ABET

Self-Study Report

for the

Bachelor of Science in Safety and Health Management Program

at

Central Washington University Ellensburg, WA

June 16, 2016

CONFIDENTIAL

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Program Self-Study Report
for
ASAC of ABET
Accreditation Review

BACKGROUND INFORMATION

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B. Program History

The roots of the Central Washington University's (CWU) Safety and Health Management (SHM) Program can be tracked back to academic year 1974-75 when a 20 credit minor in Occupational Safety and Health (OSH) was first offered under the Safety Education (SED) Program. The minor consisted of three OSH courses: SED 280 Principles of Accident Prevention, SED 386 Occupational Safety and Health, and SED 387 Accident Investigation, Data Analysis, and Evaluation. The SED program included two full-time tenure-track (FTT) faculty members Dr. Duane Patton and Dr. Ron Hales.

On January 8, 1975 Dr. Patton submitted a proposal for a new Bachelor of Science in Occupational Safety and Health (OSH) to the CWU Faculty Senate, which was approved unanimously. The purpose of the integrated interdisciplinary OSH Major was to provide an education program for aspiring safety personnel in the region. The majority of the courses in the 75-credit OSH degree were from other disciplines such as business, psychology, statistics, mathematics, physical education, health education, and English. The degree contained only four OSH courses SED 280, SED 386, SED 387, and a 15-credit SED 490 Contracted Field Experience. In June of 1977, two students graduated with a B.S. degree in OSH (first graduates). The program remained small for almost three decades graduating an average of less than ten students a year until the late 1990s.

There have been several major curriculum and program changes to the OSH degree program since its inception, which has been briefly summarized below:

- In 1980, the number of credits was increased from 75 to 100 credits. The SED 490 Contracted Field Experience course credits was decreased from 15 to 9 credits. Several new safety core courses were added to the degree program such as:
    - SED 388 Occupational Hazard Control
    - SED 486 Industrial Operations Safety
    - SED 487 Occupational Environment Safety
    - SED 499 Occupational Safety and Health Seminar

- In 1983, a new lab course SED 494 Instrumentation was added to the degree program. The SED 490 Contracted Field Experience course credits was decreased from nine to six. The total number of credits remained at 100.

- In 1987, Dr. Duane Patton, the program founder retired, whose position was not filled, which left the program with only one tenured faculty member (Dr. Hales).

- In 1989, the name of the degree was changed from Occupational Safety and Health (OSH) to Loss Control Management (LCM) to help prepare students as loss control managers. All the safety course prefix were changed from SED to LCM. Dr. Hales taught all the LCM courses. As part of the degree name change, new courses were also added to the degree such as:
    - LCM 383 Transportation Systems
    - LCM 488 Risk Assessment
    - LCM 489 Emergency, Compensation and Consumer Systems

  The course LCM 490 title was changed from "Contracted Experience" to "Cooperative Education."

- In 1994, the program name was changed from Safety Education to Safety Studies. The LCM degree started to offer two options, which were later changed to specializations in 1996.
    1. Loss Control Management (LCM)
    2. Hazardous Materials Handling and Management (HMHM)

- In 1999, Dr. Hales, the only tenured faculty member retired from CWU. A new FTT faculty member was hired to instruct all the LCM courses. The degree name was again changed from Loss Control Management (LCM) to its current name Safety and Health Management (SHM). The new SHM degree started to offer three specializations to meet local market demands:
    1. Construction Safety
    2. Risk Management
    3. Safety and Health Management

  The program continued with just one FTT faculty member, graduating less than 15 students a year.

- In 2003, a high demand program state grant was secured for the purpose of offering the SHM degree program at the CWU-Lynwood center.

- In 2004, the only FTT faculty resigned and the program was served by a full-time non-tenure track (FT-NTT) faculty member. In 2005, the FTT position was refilled.

- Between 2006 and 2007, a second FTT faculty member was hired, who also served as the program director. Under the leadership of the new program director the SHM degree was once again restructured. The changes were substantial ranging from renaming, removing, and adding courses. The revised degree program was first offered in academic year 2007-08. The degree program also dropped the specializations and, for the first time the SHM degree required a minor as part of the major. The total credits was 102 credits.

- During the 2007-08 academic year, one of the two FTT faculty members resigned at the conclusion of the fall quarter. To begin the 2008-09 academic year, the FTT position was refilled and a FTNTT instructor (third position) was added to support the increase in student enrollments. Due to lack of resources, the SHM program was discontinued at the centers in 2008.

- At the start of the 2009-10 academic year, one of the two FTT faculty members resigned, which left the program once again with only one tenure-track faculty member.

- Dr. Sathy Rajendran was hired in Fall 2011 to fill this position and to serve as the new Program Director for the SHM Program. The primary goal was to bring stability to the program, revise the curriculum to meet accreditation requirements and constituent needs, and to prepare the program for ABET accreditation. The other FTT faculty member resigned at the conclusion of the summer quarter of 2012. A FTNTT faculty member was temporarily hired for the AY 2012-13.

- During the academic year 2011-12, Dr. Rajendran reached out to three ABET accredited safety programs to understand their curriculum, outcomes, objectives, and facilities needed to support the program outcomes. The Indiana University of Pennsylvania's (IUP) Safety Sciences Department was very helpful during this process. Dr. Rajendran established a 16-member Industry Advisory Council (IAC) on March 1, 2012, consisting of the two major program constituents: Alumni and Employers. In addition, the IAC also formed a curriculum sub-committee with active professionals representing various industries. The primary goal of the curriculum sub-committee was to assist with the development/revision of program mission statement, core values, student outcomes, program educational objectives, and to provide feedback to establish a curriculum that meets ABET requirements and constituent needs. During this time, Dr. Rajendran attended a couple of ABET assessment workshops to understand the accreditation process. He also applied to become an ABET evaluator.

- The IAC's curriculum sub-committee met on April 23, and August 1, 2012, and reviewed the curriculum and recommended significant changes to Dr. Rajendran. Following the

recommendations from the IAC, Dr. Rajendran developed a program proposal to revise the B.S. in Safety and Health Management. This was a major revision which included:

- Revisions to all existing SHM courses such as title change, credit change, description change, and integrating laboratory components in appropriate courses.
- Addition of two new SHM courses: SHM 301 Fundamentals of Safety and Health Management and SHM 480 Safety and Health Laboratory.
- Revision to the list of courses in mathematics and basic sciences with experimental experience.
- Addition of new support courses in areas of project management, communication, substance abuse, statistics, and business.
- Removal of the minor requirement.

The proposal increased the degree program's credit to 129-132 credits in addition to the CWU's general education component. The proposal was approved by the CWU Faculty Senate on February 6, 2013. The curriculum was first implemented in Fall 2013. **Twelve students were the first graduates from the new SHM degree program in spring 2015.**

C. Options

The Safety and Health Management Program does not offer any options, tracks or concentrations. However, the program does offer a minor in SHM for non-SHM majors. The minor is 24 credits and includes the following required SHM courses: SHM 301, SHM 351, SHM 352, SHM 353, SHM 323 or SHM 325, and two elective SHM courses.

D. Program Delivery Modes

The SHM Program is currently within the Engineering Technologies, Safety, and Construction (ETSC) Department. The SHM program offers its courses during week days (M-F) between the hours of 8.00 a.m. to 5.00 p.m. Most SHM courses use a traditional lecture format with some of the core courses offering a complementary laboratory experience: SHM 301, SHM 323, SHM 325, SHM 379, SHM 472, and SHM 477. The SHM 480 Safety and Health Laboratory course is a 100% laboratory course.

Most SHM courses are offered exclusively on-campus, with two exceptions: SHM 423 and SHM 490. The SHM 423 course is offered via web for our students who are off-campus during summer break. This enables these students to have one additional option while off-campus to complete a department approved elective course and stay on track towards graduation.

All SHM majors must complete the SHM 490 Cooperative Education during the summer of their junior year. It is a six credit course and the students work a minimum of 400 hours to fulfill the course requirements. The primary objective of the course is to provide the students hands-on experience and allow them to apply safety and health principles in a non-academic setting. A set of objectives and associated activities, and expected competency is established at the onset, by consensus among the student, the site supervisor, and the faculty advisor. The students are required to: (1) keep a daily log to record their learning experience, (2) develop and submit a detailed report, and (3) deliver a presentation when they return to campus the following quarter.

The site supervisor is asked to complete a mid-term and final evaluation, and a brief outcomes assessment survey based on their evaluation of the student performance. The SHM students have completed their cooperative education all over the country from Washington D.C. to Alaska, and the majority of the students are compensated by the employers.

E. Program Locations

The only location the SHM degree and courses are offered is on the main campus in Ellensburg, Washington. All the SHM courses are offered in Hogue Technology Building.

F. Public Disclosure

Information related to the SHM Program can be found on the Program website:

- Mission, Objectives, and Outcomes: http://www.cwu.edu/engineering/mission-objectives-and-outcomes
- Enrollment and Graduation Data: http://www.cwu.edu/engineering/mission-objectives-and-outcomes

G. Deficiencies, Weaknesses or Concerns from Previous Evaluation(s) and the Actions Taken to Address Them

This is not applicable as this is the **initial accreditation** of the Bachelor of Science in Safety and Health Management.

GENERAL CRITERIA

CRITERION 1. STUDENTS

A. Student Admissions

A.1 CWU Admission

CWU offers admission to qualified students as they apply. All applicants must submit a completed CWU on-line or paper admissions application along with a non-refundable application processing fee of $50. For fall quarter, the Admissions office responds to applications soon after Dec. 1 for students who apply before Nov. 15 and within four to six weeks for those who apply later. The priority deadline for fall quarter application for freshmen and transfers is April 1.

Freshmen applicants (students currently enrolled in high school or high school graduates who have earned fewer than 40 college credits after high school graduation) must send official copies of all high school and college transcripts, as well as ACT or SAT scores, to the Admissions office. Freshmen applicants are offered initial admission if they meet a minimum admissions index, which is determined by a formula that weights high school GPA and standardized test scores in a ratio of approximately 3:1. The formula was developed by the Washington Higher Education Coordinating Board (HECB). For the 2015-16 academic year, the minimum admissions index is 28. Freshmen applicants must also complete the following core courses in high school: English, Mathematics, Social Studies, Science, Foreign Language and Fine and Performing Arts.

Admissions applications from homeschooled students are evaluated on an individual basis. Students will be required to submit ACT or SAT scores, as well as any high school, homeschool, or college transcripts available. They may also be asked to submit additional information or essays. Table 1.1 is a summary of the admissions history for all CWU students for the past 3 three years.

Table 1.1: History of Admissions Standards for All Freshmen Admissions

Academic Year	Composite ACT		Composite SAT		Number of New Students Enrolled
	MIN.	AVG.	MIN.	AVG.	
2015-16	11	20	510	979	1,652
2014-15	11	20	520	980	1,506
2013-14	11	20	460	984	1,622

Central recognizes that many factors affect grades and test scores, so the University utilizes a comprehensive admissions review process. Freshmen applicants whose admissions index is below 28, or who are missing any of the high school core course requirements or transfer applicants whose GPA is below 2.5 from any previous college attended will need to complete the essay portion of the admissions application. The application will go through the comprehensive review process. Additional details pertaining to admission to Central Washington University can be found in the current university catalog.

A.2 Safety and Health Management (SHM) Program Admission

Admission to the university does not assure admission to the Safety and Health Management (SHM) program. Admission to the SHM Program is governed by both the program, through a major application process, and by the university requirements as stated in the catalog. These two standards and processes are summarized below.

Requirements for admission to the SHM program as a "major" have been established to assure that incoming students have: (1) an adequate background in mathematics, basic sciences, and English composition, and (2) a strong interest and motivation to be a SHM major. In addition, the intent of the admission process 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.

Admission to the SHM program is typically a four-step process, which was developed and implemented by Dr. Rajendran in academic year 2012-2013.

1. *CWU Admission:* The prospective student will apply and be admitted to CWU.

2. *Pre-major Declaration:* The prospective student will meet for an advising session with an SHM faculty advisor to obtain information about the major and career prospects. Students may apply at any time for pre-major status by contacting their advisor and completing a pre-major application form. 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 may not have completed the required prerequisite coursework and has not applied for acceptance as a major. Pre-major students are not eligible to enroll in any of the required SHM courses (those courses with a prefix SHM).

3. *SHM Prerequisite Coursework Completion:* During this step, the student completes the SHM program prerequisite courses with a grade of C or better. The following five courses are required prerequisite for entry into the program.

    - PSY 101 – General Psychology
    - BIOL 201 – Human Physiology
    - MATH 130 – Finite Mathematics
    - MATH 153 – Precalculus Mathematics I
      OR MATH 154 – Precalculus Mathematics II

- CHEM 101 – Contemporary Chemistry
  OR CHEM 111 – Introduction to Chemistry
  CHEM 111LAB – Introductory Chemistry Laboratory
  OR CHEM 181 – General Chemistry I
  CHEM 181LAB – General Chemistry Laboratory I

In addition, ENG 101 and ENG 102, which are required CWU basic courses as part of the general education program, are used to evaluate their English composition skills.

4. *SHM Major Application Submission:* SHM pre-majors will apply for entry into the SHM major by submitting the required admission materials listed below:

   - A completed SHM Major Application form.
   - A current copy of CWU unofficial transcript, which must indicate that the student is in good academic standing, as defined by the catalog.
   - A two page personal statement which includes information about the student, his/her knowledge about the SHM profession, and the reason to enter the SHM program, and eventually pursue a career in the SHM field.
   - A current resume, with a brief description of the student's work experience (position title and job functions) and extra-curricular activities.
   - A prerequisite coursework completion plan. If a student has not taken (a) prerequisite course(s) or is currently registered in (a) prerequisite course(s), a separate sheet indicating their plan, on when the student intend to complete the course (s).
   - A realistic academic plan signed by the student's advisor that includes quarter-by-quarter list of all remaining courses that lead to graduation.

The students interested in the SHM major will submit one hard copy of their application package to the Hogue Technology office room 101A with the SHM admission cover sheet. Transfer students often mail their application packet. Applications must be submitted by 5 p.m. (PDT) on May 15 (if May 15 falls on a weekend applications are due on Monday). Late or incomplete applications will not be considered for admission.

After the applicants complete their application, using the objective criteria presented in Table 1.2, the SHM faculty will determine the top 36 students for acceptance into the SHM program each academic year. The SHM program is a cohort based program; students take most of the SHM courses together. If not successful in securing admission, students may retake prerequisite courses and reapply the following year to improve their chances of admission. The accepted students receive letters of acceptance through email. Occasionally students may be admitted to the program with deficiencies in required prerequisite courses, where their qualifications are otherwise acceptable or extenuating circumstances. In such cases, to maintain their major status, students are required to make up any deficiencies within the first quarter (typically fall) of enrollment in the program. Any exceptions, which are extremely rare, due to extenuating circumstances are dealt on a case by case basis.

The SHM application selection process has been in effect since the Spring of 2013 and has proven very effective in maintaining program quality, consistent with the program's mission and objectives. As a result of this selection process incoming students are very well qualified and the attrition rate once they are accepted in the program is extremely small. In addition, the quality of students measured in terms of total points scored has improved over the last three years as seen in Table 1.3. Sample application packages will be available to the reviewers during their visit.

Table 1.2: Safety and Health Management Major Evaluation Sheet

1. Student Coursework Evaluation				
Course	**Weight (W)**	**Grade**	**Grade Point (G)**	**W*G**
ENG 101	1			
ENG 102	1			
PSY 101	1			
BIOL 201	2			
MATH 130	2			
MATH 153/154	2/3			
CHEM 101/111/181	1/2/3			
Total Coursework Points				
2. Student Cumulative Grade Point Average (CGPA) (0-5pts)				
3. Professional Statement (0-5pts)				
4. Professional Resume (0-5pts)				
5. Work Experience (0-5pts)				
Total Student Points (0-72pts)				

Table 1.3: History of Admissions Standards for SHM Majors

Academic Year	Average Applicant Points	Number of New Students Admitted
2015-16	43.0	40*
2014-15	33.7	24
2013-14	28.0	24

*Due to a scoring tie four additional students were admitted

B. Evaluating Student Performance

The performance of all students is evaluated at least thrice each academic year. This typically occurs in the middle of the fall, winter, and spring quarters during faculty advisement. The formal faculty advisement starts two weeks before course registration begins for the following quarter. The faculty advisor posts a sign-up sheet on their door, and all SHM students are required to make an appointment with their assigned program advisor to discuss academic progress and to plan the course of study for coming quarters. A simple advising worksheet has been created for this purpose. Each advisor typically maintains a file for each advisee which contains pertinent information, including transfer transcripts, the advising worksheet, course substitution forms, etc. These are on file in the faculty offices either as hard copy or online.

In addition, both advisors and students are able to assess their progress toward the degree using an internet-based information system at Central called "MyCWU." Within this system, each student has access to their academic record through their individual on-line computer account through a system called CAPS (Central's Academic Progress System). This allows each student to print or view a "CAPS Report" or "Course History" report, a computer generated printout that compares the student's progress, class by class, including transfer credits, to the required general education and SHM major requirements. *This allows advisors and students to monitor progress and academic status at any time.*

One of the responsibilities of SHM faculty during advisement is to ensure the student is meeting course prerequisites. The CWU online course registration system does not permit a student to register for a course unless all prerequisites identified for that particular course are met. However, there are two ways to override the registration system to allow a student to register for a course without meeting prerequisite requirements: (1) the instructor teaching the course approves an override of the system by signing a "CWU course schedule change form" which is completed by the student, (or) (2) the student's program advisor issues a permission code for the course. All Safety and Health Management courses (those courses with a prefix SHM) requires an individual "permission code" by the advisor so that students may register electronically. The permission code system allows advisors to verify that the student has completed the prerequisites, and if not whether an override is acceptable. SHM students needing overrides has been rare, but overrides has been allowed when a student has completed equivalent classes at another school before transferring to CWU or if other extenuating circumstances arise. The SHM faculty are in the process of creating an internal SHM waiver form to allow overrides if needed

C. Transfer Students and Transfer Courses

C.1 Transfer Students

Most transfer students arrive from one of the 27 community colleges within the State of Washington. Working agreements have been established between each of the six state universities (including CWU) and the community colleges regarding transfer credits. If a student completes the appropriate two-year transfer degree at a community college he/she will automatically meet the general education requirements at CWU. Many students choose to do so due to the lower cost of tuition at community colleges compared to the four-year universities. Since "none" of the courses offered at these community colleges transfer directly as SHM courses (those courses with a prefix SHM) "all" transfers complete the SHM courses at Central Washington University.

Transfer students who have earned 40 or more college-level credits (27 semester credits) must send official copies of all college transcripts to the Admissions office. Generally, transfer students who have completed at least 40 college-level transferable credits with at least a 2.5 cumulative GPA will be admissible to Central. Students who have completed college-level math and English and those who have completed a Direct Transfer Associated degree (DTA) will do better in the comprehensive review process. Transfer students are granted junior standing within Central if they have more 90 or more credit hours accepted. The Admissions Office makes the

determination pertaining to the acceptance of general education credits, per the agreement with each of the community colleges or four-year universities.

C.2 Transfer Courses/Credits

Even though it has not happened in the recent past, transfer credits for courses offered within the SHM program (those courses with a prefix SHM) will be accepted from other accredited two-year or four-year institutions on a course-by-course basis. Students transferring credits will be required to present, to their faculty advisor, course outlines and other materials to demonstrate the equivalency of the course. The student must have also earned a grade of a "C" or above in the course. The SHM faculty will review the material and make a determination to either accept or reject the course(s) as equivalent to course(s) in the SHM degree program. If the course(s) is equivalent to a SHM required course or meets the intent of the required curriculum a course substitution form is completed and signed by the faculty advisor and approved by the Engineering Technologies, Safety, and Construction (ETSC) Department Chair.

Transfer credits for other required courses within the Safety and Health Management major (e.g. business classes, statistics, etc.) are accepted by the SHM faculty under one of two conditions. If the course is listed as a direct equivalent by the University it is automatically accepted as meeting the requirement. If the course is not listed as a direct equivalent but presented evidence indicates that the course meets the intent and rigor of the requirement a course substitution form is completed. Again, this must be approved by the ETSC Department Chair.

D. Advising and Career Guidance

CWU offers several types of professional advisors such as exploratory, online, transfer and college advisors. Students entering Central Washington University as freshman who are undecided on a major are assigned to an exploratory advisor. The office of exploratory advising devotes particular attention to assisting undecided students with navigating the University, exploring major and career options.

The CWU Faculty Code states that student advising is one of the primary responsibilities of its faculty. All full-time tenure-track (TT) SHM faculty members are involved in academic advising. Once a student expresses an interest in the SHM Program by declaring as SHM pre-major he or she will be assigned to one of the three faculty members in the program. In an attempt to divide the advising load equally among the faculty, students are assigned to one of the two TT faculty advisors as they enter the SHM Program based on the first letter of the student's last name. This faculty member typically will serve as the student's advisor as long as the student remains in the SHM Program. Initially the student will meet with the assigned faculty member who will establish an advising file, discuss the program requirements and the major entrance requirements and application procedure with the student. The student is directed to the on-line SHM Student Advising Handbook, which is updated as needed. Transfer students from other institutions are advised in a similar manner. Transfer students who have yet to transfer are advised via telephone and email.

SHM faculty members have open-door policies and are readily accessible for advising sessions both formal and informal. Email and telephone is also used frequently by students and faculty

members to respond to routine advising issues. The informal advising happens during office hours throughout the quarter. Prior to pre-registration or registration for each quarter each student is required to make an appointment with their assigned program advisor to discuss academic progress and to plan the course of study for coming quarters. A simple advising worksheet has been created for this purpose, as previously mentioned. Each advisor typically maintains a file for each advisee which contains pertinent information. These are on file in the faculty offices either hard copy or online.

Career advising for SHM students comes from many avenues. Career advising is a major component of SHM faculty quarterly advising sessions. They relate their experiences and provide counsel. The site supervisors provide formal feedback and advice through the cooperative education program. CWU Career Services provides general support and counsel to students seeking full-time employment or a Co-op or Internship. Career Services also provides individual counseling to enrolled students by appointment or on a walk-in basis. Career Services provides students with help in preparation of resumes and cover letters. Other services include practice in interviewing, guidance in job search strategies and on-campus job fairs. Offices for SHM employers to conduct interviews are also provided. The SHM majors are one of the top majors recruited at CWU.

Because the SHM Program is relatively small, students have excellent access to advisement and the faculty members have opportunities to devote the time necessary to provide proper advisement. In addition, because a student remains with the same advisor, continuity is maintained as each student progress through the program. The graduating SHM seniors provide an assessment of their advising experience using the Senior Exit Survey. According to the recent Senior Exit Survey assessment results, SHM students had a favorable SHM advising experience with the quality of SHM advising. Any feedback on advising improvement is used by the program to make continuous improvement.

E. Work in Lieu of Courses

CWU does not currently award credits for work experience, unless it involves military experience. Upon submission of the DD214 or DD295, students may receive up to thirty lower-division elective credits for completion of military academic schools as recommended by the American Council on Education (ACE). Credit is not awarded for basic training or specialty schools such as MOS or Tech School.

Freshman can get credit for college courses taken as dual enrollment in high school or via Advance Placement courses taken in high school. Students may receive credit for advanced placement with a grade of S, depending upon the scores achieved on the College Entrance Examination Board Advanced Placement Test (AP). Students must request that their AP test scores be sent to the Registrar Services at Central. Scores of 3 or better on Advanced Placement Examination will be awarded as free electives for departments without specific policy. No more than 45 total quarter credits through AP or other sources of nontraditional credit may apply toward graduation requirements.

Students will be awarded five college-level quarter credits for each score at the 50th percentile on the College Level Examination Program (CLEP) humanities, social science/history and

natural sciences examinations. These credits will meet the general education requirements in the appropriate areas.

F. Graduation Requirements

Graduates from the SHM program at CWU earn a *Bachelor's of Science in Safety and Health Management.*

F.1 Requirements

The following requirements must be fulfilled by a student to receive a baccalaureate degree from Central Washington University:

- A minimum of 180 quarter credits is required (some majors require more).
- A minimum of 60 credits of upper division study is required (courses numbered 300 and above).
- Students must study on the University campus or at an established University center at least three quarters and earn a minimum of 45 credits.
- No more than forty-five (45) total quarter credits through College Level Examination Program (CLEP) or other sources of non-traditional credit may apply to graduation.
- Transfer students must earn from CWU a minimum of 10 credits in the major and, if a minor is declared, 10 credits in the minor.
- The general education program must be completed as defined in the University catalog. Students transferring from Washington State community colleges holding the appropriate academic transfer associate degree will have met the general education program requirements.
- Completion of all requirements for a major as specified by the appropriate department, as defined in the University Catalog, is required.
- Completion of each course used to fulfill the Bachelor of Science in Safety and Health Management degree requires a grade of "C" or better.
- In order to graduate, students must have achieved a cumulative grade-point average of at least 2.0 in courses taken at Central.
- Students must also have achieved a cumulative grade-point average of at least 2.25 in the major field of study.

Typically a student may expect to graduate under his/her catalog of record. The catalog of record is the academic catalog that is in effect at the time the student declares a major. It identifies the graduation requirements that must be met to earn the degree.

F.2 General Education Requirement

The CWU general education program offers undergraduate students a liberal arts education in order to cultivate thoughtful and responsible persons and citizens, to prepare them for the world of work and to teach them to pursue knowledge for its own sake. In order to accomplish those broad goals, the general education program seeks to promote effective reasoning, broad and deep learning, and the inclination to inquire. The general education program requirement offers a basic knowledge of mathematics and the natural sciences, including laboratory experience, intermediate knowledge of at least one world language, the study of the humanities, the political,

philosophical and cultural history of world civilizations, and the foundations and principles of American society.

F.3 Degree Application

Degrees are not automatically awarded when requirements are completed. It is the responsibility of the student to make application in Registrar Services. Application for the bachelor's degree must be filed online by the second Friday of the quarter preceding the quarter in which the degree is to be awarded. Complete instructions and deadlines are available in Registrar Services and through University center offices.

Exceptions to University graduation requirements must be petitioned to the Registrar. Approval of exceptions must be obtained from the general education committee, department or program chair and responsible dean where appropriate. Exceptions in majors or minors and teacher education programs must be approved by the appropriate department chair and college dean or designee. Final responsibility for meeting graduation requirements resides with the student.

F.4 Graduation Requirement Verification

As previously discussed under the advising section, during each advising session, the SHM faculty are required to review the student's previous course performance and record the grade received for the course on the student's SHM advising sheet. Prior to graduation, the faculty are required to review the student's file online again to make sure all degree requirements have been met. The review is performed by the faculty by generating a CAPS report (Central's Academic Progress System) online. The report will "red flag" any areas of deficiencies.

In addition, a final graduation audit is performed by the Registrar after a student has applied for graduation to verify that the student has officially completed all requirements for a Bachelor of Science degree in Safety and Health Management.

G. Transcripts of Recent Graduates

Transcripts will be provided to the Team Chair when requested. There are no program options to be identified on the transcripts. However, some students choose to complete a minor in addition to the SHM major, however a minor is not a requirement.

CRITERION 2. PROGRAM EDUCATIONAL OBJECTIVES

A. Mission Statement

A.1 CWU Mission

The mission of Central Washington University is to prepare students for enlightened, responsible, and productive lives; to produce research, scholarship, and creative expression in the public interest; and to serve as a resource to the region and the state through effective stewardship of university resources.

Qualified faculty and staff create a community that encourages and supports the emotional, personal, and professional growth of students from a variety of backgrounds. The university works with community colleges to establish centers throughout the state and employs technology to extend the reach of its educational programs.

The university community values teaching as the vehicle to inspire intellectual depth and breadth, to encourage lifelong learning, and to enhance the opportunities of its students. The faculty develop and strengthen bachelor's and master's degree programs in the arts, sciences, and humanities; in teacher education; in business; in the social services; and in technological specializations. A strong liberal arts foundation; applied emphases; opportunities for undergraduate research, creative expression, and international study; and close working relationships between students and faculty are hallmarks of the undergraduate experience. Graduate programs develop partnerships between faculty and students to extend scholarship to important areas of research and practice.

A.2 CWU Vision

Central Washington University (CWU) is a dynamic, creative, and inclusive environment that promotes engaged learning and scholarship. It is distinguished regionally for the rigor of its curriculum and scholarship, for the excellence of its pedagogy, for the vibrancy of its co-curricular and residential experiences, for its commitment to providing access to higher education, and for its efforts to advance the social and economic health of the region.

It is typified by an entrepreneurial spirit that establishes it as a national leader in higher education. It has a strong commitment to engaged learning and scholarship, internationalism, sustainability, inclusiveness, and life-long learning.

A.3 CWU Core Values

CWU is committed to the following shared values:

- *Student success:* CWU believes that student success is best achieved by providing supportive learning and living environments that encourage intellectual inquiry, exploration, and application. CWU believes that learning is best achieved in small classroom or group settings

with ample opportunities for individualized instruction, mentoring, advising, and programming.

- *Access:* CWU believes in providing educational opportunities to as many qualified students as possible. CWU believes that restrictions of place, time, and finances can be overcome through the effective use of partnership with community colleges and by effective and efficient use of learning, communication, and social technologies.

- *Engagement:* CWU believes that learning, research, and creative expression are enhanced by engagement with external partners. CWU believes that as a publicly-funded institution, it has a responsibility to help address the social and economic challenges faced by our communities.

- *Inclusiveness:* CWU believes that diversity of peoples, cultures, and ideas is essential to learning, discovery, and creative expression. CWU believes that all faculty, staff, and students must be and must feel physically, professionally, and emotionally safe in order to fully engage in and benefit from the university experience.

- *Shared governance:* CWU believes that shared governance is most effective when information systems and decision-making processes are both robust and transparent. CWU believes that communication channels should be open and two-way and that faculty, staff, and students should be empowered to participate in the governance systems.

- *Facilities:* CWU believes that state-of-the-art, safe, and attractive facilities enhance the working and learning environments of faculty, staff, and students. CWU also believes that state-of-the-art technologies provide leverage for the efforts of faculty, staff, and students. Safety: CWU believes it has a responsibility to providing a working and learning environment that is both physically and emotionally safe. CWU believes this responsibility extends to the off-campus environment of its full-time, residential students.

A.4 Safety and Health Management Program Mission Statement

The Safety and Health Management program mission is to prepare students to be excellent, industry-ready safety professionals who have the confidence and leadership capabilities to navigate the complex organizational and knowledge networks necessary to succeed in contemporary safety and health management.

A.5 SHM Core (Aspirational) Values

The SHM program is committed to achieving the following shared values:

- Excellence
- Professionalism
- Leadership
- Engaged
- Innovative
- Networking

B. Program Educational Objectives for the B.S. in Safety and Health Management (SHM) Program

1. Graduates will be employed in the safety and health discipline or a career of their choice upon graduation.

2. Graduates will be prepared to develop, implement, and manage occupational safety and health programs.

3. Graduates will continue their life-long learning through contribution to professional safety societies and organizations, professional activities and training, the pursuit of higher educational degrees, and individual professional development.

4. Graduates will act in a professional and ethical manner.

5. Graduates will have good communication skills and are able to effectively work in teams.

The general public can find these program educational objectives on the Safety and Health Management Program Website (http://www.cwu.edu/engineering/mission-objectives-and-outcomes).

C. Consistency of the Program Educational Objectives with the Mission of the Institution

The SHM program mission statement and program educational objectives (PEOs) are consistent with CWU's mission statement by preparing future SHM leaders for enlightened, responsible, and productive lives. The SHM Program's Mission Statement is also consistent with CWU's vision for its efforts to advance the social and economic health of the region. The SHM Program is the only 4-year occupational safety and health program in the region. Our PEOs enable our graduates to serve the state and the region as excellent safety leaders who are ready to make immediate positive contributions to the society by improving worker safety and health performance. In addition, the PEOs clearly reflect the CWU's mission and vision through its focus on activity based learning, life-long learning, technology enhanced instructional methods, and professional ethics.

D. Program Constituencies

It is critical to the success of the program to receive feedback from various internal and external constituencies in the development and review of the program mission statement, core values, program educational objectives, student outcomes, curriculum, and adequacy of its facilities. The SHM Program consider its important constituencies to be:

1. Students
2. Faculty
3. Alumni
4. Employers

The students, faculty, employers and alumni are represented by the Program's Industry Advisory Council (IAC) and its sub-committees. The program's primary objective is to be the number one choice for employers seeking safety professionals; thus interaction with industry is key to achieving this objective. The IAC includes a student representative from the SHM program. All SHM faculty actively participate in the IAC meetings.

The SHM Program selected the following definition for Program Educational Objectives (PEOs) as defined by ABET/ASAC,

"Program educational objectives are broad statements that describe what graduates are expected to attain within a few years after graduation."

Based on this definition the program developed draft PEOs that were consistent with the contemporary industry needs of the safety profession and CWU's mission and vision. These PEOs were included as part of the program curriculum revision proposal submitted to the CWU Faculty Senate on November 21, 2012. These PEOs were reviewed and approved by the department chair, the College Dean, and the CWU Faculty Senate Curriculum Committee. The PEOs was first formally reviewed, revised, and approved by the Industry Advisory Council (IAC)'s Curriculum Sub-committee on August 29, 2013. The SHM faculty members met on September 22, 2014 to review and revise (if any) the PEOs. The current PEOs were last reviewed and approved by the Program Faculty and the IAC during the November 5, 2014 meeting.

The IAC look at the PEOs as what the program should enable our graduates to do. By receiving IAC feedback, our PEOs clearly state what our constituents look for in our graduates, hence it meets the needs of our constituents. We continue to see high levels of employer satisfaction with our graduates, and so we remain confident that our program's educational objectives are appropriate from a professional perspective.

A list of current IAC members and their professional affiliations is provided in Table 2.1. The IAC meets twice a year, and includes a current SHM student representative. It consists of a curriculum sub-committee and an outreach sub-committee. It is a very active group, and has met nine times since its inception in 2012. The next IAC meeting is scheduled in Ellensburg, WA on October 7, 2016. The IAC decided to schedule its Fall 2016 meeting in conjunction with the ABET site visit, so that they can meet the reviewers if schedule permits. A description of the structure, duties, and operation of the board is contained in the SHM IAC Bylaws which can be provided upon request.

Table 2.1: Safety and Health Management Program Industry Advisory Council Members/Sub-committee Members, 2015-16

Name	Affiliation	Alumni	Employer
Bill Hilton	Walt Disney		X
Bill Mitzel	MultiCare Health System	X	
Bill Yahn	Retired (previously with Wells Fargo)	X	
Brad Petitt	Track Utilities	X	
Brian Clarke	G.E.W. LLC Safety Solutions	X	X
Brian Shaw	Intellectual Ventures	X	
Craig Blackwood	L&I DOSH		X
Dan Donovan	LehighHanson	X	
Dan Dorn	Current Student		
David Tabayoyon	NASA	X	X
Gary Wilson	United States Fish and Wildlife Service	X	
Jerry Shupe	Hensel Phelps Construction		X
Jill Jones	ASSE Columbia Willamette Chapter		
John Hogan	SNC Lavalin, Thermal Power Division		X
Kate Smiley Crawford	Hensel Phelps Construction		X
Mandi Kime	Associated General Contractors of WA	X	X
Michael O'Neil	Lakeside Industries	X	X
Mike Fallon	PCL Construction Services		X
Orlando Cerrillo	ESD 105	X	
Rick Zellen	Zurich Services Corporation		
Sam Pounds	Amazon	X	X
Stacia Hayes	Swedish Medical Center	X	
Tim King	Sunnyside/Roza Irrigation District	X	
Tony Campbell	ConAgra Foods - Lamb Weston		X

E. Process for Review of the Program Educational Objectives

The process of development of the current Program Educational Objectives (PEOs) was described in the previous section. The current PEOs were approved by the Program Faculty and the Industry Advisory Council (IAC) during the November 5, 2014 meeting. No recommendations were made for changes during this meeting.

The following is the SHM Program Educational Objectives Review Plan:

1. The first phase of the formal PEO review will be conducted by the Safety and Health Management Program IAC's Curriculum Sub-committee, and will recommend revisions of PEOs as necessary. The next formal PEO review is scheduled for the 2017-18 academic year (i.e., 4 years after the 2014-15 year review described above). The review will be based on the industry needs and expectations, ABET-ASAC accreditation criteria, and CWU mission and vision, at the time of the review.

2. The second phase of the formal PEO review will be conducted by the Safety and Health Management Program Faculty, who will make revisions as necessary. The faculty will consider any recommendations from the IAC's curriculum sub-committee regarding the PEOs. In addition to the IAC curriculum sub-committee input, the SHM faculty will also consider various other constituent input including findings from senior exit surveys, internship site supervisor surveys, student outcome assessments, individual course student evaluation of instruction (SEOIs), alumni feedback, and evolving needs of the safety profession at the time of the review. The next formal review is scheduled for the 2017-18 academic year (i.e., 4 years after the 2014-15 year review described above). The formal recommendation will be forwarded to the program's IAC.

3. The final draft will be reviewed by the full IAC and approved during the spring meeting. The next PEO review and approval will happen in IAC's spring meeting, April 2018.

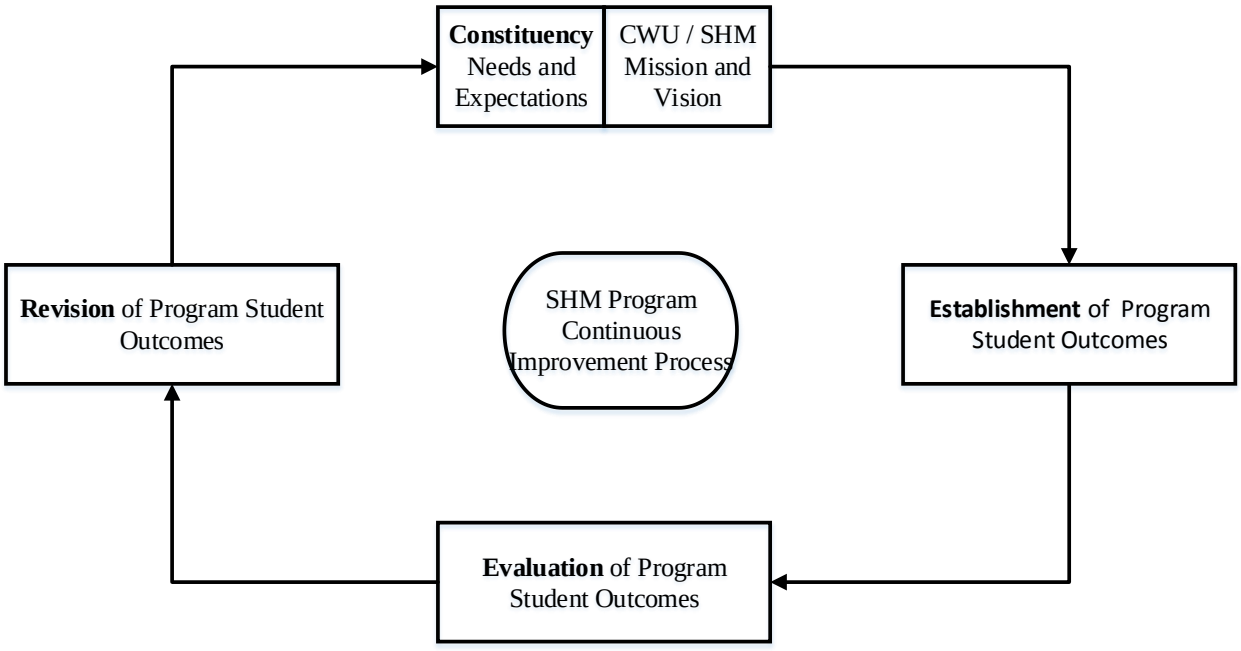
CRITERION 3. STUDENT OUTCOMES

A. Process for the Establishment and Revision of the Student Outcomes

The Safety and Health Management (SHM) Program under the leadership of Dr. Sathy Rajendran decided to implement a continuous improvement process for the program, and seek ABET accreditation in 2012. He started preparations by establishing an Industry Advisory Council (IAC) as described in the Criterion 2. Dr. Rajendran began the process of establishing the program student outcomes in 2012. Since the SHM program had a high faculty turnover in the years past, there was no clear mission, objectives, or outcomes prior to that time period.

The program sought input from various program constituencies about the needs and expectations of the program and its graduates. Based on the constituents input the program mission statement was reviewed and revised. Based on the mission statement, the program educational objectives were drafted. Criterion 2-D of this report discussed how the PEOs were established. The process of establishing, evaluating, and revising the SHM outcomes is presented in Figure 3.1.

Figure 3.1: Establishing, Evaluating and Revising SHM Student Outcomes



The process of establishing the program student outcomes, started with input from our program internal and external constituencies which included review of the following:

- Input from the newly formed Industry Advisory Council (IAC)
- ABET/ASAC Program Criteria
- Review of ABET self-study of three ABET/ASAC accredited safety programs

- Findings from 2009 and 2012 alumni surveys, 2012 cooperative education supervisor evaluations, and 2012 senior exit surveys, and
- Review of ABET & other accredited programs within the department

After reviewing the above information, the program selected the following definition for Student Outcomes as defined by ABET/ASAC, *"Student outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills, and behaviors that students acquire as they progress through the program."* The program reviewed the following ABET/ASAC Criteria:

Criterion 3: Program Outcomes

A. Baccalaureate degree programs must demonstrate that graduates have:

a) an ability to apply knowledge of mathematics, science, and applied sciences
b) an ability to design and conduct experiments, as well as to analyze and interpret data
c) an ability to formulate or design a system, process, or program to meet desired needs
d) an ability to function on multidisciplinary teams
e) an ability to identify and solve applied science problems
f) an understanding of professional and ethical responsibility
g) an ability to communicate effectively
h) the broad education necessary to understand the impact of solutions in a global and societal context
i) a recognition of the need for and an ability to engage in life-long learning
j) a knowledge of contemporary issues
k) an ability to use the techniques, skills, and modern scientific and technical tools necessary for professional practice.

Program Criteria for "Safety" and Similarly Named Applied Science Programs

Program graduates must possess the necessary knowledge and skills to competently and ethically implement and practice applicable scientific, technical and regulatory aspects of the safety, health, and environmental profession. In addition, the program must demonstrate that graduates can apply college algebra, statistics, chemistry, physics, and human physiology/biology as it pertains to the practice of the safety, health, and environmental discipline. More specifically, graduates must be able to:

1. anticipate, recognize, evaluate, and develop control strategies for hazardous conditions and work practices;
2. demonstrate the application of business and risk management concepts;
3. demonstrate an understanding of the fundamental aspects of safety, industrial hygiene, environmental science, fire science, hazardous materials, emergency management, ergonomics and/or human factors;
4. design and evaluate safety, health, and/or environmental programs;
5. apply adult learning theory to safety training methodology;
6. identify and apply applicable standards, regulations, and codes;

7. conduct accident investigations and analyses;
8. apply principles of safety and health in a non-academic setting through an intern, cooperative, or supervised experience.

The input from program constituencies and the ABET/ASAC criteria were used as a starting point by the program for the development of the new Student Outcomes. The initial draft consisted of 26 student outcomes consistent with the CWU/SHM Mission, and met the ABET/ASAC criteria. These outcomes were part of the program curriculum revision proposal submitted to the CWU Faculty Senate on November 21, 2012. These outcomes were reviewed and approved by the department chair, the College Dean, and the CWU Faculty Senate Curriculum Committee.

The Student Outcomes were formally reviewed by the Industry Advisory Council's (IAC) Curriculum Sub-committee on August 29, 2013, and provided minor recommendations, which were incorporated. A review and minor revision of the Student Outcomes occurred on September 22, 2014 at the Program Faculty Meeting, which resulted in addressing the ABET/ASAC general criteria h & j through SHM outcome 25. The action involved combining two SHM outcomes into one, resulting in 25 outcomes. This final draft was reviewed and approved by the Program Faculty and the Industry Advisory Council during the November 5, 2014 meeting.

The most recent review and revision of the student outcomes occurred on January 28, 2016, at the program faculty meeting. The review was initiated as a result of the program's ABET Readiness Review results. The review resulted in making some minor revisions to certain outcomes and adding additional "methods of assessment" to multiple outcomes. For example, the assessment activity SHM 480 Push/Pull Lab was added to outcome # 8. All these changes were reviewed and approved by the faculty with feedback from the IAC at the April 7, 2016, meeting.

B. Student Outcomes

All 25 SHM Student Outcomes and their relationship with ASAC General Criteria are included in Table 3.1. The relationship between the 25 SHM Student Outcomes and the ASAC program specific criteria for "safety" programs is presented in Table 3.2.

C. Relationship of Student Outcomes to Program Educational Objectives

As stated earlier, the Safety and Health Management (SHM) Program educational objectives are:

1. Graduates will be employed in the safety and health discipline or a career of their choice upon graduation.
2. Graduates will be prepared to develop, implement, and manage occupational safety and health programs.
3. Graduates will continue their life-long learning through contribution to professional safety societies and organizations, professional activities and training, the pursuit of higher educational degrees, and individual professional development.
4. Graduates will act in a professional and ethical manner.
5. Graduates will have good communication skills and are able to effectively work in teams.

All of the 25 SHM student outcomes are directly related to the realization of the five PEOs. All of the outcomes were created to ensure that the graduates are well prepared to pursue a career in the safety discipline, and possess the comprehensive knowledge and skillset to develop, implement, and manage safety and health programs. Hence, all the student outcomes are directly related to PEO # 1 and PEO # 2. The PEO # 3 addresses professional growth through lifelong learning which is addressed by student outcomes #24 and #25. The fourth PEO addresses acting in professional and ethical manner, which will be realized by outcome # 1. The student outcomes #22 and #23 were specifically created to attain the PEOs #5.

Table 3.1: Relationship between Program Student Outcomes and ASAC Criterion 3 Student Outcomes

Safety and Health Management Program

Program Student Outcomes *"By the time of graduation, students will have demonstrated an:"*	**ASAC General Criteria**										
	a	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**	**k**
1. Understanding of professional and ethical responsibilities of safety and health professionals.						**X**					**X**
2. Ability to apply applied science knowledge and solve problems using algebra, statistics, human physiology and anatomy, physics, chemistry, as it pertains to the practice of safety and health discipline.	**X**	**X**			**X**						
3. Ability to design and conduct experiments, and to analyze and interpret data pertinent to the safety and health discipline.		**X**									**X**
4. Ability to identify, describe, and apply the fundamental aspects of safety and health management.											**X**
5. Ability to identify, describe, and apply the fundamental aspects of industrial hygiene.											**X**
6. Ability to identify, describe, and apply the fundamental aspects of environmental management.											**X**
7. Ability to identify, describe, and apply the fundamental aspects of fire safety.											**X**
8. Ability to identify, describe, and apply the fundamental aspects of ergonomics.											**X**
9. Ability to identify, describe and apply the fundamental aspects of hazardous materials.											**X**
10. Ability to identify, describe, and apply the fundamental aspects of emergency management.											**X**
11. Ability to identify, describe, and apply the fundamental aspects of systems safety.			**X**								**X**
12. Ability to identify and apply the fundamental aspects of fleet safety.			**X**								**X**
13. Ability to identify and describe the fundamental aspects of construction (or) manufacturing safety.											**X**

Table 3.1: Relationship between Program Student Outcomes and ASAC Criterion 3 Student Outcomes (continued)

Program Student Outcomes *"By the time of graduation, students will have demonstrated an:"*	**ASAC General Criteria**										
	a	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**	**k**
14. Ability to anticipate, recognize, evaluate, and develop control strategies for hazardous conditions and work practices.			**X**								**X**
15. Ability to identify and apply business and risk management concepts as part of a comprehensive safety and health management program.	**X**										**X**
16. Ability to identify and apply applicable standards, regulations, and codes in the safety and health discipline.											**X**
17. Ability to design and evaluate a comprehensive safety and health program.			**X**								**X**
18. Ability to complete worker safety and health training by applying adult learning theories.							**X**				**X**
19. Ability to conduct an incident investigation and analysis.			**X**								**X**
20. Ability to apply the principles of safety and health in a non-academic setting through an internship, cooperative, or supervised experience.											**X**
21. Ability to use the techniques, skills, and modern scientific and technical tools necessary for professional practice in the safety and health discipline.											**X**
22. Ability to work effectively on multidisciplinary teams.				**X**							
23. Ability to communicate effectively in both oral and written forms.							**X**				
24. Ability to recognize the need for, and to engage in life-long learning in a chosen professional career.									**X**		
25. Understanding of contemporary safety and health issues and the impacts of their solutions within a global and societal context.								**X**		**X**	

Table 3.2: Relationship between Program Student Outcomes and Criterion 3 Student Outcomes – Safety Program Criteria

Safety and Health Management Program

Program Student Outcomes *"By the time of graduation, students will have demonstrated an:"*	**Program Specific Criteria**							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1. Understanding of professional and ethical responsibilities of safety and health professionals.								
2. Ability to apply applied science knowledge and solve problems using algebra, statistics, human physiology and anatomy, physics, chemistry, as it pertains to the practice of safety and health discipline.								
3. Ability to design and conduct experiments, and to analyze and interpret data pertinent to the safety and health discipline.								
4. Ability to identify, describe, and apply the fundamental aspects of safety and health management.			**X**					
5. Ability to identify describe, and apply the fundamental aspects of industrial hygiene.			**X**					
6. Ability to identify, describe, and apply the fundamental aspects of environmental management.			**X**					
7. Ability to identify, describe, and apply the fundamental aspects of fire safety.			**X**					
8. Ability to identify, describe, and apply the fundamental aspects of ergonomics.			**X**					
9. Ability to identify, describe and apply the fundamental aspects of hazardous materials.			**X**					
10. Ability to identify, describe, and apply the fundamental aspects of emergency management.			**X**					
11. Ability to identify, describe, and apply the fundamental aspects of systems safety.	**X**		**X**					
12. Ability to identify and apply the fundamental aspects of fleet safety.	**X**		**X**					
13. Ability to identify and describe the fundamental aspects of construction (or) manufacturing safety.	**X**		**X**			**X**		

Table 3.2: Relationship between Program Student Outcomes and Criterion 3 Student Outcomes – Safety Program Criteria (continued)

Program Student Outcomes *"By the time of graduation, students will have demonstrated an:"*	**Program Specific Criteria**							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
14. Ability to anticipate, recognize, evaluate, and develop control strategies for hazardous conditions and work practices.	**X**					**X**		
15. Ability to identify and apply business and risk management concepts as part of a comprehensive safety and health management program.		**X**						
16. Ability to identify and apply applicable standards, regulations, and codes in the safety and health discipline.						**X**		
17. Ability to design and evaluate a comprehensive safety and health program.				**X**				
18. Ability to complete worker safety and health training by applying adult learning theories.					**X**			
19. Ability to conduct an incident investigation and analysis.							**X**	
20. Ability to apply the principles of safety and health in a non-academic setting through an internship, cooperative, or supervised experience.								**X**
21. Ability to use the techniques, skills, and modern scientific and technical tools necessary for professional practice in the safety and health discipline.	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
22. Ability to work effectively on multidisciplinary teams.								
23. Ability to communicate effectively in both oral and written forms.								
24. Ability to recognize the need for, and to engage in life-long learning in a chosen professional career.								
25. Understanding of contemporary safety and health issues and the impacts of their solutions within a global and societal context.								

CRITERION 4. CONTINUOUS IMPROVEMENT

A. Student Outcomes

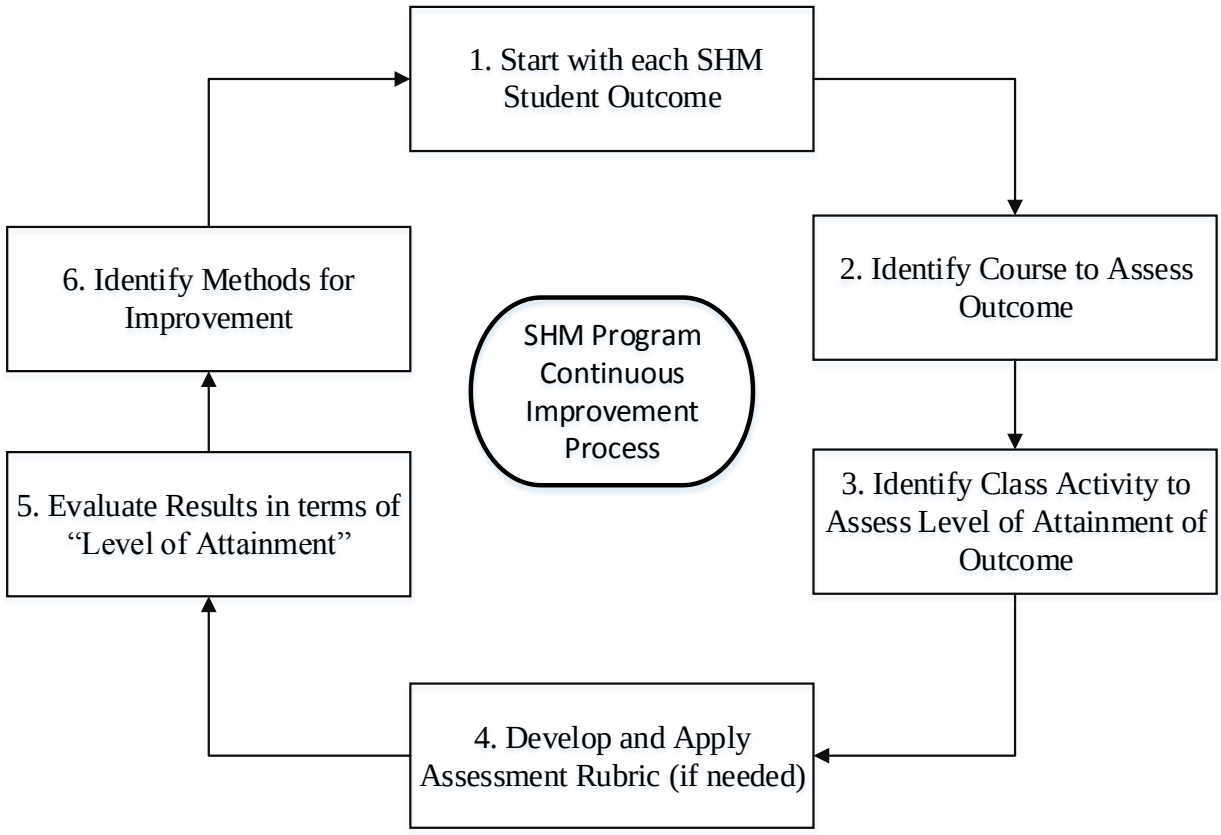
A.1 Assessment Process

The program adopted the ABET/ASAC assessment definition. Assessment is defined as one or more processes that identify, collect, and prepare the data necessary for evaluation. We use three primary sources of data to assess the 25 SHM student outcomes:

1. SHM Course (those courses with a SHM prefix) Assessments,
2. Cooperative Education Site Supervisor Surveys, and
3. Senior Exit Surveys.

Figure 4.1 illustrates the program's basic process to assess the degree to which the SHM student outcomes have been achieved.

Figure 4.1: Assessment Process for SHM Outcomes



The SHM program's pilot assessment process began during the academic year 2013-14. As the Figure 4.1 indicates, the SHM faculty started with the SHM student outcomes described in Criterion 3. We examined the required SHM courses (those courses with a SHM prefix) and their relationship to the student outcomes. Once the appropriate course was identified, the faculty

reviewed the various course activities to identify an activity most suitable to assess the outcome(s). In some cases, new course activities were created. A variety of activities has been employed as internal mechanisms to assess and continuously improve the Program. Some of the common course activities (methods of assessment) that is used to assess the SHM outcomes include homework assignments, lab work, exams, quizzes, class oral presentations, individual projects, group projects, papers, and cooperative education supervisor reports.

In some cases, especially for activities such as papers, oral presentations, etc., the faculty has developed and applied rubrics for assessments. The use of rubrics helped in dividing the outcomes into separate components so that areas needing additional attention can be more easily identified. The rubrics also provides numerical values so that changes in achieving the outcomes can be more easily tracked.

Assessment data for the outcomes was first formally collected during the academic year 2014-15. The course instructors are responsible for gathering the assessment data, documenting any recommended changes, and bringing recommendations to the annual SHM faculty assessment meeting for discussion and possible action. They are also responsible for following up on the implementation of the recommendation. The individual course assessment data were tabulated for the academic year 2014-15 to compare with subsequent years. Assessments for activities that are below the attainment level will be discussed by the SHM faculty and targeted for improvement, during the annual assessment meeting. The last assessment meeting was held on June 15, 2015 during which the data were analyzed and corrective actions were recommended. The specific assessment tools used and the level of attainment criteria for evaluation for all student outcomes are summarized in Table 4.1.

A.2 Senior Exit Surveys

Feedback is solicited from graduating seniors during the spring quarter on various aspects of the SHM program such as attainment of outcomes, advising, curriculum, and facilities. In 2012 and 2013, the program used a "forum" type senior exit survey, which was conducted by the College Associate Dean. Since the academic year 2014-15, the program has developed and disseminated a detailed formal outcome-based senior exit survey in addition to the forum. The senior exit survey results will be reviewed by the faculty every two years to allow enough data to allow meaningful evaluation.

A.3 Cooperative Education Site Supervisor Survey

Each SHM student must participate in a cooperative education (SHM 490) as part of his/her academic program. The site supervisor is asked to evaluate the student's job performance during mid-term and end of the term. However, these evaluations did not specifically address the SHM outcomes. In 2014, the program developed a brief pilot supervisor survey to specifically assess selected SHM outcomes. This assessment is performed every time the cooperative education is offered. The cooperative education site supervisor survey results will be reviewed by the faculty every two years. The survey has been revised to ensure effective assessment of SHM student outcomes. The results were informally reviewed by the faculty and the IAC during the April 7, 2015 meeting.

A.4 Frequency of Assessment and Evaluation

Our Assessment timeline is presented below:

- Individual SHM course assessments – End of each quarter the SHM course is taught
- Senior Exit Survey – Every Spring quarter
- Cooperative Education Site Supervisor Report – End of the co-op experience

The program adopted the ABET/ASAC *evaluation* definition. Evaluation is defined as one or more processes for interpreting the data acquired through the assessment processes in order to determine how well the student outcomes are being attained. Our Evaluation timeline is presented below:

- All SHM Course Assessment Data – End of Spring or start of Fall Quarter and at the Spring IAC meeting
- Senior Exit Surveys – Every two years
- Cooperative Education Site Supervisor Report – Every two years

A.5 Expected Level of Attainment for each of the student outcomes

The expected level of attainment for the 25 student outcomes for the course activities is "at least 80% or 85% (varies for different outcomes) of the students meet or exceed expectations of an entry level safety professional (70% or greater)." The expected level of attainment that is used to evaluate the student performance for each student outcome is presented in Table 4.1. The program assesses its student outcomes based on three criteria:

1. Exceeded Expectations of an entry level safety professional (> 90%)
2. Meets Expectations of an entry level safety professional (70% to 90%)
3. Did Not Meet Expectations of an entry level safety professional (<70%)

For each SHM course outcome activity (direct measure), the expected level of attainment was decided by the SHM faculty. For cooperative education performance evaluations (direct measure) and the SHM graduating senior's self-evaluation of themselves (indirect measure), the level of attainment for each of the student outcomes assessed is "at least 80% or more," agree or strongly agree with the attainment of student outcomes. The Industry Advisory Council (IAC) curriculum subcommittee reviewed and approved the level of attainment criteria at their August 29, 2013 meeting. The last review and approval was at the April 7, 2016 full IAC meeting.

Table 4.1: SHM Student Outcomes Linked to SHM Courses

Student Learning Outcomes By the time of graduation, students will have demonstrated an:	**SHM Course and Methods of Assessment**	**Level of Attainment**
1. Understanding of professional and ethical responsibilities of safety and health professionals.	SHM 490 Site Supervisor Evaluation	80% (Agree or Strongly Agree)
	SHM 485 Ethics and Professionalism Paper	85%
2. Ability to apply applied science knowledge and solve problems using algebra, statistics, human physiology and anatomy, physics, chemistry, as it pertains to the practice of safety and health discipline.	SHM 301 Safety Performance Metrics Quiz	80%
	SHM 352 Statistics Assignment	80%
	SHM 472 NIOSH Lifting Equation Problem	85%
	SHM 471 Heat Stress Assignment	85%
	SHM 480 Assessment of Noise Exposure Lab	85%
	SHM 377 Hazardous Materials Characteristics Assignment	85%
3. Ability to design and conduct experiments, and to analyze and interpret data pertinent to the safety and health discipline.	SHM 480 Measurement of Illumination Lab	85%
	SHM 480 Heat Stress Measurement Lab	85%
4. Ability to identify, describe, and apply the fundamental aspects of safety and health management.	SHM 301 Final Exam	80%
	SHM 301 Safety Performance Metrics Quiz	80%
5. Ability to identify describe, and apply the fundamental aspects of industrial hygiene.	SHM 471 Exams	85%
	SHM 480 Assessment of Noise Exposure Lab	85%
6. Ability to identify, describe, and apply the fundamental aspects of environmental management.	SHM 477 Environmental Requirement Exercise	85%
	SHM 477 Exam	85%
7. Ability to identify, describe, and apply the fundamental aspects of fire safety.	SHM 379 Life Safety Inspection Assignment	85%
	SHM 379 Fire Extinguisher Trainer Exercise and Exam	85%
8. Ability to identify, describe, and apply the fundamental aspects of ergonomics.	SHM 472 NIOSH Lifting Equation Problem	85%
	SHM 472 Exam	85%
	SHM 480 Push/Pull Lab	85%

Table 4.1: SHM Student Outcomes Linked to SHM Courses (Continued)

Student Learning Outcomes By the time of graduation, students will have demonstrated an:	**SHM Course and Methods of Assessment**	**Level of Attainment**
9. Ability to identify, describe and apply the fundamental aspects of hazardous materials.	SHM 377 Hazardous Materials Final Exam	85%
	SHM 377 Hazardous Materials Characteristics	85%
10. Ability to identify, describe, and apply the fundamental aspects of emergency management.	SHM 371 Emergency Management Plan Project	80%
	SHM 371 Exam	80%
11. Ability to identify, describe, and apply the fundamental aspects of systems safety.	SHM 352 System Safety Exam	80%
	SHM 352 Failure Mode and Effects Analysis Exercise	80%
12. Ability to identify and apply the fundamental aspects of fleet safety.	SHM 375 Class Project	80%
13. Ability to identify and describe the fundamental aspects of construction (or) manufacturing safety.	SHM 323 Construction Safety Comprehensive Exam **(or)**	80%
	SHM 325 Manufacturing Safety Comprehensive Exam	80%
14. Ability to anticipate, recognize, evaluate, and develop control strategies for hazardous conditions and work practices.	SHM 323 Pre-task Plan Assignment (or)	80%
	SHM 325 Job Hazard Analysis (JHA) Assignment	80%
	SHM 379 Life Safety Inspection Assignment	85%
	SHM 477 Environmental Audit Assignment (identify & apply)	85%
	SHM 480 Measurement of Illumination Lab	80%
	SHM 490 Site Supervisor Evaluation	80% (Agree or Strongly Agree)
15. Ability to identify and apply business and risk management concepts as part of a comprehensive safety and health management program.	SHM 353 Business Risk Management Plan	80%
	SHM 353 Risk Assessment Matrix Assignment	80%

Table 4.1: SHM Student Outcomes Linked to SHM Courses (Continued)

Student Learning Outcomes By the time of graduation, students will have demonstrated an:	**SHM Course and Methods of Assessment**	**Level of Attainment**
16. Ability to identify and apply applicable standards, regulations, and codes in the safety and health discipline.	SHM 301 OSHA regulation HW Assignment (identify)	80%
	SHM 323 Hazardous Condition Assignment (identify & apply) (or)	80%
	SHM 325 Hazardous Condition Assignment (identify & apply)	80%
	SHM 490 Site Supervisor Evaluation	80% (Agree or Strongly Agree)
	SHM 480 Heat Stress Measurement Lab	80%
	SHM 477 Environmental Audit Assignment (identify & apply)	85%
17. Ability to design and evaluate a comprehensive safety and health program.	SHM 474 Design and Evaluation of a SHM Program Project	85%
18. Ability to complete worker safety and health training by applying adult learning theories.	SHM 474 Training Exercise (Oral/Written)	85%
	SHM 490 Site Supervisor Evaluation	80% (Agree or Strongly Agree)
19. Ability to conduct an incident investigation and analysis.	SHM 351 Accident Investigation Presentation and Report	80%
20. Ability to apply the principles of safety and health in a non-academic setting through an internship, cooperative, or supervised experience.	SHM 490 Site Supervisor Evaluation	80% (Agree or Strongly Agree)

Table 4.1: SHM Student Outcomes Linked to SHM Courses (Continued)

Student Learning Outcomes By the time of graduation, students will have demonstrated an:	**SHM Course and Methods of Assessment**	**Level of Attainment**
21. Ability to use the techniques, skills, and modern scientific and technical tools necessary for professional practice in the safety and health discipline.	SHM 480 Assessment of Noise Exposure Lab	85%
	SHM 480 Measurement of Illumination Lab	80%
	SHM 379 Fire Extinguisher Trainer Exercise and Exam	85%
22. Ability to work effectively on multidisciplinary teams.	SHM 485 Group Project Evaluation	85%
	SHM 490 Site Supervisor Evaluation (teamwork)	80% (Agree or Strongly Agree)
23. Ability to communicate effectively in both oral and written forms.	SHM 490 Site Supervisor Evaluation (Oral)	80% (Agree or Strongly Agree)
	SHM 490 Site Supervisor Evaluation (Written)	80% (Agree or Strongly Agree)
	SHM 485 Capstone CAP Project (Written)	85%
	SHM 474 Training Exercise (Oral/Written)	85%
24. Ability to recognize the need for, and to engage in life-long learning in a chosen professional career.	SHM 481 Life-long Learning Paper	85%
25. Understanding of contemporary safety and health issues and the impacts of their solutions within a global and societal context.	SHM 481 Contemporary Issues Paper	85%

A.6 Summary of the Results of the Evaluation Process and Analysis

At the end of every quarter, the SHM faculty members will send the results of the course assessment to the SHM program director through the "Individual Course Assessment Tool," who then tabulates the data in an MS Excel spreadsheet for evaluation. For the ABET site visit, the faculty will also provide a representative sample of the actual student's assessments for each of their courses taught during the academic year 2015-16. The sample student outcomes assessments are categorized as "did not meet," "meets," and "exceeds" expectations, and are documented in course binders. The binders will be available to ABET program evaluators during their visit.

As previously discussed, the SHM program uses three primary sources of data to assess the 25 outcomes (1) Course assessment, (2) Co-op Education Site Supervisor Survey, and (3) Senior Exit Survey. The following tables 4.2 and 4.3 are summary results of the evaluation process and analysis for two sample outcomes that uses all the above three data sources. The full assessment report for all 25 SHM outcomes for the academic year 2014-15 will be available to the ABET program evaluators during the site visit.

Table 4.2: Sample Outcome Assessment and Evaluation (SHM Outcome # 1)

By the time of graduation, students will have demonstrated an understanding of professional and ethical responsibilities of safety and health professionals.

Course / Method of Assessment	ABET/ASAC Criteria	Level of Attainment	Results	Improvement Recommended
SHM 485 Ethics and Professionalism Paper (Spring 2015)	General: f	80% meet or exceed expectations	100% - Goal was met	Change the three ethics case studies every year. The course will require an ethics textbook starting Spring 2016.
SHM 490 Site Supervisor Evaluation (Summer 2015)	General: f	80% agree or strongly agree	95% agree or strongly agree – Goal was met	Give the students a handout of the BCSP code of ethics when they leave for internship.
Senior Exit Survey (Spring 2015)	General: f	80% agree or strongly agree	100% agree or strongly agree – Goal was met	None.

Table 4.3: Sample Outcome Assessment and Evaluation (SHM Outcome # 23)

By the time of graduation, students will have demonstrated an ability to communicate effectively in both oral and written forms.

Course / Method of Assessment	ABET/ASAC Criteria	Level of Attainment	Results	Improvement Recommended
SHM 490 Site Supervisor Evaluation – Oral (Summer 2015)	General: g	80% agree or strongly agree	82% agree or strongly agree - Goal was met	Add additional oral presentations before internship. Research the possibility of making the COM 345 a prerequisite for SHM 490.
SHM 474 Training Exercise (Oral) (Winter 2015)	General: g	85% meet or exceed expectations	100% - Goal was met	Include the ANSI/ASSE Z490.1-2009 Criteria for Accepted Practices in Safety, Health, & Environmental Training, as one of the required text for this course starting Winter 2016.
Senior Exit Survey – Oral (Spring 2015)	General: g	80% agree or strongly agree	100% agree or strongly agree – Goal was met	None.
SHM 490 Site Supervisor Evaluation – Written (Summer 2015)	General: g	80% agree or strongly agree	91% agree or strongly agree – Goal was met	None.
SHM 485 Course Project – Corrective Action Plan (Spring 2015)	General: g	85% meet or exceed expectations	91% meet or exceeded expectations – Goal was met	None.
Senior Exit Survey – Written (Spring 2015)	General: g	80% agree or strongly agree	100% agree or strongly agree – Goal was met	None.

Table 4.4 provides a detailed breakdown of sample student outcomes, communication (#23) and ethics (#1), from the Cooperative Education Site Supervisor Survey 2015. The level of attainment goal was to ensure 80% of the supervisors agree or strongly agree that the students

communicated well, and acted in an ethical and professional manner. The breakdown provides the faculty with more information about the level of agreement during analysis.

Table 4.4: Sample Outcome Assessment and Evaluation through Site Supervisor

Outcome	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The student communicated effectively with others orally (e.g., one-on-one, communicating in training, reporting, safety briefings/meetings).	33.3%	40.0%	20.0%	6.7%	0%
The student acted in a professional and ethical manner.	73.3%	26.7%	0%	0%	0%

Table 4.5 provides some sample responses from the Senior Exit Survey 2015 on performance related to student outcomes #15 and #9. For example, based on the results for outcome #9 (hazardous materials) several changes were made to the SHM 377 Hazardous Materials Management course which was delivered in Fall 2015. A new course instructor was assigned to the course. A filed trip to a local landfill was added to better educate the students about the hazardous waste/materials management. In addition, a new comprehensive homework assignment was added. In this case a re-assessment was completed through the Senior Exit Survey 2016, which showed improvement in this outcome area.

Table 4.5: Sample Outcome Assessment and Evaluation through Senior Exit Survey

Outcome	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I have the ability to apply business and risk management concepts as part of a comprehensive safety and health management program.	75%	25%	0%	0%	0%
I have the ability to identify and describe the fundamental aspects of hazardous materials management.	12.5%	43.75%	25%	18.75%	0%

A.7 Annual Assessment Meeting

All the course assessment data was last reviewed at the first SHM assessment meeting in Spring 2015, and corrective actions, if any, were decided. For example, the results of the example outcomes # 1 and # 23 were discussed earlier along with corrective actions were agreed upon by the SHM Faculty during the assessment meeting. The senior exit survey was briefly reviewed during the April 7, 2016 IAC meeting. A full review of the senior exit survey results from academic years 14-15 and 15-16 will be conducted in Fall 2016.

Of course, the tables presented above are only examples of selected outcomes. The minutes of this meeting that includes the results of the entire evaluation for the 25 student outcomes along with corrective actions, where appropriate, will be available to the reviewers during their visit.

A.8 Evaluation Documentation

All the assessment results are tabulated in an MS Excel spreadsheet for the academic year to compare with subsequent years, which is maintained by the SHM program director. There is a continuing effort to make assessments more standardized such as meeting timeline and documentation. For example, since the academic year 2014-15, the program faculty agreed to produce a one-page report for each SHM course which identifies the outcome(s) covered by that course, assessment results, and any changes needed as part of the continuous improvement process. These reports are maintained in the SHM program director's office both electronically and hard copies. These reports will be extensively used during the annual assessment meeting and IAC meetings. The survey results of the cooperative education site supervisor surveys and the senior exit surveys are maintained in the SHM program director's office. Meeting minutes of faculty reviews of various assessment data and resulting recommended actions are maintained in the SHM program director's office.

B. Continuous Improvement

The SHM Program is committed to continuous improvement. The results from our course assessment will be reviewed annually as part of our continuous improvement process. The program has made significant changes over the last 3 years in the spirit of continuous improvement, and to meet ABET/ASAC requirements, in the areas of curriculum, faculty, facilities, missions statement, outcomes, and objectives. The recommendations for change has typically come from SHM program faculty and Industry Advisory Council (IAC). Examples of recent changes in the areas of curriculum, constituent representation, outcomes, assessment tools, and facilities, are discussed below:

B.1 Overall Curriculum Example

The most significant recommendation came from the IAC curriculum sub-committee which met on April 23, and August 1, 2012, and reviewed the curriculum and recommended changes to the SHM faculty. Following the recommendations from the IAC, the program developed a program proposal to revise the B.S. in Safety and Health Management. This was a major revision which included:

- Revisions to all existing SHM courses such as title change, credit change, description change, and integrating laboratory component in appropriate courses.
- Addition of two new required SHM courses: SHM 301 Fundamentals of Safety and Health Management and SHM 480 Safety and Health Laboratory.
- Revision to the list of courses in mathematics, basic sciences with experimental experience, and applied sciences.
- Addition of new support courses in areas of project management, communication, substance abuse, statistics, and business; and

- Removal of the minor requirement.

The proposal increased the degree program's credit to 129-132 in addition to the CWU's general education component. The proposal was approved by the CWU Faculty Senate on February 6, 2013. The curriculum was first implemented in Fall 2013. Evidence of this program and course change documentation will be available to ABET program evaluators during the site visit.

B.2 Course Change Examples

- The title of SHM 481 used to be "Professional Safety Today" prior to academic year 2013-14. The IAC during its August 1, 2012 meeting recommended the program to change it to "Evolving Issues in SHM" in line with the outcome # 25.

- Prior to academic year 2013-14, the SHM 490 Cooperative Education, was only 3-credits and required 120 hours of internship. The IAC and the faculty felt this was inadequate. It was increased to 6-credits starting 2013, however required only 240 hours of internship, since CWU policy states that one credit of SHM 490 requires a minimum of 40 hours of field experience. The IAC recommended to increase the number of hours (400+) so that students can get meaningful exposure from their internship. The SHM faculty accepted this recommendation during the quarterly meeting on March 18, 2015 to require 400 hours for 6 credits. On March 31, 2015 the SHM program submitted a proposal to the Faculty Senate in order to specify/require a minimum of 67 clock hours for SHM 490. This change was approved by the CWU Faculty Senate Curriculum Committee on May 7, 2015. Starting Summer 2015 students registering for SHM 490 were required to perform 400 clock hours of field experience.

B.3. Assessment Tool Changes

The program requested the Industry Advisory Council's (IAC) curriculum sub-committee to review at least two courses during their regular meeting including syllabus and assessment tools. To date they have reviewed twelve courses: SHM 301, 323, 351, 353, 371, 377, 379, 471, 474, 481, 485, and 490, and have provided feedback for improvement. For example, during their October 27, 2014 meeting they reviewed the Capstone course SHM 485. Based on their review of one of the capstone projects that required students to create a safety assessment tool the committee recommended,

> *"…metrics are all trailing indicators, no clarity for leading indicators (e.g. worker engagement, cultural surveys) Is there room to bring attention to proactive measures when assessing a company?"*

The course instructor added several leading indicators to the assessment tool capstone project in Spring 2015.

B.4 Constituent Change Example

The Industry Advisory Council (IAC) includes employers and alumni as voting members of the IAC, however, was missing student (major program constituent) representation. During its April 2, 2015 meeting the IAC voted to include a current SHM student as a member of the IAC to represent the SHM students. The IAC decided that the sitting CWU ASSE Student Section president will be a member of the IAC. Daniel Dorn, a senior, current Section President attended the October 9, 2015 meeting.

B.5 Facilities Change Example

The SHM program used to have only one dedicated lab space until 2013. Since then, the program has grown in terms of enrollment, hence, started to add additional equipment. In addition, the program wanted to include lab components in the areas of environmental management, fire safety, and ergonomics, which has been constantly brought up students through the assessment process. The IAC/faculty discussed this during its April 2, 2015, meeting and realized that the program lacked the necessary lab space. Hence, it recommended adding another lab space dedicated to the SHM program. They wrote a letter, signed by all IAC members, to the CWU administration, requesting a new lab space. This was also supported by the College Dean, Dr. Paul Ballard. On August 17, 2015, Dr. Rajendran made his case to the CWU Enterprise Facilities Committee to reclassify Hogue 229, an 800 sq. ft., classroom from "general" scheduled classroom to a department scheduled lab. The committee unanimously approved. On October 1, 2015, CWU officially notified the program that it can take over the classroom starting winter 2016 to convert it into a lab space.

B.6 Mission Statement / Core Values Change Example

The program's initial core values were excellence, professionalism, and leadership. The IAC recommended to add "engaged, innovative, and networking," as additional values for the program during its August 1, 2012 meeting. The program accepted the recommendation.

Hence, based on above examples it is evident that the SHM program actively listens to its constituents and is committed to continuous improvement.

C. Additional Information

Examples of all the "methods of assessment" used to assess the 25 student outcomes will be available to the ABET program evaluators during their visit. All of the course materials will be organized in binders labeled by courses. In addition, the reviewers will also have access to summary reports of senior exit surveys, co-op site supervisor evaluations, IAC meeting minutes, and program assessment meeting minutes.

CRITERION 5. CURRICULUM

A. Program Curriculum

The discussion and materials presented in this section are based on the curriculum that was in effect for the 2015 graduating class.

A.1 Plan of Study

The plan of study for the Bachelor of Science (B.S.) in Safety and Health Management, is included in Table 5.1. As previously indicated, the program does not have any options or specializations. CWU currently operates on a quarter basis. Enrollments for SHM courses, required prerequisites for a SHM course, and the specific student outcomes addressed by each SHM course are included in Table 5.2.

A.2 Curriculum Alignment with Program Educational Objectives

All the required SHM courses and the SHM Program Educational Objectives (PEOs) are directly related. As discussed previously within Criterion 4, the curriculum was developed with significant input from the program Industry Advisory Council. All of the courses were created to ensure that the graduates are well prepared to pursue a career in the safety discipline, and possess the comprehensive knowledge and skillset to develop, implement, and manage safety and health programs. Hence, all the SHM courses 301, 323/325, 351, 352, 353, 371,375, 377, 379, 471, 472, 474, 477, 480, 481, 485, and 490; are directly related to PEO # 1 and PEO # 2.

The PEO # 3 addresses professional growth through lifelong learning. The specific courses that prepare our students to meet this objective are SHM 301, SHM 481, and SHM 485. The PEO # 4 addresses acting in a professional and ethical manner, which is covered in SHM 301, 485, and SHM 490. All the courses prepare the students to communicate effectively and work in multidisciplinary teams. However, specifically the courses SHM 351, SHM 485, and SHM 490 address this objective.

A.3 Curriculum Alignment with Student Outcomes

The alignment of required SHM courses (those courses with a SHM prefix) with student outcomes is identified in Table 5.2, and also in Appendix A under each SHM course syllabus. The specific course assessment activity that is completed for the student outcome is identified in Table 4.1.

The required program prerequisite courses PSY 101; MATH 130; MATH 153 or 154; BIOL 201, and CHEM 101 or CHEM 111/111L or CHEM 181/181L supports the attainment of student outcome # 2. The courses PHYS 106 and the statistics course selective elective BUS 221 or PSY 362 also support the attainment of outcome # 2.

The professional management courses provide a solid foundation in managerial knowledge, and the skills and abilities necessary for graduates to enter the safety profession. The courses ADMG

385 and COM 345 support the attainment of communication outcome # 23. The attainment of outcome # 15 is supported by courses such as HED 210; BUS 241; HRM 381; ADMG 374 or IET 455, and MGT 380 or PSY 456.

A.4 Prerequisites for SHM Courses

The prerequisites for all SHM courses are included in Table 5.2. The prerequisites discussed above meets the ASAC General Program Criterion 5 Curriculum item a, *"a combination of college-level mathematics and basic sciences (some with experimental experience) appropriate to the discipline."* The prerequisite courses were identified by significant feedback from the IAC.

A.5 General Education Program

The general education component listed in Table 5.1 meets the ASAC General Program Criterion 5 Curriculum item c, *"a general education component that complements the technical content of the curriculum and is consistent with the program and institution objectives."*

The CWU general education program offers undergraduate students a liberal arts education in order to cultivate thoughtful and responsible persons and citizens, to prepare them for the world of work and to teach them to pursue knowledge for its own sake. In order to accomplish those broad goals, the general education program seeks to promote effective reasoning, broad and deep learning, and the inclination to inquire. The general education program requirement offers a basic knowledge of mathematics and the natural sciences, including laboratory experience, intermediate knowledge of at least one world language, the study of the humanities, the political, philosophical and cultural history of world civilizations, and the foundations and principles of American society. Each of these areas consists of multiple courses. Hence, the general education courses are taken by each SHM student will vary significantly, except the ones required/specified by the SHM program.

A.6 Culminating Experience

The curriculum includes the course SHM 485 Safety and Health Management Capstone, which meets the ASAC General Program Criterion 5, *"Curriculum that culminates with a comprehensive project or experience based on the cumulative knowledge and skills acquired in earlier course work."*

Students complete three major projects and a paper that incorporate concepts they learned in earlier coursework. The program Industry Advisory Council (IAC) reviewed two of the projects and the paper in 2014 and provided feedback, and overall felt they were, *"very good capstone"* projects. One project requires the student to analyze Environmental, Health, and Safety (EHS) data for a company and prepare a detailed corrective action plan including a recommendation to create an accident prevention plan. The students performs various trend analysis as part of their project, and uses EHS hazard recognition/control techniques, and identifies and applies various EHS codes, regulations, and standards. The second project requires the students to create a safety assessment tool for an organization using MS Excel to assess the level of risk posed by an organization from an EHS standpoint. The project requires the students to incorporate eight EHS

lagging and leading indicators. The program officially added the last project to the curriculum in AY 15-16, which requires the students to solicit a current real-world EHS problem from an organization and propose a solution based on their knowledge and skills gained in prior coursework. The program has sent this capstone project to the IAC's curriculum sub-committee for their review at their July 2016 meeting. The program has developed rubrics to assess these projects. Appendix A lists SHM 485 Syllabus that provides a course description and specific goals for the course. *Overall, we feel the students use their knowledge and skills acquired in earlier course work to complete these projects.* The program will continue to seek feedback from the IAC to improve these projects continuously.

A.7 Cooperative Education / Internships

All students are required to take SHM 490 Cooperative Education in their senior year after completing half the required SHM courses. SHM 490 is a six credit course, and the students are required to work a minimum of 400 hours. The primary objective of the course is to provide hands-on experience and allow the students to apply safety and health principles to real world situations. A set of mandatory and elective objectives and associated activities and expected competency is established at the onset, by consensus among the student, the employer supervisor, and the faculty advisor. The students are required to: (1) keep a daily log to record their learning experience, (2) develop and submit a detailed report, and (3) deliver a presentation when they return to campus the following quarter. The student's supervisor is asked to complete a mid-term and final evaluation, and a brief outcomes assessment survey. The faculty advisor will use a rubric to assess the written report and the oral presentation to ensure the student has met the outcomes.

A.8 Display Materials

The display materials will be organized in binders by courses and appropriate supporting documentation topics. The program will have available the following:

- SHM course (those courses with a prefix SHM) binders and textbooks - course syllabi, individual course assessment sheets, examples of student work (assignments, exams, and projects) ranging from excellent through poor for the 25 SHM student outcomes, and other course assessment works. The individual course assessment sheet for each course will list the SHM student outcomes assessed in that course and its link to ABET/ASAC criteria. The sample student work which are used to assess the outcomes will be placed under crimson colored tabs in each binder for evaluators to review them with ease.
- Support Course Binder - course syllabi and textbooks for supporting courses and electives in the major.
- SHM Industry Advisory Council (IAC) meeting minutes binder.
- Recent SHM course/program changes, and faculty program meeting binder.
- Summary reports for Senior Exit Surveys and Cooperative Education Supervisor Surveys.
- Summary report for 2014-15 program assessment.

B. Course Syllabi

Appendix A contains syllabi for courses used to satisfy the college-level mathematics and basic sciences and discipline-specific requirements required by Criterion 5 or any applicable program criteria. For convenience the syllabi are separated into three sections; (1) SHM courses (those courses with a prefix SHM), (2) Professional Management courses, and (3) Mathematics and Basic Science Courses.

Table 5.1: Curriculum B.S. in Safety and Health Management (SHM) Program

Qtr.	Course (Department, Number, Title)	R, E, or SE	Curricular Area (Credit Hours)			
			Math & Basic Sciences	Discipline Specific Topics	General Education	Other
The General Education Basic ad Breath (includes SHM required Math and Science) Courses are normally taken during the first two years at CWU.	**General Education (GE) Program**					
	GE Basic Skills Requirements					
	Academic Advising Seminar (UNIV101)	R			1.0	
	English Composition I (ENG 101 Critical Reading)	R			4.0	
	English Composition II (ENG 102 Reasoning and Research)	R			4.0	
	Mathematics (pre-calculus or calculus)	R	5.0			
	Reasoning Elective	R	4.0 or 5.0			
	Computer Fundamentals (IT 101 or CS 101)	R			3.0 or 4.0	
	Foreign Language (2-yrs High School or 1-yr. College)	R			0.0 or 12.0	
	GE Breadth Requirements					
	Arts & Humanities 1	R			5.0	
	Arts & Humanities 2	R			4.0 or 5.0	
	Arts & Humanities 3	R			5.0	
	Social & Behavioral Sciences 1	R			5.0	
	Social & Behavioral Sciences 2	R			3.0 to 5.0	
	Social & Behavioral Sciences 3	R			5.0	
	The Natural Sciences 1	R	5.0			
	The Natural Sciences 2	R	4.0 or 5.0			
	The Natural Sciences 3	R	4.0 or 5.0			
	SHM Requirements: Math/Science					
	PSY 101 General Psychology	R			5.0 (lab)	
	BIOL 201 Human Physiology	R	5.0			
	MATH 130 Finite Mathematics	R	5.0			
	PHYS 106 Physics Inquiry	R	5.0 (lab)			
	MATH 153 Pre-calculus Math I	SE	5.0			
	MATH 154 Pre-calculus Math II	SE	5.0			
	CHEM 101 Contemporary Chemistry	SE	5.0 (lab)			
	CHEM 111/111L Chemistry	SE	5.0 (lab)			
	CHEM 181/181L Chemistry	SE	5.0 (lab)			

Table 5.1: Curriculum B.S. in Safety and Health Management (SHM) Program (Cont.)

Quarter	Course (Department, Number, Title)	R, E, or SE	Curricular Area (Credit Hours)			
			Math & Basic Sciences	Discipline Specific Topics	General Education	Other
Courses are taken normally during Sophomore, Junior, and Senior years depending class schedule.	**SHM Requirements - Professional**					
	HED 210 Drugs and Health	R		3.0		
	BUS 241 Legal Environment of Bus	R		5.0		
	HRM 381 Mgmt of Human R	R		5.0		
	ADMG 385 Business Report Writing	R		5.0		
	COM 345 Professional Speaking	R		4.0		
	BUS 221 Intro Business Statistics	SE	5.0			
	PSY 362 Intro Statistics	SE	5.0			
	MGT 380 Organizational Mgmt.	SE		5.0		
	PSY 456 Ind. & Org. Psychology	SE		4.0		
	ADMG 374 Project Mgmt.	SE		5.0		
	IET 455 Engineering Project Mgmt.	SE		4.0		
	SHM Requirements – Core					
Fall-7	SHM 301 Fundamentals of SHM	R		3.0		
Win-8	SHM 323 Construction S&H	SE		3.0		
Win-8	SHM 325 Manufacturing S&H	SE		3.0		
Win-8	SHM 353 Risk and Insurance	R		4.0		
Win-8	SHM 371 Emergency Planning	R		4.0		
Spr-9	SHM 351 Incident Analysis	R		3.0		
Spr-9	SHM 352 Systems and Design	R		3.0		
Spr-9	SHM 375 Transportation/Fleet Safety	R		4.0		
Sum-10	SHM 490 Co-operative Education	R		6.0		
Sum-10	SHM Free Elective	E		4.0 or 5.0		
Fall-11	SHM 377 Hazardous Materials Mgmt	R		4.0		
Fall-11	SHM 379 Facility & Building Safety	R		4.0		
Fall-11	SHM 471 Fund of Industrial Hygiene	R		4.0		
Win-12	SHM 472 Ergonomics	R		3.0		
Win-12	SHM 474 SHM Systems	R		4.0		
Win-12	SHM 480 S&H Laboratory	R		2.0		
Spr-13	SHM 477 Environmental	R		4.0		
Spr-13	SHM 481 Evolving Issues in SHM	R		2.0		
Spr-13	SHM 485 SHM Capstone	R		3.0		
Total Credits	180.0		27.0 - 30.0	94.0 - 97.0	44.0 - 59.0	
Percent of Total	100%		~16%	~52%	~32%	

Table 5.2: Required Course and Section Size Summary
B.S. in Safety and Health Management (SHM) Program

Course Title	Last two times course was offered	Average Section Enroll.	Course Prerequisites	SHM Student Outcome Supported
SHM 301 Fundamentals of SHM	Fall 2014 Fall 2015	24 41	SHM Major / Minor	2, 4, and 16
SHM 323 Construction S&H	Winter 2016 Spring 2016	38 20	SHM 301	13, 14, and 16
SHM 325 Manufacturing S&H	Spring 2015 Spring 2016	12 38	SHM 301	13, 14, and 16
SHM 351 Incident Analysis	Spring 2015 Spring 2016	22 39	SHM 301, 323/5 CR: SHM 352	19
SHM 352 Systems and Design	Spring 2015 Spring 2016	22 38	SHM 301 MATH 130 CR: SHM 351	2 and 11
SHM 353 Risk and Insurance	Winter 2015 Winter 2016	25 39	SHM 301	15
SHM 371 Emergency Planning	Winter 2015 Winter 2016	25 20	SHM 301	10
SHM 375 Transportation/Fleet Safety	Spring 2015 Spring 2016	22 39	SHM 301	12
SHM 377 Hazardous Materials Mgmt	Fall 2014 Fall 2015	26 21	SHM 351 CHEM Preq.	2 and 9
SHM 379 Facility & Building Safety	Fall 2014 Fall 2015	30 21	SHM 351	7, 4, and 21
SHM 471 Fund of Industrial Hygiene	Fall 2014 Fall 2015	24 22	SHM 351 BIOL 201	2 and 5
SHM 472 Ergonomics	Winter 2015 Winter 2016	26 19	SHM 471	2 and 8
SHM 474 SHM Systems	Winter 2015 Winter 2016	25 21	SHM 353	17, 18, and 23
SHM 477 Environmental Mgmt.	Spring 2015 Spring 2016	29 20	SHM 353 SHM 377	6 and 16
SHM 480 S&H Laboratory	Winter 2015 Winter 2016	11 10	SHM 490, 471 & PHYS 106	2, 3, and 21
SHM 481 Evolving Issues in SHM	Spring 2015 Spring 2016	23 21	SHM 490	24 and 25
SHM 485 SHM Capstone	Spring 2015 Spring 2016	23 21	SHM 490	1 and 23
SHM 490 Co-operative Education	Summer 2015 Summer 2016	22 38	SHM 301, 351, 352, 353, & 371	1, 20, 22, and 23

CRITERION 6. FACULTY

A. Faculty Qualifications

There are four faculty members assigned to the SHM program. The four faculty members include a tenured associate professor (Dr. Sathy Rajendran), a tenure-track assistant professor (Prof. Morgan Bliss, who will start in Fall 2016), a non-tenure track full-time senior lecturer (Prof. Michael Andler, multi-year contract), and a non-tenure track part-time lecturer (Dr. Allen Sullivan, multi-year contract). Prof. Scott Calahan, coordinator for the technology education program and a tenured full professor teaches the SHM program's SHM 375 Transportation and Fleet Safety Course. *Hence, the current faculty for the program provides the adequate instructional capacity to offer all of the required and elective SHM courses on an annual basis.*

The educational backgrounds and industry experience of the faculty are consistent with the mission of the SHM program. Historically the program has predominantly served the construction industry. Currently, more than 80% of our graduates pursue a career in the construction industry. The tenured associate professor and program director, Dr. Rajendran has more than five years of construction safety experience. He has managed workplace environmental, health, and safety programs for construction projects and his experience include a wide variety of buildings, with complex mechanical systems, including hospitals, a biopharmaceutical facility, high-rise condominiums and office buildings, airport projects, parking garage and a hotel. The program recently hired Prof. Morgan Bliss, who will start on September 1, 2016, to add industry diversity among faculty. She brings ten years of applied safety and health experience in the general industry. Prof. Andler has worked in the U.S. Forest Service and the construction industry. Dr. Sullivan has served as the Environmental Management System and Sustainability Coordinator for over four years. Prof. Calahan, who teaches the required traffic safety course, has years of experience in this discipline. *Hence, the current faculty members' industry background/experience is adequate to cover all the curricular areas of the program.*

Three of the four faculty have certifications from nationally accredited credentialing bodies. The certifications held by the faculty members include Certified Safety Professional (CSP), Certified Industrial Hygienist (CIH), Certified Indoor Environmentalist (CIE), Construction Health and Safety Technician (CHST), and Associate in Risk Management (ARM). Two of the faculty members hold the Construction Risk and Insurance Specialist (CRIS) from the International Risk Management Institute.

All the faculty members are involved in professional development activities. All the SHM faculty are members of at least one professional society such as American Society of Safety Engineers (ASSE), Risk Management Society (RIMS), American Industrial Hygiene Association (AIHA), National Fire Protection Association (NFPA), etc. The composition, credentials, and workload information for the B.S. in Safety and Health Management faculty are described fully in Tables 6.1 and 6.2.

B. Faculty Workload

The workload expectations for tenured and tenure-track faculty involve three categories: teaching, research, and service. The workload expectations for the non-tenure track faculty involves only teaching. The faculty of CWU unionized in 2006. The Collective Bargaining Agreement (CBA) governs workloads and other workload issues. The CBA defines a full-time load as 45 workload units (WLUs) per year. For teaching, each WLU is equivalent to one lecture contact hour, and a two-hour lab is typically considered 2 WLU (but only one credit for students). WLU credits are allocated for Research and Service tasks (such as program coordination, department & college committees, professional service, etc.). Workload units associated with service activities are based on 30 hours = 1 WLU. In general, a typical full-time instructor may have 36 WLU assigned to teaching, with the remaining 9 WLU split between research and service categories. Table 6.2 provides details of the WLU assignments for each SHM faculty member.

C. Faculty Size

As described in the faculty qualifications section, there are four faculty members assigned to the SHM program. Dr. Rajendran serves as SHM program director, with responsibility for organizing and coordinating the SHM Industrial Advisory Council (IAC), publication of the annual newsletter and program reports, contacts with prospective students, alumni, and industrial contacts, curriculum change review, resolving course scheduling conflicts, fundraising, program accreditation, and other program related tasks that may arise. In addition to these responsibilities, Dr. Rajendran also serves as the Faculty Advisor for the student section.

Student advising is normally split between the two tenured/tenure-track SHM faculty advisors, with the average being 50 advisees per faculty. Each quarter students are required to meet with the SHM advisors. At a minimum, the faculty is required to post and maintain at least two office hours. A detailed discussion of faculty interactions during advisement is included in Criterion 1.

The three full-time and one part-time teaching faculty is adequate for the Safety and Health Management Program. However, the program's IAC has recommended that the program add a third tenure-track line to bring long-term stability to the program and deal with the enrollment growth. During the October 9, 2015, Safety and Health Management Industry Advisory Council (IAC) meeting, the College Dean shared that he recognized this concern, and told the SHM's IAC that he will strongly consider adding a third tenure-track line if the need arises.

D. Professional Development

Within the ETSC department, faculty members are encouraged to attend at least one professional society conference each year, and many faculty members attend more than one. This is true for both tenured/tenure-track and non-tenure track faculty. Also, there are opportunities for attending appropriate off-campus training seminars.

Funding for tenured and tenure-track faculty professional development is in the form of annual funding of $700 per faculty member from the provost's office, with an additional $300 from the Dean of the College of Education and Professional Studies (CEPS). If a faculty member is presenting a peer reviewed paper at the conference/seminar, the office of the Dean of the School of Graduate Studies and Research will provide an additional $300 in funding. Beyond this $1,300 of annual funding, the ETSC department also funds registration and travel from summer revenues to at least one professional conference per faculty member. Industry funding provided through the CWU Foundation accounts are also available for the SHM faculty. For non-tenure track faculty, most funding comes from the ETSC Department summer revenues or foundation accounts, and a university-wide professional development fund pool. Also, for some local conferences, SHM program employers or friends cover the registration cost for faculty and students. For example, the Washington Construction Safety Day Conference registration cost has been paid by a local construction company for three years in a row. The department provides flexibility for faculty travel for professional development as needed. Often another faculty will substitute in courses for faculty that is traveling for professional development.

Typical professional development activities in recent years include the ASSE annual conference, ASSE local PDC, recertification(s), new certification(s), WA Governors Safety and Health Conference, ABET Faculty Workshops, and more. Details of individual faculty professional development activities are listed in individual resumes in Appendix B. *The level of support for faculty development from all the sources listed above is quite adequate.*

E. Authority and Responsibility of Faculty

The teaching faculty collectively is the major force governing the curriculum of the university. The faculty are instrumental in creating, modifying, and evaluating their courses. Faculty ideas for changes or additions to existing programs, or creation of new programs such as minors, majors or specializations, can come from the IAC, personal experiences, consultation and interactions with industry, and professional development opportunities such as conferences or workshops. Course/program creation, modification, and deletion follows a standard set of procedures established by university curricular policies prescribed under "CWUP 5-50 Curriculum Policies and Procedures." The primary facilitator in SHM course/program proposal, modification or assessments is Dr. Sathy Rajendran, who is assigned to do the administrative duties necessary for the tasks. He initiates curriculum changes through ETSC Department Chair and the College Dean. The changes are reviewed and approved by Registrar Services. In the case of a new program creation or program modification proposals, it is subject to examination by the provost/ vice president for academic and student life. The Approved proposals are then reviewed by the Faculty Senate curriculum committee, and posted for 14-day campus review. Some are subject to further review by the higher education coordinating board and the board of trustees.

Each faculty member is responsible for the evaluation of student outcomes within their specific courses. The program faculty defines the program educational objectives and student outcomes. The faculty uses input from various constituents of the program such as the IAC, students, employers, and alumni. However, the final definition of these is determined by the program faculty.

More details about the curriculum change process can be accessed on the CWU Faculty Senate website: http://www.cwu.edu/faculty-senate/curriculum-and-general-education-forms.

TABLE 6-1: Faculty Qualifications

Safety and Health Management Program

Faculty Name	Highest Degree Earned, Field and Year	Rank [1]	Type of Academic Appointment[2] T, TT, NTT	FT or PT	Years of Experience			Professional Registration/ Certification	Level of Activity[4] H, M, or L		
					Govt./Ind. Practice	Teaching	This Institution		Professional Organizations	Professional Development	Consulting/summer work in industry
Sathyanarayanan Rajendran	PhD in Civil Engineering / Environmental and Occupational Health, Oregon State University, 2007	ASC	T	FT	6	5	5	CSP, ARM, CRIS	H	H	L
Morgan Bliss[3]	M.S., in Technology – Environmental Management, Arizona State University, Arizona, 2012	AST	TT	FT	10	3	0[3]	CSP, CIH, CIE	H	H	M
Michael Andler	M.S., in Engineering Technology, Central Washington University, 2008	I	NTT	FT	3	9	9	CHST, CRIS	L	M	L
Allen Sullivan	PhD in Geography, Oregon State University, 2000	I	NTT	PT	8	11	11	-	L	M	L
Scott Calahan	MA, Heritage College, 1996	P	T	FT	3	26	15	-	H	H	L

1. Code: P = Professor ASC = Associate Professor AST = Assistant Professor I = Instructor A = Adjunct O = Other
2. Code: TT = Tenure Track T = Tenured NTT = Non Tenure Track
3. A National search for this tenure-track position was completed in Spring 2016, she will start in Fall 2016.

Table 6-2: Faculty workload summary

Safety and Health Management Program

Faculty Member (name)	PT or FT[1]	Classes Taught (Course No./Credit Hrs.) Term and Year[2]	Program Activity Distribution			% of Time Devoted to the Program[3]
			Teaching	Research Scholarship	Other	
Sathyanarayanan Rajendran	FT	Fall 2015: SHM 301 (3 cr.); SHM 323 (3 cr.) Winter 2016: SHM 323 (3 cr.); SHM 480 (2 cr.) Spring 2016: SHM 351 (3 cr.); SHM 481 (2 cr.)	40%	12%	48% Senate / Director	100%
Morgan Bliss[4]	FT	Fall 2016: SHM 379 (4 cr.); SHM 471 (4 cr.) Winter 2017: SHM 480 (2 cr.) of 3 sections Spring 2017: SHM 351; SHM 477 (4 cr.); SHM 485 (3 cr.)	80%	14%	6%	100%
Michael Andler	FT	Fall 2015: SHM 377 (4 cr.) Winter 2016: SHM 474 (4 cr.); SHM 353 (3 cr.) Spring 2016: SHM 352 (3 cr.); SHM 477 (4 cr.); SHM 485 (3 cr.)	100%	0%	0%	20%
Allen Sullivan	PT	Fall 2015: SHM 379 (4 cr.); SHM 471 (4 cr.) Winter 2016: SHM 371 (4 cr.); SHM 472 (3 cr.) Spring 2016: SHM 325 (3 cr.)	100%	0%	0%	50%
Scott Calahan	FT	Spring 2016: SHM 375 (4 cr.)	67%	13%	20% Tech Ed. Director	~10%

1. FT = Full Time Faculty or PT = Part Time Faculty, at the institution
2. For the academic year for which the Self-Study Report is being prepared.
3. Out of the total time employed at the institution.
4. A National search for this tenure-track position was completed in Spring 2016, she will start in Fall 2016. Course listing- scheduled to teach AY 16-17

CRITERION 7. FACILITIES

The SHM Program is housed in Hogue Technology Building or Hogue Hall, which underwent a $27 million renovation and expansion in 2012. Hogue Hall is CWU's primary engineering technology classroom building. Originally built in the early 1970s, the two-story concrete and masonry structure received a major modernization that more than doubled its size to consolidate its programs and help train students for 21st-century careers. The new 96,400 square feet building includes a renovated space of 34,600 square feet, and a newly added space of 61,400 square feet.

The Hogue Hall renovation and expansion provided additional classroom space including a flexible high bay laboratory space with an overhead crane for integrated projects, and rooftop lab space for testing of wind and solar technologies. Other spaces include a wide range of laboratories, workshops, classrooms and office spaces that echo private-sector workplace. Many of the design and construction features are focused around the building as a living-learning laboratory. Centralized circulation corridors encourage informal and spontaneous exchange between program spaces, including furnished lounges with stainless steel bulletin boards. Classrooms and workshops are filled with daylight, and organized to provide flexibility and efficient moving and layout of large equipment. The building achieved the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Gold certification for new construction.

A. Offices, Classrooms and Laboratories

A.1 Offices

The SHM Program is part of the Engineering Technologies, Safety, and Construction (ETSC) Department. The administrative office for the ETSC Department is located on the first floor of Hogue Hall in Room 101 and it is approximately 2,000 sq. ft. It houses the offices of the ETSC department chair, department secretary, and two clerical stations used by student assistants, along with a 10-seat conference room and the mail room. All department-related paper records are stored in this office. A larger 20-seat conference room with video conference capability is located on the third floor, adjacent to faculty offices. The department chair has a large private office of sufficient size to hold small private meetings with 4 to 5 people.

All four faculty offices for the SHM program are located on the third floor of Hogue Hall, in relatively close proximity to all classrooms in Hogue Hall. Each faculty member is provided with a private and lockable office. The faculty offices are of sufficient size for private meetings with students. Each faculty office is outfitted with a desktop computer, office furniture, a whiteboard, book shelving, and multiple storage cabinets.

A.2 CWU American Society of Safety Engineers (ASSE) Student Section Office

The CWU American Society of Safety Engineers (ASSE) Student Section has a dedicated, lockable office space in Hogue Hall in Room 231E, which is furnished with a desktop computer, a whiteboard, desk/chairs, a bulletin board, and storage cabinets. The Section officers use this office to conduct Section business. They store all their Section related materials in this office.

A.3 Classrooms

CWU has numerous classrooms available for instruction and an extensive support system, operating under the designation of Academic Scheduling within the Registrar Services. Academic Scheduling coordinates the scheduling for courses and other related academic events. These resources are available for all CWU academic departments. Classrooms are assigned on a quarter-by-quarter basis by the ETSC Department Chair, in consultation with the SHM faculty (and other ETSC faculty). If faculty, staff, or students would like to schedule a non-academic event, such as employer information sessions, ASSE Student Section membership meetings, etc., a support system called Scheduling Center is also available.

All required and elective SHM courses (those courses with a prefix SHM) are taught in a variety of classrooms within Hogue Hall. Table 7.1 lists the available classrooms in Hogue Hall and their seating capacity and adequacy for instruction.

Table 7.1: Classrooms in Hogue Hall

Classroom	Seating Capacity / Notes	Condition	Adequacy for Instruction	Area (sq. ft.)
Hogue 102	65	Excellent	Excellent	1,600
Hogue 129	32	Excellent	Excellent	850
Hogue 220	32 / DE capabilities	Excellent	Excellent	1,000
Hogue 221	32 / DE capabilities	Excellent	Excellent	1,000
Hogue 223	32	Excellent	Excellent	850
Hogue 226	50	Excellent	Excellent	1,500
Hogue 227	50	Excellent	Excellent	1,500

Each Hogue classroom is equipped with a large whiteboard, a ceiling mounted projector with a pull down screen, a desktop computer wired to the projector and controls, a document camera, DVD, VCR, and a state-of-the-art multi-media system with Bose surround sound system. Wireless internet is available throughout the building. Some of the classrooms in Hogue Hall are available to programs outside the ETSC department, however, programs within ETSC gets the first scheduling rights. Only after all the programs within ETSC, including SHM courses are scheduled, the classrooms are opened to other program course scheduling. All equipment are relatively new and are well maintained and are in good operating condition. *The number and quality of classrooms are more than adequate for SHM instruction.*

A.4 Student Study Areas and Lockers

Hogue Hall provides two dedicated lounge-type study areas, one each, on the first and second floor; with tables and chairs for students to study and/or relax. In addition, there are other study areas located within Hogue, with tables and seating arrangements for studying and discussions. SHM students take full advantage of these spaces. The two conference rooms in Hogue Hall can also be reserved by students if needed for group project discussions and other academic purposes.

Hogue Hall is also equipped with more than 200 student lockers, which can be rented by students to store their personal belongings. The SHM program has ten dedicated lockers to store program-owned Personal Protective Equipment (PPE) such as hard hats, gloves, vests, etc., which are loaned to students for field trips. Table 7.2 provides detailed information about the study areas and conference rooms.

Table 7.2: Study Areas, Offices, and Conference Rooms in Hogue Hall

Study Area/Conference Room	Seating Capacity / Notes	Condition	Area (sq. ft.)
Study Area 1st Floor	12 w/ two Mac computers	Excellent	400
Study Area 2nd Floor	30	Excellent	800
Other Study Areas 1st Floor	16	Excellent	N/A
Other Study Areas 2nd Floor	18	Excellent	N/A
Conference Room 1st Floor	10	Excellent	200
Conference Room 3rd Floor	20	Excellent	800
SHM Student Field Office	6	Excellent	140

A.5 Laboratories

A summary and description of laboratories in Hogue Hall is provided in Table 7.3. Hogue Hall is considered a learning laboratory equipped with multiple laboratories and workshops. The SHM program currently has two dedicated and one shared laboratory space. There are multiple other workshops/labs which are being occasionally used as part of SHM instruction.

Table 7.3: Laboratory and Workshop Spaces in Hogue Hall

Lab/ Workshop	Name	Condition	Adequacy for Instruction	Capacity	Area SF
Hogue 230	Safety Lab I[1]	Excellent	Excellent	36	2,000
Hogue 229	Safety Lab II[1]	Excellent	Excellent	24	800
Hogue 228	Lab Storage I[1]	Excellent	Excellent	--	140
Hogue 230B	Lab Storage II[1]	Excellent	Excellent	--	70
Hogue 106	Interdisciplinary Lab[2]	Excellent	Excellent	100	4,000
Hogue 108	Woods Lab[3]	Excellent	Excellent	16	3200
Hogue 105	Construction Lab[3]	Excellent	Excellent	24	800
Hogue 107	Machine Lab[3]	Excellent	Excellent	15	3200
Hogue 107B	Grinder Room[3]	Excellent	Excellent	5	
Hogue 109	Paint/Finish Room[3]	Excellent	Excellent	1	100
Hogue 127	Metallurgy Lab[3]	Excellent	Excellent	28	3000
Hogue 132	Foundry/Welding[3]	Excellent	Excellent	16	2000

1 – Space fully dedicated to the SHM Program.
2 – Space shared with other programs within ETSC.
3 – Space dedicated to other programs within the ETSC department, current/future use by SHM program.

The 2,000 square feet Safety Lab I (Hogue 230) is fully equipped with appropriate latest industrial safety and industrial hygiene sampling equipment to meet program outcomes. The lab

has multiple training props such as Lock out/tag out simulator, electrical safety simulator, rigging trainer, etc. Other examples of equipment in this room include: scaffolding, fall protection equipment, respiratory equipment, scissor lift, and steel erection trainer. All the industrial hygiene equipment such as noise meter, light meter, heat stress monitor, etc., are stored in this lab as well. The lab also has various textbooks, codes, standards, manuals, journals and magazines related to the SHM discipline. The program takes pride that all equipment used in the lab is representative of what the students will use in industry. The students gain valuable hands-on experience in this lab.

When the program increased its enrollment in 2015 and added more equipment to meet its student outcomes, the original 2,000 square feet lab space (Safety Lab I) was deemed insufficient. The program submitted a request to the CWU Enterprise Facilities Committee to allocate additional dedicated lab space for the SHM program. The University approved Hogue 229 (Safety Lab II), a general lecture classroom, to be converted to a department controlled safety lab classroom in March 2016. One of the primary focus of this new lab will be to provide the students hands-on experience in evaluating ergonomic hazards and fire hazards. This new space will also serve as a reading room with an exclusive collection of environmental, health, and safety regulations, codes, books, training materials, and magazines. Two dedicated computer workstations for safety-related online reference will be added to this space. The SHM Program is currently working to furnish this new lab, and we anticipate it to be partially complete by the beginning of Fall quarter 2016.

Both these labs are equipped with tables/chairs, a large whiteboard, a ceiling mounted projector with a pull down screen, a desktop computer wired to the projector and controls, a document camera, DVD, VCR, and a state-of-the-art multi-media system with Bose surround sound system.

The high-bay interdisciplinary laboratory (Hogue 106) forms the building's signature campus presence, with a large roll-up door opening onto a loading dock that functions as an outdoor staging area and social plaza. This space has a 5-ton gantry-type crane which is occasionally used by the SHM program for crane and rigging safety training. The program's confined space simulator is also located in this space. Since the lab has high-bay space, the lab allows scissor lift training, fall protection training with the training truck to show load drops, etc. In addition, to the three labs discussed above, the program has two dedicated storage rooms to store SHM lab equipment such as ladders, scaffolds, tool box, etc.

Table 7.3 lists many other labs within Hogue Hall that are dedicated to other programs (e.g., Mechanical Engineering Technology, Technology Education) which are part of the ETSC department. These labs are equipped with numerous industrial equipment and tools commonly found in the manufacturing sector. For example, the woods lab has multiple table saws, planer, band saws, etc. The machine lab consists of Lathes, CNC machines, Cold Saw, etc. The foundry has a furnace and multiple welding stations. The SHM program sporadically uses these labs as part of its instruction. However, this is an area that can be improved as part of the continuous improvement process. The SHM faculty are thinking of developing hands-on activities that will make use of these state-of-the-art industrial workshops in Hogue.

The program receives feedback from our alumni and employers about the adequacy of our equipment. The program Industry Advisory Council (IAC) members took a tour of the SHM lab

facilities on November 5, 2014, and reviewed the equipment as part of the lab, which are used to meet the student outcomes. Overall they were content with the facility and agreed that the program has equipment in sufficient numbers and in good condition to meet the program student outcomes.

The current list of industrial safety and industrial hygiene equipment are listed in Appendix C. The program feels, that the current inventory of equipment and laboratory space are sufficient to meet the program outcomes. However, the program is actively looking to add more equipment that will enhance student learning.

Overall, the classrooms, offices, labs, and associated equipment are adequate to support attainment of the student outcomes and provides an atmosphere conducive to learning.

B. Computing Resources

B.1 Campus Computing Support

At CWU, the Information Services (IS) Division provides services and systems to meet the current and future information technology requirements of CWU's staff, faculty, and students in support of the academic mission of the University. The IS division consists of various sub-units such as accounts and access, computing support services, CWU Service Desk, Telecom, Wireless Access, Networks, E-mails and calendars, Data Storage, and more.

All CWU students are provided with an e-mail account and a network account, including provisions for a personal web site. The network account includes personal home directory space that can be accessed from anywhere with internet access. CWU Service Desk provides a single point of contact for faculty, staff, students, alumni and parents requesting technology related services by contacting them via phone (509-963-2001) or may access the webpage at http://www.cwu.edu/its-helpdesk/.

B.2 Campus Computing Resources

CWU campus computing resources are extensive, strategically placed around campus, professionally managed, and serves as an excellent resource for student learning. There are more than 25 public computer labs with 322 Mac and 315 PCs for student access. All computer labs have the listed standard software package for either PC or Mac computers (with a few minor exceptions) in Table 7.4. In Spring 2016, CWU announced that it will invest $750,000 to launch a computer-replacement program. For years CWU has relied upon the "Win-Win Desktop Computer Replacement Program" to update computer technology—but only sporadically. In order to ensure consistent and reliable computing resources for employees and students, CWU will replace the old Win-Win program with a consistent approach to replacing personal computing technology on a predictable schedule.

The CWU Computer Support Services provided service include warranty and out of warranty support, systems imaging and delivery, new equipment checkout, software installation and assistance, student computer lab management, and distribution of CWU site-licensed software.

Table 7.4 CWU Student Lab Software

PC Standard Software	MAC Standard Software
• Windows 7 64-bit • Internet Explorer, Firefox & Chrome • Microsoft Office 2013 • Microsoft Project 2013 • IBM SPSS Statistics • Adobe Acrobat Pro • Microsoft Endpoint AntiVirus • Central Access Reader	• OSX 10.10.5 • Safari & Firefox • Microsoft Office 2016 • IBM SPSS Statistics • Adobe Acrobat Pro • Adobe Master Collection CC • iLife and iWork • Microsoft Endpoint AntiVirus • Central Access Reader

B.3 ETSC Department/SHM Program Computing Resources

Students in the SHM program can take advantage of the two computer labs (1,550 sq. ft. each) in Hogue Hall located in rooms 118 and 120. The computer lab 120 (20 PC stations) is dedicated to the ETSC department and lab 118 (27 PC stations) is a university controlled public computer lab. Both computer labs, with a general suite of applications and program specific applications, serves the programs in the ETSC department. The two computer labs are used for instruction within the ETSC department. The labs are open during building hours (generally 7 a.m. to 9 p.m., closed on Saturdays, and open Sunday afternoons during the academic quarter).

Computers in the department controlled lab (Hogue 120) are being constantly upgraded to meet the student requirements with a $5 fee which is charged to every course within the ETSC department. Hogue Lab 118 computers are maintained and upgraded by the CWU Information Services.

As noted above the SHM program will also have two new computers in the new safety lab which will be used by students to reference safety and health related standards. All program faculty have their personal computers in their office and are replaced every 3-4 years depending on use. *In our assessment, the computer facilities are adequate for the student use in terms of meeting the program student outcomes.*

C. Guidance

CWU Service Desk provides a single point of contact for faculty, staff, students, alumni and parents requesting technology related services by contacting them via phone (509-963-2001) or may access the webpage at http://www.cwu.edu/its-helpdesk/.

Students are instructed in the use, operation, and handling of tools and equipment by the course instructors. While there are typically minor safety concerns associated with most safety lab work, operating procedures have been developed for each major lab exercise performed in the safety labs to protect the student from possible injury. For example, students are given specialized training and safety material on the proper and safe way to use the confined space simulator.

Faculty spend considerable time in the building outside of class time and are available one-on-one guidance for students regarding equipment usage on an as-needed basis. In addition, the ETSC department has a building safety policy which lists general safety rules such as training, PPE, and access requirements. Most labs have safety rules posted near the lab entrance. Students are expected to adhere to posted rules and procedures for each area.

We feel the students are provided with appropriate guidance regarding the use of the tools, equipment, computing resources, and labs available to the program.

D. Maintenance and Upgrading of Facilities

As noted above, Hogue Hall, which hosts the SHM program, underwent a major renovation/addition from 2009 to 2012. Hence, the building and most of the equipment are in good operating condition. Any repairs or modifications to floors, walls or ceilings of rooms are the responsibility of the CWU facilities. When a need arises in these areas, the department submits an online Work Order to CWU facilities. The Facilities Work Control Staff will assist with defining the need and direct the request to the proper facilities personnel. The cost of routine building maintenance and repairs is covered by CWU Facilities. The CWU Facilities provides janitorial services daily for Hogue Hall, which is adequate considering the use of the building.

The ETSC Department lab technician Greg Lyman is charged with maintaining and upgrading department computer facilities. The cost of maintenance/upgrade of the department controlled computers (faculty offices and computer lab 120) are paid by department operational funds and student fees. Repairs and maintenance of multimedia equipment and computer stations in the classrooms are the responsibility of the Media Services within the Information Services.

The SHM faculty members teaching in labs are responsible for maintaining laboratory equipment they use as part of instruction. They are responsible for identifying equipment that needs upgrade or maintenance, and to propose the purchase of new equipment to the program director Dr. Sathy Rajendran. For smaller items, the program director will review the request and make the final decision depending on funds availability and other factors such as request's alignment with course objective and outcomes. If competing requests exceed the available budget, then a decision will be made collectively by the faculty which requests need to be met first.

The primary source of funding for equipment purchase/replacements/upgrades for the SHM labs is through lab fees. The program added lab fees to four SHM courses in 2015, which help offset the cost of materials, equipment purchase, maintenance, and repairs for the safety labs. We collect approximately $200 per student each year. Hence, the revenue from the fees fluctuates depending on student enrollment. At the time of this writing, the SHM lab fee account had a balance of approximately $5,000; fees collected during AY 15-16. At the current enrollment level, we anticipate a minimum of $6,000 per year in revenue through SHM lab fees. Other possible sources of funding to support the cost of maintenance, repair, or replacement of tools and equipment include departmental operating funds, industry in-kind donations, and program's multiple foundation funds. The program has a foundation lab account called "SHM Lab

Equipment Fund," which was and is continued to be funded by industry cash donations. The program also has a $100,000 endowed account and its interest earnings can also be used to support the labs. Between these funding sources, the program feels it has adequate reliable and sustaining source of funding to maintain and upgrade its lab equipment. *Overall, the program feels we have modern tools, equipment, computing resources, and labs appropriate to the program are available, accessible, and systematically maintained and upgraded to enable students to attain the student outcomes and to support program needs.*

E. Library Services

There are various library resources available to students. The James E. Brooks library provides resources and services to support the teaching, learning, and research needs of the Central Washington University community. In addition to general services, the library strives to collaborate with academic departments to ensure that our resources and services respond to changing needs.

E.1 Services

The library collaborates with academic departments and colleges in a number of ways. The Library Liaison Program is the primary means of communication with the library. During the 2015-2016 academic year the library received input on needed resources and services from the library representative and faculty from ESTC to the Librarian Liaison. Government Documents Librarian, Aimee Quinn serves as the 2015-2016 Engineering Technologies, Construction and Safety Liaison Librarian. Library liaisons serve as the subject specialist for their assignment departments providing instruction, research and collection development services. Academic support is provided through in class bibliographic instruction sessions, instructional modules delivered through the university's learning management system Canvas, LibGuides and print publications.

In addition to department specific services the library provides reference services in person during library hours, by email and through a 24/7 chat service. The library provides in person services at our three libraries with the following hours of operation (hours are reduced when classes are not in session):

- Main Campus – average of 100.5 hours per week
- Lynnwood – average of 40 hours per week
- Des Moines – average of 40 hours per week
- Tutoring Services – average of 40 hours per week
- Ask WA 24/7 chat reference service (closed on Christmas Day)

E.2 Facilities

The Brooks Library provides access to facilities and technology to support teaching and learning, these include:

- Computer lab with 30 computers using the windows operating system
- Mobile 20 Apple laptop computer lab

- Two interactive Smartboards
- Three collaborative Mediascapes
- 75 Apple laptops for student checkout and use in the library
- 24 public access Apple Computers
- 33 individual use computers stationed throughout the library

The library also circulates digital cameras and recorders. The library provides group and individual study spaces.

E.3 Resources

The library provides access to materials in a variety of formats including video, print, electronic and microform. In addition to the over 1 million individual library resources, patrons have access to millions of resources through our partner libraries. As members of the Orbis Cascade Alliance, Brooks Library offers patrons access to over 600 million volumes held in the 38 colleges and university member libraries. These include the collections of major research universities like University of Washington and University of Oregon. In addition to its regional consortium, Brooks Library provides access to the collections of 10,000 national and international libraries through OCLC Worldcat interlibrary loan service. Faculty members may request materials for purchase by email or through the library's electronic book selection service. On our 2016 senior exit survey, only 71% (at some level) of the students indicated they were satisfied with the CWU library facilities. *The faculty believe that with the addition of the new SHM reading space in Safety Lab II starting Fall 2016, and CWU Library services such as interlibrary loan, the current library services is adequate to support the scholarly and professional activities of the SHM program students and faculty.* The SHM program will continue to work with the library liaison to add additional SHM program specific journals during academic year 2016-17.

F. Overall Comments on Facilities

We feel that our facilities meet the needs of students, faculty, and staff. After the renovation/addition of Hogue Hall in 2012, the quality of the departmental facilities was greatly improved. Currently, the program has more than 3,000 square feet of dedicated lab and equipment storage space, and an additional 4,000 square feet of shared space. With the addition of space, we believe that the current departmental facilities are superior compared to pre-renovation conditions. As a consequence, we are able to serve the needs of our students better.

In our labs, our goal was to provide sufficient quantity of equipment to allow lab groups that average three students with an overall lab size of 12 students. Hence, the SHM 480 S&H Laboratory course sections are limited to 12 students. The program gets input from its Industry Advisory Council to continually evaluate our facilities and laboratories. We do have sufficient source of funds to add, maintain, or upgrade lab equipment. On our 2016 senior exit survey, 100% of the SHM students indicated that they were satisfied (at some level) with the SHM laboratory facilities and equipment.

The ETSC department has a building use and safety policy in place to ensure the students have a safe learning environment. In general, it is each course instructor's responsibility for the proper functioning and safety of the equipment. The faculty is required to instruct students on the safe operation of the equipment with their respective labs. One part of this instruction is to tell

students to report potentially unsafe conditions. Faculty must monitor labs while they are in use to ensure that the equipment is safe and that students are using the equipment safely. General safety procedures are provided on posters in the labs to increase the students' awareness of safety.

The ETSC department and its programs are committed to safety. One example that demonstrates our commitment is that in April 2014, Dr. Rajendran invited the Washington State Department of Labor and Industries Division of Occupational Safety and Health (DOSH) for a consultation visit for a comprehensive safety and health inspection of Hogue Hall including all labs. All recommendations from the visit were completed. On safety outcomes, it is worth noting that there have been no incidents involving injuries to SHM students or faculty involved in instructional activities for the past five years.

CRITERION 8. INSTITUTIONAL SUPPORT

A. Leadership

The Bachelor of Science in Safety and Health Management program is offered by Engineering Technologies, Safety, and Construction (ETSC) Department. The ETSC Department is one of eight departments within the College of Education and Professional Studies (CEPS). Prof. Lad Holden is the current chairperson of the ETSC department, who reports directly to Dr. Paul Ballard, Dean, CEPS. Dr. Ballard reports to Interim Provost Stephen Hulbert (new Provost Dr. Katherine Frank will start July 1, 2016), who reports to President Dr. James Gaudino. The ETSC department consists of seven major programs including the SHM Program. Dr. Sathy Rajendran serves as the Director of the SHM Program. Dr. Rajendran's vitae is included in Appendix B. As indicated on the vitae, he has worked in the safety profession for over ten years, 5 of which were in academia.

At the program level, Dr. Rajendran plays the primary role in administering the SHM assessment plans. He oversees the SHM Program Industry Advisory Council (IAC) and administers the collection and analysis of data from internship supervisors, program seniors through exit surveys, and individual SHM course assessments related to student outcomes. He is also the lab coordinator for the SHM labs, and the manager of all SHM Foundation accounts. He was hired in 2011 to revitalize the program, and he has been successful. Under his leadership, the program enrollment has grown, and the reputation of the program has become very positive within the industry and alumni; all evidence of his effective leadership of the SHM program. The list of his duties include:

- Serve as the primary contact for the program
- Manage and coordinate curriculum in the program
- Seek or maintain appropriate accreditation. Includes managing accreditation documents and accreditation visits
- Maintain industry contacts, including an industry advisory council
- Manage foundation funds for the program
- Maintain program correspondence with alumni and industry, including creation and distribution of newsletters
- Manage and document ongoing program and course assessment, including continuous quality improvement
- Manage and coordinate, with the ETSC Chair's assistance, faculty teaching assignments
- Manage and coordinate student advising for the program
- Coordinate faculty advising for student organizations in the program

At the department level, the leadership of the program is shared between the ETSC Department Chair (Prof. Lad Holden) and the Program Director (Dr. Sathy Rajendran). The ETSC Department will have an interim chair for AY 16-17, Dr. Ethan Bergman. SHM Faculty controls course content and to a large part the curriculum. The department chair by virtue of his position is the representative for the program in all administrative matters outside the department and is intricately involved in any decisions that affect the program. Important department strategic decisions are made collegially by the ETSC faculty and reported to the CEPS Dean by the

Department Chair. The CEPS Dean and the Chair meet individually on at least a monthly basis, and there are also monthly college-wide executive council meetings including all chairs in the college, so there is good communication between the College and the Department in regards to program needs. The Dean serves as a strong advocate for the program at the University level. *Overall, the leadership for the program at all levels – program, department, college, and university – is adequate to ensure the quality and continuity of the program.*

B. Program Budget and Financial Support

B.1 Program Budget Process and Sources of Financial Support

CWU's primary funding is derived from legislative appropriations, student tuition payments, and special course fees. Each year, as a result of the state-wide legislative process, increase or decrease in base funding and allowable increases/decreases in tuition are approved, and funding authorizations are passed to each institution in the State. The general financial condition of the university should be considered healthy.

The ETSC department budget is established annually by the institution through the College of Education and Professional Studies (CEPS). The annual budget is to cover salaries of faculty, staff, student wages, and goods & services. The budget for the B.S. in SHM degree program is part of the total budget for the ETSC department. The budget does not include summer revenues. The college distributes revenue generated from summer courses back to the departments. This revenue is used to support department's operations, and staff/faculty professional development. See Table 8.1 which shows the department financials for the past 5 years.

Other sources of financial support for the program include non-recurring funds in the form of donations from associations, employers, volunteers, and alumni. These monies are donated to the program for a specific purpose (restricted funds), such as student scholarships, student section expenses, general program support, and identified laboratory needs. See Table 8.2 that lists the program donations (cash and in-kind) for the past five years. The department receives minimal support in the form of grants.

Table 8.1: ETSC Department Financials

Category	FY 12	FY 13	FY 14	FY 15	FY 16
Faculty Salaries	$1,022,281	$1,027,536	$1,112,979	$1,144,597	$1,345,247
Staff Salaries	$143,616	$146,004	$157,980	$159,164	$149,488
Graduate Assistants	-	-	$8,100	$8,100	$8,550
Student Workers	$836	-	$6,708	$26,206	$39,850
Student Lab Fee	$30,984	$57,743	$60,391	$50,358	$51,420
Goods and Services	$27,414	$38,576	$57,116	$70,506	$65,000
Summer Revenue	$20,716	$70,553	$66,286	$32,425	$29,957

Table 8.2: Soft Monies Allocated to the SHM program[1]

Year	FY 12	FY 13	FY 14	FY 15	FY 16[2]	Total
Funding	$7,697	$49,190	$164,871	$86,771	$7,176	**$315,705**

1 – Funds includes both Cash donations for scholarships, lab equipment, and program support, and Gift-in-Kind
2 – As of May 1, 2016

B.2 Teaching Support

The University currently allocates two graduate assistants to the department. Since the SHM program does not offer a graduate degree and has not had the need, no graduate assistants are devoted to the SHM program. The department has provided student help for lab setup during the past two academic years.

All faculty members new to the University are required to attend a one-day faculty orientation program which covers a broad range of topics, including teaching methods, diversity, learning, and University requirements and procedures. Each year one full day is dedicated to faculty professional development called "Faculty Development Day." CWU has a faculty member designated as the Professional Development Coordinator, who arranges workshops and seminars for faculty on this day, and throughout the year on various topics in teaching and pedagogy. The Office of Multimodal Learning at CWU offers several training workshops throughout the year on online learning tools for faculty who choose online technology for instruction such as web conferencing, lecture capture recording, online discussions, streaming media and more.

B.3 Resources for maintaining and upgrading facilities and equipment

Maintenance of infrastructure and facilities occurs through CWU Facilities. Our primary sources of money for update of laboratory equipment is our student lab fees and foundation accounts. Student lab fees are associated with some of the SHM courses since Fall 2015. The money from these fees will be used to replace smaller equipment and to replenish supplies used in the courses. Also, money from the SHM Program Foundation accounts has been used to expand labs and to provide a variety of extra services that benefit the educational experience. The SHM Program Director administers these accounts.

B.4. Adequacy of Budget

Because the major emphasis at the university, college, and department level is on teaching and creating a quality undergraduate educational experience, institutional funding for the SHM Program is dedicated predominantly to faculty salaries. Institutional funding for course and laboratory development, faculty travel and development, and other needs not directly related to faculty salaries would likely prove to be inadequate without financial support from industry and student lab fees. The SHM Program and its graduates have an excellent reputation in the industry. As a result, companies that hire graduates, volunteers, and alumni, have provided funding, allowing the program to continuously improve it's overall quality.

While additional funding is always helpful, the resources available to the program are sufficient to enable students to achieve student outcomes.

C. Staffing

The ETSC department has 15 full-time and two part-time faculty members. Among them, one tenured, one tenure-track, one non-tenure track, and one half-time non-tenure track faculty are devoted to the Safety and Health Management (SHM) program. The department also has one full-time administrative assistant. The department supports the faculty in the classroom, laboratory, and scholarly activities by two Instructional and Classroom Support Technicians. The department also uses student help for lab sections through department and Work-Study funds. The department usually has two graduate assistantships. Student access to labs outside of scheduled class times is made possible through student lab attendants made available with the department and work-study funding.

The retention of staff has not been an issue for our department. The two technicians Matt Burvee and Greg Lyman are in their 9th and 3rd years of service, respectively, with the department. The current administrative assistant, Shelley Spencer, is in her 1st year with the Department, however, has been with the University for over 12 years. Her predecessor, who retired in Spring 2015 was with the department for over 15 years. Training for administrative staff is provided on an as needed basis, supported both by what is offered by the CWU Human Resources department as well as external training when requested by staff members. At a minimum, they attend at least one professional development conference per year.

Overall, the current department staff is sufficient to handle the number of faculty and staff associated with the program and the department.

D. Faculty Hiring and Retention

D.1 Hiring

The process of hiring a new faculty at CWU is described below:

- When an existing line is vacated or a new faculty line is needed, the department initiates "Initial Request to Fill Vacancy – Faculty form" also known as "Form 1" to the College Dean.
- The Dean approves the position and forwards it to the Provost for final approval.
- Once the Provost authorizes the position, a position description is generated, is assigned a position number and a salary range.
- The Department Chair charges a search committee, typically with four faculty members and a student, to complete the search.
- The Human Resources (HR) Department validates the description and works with the committee chair to get the position posted and advertised as appropriate. For SHM, the position is typically advertised in the Chronicle of Higher Education, ASSE, and AIHA job boards. CWU uses an applicant tracking system called "Recruiting Solutions" to receive and track applications.

- The committee develops minimum standards, and all candidates that apply are screened, by two committee members, based on those standards. All candidates that meet the minimum are then screened by the whole committee using a tool that the committee develops to determine the most desired candidates.
- A subset of candidates is then interviewed by phone (typically 8 to 10) using the same set of questions for each candidate and then the committee determines who to bring to campus for interviews.
- The committee typically invites three candidates for full-day campus interview. The candidates have an opportunity to meet with faculty, staff, students, Dean, etc. They are requested to deliver an in-class presentation to the SHM students. The search committee receives feedback from these groups.
- The Dean then makes an offer based on the recommendation of the search committee.

D.2 Retention

Central Washington University (CWU) and Ellensburg has become an attractive place to work for faculty.

CWU's exceptionally beautiful and well-maintained residential campus occupies 367 acres in Ellensburg, the largest city and county seat of historical Kittitas County. The city is situated in the geographic center of the state and on the Eastern slopes of the Cascade Mountains. Stretching over 700 miles from British Columbia, through Central Washington, and into Oregon, the Cascades and divide Washington State into a "wet West" and an "arid east". The Cascades are tall, with several mountains boasting an altitude above 10,000' feet, with its highest peak at the active stratovolcano of Mount Rainier. The Northern Cascades are home to its namesake national park (Northern Cascades National Park), the lake-resort city of Chelan, and the historic railroad town of Skykomish. The Northern Cascades are known as a world-class destination for hiking, fishing, camping, whitewater rafting, boating, skiing, and snowboarding.

As one of Washington's founding communities, Ellensburg's downtown is composed of beautiful brick buildings largely constructed between 1889 and 1917, and located just three blocks from the CWU campus. Weekends bring delicious local food, fresh produce, regional crafts, and eclectic entertainment downtown at the Kittitas County Farmer's Market. Over the years, Ellensburg has a gained a reputation as one of the healthiest cities in the state, and has been praised for its "compact, walkable streets, where 14.3 percent of residents commute by foot, one of the highest percentages in the state". Ellensburg is home to many top arts and cultural events in Washington, including Jazz in the Valley, Dachshunds on the Parade, Buskers in the 'Burg, and Sprit of the West.

The faculty is well supported regarding professional development and workload reduction for additional responsibilities. The faculty is empowered to control course content and curriculum. CWU has a very strong shared governance through its Faculty Senate. There is a very clear and transparent path for promotion and tenure, which is documented in the CBA. All of these auxiliary benefits are excellent benefits for faculty to stay. Our ETSC department has a lot to offer.

The SHM program has had faculty turnover issues over the past fifteen years. We attribute the faculty turnover to multiple reasons (1) poor fit of past SHM faculty members with the ETSC Department, (2) not capable of attaining tenure and promotion, (3) personal reasons, and (4) modest faculty starting salary. When Central Washington University and the United Faculty of Central ratified the collective bargaining agreement for 2013 to 2017 that gave the faculty a 16% salary increase over four years, the faculty salary issue was almost rectified. The Dean agreed to offer a competitive starting salary for the SHM faculty search that was completed in Spring 2016, which helped the program recruit a highly qualified professional to join the SHM faculty team. Also, the program has worked with the Industry Advisory Council (IAC) to identify ways to recruit and retain qualified faculty members. Dr. Sathy Rajendran will be assigned as the mentor to the new faculty member to assist in her transition to academia, with the goal that she receives tenure. The IAC has also agreed to to work with this new faculty member to ensure she is successful and stays at CWU. *We expect that that the SHM program faculty will become stable over the next few years, especially, if a third tenure-track line is added as the program grows its enrollment.*

E. Support of Faculty Professional Development

CWU is committed and supports faculty professional development. All new faculty and staff receive an orientation program organized by CWU Faculty Relations situated within the Provost Office, in September before classes start. Each year one full day is dedicated to faculty professional development called "Faculty Development Day." CWU has a faculty member designated as Professional Development Coordinator, who arranges workshops and seminars for faculty on this day, and throughout the year on various topics in teaching and scholarship. The School of Graduate Studies and Research helps faculty and staff develop grant-writing skills through periodic works.

CWU's Central Learning Academy (CLA) located within the Human Resources Office empowers staff and faculty by providing professional development and consultation to fulfill compliance standards, broaden skills and knowledge, enhance job effectiveness, increase opportunities for career advancement, and contribute to the mission and strategic goals of the university. Through CLA-Online, faculty and staff have 24x7 access to an eLearning library with thousands of online courses, full-text books, and videos.

Funding for tenured and tenure-track faculty professional development is in the form of annual funding of $700 per faculty member from the provost's office, with an additional $300 from the Dean of the College of Education and Professional Studies (CEPS). If a faculty member is presenting a peer reviewed paper at the conference/seminar, the office of the Dean of the School of Graduate Studies and Research will provide an additional $300 in funding. Beyond this $1,300 of annual funding, the ETSC department also funds registration and travel from summer revenues to at least one professional conference per faculty member. Industry funding provided through the CWU Foundation accounts are also be available for the SHM faculty. For non-tenure track faculty, most funding comes from the ETSC Department summer revenues or foundation accounts, and a university-wide professional development fund pool. Also, for some local conferences, SHM program employers or friends cover the registration cost for faculty and

students. For example, the Washington Construction Safety Day Conference registration cost has been paid by a local construction company for three years in a row. The department provides flexibility for faculty travel for professional development as needed. Often another faculty will substitute in courses for faculty that is traveling for professional development.

CWU has a clear and transparent sabbatical policy outlined in the CWU Collective Bargaining Agreement (CBA) Article 18. The purposes of sabbatical leave are to enhance the University educational environment and to promote the professional development of eligible faculty members by affording opportunities for sustained periods of concentrated scholarship free from regular on-campus obligations. The University and the individual faculty member share a joint responsibility to ensure the effective use of sabbatical leave to achieve these purposes. The SHM program is small with only two tenure-track/tenured faculty members. Hence, at this time, it is not feasible for one of them to take sabbatical. However, if requested the university will support the sabbatical application, such as one-quarter sabbatical, etc.

Overall the level of support for faculty professional development from all the sources listed above is quite adequate for the program faculty.

Program Criteria

Outcomes

The Safety and Health Management (SHM) Program meets both the ASAC General Criteria for Baccalaureate level programs and the ASAC Program Criteria for "Safety" or similarly named programs.

All 25 SHM Student Outcomes and their relationship with ASAC General Criteria (a-k) are included in Table 3.1. The relationship between the 25 SHM Outcomes and the ASAC specific criteria for "safety" program criteria (1-8) is presented in Table 3.2.

Table 4.1 within Criterion 4 "Continuous Improvement" provides a link between SHM student outcomes and SHM courses including assessment measures.

Curriculum

The prerequisites for all SHM courses are included in Table 5.2. The prerequisites meets the ASAC General Program Criterion 5 Curriculum item (a), "a combination of college-level mathematics and basic sciences (some with experimental experience) appropriate to the discipline."

The general education component listed in Table 5.1 meets the ASAC General Program Criterion 5 Curriculum item c, "a general education component that complements the technical content of the curriculum and is consistent with the program and institution objectives."

The curriculum includes the course SHM 485 Safety and Health Management Capstone (3 credits), which meets the ASAC General Program Criterion 5 "Curriculum that culminates with a comprehensive project or experience based on the cumulative knowledge and skills acquired in earlier course work." Students complete three major projects that incorporates concepts they learned in earlier course work.

The Faculty criteria is met by the SHM faculty's participation in professional societies, possessing applicable certifications by nationally accredited credentialing bodies and experience in safety and health field.

Dr. Sathyanarayanan (Sathy) Rajendran is administratively in charge of the Safety and Health Management (SHM) Program.

Appendix A – Course Syllabi

Required or Elective SHM Core Courses

SHM 301 – Fundamentals of Safety and Health Management

SHM 323 – Construction Safety and Health

SHM 325 – Manufacturing Safety and Health

SHM 351 – Incident Analysis

SHM 352 – Systems and Design

SHM 353 – Risk and Insurance

SHM 371 – Emergency Planning and Preparedness

SHM 375 – Transportation and Fleet Safety

SHM 377 – Hazardous Materials Management

SHM 379 – Facility & Building Safety

SHM 423 – Advanced Construction Safety Management

SHM 471 – Fundamentals of Industrial Hygiene

SHM 472 – Ergonomics

SHM 474 – Safety and Health Management Systems

SHM 477 – Environmental Management

SHM 480 – Safety and Health Laboratory

SHM 481 – Evolving Issues in Safety and Health Management

SHM 485 – Safety and Health Management Capstone

SHM 490 – Co-operative Education

SHM 301 Fundamentals of Safety and Health Management

1. Course number and name: SHM 301 Fundamentals of Safety and Health Management

2. Credits and contact hours: 3 credits, 4 lecture hours

3. Course instructor: Dr. Sathyanarayanan Rajendran

4. Text book: Philip E. Hagen; John F. Montgomery; James T. O'Reilly. (2015). Accident Prevention Manual for Business and Industry – Administration Programs. National Safety Council, 14th Edition.

5. Specific Course Information:

    a. Catalog Description: This course covers the fundamental aspects of safety and health, applicable standards, risk management, performance metrics, hazard recognition/controls, industrial hygiene, environmental management, fire safety, systems safety, ergonomics, hazardous materials, fleet safety, emergency management, and accident investigation.

    b. Prerequisites or co-requisites: Admission to the safety and health management major, safety and health management minor.

    c. Course Status: SHM 301 is a required course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Explain the influence of various institutions such as trade associations, government agencies, insurance companies, and professional societies that led to a change in safety culture in the American workplace.
        ii. Summarize the scope and roles of the safety function in a typical business.
        iii. Describe the emergence of workers' compensation legislation.
        iv. Explain the fundamental aspects of safety, risk management, industrial hygiene, environmental management, fire safety, process safety, ergonomics, hazardous materials, fleet safety, emergency management, and accident investigation.
        v. State the regulatory agency's recordkeeping and reporting requirements and complete the OSHA recordkeeping log.
        vi. Calculate the common safety performance metrics and explain their importance.
        vii. Demonstrate their ability to identify applicable regulatory agencies their standards, regulations, and codes.
        viii. Describe methods used for recognizing, evaluating and controlling occupational safety and health hazards.

ix. Identify and explain the importance of major safety and health professional organizations.
x. Identify and explain the importance of major safety and health professional certifications.
xi. Demonstrate their basic understanding of professional and ethical responsibilities of safety and health professionals.

b. SHM Student Outcomes 2, 4, and 16 are assessed by this course.

7. Brief list of topics to be covered:

a. Introduction to Safety and Health
    i. Historical Perspective
    ii. Safety and Health Professional
    iii. Ethics and Professionalism
    iv. Safety Culture
    v. Regulatory History
b. Loss Information and Analysis
    i. Risk and Insurance
    ii. Workers' Compensation
    iii. Hazard Recognition and Controls
    iv. Incident Investigation
    v. Performance Metrics
c. Industrial Hygiene
d. Environmental Management
e. Fire Safety
f. Process Safety Management
g. Ergonomics
h. Hazardous Materials Management
i. Product Safety Management
j. Transportation & Fleet Safety
k. Emergency management
l. Workplace violence
m. Employee wellness
n. Guest Lecture on Worker Communication

SHM 323 Construction Safety and Health

1. Course number and name: SHM 323 Construction Safety and Health

2. Credits and contact hours: 3 credits, 3 lecture hours

3. Course instructor: Dr. Sathyanarayanan Rajendran

4. Text book: 29 CFR 1926: Occupational Safety and Health Administration Construction Industry Regulations, Mancomm, Davenport, IA. (current edition)

5. Specific Course Information:

    a. Catalog Description: A comprehensive course that covers the safety and health regulations and practices pertaining to the construction industry.

    b. Prerequisites or co-requisites: SHM 301 or CMGT 265.

    c. Course Status: SHM 323 is a selective elective course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Describe construction contract types, contractual elements, pricing schemes, and typical project delivery methods including advantages and disadvantages from a safety perspective.
        ii. Demonstrate an understanding of the fundamental aspects of construction safety.
        iii. Identify and apply construction-related standards, regulations, and codes.
        iv. Anticipate, recognize, evaluate, and develop control strategies for hazardous conditions and work practices in the construction industry.
        v. Given a work construction task, evaluate worker task performance to identify the appropriate PPE required to control the hazards.

    b. SHM Student Outcomes 13, 14, and 16 are assessed by this course.

7. Brief list of topics to be covered:

    a. Construction Industry Fundamentals – safety in construction industry, project lifecycle, project team, and project delivery methods.
    b. Introduction to OSHA
    c. Personal Protective and Lifesaving Equipment
    d. Excavations
    e. Construction Focus Four Hazards
    f. Steel Erection

g. Concrete Construction
h. Stairs
i. Ladders
j. Scaffolds
k. Health Hazards in Construction
l. Confined Space
m. Pre-task planning

SHM 325 Manufacturing Safety and Health

1. Course number and name: SHM 325 Manufacturing Safety and Health

2. Credits and contact hours: 3 credits, 3 lecture hours

3. Course instructor: Dr. Allen Sullivan

4. Text book: 29 CFR 1910: Occupational Safety and Health Administration General Industry Regulations, Mancomm, Davenport, IA. (current edition)

5. Specific Course Information:

    a. Catalog Description: A comprehensive course that covers the safety and health regulations and practices pertaining to the manufacturing/general industry.

    b. Prerequisites or co-requisites: SHM 301 (or) instructor permission (or) admission to Technology Education Major.

    c. Course Status: SHM 325 is a selective elective course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Demonstrate a basic understanding of the structure of the general industry.
        ii. Demonstrate an understanding of the fundamental aspects of general industry safety.
        iii. Identify and apply general industry related standards, regulations, and codes.
        iv. Anticipate, recognize, evaluate, and develop control strategies for hazardous conditions and work practices in the general industry.
        v. Given a work general industry task, evaluate worker task performance to identify the appropriate PPE required to control the hazards.

    b. SHM Student Outcomes 13, 14, and 16 are assessed by this course.

7. Brief list of topics to be covered:

    a. Introduction to General Industry / Industrial Processes.
    b. Introduction to OSHA
    c. Bloodborne Pathogens
    d. Electrical
    e. Exit Routes, Emergency Action Plans, Fire Prevention Plans, and Fire Protection Flammable and Combustible Liquids
    f. Hazard Communication
    g. Machine Guarding

h. Personal Protective Equipment
i. Safety and Health Programs
j. Walking and Working Surfaces
k. Powered Industrial Vehicles

SHM 351 Incident Analysis

1. Course number and name: SHM Incident Analysis

2. Credits and contact hours: 3 credits, 3 lecture hours

3. Course instructor: Dr. Sathyanarayanan Rajendran

4. Text book: Oakley, Jeffrey (2012). Accident Investigation Techniques" (Second Edition), American Society of Safety Engineers (ASSE), Des Plaines, IL (ISBN 978-1-885581-62-4)

5. Specific Course Information:

    a. Catalog Description: Review of accident investigation methodologies that include accident response, evidence collection, analysis techniques, developing and communicating recommendations to prevent recurrence. It includes drug/alcohol testing, claims management, return to work/rehabilitation programs, and preparation for lawsuits & deposition.

    b. Prerequisites or co-requisites: SHM 301 and SHM 323 (or) SHM 325; Co-requisite: SHM 352.

    c. Course Status: SHM 351 is a required course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Explain the importance and purpose of accident investigation.
        ii. Describe different accident causation theories and how to apply them to an accident investigation process.
        iii. Identify and explain the importance of the major elements of an accident investigation program.
        iv. Evaluate an organization's accident investigation program.
        v. Describe the various accident analysis techniques, and use them to identify the causes of an accident.
        vi. Conduct an accident investigation and analysis, and provide recommendations verbally and in a written report.
        vii. Complete different forms related to accident investigation and claims management.
        viii. Describe a Return-to-Work (RTW) Program, its primary purpose, and its benefits to an organization.
        ix. Describe a Workplace Substance Abuse Program, its primary purpose, and its benefits to an organization.
        x. Discuss appropriate ethical and professional conduct during their internship.
        xi. Describe the importance of teamwork especially during their internship.

b. SHM Student Outcome 19 is assessed by this course.

7. Brief list of topics to be covered:

a. Introduction to Accident Investigation
b. Major Safety Disasters
c. Economic effects of losses
d. Accident Theories
e. Pre-planning Accident Investigation
f. Accident Response
g. Evidence Collection
h. Accident Causes
i. Analysis Techniques
j. Recommending Corrective Actions
k. Reporting and Follow-up
l. Workplace Substance Abuse Program
m. Return-to-work / Stay-at-work Program
n. Lawsuits and Deposition
o. Claims Management
p. Internship Overview
    i. Ethics
    ii. Professionalism
    iii. Teamwork skills
    iv. Communication

SHM 352 Systems and Design

1. Course number and name: SHM 352 Systems and Design

2. Credits and contact hours: 3 credits, 3 lecture hours

3. Course instructor: Michael Andler

4. Text book: Vincoli, Jeffrey W. (2014). Basic Guide to System Safety. 2014. 3rd Edition. John Wiley and Sons. New York, NY. (ISBN 9781118460207)

5. Specific Course Information:

    a. Catalog Description: It provides an overview of system safety concepts, qualitative and quantitative system safety analysis techniques (failure mode and effect analysis, hazard and operability studies, and fault tree analysis), and design for safety concepts.

    b. Prerequisites or co-requisites: SHM 301 and MATH 130. Co-requisite: SHM 351.

    c. Course Status: SHM 352 is a required course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Describe systems safety, its primary purpose, and its advantages.
        ii. Describe system design processes and the system life cycle.
        iii. Identify the fundamental concepts and requirements of a system safety program.
        iv. Perform a failure mode and effect analysis (FMEA) and explain how an organization can use FMEA to assess and mitigate risk.
        v. Perform a fault tree analysis (FTA) and explain how an organization can use FTA to assess and mitigate a risk event.
        vi. Perform a hazard and operability studies (HAZOP) and explain how an organization can use HAZOP to assess and mitigate a risk.
        vii. Describe the following characteristics of probability distribution expected value, mean, standard deviation, the coefficient of variation, and normal distribution.
        viii. Demonstrate an understanding of reliability concepts and solve mathematical reliability problems relevant to system safety.

    b. SHM Student Outcomes 2 and 11 is assessed by this course.

7. Brief list of topics to be covered:

    a. System Safety Overview

b. System Safety Concepts
c. System Safety Program Requirements
d. Probability Theory and Statistical Analysis
e. Failure Mode and Effect Analysis
f. Fault Tree Analysis
g. Management Oversight and Risk Tree
h. HAZOP and What-if Analysis

SHM 353 Risk and Insurance

1. Course number and name: SHM 353 Risk and Insurance

2. Credits and contact hours: 4 credits, 4 lecture hours

3. Course instructor: Michael Andler

4. Text book: Rejda and McNamara (2014). Principles of Risk Management and Insurance, 12th Edition.

5. Specific Course Information:

    a. Catalog Description: An introduction to the concept of risk management, including risk definition, identification, assessment, and management techniques. Includes the fundamentals of various insurance related to the safety and health profession, loss control techniques, and legal foundations of safety and health management.

    b. Prerequisites or co-requisites: SHM 301.

    c. Course Status: SHM 353 is a required course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Describe risk identification, its purpose, and risk identification techniques.
        ii. Describe risk analysis, its purpose, and risk analysis techniques.
        iii. Describe risk treatment, its purpose, and risk treatment techniques.
        iv. Explain how probability analysis can be used to estimate the likelihood and consequences of an event.
        v. Given a description of a business operation, apply business and risk management concepts to develop a risk management plan.
        vi. Identify and define the various types of insurance associated with an organization.
        vii. Define and use cost-benefit analysis, life cycle cost, net present value, and return on investment.
        viii. Identify the various legal aspects of safety and health profession.

    b. SHM Student Outcome 15 is assessed by this course.

7. Brief list of topics to be covered:

    a. Introduction to Risk Management
    b. Advanced Topics in Risk Management
    c. Basic Financial Principles

d. Types of Insurers and Marketing Systems
e. Insurance Company Operations
f. Government Regulation of Insurance
g. Fundamental Legal Principles
h. Analysis of Insurance Contracts
i. Life Insurance
j. Social Insurance
k. The Liability Risk
l. Homeowners Insurance
m. Commercial Property Insurance
n. Commercial Liability Insurance
o. Crime Insurance and Surety Bonds

SHM 371 Emergency Planning and Preparedness

1. Course number and name: SHM 371 Emergency Planning and Preparedness

2. Credits and contact hours: 4 credits, 4 lecture hours

3. Course instructor: Dr. Allen Sullivan

4. Text book: Perry, Ronald W. and Michael K. Lindell (2007). Emergency Planning. John Wiley and Sons. New York, NY. (ISBN 13 978-0-471-92077-9)

5. Specific Course Information:

    a. Catalog Description: It introduces students to: workplace hazards associated with natural and man-made disasters; the countermeasures to minimize its effects; required coordination between various government agencies; business continuity planning, and the role of emergency/disaster planning and preparedness in a workplace safety program.

    b. Prerequisites or co-requisites: SHM 301.

    c. Course Status: SHM 371 is a required course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Describe the differences among emergencies, disasters, and catastrophes.
        ii. Demonstrate an understanding of the fundamental aspects of emergency management.
        iii. Describe the role of government and business in emergency planning and response.
        iv. Identify the applicable standards, regulations, and codes associated with emergency management.
        v. Demonstrate an understanding of human behavior during disasters and its role in emergency planning.
        vi. Demonstrate their ability to anticipate, recognize, evaluate, and develop control strategies to the various hazard risks associated with natural and man-made disasters.
        vii. Create an emergency action plan to mitigate, prepare, respond, and recover from natural and man-made disasters.
        viii. Identify and describe protective action recommendations that may be taken during an emergency.
        ix. Describe the importance of an effective business continuity operations plan.

    b. SHM Student Outcome 10 is assessed by this course.

7. Brief list of topics to be covered:

    a. Introduction to Emergency Planning
    b. The Emergency Planning Process
    c. Patterned Human Behavior in Disasters
    d. Fostering Successful Emergency Planning
    e. Classes of Protective Action Recommendations
    f. Continuity of Operations Plans
    g. Analyzing and Selecting Protective Actions
    h. Population Warning
    i. Selected Federal Emergency Planning Mandates

SHM 375 Transportation and Fleet Safety

1. Course number and name: SHM 375 Transportation and Fleet Safety

2. Credits and contact hours: 4 credits, 4 lecture hours

3. Course instructor: Scott Callahan

4. Text book: Instructor prepared various materials posted on Course website.

    a. Target Zero, Washington State Traffic Commission, http://wtsc.wa.gov/target-zero/

5. Specific Course Information:

    a. Catalog Description: Program management relating to fleet safety including transportation systems loss control management, fleet management, and driver safety training.

    b. Prerequisites or co-requisites: SHM 301.

    c. Course Status: SHM 375 is a required course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Identify and describe the role of state and federal agencies in establishing and maintaining rules and regulations for transportation safety.
        ii. Identify and apply applicable standards, regulations, and codes associated with transportation / fleet safety.
        iii. Ability to identify and apply the fundamental aspects of fleet safety.
        iv. Describe the impact of different transportation modes used daily by industry and the general public.
        v. Determine causes and countermeasures for transportation-related injuries and death.
        vi. Identify and describe the components of a complete transportation safety program.
        vii. Establish a transportation / fleet safety program to achieve targeted performance goals.
        viii. Demonstrate correct driver performance including the ability to manage risk and other skills related to the driving task.

    b. SHM Student Outcome 12 is assessed by this course.

7. Brief list of topics to be covered:

a. Agencies governing transportation
b. Motor vehicle costs
c. Characteristics of risk in transportation
d. Transportation types (pipeline, aviation, rail, water, mass-transit, motor-vehicle)
e. Highway design / engineering
f. Driver improvement
g. Fleet safety program development

Laboratory Exercises

a. Traffic Analysis

SHM 377 Hazardous Materials Management

1. Course number and name: SHM 377 Hazardous Materials Management

2. Credits and contact hours: 4 credits, 4 lecture hours

3. Course instructor: Michael Andler

4. Text book: Borgias, A., and Bradfield, M.S. (2015). Managing Hazardous Materials. 3rd edition. Institute of Hazardous Materials Management, Rockville, MD. (ISBN 978-0-692-38549-4)

5. Specific Course Information:

    a. Catalog Description: Provides an introduction to the management of hazardous materials, including best practices and federal regulations associated with the transportation, storage, use, and disposal of hazardous materials in the workplace.

    b. Prerequisites or co-requisites: SHM 351 and either CHEM 101, CHEM 1/111LAB, or CHEM 181/181LAB

    c. Course Status: SHM 377 is a required course in the program

6. Specific goals for the course:

    a. The student will be able to

        i. Demonstrate an understanding of the fundamental aspects of hazardous materials.
        ii. Define various terminology, and perform necessary calculations, to categorize and define the various properties / characteristics of hazardous materials (chemistry).
        iii. Identify and apply the various standards, regulations, and codes related to the transportation, storage, use, and disposal of hazardous materials in the workplace.
        iv. Demonstrate their ability to anticipate, recognize, evaluate, and develop control strategies for hazards associated with hazardous materials using a hazardous materials management plan.
        v. Describe the legal liabilities faced by individuals and organizations associated with managing hazardous materials and waste.

    b. SHM Student Outcomes 2 and 9 are assessed by this course.

7. Brief list of topics to be covered:

    a. Properties of Hazardous Materials
    b. Impacts of Hazardous Materials on People and the Environment

c. Legal Liabilities
d. Regulatory Basics
e. Onsite Management Hazardous Materials
f. Transportation of Hazardous Materials
g. Disposal of Hazardous Materials
h. Management of Hazardous Materials Incidents

SHM 379 Facility and Building Safety

1. Course number and name: SHM 379 Facility and Building Safety

2. Credits and contact hours: 4 credits, 4 lecture hours (lab integrated)

3. Course instructor: Dr. Allen Sullivan

4. Text book: Ferguson, Lon H. and Christopher A. Janicak. (2015). Fundamentals of Fire Protection for the Safety Professional. (Second edition). Bernan Press., Lanham, MD. (ISBN 978-1598887112)

5. Specific Course Information:

    a. Catalog Description: Program management relating to the facility and building safety including basic concepts of fire safety, fire prevention, fire protection, accessibility, confined spaces, indoor air quality and ventilation, and walking-working surfaces.

    b. Prerequisites or co-requisites: SHM 351.

    c. Course Status: SHM 379 is a required course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Define basic fire prevention and protection terminology.
        ii. Demonstrate their ability to identify and describe the fundamental aspects of fire safety.
        iii. Demonstrate their ability to anticipate, recognize, evaluate, and develop control strategies such as procedures and programs, for fire-related hazardous conditions and work practices.
        iv. Identify and apply applicable fire-related standards, regulations and codes.
        v. Explain how human characteristics, building occupancies, and the Life Safety Code affect the safety of persons exposed to fire in buildings.
        vi. Demonstrate their ability to identify the common fire extinguishment agents used and the different options available in terms of fire suppression, fire detection, and alarm systems.
        vii. Demonstrate how to use and inspect a portable fire extinguisher.

    b. SHM Student Outcomes 7, 14, and 21 are assessed by this course.

7. Brief list of topics to be covered:

    a. Introduction to Industrial Fire Protection
    b. Chemistry and Physics of Fire

c. Common and Special Hazards
d. Mechanical and Chemical Explosion
e. Fire Program Management
f. Life Safety in Buildings
g. Fire Extinguishment
h. Alarm and Detection Systems
i. Confined Space
j. Indoor Air Quality
k. Facilities Management

Laboratory Exercises

a. Fire Extinguisher Simulator

SHM 423 Advanced Construction Safety Management

1. Course number and name: SHM 423 Advanced Construction Safety Management

2. Credits and contact hours: 4 credits, 4 lecture hours

3. Course instructor: Dr. Sathyanarayanan Rajendran

4. Text book: Rajendran, S. (2015). Construction Safety Management Best Practices Handbook. Washington State Department of Labor and Industries, Olympia, WA.

5. Specific Course Information:

    a. Catalog Description: This course will cover advanced construction safety management techniques such as contractor pre-qualification, leading and lagging indicators, design for construction safety, Leadership in Energy and Environmental Design (LEED) and safety, safety in contract management, 3-dimensional technology in construction safety, safety and quality, and implementation of a Sustainable Construction Safety and Health (SCSH) rating system.

    b. Prerequisites or co-requisites: SHM 323 or instructor permission.

    c. Course Status: SHM 423 is an elective course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Demonstrate an understanding of the safety management and administration practices associated with construction sites.
        ii. Identify the impacts of Leadership in Energy and Environmental Design (LEED) on worker safety and health.
        iii. Pre-qualify construction contractors based on historical safety performance
        iv. Identify the innovation in the technology available to enhance construction safety management.

    b. No SHM Student Outcomes are assessed by this course.

7. Brief list of topics to be covered:

    a. Project Team Selection
    b. Safety Management in Procurement
    c. Design for Construction Worker Safety
    d. Use of Modern Technology in Construction Safety Management
    e. Employee Wellness
    f. Site Specific Safety Plan

g. JHAs/PTPs
h. Training and Education
i. Substance Abuse Program
j. Accident Investigation
k. Emergency Management
l. Safety Recognition Program
m. Return-to-work Program
n. WMSDs
o. Safety Inspections
p. Safety Performance Measurement
q. Construction Site Environmental Management
r. Project Commissioning and Turnover
s. Project Safety Archives Records Management
t. LEED and Safety
u. Quality and Safety

SHM 471 Fundamentals of Industrial Hygiene

1. Course number and name: SHM 471 Fundamentals of Industrial Hygiene

2. Credits and contact hours: 4 credits, 4 lecture hours

3. Course instructor: Dr. Allen Sullivan

4. Text book: Plog, Barbara, and Patricia Quinlan (2015). Fundamentals of Industrial Hygiene. National Safety Council, Itasca, IL. (ISBN 978-0-07912-312-3)

5. Specific Course Information:

    a. Catalog Description: An introduction to the basics of industrial hygiene that includes: the anticipation, recognition, evaluation, and control of workplace environmental stressors (chemical, physical, and biological) that can impact the health, comfort, or productivity of the worker.

    b. Prerequisites or co-requisites: SHM 351 and BIO 201.

    c. Course Status: SHM 471 is a required course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Define the basic terminology associated with chemical, biological, and physical stressors in the workplace.
        ii. Demonstrate their ability to identify and describe the fundamental aspects of industrial hygiene.
        iii. Anticipate and identify chemical, biological, and physical stressors in the workplace.
        iv. Evaluate chemical, biological, and physical stressors in the workplace.
        v. Apply appropriate engineering and administrative controls to reduce employee exposures to chemical, biological, and physical stressors in the workplace.
        vi. Select appropriate types of personal protective equipment required to control employee exposures to chemical, biological, and physical stressors in the workplace.

    b. SHM Student Outcomes 2 and 5 are assessed by this course.

7. Brief list of topics to be covered:

    a. Recognition of Hazards
        i. Industrial Toxicology
        ii. Gas, Vapors, and Solvents

iii. Particulate Matter
iv. Industrial Noise
v. Ionizing and Non-ionizing Radiation
vi. Thermal Stress
vii. Biological Hazards

b. Evaluation of Hazards
i. Evaluation
ii. Air Sampling
iii. Direct-Reading Instruments

c. Controls of Hazards
i. Overview of various Methods of Control
ii. Personal Protective Equipment

SHM 472 Ergonomics

1. Course number and name: SHM 472 Ergonomics

2. Credits and contact hours: 3 credits, 3 lecture hours

3. Course instructor: Dr. Allen Sullivan

4. Text book: Bush, Pamela M. (2012). Ergonomics: Foundational Principles, Applications, and Technologies. CRC Press. New York, NY. (ISBN 978-1-4398-0445-2)

    a. Plog, Barbara and Patricia Quinlan, Fundamentals of Industrial Hygiene. Chapter 13. National Safety Council, Itasca, IL. (ISBN 978-0-07912-312-3)

5. Specific Course Information:

    a. Catalog Description: It provides the basics of ergonomics in the work environment: musculoskeletal disorders, assessment of ergonomic risk factors, workplace design, evaluation of lifting and material handling activities, and the role of ergonomics in a comprehensive workplace safety program.

    b. Prerequisites or co-requisites: SHM 471.

    c. Course Status: SHM 472 is a required course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Define the basic terminology associated with ergonomics and its applications.
        ii. Describe the role of legislative and regulatory organizations impacting ergonomics.
        iii. Identify and describe the role of professional ergonomics societies.
        iv. Anticipate and identify ergonomic risk factors that lead to work-related musculoskeletal disorders.
        v. Evaluate ergonomic risk factors in the workplace.
        vi. Describe how ergonomic risk factors affect underlying physiological and biomechanical mechanisms of the human worker.
        vii. Conduct an ergonomic analysis of a workplace or specific task and establish an ergonomic program focused on reducing the ergonomic risk factors.
        viii. Calculate recommended weight limit for lifting/lowering tasks using the NIOSH lifting equation.
        ix. Evaluate computer workstations and provide recommendations.

    b. SHM Student Outcomes 2 and 8 are assessed by this course.

7. Brief list of topics to be covered:

    a. Foundational Ergonomics
    b. Anthropometry
    c. Systems of the Human Body
    d. Senses of the Human Body and Measurement of Environmental Factors
    e. Muscular Work and Nervous Control of Movements
    f. Anthropometry
    g. Design of Workplaces and Hand Tools
    h. Work-Related Musculoskeletal Disorders
    i. Heavy Work and Evaluating Physical Workloads and Lifting
    j. Information Ergonomics, Controls, and Displays
    k. Warning Labels, Instructions, and Product Liability

Laboratory Exercises

a. Lifting Evaluation
b. Workstation Evaluation project

SHM 474 Safety and Health Management Systems

1. Course number and name: SHM 474 Safety and Health Management Systems

2. Credits and contact hours: 4 credits, 4 lecture hours

3. Course instructor: Dr. Sathyanarayanan Rajendran

4. Text book: ANSI/AIHA/ASSE® Z10-2012, Occupational Health, and Safety Management Systems
    a. ANSI/ASSE Z490.1-2009 Criteria for Accepted Practices in Safety, Health, & Environmental Training

5. Specific Course Information:

    a. Catalog Description: It provides a systems-based approach to managing safety programs, with the help of major consensus standards such as American National Standard Institute (ANSI) /American Industrial Hygiene Association (AIHA)/ American Society of Safety Engineers (ASSE) Z10, OHSAS 18001, and Occupational Safety and Health Administration (OSHA) Voluntary Protection Program (VPP).

    b. Prerequisites or co-requisites: SHM 353

    c. Course Status: SHM 474 is a required course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Describe the major elements of the common system-based safety and health management consensus standards.
        ii. Apply system-based consensus standards, and explain how it provides a framework and a process for an organization to manage its safety and health risks.
        iii. Design a comprehensive system-based safety and health program using a consensus standard.
        iv. Evaluate, a comprehensive system-based safety and health program using a consensus standard.
        v. Apply adult learning theories in the development and delivery of a workplace safety and health training.
        vi. Apply risk-based approach and concepts to the prevention of hazardous acts and conditions.
        vii. Deliver their recommendations effectively in an oral form.

    b. SHM Student Outcomes 17, 18, and 23 are assessed by this course.

7. Brief list of topics to be covered:

    a. Safety systems approach
    b. Phases of Safety Excellence
    c. ANSI/AIHA Z10 – Occupational Health, and Safety Management Systems
        i. Management Leadership and Employee Participation
        ii. Planning
        iii. Implementation and Operation
        iv. Evaluation and Corrective Action
        v. Management Review
    d. Overview of OHSAS 18001 Occupational Health and Safety Management
    e. Overview of OSHA Voluntary Protection Programs
    f. Safety and Health Training
        i. Adult Learning Techniques
        ii. ANSI/ASSE Z490.1-2009 Criteria for Accepted Practices in Safety, Health, & Environmental Training
        iii. Development and Delivery of S&H Training
    g. Overview and status of ISO 45001

SHM 477 Environmental Management

1. Course number and name: SHM 477 Environmental Management

2. Credits and contact hours: 4 credits, 4 lecture hours

3. Course instructor: Michael Andler

4. Text book: Haight, Joel M. (2012). Environmental Safety and Health Regulations. American Society of Safety Engineers (ASSE), Des Plaines, IL (ISBN 978-1-885581-69-3)

5. Specific Course Information:

    a. Catalog Description: It provides an overview of federal environmental legislations (Clean Water Act, Clean Air Act, Resource Conservation and Recovery Act, and CERCLA) and their practical application in the work environment. The course will also introduce the ISO's environmental management system 14000 series.

    b. Prerequisites or co-requisites: SHM 353 and SHM 377.

    c. Course Status: SHM 477 is a required course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Explain how an organization can incur environmental liability.
        ii. Define the common terminology associated with environmental safety and health hazards.
        iii. Demonstrate a fundamental understanding of a workplace environmental management.
        iv. Summarize the basic purpose and distinguishing features of the common federal environmental laws.
        v. Given information on an organization’s environmental exposure, identify and apply pertinent environmental standards, regulations, and codes.
        vi. Describe the various environmental permitting and reporting requirements.
        vii. Prepare and conduct a comprehensive environmental audit in a workplace and communicate the recommendations effectively in a written report.
        viii. State the benefits of environmental management systems for an organization and the economy.
        ix. Describe the general characteristics and elements of the environmental management system ISO 14000.
        x. Explain how ISO 14000 provides a framework and a process for an organization to manage its environmental risks.

    b. SHM Student Outcomes 6, 14, and 16 are assessed by this course.

7. Brief list of topics to be covered:

    a. Environmental Regulations
    b. Water Quality and associated regulations
    c. Air Quality and associated regulations
    d. Solid Waste and associated regulations
    e. Hazard Communication and Right-to-Know Regulations
    f. Management Systems (ISO 14000)

SHM 480 Safety and Health Laboratory

1. Course number and name: SHM 480 Safety and Health Laboratory

2. Credits and contact hours: 2 credits, 4 lab hours

3. Course instructor: Dr. Sathyanarayanan Rajendran

4. Text book: Safety and Health Management Laboratory Manual written by Dr. Sathyanarayanan Rajendran.

5. Specific Course Information:

    a. Catalog Description: It provides hands-on experience with various safety measurement instruments used in the profession. It includes training strategies using safety equipment/situations encountered in the workplace.

    b. Prerequisites or co-requisites: SHM 490, SHM 471, and PHYS 106.

    c. Course Status: SHM 480 is a required course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Demonstrate an ability to use the techniques, skills, and modern scientific and technical tools necessary for professional practice in the safety and health discipline.
        ii. Demonstrate an ability to design and conduct experiments, and to analyze and interpret data pertinent to the safety and health discipline.

    b. SHM Student Outcomes 2, 3, 5, 8, 14, 16, and 21 are assessed by this course.

7. Brief list of topics to be covered:

    a. Lab Safety Training
    b. Evaluation and Control of Noise Exposures
    c. Evaluation and Control of Heat Exposures
    d. Evaluation of workplace Illumination
    e. Evaluation and Control of Hazardous Atmosphere
    f. Confined Space Entry and Rescue
    g. Crane use, Signaling, and Rigging
    h. Respirator Fit Testing
    i. Moisture Testing
    j. Vibration Assessment
    k. Electrical Hot Work

l. Lock out / Tag out

SHM 481 Evolving Issues in Safety and Health Management

1. Course number and name: SHM 481 Evolving Issues in Safety and Health Management

2. Credits and contact hours: 2 credits, 2 seminar hours

3. Course instructor: Dr. Sathyanarayanan Rajendran

4. Text book: None

5. Specific Course Information:

    a. Catalog Description: Presentations and case studies by practicing safety professionals on contemporary safety and health management topics, and future safety and health management topics.

    b. Prerequisites or co-requisites: SHM 490

    c. Course Status: SHM 481 is a required course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Demonstrate an understanding of contemporary safety and health issues and the impacts of their solutions within a global and societal context.
        ii. Demonstrate their ability to recognize the need to engage in life-long learning by preparing a five-year professional development plan.
        iii. Identify the various sources of life-long learning opportunities available in the safety and health discipline.
        iv. Describe how professional societies such as American Society of Safety Engineers (ASSE) provide professional development opportunities.
        v. Identify and describe the process of obtaining professional certifications.
        vi. Describe how to learn new material without taking a formal course.
        vii. Describe how to respond to changes in an evolving safety and health discipline.

    b. SHM Student Outcomes 24 and 25 are assessed by this course.

7. Brief list of topics to be covered:

    a. Contemporary topics in the safety and health profession
    b. Sources of contemporary safety and health issues
    c. Various current safety and health issues by practicing safety and health professionals
    d. Professional Development

SHM 485 Safety and Health Management Capstone

1. Course number and name: SHM 485 Safety and Health Management Capstone

2. Credits and contact hours: 3 credits, 3 lecture hours

3. Course instructor: Dr. Sathyanarayanan Rajendran

4. Text book: Wachter, J. (2014). Ethics for the Safety and Health Professional: Approaches and Case Studies, American Industrial Hygiene Association (AIHA).

5. Specific Course Information:

    a. Catalog Description: Students will apply the principles of safety and health management to solve real world safety issues through various real-world projects. The course will help prepare the students for the transition from student life to employment as a safety and health professional.

    b. Prerequisites or co-requisites: By Permission or SHM 490.

    c. Course Status: SHM 485 is a required course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Demonstrate an understanding of professional and ethical responsibilities of safety and health professionals.
        ii. Demonstrate their ability to function effectively on multidisciplinary teams.
        iii. Demonstrate their ability to complete comprehensive projects based on knowledge and skills acquired in earlier course work.
        iv. Deliver their recommendations effectively in written communications, with a wide range of audiences.

    b. SHM Student Outcomes 1 and 23 are assessed by this course.

7. Brief list of topics to be covered:

    a. Multiple real-life projects
    b. Ethics
    c. Professionalism
    d. Group Dynamics
        i. Conflict resolution
        ii. Methods of facilitating teams
        iii. Multidisciplinary teamwork
        iv. Negotiation procedures

SHM 490 Cooperative Education

1. Course number and name: SHM 490 Cooperative Education

2. Credits and contact hours: 6 credits, 400 clock hours

3. Course instructor: Varies among SHM Faculty Members

4. Text book: No texts, supplemental books and readings are required. Students will use textbooks from previous courses.

5. Specific Course Information:

    a. Catalog Description: An individualized contracted field experience with business, industry, government, or social service agencies.

    b. Prerequisites or co-requisites: By Permission. SHM 301, SHM 351, SHM 352, SHM 353, and SHM 371.

    c. Course Status: SHM 490 is a required course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Apply the principles of safety and health while on their internship in the at least in the following areas:
            1. Anticipate, recognize, evaluate, and control the hazards encountered in the workplace (hazard identification and abatement).
            2. Identify and apply applicable standards, regulations, and codes.
            3. Develop and deliver a safety and health training.
            4. Conduct workplace safety and health audits and inspections.
            5. Conduct an accident investigation and recommend corrective actions.
        ii. Act in a professional and ethical manner.
        iii. Function effectively as part of a multidisciplinary team.
        iv. Communicate effectively with others orally.
        v. Communicate effectively with others in writing.

    b. SHM Student Outcomes 1, 14, 16, 18, 20, 22, and 23 are assessed by this course.

7. Brief list of topics to be covered: N/A

Professional Management Courses

HED 210 – Drugs and Health

BUS 241 – Legal Environment of Business

HRM 381 – Management of Human Resources

ADMG 385 – Business Communications and Report Writing

COM 345 – Business and Professional Speaking

BUS 221 – Introductory Business Statistics

PSY 362 – Introductory Statistics

MGT 380 – Organizational Management

PSY 456 – Industrial and Organizational Psychology

ADMG 374 – Project Management

IET 455 – Engineering Project Management

HED 210 Drugs and Health

1. Course number and name: HED 210 Drugs and Health

2. Credits and contact hours: 3 credits, 3 lecture hours

3. Course instructor: Mark Perez

4. Text book: Hanson, R., Venturelli, P.J., & Fleckenstein, A.E. (2012). Drugs and Society, 12th ed.

5. Specific Course Information:

    a. Catalog Description: The purpose of the course is to help student's gain an understanding of the physiological, psychological, and emotional aspects of drug use in today's society in regard to health promotion and education. Students will also increase their awareness about the methods and resources available for treatment and prevention of drug abuse.

    b. Prerequisites or Co-requisites: None

    c. Course Status: SHM is a required/selective elective course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Describe the epidemiology of drug use in society and the problems resulting from drug use in society.
        ii. Describe the history of drug use and the motives of drug-taking behavior.
        iii. Identify issues related to drug use by individuals and communities.
        iv. Identify the strategies for preventing drug abuse.
        v. Describe health education strategies, interventions, and programs related to drugs and society.
        vi. Students will be able to explain the main arguments for and against legalizing all drugs of abuse.

7. Brief list of topics to be covered:

    a. Introduction to Drugs and Society
    b. Explaining Drug Use and Abuse
    c. Drug Use, Regulation, and the Law
    d. Homeostatic Systems and Drugs
    e. How and Why Drugs Work
    f. CNS Depressants: Sedative-Hypnotics

g. Alcohol: Pharmacological Effects
h. Alcohol: Behavioral Effects
i. Narcotics (Opioids)
j. Stimulants
k. Tobacco
l. Marijuana
m. Over-the-Counter (OTC), Prescription, and Herbal Drugs
n. Drug Use In Subcultures of Special Populations
o. Drug Abuse Prevention
p. Treating Drug Dependence

BUS 241 Legal Environment of Business

1. Course number and name: BUS 241 Legal Environment of Business

2. Credits and contact hours: 5 credits, 5 lecture hours

3. Course instructor: Dr. Nancy Graber Pigeon, JD, Department of Management

4. Text book: Clarkson, K., Miller, R., and Cross, F. (2014). Business Law - Text and Cases. (13th ed.). Cincinnati OH: South-Western College/West. (Custom book bundled with Mindtap at bookstore).

    a. MindTap – Cengage Learning. www.cengage.com/mindtap

5. **Specific Course Information:**

    a. Catalog Description: An introduction to legal reasoning, business ethics, the law of contracts, sales, torts and related areas, employment and agency law, sales.

    b. Prerequisites or co-requisites: Sophomore standing or above.

    c. Course Status: BUS 241 is a required course in the program.

6. Specific goals for the course:

    a. Students will be able to:

        i. List the sources of legal rules and describe the political, social and technological influences that affect the institutions that develop and interpret them.
        ii. Recognize types of property interests created in the context of hypothetical fact specific problems.
        iii. Recognize acceptable and unacceptable employment practices under the Civil Rights Laws and other employment laws in hypothetical fact specific problems involving the management of a diverse labor force.
        iv. Recognize when parties have negotiated valid, Voidable and void contracts under the common law and the Uniform Commercial Code.
        v. Know the contractual rights and duties, which can be transferred, subject to limitations.
        vi. Be able to recognize when performance or external events discharge contractual obligations.
        vii. Be able to recognize the appropriate remedy for various types of breach of contract.
        viii. Apply a model of ethical reasoning to derive a logical decision to an ethical question in the context of a hypothetical business problem.

7. Brief list of topics to be covered:

    a. Law and Legal Reasoning
    b. Courts and ADR/Court Procedures
    c. Business and the Constitution
    d. Ethics
    e. Torts
    f. Intellectual Property
    g. Criminal Law
    h. Contract Law
    i. Employment Immigration and Labor Laws
    j. Employment Discrimination and Diversity
    k. Personal Property and Bailments
    l. Wills and Trusts
    m. Landlord and Tenant Law

HRM 381 Management of Human Resources

1. Course number and name: HRM 381 Management of Human Resources

2. Credits and contact hours: 5 credits, 5 lecture hours

3. Course instructor: Dr. James Avey, Department of Management

4. Text book: Avey, J. (2011). Narrow the Gap: A Management Development Workbook. (3rd ed.). Ellensburg: Mind Garden.

5. Specific Course Information:

    a. Catalog Description: Selection of personnel, methods of training and retraining workers, wage policy, utilization of human resources, job training, administration of labor contracts, and public relations.

    b. Prerequisites or co-requisites: None.

    c. Course Status: HRM 381 is a required course in the program.

6. Specific goals for the course:

    a. Students will be able to:

        i. Recognize the role and strategic importance of human resource management in management, organization, and society.
        ii. Practice ethical considerations in human resource management.
        iii. Recognize the recent and rapid growth and development of human resource management related legislation.
        iv. Describe the international elements of human resource management.

7. Brief list of topics to be covered:

    a. Strategic HRM
    b. Ethics in HRM
    c. Job Analysis, Job Characteristics, and Recruiting
    d. EEO and the Law
    e. Compensation Principles, Employee Benefits, and Employee Retention
    f. Training and Development
    g. Health, Safety, and Security
    h. Performance Management
    i. Employee Rights and Responsibilities
    j. Unions and Collective Bargaining

ADMG 385 Business Communication and Report Writing

1. Course number and name: ADMG 385 Business Communication and Report Writing

2. Credits and contact hours: 5 credits, 5 lecture hours

3. Course instructor: Varies among Tenure/Non-Tenure Track Faculty

4. Text book: Rentz, P., and Lentz, P. (2014). M: Business Communications with Connect Plus, McGraw-Hill/Irwin; 3 edition

5. Specific Course Information:

    a. Catalog Description: Develops planning and writing skills for business letters, employment applications, memoranda, and reports.

    b. Prerequisites or co-requisites: ENG 102 or equivalent, and junior standing.

    c. Course Status: ADMG 385 is a required course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Demonstrate an understanding of composing and writing effective styles of business correspondence.
        ii. Demonstrate an understanding of letter and memoranda formats.
        iii. Demonstrate an understanding of emerging technologies in business communication.
        iv. Demonstrate an understanding of resume, application letter, and follow-up letter.
        v. Demonstrate an understanding of researching and writing a business report.
        vi. Develop interpersonal and group communication skills.
        vii. Develop and demonstrate proper use of grammar, spelling, word use, and punctuation as applied in business communication.

7. Brief list of topics to be covered:

    a. Understanding Business Communication
    b. Mastering Writing and Presentation Basics
    c. Writing Effective Messages
    d. Writing Effective Reports
    e. Using Oral Skills

COM 345 Business and Professional Speaking

1. Course number and name: COM 345 Business and Professional Speaking

2. Credits and contact hours: 4 credit hours, 4 lecture hours

3. Instructor's Name: Nadene Vevea, Communication Department

4. Text book: Beebe, S.A., & Mottet, T.P. (2013). Business and professional Communications: Principles and skills for leadership, 2nd Edition, Pearson, 2013

5. Specific course information:

    a. Catalog Description: Oral communication in career and professional settings with focus on public presentations, briefings, and persuasion.

    b. Prerequisites or co-requisites: None.

    c. Course Status: COM 345 is a selective elective course in the program.

6. Specific goals for the course:

    a. The Student will be able to:

        i. Demonstrate informative methods by delivering an informative speech.
        ii. Demonstrate persuasive methods by delivering a persuasive speech.

7. Brief list of topics covered:

    a. Introduction to communication
    b. Using verbal and nonverbal messages
    c. Listening and responding
    d. Adapting to differences
    e. Developing and delivering professional presentations
    f. Writing for business
    g. Informative speech
    h. Interview types
    i. Persuasive speech

BUS 221 Introductory Business Statistics

1. Course number and name: BUS 221 Introductory Business Statistics

2. Credits and contact hours: 5 credits, 5 lecture hours

3. Course instructor: Dr. Toni Sipic, Department of Economics

4. Text book: Donnely, R.A. (2015). Business Statistics. (2nd ed.). New York: Pearson.

    a. Other supplemental materials: MyStatLab Standalone Access Card. New York: Pearson, 2012.

5. Specific Course Information:

    a. Catalog Description: Introduction to inferential business statistics. Using probability distributions and information from samples for business decisions.

    b. Prerequisites or co-requisites: MATH 130 or higher with a minimum grade of C- or higher.

    c. Course Status: BUS 221 is a selective elective course in the program.

6. Specific goals for the course:

    a. Students will be able to:

        i. Develop statistical and critical thinking skills.
        ii. Develop Excel graphing and data analysis skills.
        iii. Collect, manage, analyze, interpret and present business data in Microsoft Excel.
        iv. Apply these skills to solve "real-world" business and economic problems.

7. Brief list of topics to be covered:

    a. Calculating and Displaying Descriptive Statistics
    b. Introduction to Probabilities
    c. Probability Distributions
    d. Sampling and Sampling Distributions
    e. Confidence Intervals
    f. Hypothesis Testing
    g. Analysis of Variance
    h. Correlation
    i. Simple and Multiple Regression Model Building

PSY 362 Introductory Statistics

1. Course number and name: PSY 362 Introductory Statistics

2. Credits and contact hours: 5 credits, 5 contact hours

3. Course instructor: Varies among Tenure/Non-Tenure Track Faculty

4. Text book: American Psychological Association. (2009). Publication Manual of the American Psychological Association (6th ed.). Washington, DC: Author.

    a. Paulos, J. (). *Innumeracy: Mathematical Illiteracy and its consequences.* New York, NY; Vantage Books.

5. Specific Course Information:

    b. Catalog Description: Descriptive statistics and introduction to inferential statistics up through the one-way analysis of variance.

    c. Prerequisites or co-requisites: MATH 130

    d. Course Status: PSY 362 is a selective elective course in the program.

6. Specific goals for the course:

    e. The student will be able to

        i. Organize raw data into a form in which it can be analyzed.
        ii. Graph data in a form that is both appropriate to the data and meaningful to an audience.
        iii. Use appropriate descriptive statistics to convey information about a data set.
        iv. Demonstrate an understanding of the concepts of probability and variability and how they relate to and underlie inferential statistics
        v. Calculate basic inferential statistics, including z-tests, t-tests, correlation coefficients, and chi-square tests.
        vi. Use the appropriate t-test for a data set, including knowledge of dependent means and independent group t-tests.
        vii. Demonstrate understanding of the theoretical basis of the analysis of variance (ANOVA), and the logic of hypothesis testing using the ANOVA.
        viii. Calculate and interpret the outcome of a one-way ANOVA with post-hoc comparisons.
        ix. Choose statistical tests that are appropriate to specific data and research questions.
        x. Interpret the outcomes of inferential tests.

7. Brief list of topics to be covered:

f. Probability Theory
g. Hypothesis Testing and Statistical Significance
h. Correlation
i. Regression
j. T-test
k. ANOVA
l. Sequential Analysis

MGT 380 Organizational Management

1. Course number and name: MGT 380 Organizational Management

2. Credits and contact hours: 5 credits, 5 lecture hours

3. Course instructor: Dr. Andrew Waldum, Department of Management

4. Text book: Williams, C. (2012). Management (7th ed.). Mason, Ohio: South-Western College.

    a. Other supplemental materials: Avey, J. (20XX). *The Handbook: A Practical Guide for New Managers.* (ISBN: 978-0-9815498-0-4)

5. Specific Course Information:

    a. Catalog Description: Principles of management class for non-business majors. Introduces students to the history and development of management ideas and contemporary practice. Overview of all the major elements of the managerial function. Only available for non-business majors.

    b. Prerequisites or co-requisites: None. This course is only available to non-business majors.

    c. Course Status: MGT 380 is a selective elective course in the program

6. Specific goals for the course:

    a. The course will:

        i. Provide students with a foundation in management theories and practices both from a historical and contemporary perspective.
        ii. Expose students to the planning, leading, organizing and controlling framework of management.
        iii. Expose students to the ethical, legal and environmental challenges facing managers.
        iv. Discuss management tools that can be used when faced with key business opportunities or threats.
        v. Facilitate students' critical thinking and problem-solving skills by working through real-world management cases.

7. Brief list of topics to be covered:

    a. Management.
    b. History of Management.
    c. Organizational Environments and Culture.

d. Ethics and Social Responsibility.
e. Planning and Decision Making.
f. Organizational Strategy.
g. Innovation and Change.
h. Global Management.
i. Designing Adaptive Organizations.
j. Managing Teams.
k. Managing Human Resource Systems.
l. Managing Individuals and a Diverse Work Force.
m. Motivation.
n. Leadership.
o. Managing Communication.
p. Control.

PSY 456 Industrial and Organizational Psychology

1. Course number and name: PSY 456 Industrial and Organizational Psychology

2. Credits and contact hours: 4 credits, 4 lecture hours

3. Course instructor: Dr. Anthony Stahelski, Psychology Department

4. Text book: Muchinsky, P. (2011). Psychology Applied to Work (10th ed.). Summerfield, NC: Hypergraphic Press.

5. Specific Course Information:

    a. Catalog Description: Application of psychological principles to personnel and organizational problems in labor, industry, government, education, and the military. Additional Information - Working adults spent approximately 1/3 of their lives in the workplace. Consequently, work is a meaningful part of our lives that helps determine our overall life satisfaction. This course examines how psychology contributes to understanding all aspects of the workplace environment.

    b. Prerequisites or co-requisites: PSY 101.

    c. Course Status: PSY 456 is a selective elective course in the program.

6. Specific goals for the course:

    a. Students will be able to:

        i. Describe what Industrial and Organizational psychologists do.
        ii. Apply Industrial and Organizational research methods to practical problems.
        iii. Explain how psychological measurements are used in the workplace.
        iv. Describe how Industrial and Organizational psychology relates to the human resources function.
        v. Explain the importance of facilitation, team building and teamwork in the workplace.
        vi. Describe the various leadership styles and the characteristics of good leadership.

7. Brief list of topics to be covered:

    a. Overview, Historical Approach to Industrial and Organizational Psychology.
    b. Organizational Theory and Design.
    c. Measurement: Predictors and Criteria.
    d. Human Resources Systems and Analysis.
    e. Training and Learning.
    f. Performance Appraisal.

g. Attitudes and Motivation.
h. Leadership: The Search for the Perfect Match.
i. Groups and Teams: Input, Throughput and Output.
j. Applied Issues.

ADMG 374 Project Management

1. Course number and name: ADMG 374 Project Management

2. Credits and contact hours: 5 credits, 5 lecture hours

3. Course instructor: Varies among Tenure/Non-Tenure Track Faculty

4. Text book: Schwalbe, K. (2014). Information Technology Project Management, Revised 7th Ed. by Kathy Schwalbe. Course Technology, 2014.

    a. Project Management – Achieving competitive advantage, 3rd Ed. by Jeffrey K. Pinto. Prentice-Hall, Inc., 2013. ISBN: 9780132664158. (reference only)

5. Specific Course Information:

    a. Catalog Description: Development of skills in the core project management areas; scope management, time management, cost management, quality management.

    b. Prerequisites or co-requisites: Junior standing or above.

    c. Course Status: ADMG 374 is a selective elective course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Demonstrate an understanding of the genesis of Project Management and its importance to improving the success of projects.
        ii. Demonstrate an understanding of Project Management terms, techniques, and tools.
        iii. Use Microsoft Project 2013 and other software to help plan and manage a project
        iv. Apply Project Management techniques by working on a team project as project manager or active team member.
        v. Appreciate the importance of good Project Management by sharing examples of good and bad project management and using knowledge and skills developed in this class and in other settings.

7. Brief list of topics to be covered:

    a. Scope Management
    b. Project Life Cycle
    c. Project Scheduling (Microsoft Project)
    d. Cost Management
    e. Quality Assurance

f. Project Procurement
g. Project Control
h. Motivation Theory
i. Team Building
j. Project Risk Management

ETSC 455 Engineering Project Management

1. Course number and name: ETSC 455 Engineering Project Management

2. Credits and contact hours: 4 credits, 4 lecture hours

3. Course instructor: Dr. Michael Whelan, ETSC Department

4. Text book: Pinto, J.K. (2013). Project Management: Achieving Competitive Advantage, 3rd Edition; by Jeffrey K. Pinto; Pearson Publishing, 2013.

5. Specific Course Information:

    a. Catalog Description: Project-based synthesis used in engineering project management. Topics: bidding, contract management, scheduling, cost estimating and control, logistics, conflict management, team building, negotiating, and risk assessment.

    b. Prerequisites or co-requisites: By Permission.

    c. Course Status: ETSC 455 is a selective elective course in the program.

6. Specific goals for the course:

    a. Students will be able to

        i. Demonstrate the ability to describe the key characteristics of a project.
        ii. Demonstrate the ability to apply the principles of network analysis, PERT, time-cost issues, and decision-making to expedite project activities.
        iii. Demonstrate the ability to describe the stages of a project management life cycle.
        iv. Demonstrate the ability to create, given a project scenario, a work breakdown structure and a project baseline plan, and outline each of the key elements of the project.
        v. Demonstrate the ability to establish budgets, assign resources, draft proposals, and implement plans.
        vi. Demonstrate the ability to conduct meetings, establish reporting mechanisms, and implement plans.
        vii. Demonstrate the ability to assess risk in projects.
        viii. Demonstrate the ability to close projects in a systematic manner.

7. Brief list of topics to be covered:

    a. Scope Management
    b. Cost Estimation and Budgeting
    c. Project Scheduling

d. Resource Management
e. Project Evaluation and Control
f. Project Closeout and Termination
g. Risk Management
h. Leadership and the Project Manager
i. Project Team Building, Conflict, & Negotiation

Basic and Breadth Courses

PSY 101 – General Psychology

BIOL 201 – Human Physiology

MATH 130 – Finite Mathematics

PHYS 106 – Physics Inquiry

MATH 153 – Pre-calculus Mathematics I

MATH 154 – Pre-calculus Mathematics II

CHEM 101 – Contemporary Chemistry

CHEM 111 – Introduction to Chemistry

CHEM 111LAB – Introductory Chemistry Laboratory

CHEM 181 – General Chemistry I

CHEM 181LAB – General Chemistry Laboratory I

PSY 101 General Psychology

1. Course number and name: PSY 101 General Psychology

2. Credits and contact hours: 5 credits, 4 lecture hours and 1 lab hour

3. Course instructor: Dr. Mary Radeke, Psychology Department

4. Text books: Myers, D. (2005). Exploring Psychology (9th ed.). New York, NY: Worth. (Required)

    a. Hock, R. (2009). Forty studies that changed psychology: Explorations into the history of psychological research (7th ed.). Upper Saddle River, N.J.: Pearson/Prentice Hall. (Required)

5. Specific Course Information:

    a. Catalog Description: An introduction to the science of human behavior, including fundamental principles and processes.

    b. Prerequisites or co-requisites: There is no prerequisite/co-requisite to attend.

    c. Course Status: PSY 101 is a required course in the program.

6. Specific goals for the course:

    a. Students will be able to

        i. Apply the concepts of biological, cognitive, and emotional principles to their understanding of human interaction.
        ii. Analyze the cognitive thought process as well as ways in which humans perceive and interact with the natural and human-made world.
        iii. Explore and foster a better understanding of diversity issues in the field of psychology.
        iv. Explore abnormal behavior and learn the ways in which abnormal behavior plays a role in understanding differences among humans and how to foster better understanding and compassion for the human condition.
        v. Identify and apply the major components of the scientific method.
        vi. Examine peer-reviewed scientific literature.

7. Brief list of topics to be covered:

    a. Diversity in Psychology
        i. Gender and ethnic diversity in the history of psychology
        ii. Gender and cultural issues on topics of psychology
    b. Scientific approach to psychology

        i. Theories, hypotheses, operational definitions, constructs, designs, power
c. History of Psychology
        i. Evolution of organisms
        ii. Modern systems of psychology
d. Biological bases of behavior
        i. Evolution of organisms
        ii. Genetics
        iii. The nervous system
e. Experience
        i. Sensation and vision
        ii. Perception and attention
        iii. Consciousness
        iv. Learning
f. Cognition
        i. Memory
        ii. Language
        iii. Thinking and intelligence
        iv. Motivation and emotion
g. Becoming a person
        i. Personality
        ii. Development
        iii. Social Influences
h. Abnormal Behavior
        i. History
        ii. Disorders
        iii. Etiology

BIOL 201 Human Physiology

1. Course number and name: BIOL 201 Human Physiology

2. Credits and contact hours: 5 credits, 5 contact hours

3. Course instructor: Dr. Blaise Dondji, Department of Biological Sciences

4. Text book: Michael D. Johnson. (2013). Human Biology: Concepts and Current Issues. (7th ed.). New York: Pearson. (CWU 2nd Custom Edition)

5. Specific Course Information:

    a. Catalog Description: This course will cover the study of structure and function of biological macromolecules, cells, tissues, organs, organ systems, and disorders/diseases that may compromise their functioning.

    b. Prerequisites or co-requisites: There is no prerequisite/co-requisite to attend.

    c. Course Status: BIOL 201 is a required course in the program

6. Specific goals for the course:

    a. Students will be able to

        i. Explain in basic terms how the different organ systems in the human body function.
        ii. Discuss disorders/diseases that may alter the functioning of human body.
        iii. Analyze and interpret real-world human subject data to evaluate the function of organ systems under both normal and disease states to diagnose medical conditions.
        iv. Describe the function and interaction between human physiological systems.
        v. Demonstrate a basic understanding of structure of chemical compounds and of chemical reaction process.
        vi. Demonstrate a basic understanding of structure and function of biological macromolecules, cells, tissues and organs.
        vii. Present scientific information clearly in oral form.

7. Brief list of topics to be covered:

    a. The Organ Systems
    b. The Skeletal System
    c. The Muscular System
    d. Blood, Blood Vessels, and Heart
    e. The Immune System
    f. The Respiratory System
    g. The Central Nervous System

h. The Digestive System
i. The Urinary System

MATH 130 Finite Mathematics

1. Course number and name: MATH 130 Finite Mathematics

2. Credits and contact hours: 5 credits, 5 contact hours

3. Course instructor: Varies among Tenure/Non-Tenure Track Faculty

4. Text book: Owen, W.B., and Cutlip, F. (2012). Finite Mathematics: Introductory Probability and Statistics, Hayden-McNeil Publishing

5. Specific Course Information:

    a. Catalog Description: The language of sets, counting procedures, introductory probability and decision-making, introductory descriptive statistics.

    b. Prerequisites or co-requisites: Either at least 500 on the SAT, 19 on the ACT, a Compass test score of either 50-Pre-Algebra, 26-Algebra, 31-College Algebra, or 31-Trigonometry, or completed MATH 100B or a higher level math class.

    c. Course Status: MATH 130 is a required course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Read, interpret, and generate graphical representations of relevant data.
        ii. Describe the uses and limitations of statistical summaries of data.
        iii. Evaluate the strength of a claim based on statistical evidence.

7. Brief list of topics to be covered:

    a. Language of sets
    b. Counting procedures
    c. Probability
    d. Decision-making
    e. Introductory statistics

MATH 153 Pre-calculus Mathematics I

1. Course number and name: MATH 153 Pre-calculus Mathematics I

2. Credits and contact hours: 5 credits, 5 contact hours

3. Course instructor: Varies among Tenure/Non-Tenure Track Faculty

4. Text book: Sullivan, M. (2012). Precalculus. Pearson, 9th Edition.

5. Specific Course Information:

    a. Catalog Description: A foundation course that stresses those algebraic and elementary function concepts together with the manipulative skills essential to the study of calculus.

    b. Prerequisites or co-requisites: Either MATH 100C with a grade of C or higher; or a score of 18 or higher on the Intermediate Math Placement Test, or a score of 66 or higher on the Compass Algebra test.

    c. Course Status: MATH 153 is a selective elective course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Demonstrate an understanding of functions, including operations, compositions, and graphs.
        ii. Demonstrate an understanding of the specific features and applications of linear, quadratic, exponential, logarithmic, polynomial, and rational functions.

7. Brief list of topics to be covered:

    a. Functions and Their Graphs
    b. Linear and Quadratic Functions
    c. Polynomial and Rational Functions
    d. Exponential and Logarithmic Functions
    e. Trigonometric Functions

MATH 154 Pre-calculus Mathematics II

1. Course number and name: MATH 154 Pre-calculus Mathematics II

2. Credits and contact hours: 5 credits, 5 contact hours

3. Course instructor: Varies among Tenure/Non-Tenure Track Faculty

4. Text book: Sullivan, M. (2012). Precalculus. Pearson, 9th Edition.

5. Specific Course Information:

    a. Catalog Description: A continuation of MATH 153 with emphasis on trigonometric functions, vectors, systems of equations, the complex numbers, and an introduction to analytic geometry.

    b. Prerequisites or co-requisites: MATH 153 with a grade of C or higher, a score of 17 or higher on the Advanced Math Placement Test, or a score of 46 or higher on the Compass College Algebra Test.

    c. Course Status: MATH 154 is a selective elective course in the program.

6. Specific goals for the course:

    a. The student will be able to

        i. Use geometry to work with symmetrical triangles.
        ii. Compute trigonometric functions of special angles and use them to solve for the unknown part(s) of right triangles.
        iii. Use the Laws of Sines and Cosines to solve for the unknown parts of triangles.
        iv. Solve trigonometric identities and equations.
        v. Graph trigonometric functions.
        vi. Compute the values of inverse trigonometric functions.
        vii. Use matrices to solve systems of equations.

7. Brief list of topics to be covered:

    a. Introduction to Trigonometry
    b. Graphing Trigonometric Functions
    c. Trigonometric Identities
    d. Solving Trigonometric Equations
    e. Oblique Triangle Theorem
    f. Parabolas and Circles
    g. Ellipses and Hyperbolas
    h. Matrix Operations and Applications

CHEM 101 Contemporary Chemistry

1. Course number and name: CHEM 101 Contemporary Chemistry

2. Credits and contact hours: 5 credits, 4 lecture hours and two lab hours

3. Course instructor: Varies among Tenure/Non-Tenure Track Faculty

4. Text book: Hill, J.W., McCreary, T.W., Kolb, D.K. (2012). *Chemistry for Changing Times.* Upper Saddle River, New Jersey, Prentice Hall, 13th Edition.

    a. Laboratory Manual written by several members of the Chemistry Department.

5. Specific Course Information:

    a. Catalog Description: Chemical principles and their application to contemporary problems of human beings and their environment.

    b. Prerequisites or co-requisites: None.

    c. Course Status: CHEM 101 is a selective elective course in the program.

6. Specific goals for the course:

    a. Students will be able to

        i. To become sufficiently literate in the field of chemistry to understand scientific issues that impact our personal and societal well-being, such as those relating to health, energy, and the environment.
        ii. Demonstrate an understanding of the chemical principles underlying several real-world issues. These issues will be selected from the areas of the environment, medicine, modern materials, and biochemistry.
        iii. To get a feel for the dynamic process of science and develop expertise in using scientific and analytical thinking skills. To learn to make observations and develop plausible explanations for those observations and to design experiments to test your explanations.
        iv. To gain an appreciation for the work of scientists and become familiar with some of the most brilliant and important experiments that led to our present understanding of matter.
        v. To discover the beauty and symmetry of nature at the atomic and molecular level.
        vi. To develop and improve skills needed to solve problems, including the application of basic algebra and effective strategies for finding a successful pathway to a solution.

7. Brief list of topics to be covered:

a. Chemistry
b. Atoms
c. Atomic Structure
d. Chemical Bonds
e. Chemical Accounting
f. Gasses, Liquids, Solids, and Intermolecular Forces
g. Acids and Bases
h. Oxidation and Reduction
i. Organic Chemistry

CHEM 111 Introduction to Chemistry

1. Course number and name: CHEM 111 Introduction to Chemistry

2. Credits and contact hours: 4 credits, 4 lecture hours

3. Course instructor: Varies among Tenure/Non-Tenure Track Faculty

4. Text book: Bettelheim, F., Brown, W., Campbell, M., Farrell, S., and Torres, O. (2012). Introduction to General, Organic, and Biochemistry.

5. Specific Course Information:

    a. Catalog Description: Chemical principles of the compositions, structure, properties, and changes of matter. Designed for students in certain health science programs.

    b. Prerequisites or co-requisites: None.

    c. Course Status: CHEM 111 is a selective elective course in the program.

6. Specific goals for the course:

    a. Students will be able to:

        i. Correctly use the vocabulary of a chemist
        ii. Describe the chemical and physical forces between atoms
        iii. Describe basic chemical principles
        iv. Recognize the relationship between the chemical and physical relationship between atoms
        v. Perform basic chemistry calculations including calculation of pH

7. Brief list of topics to be covered:

    a. Matter, Energy, and Measurement
    b. Atoms
    c. Chemical Bonds
    d. Chemical Reactions
    e. Gasses, Liquids, and Solids
    f. States of matter, gas pressure, and gas laws
    g. Solutions and Colloids
    h. Reaction Rates and Chemical Equilibrium
    i. Acids and Bases

CHEM 111LAB Introduction to Chemistry Laboratory

1. Course number and name: CHEM 111LAB Introduction to Chemistry Laboratory

2. Credits and contact hours: 1 credit, 2 lab hours

3. Course instructor: Varies among Tenure/Non-Tenure Track Faculty

4. Text book: Chemistry 111 Laboratory Manual written by several members of the Chemistry Department (available from CWU Bookstore).

5. Specific Course Information:

    a. Catalog Description: This is the laboratory component of Chem 111. The lab course is designed to introduce students to scientific methods and laboratory techniques that are commonly used in the field of chemistry. Through practice, you will learn to make careful observations and measurements, manipulate data, interpret results, and draw conclusions.

    b. Prerequisites or co-requisites: CHEM 111.

    c. Course Status: CHEM 111LAB is a selective elective course in the program.

6. Specific goals for the course:

    a. Students will be able to

        i. Apply chemistry concepts to real-world issues.
        ii. Collect, analyze, and interpret quantities and qualitative data to address questions about relevant chemistry topics.
        iii. Apply scientific methods in laboratory situations.
        iv. Apply mathematical methods to the solve common chemistry problems, including the use of scientific notation, significant figures and the quantitative use of balance chemical equations.
        v. Generate graphical data, including common x, y plots with axes properly labeled and extract qualitative information about the relationship between quantities and qualitative information from the slope of x, y plots.
        vi. Understand the difference between accuracy precision, and the difference between random and systemic error, and calculate average and standard deviate from a given data set.
        vii. Describe the terms in an algebraic expression and qualitatively describe the relationships between various terms.
        viii. Use an algebraic expression to solve quantitatively for various terms, given appropriate numerical information.

7. Brief list of topics to be covered:

a. Laboratory Safety
b. Lab #1: An Investigation of Density
c. Lab #2: Physical Separation of the Components of a Mixture
d. Lab #3: Observing Signs of a Chemical Change
e. Lab #4: Observing Chemical Reactions and Predicting Chemical Equations
f. Lab #5: Determination of Bicarbonate in Alka-Seltzer
g. Lab #6: Determination of Phosphate in Natural Waters
h. Lab #7: Standardization of Sodium Hydroxide Using KHP
i. Lab #8: Determination of Acetic Acid by Titration. Check out

CHEM 181 General Chemistry

1. Course number and name: CHEM 181 General Chemistry

2. Credits and contact hours: 4 credits, 4 lecture hours

3. Course instructor: Varies among Tenure/Non-Tenure Track Faculty

4. Text book: Tro, N.J. (2014). Chemistry: Structure and Properties. New York City, NY, Pearson Education. 1st Edition.

5. Specific Course Information:

    a. Catalog Description: This course introduces chemistry concepts such as atoms and molecules, stoichiometry, solution chemistry, thermochemistry, electronic structure of the atom and periodicity, and chemical bonding.

    b. Prerequisites or co-requisites: Strongly recommend high school chemistry and qualification for MATH 153 or math placement exam.

    c. Course Status: CHEM 181 is a selective elective course in the program.

6. Specific goals for the course:

    a. Students will be able to

        i. Apply chemistry concepts to real-world issues.
        ii. Collect, analyze, and interpret quantities and qualitative data to address questions about relevant chemistry topics.
        iii. Apply scientific methods in laboratory situations.
        iv. Apply mathematical methods to the solve common chemistry problems, including the use of scientific notation, significant figures and the quantitative use of balance chemical equations.
        v. Generate graphical data, including common x, y plots with axes properly labeled and extract qualitative information about the relationship between quantities and qualitative information from the slope of x, y plots.
        vi. Understand the difference between accuracy precision, and the difference between random and systemic error, and calculate average and standard deviate from a given data set.
        vii. Describe the terms in an algebraic expression and qualitatively describe the relationships between various terms.
        viii. Use an algebraic expression to solve quantitatively for various terms, given appropriate numerical information.

7. Brief list of topics to be covered:

a. Atoms
b. Measurement, Problem Solving, and the Mole Concept
c. The Quantum-Mechanical Model of the Atom
d. Periodic Properties of the Elements
e. Molecules and Compounds
f. Chemical Bonding
g. Chemical Reactions and Chemical Quantities

CHEM 181LAB General Chemistry Laboratory

1. Course number and name: CHEM 181LAB General Chemistry Laboratory

2. Credits and contact hours: 1 credit, 3 lab hours

3. Course instructor: Varies among Tenure/Non-Tenure Track Faculty

4. Text book: Chemistry 181 Laboratory Manual written by several members of the Chemistry Department (available from CWU Bookstore).

5. Specific Course Information:

    a. Catalog Description: This laboratory supports hands-on, inquiry-based approaches to exploring topics presented in CHEM 181. Three hours of laboratory weekly.

    b. Prerequisites or co-requisites: CHEM 181.

    c. Course Status: CHEM 181LAB is a selective elective course in the program.

6. Specific goals for the course:

    a. Students will be able to

        i. Apply chemistry concepts to real-world issues.
        ii. Collect, analyze, and interpret quantities and qualitative data to address questions about relevant chemistry topics.
        iii. Apply scientific methods in laboratory situations.
        iv. Apply mathematical methods to the solve common chemistry problems, including the use of scientific notation, significant figures and the quantitative use of balance chemical equations.
        v. Generate graphical data, including common x, y plots with axes properly labeled and extract qualitative information about the relationship between quantities and qualitative information from the slope of x, y plots.
        vi. Understand the difference between accuracy precision, and the difference between random and systemic error, and calculate average and standard deviate from a given data set.
        vii. Describe the terms in an algebraic expression and qualitatively describe the relationships between various terms.
        viii. Use an algebraic expression to solve quantitatively for various terms, given appropriate numerical information.

7. Brief list of topics to be covered:

    a. Lab safety
    b. Basic Lab Skills

c. Investigations in Density
d. Empirical Formula of a Compound
e. Spectroscopy and Analysis of Light
f. Chemical Sleuthing
g. Molecular Modeling
h. Gravimetric Plant Food Analysis

PHYS 106 Physics by Inquiry (with lab)

1. Course number and name: PHYS 106 Physics by Inquiry

2. Credits and contact hours: 5 credits, 3 lecture hours and 2 lab hours

3. Course instructor: Dr. Darci Snowden, Physics Department

4. Text book: Bloomfield, L. (2013). How things work: The physics of everyday life (5th ed.). New York: J. Wiley.

    a. Access to The Physics Classroom at http://www.physicsclassroom.com/

5. Specific Course Information:

    a. Catalog Description: An introduction to fundamental physics topics in the matter, motion, electricity, magnetism, and other important topics. This is an introductory integrated lab/lecture course in Physics.

    b. Prerequisites or co-requisites: None.

    c. Course Status: PHYS 106 is a required course in the program.

6. Specific goals for the course:

    a. Students will be able to

        i. Apply scientific investigative techniques to answer questions about relevant physics concepts.
        ii. Apply Quantitative and qualitative approach to describing and analyzing motion, forces, and energy; light and optical instruments, and sound.
        iii. Describe and analyze key physics principles stated in the Next Generation Science Standards (NGSS) Disciplinary Core Ideas.
        iv. Apply physics and engineering principles to solve a real-world problem.
        v. Collect, analyze, and interpret quantitative and qualitative data to address questions about relevant physics concepts.
        vi. Apply physics concepts and processes to personal and societal issues.
        vii. Find and utilize a variety of resources to learn and communicate about physics events and processes.

7. Brief list of topics to be covered:

    a. 1-D Kinematics
    b. Newton's Laws
    c. Vectors-Motion and Forces in Two Dimensions
    d. Momentum and its Conservation

e. Work, Energy, Power
f. Static Electricity
g. Current Electricity
h. Waves
i. Sound Waves and Music
j. Light Waves and Color
k. Reflection and the Ray Model of Light
l. Refraction and the Ray Model of Light

Appendix B – Faculty Vitae

Sathy Rajendran, Program Director

Morgan Bliss (starts Fall 2016)

Michael Andler

Scott Calahan

Allen Sullivan

Dr. Sathyanarayanan Rajendran, CSP, ARM, CRIS

1. Education

- Doctor of Philosophy (Ph.D), Construction Engineering Management Program (Major) / Environmental Health and Occupational Safety Mgmt (Minor), Oregon State Univ., 2007
- Master of Science (M.S.), Construction Engineering and Management Program (Major) / Transportation Engineering (Minor), Oregon State University, 2004
- Bachelor of Engineering (B.E.), Civil Engineering, Anna University, India, 2002

2. Academic Experience

- Central Washington University, Associate Professor, Program Director, Safety and Health Management (SHM) Program, September 2015-present; full-time
- Central Washington University, Assistant Professor, Program Director, Safety and Health Management (SHM) Program, September 2011-August 2015; full-time

3. Professional Experience

- Hoffman Construction Company of Oregon, Environmental, Health, and Safety Program Manager, Intel D1X Base Build Construction Project. Developed and implemented the project construction environmental, health, and safety (EHS) program for the multi-billion dollar mega project; June 2010-August 2011; full-time
- Hoffman Construction Company of Oregon, Safety Manager. Developed and implemented project safety programs for multiple projects; Oct 2006-May 2010; full-time

4. Certifications

- Certified Safety Professional (CSP), Board of Certified Safety Professionals, 2010-present
- Associate in Risk Management (ARM), The Institutes, 2015-present
- Construction Risk and Insurance Specialist (CRIS), Intl Risk Mgmt Institute, 2009-present
- Leadership in Energy and Environmental Design (LEED) Accredited Professional, U.S. Green Building Council, 2009-present

5. Professional Organizations

- American Society of Safety Engineers (ASSE), Professional Member, 2004 – present
- National Fire Protection Association (NFPA), Member, 2013 – present
- American Industrial Hygiene Association (AIHA), Member, 2013 – present
- The Risk Management Society (RIMS), Educational Member, 2013 – present

6. Honors and Awards

- Outstanding Service Award, Engineering Technologies, Safety, and Construction Department, Central Washington University, 2012 & 2014.
- Outstanding Scholarship Award, Engineering Technologies, Safety, and Construction Department, Central Washington University, 2013 & 2015.

7. Service Activities (selected)

- ABET Program Evaluator, Applied Science Accreditation Commission, American Society of Safety Engineers (ASSE), 2014 – present
- Judge, Build Washington Awards, Associated General Contractors of WA, 2012-2015
- Manuscript Reviewer, American Society of Safety Engineers (ASSE) Journal of Safety, Health & Environmental Research, 2010 – present
- Chair-elect, Faculty Senate, CWU Faculty Senate, 2015– present
- Faculty Advisor, American Society of Safety Engineers (ASSE) Central Washington University Student Section, 2011- Present

8. Publications/Presentations

- 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.
- 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.
- 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.
- Rajendran, S. (2013). "Enhancing Construction Worker Safety Performance Using Leading Indicators." Periodical on Structural Design and Construction, ASCE, 18 (1), 45-51.

9. Professional Development Activities

- ASSE Puget Sound PDC, Puget Sound ASSE and CWU Chapter ASSE, Central Washington University, 2016.
- ABET Program Evaluator Training, ABET, Baltimore, MD, March 26-27, 2014.
- Contractor Controlled Insurance Program, International Risk Management Institute, Richardson, TX, April, 2016
- 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. 12-14, 2013.

Morgan Bliss, M.S., CIH

1. Education

    - Master of Science (M.S.), Technology – Environmental Management, Arizona State University, Arizona, 2012
    - Bachelor of Science (B.S.), Microbiology (Major) / Chemistry (Minor), University of Arizona, Arizona, 2006

2. Academic Experience

    - Central Washington University, Assistant Professor, Safety and Health Management (SHM) Program, September 2016 – present; full-time
    - Embry-Riddle Aeronautical University, Adjunct Professor, Department of Behavioral and Safety Sciences, August 2013 – May 2016; part-time

3. Professional Experience

    - Dignity Health, Safety Officer. Managed programs in employee/patient safety, hazardous materials and waste, environmental health and safety, emergency preparedness, and coordinated the Environment of Care program for multiple facilities; December 2014 – August 2016; full-time
    - Spore Consulting, LLC, Principal Industrial Hygienist. Conducted industrial hygiene surveys and developed safety programs for clients throughout the U.S.; May 2013 – current; part-time
    - ATC Associates/Cardno ATC, Industrial Hygiene Department Manager. Provided technical expert senior review, industrial hygiene program management, and project-specific health and safety plans for clients throughout the U.S.; November 2010 – November 2013; full-time
    - Dunn Environmental, Industrial Hygienist. Independent project management and field work for industrial hygiene, public health, and environmental health projects, primarily in healthcare facilities; June 2006 – November 2010; full-time

4. Certifications

    - Certified Industrial Hygienist (CIH), American Board of Industrial Hygiene, 2012-present
    - OSHA-authorized General Industry Trainer, University of California – San Diego OSHA Technical Institute and Education Center, 2013 – present

5. Professional Organizations

    - American Industrial Hygiene Association (AIHA), Member, 2011 – present
    - American Society of Safety Engineers (ASSE), Professional Member, 2010 – present
    - Arizona Governmental Safety Association (AGSA), Member, 2012 – 2016
    - Central Arizona Society for Healthcare Engineering (CASHE), Member, 2014 – 2016

6. Honors and Awards

- 1st Place, OSH Independent Film Festival Contest, ASSE Region 2, April 2016
- 3rd Place, IH Fundance Film Festival Contest, AIHA, May 2015

7. Service Activities (selected)

- Content Coordinator, Industrial Hygiene Practice Specialty, ASSE, 2014 – present
- Social Media/Website Chair, Industrial Hygiene Practice Specialty, ASSE, 2011 – 2014
- Manuscript Reviewer, Journal of Homeland Security and Emergency Management, 2013
- Healthcare Section Chair, Arizona Chapter ASSE, 2011 – 2013
- Technical Education and Governmental Affairs Chair, Arizona Chapter American Society of Heating, Refrigerating, and Air-Conditioning Engineers, 2010 – 2011

8. Publications/Presentations (selected)

- Bliss, Morgan; Feitshans, Ilise; Hb, Aubrey. "Remember the Ladies: Gender Equity in OSH Programs." Concurrent Session #769 at ASSE Safety 2016 in Atlanta, GA.
- Bliss, Morgan. "Do-It-Yourself Safety Data Sheet Authoring and Revision." Breakout Session #1D at 2016 Arizona ASSE Health and Safety Summit in Scottsdale, AZ.
- Bliss, Morgan and Severson, Lori. "Key Issue Roundtable: Safety Implications of Chemical Disinfectants in Healthcare." Concurrent Session #625 at Safety 2015 in Dallas, TX.
- Bliss, Morgan; Nesbitt, Jeff; Chanice, Milissa. "Safety Implications of Chemical Disinfectants in Healthcare." The Monitor, a Technical Publication of IHPS in ASSE. Volume 14, Number 3.
- Bliss, Morgan; Hristovski, Kiril; Ulrich, Jon. "Compliance of Community Hospitals with the Chemical Facility Anti-Terrorism Standards (CFATS) in the Western United States." Journal of Homeland Security and Emergency Management. Volume 10, Issue 2, Pages –, ISSN (Online) 1547-7355, ISSN (Print) 2194-6361, DOI: 10.1515/jhsem-2012-0018, August 2013.
- Bliss Morgan, "Review of National Security Reform: How Commissions Can Drive Change During Crises" (2012). Journal of Homeland Security and Emergency Management. Volume 9, Issue 1, Pages –, ISSN (Online) 1547-7355, DOI: 10.1515/1547-7355.1994, May 2012.

9. Professional Development Activities

- Professional Ethics and the Practice of Industrial Hygiene, Rocky Mountain Center for Occupational and Environmental Health at the University of Utah, November 2015
- CSP Online Review Course, Bowen EHS, November 2015
- Incident Commander 8-hour Refresher Course #1363, Hazmat School, October 2015
- Hazardous Materials and Waste Transportation Certification, Lion Technologies, Inc., June 2014
- Hazardous/Toxic Waste Management Certification, Lion Technologies, Inc., June 2014

Michael Joseph Andler, M.S., CHST, CRIS

1. Education

    - Masters of Science (M.S.), Engineering Technology, Central Washington University, 2008.
    - Bachelor of Science (B.S.), Safety and Health Management, Central Washington University, 2006.
    - Bachelor of Science (B.S.), Industrial Technology, Central Washington University, 2006.

2. Academic Experience

    - Central Washington University, Senior Lecturer, Safety and Health Management Program, 2015-present, full-time
    - Central Washington University, Senior Lecturer, Safety and Health Management / Construction Management / Engineering Technologies, Safety, and Construction Programs; 2014-2015, full-time
    - Central Washington University, Lecturer, 2007-2013, Safety and Health Management / Construction Management / Engineering Technologies, Safety, and Construction Programs; part-time/full-time

3. Professional Experience

    - USDA Forest Service, Forestry Technician Foreman. ORV Maintenance Crew; Maintained, designed, built trails, and bridges. Summers 2003-2009; full-time.
    - USDA Forest Service, Forestry Technician Foreman. ORV Winter Ranger; Enforced CFR's in the national forest riding snowmobiles. Winter 2006; full-time.
    - J.Babcock Construction, Laborer. Custom-remodels of local homes including additions and re-roofs, siding, etc.; Summer 2002; full-time
    - G.L. White Construction, Laborer. Converted local Kentucky Fried Chicken to Taco Bell and KFC; built a 10,000 SF home; Summer 2001; full-time.

4. Certifications or professional registrations:

    - Construction Safety and Health Technician (CHST), Board of Certified Safety Professionals, 2015-present
    - Construction Risk and Insurance Specialist (CRIS), Intl Risk Mgmt Institute, 2013-present
    - Firefighter-II US Forest Service wild-and firefighter trained, June 2003.
    - SEC-II US Forest Service Law Enforcement Officer-II, July 2004. Enforced Code of Federal Regulations (CFR) on national forest land.

5. Membership in professional organizations:

- American Society of Safety Engineers (ASSE), Member, 2015-present

6. Honors and awards

- Outstanding Teaching Award, Engineering Technologies, Safety, and Construction Department, Central Washington University, 2015.

7. Service Activities

- Project Lead, Various construction projects for the local community, every spring, 2008-present
- Project Assistant, Construction of Confined Space Simulator for the Safety and Health Management Program, 2014
- Judge, SkillsUSA Regional Cabinetry Competition, 2013 & 2014
- Understanding Construction Insurance Rates and Premiums, International Risk Management Institute, Richardson, TX, August, 2015

8. Publications and presentations

- M. Andler, S. Calahan, "Old Relic Goes High Tech" Project of the month, July 2006, Popular Mechanics Magazine.
- M. Andler, Co-presenter, Washington State Technology Education Association Conference, Processes of an MET 345 (Production Technology) course, Wenatchee, WA, 2006.

9. Professional Development

- ASSE Puget Sound PDC, Puget Sound ASSE and CWU Chapter ASSE, Central Washington University, 2016.
- AGC National Safety and Health Committee Meeting, Portland, Oregon, July 2014.
- Enhanced Leadership Skills for Safety Professionals PDC, Puget Sound ASSE and CWU Chapter ASSE, Central Washington University, 2014.
- Engineering and Technology Curriculum Assessment Project, School of Education and College of Engineering, Colorado State University, Dr.'s De Miranda and Siller, 2008.

Dr. Allen Sullivan

1. Education

- Doctor of Philosophy (Ph.D.), Geography, Oregon State University, 2000.
- Master of Science (M.S.), Resource Management, Central Washington University, 1994.
- Bachelor of Arts (B.A.), Education / Biological Sciences Endorsement, 1984
- Bachelor of Arts (B.A.), Botany / Environmental Studies Minor, 1984

2. Academic Experience

- Central Washington University, Lecturer, Safety and Health Management Program, September 2015-present; part-time
- Central Washington University, Assistant Professor, Safety and Health Management Program, September 2013-June 2015; full-time
- Central Washington University, Assistant Professor, 2000-2008; full-time
- Central Washington University, Instructor, 1994-95, 1998-99; part-time/full-time

3. Professional Experience

- Stell, Inc. and Versar, Inc., Environmental Management System and Sustainability Coordinator. Developed and maintained all program documentation, and directed implementation of ISO 14001 compliant EMS. 2009-2013; full-time.
- ICI Services Corporation, Range and Training Land Coordinator. Assessed impacts to rangelands resulting from military training exercises. 2008-2009; full-time.
- Washington Environmental Council, U.S Forest Service, Private Consultant. Surveyed and mapped anadromous fisheries habitat and barriers in central Washington streams. 1995/2000; part-time.
- Harza Northwest, Inc. Fisheries and Wildlife Ecologist. Performed a variety of ecological surveys, including plant, wildlife, and fishery surveys.1993; full-time.

4. Membership in professional organizations:

- American Society of Safety Engineers (ASSE), Member, 2014-present

5. Service Activities

- National Safety Council Press Editorial Advisory Board, Attend quarterly conference calls. Availability for peer review of revised or new manuscripts. Provide and/or review supplemental teaching materials.
- Gladmar Committee (CWU) Fall Quarter 2013 - Ongoing
- Safety and Health Management Advisory Council (CWU) Fall Quarter 2013 - Ongoing
- Symposium on University Research and Creative Expression (SOURCE) (CWU) Fall
- Quarter 2013 - Ongoing

- Institutional Animal Care and Use Committee (IACUC) (CWU) Fall Quarter 2013 – Ongoing
- ETSC Safety Committee (CWU) Fall Quarter 2013 - Ongoing

6. Publications and presentations

- Sullivan, A. E. (2014). Supplemental Instructional Materials for Fundamentals of Industrial Hygiene. National Safety Council.
- Sullivan, A. E. (2015). Supplemental Materials - Industrial Hygiene Homework Exercises. National Safety Council.

7. Professional Development

- Washington Construction Safety Day, Puyallup, WA, May 2015
- ABET Program Assessment Workshop, Seattle, WA; 2014
- Occupational Safety and Health Administration 511 – Occupational Safety and Health Standards for General Industry, University of Washington OSHA Training Institute Education Center & United States Department of Labor Occupational Safety and Health Administration, Seattle, WA, July 2014
- Occupational Safety and Health Administration 501 Trainer Course in Occupational Safety and Health Standards for General Industry**,** University of Washington OSHA Training Institute Education Center & United States Department of Labor Occupational Safety and Health Administration, Seattle, WA, July 2014
- AGC National Safety and Health Committee Meeting, Portland, Oregon, July 2014
- Enhanced Leadership Skills for Safety Professionals PDC, Puget Sound ASSE and CWU Chapter ASSE, Central Washington University, June 2014
- Washington Agriculture Safety Day, Puyallup, WA, February 2014
- Washington Governors Industrial Safety and Health Conference, Tacoma, WA, September 2013

Scott B. Calahan

1. Education

    - Master of Arts, Heritage College, 1996
    - Bachelor of Science, Central Washington University, 1992

2. Academic Experience

    - Central Washington University, Professor, Program Coordinator, Technology Education and Traffic Safety Studies, September 2015-present; full-time
    - Central Washington University, Associate Professor, Program Coordinator, Technology Education and Traffic Safety Studies, September 2006-August 2015; full-time
    - Central Washington University, Professor, Program Coordinator, Technology Education and Traffic Safety Studies, September 2000-August 2006; full-time

3. Professional Experience

    - Kittitas School District, Technology Education Teacher, September 1992 – June 2000
    - Yakima Door Company, Production Team Member, 1989 – 1992

4. Membership in professional organizations:

    - Washington Traffic Safety Education Association (Past President)
    - Washington Industrial Technology Education Association (University Rep.)
    - International Technology Education Association
    - Washington Technology Student Association (Board of Directors)
    - Washington Association of Vocational Administrators
    - Washington Association for Career & Technical Education

5. Honors and awards

    - Club of the Year, Central Technology Education Association, 2012-13
    - Outstanding Scholarship Award, Engineering Technologies, Safety, and Construction Department, Central Washington University, 2011.

6. Service Activities

    - Hiring committee member CEPS Dean, AY 2014-15
    - ETSC Co-chair, AY 2013-15
    - ETSC Scholarship Committee, AY 2013-15
    - ETSC Personnel Committee, AY 2013-15
    - Hiring committee chair for Tech. Ed. position 2014
    - Hiring committee member for SHM position 2013
    - Hiring committee chair for SHM position 2010

- South Central Washington STEM Advisory Committee
- VEX Robotics Host, Judge, Coordinator
- Skills USA Cabinet Making Contest Host, Judge, Coordinator
- Washington TSA Judge, Event Coordinator
- Real World Design Challenge Coordinator
- CTE Advisory Committee for Excel and Wahluke School District
- CTEA Club Faculty Advisor

7. Publications and presentations

- "*Advanced Manufacturing Curriculum*" S. Calahan, et. al, developed in conjunction with an NSF Grant and the Snohomish County Advanced Manufacturing Project, (ongoing); web development at: http://www.snocamp.org/
- *"Practical Implementation of Manufacturing-Based STEM Concepts"* Calahan S. Presented at the International Technology and Engineering Educators Association's Annual Conference, Milwaukee, Wisconsin, March 2014
- *"CWU's CTE Graduate Program: A Masters That Matters"* Bartel, K., Calahan S. Presented at the Washington Industrial Technology Education Association's Annual Conference, Wenatchee, Washington, March 2014
- *"The Direction of Traffic Safety Education and the Governor's Safety Plan"* Presentation and Panel Discussion. Presented at the Washington Traffic Safety Education Association's Annual Conference, Olympia, Washington, October 2013
- *"What's New with Foundry in a Box"* Cattin, W.E., Calahan S. Presented at the Washington Industrial Technology Education Association's Annual Conference, Wenatchee, Washington, March 2013

8. Professional Development

- Washington Traffic Safety Education Association Conference
- International Technology Education Association annual conference Milwaukee, WI 2015
- International Technology Education Association annual conference Orlando, FL 2014
- Washington Industrial Technology Education Association Conferences (2011, 2012, 2013, 2014, 2015)

Appendix C – Laboratory and Field Equipment

The program procured more than 95% of the equipment and materials listed in this Appendix between 2012 and 2015; hence, they are in excellent condition. The program defined "adequacy of equipment" based on the Industry Advisory Council's (IAC) recommendation on May 17, 2013, curriculum subcommittee meeting; the minutes will be available for evaluators review during the visit. The IAC recommended that equipment to student ratio of 1:5 was sufficient. They also recommended that certain equipment would only be needed for demonstration and not for a hands-on activity, in such case the program defined one equipment as sufficient. If a piece of equipment did not meet the criteria above, then it is considered insufficient.

Industrial Safety Equipment and Materials

Equipment and Materials	Quantity	Condition	Adequacy of Equipment
Confined Space Safety			
BullEX Gas Trainer	1	Excellent	Sufficient
Confined Space Simulator	1	Excellent	Sufficient
CS Rescue Tripod	1	Excellent	Sufficient
CS Access 12ft Ladder	1	Excellent	Sufficient
CS Blower	1	Excellent	Sufficient
Fall Protection Safety			
Falling Object Protection Display	1	Excellent	Sufficient
Fall Protection Anchor Point Model	1	Excellent	Sufficient
Steel Erection / Guardrail Model	1	Excellent	Sufficient
Fall Protection Harness	31	Excellent	Sufficient
Vertical Lifeline Kit	1	Excellent	Sufficient
Horizontal Lifeline Kit	1	Excellent	Sufficient
Lanyards (various)	11	Excellent	Sufficient
Safety Net Sample	1	Excellent	Sufficient
Horizontal Fall System	2	Excellent	Sufficient
Anchors (various)	15	Excellent	Sufficient
Lanyards	11	Excellent	Sufficient
Retractable Lifeline	2	Excellent	Sufficient
Fall Protection Bucket Kit	6	Excellent	Sufficient
Crane and Rigging Safety			
5-ton Overhead Crane	1	Excellent	
Rigging Training Model	1	Excellent	Sufficient
Rigging Display	1	Excellent	Sufficient
Rigging Sample Loads	2	Excellent	Sufficient
Rigging – Chains (various)	9	Excellent	Sufficient
Rigging – Wire Rope (various)	14	Excellent	Sufficient
Rigging – Nylon (various)	7	Excellent	Sufficient
Rigging – Shackles (various)	10	Excellent	Sufficient
Tower Crane Model	2	Excellent	Sufficient

Industrial Safety Equipment and Materials (Continued)

Equipment and Materials	Quantity	Condition	Adequacy of Equipment
Electrical Safety			
Electrical Safety Model	1	Excellent	Sufficient
Arc Flash Suit	1	Excellent	Sufficient
Arc Flash Suit	1	Excellent	Sufficient
Arc Flash Suit	4	Excellent	Sufficient
Electrical Rubber Boots	21	Excellent	Sufficient
Circuit Tester	2	Excellent	Sufficient
Multitester	1	Excellent	Sufficient
Extension Cord	1	Excellent	Sufficient
Portable GFCI	1	Excellent	Sufficient
Volt Alert Radius Tester	2	Excellent	Sufficient
Jonard Insulated Tool Kit	1	Excellent	Sufficient
Fire and Welding Safety			
Bullex Fire Extinguisher Training System	1	Excellent	Sufficient
Justrite Approved Metal Can	2	Excellent	Sufficient
Class D Fire Extinguisher	1	Excellent	Sufficient
Class AK Fire Extinguisher	1	Excellent	Sufficient
Class ABC Fire Extinguisher	2	Excellent	Sufficient
Class A Fire Extinguisher	2	Excellent	Sufficient
Class BC Fire Extinguisher	1	Excellent	Sufficient
Oxygen Tank and Cart	2	Excellent	Sufficient
Welding Protection Screen	4	Excellent	Sufficient
Welding Jacket	6	Excellent	Sufficient
Welding Helmet	2	Excellent	Sufficient
Welding Gloves	2	Excellent	Sufficient
Respirator Safety			
Self-contained Breathing Apparatus (SCBA)	3	Excellent	Sufficient
Airline Respirator	1	Excellent	Sufficient
Full Face Respirators	9	Excellent	Sufficient
Half Face Respirators	20	Excellent	Sufficient
Air Purifying Respirator	2	Excellent	Sufficient
Advantage GWA OV	5	Excellent	Sufficient
Advantage 420 Respirator	17	Excellent	Sufficient
Advantage P100	6	Excellent	Sufficient
MSA Cartridge (Various)	30+	Excellent	Sufficient
MSA Face piece Adapter	3	Excellent	Sufficient
Qualitative Fit Test Kit	1	Excellent	Sufficient
Fit Test Adapter	2	Excellent	Sufficient

Industrial Safety Equipment and Materials (Continued)

Equipment and Materials	Quantity	Condition	Adequacy of Equipment
Other Personal Protective Equipment (PPE)			
Central SHM Safety Vest – Field Trip	40	Excellent	Sufficient
Central SHM Hardhats – Field Trip	40	Excellent	Sufficient
Nitrile Gloves 12pk – Field Trip	4	Excellent	Sufficient
Lock Out Tag Out Equipment	11	Excellent	Sufficient
Traffic Control Model	1	Excellent	Sufficient
SHM Hard Hats Red	13	Excellent	Sufficient
Ear Muffs	18	Excellent	Sufficient
Radians Safety Glasses	38	Excellent	Sufficient
Clearvue 200 Safety Glasses	9	Excellent	Sufficient
Safety Goggles	9	Excellent	Sufficient
Safety Glasses ORR XP Clear	14	Excellent	Sufficient
Safety Glasses ORR XP Polarized	18	Excellent	Sufficient
Safety Glasses ORR XP 500	10	Excellent	Sufficient
Safety Glasses	9	Excellent	Sufficient
Polyvinyl Chloride Gloves	3	Excellent	Sufficient
Leather Gloves	4	Excellent	Sufficient
Assorted Gloves	6	Excellent	Sufficient
Electrical safety Glove	1	Excellent	Sufficient
Hearing Protection Plugs	20	Excellent	Sufficient
Other Industrial Equipment/Tools			
Mannequin Display – various	5	Excellent	Sufficient
AED Trainer Cardiac Science	1	Excellent	Sufficient
Genie GS-1930 Scissor Lift	1	Excellent	Sufficient
Excavation Safety Models	2	Excellent	Sufficient
Knack Box	1	Excellent	Sufficient
Jobox	2	Excellent	Sufficient
Ladder and Scaffold Safety			
Scaffold Training Model	1	Excellent	Sufficient
Baker Scaffold	1	Excellent	Sufficient
Tube/Coupler Mobile Scaffold	1	Excellent	Sufficient
A-frame Ladders (various)	5	Excellent	Sufficient
Extension Ladder (various)	2	Excellent	Sufficient

Industrial Hygiene / Environmental Equipment and Materials

Equipment and Materials	Quantity	Condition	Adequacy of Equipment
Gas Meter - Industrial Scientific	10	Fair	Sufficient
Gas Meter – 5 Gas MSA	4	Excellent	Sufficient
Gas Meter – 4 Gas MSA	2	Excellent	Sufficient
Gas Meter – Other models	3	Excellent	Sufficient
Compressed Gas Cylinder	3	Excellent	Sufficient
Sample Pumps	4	Fair	Sufficient
Tubing Various Sizes	14	Fair	Sufficient
Air Monitor Filters	11	Good	Sufficient
Filter Guard Sampling Pump	3	Good	Sufficient
Anemometer	2	Excellent	Sufficient
Moisture Meter	2	Excellent	Sufficient
Sound Meter	8	Excellent	Sufficient
Dosimeter	5	Excellent	Sufficient
Light Meter	6	Excellent	Sufficient
Vibration Meter	2	Excellent	Sufficient
Heat Stress Meter	6	Excellent	Sufficient
Force Gauge Meter	3	Excellent	Sufficient
Tribometer	1	Fair	Not Sufficient
Knee Pads	10	Excellent	Sufficient
Absorbent Pad	100	Excellent	Sufficient
Absorbent Pad	1	Excellent	Sufficient
Tyvek Suit	2	Excellent	Sufficient
Spill Kit	4	Excellent	Sufficient

Appendix D – Institutional Summary

1. The Institution

a. Name and address of the institution:

Central Washington University (CWU)
400 E University
Ellensburg, WA 98926

b. Name and title of the chief executive officer of the institution:

Dr. James Gaudino, President

c. Name and title of the person submitting the Self-Study Report:

Dr. Sathyanarayanan Rajendran, Program Director, Safety and Health Management Program

d. Name the organizations by which the institution is now accredited, and the dates of the initial and most recent accreditation evaluations:

CWU is accredited by the Northwest Commission on Colleges and Universities (NWCCU) since 1918. The most recent evaluation was the 2014 mid-cycle review. In addition, there are several individual programs accredited by a variety of agencies. The following list provides some examples:

- Engineering Technology Accreditation Commission of ABET
- American Council for Construction Education (ACCE)
- American Dietetic Association Commission on Accreditation for Dietetics Education (CADE-ADA)
- Association to Advance Collegiate Schools of Business (AACSB)
- Committee on Accreditation of Educational Programs for the EMS-Profession (CoEMSP)
- Public Education Standards Board (PESB)
- Academy of Nutrition and Dietetics Accreditation Council for Education in Nutrition and Dietetics (ACEND)
- Academy of Nutrition and Dietetics (AND)

2. Type of Control

Central was established in 1890 as Washington State Normal School by the first legislature to fulfill the intent of the 1889 Enabling Act for Statehood. Mr. Benjamin Franklin Barge was the first principal of the school, which was founded to educate future elementary and junior high teachers. In 1891, doors opened for classes. Ellensburg Normal School became Central

Washington College of Education in 1937, Central Washington State College in 1961 and Central Washington University in 1977.

Central Washington University is one of six state-supported institutions offering baccalaureate and graduate degrees. The University is governed by an eight member Board of Trustees, seven of whom are appointed for six-year terms by the governor of Washington State with the consent of the state Senate, and one student trustee, appointed annually. Responsibility for the day-to-day operations is entrusted to the university president, who is the chief executive officer. Other University administration consists of a Provost/Vice President of Academic and Student Life, Vice President for Business and Financial Affairs, Vice President of Operations and Director of Athletics. There is also a Dean of Library, Office of Continuing Education, Undergraduate and Graduate Studies, Science Honors Research Program and William O. Douglas Honors College. The University consists of four academic colleges:

- College of Arts and Humanities
- College of Business
- College of the Sciences
- College of Education and Professional Studies

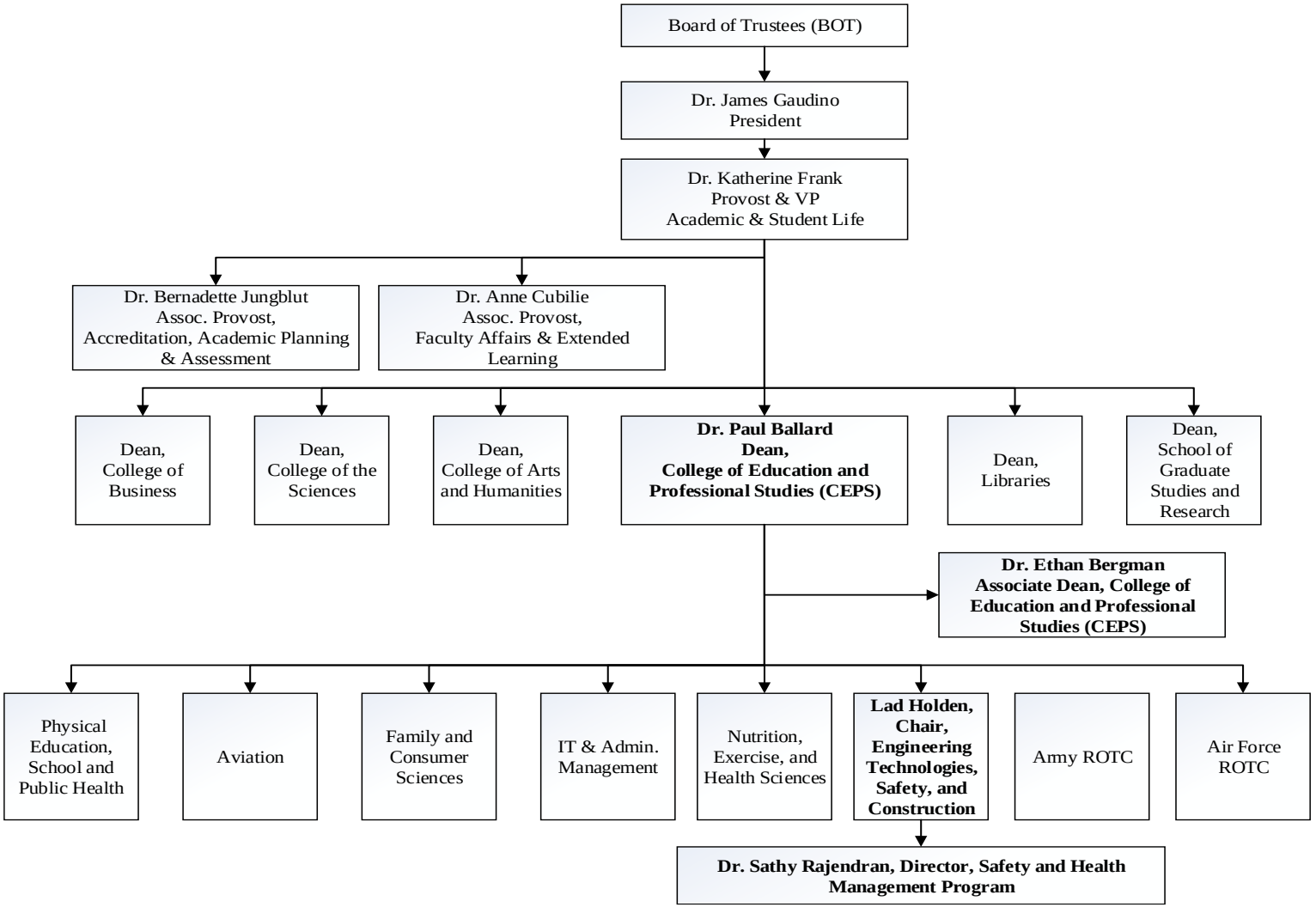
The Deans are the administrative head of the colleges. The Department Chairperson is an elected position within the department with the term of appointment being four years. The Department Chairperson directs the activities of the department, subject to approval of the College Dean. The responsibilities of the Chairperson are defined in Article 12 of the CWU Collective Bargaining Agreement (CBA).

3. Educational Unit

The Engineering Technologies, Safety and Construction (ETSC) Department is one of eight departments within the College of Education and Professional Studies (CEPS). Prof. Lad Holden is the current chairperson of the ETSC department, who reports directly to Dr. Paul Ballard, Dean, CEPS. Dr. Ballard reports to the Interim Provost, Dr. Stephen Hulbert (new Provost Dr. Katherine Frank will start July 1, 2016), who reports to President Dr. James Gaudino.

The ETSC department consists of seven major programs which includes the Safety and Health Management (SHM) Program. Dr. Sathyanarayanan (Sathy) Rajendran serves as the Director of the SHM Program. See Figure D.1 for organizational chart.

Figure D.1: CWU Organizational Chart (Academic Life)



4. Academic Support Units

- Biological Sciences Department, Chairperson, Dr. James Johnson
- Chemistry Department, Chairperson, Dr. Levente Fabry-Asztalos
- Communications Department, Chairperson, Dr. Marji Morgan (interim chair)
- IT & Administrative Management, Chairperson, Dr. Bob Lupton
- Management Department, Chairperson, Dr. Jeffrey Stinson
- Mathematics Department, Chairperson, Dr. Stuart Boersma
- Physical Education, School and Public Health Department, Chairperson, Dr. Heidi Henschel Pellett
- Physics Department, Chairperson, Dr. Andy Piacsek
- Psychology Department, Chairperson, Dr. Stephanie Stein

5. Non-academic Support Units

- Business and Financial Affairs, Vice President, Mr. Joel Klucking
- Career Services, Director, Ms. Vicki Sannuto
- Library, Dean, Dr. Patricia Cutright
- Operations, Vice President, Mr. Gene Shoda
- Registrar Services, Registrar, Ms. Lindsey Brown
- Student Success, Dean, Sarah Swager
- University Advancement, Executive Director, Mr. Scott Wade

6. Credit Unit

CWU operates on a quarter system and gives quarter credit. One quarter consists of 10 weeks of classes per quarter. The number of instructional days ranges from 51 to 53 depending on the quarter, with four days of finals. One credit represents one lecture hour or two laboratory hours per week, along with the resulting time outside of class required to complete assignments. One academic year consists of three academic quarters; 156 total days including 144 class days (28.8 weeks) and 12 days of finals, exclusive of summer quarter offerings. Summer quarter has 6 week and 9 week sessions.

7. Tables

Tables D1 and D2 are presented in the following pages.

Table D.1: Safety and Health Management Program Enrollment and Degree Data

Academic Year		Enrollment Year*					Total Undergrad	Total Grad	Degrees Awarded			
		1st	2nd	3rd	4th	5th			Associates	Bachelors	Masters	Doctorates
2015/16	FT	7	18	28	42	1	96	NA	NA	7^	NA	NA
	PT	0	1	3	16	1	21	NA				
2014/15	FT	0	13	30	48	2	93	NA	NA	32	NA	NA
	PT	0	1	1	11	1	14	NA				
2013/14	FT	0	8	35	48	2	93	NA	NA	34	NA	NA
	PT	0	0	1	10	1	12	NA				
2012/13	FT	0	3	20	26	0	49	NA	NA	32	NA	NA
	PT	0	0	0	3	1	4	NA				
2011/12	FT	0	5	15	33	1	54	NA	NA	19	NA	NA
	PT	0	0	0	8	0	8	NA				

*Most students start in the SHM degree as juniors.
^As of June 15, 2016; the number of students (~16) graduating in June will be officially posted on June 30, 2016

Table D.2: Personnel

Safety and Health Management (SHM) Program

Year: _2015-16_____

	HEAD COUNT		FTE[2]
	FT	PT	
Administrative[1]	2		0.35
Faculty (tenure-track)[2]	2		2.0
Other Faculty (excluding student Assistants)[3]	1	1	1.5
Student Teaching Assistants			
Technicians/Specialists[4]	2		0.4
Office/Clerical Employees[5]	1		0.25
Others			

[1] This includes the SHM Program Director who is released for 6 workload units (6 credits) each academic year and the ETSC Department chair who oversees all seven programs within the department.

[2] The SHM Program just filled the second tenure-track position.

[3] The SHM Program currently consists of one full-time non-tenure track faculty and one part-time non-tenure track faculty on multi-year contracts.

[4] The SHM Program shares two lab technicians between the programs in the department.

[5] The SHM Program shares one full-time department secretary between the programs in the department.

Signature Attesting to Compliance

By signing below, I attest to the following:

That **_Safety and Health Management Program_____** (*Name of the program(s)*) has conducted an honest assessment of compliance and has provided a complete and accurate disclosure of timely information regarding compliance with ABET's *Criteria for Accrediting Applied Science Programs* to include the General Criteria and any applicable Program Criteria, and the ABET *Accreditation Policy and Procedure Manual.*

June 16, 2016

Signature **Date**

Interim Provost Dr. Stephen T. Hulbert
Provost/VP for Academic and Student Life