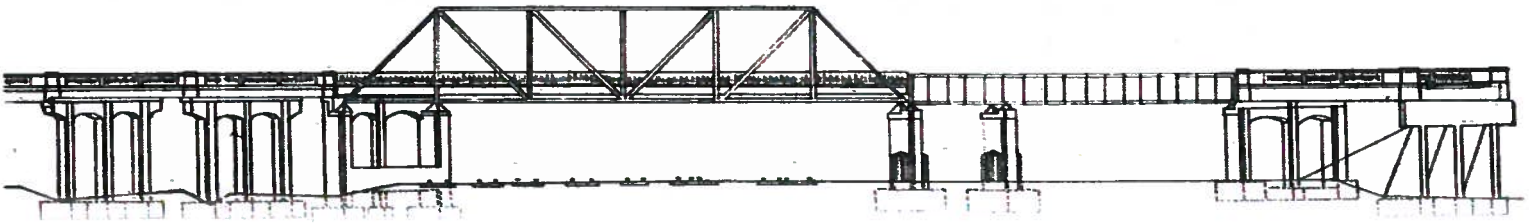


Riley Anderson
Heavy/Civil: 185 lbs

Concrete Bridge Competition Winners

Adam Hansen, Brad Hayes, Ryan Snyder
Commercial: 2042.6 lbs

Malcolm George, Greg Gebhard, Carmello Chavez, Nick Laborde
Heavy/Civil: 1789.2 lbs



Program News

Advisory Council

The Industry Advisory Council was established over 20 years ago to provide input and support for the program. The council provides scholarships, promotes alumni events including the annual golf tournament, curriculum review and assists with accreditation. There are four committees which include the Scholarship, Membership, Curriculum and the Events and Outreach committees. Thanks to all of the members that provide input to maintaining the quality the construction management program:

Industry Council Members:

Jason Goetz, Chair	PCL Construction
Brandon Watts	Lydig Construction
Allison Bujacich	University of Puget Sound
Pete Barlow	Contech Services
Edward Barry	WSDOT -Retired
Brandon Drexler	Belsaas & Smith Construction
Jason Gill	GLY Construction
Troy Goodreau	Greenberry Industries
Nick Lupo	Granite Construction
Chris Lang	Fisher & Sons
Jake Smith	Shinn Mechanical
Megan Orthmeyer	AGC Education Foundation
Chad Webley	Gary Merlino Construction Co. Inc.

AIC Exam

Central's 2013 CMGT students scored 4% higher than the national average of 69.6% in all areas on the eight hour comprehensive exam. Central students had an average score of 221 compared to the national average score of 209 on the 300 point exam. Nationally 53% scored 70% or better to give them the Associate Constructor (AC) designation, while 62% of CWU students passed the exam. The exam tests student knowledge in the Construction Management areas of communication, engineering, management, materials, methods, project modeling, visualization, bidding and estimating, budgeting, costs, cost control, construction safety construction geomatics, and project administration. Congratulations to all the students on their hard work!

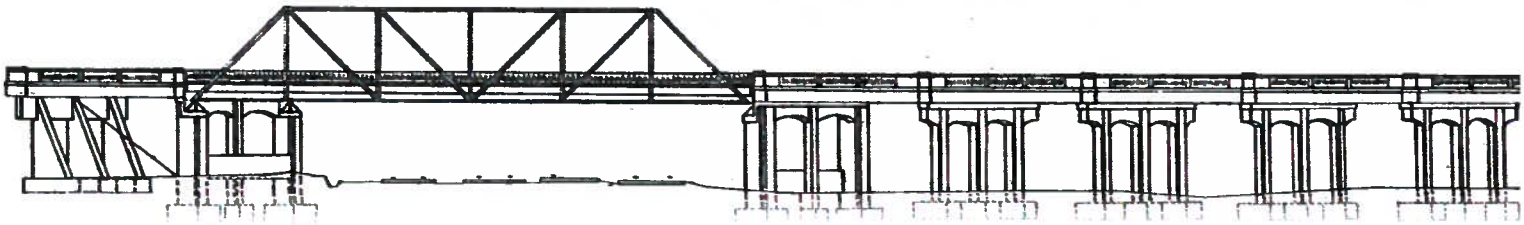
Alumni and Friends Golf Tournament

This year's annual Alumni and Friends Golf tournament sponsored by Absher Construction was a huge success! It was held in July at Druids Glenn golf course in Covington, Washington. The tournament raised over $7700 to support student scholarships and activities. Thanks to all of the hole sponsors: Potelco Inc., Bravo Environmental, Granite Construction Washington Region, DPNicoli, Turner Construction and the Daily Journal of Commerce. Raffle Prizes were provided by Manson Construction, Williams Form Engineering Corporation, Anderson Specialties, Atlas Supply, Hilti, Suncadia Resorts, Iron Horse Brewery, Troutwater Flyfishing Guide Service, Construction Management Advisory Council and Jayme Newbigging. A special thanks to the events committee comprised of Pete Barlow, who collected numerous raffle prizes, Jake Smith, Ally Bujacich, and Nick Lupo, who made phone calls and, most importantly Michoan Spoelstra who provided outreach and support in the organization of the tournament. If you would like to play or sponsor next year's tournament contact Dr. Plugge at wplugge@cwu.edu for more information.

Alumni and Friends on LinkedIn

Stay in touch with Construction Management Alumni and Friends. We now have a group on Linked in. Search for Construction Management Alumni and Friends. Get linked in!

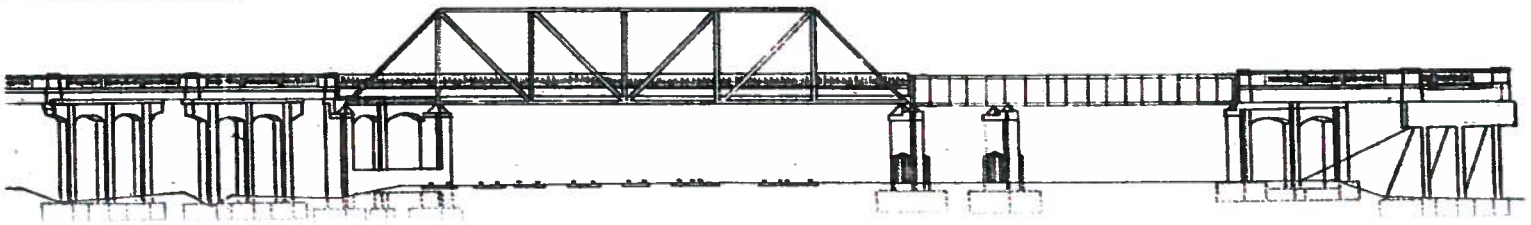
CWU | Central Washington University



Upcoming Events

Come join us at the 2014 Alumni and Friends Golf Tournament It will be held at Druids Glen Golf Course in Covington, Washington on Tuesday, July 15, 2014 starting at 1:00 p.m.

For more information about the event including: sponsoring the tournament, a hole or playing, email Dr. Warren Plugge at **wplugge@cwu.edu** or call him at **509-963-2427**.



Faculty News

Dave Carns has been enjoying his spring since moving to half-time status. Carns has attended the Associated Schools of Construction conference this April in San Luis Obispo, California. He resumed teaching this Fall. Carns is also co-authoring a paper with Dr. Plugge on Green Concrete to be submitted at a future conference.

Dr. Bill Bender co-authored an accepted peer reviewed paper with Dr. Plugge and Dr. Whelan for the Associated Schools of Construction proceedings. This paper entitled "Sustainable Design Strategies That Succeed II" was accepted and he presented with Dr. Plugge at the annual Associated Schools of Construction conference in San Luis Obispo, California. Dr. Bender has been busy serving as the Interim Assistant Dean for the College of Professional Studies. His duties as Interim Dean will end this coming spring and he will be on sabbatical in the Fall.

Dr. Michael Whelan co-authored an accepted peer reviewed paper to the Journal of the American Society of Safety Engineers entitled Contract Issues: Improving Construction Safety Management with Sathy Rajendran (CWU SHM Coordinator).

David Martin recently purchased a house in the Ellensburg area and co-authoring a paper with Dr. Bender and Dr. Plugge on Integrated Project Delivery Games for the Classroom to be submitted at the Associated Schools of Construction Annual Conference in Washington D.C.

Dr. Warren Plugge coordinated a successful Contractor/Alumni Golf tournament at Druids Glenn. He also attended the Associated Schools of Construction Annual Conference in San Luis Obispo and presented the paper on Sustainable Design Strategies That Succeed II with Dr. Bender. Plugge is co-authoring papers for the Associated Schools of Construction conference in Washington, D.C. with Dr. Bender, David Martin and Dr. Rajendran. Plugge has also been working through the program accreditation process, which will begin this year.

CMGT Alumni Wildcat Accomplishments!

In the next newsletter the program would like to hear about our CMGT Alumni accomplishments! Share with us your new project, a promotion, etc. Simply email Dr. Warren Plugge at wplugge@cwu.edu. Be sure to include your name, graduation year, company, title and description of your accomplishment. Feel free to incorporate a picture if you wish.

Supporting Our Students and the Construction Management Program

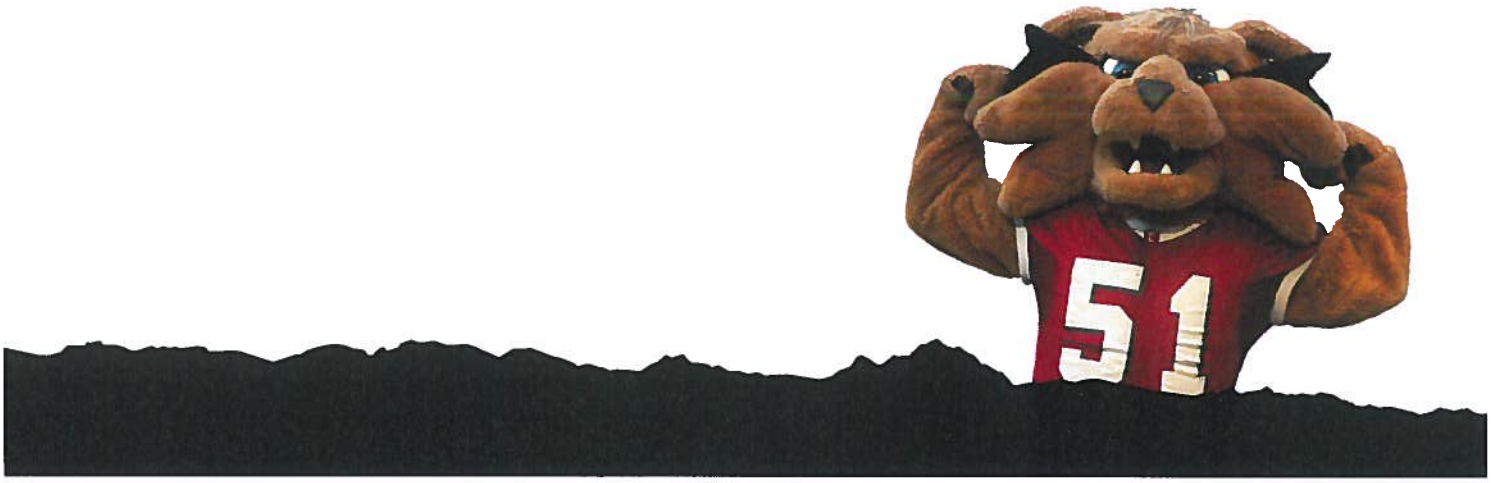
Private and corporate gifts are more vital to Central since the state of Washington has reduced funding to the institution by more than 50 percent since 2009. Now, just 16 percent of CWU's total budget comes from the state. We encourage you to make a donation to support the Construction Management program and students.

For more information on how to make a gift, contact: Michoan Spoelstra, Development Officer, spoelstm@cwu.edu or 509-963-1423

Central Washington University LEARN. DO. LIVE.
Engineering Technologies, Safety and Construction

Construction Management Program
400 East University Way
Ellensburg WA. 98926-7584

NON PROFIT ORG.
U.S. POSTAGE
PAID
YAKIMA, WA
PERMIT NO. 90



BUILDING TIMES

CENTRAL WASHINGTON UNIVERSITY
CONSTRUCTION MANAGEMENT PROGRAM

CWU is a AA/EEO/Title IX institution. For accommodations: CDS@cwu.edu

Fall 2012

STUDENT NEWS

Student Teams Preparing for Reno

Central students are busy preparing for the upcoming Associated Schools of Construction (ASC) Region 7 competition to be held February 6-9, 2013 in Sparks, Nevada. This year CWU will send three teams to compete in the Heavy/Civil category, the Commercial Category and the Mixed-Use category. Each team is comprised of six team members, a student alternate and a faculty coach. In addition construction companies have been dedicating their time and expertise to help each team prepare. This year the team coaches and contractor "mentors" are:

- Heavy/Civil Division - coach, Dr. Warren Plugge; mentors, Granite Construction, Knik Construction Co., Mowat Construction Co., and Active Construction, Inc.
- Commercial Division - coach, Dr. Bill Bender; mentor, Sellen Construction
- Mixed-Use Division - coach, David Carns; mentor, Walsh Construction

In recent years all three teams have done very well, bringing home trophies and prize money in each category. Students and faculty would not be able to participate in this outstanding competition without your annual donation. Thank you for over 15 years of support!

Senior Luncheon

Allison Webley

Each spring the Construction Management program hosts a luncheon on campus for the graduating seniors. This fun event typically features a faculty skit that pokes fun at the students, and a student video that parodies faculty. In addition to the fun, a keynote speaker, typically a CMGT alum, is invited to share their experience in the industry with the senior class. This year Allison Webley (Montgomery), Project Engineer with Sellen Construction, and a 2008 graduate, spoke about her adventures in the construction industry since graduation and gave some advice to new graduates.

MCA Student Chapter Competition

The Mechanical Contractors Association of America (MCAA) sponsors a student competition conducted in conjunction with the MCAA annual convention. Student teams of six develop a proposal describing the design and construction of major mechanical systems for a construction project. Proposals are submitted in December and evaluated by the MCAA staff. The four highest ranked teams are invited to make oral presentations at the MCAA annual convention in March, at which time the winner is selected.

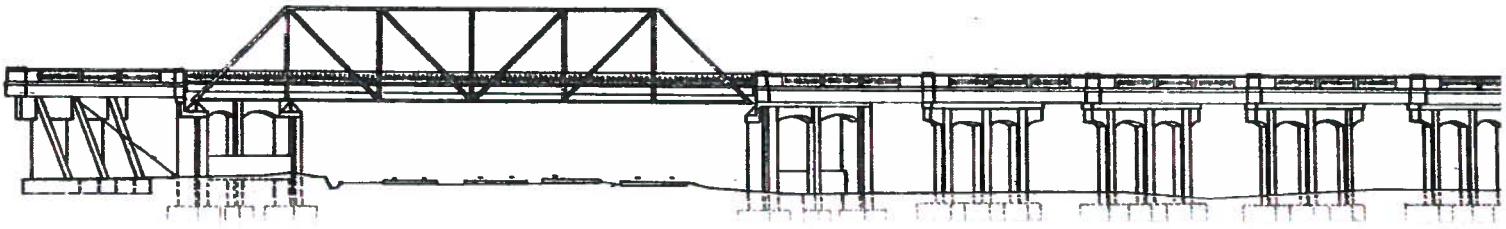
This year's project is unique. It is a 50,000-SF plan/spec project for NASA. Teams are submitting bid proposals for the award of the contract for the HVAC and plumbing systems associated with the construction of the Space Exploration Center Building. The facility is located at the entrance to the NASA Research Park in Cape Canaveral, FL. Students that act as the "bidders" are challenged to design and construct a building that embodies NASA's spirit, fosters collaboration, supports health and well-being, and goes beyond LEED Platinum. Within the proposal, students prepare a "real-world" proposal that duplicates a real Request for Proposal (RFP) process. Some of components of the proposal include estimating, safety, and site logistics.

This competition provides CM students real world hands-on experience which prepares them well for their future careers in construction.

Design Build Student Competition

Dr. Bill Bender, Associated Dean of the College of Education and Professional Studies, worked with a team of Central students who competed in the regional Design Build Institute of America (DBIA) competition for the first time. The team—consisting of Michael Pleger, Austen Kartic, Nate Messner, and Brian Piper—earned an honorable mention in the competition by replying to an RFP requiring them to propose a design and build project for a university performing arts building.

CWU | Central Washington University



Program News

New Department Name

Last spring the old Industrial and Engineering Technology (IET) Department officially underwent a name change to better reflect the programs in the department, including construction management. The new name is the Engineering Technologies, Safety and Construction Department (ETSC). The programs within the department have evolved over the years and now include the following: Construction Management; Electronics Engineering Technology; Technology Education, the only such program in the state; Industrial Technology; Mechanical Engineering Technology; and Safety and Health Management, also the only program of its kind in the state.

The Hogue Technology Renovation is Now Complete and in Use

This fall quarter 2012 classes were held in the 36,000 square foot newly-renovated "old" Hogue Hall for the first time. Renovation of the old Hogue Hall began a year ago and includes two new computer laboratory/classrooms, a new safety lab, remodeled and updated classrooms, and office space for student organizations. This follows completion of the Hogue Addition (56,000 square feet), which officially opened in fall 2011. We have been extremely grateful for the investment of our alumni and industry friends that help supply these facilities with state-of-the-art equipment and funds to support students with scholarships. It is with great pride that we show the support and commitment of industry through naming opportunities promptly displayed within Hogue Technology:

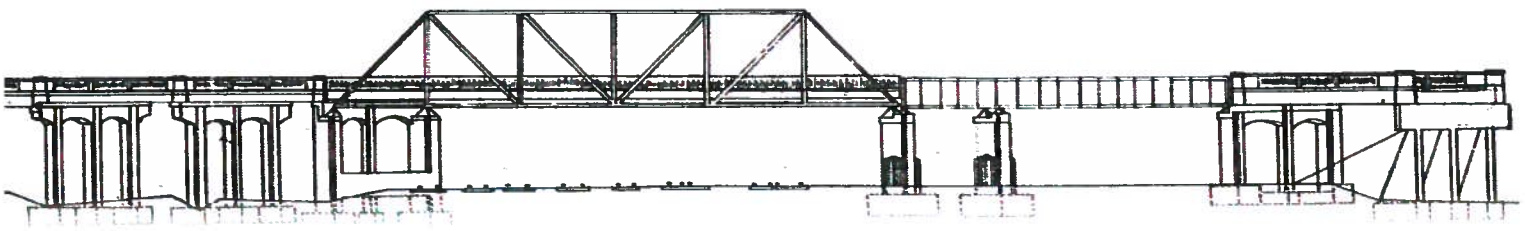
- Allan and Inger Osberg Construction Lab
- Mechanical Contractors Association of Western Washington Construction Lab
- Lydig Conference Room
- Fisher Companies Study Area
- Sellen Construction Company Lobby
- Bender's Knuckle
- Associated General Contractors of Washington Construction Classroom
- Gaudino-Keats Research Lab
- Fluke Interdisciplinary Lab
- Capital Safety, SHM Lab
- American Society of Safety Engineers of Washington and Oregon
- SNC-Lavalin Safety and Health Management Classroom

Alumni Social

The Construction Management Industry Advisory Council sponsored an alumni/contractor social on Thursday, October 11, at McCormick and Schmick's on Lake Union in Seattle. This was the first time that this event included both Safety and Health Management (SHM) alums and CMGT alums. The social was well attended by graduates from both programs and is a great way to see old friends and network with individuals in the construction industry. Check out our new alumni website at cwu.edu/alumni or the cwu.edu/engineering/where you can find out what Wildcat alumni are up to and reconnect with old friends.

Career Fair

CWU Career Services and the Engineering Technologies, Construction and Safety Department organized and held a great career fair on Thursday November 1st in the Sub-Rec ballroom on campus. Over 40 companies attended and over 30 of those are construction companies looking to hire both interns and graduates from the CMGT program. Most companies were represented by alumni of the Construction Management program.



Wildcats Blow Away 2012 AIC Exam

On Saturday March 31, 2012 all 32 seniors in the CMGT program took the eight-hour American Institute of Constructors (AIC) Certified Professional Constructor (CPC) Level I exam. Of those 32 students 29 passed the exam. This represents a passing percentage for CWU of 91 percent, compared to a national passing rate of 58% among the 1200 plus students who took the exam. The comprehensive exam covers ten separate categories including communication skills, estimating, cost control, scheduling, project administration, plan reading, engineering and construction safety. Central students scored higher than the national average in all ten categories!

Faculty News

Dr. David Martin joined the Construction Management faculty this fall quarter and is now actively engaged in the program. Dr. Martin is most recently from Western Carolina University and brings with him 15 years of industry experience and seven years of university construction management teaching experience. This quarter he's teaching both the sophomore-level blueprint reading class and the senior-level scheduling class. Welcome to Dr. Martin!

Dr. Bill Bender has written two peer-reviewed papers for publication in the Associated Schools of Construction (ASC) proceedings. One is entitled "Construction Safety Lab," co-authored with Sathy Rajendran and Dr. Plugge. The other is entitled "Sustainable Design Strategies that Succeed II," coauthored with Dr. Plugge and Dr. Whelan. Dr. Bender would like to thank the CMGT alumni who participated in the safety survey to enable collection of data for the safety paper. He also serves as the Interim Assistant Dean for the College of Professional Studies.

Dr. Warren Plugge has been busy preparing the heavy/civil team for Reno and has submitted several papers for review and publication by ASC. Dr. Plugge was also recently tenured and promoted to Associate Professor. Congratulations! Dr. Plugge was also very busy coordinating the 2012 Contractor/Alumni Golf Tournament as well as the fall Alumni/Industry Social.

Dr. Michael Whelan has been busy teaching the contracts class, CMGT 444, and writing numerous papers for ASC. He is also serving as chair for the Academic Affairs Committee on campus.

David Carns has coauthored, with Dr. Plugge, a paper entitled "Making, Curing, and Testing Concrete Cylinders in a Senior Level Construction Management Course." The paper was submitted to ASC with the intent of presenting it in April at Cal Poly San Luis Obispo.

Central Washington University LEARN DO LIVE
Industrial and Engineering Technology
Construction Management Program

400 East University Way
Ellensburg WA 98926-7584

Hogue Open House Highlights



Upcoming Events

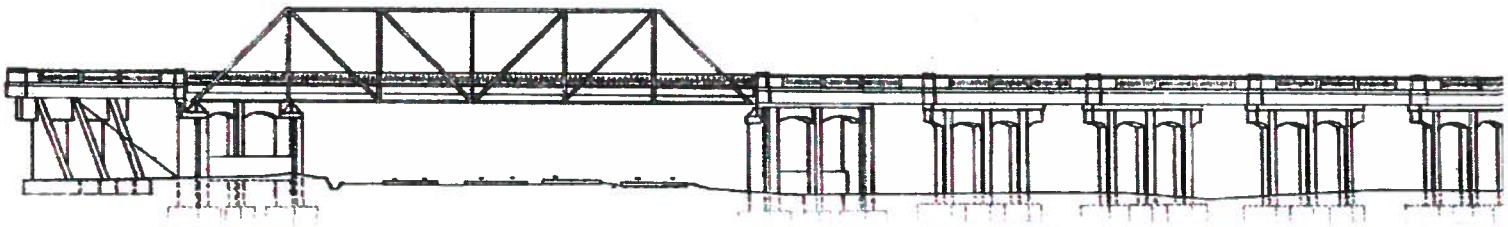
SAVE THE DATE!! The Annual Contractor/Alumni Golf Tournament is scheduled for Tuesday, July 16, 2013 at Druid's Glen Golf Course in Covington, WA. This event is a great time and all money over and above expenses goes to the Construction Management Foundation to directly support needs of students and programs. For more information please contact Dr. Warren Plugge at wplugge@cwu.edu

Supporting Our Students

Construction Management Advisory Council Scholarship
400 East University Way, Ellensburg WA 98926-7508

It is not too late to make your annual contribution to support the next generation of construction professionals. Your donation to the Construction Management Advisory Council Scholarship underscores your belief that Central Washington University is a worthy investment and shows your commitment to the future leaders in the Construction industry. Live, Do, Learn.

Contact Michoan Spoelstra, Development Officer – 509-963-1423 or spoelstm@cwu.edu



Program News

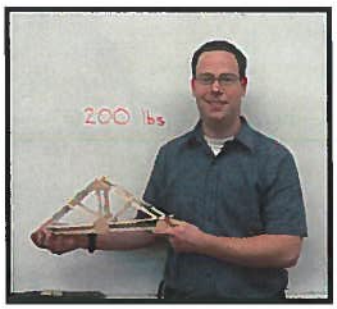
National Association of Home Builders Team Takes "Rookie of the Year" in Orlando, Florida

Photo: Jesse Galligan, Craig Almont, Sam Fowler, Jeremy Winter, Josh Roeter, and Shaun Gough in Orlando.

In January, construction management students Sam Fowler, Jesse Galligan, Craig Almont, Shaun Gough, Jeremy Winter, and Josh Roeter took Rookie of the Year honors in the National Association of Home Builders (NAHB) Residential Construction Management Competition in Orlando, Florida. The team placed 13th out of 35 schools. This was the first year CWU students have participated in the competition. During fall quarter the team developed their proposal that included a design and management package for a residential development and then presented their solution to a panel of industry professionals in Orlando at the NAHB International Builders' Show. Thank you to the Central Washington Chapter of NAHB for their sponsorship and support of our team.

2011 Balsa Wood Bridge Contest Winner

David Rothnie won the CMGT 440/441 annual balsa wood bridge contest with a winning entry that held 200 lbs! David's bridge utilized a simple triangular truss design, weighed 60 grams, and spanned 16 inches. The bridges are loaded at mid-span with a 1 1/2 inch square steel plate.



The New Hogue Technology Addition is Nearly Complete

Interior finish work and exterior details are being completed for the new 56,000-square-foot, LEED-certified Hogue Technology addition, which is scheduled for substantial completion at mid May. Highlights of the new building include two complete construction management laboratory spaces, one for soils/asphalt and concrete (Allan and Inger Osberg Lab) and one electrical/mechanical (MCAWW Lab). In addition, multiple student study areas will be located throughout the building. The Department of Industrial and Engineering Technology will be moving to the new facility in June. As soon as the existing Hogue building is vacated the contractor, T.W. Clark, will begin the renovation process.

BUILDING TIMES

CENTRAL WASHINGTON UNIVERSITY
CONSTRUCTION MANAGEMENT PROGRAM

Issue 30 | CWU is a AA/EEO/Title IX institution. TDD 509-963-2143 | Spring 2011

STUDENT NEWS

CONGRATULATIONS 2011 RENO TEAMS!

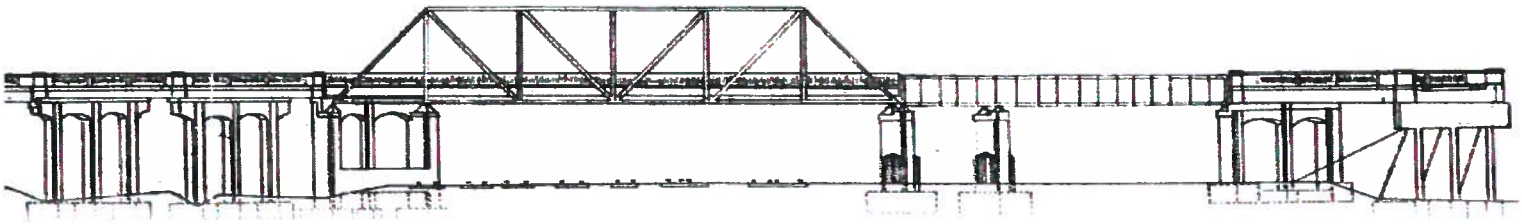
Congratulations go to Central Washington University's construction management students. Two teams placed third in their respective categories. Both the Commercial and Multi-Family teams brought back trophies for their outstanding performance in the Associated Schools of Construction Region 7 competition held in Sparks, Nevada, on February 17, 18, and 19, 2011. The third Central team, in the heavy/civil category, also did extremely well, achieving the highest score of all teams on their oral presentation to the panel of judges.

In addition, Craig Almont was honored by Morley Builders (industry judges) as the most outstanding student presenter for the Multi-family category.

Third Place Multi-family Team
Sam Fowler, Kelvin Crockford, Craig Almont, Jacqueline DeRuyter, Jesse Galligan, Jeremy Winter, Dave Carns (coach), and Caleb Boston (alternate). Thanks to Walsh Construction for helping coach the team.

Third Place Commercial Team
Bill Bender (coach), David Rothnie, Sari Gudwin, Justin Pritchett, Jake Kelsey, Josh Roeter, Tela Gilge, and Jeff Bird (alternate). Thanks to Sellen Construction for helping coach the team.

Your generous support to send these students to the competition is very much appreciated: AGC of Washington Education Foundation, KNIK Construction, Thayer Excavating, Max J. Kuney, Apollo, Inc., Gary Merlino Construction, Granite Northwest, Inc., Nelson and Sons Construction, Quigg Brothers Construction, Wilbert Precast, Hensel Phelps Construction, Contech Services, Gaffney Construction, Inc., Jason L. Goetz, T. W. Clark Construction, Barmon Lumber, Dunkin and Bush, Inc., Turner Construction Company, Graham Construction, Sellen Construction, Lydig Construction, and TSC Services.



Faculty News

Warren Plugge was a featured presenter at the InteConference held October 25 and 26, 2010, at the Sheraton Dubai Creek Hotel Creek & Towers in Dubai, United Arab Emirates. Warren's presentation covered managing and reducing construction costs. Bill Bender has been diligently working with the university and T.W. Clark, the contractor building the Hogue Addition, to coordinate details for fixtures, equipment, and the move-in process, scheduled to take place over this summer. Both Bill and Warren attended the 47th annual Associated Schools of Construction conference held in Omaha, Nebraska, on April 7-10, 2011. Professor Michael Whelan coached and accompanied the student team that competed in the NAHB Residential Construction Management competition in Orlando, Florida, earlier this year. Dave Carns is currently serving as advisor to the Mechanical Contractors and Associated General Contractors student chapters and is also serving on the Art Selection Committee for the new Hogue Addition.

Upcoming Events

Annual Construction Management Golf Tournament

Join us for a wonderful afternoon and evening of golf, conversation, and dinner on Tuesday, July 19, 2011, at Druid's Glen Golf Course in Covington, Washington. For more information please contact Warren Plugge at wplugge@cwu.edu or visit our website at www.cwu.edu/~iet/programs/cmgt/cmgt.html.

Construction Management Alumni and Friends Reunion

Please mark your calendar for Saturday, October 15, 2011, for a Construction Management Alumni and Friends Reunion. This event will be held in conjunction with homecoming activities on the CWU campus in Ellensburg. Ally Montgomery, 2008 CM graduate, will be chairing the CM committee. Please contact her at MontgomeryAllyD@gmail.com if you are interested in volunteering or connecting with other CM graduates.

For additional information on the reunion weekend visit www.mycentral.cwu.edu/homecoming2011 or contact Michoan Spoelstra at 509-963-1423.

CENTRAL WASHINGTON UNIVERSITY
Industrial and Engineering Technology
Construction Management Program
400 East University Way
Ellensburg, WA 98926-7584

SUPPORTING OUR STUDENTS

CONSTRUCTION MANAGEMENT ADVISORY COUNCIL SCHOLARSHIP

On behalf of the Construction Management Advisory Council and the Construction Management students we thank you for your kindness and generosity of the recent gifts to the Construction Management Advisory Council Scholarship. Scholarship incentives often play a crucial role as students make decisions about where to attend college and what major to pursue. The Construction Management Advisory Council Scholarship provides funds that are significant in reducing the financial burden of completing a degree.

CWU's Construction Management Program provides students with the knowledge and skills it takes to excel in a construction management position. The program also employs industry-driven curriculum to follow the latest and best practices and standards set within the field. It is through the passion and talent of the program's professors that CWU is able to help make a difference and attract the talented young people who will be tomorrow's leaders. Thank you again for your support to CWU's Construction Management Program.

MICHOAN SPOELSTRA, DEVELOPMENT OFFICER • SPOELSTM@CWU.EDU • 509-963-1423

Central Washington University

Construction Management Advisory Council

Spring 2014 Meeting
Thursday, May 1, 2014
3:00 p.m. – 5:00 p.m.

Location: Ellensburg, WA Hogue Hall RM 300N
(Phone Number for conference call – 509-963-1000, when prompted enter 410539)

Industry Members	Ex-Officio Members
Jason Goetz, Chair	Dave Carns
Brandon Watts	Warren Plugge
Allison Bujacich	Michoan Spoelstra
Pete Barlow	Bill Bender
Ed Barry	David Martin
Jason Gill	Michael Whelan
Troy Goodreau	Addrienne Woods
Chris Lang	
Nick Lupo	
Jake Smith	
Chad Webley	
Brandon Drexler	
Mitch Droz	

AGENDA

1. Introductions, Jason Goetz (Brandon Watts) (5 Mins)
2. Approve minutes from October 10, 2013 meeting, Jason Goetz (Brandon Watts) (5 Mins)
3. Reports: (30 Mins)
    a. CEPS Volunteer Appreciation Day, Michoan
    b. 100% Board Giving, Michoan
    c. AGCEF Event, Adrienne Woods
    d. Career Fair, Nov. 6, 2014 (10am to 2pm), Warren
    e. Student Reports
        i. AGC
        ii. MCAWW
        iii. Reno Teams (Heavy Civil, Multi-Use, Commercial, Marine)
    f. Treasurer's Report, Dave Carns
4. Discussion Items: (40 Mins)
    a. CMGT Endowment Fund, Warren Plugge
    b. Carns/Calhoun Naming Opportunity, Warren Plugge
    c. Selection of Vice Chair
    d. New Member Induction – Pete Barlow (re-instatement), Jason Gill (re-instatement), Greg Toy, Steve Houston, John Schmidt, Phil Baker, Kyle Smith, (Start Fall 2014) Steve Sunich, Kyle MacDonald (recommendation for 2015-2019), 5 terms coming due.
    e. Fund Raising Strategic Plan, Warren Plugge
    f. Professional Conduct for Students, David Martin
5. Committee Breakout Session (15 Mins)
6. Committee Reports (20 Mins)
    a. Scholarship, Jason Goetz
        Report on recipients – Advisory Council and AGC
    b. Membership, David Martin
        Membership Update
    c. Curriculum Review, Dave Carns
        Update on curriculum that was reviewed this year.
    d. Events and Outreach, Warren Plugge
        Golf Tournament
        Student/Industry Event
7. Closing: Jason Goetz and Allison Bujacich (5 Mins)

Central Washington University

Central Washington University Management Program Advisory Council
Meeting Minutes
May 1, 2014
Central Washington University Ellensburg Campus, Ellensburg, WA

Attendees

Council Members	Affiliation
Brandon Watts	Lydig Construction
Ed Barry	WSDOT – (Retired)
Brandon Drexler	Belsaas & Smith
Mitch Droz	Puget Sound Energy
Jake Smith	Shinn Mechanical
Nick Lupo	Granite Construction
Chad Webley	Gary Merlino Const. Inc.
Chris Clayton	BN Builders

Ex-Officio Members	Affiliation
Bill Bender	CWU
Dave Carns	CWU
David Martin	CWU
Adrienne Woods	AGC Ed. Fdn.
Michoan Spoelstra	CWU Fdn.
Warren Plugge	CWU

3:03PM. Brandon Watts started the meeting and thanked everyone for coming then asked everyone in attendance to introduce themselves. Introductions were made by all board members and students in attendance.

A motion was made to accept the meeting minutes by Ed Barry from October 10, 2013 meeting the motion was accepted by the council.

Reports

CEPS Volunteer Appreciation Day:
Michoan Spoelstra reported on the Volunteer Appreciation Event held on April 10, 2014 at Bahama Breeze in Seattle, WA. She stated there were 57 attendees and this event was a way for the CEPS Dean (Connie Lambert) and University President (Jim Gaudino) to meet our volunteers who provide support to our programs within the College of Education and Professional Studies.

100% Board Giving:
Michoan reported on the present status of donations to the University. She also mentioned that we did not meet the 2013 goal of 100% board giving and encouraged employers to help match the goal. Michoan also introduced the Carns/Calhoun naming opportunity. Professors Carns and Calhoun were the original founding members of the Construction Management program and this naming opportunity is a way to recognize Carns and Calhoun for their efforts in starting and continuing to build the program. Michoan also mentioned that there is still $3000 left to reach the goal and the alumni have been given 60 days to June 30, 2014 to meet the goal. To reach the goal malings and emails will be used as reminders to alumni to help reach the goal.

AGC Education Foundation Event:

Adrienne stated that there will be an AGC Education Foundation Future Leaders Forum held on May 20, 2014 at 5PM on Central's campus with a panel of industry members to speak to the AGC student club. Jordan Hanks (student) explained that this opportunity is a way for students to ask questions from the industry leaders about their future careers as construction managers. Adrienne also reported on the AGC Mentorship Day held on November 11, 2013 at the AGC Building on Lake Washington. She stated that this was an opportunity for a select group of students to sit in front of an industry panel where interview and job skills were discussed. Once the panel broke up, separate individual one on one sessions were held in a round table format. After the presentations students were taken on two field trips to the University of Washington Sound Transit Link Light Rail Station constructed by Sound Transit and Amazon Campus Building constructed by GLY Construction in Seattle.

Career Fair:

Warren reported on the career fair held on November 7, 2014 where 56 companies attended the career fair and over $9,000 was raised for program support. He also mentioned the $9,000 was dispersed to the various programs based on what companies were offering as positions within the company (i.e. – CMGT, SHM etc.). He also stated that the CMGT program raised over $6,000 for program support from the career fair.

Student Reports:

AGC Student Chapter
Jordan Hanks and Reyna Perez reported on this year's activities which included the CMGT application workshop, Habitat for Humanity Build Day on May 17, 2014, Future Leader Forum in Seattle, AGC Student Golf Tournament at Ellensburg Country Club.

MCAA Student Chapter
David Halseth reported on this MCAA's activities and mentioned there was a drop in participation this year and that next year's goal was to increase participation. They are also working on reaching out to the Mechanical Engineering Technology students within the department to encourage them to join MCAAW activities. The board also mentioned ideas on how to increase participation which included social media and reaching out to other students in different programs across campus (Business, Marketing, etc.). David also stated that they (David Halseth and Adam Hansen) worked with Professor's Martin and Carns to submit an Emerging Chapter Grant with Joe Holden of Auburn Mechanical. David also talked about the upcoming MCAAW wine tasting event and they will be attending the National MCAAW Convention in Scottsdale, Arizona. The next convention will be held in Hawaii. He also mentioned the date for the MCAAW golf tournament to be held on August 29, 2014.

Reno Teams
Several students from each of the teams reported on their experiences with the Reno Competition which was held February 5-8. 2014. It was reported that four teams attended the competition, Mixed-Use, Heavy/Civil, Marine and Commercial. Grant Maskal, Eduardo Sanchez and David Reeder talked about the Heavy/Civil team and their project. They also thanked the advisory board and donors for their support to attend the competition. Adam Hansen reported on the Mixed-Use team that placed 3rd in the competition. Jason Aldrich and Andrew VonRotz reported on the commercial team's participation in the completion, they mentioned that the Reno experience was a confidence boost in what they are learning at Central. Kenji Norwood reported on the Marine team's participation, he stated that the experience was very educational and that this was the first time Central has sent a Marine team to the competition. It was also reported that Michael Norman was on the 2nd place team for the Alternates Competition.

There was further discussion on the types of software that could be available for students to use during the competition. Additional conversations ensued on the likelihood of having additional teams attend the competition, the possibility of a Mechanical team. The board and students discussed the pros and cons of having additional teams and it was stated that Central should stick their strengths.

Treasurer's Report:

David Carn's stated that there was $68,611.09 in the Advisory Board Foundation Account. He stated that major income to this account was from the Golf Tournament, Career Fair and donors to support the Reno teams. He also mentioned that the total Reno Cost was over $20,000 due to sending four teams to Reno. David also mentioned that there was over $25,000 in the Scholarship fund.

Discussion Items

CMGT Endowment Fund:

Warren Plugge talked about the creation of a new CMGT Endowment fund. A plan and justification was provided to the board. He mentioned that the University takes a close look at all funds within the departments and that since the Advisory Board Fund has almost $70,000 that this could be subject to the University requiring the CMGT program to spend this money on programmatic expenses. And during economic hard times with state funding these funds are subject to being used. To prevent this, Warren made the recommendation with guidance from information provided by Michoan to move $30,000 from the CMGT Advisory Council Fund to create a new endowment. It was stated that the minimum required to create the endowment is $25,000. Discussion ensued on the creation of the account, much of the discussion was centered on the interest the fund would make and the fees associated with the account. There was a motion made by Mitch Droz to create the account in the amount of $30,000. The motion passed to create a new CMGT Endowment Fund in the amount of $30,000.

Carns/Calhoun Naming Opportunity:

The Carns/Calhoun naming opportunity discussion was moved to the 100% Board Giving Discussion at the beginning of the meeting, see previous statements within the minutes.

Selection of Vice Chair:

With the resignation of Jason Goetz as chair, the default to assume the chair position was Brandon Watts was accepted prior to the meeting. Discussion ensued on who shall become Vice Chair within the committee, nominations were made by Nick Lupo to nominate Chad Webley as the new Vice Chair. A motion was made by Brandon Watts there was some discussion, a vote was made and the motion was approved to accept Chad Webley as the new Vice Chair. David Martin mentioned that Chad will serve as the Vice Chair starting in 2014 and continuing to 2016.

New Member Induction:

A discussion ensued on the new members to be inducted to the board. David Martin mentioned that Pete Barlow would be willing to serve on the board for an additional year to the end of 2015 and Jason Gill could be re-instated for another four year term. Further induction discussions were tabled until after the committee had a chance to discuss inducting new members during the committee breakout session

Fund Raising Strategic Plan:
Warren Plugge initiated a discussion on how the board could identify a fund raising strategic plan. He stated that the program would like to get away from multiple asks for different events from donors. Some discussion ensued on the strategic plan, but further discussion was tabled to acquire more information on how the strategic plan might be structured.

Professional Conduct for Students:
David Martin opened up the discussion on professional conduct by students within the CMGT program. Discussion ensued on professional conduct where students are using cell phones during lecture time, speaking while lectures are taking place, accepting phone calls during lecture and not paying attention to the delivery of the course material. David did mention that the enforcement of such policies should be introduced in Estimating 1 when students have been formally accepted in to the program. There was also discussion to have representatives within companies come to campus to talk about professionalism within the construction industry and that professionalism starts while the students are in college. There was also discussion to amend the CMGT handbook to provide guidelines on professional conduct.

Committee Breakout Sessions

The board took 15 to 20 minutes for committee breakout sessions.

Committee reports were made to the council:

Scholarship Committee Report:- Bill Bender
Bill Bender mentioned that there was $3,000 available in scholarship awards available for renewal. The scholarships to be awarded are generally for Women and underprivileged students pursueing their education in Construction Management. This past year two scholarships were awarded for $1,500 each to Kindra Scooba and Chris Farias. Addriene Woods also stated that five students were interviewed for the AGC of Washington Scholarships a week ago and four students from CWU would be awarded scholarships, the amounts and who the scholarship would be awarded to would come at a later date.

Membership Committee Report- David Martin
David Martin recommended the induction of Greg Toy, Steve Houston, John Schmidt and Steve Sunich to start in the Fall of 2014. Discussion ensued on this recommendation. A motion was made to approve the recommendation and was approved. Further discussion ensued on when to induct Kyle Smith, it was determined that Kyle's induction onto the board would take place in 2015 once Pete Barlow's term has ended.

Curriculum Committee Report- David Carns
Brandon Drexler mentioned four out of the seven courses for Winter have been reviewed which included CMGT 343 Estimating, CMGT 442 Building Service Systems, CMTT 455 Building Principles of Construction Management and CMGT 320 Electrical Construction. Courses still yet to be reviewed include CMGT 346 Building Materials and Methods, CMGT Heavy Civil Materials and Methods and CMGT 456 Principles of Heavy Civil Construction. Brandon also thanked those who have helped review the courses and that their input is valuable.

Events and Outreach Committee Report-Warren Plugge
Warren Plugge updated the committee on the upcoming events which include the Construction Management Alumni and Friends Golf Tournament on July 15, 2014 at Druid's Glen in Covington, WA at 1pm. He also stated that calls will be made and the use of social media such as

LinkedIn will be used to get the word out and encouraged the board members to help get the word out. He also mentioned trying to develop a new event to get CMGT students in front of the industry, something that would be an informal event to showcase new incoming students and those who will be graduating from the program. Some discussion ensued on this topic and Addriene Woods mentioned that AGC Education Foundation would be willing to help on achieving this goal. It was also suggested by Warren to get a bus and ship the entire class to Seattle for this type of event. Brandon Drexler did mention that A&A Motorcoach does provide good prices on transportation for these events.

At the close of the meeting Warren Plugge recognized the efforts of Jason Goetz and Allison Bujacich to the Advisory Board and thanked them for their years of service and contributions. Unfortunately, neither Jason or Allison could attend the meeting. But, they were each provided with a Platinum Hardhat Award, the new CMGT program hardhat and a $100 gift certificate to Lowe's.

The next meeting has yet to be determined, if following the bylaws this date would be scheduled for October 9, 2014 at a location to be determined in Seattle.

5:55 pm. Brandon Watt adjourned the meeting.

Construction Management Advisory Council Standing Committees

Membership Committee	**Events/Outreach Committee**
Ed Barry	Warren Plugge
Troy Goodreau	Michoan Spoelstra
Pete Barlow	Brandon Drexler
David Martin	Jesse Ellenz
Chad Webley	Jake Smith
	Nick Lupo
	Pete Barlow

Curriculum Review Committee	**Scholarship Committee**
Brandon Drexler, Chair	Bill Bender (Chair)
Chris Lang	Chris Lang
Brandon Watts	Michoan Spoelstra
Jason Gill	Megan Orthmeyer (advisor)
Dave Carns	Mitch Droz

**Members not on a committee – Chris Clayton (TBD)

Central Washington University

Construction Management Advisory Council
Fall 2013 Meeting
Thursday, October 10, 2013
3:00 p.m. – 5:00 p.m.

Location: 1505 Westlake Avenue Suite 1010, Seattle WA (Directions attached)

Industry Members	**Ex-Officio Members**
Jason Goetz, Chair	Dave Carns
Brandon Watts	Warren Plugge
Allison Bujacich	Michoan Spoelstra
Pete Barlow	Bill Bender
Ed Barry	David Martin
Jason Gill	Michael Whelan
Troy Goodreau	Megan Orthmeyer
Chris Lang	
Nick Lupo	
Jake Smith	
Chad Webley	
Brandon Drexler	
Mitch Droz	

AGENDA

1. Introductions and present new members , Jason Goetz
2. Approve minutes from May 2, 2013 meeting, Jason Goetz
3. Treasurer's Report, Dave Carns
4. BIM Discussion, Faculty
5. CEPS Volunteer Event, Michoan
6. Career Fair, Nov. 7, 2013, Warren
7. 100% Board Giving, Michoan
8. AGCEF Event, Megan
9. Committee Breakout Session (20 Mins)
10. Committee Reports
    a. Scholarship, Jason Goetz
       Report on recipients – Advisory Council and AGC
    b. Membership, David Martin
       Membership Update
    c. Curriculum Review, Dave Carns
       Update on curriculum that was reviewed this year.
    d. Events and Outreach, Warren Plugge
       Golf Tournament Report and Planning
       Alumni Social

Central Washington University

Central Washington University Management Program Advisory Council
Meeting Minutes
October 10, 2013
Central Washington University, Westlake Office, Seattle, WA

Attendees

Council Members	Affiliation
Brandon Watts	Lydig Construction
Ally Bujacich	University of Puget Sound
Pete Barlow	Contech Services
Ed Barry	WSDOT (retired)
Brandon Drexler	Belsaas & Smith Constructon
Mitch Droz	Puget Sound Energy
Chris Lang	Fisher & Sons
Chad Webley	Gary Merlino Construction Co. Inc.
Jesse Ellenz	Bellingham-Marine

Ex-Officio Members	Affiliation
Bill Bender	CWU
Dave Carns	CWU
David Martin	CWU
Megan Orthmeyer	AGC Ed. Fdn.
Michoan Spoelstra	CWU Fdn.
Warren Plugge	CWU

2:58 pm. Brandon Watts started the meeting and thanked everyone for coming then asked everyone in attendance to introduce themselves. Introductions were made.

New members Chris Clayton (Aldrich & Associates), Jesse Ellenz (Bellingham-Marine), and Mitch Droz (Puget Sound Energy) were also introduced to the council by Warren Plugge.

A motion was made to accept the meeting minutes by Ed Barry from May 2, 2013 the motion was accepted by the council.

Dave Carns presented the treasurer's reports from December 2012 to June 2013 he reported the balance in the advisory council account at the end of July 2013 was at $67,700. Carns also mentioned that there was $29,120 in the scholarship account and announced that two students recipients, Kindra Scooba received a $3,000 and Chris Farias received a $2,000 scholarship from the advisory council. David Martin also stated how the students were selected to receive the scholarships. He mentioned the scholarships are awarded based on the student's potential and leadership while in the Construction Management program. It was also mentioned that minority students are strongly encouraged to apply. Thank you letters were shared with the council from the award recipients.

David Martin opened a discussion on Building Information Modeling (BIM), council members were asked to comment on the article "Integrating BIM into Construction Management Education." Questions were asked how we (CMGT program) could integrate BIM into the curriculum? What are the outcomes? Are there internships available from companies to bring faculty up to speed on BIM? What does industry want from graduates with respect to knowledge on BIM? With these questions discussions continued with members stating the types of software

packages typically used by their organization which included Winest, P6, Navisworks, Revitt. It was also stated that typically there is a dedicated person assigned to building the models. Members further discussed that it would be more important that students understand the theory and application of the idea of BIM rather than become a BIM operator creating models. Students should have the ability to extract information from the models to manage a project by. Members from the council with experience in commercial and civil construction both identified that BIM is being used, more so on the commercial side rather than the civil side. It was suggested that the council look at leaders in the industry in BIM include McKinstry and Shinn Mechanical would provide excellent examples on how BIM is used. The question was asked whether BIM was used in estimating, some members mentioned they are using it though programs such as Bluebeam and On-Screen Takeoff more as a tool for quantity takeoff and that paper drawings are on their way out. A suggestion was made to introduce the topic with an existing model then allow students to manipulate the data within the model, also to start with a small project and find a program with multiple capabilities. Dave Carns and Bill Bender asked for assistance from the council on the topic and to create a set of learner outcomes from an industry perspective on BIM. Discussion ensued by asking if BIM was taught, is the student going to utilize this information in the field? Suggestions were made by the council that integration of BIM should be made through basic exposure to the concept and how it could be used then once the student has graduated allow them to be trained by their prospective company in further details of BIM.

Michoan Spoelstra spoke about the Volunteer Appreciation event provided by the College of Education and Professional Studies (CEPS). She mentioned this is an opportunity for the CEPS Dean to show appreciation to volunteers and the impact volunteers have on our programs. It was also stated that the President uses this opportunity to learn more about the programs through volunteers. Michoan stated that next years event will be held on the 1st or 2nd Thursday of April and would have more information at a later date on the specifics of the event. This year the event was held at the Museum of Flight. Pete Barlow mentioned he attended the event which was well attended. Michoan concluded by extending an invite to all advisory board members.

Warren Plugge reminded the board about this year's career fair to be held on November 7, 2013 on the CWU campus from 10 am to 2 pm and there would be an alumni social immediately following the career fair at the TAV. He also mentioned that a portion of the fee to attend the career fair does go back to support the program. Discussion ensued about the cost of the fees. Warren proposed to the board about charging companies for information sessions and mentioned that part of the fees would pay for setting up the info session and pay for the food. He stated that this was an idea the program was considering. Through further discussion it was concluded that charging for the information session would not be a good idea for this program, but increasing the cost for the career fair would be a better idea since these costs would be easier to cover by companies due to their budgeting structure.

Michoan Spoelstra talked about 100% board giving. She stated that board giving across campus is up 2% from alumni in other areas and across campus. Michoan asked the board if they were willing to shoot for this goal and asked for support. The question was asked if there were still naming opportunities and Brandon Watt asked if a list could be provided to the board with the companies that currently have naming opportunities in the building. Dave Carns made the motion to accept the challenge to meet the 100% giving. The motion was seconded by Chris Lang and accepted by the board. Michoan mentioned out of the 13 members on the board 10 donated, at 77% participation.

Megan Orthmeyer asked for suggestions on AGC's effort to create a mentorship day which was still in the planning stages. The purpose of the mentorship day would be to promote AGC and provide students the opportunity to work with industry partners. She described the mentorship day would allow former AGC scholarship recipients to meet withcurrent students on building professional skills related to the construction industry. It was suggested the students that would take part in the event would be Reno students from all three major Washington schools. The question was also asked to consider other students outside the students participating in Reno competition. Jesse Ellenz suggested students present on themselves, Alli Bujacich suggested selecting students based on a first come first serve basis and Mitch Droz suggested a more competitive type of format. A suggested agenda would include the students presenting on a current Reno practice problem then tour a jobsite from an AGC member company. There was further discussion suggesting this was a good idea to allow students to connect with AGC and industry. The challenge of the event would be the timing of the event due to other activities taking place such as Battle in Seattle and Reno preparations.

The board took 15 to 20 minutes for committee breakout sessions.

Committee reports were made to the council:

Scholarship Committee Report:- Bill Bender
Bill identified there was a need to advertise to get more applicants to apply for existing scholarships. It was suggested to get past recipients to present in class about the scholarship. Other suggestions were identified such as getting the scholarship information to the parents of students. The committee was also tasked to identify the sustainability of the scholarships.

Membership Committee Report- David Martin
David reported that a review of all members has taken place to identify those members whose terms are coming due. Information on individual terms has been documented and will accompany these minutes as an attachment. It was also reported that Jason Goetz's term as chair ends in 2013 and has the option to renew his commitment as chair, this would be discussed with Jason since he was not present at the meeting. It was stated that with terms ending there will be 7 positions to fill next year. David also welcomed three new members Jesse Ellenz (Bellingham-Marine), Mitch Droz (Puget Sound Energy) and Chris Clayton (Aldrich & Associates). Suggestions were made to increase membership and its diversity of members within disciplines. Mitch Droz suggested additional members with a Marine background since the program is adding a Marine team to compete in Reno. It was also suggested to increase and reach out to east side alumni who might be interested in participating on the board. The committee also stated it would be good to have full board participation in time for the accreditation process to take place during the Winter quarter of 2015. David Carns also announced the resignation of Troy Goodreau's resignation from the advisory board. The advisory board recognized and accepted Troy's resignation and appreciates his many years of service to the membership committee and advisory board. Through Troy's resignation, he did suggest the name of Greg Toy to the committee to replace Troy's vacancy. The committee noted his nomination and will reach out to Greg to apply to the council.

Curriculum Committee Report- David Carns
David Carns reported on courses coming under review which include the Winter Quarter CMGT courses. These courses include CMGT 343 Beginning Estimating, CMGT 442 Building Service Systems, CMGT 346 Means and Methods and CMGT 347 Heavy Civil Means and Methods. Chad Webley offered to review course materials for CMGT 347 Heavy Civil Means and Methods. All materials will be collected during the Winter quarter and distributed to the reviewers at the end of the quarter.

Events and Outreach Committee Report-Warren Plugge
Warren Plugge reported on the 2013 Alumni and Friends Golf Tournament. He stated the tournament made $7,709 and was a huge success with a total of 112 players. Which was an increase from the previous year of 88 players. He mentioned that next years golf tournament would be held at Druids Glenn during the same time period. It was suggested to consider a new venue and the timing of the tournament to potentially increase player participation. Ideas for location included having the tournament held at a destination location so participants could stay. Michoan offered to provide a map of companies in the Seattle area to assess a location for the tournament that would be "convenient" for more players. Others suggested tying the tournament to a conference where there is already a draw of players. There was also a suggestion made do a plan the tournament in two year increments and the committee would work on this plan. Advertisement for the tournament was also discussed, postcards worked, but the committee suggested a different method advertisement such as a letter. Jesse Ellenz suggested changing the payment structure to a single charge for all participants.

The next meeting will be **Thursday, May 8, 2014** on campus at Central Washington Unviversity in Hogue Hall. More details to follow.

5:11 pm. Brandon Watt adjourned the meeting.

Construction Management Advisory Council Standing Committees

Membership Committee	**Events/Outreach Committee**
Ed Barry	Warren Plugge
Troy Goodreau	Michoan Spoelstra
Pete Barlow	Allision Bujacich
Michael Whelan	Brandon Drexler
David Martin	Jesse Ellenz
Chad Webley	Jake Smith
	Nick Lupo

Curriculum Review Committee	**Scholarship Committee**
Brandon Drexler, Chair	Jason Goetz, Chair
Chris Lang	Chris Lang
Brandon Watts	Bill Bender
Jason Gill	Michoan Spoelstra
Dave Carns	Megan Orthmeyer (advisor)
	Mitch Droz

**Members not on a committee – Chris Clayton (not present)

CENTRAL WASHINGTON UNIVERSITY

Your future is Central.

Construction Management Advisory Council
Spring 2013 Meeting
Thursday, May 2
3:00 p.m. – 5:00 p.m.

Location: 3rd Floor Conference Room 300N, Hogue Hall, Ellensburg, WA
(Phone Number for conference call – 509-963-1000, when prompted enter 165509)

Industry Members	Ex-Officio Members
Jason Goetz, Chair	Dave Carns
Brandon Watts	Warren Plugge
Allison Bujacich	Michoan Spoelstra
Pete Barlow	Bill Bender
Ed Barry	David Martin
Brandon Drexler	Michael Whelan
Jim Gebhardt	Megan Orthmeyer
Jason Gill	
Troy Goodreau	
Chris Lang	
Nick Lupo	
Jake Smith	
Chad Webley	

AGENDA

1. Introductions, Jason Goetz
2. Approve minutes from October 11, 2012 meeting, Jason Goetz
3. Treasurer's Report, Dave Carns
4. Introduction of New CMGT Program Coordinator, Dave Carns
5. Student Reports
    a. AGC
    b. MCAWW
    c. Reno Teams (Heavy Civil, Multi Use, Commercial)
6. Volunteer Appreciation Day (Report), April 2013, Michoan Spoelstra
7. Clean Lab Demonstration (Clean Lab Hogue Hall) – Electrical
8. Board Giving 100%, Michoan Spoelstra (Report)
9. Committee Breakout Session (15 Mins)
10. Committee Reports
    a. Scholarship, Jason Goetz
        Report on recipients
        Annual appeal mailing update
    b. Membership, David Carns
        New members – Review Incoming Members
    c. Curriculum Review, Brandon Drexler
        Update on curriculum that was reviewed this year.
    d. Events and Outreach, Warren Plugge
        Golf Tournament Planning – prizes, etc.
        Alumni Social – need location ideas, date, combined programs

CENTRAL WASHINGTON UNIVERSITY

Your future is Central.

Central Washington University Management Program Advisory Council
Meeting Minutes
Thursday May 2, 2013
Central Washington University, Hogue Hall RM 300N, Ellensburg, WA

Attendees

Council Members	Affiliation
Jason Goetz	PCL Construction Co.
Brandon Watts	Lydig Construction
Pete Barlow	Contech Services
Ed Barry	WSDOT
Ally Bujacich	University of Puget Sound
Nick Lupo	Granite Construction
Chris Lang	Fisher & Sons
Jake Smith	Shinn Mechanical

Ex Officio Members	Affiliation
Dave Carns	CWU CMGT
Bill Bender	CWU CMGT
Warren Plugge	CWU CMGT
Michoan Spoelstra	CWU Development
David Martin	CWU CMGT
Megan Orthmeyer	AGC Ed. Fdn.

3:05 pm. Jason Goetz called the meeting to order thanked everyone for coming.

A motion was made to accept the meeting minutes by Ed Barry from October 11, 2012 the motion was accepted.

Dave Carns presented the treasurer's reports from October 2012 through December 2012. The balance in the account at the end of December was $68,718.55 and the balance in the scholarship Fund account at the end of December was $30,407.26. A discussion ensued about expenses for the Reno student competition were covered for the year, but would have fallen short without the generous contributions by all donors. Warren also noted that the most significant contribution was made by KNIK Construction which covered the expenses for one team. A motion was made to accept the treasurer's reports. The motion was seconded, a vote was called and the motion passed.

Dave Carns introduced the new CMGT Program Coordinator Warren Plugge and mentioned that he will only be on campus Fall and Winter. So any questions regarding the program during the Spring quarter should be directed to Warren.

Student Reports

AGC Student Chapter
Nate Messner the current AGC student chapter president updated the committee on the activities the AGC student club. One of the highlighted activities he mentioned was the AGC industry panel that came in September to speak to the AGC student club about beginning a career, challenges and opportunities in construction management. He also mentioned the club has been active in attending AGC meetings in Yakima where the students were able to meet and mingle with many industry professionals and update the AGC on activities the student chapter has been involved with. He also mentioned a goal for the student chapter is to increase their contacts within the Seattle area and become more involved through field trips with companies in the area. Jason Goetz suggested that the Advisory Board should come to the next Fall AGC meeting to present the Advisory Board and what the function of the board is to the students. The purpose of this meeting would be to show students that the Advisory Board can be a resource for students to get help on projects and competition preparation.

MCAAWW Student Chapter
Mason LeMay, David Halseth, and David Smith updated the committee on their recent trip to the MCAA Convention in San Antonio. He reported that the student chapter competed in the student competition in San Antonio and finished within the top ten in the competition. Discussion ensued about the challenges and successes of the student competition, students mentioned that this was an opportunity of a lifetime and would like to see more industry support from the mechanical companies that would be able to provide insight into their proposal they submitted for the competition. A sample proposal was provided to the board for review, Congratulations to the MCAWW CWU student chapter for your efforts in finishing within the top 10!!

Reno Student Teams
Each of the Reno teams, Commercial, Heavy/Civil, and Multi-use, reported on their experience in Sparks, Neveada. Heavy/Civil mentioned their third place finish and thanked the board for their involvement. The multi-use team also reported on their experience followed by the commercial team. There was a lengthy discussion by all teams thanking the industry sponsors for their involvement and the students appreciated the critical feedback each of the industry sponsors provided.

Michoan Spoelstra reported on the Volunteer Apreciation Day in April at the Museum of Flight in Seattle stating the fact that this event was a way to say thank-you and show appreciation to our Advisory Members that help promote CWU's educational mission. She mentioned that the event was well attended with about 80 attendees and was funded by the Alumni Association.

The Advisory board took a short 10 minute tour of Hogue Hall's clean lab and observed Bill Bender's electrical class CMGT 320. This provided an opportunity for the board to view the new clean lab and observe students wiring a simple wall switch assembly in lab.

The meeting then resumed with Michoan providing an update on the Board Giving. She mentioned the number of donors was important and that the fiscal year is from 7/1-6/1. She also stated that when donating it is important to identify who or what program a contribution would be made to and the total amount of Board Giving is up to $11,825. Jason Goetz stated there should be an annual review of gifts by the board.

The council broke out into individual committees for 15-20 minutes.

Committee reports were made to the council.

Scholarship Committee Report:- Jason Goetz
Jason reported that the faculty is working to provide the board with nominees for this year's scholarships. Last year there were only three applicants with two applicants being rejected due to incomplete applications. Megan Orthmeyer also reported that there was a significant increase in applicants from CWU for the AGC scholarship. She also stated that there were 7 applicants with 6 interviews that were recently completed on campus by the scholarship selection committee. She did mention the interviews went very and that the selection committee was very impressed by all of the applicants.

Membership Committee Report-Ed Barry
Ed mentioned that there 6 new individuals were identified as potential advisory board members to put together a proposal to be reviewed by the committee. A motion was made to nominate Mitch Droz to the advisory board. The motion was passed to accept Mitch as a member for 4 years and Ed Barry would be in contact with Mitch to notify him the nomination passed. Ron Paine (Fowler Construction) was also nominated and contact would be made with him, if he accepts the nomination the board would vote via email. Rotations are up for several members and Michael Whelan was to provide an updated list of the potential candidates that would rotate off the board at the end of their specific terms.

Curriculum Committee Report-Chris Lang
Chris Lang reported on the courses that were reviewed this past year. The three courses reviewed included CMGT 440 – Heavy Civil Temporary Structures was reviewed by Phil Bogardus of Mowat Construction, CMGT 450- Soils and Foundations by Brandon Watts and CMGT 461- Pavement Design and Construction by Kentin Hill of Granite construction. Chris also mentioned that the review process is important and that courses should be reviewed every three years to maintain the program accreditation. Jake Smith agreed to review CMGT 442 Building Service Systems

Events and Outreach Committee Report-Warren Plugge
Warren Plugge reported on the status of the golf tournament. This year the tournament will be held on Tuesday, July 16, 2013 at 1pm on Druids Glen Golf Course. He also mentioned the goals for this tournament which would be to get over 88 players, 9 hole sponsors and 3 tournament sponsors. An additional goal would be to increase the number and type of door prizes. He also stated that the cost for a tournament sponsor would be $750 and $250 for a hole sponsor. Warren mentioned that there has been a door prize provided by Jayme Newbigging of Manson Construction for tickets to an upcoming Seahawk game. Warren also reported on the success of last Alumni Social which was held at McCormick &Schmicks below the AGC offices on Lake Washington. He stated that this was a unique social because both programs, Construction Management and Safety and Health Management had a combined social. The question was presented to the board about next year's social on whether to have a combined social with Safety and Health Management. Nick Lupo did mention that this would be a good idea since constructors do work closely with safety professionals in the field. In addition to the combined meeting, a discussion ensued on the location of the meeting. Several options were presented which included Cedarbrook Lodge near Seatac, Rockbottom Brewery in Bellevue and McKinstry Construction. Jason Goetz mentioned he would make contact to see if McKinstry Construction would be an option.

The next meeting will be **Thusday, October 10, 2013** at a location to be determined by the events committee. More details to follow.

5:33 pm. Jason Goetz adjourned the meeting.

Construction Management Advisory Council Standing Committees

Membership Committee	Events/Outreach Committee
Ed Barry	Warren Plugge
Troy Goodreau	Michoan Spoelstra
Pete Barlow	Allision Bujacich
Michael Whelan	Brandon Drexler
David Martin	Bill Bender
Chad Webley	Jake Smith
	Nick Lupo

Curriculum Review Committee	Scholarship Committee
Brandon Drexler, Chair	Jason Goetz, Chair
Chris Lang	Chris Lang
Brandon Watts	Bill Bender
Jim Gebhardt	Michoan Spoelstra
Jason Gill	Megan Orthmeyer (advisor)
Dave Carns	

CWU Construction Management Advisory Council
Treasurer's Report
Date: March 2014

Beginning Balance	$64,781.55
Income	$1,500.00
Expenses	$11,229.98
Total Change	($9,729.98)
Ending Balance	**$55,051.57**

Income Details

Kiewit Bridge and Marine	$1,500.00
	$1,500.00

Expenses

Four Print Heads for Reno Printers	$92.13
Conduit and Wire for CMGT 320	$194.44
Mixed-Use Team Jackets	$907.20
Meals and Lodging, Plugge	$114.65
Meals and Lodging, Plugge	$112.32
Reno Rooms for 28 Students	$7,709.24
Meals for 28 Students for Reno at $75 each	$2,100.00
	$11,229.98

Scholarship Fund Available Balance	**$25,387.26**

G. Assessment

1. Assessment of Student Learning Report, Fall 2013
2. Course Quality Improvement Plan Example, CMGT 450
3. 2014 CWU Construction Management Employer Survey Results

Central Washington University
Assessment of Student Learning
Construction Management Program
Engineering Technologies, Safety and Construction Department
College of Education and Professional Studies
Fall 2013

Introduction: This report is an overview of the student learning outcome assessment process. Included are the instruments utilized, data collected and the resulting changes that took place during the time period from June 2012 to June 2013. Discussion of the significance of the results is also included.

Contents:

2013 Graduating Class
Construction Management
Central Washington University

1. Program Mission and Goals

The primary mission for the Construction Management Program is to provide the highest possible quality general construction education to undergraduate students who are preparing for careers in the construction industry.

The secondary mission is to maintain ongoing contact with the construction industry and to provide support for this industry.

The Major Program Goals Are:

- Goal A: Improve the quality of instruction within the program
- Goal B: Provide support for the construction industry
- Goal C: Measurably improve the overall quality of the construction program
- Goal D: Support professional development for program faculty
- Goal E: Improve and expand the heavy/civil construction option within the program

2. Student Learning Outcomes and Assessment

Twenty eight specific student learning outcomes have been divided into **three primary categories.** These three primary student learning outcomes and a summary of the corresponding assessment methods are as follows:

Outcome	
1. Cognitive/Knowledge/Knowing	**Assessment Method, When Assessed, Students Assessed**
A. Graduates shall be able to identify and describe the legal, economic and social aspects of the construction industry, the construction process and construction contract systems.	Specific instruments in courses: CMGT 444, CMGT 445(fall quarter, seniors), 455 and CMGT 456. (winter, seniors).
B. Graduates shall demonstrate analytical skills and knowledge in the area of structures, construction finance, cost analysis, construction safety, construction materials, construction methods and building systems.	Specific instrument in courses: CMGT 485 (spring, seniors), IET 312 (winter, spring, juniors), CMGT 265 (fall, winter, sophomores), CMGT 460, 461 (spring, seniors), CMGT 320 (spring, juniors and seniors), CMGT 442 (winter, juniors and seniors), CMGT 450 (fall, seniors), CMGT 455, 456 (winter, seniors) and SHM 323 (fall, juniors). Also: AIC Exam section scores and employer survey responses (not every year, senior students and graduates).
2. Affective/Attitudes/Feelings and Values	**Assessment Method**
A. Graduates shall obtain employment as construction professionals in entry-level positions. Graduates shall also possess the skills, knowledge, attitude and behavior to advance within the industry.	Ethics assignments in CMGT 265 (fall, sophomores), CMGT 444 and CMGT 445 (fall, seniors). Also specific assignment in CMGT 265 (fall, sophomores) and lab scores in CMGT 267 (spring, sophomores). Also, employer survey (not every year) graduating senior survey, exit interview (spring, seniors).
3. Skills/Doing	**Assessment Method**
A. Graduates shall be able to estimate, plan and schedule a small commercial/residential or heavy/civil project using microcomputers and appropriate software.	Estimating final project (spring, juniors), AIC exam section on scheduling (spring, seniors), CMGT 447 final project (fall, seniors). Also, employer survey (not every year).

B. Graduates shall be able to demonstrate basic building and material testing skills and the proper use of construction software.	CMGT 267 (spring, sophomores), CMGT 450 (fall, seniors), CMGT 460 and CMGT 461 lab scores (spring, seniors). Employer survey (not every year).
C. Students graduating from the program shall be able to communicate clearly and effectively, orally, graphically and in writing.	Presentations in various courses, IET 161 final project (winter, freshmen and sophomores), CMGT 265 sketching exercises (fall, sophomores), CMGT 346 and CMGT 347 research paper (winter, juniors) and AIC exam section on Communication Skills (spring 2013). Also, employer survey. (not every year).

Complete details of all the student learning outcomes, corresponding program, department, college and university goals are available in the appendix of this report (Section 5A).

3. Assessment Instrument Table

In addition to assessment data collected in specific courses, the CMGT program uses other assessment instruments. The following table summarizes the instruments that are utilized to collect data, evaluate student learning outcomes and make changes to the construction management program. The instruments utilized to assess student learner outcomes are shown in bold italics in the table.

Instrument	Description	Where Implemented	Schedule	Feedback	Implementation of Change (Adjustment)
Student Evaluation of Instruction Forms (SEOI)	Standardized evaluations pertaining to course and instructor	Completed by each student in each course in the program	Every quarter, usually in the last week	Summary and individual comments supplied to instructor, ETSC Chair and Dean within three weeks	Faculty member adjusts course delivery/content. ETSC Chair, Personnel Committee and the Dean of CEPS may make suggestions
Continuous Quality Improvement (CQI)	Instructor self-evaluation pertaining to each course	Completed by each instructor at the conclusion of each course	Every quarter	Instructor implements changes	Faculty member adjusts course deliver/content
Exit Questionnaire	Written document completed by graduating seniors in June. Pertains to education and pending employment.	400 level course in the major	Administered each May or June by the ETSC Chair or CEPS Associate Dean	Results are summarized and discussed among the faculty and Chair	Faculty/program director implement changes for the upcoming academic year
Focus Group	Chair or Associate Dean conducts a focus group survey with all the graduating seniors, designed to identify program strengths and weaknesses	400 level course in the major	Administered each May or June	Chair or Associate Dean prepares short written report, results are discussed with program director	Faculty/program director implement changes for the upcoming academic year
Alumni Survey	Written survey pertaining to placement, duties, salary, job satisfaction and education at CWU is mailed to all alumni on record that graduated within the past five years		Five-year cycle	Detailed report is prepared	Information is shared with the Executive Members of the Advisory Council (re: job placement and salaries) and with program faculty. Helps to identify direction and satisfaction of program and areas that may need improvement

American Institute of Constructors CPC Level I Exam	National Exam designed for seniors/professionals	Required of all seniors as part of CMGT 488, Professional Certification	Administered every March or April	Summary report is prepared and submitted to the program coordinator each April or May	Results provide comparison with the national averages. These results are arranged by subject, allowing identification of relative strengths and weaknesses
Report of Change Form	Documentation of changes	At all levels	Continuous	Program faculty	Reporting mechanism

4. Narrative Report of Assessment of Student Learning Outcomes

Graduates of the CMGT program are very well received by industry, as indicated by the following measures:

A. Senior Surveys

On Tuesday, May 21, 2013 an exit questionnaire survey was distributed to seniors in the Construction Management program where 23 surveys were returned.

Employment: In June 2013: Of the 23 seniors, 22 indicated that they were graduating in June and of those 23, 19 (82%) had accepted full-time employment in the construction industry at the time of the survey. The average starting salary was $54,806. This salary was slightly lower than previous years.

Satisfaction: In addition the seniors were asked to rate their satisfaction pertaining to 14 aspects of their construction management education. A scale of 1 to 5 was used with 1 being "strongly disagree" and 5 being "strongly agree".

Most of the 14 areas received very favorable feedback with a rating of 4.0 or higher. An area that has, for several years, been a consistent issue with the program was safety. Last year in 2012 safety was rated at a 2.9, this year (2013) it was the only rating that fell below a 4.0 with an increase to 3.7. A very good reason why there has been an increase in this rating is through the efforts of a new safety professional teaching the course who has brought the course back to a more hands-on mode of delivery where students can relate to the material. This change in instructors has been a beneficial change to the program and should show an increase in the future with a state of the art safety lab, which will include several hands-on safety trainers incorporated into the lab. It should also be noted that the Safety program at the end of this year hired a new safety professor to start in the Fall of 2013. This will increase the number of professors in the safety program to two.

The 2012 to 2013 seniors rated the highest curriculum area of satisfaction in "Methods and Plan Reading" with a rating of 4.57. Other areas of strength in the program included "Engineering Concepts" and "Bidding and Estimating" both with ratings of 4.39. Interestingly, "Oral Communication" was also rated as an area of strength with a rating of 4.35. Finally, the "Competitiveness with other Programs" was the highest rated item with a rating of 4.65 which was slightly higher than 2012.

These survey results support student learner outcomes (or at least the senior students' perception of knowledge gained) in two of the three categories:

1. Cognitive/Knowledge/Knowing

B. Graduates shall demonstrate analytical skills and knowledge in the area of structures, construction finance, cost analysis, construction safety, construction materials, construction methods and building systems.

Item from survey	2013 Rating from survey
Engineering concepts	4.39
Construction methods and plan reading	4.57
Management concepts	4.35
Budgeting and cost control	4.13
Construction safety	3.70

3. Skills/Doing

A. Graduates shall be able to estimate, plan and schedule a small commercial/residential or heavy/civil project using microcomputers and appropriate software.

Item from survey	2013 Rating from survey
Bidding and estimating	4.39
Scheduling	4.22

B. Graduates shall be able to demonstrate basic building and material testing skills.

Item from survey	2013 Rating from survey
Surveying	4.17

C. Students graduating from the program shall be able to communicate clearly and effectively, orally, graphically and in writing.

Item from survey	2013 Rating from survey
Written communication	4.13
Oral communication	4.35

Students felt very satisfied with their written communication skills which increased from 2012 at 3.8 where oral communication dropped slightly in 2013 to 4.35 from 2012 at 4.5. It seems that the faculty have made a consistent effort to increase students written communication assignments into the CMGT since the students' satisfaction with written communication has increased above 4.0.

Employment Information:

Starting Salary 2013	$54,806			
Employment (Type of firm)	General contractor 78%	Specialty contractor 4%	Owner 0%	
Type of Work	Commercial 30%	Heavy/Civil (includes marine) 43%	Residential 4%	Other (Mechanical/Industrial) 4%

With an 83% placement rating there were a slightly higher number of graduates who had accepted positions with heavy/civil employers than commercial contractors. It is interesting that there were graduates who did accept positions with residential and utility contractors. Our data does seem to align with how the economy is on a slight comeback from previous years even though the average salaries has dropped slightly from previous years.

Other summary employment data is included below and the complete data from the survey is included in Appendix D.

B. On-Campus Recruiting

Again this year from June 2012 to June 2013, well over 50 companies have visited campus to recruit CMGT students for internships and permanent positions. Many of the visits were in conjunction with the November 2012 ETSC Career Fair (43 companies in attendance) in the Sub-Rec ballroom and a number of companies visited in the fall and winter quarters in Hogue Hall. For the most part, in the month of October every Monday through Wednesday evening was booked with a company visiting campus recruiting students for internships and final placement. All aspects of construction (residential, commercial, heavy/civil, marine and mechanical) were represented. Many of the companies stated that they have seen an increase in their backlogs which was the driving need to increase their hiring practices.

C. Focus Group Report

Students are generally satisfied with their learning and educational experience:

On May 22, 2013 Dr. Connie Lambert, Dean of College of Education and Professional Studies, held an informal focus group interview with 23 graduating seniors in Hogue room 227. Her findings are included in the form of a short report below.

May 22, 2013

To: Warren Plugge, Program Coordinator, Construction Management
From: Connie Lambert, Dean, College of Education and Professional Studies Re: Construction Management Senior Exit Interview

Date: Tuesday, May 21, 11:00-11:30 AM

Location: Hogue 227

Purpose: Construction Management Senior Exit Interview

I met with the senior Construction Management students and listened to their responses to three questions: strengths of the program, needs of the program and suggested improvements. The following is what was shared with me.

Strengths:
- Professor Carns
- Small class sizes
- Attending the Reno competition
- Meeting company representatives and having them recruit on campus
- Internships that allow for application of skills
- Embracing technology that is somewhat current

Needs:
- More than one professor with industry knowledge
- A class on Building Information Modeling (BIM)
- Keep the building and computer labs open later
- Estimating class that involves teams and a competition making it more like Reno
- More lab space

Suggested Improvements:
- Professor Martin is doing well except he docks points for format, which is "extreme"
- Professor Whelan seems to be teaching without understanding the content
- Professor Plugge gets angry when questioned and doesn't provide correct responses; he also changes the calendar to "crunch" exams toward the end of the quarter without returning assignments that can be used for studying
- More internships – make external industry internships mandatory vs. voluntary
- Allow an audit of some of the Heavy Civil courses – students said that they gained most of the information prior to taking the courses and felt some of the information was redundant. Also that it was frustrating when they thought they

knew more about the content than the professor. They suggested that a professional audit be allowed for 1) Utilities, 2) Estimating, 3) Temporary structures, and 4) Asphalt. They said that all four courses seemed to be based more teacher opinion without textbooks vs. actual information.

- Bring in more guest speakers from industry
- Provide seminars to "fill the gap" between courses (book knowledge) and industry realities
- Provide more field trips to job sites
- Narrow the course content in CMGT 320: Electrical Systems Design to usable information, such as utilities and underground
- Associate Constructor Exam – offer it as a 3hour/week option at the 400 level; take it in the fall vs. winter
- Provide more information on risk management
- Add "following the money flow" to the project management class

Recommendations:

- Since Professor Carns is perceived as a strength of the program, have him mentor Professors Whelan, Plugge, and Martin to ensure program delivery is consistent and cohesive.
- Review CMGT 320 content to ensure all information provided is critical
- Review internship requirements concerning whether having mandatory internships will benefit students and the program. Students stated that they were very valuable experiences in which they applied content knowledge to the "real world."
- In collaboration with industry professionals, review Heavy Civil course content to reduce redundancy while, at the same time, ensuring accreditation standards are met.

Conclusion: Students were unanimous that they "learned a lot" and that "the program is good." Others wanted me to know that the "commercial program is awesome."

Thank-you for the opportunity to visit with this group of seniors – I enjoyed my time with them.

Results and Changes: The students had many relevant comments and some good ideas and some have been implemented at the time of this report. For example, a licensed for Primavera P6 has been purchased and the software is being used fall quarter 2012 in CMGT 447, Construction Scheduling. The safety class, SHM 323, Construction Safety, has a new instructor and is being revamped to include many relevant hands-on labs such as: Confined Space Training, Lockout Tagout procedures, Fall Protection, Ladder Safety, Scissor Lift Safety, etc. The student comments about the computer lab were legitimate. This has been addressed with the completion of the new addition and renovation of the existing Hogue building, where two computer labs and a color printer are available.

D. AIC Exam

The American Institute of constructors (AIC) exam scores indicate extremely strong performance for students from the Construction Management Program at Central Washington University. Numerical results are utilized to provide data to evaluate student learner outcomes.

The AIC exam is required of all CMGT seniors in the spring of their year of graduation. This is a national, eight-hour comprehensive exam that tests and identifies ten areas of competency. In April 2011, 36 CMGT seniors took the exam and in and March 2012, 32 CMGT seniors took the exam.

In 2013 the average score for 26 Central students was 220.77/300 (74%), while the national average was 208.93/300 (70%). One thousand thirteen (1013) students took the exam nationwide. Results for 2013 are summarized below:

- 16 of the 26 (62%) students from CWU who took the exam passed. This was well below the 2012 pass rate of 91% and slightly lower than the 2011 pass rate of 67%.
- 537 of the 1013 (53%) students nationally passed.
- The average score from CWU was 74% slightly lower than 2012 average of 76% and 2011 average of 75%.
- It is noteworthy that three students scored above the 90th percentile and one of those students was an international student.
- Central students scored 4.4% higher than the national average in all ten of the subject categories with the categories of "Construction Geomatics" at the highest at 12.4% and lowest category "Construction Project Administration" at 1.9%.

The communication skills category, which involves reading and interpreting plans and written correspondence and writing business letters and memos, has been an issue, both at Central and nationally. It is worthwhile to note the positive trend for CWU students in this category over the past eight years. Other than a spike in 2009 the performance has risen each year.

Category	School	2013	2012	2011	2010	2009	2008	2007	2006	2005
Communication Skills	CWU	73%	71%	69%	67%	76%	65%	63%	59%	62%
	National Average	69%	69%	63%	64%	69%	55%	66%	64%	63%

The scores in the area of communication skills have shown slight improvement over the years and are above the national average but, until 2012, have been slightly below the current AIC designated minimum score of 70%.

The scores in the area of construction safety have increased slightly over the past seven years, while the national average in this category has remained fairly constant (see table below). This is likely as a direct result of the fact that a construction specific safety class, SHM 323, Construction Safety, was added to the major four years ago as a replacement for SHM 386, Occupation Safety and Health. This change was the result of student evaluations, senior performance on the AIC Level I exam in "Construction Safety" and alumni feedback.

Category	School	2013	2012	2011	2010	2009	2008	2007	2006	2005
Construction Safety	CWU	75.4%	72.9%	76.7%	78.1%	72.9%	73%	71%	68%	67%
	National Average	73.1%	72.5%	76.1%	75.8%	73.2%	70%	73%	72%	70%

The addition of this course appears to have helped the students, even though the exit interview (focus group) designates construction safety as an area of concern. In 2013 there was a slight increase in the category of Construction Safety at 75.4%, this increase was directly attributable to a new faculty member dedicated to construction safety. This faculty member has also made significant changes to the SHM 323 course paying particular attention the information provided in the course and increasing the level of rigor in the course.

E. Student Learning Outcomes Data

Assessment data from the latest assessment cycle of evaluating student learner outcomes is detailed below. This spreadsheet includes data collected through the end of this assessment cycle; June 2012 and June 2013. It also shows data collected for the last 5 years from 2008 to 2013.

Assessment Data, Student Learner Outcomes
Central Washington University Construction Management Program

Data From Assessment Measures

Outcome	March 2008-March 2009 Year: 2008/2009					March 2009-March 2010 Year: 2009/2010					March 2010-March 2011 Year: 2010/2011					March 2011-June 2012 Year: 2011/2012							September 2012-June 2013 Year: 2012/2013						
		Measure 1		Measure 2			Measure 1		Measure 2			Measure 1		Measure 2			Measure 1		Measure 2		Measure 3*			Measure 1		Measure 2		Measure 3*	
1. Cognitive/Knowledge/Knowing	Target	Actual	Variance	Actual	Variance	Target	Actual	Variance	Actual	Variance	Target	Actual	Variance	Actual	Variance	Target	Actual	Variance	Actual	Variance	Actual	Variance	Target	Actual	Variance	Actual	Variance	Actual	Variance
A **Description**																													
A **Legal, Economic, Social**																													
A1 Contracts	80%	88%	8%			80%					80%	79%	-1%			80%	91%	11%					80%	83%	3%				
A2 Laws	80%	76%	-4%			80%					80%					80%							80%						
A3 Dispute resolution	80%	68%	-12%	88%	8%	80%					80%	83%	3%			80%	94%	14%					80%	91%	11%				
A4 Management principles	80%	72%	-8%			80%	87%	7%	82%	2%	80%	79%	-1%	69%	-11%	80%	76%	-4%		-80%			80%	89%	9%	81%	1%		
B **Analytical and Systems**																													
B1 Accounting	80%					80%					80%					80%							80%						
B2 Mathematics and sciences	80%	70%	-10%			80%	58%	-22%			80%	69%	-11%			80%	79%	-1%	76%	-4%	73%	-7%	80%	68%	-12%		-80%		-80%
B3 Wood, steel and concrete	75%	84%	9%			75%	84%	9%			75%	75%	0%	94%	19%	75%	81%	6%	84%	9%			75%	77%	2%	76%	1%		
B4 Structural mechanics	80%	83%	3%			80%	83%	3%			80%	84%	4%			80%	92%	12%					80%	84%	4%				
B5 Electrical and mechanical	80%	89%	9%	87%	7%	80%	84%	4%			80%	84%	4%	91%	11%	80%	89%	9%	91%	11%			80%	87%	7%		-80%		
B6 Soils and foundations	80%	97%	17%			80%	88%	8%			80%	91%	11%			80%	93%	13%					80%	81%	1%				
B7 Financing and money	70%	82%	12%			70%	78%	8%			70%	78%	8%			70%	77%	7%	79%	9%			70%	73%	3%		-70%		
B8 Construction safety	70%	73%	3%			70%	78%	8%			70%	78%	8%			70%	77%	7%	73%	3%			70%	73%	3%		-70%		
B9 Project administration	70%	76%	6%			70%	76%	6%			70%	76%	6%			70%	75%	5%	77%	7%			70%	71%	1%		-70%		
B10 Project planning	80%	95%	15%	95%	15%	80%	88%	8%	100%	20%	80%	84%	4%			80%		-80%					80%	89%	9%	88%	8%		
2. Affective/Attitudes/Feelings and Values																													
A **Attitudes and Behavior**																													
A1 Ethical issues	80%	86%	6%	90%	10%	80%	85%	5%	92%	12%	80%	82%	2%			80%	95%	15%	88%	8%			80%	62%	-18%	83%	3%		
A2 Team players	80%	89%	9%			80%	89%	9%			80%	89%	9%			80%	87%	7%					80%		-80%				
A3 Industry organizations	80%		-80%	Not Assessed		80%		Not Assessed			80%					80%	71%	-9%					80%	89%	9%	79			
3. Skills/Doing																													
A **Plan and Schedule**																													
A1 Quantity take off	90%	93%	3%	98%	8%	90%	94%	4%			90%	96%	6%			90%	95%	5%					90%		-90%				
A2 Bid preparation	90%	88%	-2%			90%	89%	-1%			90%	95%	5%			90%	91%	1%	84%	-6%			90%	82%	-8%	78%	-12%		
A3 Network schedule	70%	94%	24%	80%	10%	70%	92%	22%	82%	12%	70%	94%	24%	82%	12%	70%	78%	8%	94%	24%	78%	8%	70%	74%	4%		-70%	78%	8%
B **Material Testing**																													
B1 Soils and concrete testing	80%	90%	10%	86%	6%	80%	94%	14%	86%	6%	80%	87%	7%	93%	13%	80%	90%	10%	92%	12%	90%	10%	80%	91%	11%	88%	8%	93%	13%
B2 Surveying equipment	80%	91%	11%			80%	91%	11%			80%	93%	13%			80%	87%	7%	89%	9%			80%		-80%		-80%		
C **Communication**																													
C1 Technical oral report	80%	85%	5%	92%	12%	80%	82%	2%			80%	89%	9%			80%		-80%					80%	90%	10%				
C2 Business presentation	80%					80%					80%					80%							80%						
C3 Prepare working drawings	80%	90%	10%			80%	88%	8%			80%	90%	10%			80%		-80%					80%		-80%				
C4 Sketching and drawing	80%	88%	8%			80%	81%	1%			80%	90%	10%			80%	83%	3%					80%	83%	3%	93%	13%		
C5 Technical written report	80%	85%	5%	96%	16%	80%	74%	-6%			80%	85%	5%			80%		-80%					80%	87%	7%				
C6 Business writing	70%	76%	6%			70%	67%	-3%			70%	67%	-3%			70%	69%	-1%	71%	1%			70%	69%	-1%		-70%		

Shading indicates the data was collected in the spring of 2008
This is included in the March 2008 to March 2009 report
Shading indicates the data was collected from the April 2009 AIC Exam

Shading indicates the data was collected in the spring of 2009
This is included in the March 2009 to March 2010 report
Shading indicates the data was collectd from the March 2010 AIC Exam

*Measure 3 was used for this time period because it covers from March 2011 to June 2012; four academic quarters

There are 28 specific student learner outcomes that have been identified for assessment and continuous quality improvement and, at the time of this writing, data is available for nearly all of the outcomes, as indicated in the table above. Although this is a work in progress, the most recent data indicates that students are at or above the target values for nearly all measures except as noted below.

In the category of Cognitive/Knowledge/Knowing, A. During this assessment cycle the students were slightly above the target values in all areas. These values also show students improved in the area of Management Principles from -4% (2012) to a +9% and +1% (2013) for Outcome 1.A4. Students are exposed to this area in two courses, CMGT 455 and CMGT 456, senior courses that cover construction management applications. Scores continue to be above the target areas in contracts and dispute resolution.

In the category of Cognitive/Knowledge/Knowing, B. (Graduates shall demonstrate analytical skills and knowledge in the area of structures, construction finance, cost analysis, construction safety, construction materials, construction methods and building systems), students have performed very well. In fact, scores continue to remain strong, especially in the areas of Electrical and Mechanical Systems, Soils and Foundations, Financing and Money and Project Planning. It should be noted that the data from item 1.B2, Mathematics and Science, indicates values of only 12% below the target value of 80% from this assessment. This is an 11% decrease from previous reporting cycles. This item is assessed in IET 312, Strength of Materials, and is based on a calculus-based exam questions. Students continue to improve but, at times, struggle with calculus applications. The plan continues to emphasize integral applications in the future in this course (and others) in an attempt to strengthen students' understanding of these concepts and applications.

It should be noted that students appear to be very strong in the areas of understanding ethical issues, Construction Scheduling, Surveying and Project Layout and Engineering Concepts. This last data is supported by relatively high scores in the areas of project planning and scheduling and Surveying and Project Layout on the Spring 2013 AIC exam.

AIC exam results, Spring 2013:

Category	Possible Score	Minimum Acceptable Score	CWU School Average	National Average
Planning, Scheduling and Control	45	32 (71%)	34.88 (78%)	34.45 (74%)
Construction Geomatics	7	5 (71%)	5.50 (79%)	4.64 (66%)
Budgeting and Cost Control	33	23 (70%)	25.62 (78%)	24.02 (73%)
Bidding and Estimating	45	32 (71%)	31.15 (69%)	29.21 (65%)

As this data-based assessment process continues it will be possible in future years to identify trends and incorporate changes into the program to help provide the students with an even better education.

5. Appendix: Supporting Documents and Data

A. **Complete Learner Outcomes, Tied to Department, College, University Goals**
B. **AIC Exam Results, Spring 2013**
C. **Exit Interview Form, Spring 2013**
D. **Senior Survey Data, Spring 2013**
E. **Report of Change Forms**

A. Complete Learner Outcomes, Tied to Department, College, University Goals

Student Learning Outcomes (performance, knowledge, attitudes)	Related Program Goals	Related Departmental Goals	Related College Goals	Related University Goals	Method(s) of Assessment	Who Assessed	When Assessed	Standard of Mastery/ Criterion of Achievement (How good does performance have to be?)
1.Cognitive/Knowledge/Knowing								
A. Graduates shall be able to identify and describe the legal, economic and social aspects of the construction industry, the construction process and construction contract systems.	Goal A. Improve the quality of instruction in the program.	1. To nurture excellent programs in Technology, and Engineering Technology related disciplines by maintaining or obtaining national accreditation in the following programs.	Goal 1 - Provide for an outstanding academic and professional growth experience for students at all CWU locations. Goal 2 - Prepare students to participate in an increasingly diverse economy and environment.	Goal I: Maintain and strengthen an outstanding academic and student life on the Ellensburg campus. Goal V: Achieve regional and national prominence for the university.				

1. The student shall be able to identify and explain construction contracts and the roles and responsibilities of all parties involved with 80% accuracy.					CMGT 444 and CMGT 445 Exam	Seniors	Fall	80%
2. The student shall demonstrate knowledge of lien laws, local and national labor laws and the contractors' and owners' rights pertaining to these areas with 80% accuracy.					CMGT 444 and CMGT 445 Final Exam	Seniors	Fall	80%
3. The student shall be able to explain various construction dispute resolution techniques and various steps that may be taken to avoid disputes with 80% accuracy.					CMGT 444/445 Exams	Seniors	Fall	80%
4. Students shall be able to describe basic management principles, organizational behavior and structure as these related to the construction industry with 80% accuracy.					CMGT 455/456 Quizzes or Assignments	Seniors	Spring	80%

B. Graduates shall demonstrate analytical skills and knowledge in the area of structures, construction finance, cost analysis, construction safety, construction materials, construction methods and building systems.	Goal A. Improve the quality of instruction in the program.	1. To nurture excellent programs in Technology, and Engineering Technology related disciplines by maintaining or obtaining national accreditation in the following programs.	Goal 1 - Provide for an outstanding academic and professional growth experience for students at all CWU locations.	Goal I: Maintain and strengthen an outstanding academic and student life on the Ellensburg campus. Goal V: Achieve regional and national prominence for the university.				
1. Students shall demonstrate an understanding of managerial accounting techniques as they relate to the construction industry with 80% accuracy.					CMGT 485 Exam or Assignment	Seniors	Spring	80%
2. Students shall demonstrate an understanding of mathematics and science; including chemistry, physics and mathematics through calculus with 80% accuracy.					IET 312 exam question on shear and moment diagrams	Juniors	Winter or Spring	80%

3. The student shall demonstrate knowledge of types and uses of construction materials, including wood, steel and concrete. This knowledge shall include understanding terminology, units of measure, sizes and gradations, standard designations, specifications and testing techniques, with 75% accuracy.					CMGT 265 Exam questions CMGT 460/461, average of exam 1	Sophomores Seniors	Fall or Winter Spring	75% 75%
4. Students shall demonstrate knowledge in the areas of structural mechanics, including statics and strength of materials with 80% accuracy.					IET 311 Exam, Find reactions for a beam	Juniors	Fall or Winter	80%
5. Students shall demonstrate an understanding of, electrical and mechanical systems with 80% accuracy.					CMGT 320, Assignment to calculate the electrical load for a house CMGT 442, Assignment to calculate the heat load for a building	Juniors/seniors Juniors/Seniors	Winter Spring	80% 80%
6. Students shall demonstrate knowledge of soil mechanics and foundation types and principles of design with 80% accuracy.					CMGT 450, Assignment to calculate the bearing capacity of a shallow foundation	Seniors	Fall	80%

7. Students shall demonstrate a working knowledge of construction cost accounting, financing, insurance, bonding, bidding and procurement practices, depreciation and expensing, cost forecasting, cash flow requirements, time value of money and project payment procedures, with 70% accuracy.					AIC Exam section; Budgeting, Costs and Cost Control, overall scores of CMGT seniors	Seniors	Spring	70%
8. The student shall demonstrate knowledge of construction safety training, procedures, record keeping, maintenance, inspection, penalties and compliance with state and federal regulations with 70% accuracy.					AIC Exam section; Construction Safety, overall scores of CMGT seniors SHM 323 Final exam, average scores	Seniors Juniors	Spring Fall	70% 70%
9. Students shall demonstrate an understanding of construction project management; including concepts, roles and responsibilities of individuals, administrative systems and procedures, cost control systems, proper job site and office documentation and quality control philosophies and applications with 70% accuracy					AIC Exam section; Management Concepts, overall scores of CMGT seniors	Seniors	Spring	70%
10. Students shall be able to demonstrate knowledge of site mobilization and short term project planning, including staffing, material requirements and equipment selection and utilization with 80% accuracy.					CMGT 455/456 Project	Seniors	Spring	80%

2.Affective/Attitudes/Feelings/Values								
A. Graduates shall obtain employment as construction professionals in entry-level positions. Graduates shall also possess the skills, knowledge, attitude and behavior to advance within the industry.	Goal A. Improve the quality of instruction in the program.	1. To nurture excellent programs in Technology, and Engineering Technology related disciplines by maintaining or obtaining national accreditation in the following programs. 5. Continuously improve the cultural educational environment.	Goal 4 - Build mutually beneficial partnerships with alumni, industry, professional groups, institutions, and the communities surrounding our campus locations.	Goal I: Maintain and strengthen an outstanding academic and student life on the Ellensburg campus. Goal V: Achieve regional and national prominence for the university.				
1. Students shall be able to identify and understand ethical issues relevant to the various parties in the construction process, and to react in a manner consistent with ethical standards established by the construction industry associations, with 80% accuracy.					Average scores of CMGT 265 ethics assignments Average score of CMGT 444/445 ethics assignment	Sophomores Seniors	Fall or Winter Fall	80% 80%
2. Students shall demonstrate the ability to work in groups and act as team players, with a success rate of 80%.					Average scores on CMGT 267 final project	Sophomores	Spring	80%

3. The student shall demonstrate knowledge of construction industry organizations, such as; The Associated General Contractors of America (AGC), The National Association of Home Builders (NAHB), The Mechanical Contractors Association (MCA), The American Council for Construction Education and The American Institute of Constructors. Students shall also demonstrate knowledge of the commitment and importance of these organizations to society, with 80% accuracy.					CMGT 265 Assignment or exam	Sophomores	Fall/Winter	80%

3. Skills/Doing								
A. Graduates shall be able to estimate, plan and schedule a small commercial/residential or heavy/civil project using microcomputers and appropriate software.	Goal A. Improve the quality of instruction in the program.	1. To nurture excellent programs in Technology, and Engineering Technology related disciplines by maintaining or obtaining national accreditation in the following programs. 5. Continuously improve the cultural educational environment.	Goal 1 - Provide for an outstanding academic and professional growth experience for students at all CWU locations. Goal 5 - Provide professional, high-quality staffing, facilities, technologies, and appropriate resources to ensure the highest levels of academic and professional development.	Goal I: Maintain and strengthen an outstanding academic and student life on the Ellensburg campus. Goal V: Achieve regional and national prominence for the university.				

1. Students shall be able to perform accurate detailed quantity takeoffs on a commercial/residential project, including all Construction Specification Institute (CSI) divisions, both manually and utilizing Microsoft Excel, with a success rate of 90%.					CMGT 343 Final project scores	Juniors	Winter	90%
2. Students shall be able to accurately prepare a bid, based on pricing of materials, labor, equipment, overhead and profit for a commercial/residential or heavy/civil project. In addition, students choosing the general construction option shall be able to utilize estimating software, such as Timberline, to create and submit a bid for a residential/commercial project. Students choosing the heavy/civil construction option shall be able to estimate and bid a heavy/civil project using appropriate software, with an accuracy rate of 90%.					CMGT 344/345 Final Project	Juniors	Spring	90%

3. Students shall be able to prepare, analyze and update both a Gantt chart and a network (critical path method) schedule for a commercial/residential or heavy/civil project, both manually and utilizing scheduling software (Microsoft Project, SureTrak or similar scheduling software), with a success rate of 70%.					AIC Exam section; Planning, Scheduling and Control, overall score of CMGT seniors CMGT 447 Final project average score	Seniors Seniors	Spring Fall	70% 70%

B. Graduates shall be able to demonstrate basic building and material testing skills.	Goal A. Improve the quality of instruction in the program.	1. To nurture excellent programs in Technology, and Engineering Technology related disciplines by maintaining or obtaining national accreditation in the following programs. 5. Continuously improve the cultural educational environment.	Goal 1 - Provide for an outstanding academic and professional growth experience for students at all CWU locations. Goal 5 - Provide professional, high-quality staffing, facilities, technologies, and appropriate resources to ensure the highest levels of academic and professional development.	Goal I: Maintain and strengthen an outstanding academic and student life on the Ellensburg campus. Goal V: Achieve regional and national prominence for the university.				
1. Students shall demonstrate the ability to perform basic field and lab tests on construction materials, including concrete, and soils with 80% accuracy.					CMGT 450, Overall average lab scores CMGT 460/461, Slump and cylinder tests, overall average lab report scores	Seniors Seniors	Fall Spring	80% 80%

2. Students shall demonstrate the ability to properly use and care for construction surveying instruments, including levels, transits, theodolites, tapes and electronic distance measuring devices, as these instruments relate to construction projects, with 80% accuracy.					CMGT 267 Lab, overall average lab scores	Sopho mores	Spring	80%

C. Students graduating from the program shall be able to communicate clearly and effectively, orally, graphically and in writing.	Goal A. Improve the quality of instruction in the program.	1. To nurture excellent programs in Technology, and Engineering Technology related disciplines by maintaining or obtaining national accreditation in the following programs. 5. Continuously improve the cultural educational environment.	Goal 1 - Provide for an outstanding academic and professional growth experience for students at all CWU locations. Goal 2 - Prepare students to participate in an increasingly diverse economy and environment.	Goal I: Maintain and strengthen an outstanding academic and student life on the Ellensburg campus. Goal V: Achieve regional and national prominence for the university.				

1. Students shall be able to effectively prepare and present a technical oral report on various construction topics, with 80% success					CMGT 346/347 Student presentation average scores	Juniors	Winter	80%
2. Students demonstrate the ability to make business and professional oral presentations, with 80% success.					CMGT 485 Student presentation average scores	Seniors	Spring	80%
3. Students shall demonstrate the ability to prepare and edit a complete set of working drawings for both a residential or commercial building using AutoCAD software, with 80% accuracy.					1 Final project average score	Freshmen/Sophomores Juniors/Seniors		80%
4. Students shall be able to communicate graphically using standard sketching and engineering drawing techniques, including proper dimensioning, orthographic projections, sections, auxiliary views and detail views, with 80% accuracy.					CMGT 265 Sketching and drawing assignments, average scores	Sophomores	Fall/Winter	80%

5. Students shall be able to properly research a topic, using the reference materials at the library, the Internet and industry resources to prepare written technical reports, with 80% accuracy.					CMGT 346/347 Research paper average score	Juniors	Winter	80%
6. Students shall be able to clearly demonstrate their written communication skills by writing prose, business letters, resumes, and daily job reports that include proper grammar, spelling and sentence structure, with a 70% success rate.					AIC Exam section; Communication Skills on written skills, overall score of CMGT seniors	Seniors	Spring	70%

B. AIC Exam Results, Spring 2013

AIC - Constructor Certification Commission

School Report
(Graduating Seniors)

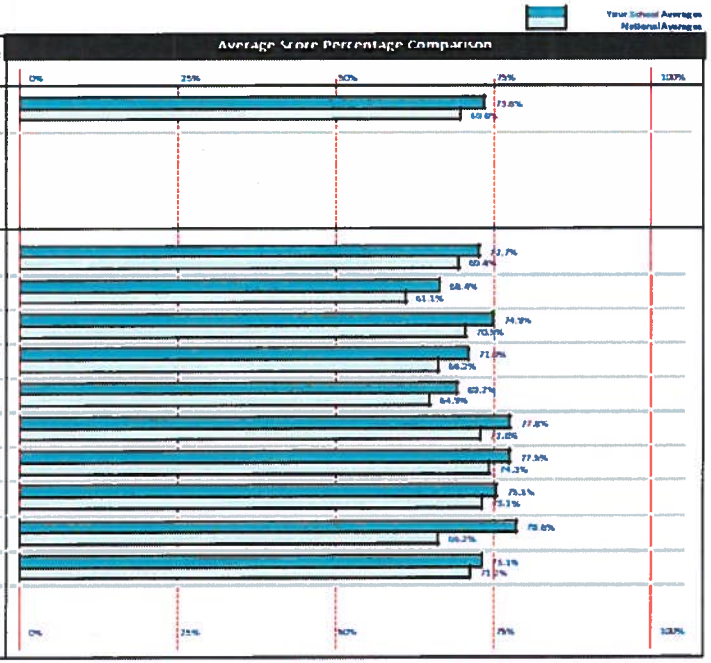
Central Washington University (WA001)

CQE Level 1 - Construction Fundamentals - April 2013

	Your School Candidates	National Candidates
Number of Candidates Tested:	26	1013
Number of Candidates Passed:	16	537
Number of Candidates Failed:	10	476

Score Summaries Total Score	School Average	National Average	Max Possible	Passing Score
Average Total Score	220.77	208.93	300	210
Highest Total Score	255	272		
Lowest Total Score	170	75		
Area Scores (Averages)	**School Average**	**National Average**	**Max Possible**	**Min Acceptable**
Communication Skills	22.54	21.52	31	22
Engineering Concepts	9.96 **	9.16	15	11
Management Concepts	26.96	25.39	36	25
Materials, Methods, and Project Modeling and Visualization	22.00	20.53	31	22
Bidding and Estimating	31.15 **	29.21	45	32
Budgeting, Costs, and Cost Control	25.62	24.02	33	23
Planning, Scheduling, and Schedule Control	34.88	33.45	45	32
Construction Safety	15.85	15.35	21	15
Construction Geomatics	5.50	4.64	7	5
Project Administration	26.31	25.65	36	25

** *Indicates areas of weakness*



CENTRAL WASHINGTON UNIVERSITY

Your future is Central.

DEPARTMENT OF INDUSTRIAL AND ENGINEERING TECHNOLOGY

Construction Management Exit Interview Questionnaire

This form is confidential and will be used for program assessment purposes. It is to be completed prior to graduation from the Construction Management program.

Name (optional) _____ Graduation Date _____

A. Background:

1. Why did you choose the CMGT program at CWU? _____
_____

2. What previous construction-related experience have you had? _____
_____

3. What other college level education have you had prior to coming to CWU?

_____ None

_____ Community College, No Degree

_____ Community College, Associate Degree

_____ Other University, _____ Number of hours

_____ University Degree, Program _____

4. How did you hear about the CWU program? _____
_____

B. Post-graduation employment:

1. Have you accepted a position? _____ yes _____ no (skip to question 3)

2. If yes, position title _____

Starting Salary _____ Starting Date _____

Company Name _____

Company Address _____

_____

- How would you best categorize this company (circle all that apply)?

General Contractor Specialty Contractor Supplier Owner Self-employed Other

- Type of work associated with your employer _____

(commercial, residential, heavy/civil, marine, utility, mechanical, electrical, industrial, etc.)

- How did you become aware of this position? _____

_____

- What factors were important in making this decision?

3. If you have not accepted a position, what is your career objective?

- Have you interviewed? _____ no _____ yes _____ number of companies

C. Continuing Education

Do you plan to obtain additional education? _____no _____ yes

_____ Graduate School - Type of Program _____

_____ Other BS program _____

_____ Special Certifications _____

D. Construction Management Education from Central Washington University

How strongly I agree that...					
	Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
my education experience at CWU prepared me to compete with graduates from other construction programs.	O	O	O	O	O
my studies at CWU contained a good balance between theory and application.	O	O	O	O	O
the CMGT program adequately developed my written communication skills.	O	O	O	O	O
the CMGT program adequately developed my oral communication skills.	O	O	O	O	O
the CMGT program adequately developed my computer skills (spreadsheets, estimating, scheduling, CAD).	O	O	O	O	O
the CMGT program prepared me well in the area of engineering concepts and applications (statics, strength of materials, soils, etc.)	O	O	O	O	O
the CMGT program prepared me well in the area of management concepts.	O	O	O	O	O
the CMGT program prepared me well in the area of materials, methods and plan reading.	O	O	O	O	O
the CMGT program prepared me well in the area of bidding and estimating.	O	O	O	O	O
the CMGT program prepared me well in the area of budgeting, costs and cost control.	O	O	O	O	O
the CMGT program prepared me well in the area of planning and scheduling.	O	O	O	O	O
the CMGT program prepared me well in the area of construction safety.	O	O	O	O	O
the CMGT program prepared me well in the area of surveying and project layout.	O	O	O	O	O
the CMGT program prepared me well in the area of project administration.	O	O	O	O	O

E. General Comments

1. What specific curriculum changes (course additions, course deletions, course changes) would you recommend?

2. What do you consider to be the major strengths or most positive aspects of the construction management program?

3. What suggestions (physical facilities, industry involvement, faculty, etc.) would you like to make relative to making improvements to the construction management program?

4. Other comments?

D. Senior Survey Data, Spring 2013

2013 CMGT Senior Focus Group Survey Data

Year: 2013
Date: 20-May-13
Surveys: 23

Satisfaction Level

1 Strongly disagree
2 Disagree
3 Neutral
4 Agree
5 Strongly agree

No.	Comments	June Grad	Full-time Job	Salary	Type of Firm	Type of Work	Continue Education	competitive other programs	good balance	written comm.	oral comm.	computer skills	engr. concepts	manage. concepts	methods plan rdg	bidding estimating	budgeting cost control	scheduling	safety	surveying	project administration
1	small class size, Reno, building hrs	1	1	60000	GC	H/C		4	4	3	5	4	4	4	4	4	4	4	4	4	4
2	small class size, professors, build. Hrs	1					1	5	4	3	3	4	5	4	5	5	4	4	4	5	4
3	more mech., internships	1	1		Specialty	Utility	1	5	5	4	4	4	4	4	4	4	4	4	4	4	4
4	internships	1	1	65000	GC	H/C		4	4	4	3	4	3	4	4	4	4	3	3	3	4
5	more software use	1	1	41000	GC	H/C		4	4	3	3	3	4	4	4	4	4	4	3	4	3
6	class size and professors	1	1	60000	GC	Commercial		5	5	4	5	5	5	5	5	5	5	5	4	4	5
7	engineering concepts	1	1	57000	GC	Commercial		5	5	4	5	4	4	4	5	4	4	4	4	3	5
8	computer software, Reno, MCA	1	1	61000	GC	Commercial		5	4	5	5	4	5	5	5	5	5	5	5	4	5
9	computer programs, Reno						1	5	5	5	5	5	5	5	5	5	5	5	4	5	5
10	BIM	1	1	52000	GC	Residential		4	4	4	4	5	4	4	4	4	4	5	3	4	4
11	computer programs	1	1	52800	GC	H/C	1	5	4	5	4	3	4	4	5	5	3	3	2	5	4
12	program	1	1	53250	GC	Commercial	1	4	4	4	4	3	4	5	4	4	4	4	3	4	4
13	computers	1	1	42500	GC	H/C		4	4	3	5	1	4	4	3	2	4	3	5	3	4
14	use of software	1	1	55150	GC	Commercial	1	5	5	5	5	5	5	5	5	5	5	5	3	5	5
15	small class size	1	1	56000	GC	Commercial		5	4	4	5	4	5	5	5	5	4	3	3	4	4
16	more Reno	1						4	4	5	4	4	5	4	5	4	4	4	4	4	4
17	bulding hrs, computer programs	1	1		GC	H/C		5	4	5	5	5	5	5	5	5	4	5	3	5	4
18	small class size, computer programs	1					1	5	4	5	5	5	5	5	5	5	5	5	3	5	5
19	technology, recruiting companies	1	1	54000	GC	Commercial		5	5	4	4	5	4	4	4	4	4	5	4	4	4
20	heavy bid	1	1	59000	GC	H/C	1	5	5	4	4	5	5	4	5	5	4	4	5	5	4
21		1	1	51000	GC	H/C		4	4	3	4	3	4	3	4	4	3	4	4	4	3
22		1	1		GC	H/C	1	5	4	5	5	4	4	5	5	5	4	5	4	4	4
23	software	1	1	57200	GC	H/C	1	5	4	4	4	3	4	4	5	4	4	4	4	4	4
24																					
25																					
26																					
27																					
28																					
29																					
30																					
31																					
32																					
33																					
34																					
35																					
36																					
37																					
38																					
39																					
		22	19	$54,806			10	4.65	4.30	4.13	4.35	4.00	4.39	4.35	4.57	4.39	4.13	4.22	3.70	4.17	4.17

Employment Industry Type

Comercial	7
H/C	10
Mechanical	
Residential	1
Other	1

Common Comments:

More software training
Increase building hours
Make internships mandatory

19 of 23 respondents indicated full time employment

E. Report of Change Forms

Report of Change

Program Assessment, Construction Management
Central Washington University

Date of report: September 1, 2012 Name: Warren Plugge

Description of concern:

Dave Carns and Bill Bender are scheduled to go on phased retirement starting Fall of 2012.

How and when the concern was identified:

Concern was identified in the Spring 2012.

Actions taken or to be taken:

Starting Fall 2012 Dave Carns will teach courses in the Fall and Winter quarters and Bill Bender will teach courses in the Winter and Spring quarters.

Review method and timeline:

With the additional faculty these changes have created a seamless transition between faculty members.

Report of Change

Program Assessment, Construction Management
Central Washington University

Date of report: Winter 2013 Name: Warren Plugge

Description of concern:

With CMGT 320 being offered in the Spring quarter, this does not align with the proper flow of classes into the curriculum.

How and when the concern was identified:

Concern was identified due to conflicts with student schedules in their senior year.

Actions taken or to be taken:

Move CMGT 320 from Spring to Winter quarter.

Review method and timeline:

CMGT 320 will be offered in Winter 2014 instead of Spring.

Report of Change

Program Assessment, Construction Management
Central Washington University

Date of report: November 15, 2012 Name: Warren Plugge

Description of concern:

Use of Microsoft Project is slowly being phased out from most companies. Owner demands have required contractors to use P6.

How and when the concern was identified:

Industry advisory board suggested changing from Microsoft Project to P6 during a industry advisory board meeting due to its usage across multiple projects and companies.

Actions taken or to be taken:

P6 is being used in place of Microsoft Project. This program has been added to all computers in our labs.

Review method and timeline:

Since this is the first year the program there were several bugs that have had to be worked out to make the program functional with the computers on campus and get it ready for student use. This is an issue with many programs used within the Construction Management program.

Report of Change

Program Assessment, Construction Management
Central Washington University

Date of report: September 1, 2012 Name: Warren Plugge

Description of concern:

Additional CMGT faculty.

How and when the concern was identified:

Not necessarily a concern, but with Dave Carns and Bill Bender taking half time phased retirement this has created a need for a new faculty member.

Actions taken or to be taken:

Starting September 1, 2012 Professor David Martin was hired to teach many of the commercial courses including Blueprint Reading, Scheduling, Estimating I and Estimating II for Commercial Construction and Concrete.

Review method and timeline:

David Martin has integrated very well with existing faculty and the students.

Course Quality Improvement
CMGT 450 Soils and Foundations, Fall 2013

Course	CMGT 450	Soils and Foundations
Quarter	Fall 2013	
Instructor	Dave Carns	
Enrollment	31 Students	

Grading:

Homework (including lab assignments and projects)	120 pts
Exam No. 1	100 pts
Exam No. 2	100 pts
Final Exam	120 pts
Total Points	440 pts

Grade Distribution:

	2013	2012	2011
A	7	6	7
A-	4	2	3
B+	2	4	2
B	7	6	18
B-	5	1	0
C+	4	5	2
C	1	0	1
C-	0	0	0
D+	0	0	1
D	1	1	0
F	0	0	0
I			1

Exams	2013 Average	2012 Average	2011 Average
No. 1	89/100	83/100	79/100
No. 2	79/100	82/100	85/100
Final	97/100	98/120	102/120

Comments:

Last year, due to a dip in enrollment in the CMGT program (due to the economy) enrollment was also down in this course; from a typical number of 36 to 25 and this year it was back up a bit, to 31 students. This course was offered in the format of 3 hours of lecture per week and two, two hour labs, with students attending one of the labs. Some of the lab times were used for guest speakers and open note, open book exams, as there were six actual labs. Grades and scores seem very comparable to previous years, with a fairly consistent distribution of grades over the past three years. I did note that this year the average on the first exam was a bit higher than usual but the scores on the second exam and final exam were a bit lower. The students seemed to enjoy the class as a whole, and SEOI numerical results and written comments were very positive. Only 7 of the 31 enrolled students who completed the SEOI forms (a 23% response rate). This is terrible and very disappointing…of course I remind the students to complete the forms on-line but I think they get lazy or forgetful toward the end of the quarter.

Student Evaluations from SEOI Forms

From Item No. 5, Teaching for Student Learning

All 12 items, 2a. through 2l. show a student response significantly above both the department, college and university mean:

	Student Numerical Response			
Item	**CMGT 450 (Carns)**	**Department (ETSC)**	**College (CEPS)**	**University**
2a	4.83	4.22	4.40	4.34
2b	5.00	4.14	4.31	4.25
2c	4.83	4.05	4.28	4.18
2d	4.83	4.31	4.48	4.43
2e	5.00	4.09	4.28	4.26
2f	5.00	4.08	4.29	4.28
2g	5.00	3.93	4.23	4.16
2h	5.00	3.93	4.22	4.19
2i	5.00	4.19	4.30	4.26
2j	5.00	4.20	4.33	4.25
2k	5.00	4.27	4.51	4.33
2l	5.00	4.34	4.40	4.33

Comments:

Student Comments: The following student comments are taken from the on-line SEOI form:

CENTRAL WASHINGTON UNIVERSITY - STUDENT EVALAUTION OF INSTRUCTION

CEPS — **Fall 2013 - Form A**

IET — **Form A - Lecture**

CMGT450.001, Soils and Foundations

David Carns

3. What aspects of the teaching or content in this course do you feel were especially good?

- Good lectures and it was obvious that he wanted us to understand material. carns does a good job to make sure we have all the materials needed to understand the work.

- In class examples that related to the homework

- The guest speakers were helpful to understand how the industry works.

4. What changes could be made to improve learning in this course?

- N/A

Changes for next fall (2014): Try to arrange a workshop or at least a two or three hour block of time to cover deep foundations, such as pile driving. Having a guest speaker on deep foundations is great but there is just too much material and it is too interesting to try to fit it into one regular class period. Also, I plan to purchase two more Liquid Limit devices for the lab. We have five such devices in the lab but we should really have about seven so that for the liquid limit lab (Atterberg limits) the students can work in groups of three. Also, I may utilize a different soils report, rather than the one from the Music Education Facility, as it is getting a bit dated. I do like the report, however, as the project site is immediately adjacent to the relatively new Hogue Addition.

I think I will go through and revise a Powerpoint slide show that I have on piling…I think I can organize it a bit better to make it more meaningful to the students.

I did add a question on the SEOI form pertaining to each guest speaker (I had three of them) so the students could provide feedback. All three guest speakers received a favorable review from the students.

Changes from fall 2012: No real changes, although a couple of guest speakers have changed. The class seems to be working very well and the students like the combination of in-class learning and the hands-on labs.

2014 CWU Construction Management Employer Survey Results

2014 CWU Construction Management Program Employer Survey

1. How satisfied are you with the recent graduates?

#	Question	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied	Total Responses	Mean
1	Ability to work with technology	1	0	2	11	5	19	4.00
2	Ability to work as a team member	0	0	1	13	5	19	4.21
3	Fundamentals of construction terminology, methods and practices	0	1	4	10	4	19	3.89
4	Ability to communicate in writing and verbally	1	1	2	12	3	19	3.79
5	Ability to work with plans	0	1	3	11	4	19	3.95

2. Do you feel CM faculty understand employer expectations for new hires?

#	Answer	Response	%
1	Strongly agree	3	16%
2	Agree	12	63%
3	Neutral	3	16%
4	Disagree	0	0%
5	Strongly Disagree	0	0%
6	Not sure	1	5%
	Total	19	100%

3. Overall, please rate the quality of graduates from CWU's CM program:

#	Answer	Response	%
1	Excellent	2	11%
2	Very Good	11	58%
3	Good	5	26%
4	Fair	0	0%
5	Poor	0	0%
6	Not sure	1	5%
	Total	19	100%

4. Would you recommend the CWU CM program to young people who want to enter the construction industry?

#	Answer	Response	%
1	Yes	18	95%
2	No	0	0%
3	Not sure	1	5%
	Total	19	100%

5. What should CWU's CM program do to improve the quality of its graduates?

Text Response

- Require a construction related internship as part of the program credits.
- Improve the strength of the safety program.
- get more expose to real life construction. This is not CWU sepcific, but recent graduates are not as ambitious and go getters. That is true for most of them.
- Continue pushing team building skills and technology / software skills.
- Teach them how to have a live conversation - STOP TEXTING for business purposes.
- nothing
- Continue to focus on VERBAL and WRITTEN communications skillset.
- Emphasize professionalism. The industry is looking for those not just with technical knowledge, but with presentation, leadership skills, business acumen, entrepreneurialism, communication skills and professional demeanor. Also - more focus on the business aspects of construction management. Running a project is like running a small business. Budgeting, production tracking, scheduling, negotiating skills, analysis of industry economic factors, understanding of business law and contracts - all of these are skills needed to move past entry level.
- Mandatory internship program, also help promote awareness that the "Big" commercial firms are not the only paths to success
- Further develop the communication abilities of graduates. I realize this comes with the development of confidence and experience however communication is a key to success.
- Concentrate on course work focused on Scheduling, Estimating/Take-Off and Construction Law
- Provide more exposure to structural, civil, and mechanical areas.
- Provide more exposure to Structural Drawings, and or Mechanical.
- Expose the students to all potential careers in construction, less focus on commercial only
- Increased technology knowledge (i.e. Spreadsheets, PowerPoint, Word, MS Scheduler, etc); stronger communication skills written & verbal
- Continue to emphasize communication, team interaction, and presentation skills.

6. What do you feel are the strengths of CWU's CM graduates?

Text Response
• Work ethic and willingness to learn.
• I often brag to other peers in my industry that the CWU CMGT program is all about quality not quantity. Keeo the numbers low for students accepted into the program. That is our niche!!
• Great work ethic!
• explaining the fundamentals and making sure students understand the theory and practice behind it. require more than 2 internships with a GC before they join the program.
• Solid fundamentals, good builders.
• Confident, Smart, Personable.
• Hands on hard workers
• The strength of CWU student's are that they are used to HARD work - part time jobs, etc... This helps tremendously.
• Work ethic/attitude, technical engineering expertise, strong supervisory skill sets, exposure to real world problem solving (vs. theory)
• Grads come out well rounded in methods/materials, and good engineering base.
• General construction knowledge.
• Well rounded and genuinely excited about the oportunity to work in the construction industry
• CWU's CM graduates tend to have more people skills and common knowledge of construction than other school graduates.
• The CM program offers a diverse base of relevant courses. Particularly: soils, concrete, scheduling, estimating, means/methods are all vitally important to have a fast start in the industry.
• They all seem to be hard working and down to earth.
• Work ethic; strong facility support; and construction fundamentals
• They seem to understand the technical aspects well, most seem to have had internships prior to starting in a graduate full time role so they are coming out with some real world experience