FAMILY AND CONSUMER SCIENCES

Faculty
Chair: Jan Bowers
Michaelsen 100

Professors
Ethan Bergman, Food Science and Nutrition
Jan Bowers, Family and Consumer Sciences Education
Shawn Christiansen, Family Studies
Vicki Shaffer-White, Fashion Merchandising

Associate Professors
Joan Amby, Family Studies
Marla Wyatt, Family and Consumer Sciences Education

Assistant Professors
Nancy Buergel, Food Science and Nutrition
Shawn Christiansen, Family Studies

General Departmental Information
The Department offers programs of study leading to Bachelor of Arts degrees in Family and Consumer Studies and Family and Consumer Studies. Bachelor of Science degrees are available in Family and Consumer Sciences, Vocational Teaching, Fashion Merchandising, and in Food Science and Nutrition. There is also a Master of Science degree in Family and Consumer Sciences.

These majors offer training in a variety of fields. Specific information concerning them and their specializations is described in the introduction to each major.

Students planning to become certified for Vocational Family and Consumer Sciences Education must take the B.S. Family and Consumer Sciences major and fulfill the additional requirements described there. The B.A. Family and Consumer Sciences major offers two specializations. Students can specialize in Family Studies or a specialization that is non-structured and permits any combination of departmental courses (and may include a limited number of courses from other departments) to create a program best suited to a particular student’s interests and professional goals. The Department Chair can provide further information and guidance.

Department advisors are available for all majors and students are urged to make contact with an appropriate advisor as soon as possible. Contact the Department Chair for help in identifying an advisor.

Admission Policy for Family and Consumer Sciences
1. All students, except Family Studies Majors, must have successfully completed FCSG 205 prior to being admitted to the major.
2. Students must have successfully completed ENG 101 and 102 or equivalents.
3. The application for major form must be completed, then signed by a department advisor and Chair. A current credit evaluation from Registrar Services must accompany the form.
4. Students must have a university-level cumulative GPA of at least 2.30 for full admission to a departmental major.
5. Students may be admitted as pre-majors by the Department Chair. Students admitted as pre-majors must achieve at least a 2.30 GPA as a full-time student for the following two consecutive quarters of enrollment to be fully admitted to a departmental major.
6. If the student does not meet admission requirements following pre-major admission, reapplication for admission to a department major may be made when the cumulative GPA is at least 2.30.
7. Students must earn a minimum grade of C- in each course counted towards fulfilling major and minor requirements.
8. Students must have a 2.3 minimum cumulative GPA in the major and minor to exit the program.

Bachelor of Arts Family and Consumer Studies
Major (3350) with Specialization
The Bachelor of Arts in Family and Consumer Studies prepares students for employment or advanced study in one of several professions in the broad area of family and consumer studies. Curriculum requirements have been approved for a specialization in Family Studies.

Family Studies Specialization (3352)
The Family Studies specialization is an interdisciplinary study of interpersonal, and family relationships. Graduates are well prepared for career opportunities in family service agencies, parent education programs, family counseling centers, other family life education settings, or advanced study in family relations. Students must successfully complete FCSF 234, Introduction to Family Studies, before being admitted to the program.

Required Courses
ANTH 130, Introduction to Cultural Anthropology .......................... 5
ENG 101, General Psychology OR PSY 101, General Psychology OR SOC 107, Principles of Sociology .................. 5
FCSF 234, Introduction to Family Studies .................................. 4
EDEC/FCSF 331, Child Development .................. 3
FCSF 336, Parent Education and Guidance .......................... 3
FCSF 337, Sociology of Families (3) LCJ 311, Family Law OR
FCSF 439, Families and Public Policy .................................. 3-4
Select one from the following: .................................. 3-4
FCSF 433, Family Problems and Mediation .......................... 4
HIST 352, History of the American Family(4) FCSF 434, Ethnic Diversity in Families (3)
ANTH/FCSF 333, Culture and Marriage (4) FCSF 334, Family Problems and Mediation . 4
FCSF 433, Family Life Education .................................. 4
FCSF 435, Family Gerontology .................................. 4
FCSG 470, Cooperative Education OR
PSY 452, Adult Development and Aging OR FCSG 490, Cooperative Education OR
FCSF 235, Relationships and Personal Development .................................. 3
Approved Electives .................................. 10

Total 61-65

Personalized Studies Specialization (3353)
This specialization allows the student to construct a personalized major. It may consist of a broad exposure to all areas of the discipline or may concentrate on one or two areas of emphasis.

Interior Design Emphasis. This emphasis prepares students for professional careers as residential, commercial, hospitality or health care interior designers. In addition, students may choose to specialize in kitchen and bath design (the program is endorsed by the National Kitchen and Bath Association). An individual course of study will be developed for each student with the interior design advisor.

Apparel Studies Emphasis. This emphasis allows students the opportunity to experience courses which are basic to skills and knowledge needed in the wide range of careers within the fashion industry. An individualized course of study will be developed for the student by the Apparel Studies advisor.

A minimum of 45 credits are required, at least 50 percent of which must be at the upper-division level. With department chair approval, a limited number of courses from other departments may be included.

The planned course of study must have the signature of both the student and a faculty advisor before submission to the department chair for approval.
Family and Consumer Sciences
Major (3360)

The Bachelor of Arts in Family and Consumer Sciences comprises a general introduction to the broad areas of family and consumer sciences and, with an appropriate minor, can provide students with a well-rounded preparation for life or for further advanced study.

Required Courses Credits
FCSC 205, FCS Entry Assessment .................. 1
FCSC 371, Consumer Awareness .................. 3
FCSC 472, Life Management ........................ 5
FCSA 351, Sociocultural Aspects of Apparel . . . . 3
FCSA 355, Consumer Textiles ........................ 4
FCSF 231, Human Sexuality ........................ 4
FCSF 235, Relationships and Personal Development (3) OR
FCSF 234, Introduction to Family Studies (4) ........ 3-4
FCSF 331, Child Development OR
PSY 447, Psychology of Adolescence ......... 3
FCSF 336, Parent Education and Guidance ......... 3
FCSN 140, Introduction to Foods ................... 2
FCSN 140.1, Introduction to Foods Laboratory .... 2
FCSN 240, Quantity Food Production and Service .... 4
FCSN 240.1, Quantity Food Production and Service Laboratory .......................... 1
FCSN 240, Management of Food Resources ........ 2
FCSN 340.1, Management of Food Resources Laboratory .............................................. 1
FCSN 341, Nutrition I .................................. 3
FCSN 348, Nutrition Interview ...................... 1
FCSN 440, Experimental Foods .................... 3

Total 45-46

Bachelor of Science
Food Science and Nutrition
Major (3465)
with Specialization

The Bachelor of Science in Food Science and Nutrition major prepares students for employment or advanced study in one of several professions in the broad area of foods and nutrition. To complete degree requirements, students must complete the required core courses listed below. Students must also complete courses listed in their chosen specialization.

In addition to Department requirements listed above, students must successfully complete MATH 100.1, Intermediate Algebra, or equivalent, before being admitted to the major. Students must consult with a major advisor for approval of the program specialization.

Students are highly encouraged to complete at least five credits of FCSG 490, Cooperative Education.

Food Science and Nutrition Core Requirements

- FCSN 140, Introduction to Foods .................. 2
- FCSN 140.1, Introduction to Foods Laboratory .... 2
- FCSN 245, Basic Nutrition .......................... 5
- FCSN 345, Developmental Nutrition ............... 3
- FCSN 446, Sports Nutrition and Weight Control ................................................... 3
- FCSN 447, Nutrition and Society .................. 3
- EDCS 312, Educational Statistics OR
PSY 362, Introductory Statistics .................... 4
- FCSN 440.1, Experimental Foods ................. 3
- FCSN 441, Nutrition and Aging .................... 3
- FCSN 442, Nutrition Assessment Laboratory ...... 2
- FCSN 443, Nutrition II ............................... 5
- FCSN 444, Medical Nutrition Therapy ............ 5
- FCSN 448, Food Service Systems Management ...................................................... 4
- MGT 380, Organizational Management ............ 5
- BIOL 201, Human Physiology ..................... 5

Total 100

In addition to the above major requirements, The American Dietetic Association requires competence which may be satisfied by the following three courses: ANTH 130, Introduction to Cultural Anthropology (5) OR ANTH 357, Medical Anthropology: Cross-Cultural Perspectives on Health and Healing (5), and ECON 101, Economic Issues (5), and
PSY 101, General Psychology (5). These courses may also meet breadth requirements at Central Washington University.

The requirement for CHEM 111, 111.1, Introduction to Chemistry and Laboratory, may be met by satisfactorily completing CHEM 181, 181.1 and 182, 182.1, General Chemistry and Laboratory. The requirement for CHEM 112, 112.1, Introduction to Organic Chemistry and Laboratory, may be met by satisfactorily completing CHEM 361, 361.1, 362, Organic Chemistry and Laboratory. The requirement for CHEM 113, 113.1, Introduction to Biochemistry, may be met by satisfactorily completing CHEM 431, 431.1 and 432, Biochemistry and Laboratory. The requirement for BIOL 201, Human Physiology, may be met by satisfactorily completing BIOL 355, 356, Human Anatomy and Physiology.

Nutrition Science Specialization (3470)

The Nutrition Science specialization provides the training necessary to pursue advanced study in nutrition leading towards a career in nutrition research. This option also can be used for those students seeking admission to medical schools. In addition to the courses listed, a year of introductory physics is also required for admission to most medical schools. Pre-medical students should also maintain contact with the pre-medical advisor for current information. MATH 163.1, Pre-Calculus Mathematics I, or an equivalent course needs to be completed before a student is admitted to this specialization.

Required Courses Credits
FSNCore Requirements .................................. 22
BIOL 220, Introductory Cellular Biology .......... 5
BIOL 323, Microbiology ............................. 5
OR BIOL 322, Intro to Microbiology
CHEM 111, Introduction to Chemistry ............ 4
CHEM 111.1, Chemistry Laboratory ................ 1
CHEM 112, Introduction to Organic Chemistry ... 4
CHEM 112.1, Chemistry Laboratory ............... 1
CHEM 113, Introduction to Biochemistry .......... 4
CHEM 113.1, Chemistry Laboratory ............... 1
ENG 310, Technical Writing ......................... 4
FCSE 421, Adult Education .......................... 3
FCSN 240, Quantity Food Production and Service ................................................. 4
FCSN 240.1, Quantity Food Production and Service Laboratory .................................... 1
FCSN 340, Management of Food Resources ....... 2
FCSN 340.1, Management of Food Resources Laboratory .............................................. 1
FCSN 341, Nutrition I .................................. 3
FCSN 348, Nutrition Interview ...................... 1
FCSN 440, Experimental Foods .................... 3

Total 100
Biol 220, Cellular Biology .......................... 5  
Chem 181, General Chemistry ...................... 4  
Chem 181.1, General Chemistry Laboratory .......... 1  
Chem 182, General Chemistry .......................... 4  
Chem 182.1, General Chemistry Laboratory .......... 1  
Chem 183, General Chemistry .......................... 4  
Chem 183.1, General Chemistry Laboratory .......... 1  
Chem 361, Organic Chemistry .......................... 3  
Chem 362, Organic Chemistry .......................... 3  
Chem 361.1, Organic Chemistry Laboratory .......... 2  
Chem 431, Biochemistry ................................ 3  
Chem 431.1, Biochemistry Laboratory ................. 2  
Chem 432, Biochemistry ................................ 3  
FCSN 341, Nutrition I ................................ 3  
FCSN 440, Experimental Foods ........................ 3  
FCSN 440.1, Experimental Foods Laboratory .......... 2  
FCSN 442, Nutrition Assessment Laboratory .......... 2  
FCSN 443, Nutrition II ................................ 5  
FCSN 444, Medical Nutrition Therapy ............... 5  
Math 163.2, Pre-Calculus II ........................... 5  
Math 172.1, Calculus ................................ 5  
Biol 355, Human Anatomy and Physiology .......... 5  
Biol 356, Human Anatomy and Physiology .......... 5  
FCSN 441, Nutrition and Aging ........................ 3  
FCSN 448, Food Service Systems Management ........ 4  
Department approved electives ........................ 10  
Total 80

Family and Consumer Sciences Vocational Teaching Major (3365)

This major satisfies the Primary endorsement for Family and Consumer Science Education. Students wishing to obtain a teaching certificate in Family and Consumer Sciences Education will be required to complete one of the Professional Education program options, the Family and Consumer Sciences Vocational Teaching Major, student teach in a vocationally approved program, hold a valid first aid card with CPR, complete 2,000 hours of paid work experience in the last six years, and provide documentation of occupational safety.

Required Courses ................................. Credits
FCSG 205, FCS Entry Assessment .................... 1
FCSG 405, FCS Exit Assessment .................... 1
FCSG 371, Consumer Awareness .................... 3
FCSG 472, Life Management ......................... 5
FCSA 351, Socio-Cultural Aspects of Apparel 3
FCSA 355, Consumer Textiles ........................ 4
FCSF 231, Human Sexuality .......................... 4
FCSF 234, Introduction to Family Studies (4) OR FCSF 235, Relationships and Personal Development (3) ....................... 3-4
FCSF 331, Child Development OR PSY 447, Psychology of Adolescence ........................................ 3
FCSF 336, Parent Education and Guidance .......... 3
FCSN 140, Introduction to Foods ..................... 2
FCSN 140.1, Introduction to Foods Lab .............. 2
FCSN 245, Basic Nutrition ............................ 5
FCSH 166, Applied Creativity ........................ 3
FCSH 367, Family Housing ............................ 3
FCSE 326, Curriculum and Evaluation in Vocational Family and Consumer Sciences 3
OCED 410, Vocational School to Work Program .......... 4
FCSE 421, Adult Education ........................... 3
FCSG 422, Impact of ED Reform on Family and Consumer Sciences 2
FCSG 426, Methods and Materials of Teaching Family and Consumer Sciences 3

Total 60-61

Family and Consumer Sciences Education Minor (3365)

This minor does not meet endorsement requirements to teach family and consumer sciences.

Required Courses ................................. Credits
FCSF 234, Introduction to Family Studies .......... 4
FCSF 331, Child Development ......................... 3
FCSF 336, Parent Education and Guidance .......... 3
FCSA 351, Socio-Cultural Aspects of Apparel 3
FCSN 245, Basic Nutrition ............................ 5
FCSG 371, Consumer Awareness .................... 3
FCSG 426, Methods and Materials of Teaching Family and Consumer Sciences 3

Total 24

Family and Consumer Sciences Minor (3366)

In consultation with a faculty advisor, students select a minimum of 20 credits of coursework as appropriate to individual interests and professional goals. The planned course of study must have the signature of both the student and the faculty advisor before submission to the Department Chair for approval.

Nutrition Minor (5660)

This program is designed primarily for those individuals who wish for a more in-depth study of nutrition. This program is intended for use by students with majors in Fitness Management, Family Studies, Physical Education, Health Education, and Gerontology. This minor may also be of interest for students in Pre-Professional programs including Pre-Medicine, Pre-Dentistry, Pre-Veterinary, and Pre-Physical Therapy. Courses in this minor may also be used to satisfy requirements in other major programs.

Required Courses ................................. Credits
FCSN 140, Introduction to Foods ........................ 2
FCSN 140.1, Introduction to Foods Lab ............... 2
FCSN 245, Basic Nutrition ............................ 5
FCSN 340, Management of Food Resources ........................ 2
FCSN 340.1, Management of Food Resources Laboratory .......... 1
FCSN 441, Nutrition and Aging ........................ 3
FCSN 448, Food Service Systems Management ........ 4
Department approved electives ........................ 10
Total 80

Approved Electives in Nutrition ..................... 3
FCSG 346, Theory and Treatment of Eating Disorders (3)
FCSG 447, Nutrition and Society (3)
FCSG 441, Nutrition and Aging (3)
FCSG 421, Adult Education (3)
FCSG 490, Contracted Field Experience (5)

Total 22

Food Service Management Specialization (3469)

The Food Service Management specialization is designed for those interested in obtaining skills in managing a food service such as a university dining facility, a hospital, a public school food service, or a restaurant.

Required Courses ................................. Credits
FSCN 240, Quantity Food Production and Service .......... 4
FSCN 240.1, Quantity Food Production and Service Laboratory .......... 1
FSCN 340, Management of Food Resources ........................ 2
FSCN 340.1, Management of Food Resources Laboratory .......... 1

Total 113

Family and Consumer Sciences Education Minor (3365)

This minor does not meet endorsement requirements to teach family and consumer sciences.

Required Courses ................................. Credits
FCSF 234, Introduction to Family Studies .......... 4
FCSF 331, Child Development ......................... 3
FCSF 336, Parent Education and Guidance .......... 3
FCSA 351, Socio-Cultural Aspects of Apparel 3
FCSN 245, Basic Nutrition ............................ 5
FCSG 371, Consumer Awareness .................... 3
FCSG 426, Methods and Materials of Teaching Family and Consumer Sciences 3

Total 24

Family and Consumer Sciences Minor (3366)

In consultation with a faculty advisor, students select a minimum of 20 credits of coursework as appropriate to individual interests and professional goals. The planned course of study must have the signature of both the student and the faculty advisor before submission to the Department Chair for approval.

Nutrition Minor (5660)

This program is designed primarily for those individuals who wish for a more in-depth study of nutrition. This program is intended for use by students with majors in Fitness Management, Family Studies, Physical Education, Health Education, and Gerontology. This minor may also be of interest for students in Pre-Professional programs including Pre-Medicine, Pre-Dentistry, Pre-Veterinary, and Pre-Physical Therapy. Courses in this minor may also be used to satisfy requirements in other major programs.

Required Courses ................................. Credits
FCSN 140, Introduction to Foods ........................ 2
FCSN 140.1, Introduction to Foods Lab ............... 2
FCSN 245, Basic Nutrition ............................ 5
FCSN 340, Management of Food Resources ........................ 2
FCSN 340.1, Management of Food Resources Laboratory .......... 1
FCSN 441, Nutrition and Aging ........................ 3
FCSN 448, Food Service Systems Management ........ 4
Department approved electives ........................ 10
Total 80

Approved Electives in Nutrition ..................... 3
FCSG 346, Theory and Treatment of Eating Disorders (3)
FCSG 447, Nutrition and Society (3)
FCSG 441, Nutrition and Aging (3)
FCSG 421, Adult Education (3)
FCSG 490, Contracted Field Experience (5)

Total 22
Family and Consumer Sciences Courses / Family Studies Courses

FCSF formerly HOFF. Students may not receive credit for both.

FCSF 231. Human Sexuality (4). The biophysical, psychosocial and behavioral aspects of sexuality with emphasis on making responsible sexual decisions and promoting healthy relationships.

FCSF 234. Introduction to Family Studies (4). Origins and historical development of families; cultural variations, contemporary trends. Draws upon information and insight from numerous root disciplines to explore family structure and function.

FCSF 235. Relationships and Personal Development (3). Development of interpersonal relationships from initial encounters to stable commitments. Major focus on interaction patterns in intimate relationships. Same as PSY 235. Students may not receive credit for both.

FCSF 298. Special Topics (1-6).

FCSF 331. Child Development (3). Developmental characteristics of children with emphasis from conception to eight years. Includes observation techniques. Same as EDEC 331. Students may not receive credit for both.

FCSF 332. Culture and Marriage (4). The reciprocal relationships between the biophysical and cultural components in mating, nurturing and sexual access. Cross-cultural patterns in marriage. Same as ANTH 333. Students may not receive credit for both.

FCSF 334. Family Problems and Mediation (4). Problems arising out of the interaction of family members. Mediation techniques, family policy, and theories and ethics in studying families.

FCSF 335. Divorce and Remarriage (3). Prerequisite, FCSF 234 or permission. Personal, family, and legal aspects of divorce and remarriage; historical antecedents and trends.


FCSF 398. Special Topics (1-6).

FCSF 430. Principles and Practices of Caregiving (3). Prerequisite, six credits of family studies or permission. An examination of developmental characteristics and needs of individuals across the life cycle as they relate to both familial and non-familial caregiving. Same as EDEC 430. Students may not receive credit for both.

FCSF 431. Principles of Sexuality Education (3). Prerequisite, FCSF 231 or permission. Principles and content for sex education in school and community settings.

FCSF 433. Family Life Education (4). Prerequisite, FCSF 234 or permission. The broad objectives, trends, methods and materials of family life education programs in various settings.

FCSF 434. Ethnic Diversity in Families (3). Prerequisite, FCSF 234 or permission. Examination of similarities and differences across ethnic groups based on national, cultural, religious and racial identification.

FCSF 435. Family Gerontology (4). Prerequisite, FCSF 234 or permission. A review of the research literature on families in later life, focusing on family interactions and building family strengths.

FCSF 439. Families and Public Policy (3). Prerequisite, FCSF 334 or permission. Impact of governmental policies on families; policy implications of changes in the structure and composition of families.

FCSF 490. Cooperative Education (1-12). Prerequisite: by permission of department chair. A contracted field experience with business, industry, government, or social service agency. Requires a cooperative learning agreement. May be repeated for a total of 20 credits.

FCSF 491. Workshop (1-6).

FCSF 498. Special Topics (1-6).

FCSF 499. Seminar (1-5).

Consumer Management Courses

FCSC formerly HOCM. Students may not receive credit for both.

FCSC 298. Special Topics (1-6).


FCSC 398. Special Topics (1-6).


FCSC 491. Workshop (1-6).

FCSC 498. Special Topics (1-6).

FCSC 499. Seminar (1-5). May be repeated.

Food and Nutrition Courses

FCSN formerly HOFN. Students may not receive credit for both.

FCSN 140. Introduction to Foods (2). Examination of scientific principles of food preparation, function of ingredients, effects of preparation techniques, and nutritional considerations. Two hours lecture per week.

FCSN 140.1. Introduction to Foods Laboratory (2). Corequisite, FCSN 140. $20 materials fee. Fours per week.

FCSN 240. Quantity Food Production and Service (4). Prerequisite, FCSN 140. Principles and techniques of food production and food safety for restaurants, health care facilities and other institutions. Corequisite, FCSN 240.1.

FCSN 240.1. Quantity Food Production and Service Laboratory (1). Corequisite, FCSN 240.

FCSN 245. Basic Nutrition (5). Fundamental nutritional concepts as related to health. Four hours lecture and one hour discussion per week.

FCSN 298. Special Topics (1-6).

FCSN 340. Management of Food Resources (2). Prerequisites, FCSN 140 and FCSN 245. Food management principles involved in the planning, purchasing, preparing and serving of meals in relation to nutritional needs, social needs, food preferences and resources.

FCSN 340.1. Management of Food Resources Laboratory (1). Corequisite FCSN 340. Demonstration of food management principles. $20 materials fee.


FCSN 345. Developmental Nutrition (3). Prerequisite, FCSN 245 or FCSN 341. Effects of nutrition on development, growth and health, from conception through aging.


FCSN 348. Nutrition Interview (1). Prerequisite, FCSN 245. Techniques, procedures and skills related to nutrition interviewing and counseling.

FCSN 398. Special Topics (1-6).

FCSN 440.1. Experimental Foods Laboratory (2). Corequisite, FCSN 440. $20 materials fee.

FCSN 441. Nutrition and Aging (3). Prerequisite, FCSN 245. This course will focus on how aging affects nutritional status and the unique needs of the older adult.

FCSN 442. Nutrition Assessment Laboratory (2). Prerequisite FCSN 443 (can be taken concurrently). Current tools for nutritional assessment with laboratory experience. One hour lecture and two hours laboratory per week.

FCSN 443. Nutrition II (5). Prerequisites, FCSN 341, CHEM 113 or CHEM 372, BIOL 201 or BIOL 356 or permission. Effect of nutritional and physiological state on the regulation of carbohydrate, lipid, and protein metabolism. Metabolic and physiological role of vitamins and minerals.

FCSN 444. Medical Nutrition Therapy (5). Prerequisites, FCSN 443, BIOL 201 or BIOL 356, CHEM 113 or CHEM 372. Influence of nutritional deficiency on physiological problems; disease and medical nutritional therapy; nutrition and health management.

FCSN 445. Problems of Human Nutrition (3). Prerequisite, FCSN 245 or FCSN 341. Advanced study of normal nutrition; relationship of nutrition to disease.

FCSN 446. Sports Nutrition and Weight Control (3). Prerequisite, FCSN 245 or permission. Study of interrelationship of factors required for successful weight control; modification of diet, activity and behavior. Role of dietary factors in health and body function. Same as PE 446. Students may not receive credit for both.

FCSN 447. Nutrition and Society (3). Prerequisite, FCSN 245 or FCSN 341. National and international nutritional problems and programs.

FCSN 448. Food Service Systems Management (4). Prerequisites, FCSN 140, FCSN 240 and MGT 380. Application of organizational management and principles to food-service systems including organizing, staffing, controlling, planning, marketing and leading.

FCSN 491. Workshop (1-6).

FCSN 492.1 Dietetic Internship (18). Dietetic Internship Experience. May not be repeated. Credits may not be used to apply to the Master’s degree. Grade will be S or U. Permission required.

FCSN 492.2 Dietetic Internship Experience. May not be repeated. Prerequisite, successful completion of 492.1. Credits may not be used to apply to the Master’s degree. Grade will be S or U. Permission required.

FCSN 492.3 Dietetic Internship Experience. May not be repeated. Prerequisites, successful completion of 492.1 and 492.2. Credits may not be used to apply to the Master’s degree. Grade will be S or U. Permission required.

FCSN 498. Special Topics (1-6).

FCSN 499. Seminar (1-5). May be repeated.

Fashion Merchandising and Textiles Courses>

FCSA formerly HOCT. Students may not receive credit for both.

FCSA 181. Fashion Show Production (1). Preparation, production, and evaluation of special fashion related events. Professional learning experiences will include modeling techniques, organization and directing procedures. Class may be repeated up to 3 credits. Grade will be S or U.

FCSA 251. Visual Merchandising (3). Prerequisite FCSH 166, ADMG 201. Organization, planning, preparation and arrangement of effective visual merchandise sales presentation. One hour lecture and four hours lab per week. Same as ME 251. Students may not receive credit for both.

FCSA 280. Basic Sewing Techniques (3). Basic clothing construction theory, techniques and teaching methods covering basic garment components: collars, sleeves, bodices, pleats, etc. All work is executed in full scale samples. Five hours laboratory per week. Formerly HOCT 250. Students may not receive credit for both.

FCSA 298. Special Topics (1-6).

FCSA 301. Principles of Fashion Merchandising (4). The development of the fashion industry; historical, economic and technological influences; apparel manufacturing, product development, fashion styles and markets. Formerly ME/FCSA 180. Same as ME 301. Students may not receive credit for both.


FCSA 353. Apparel Evaluation (3). Prerequisites FCWA 150, or FCSA 280 and FCSA 355. A visual analysis and examination of ready-to-wear garments; a study of apparel quality relative to product performance, mass production principles and consumer value.

FCSA 355. Consumer Textiles (4). Prerequisites: FCWA 150 or FCSA 280, and a physical science with a lab. Study of natural and synthetic textiles: generic classification, fiber-forming substances, morphology, fabrication, finishing and dyeing processes, properties and performances. $10 material fee. Three-and-one-half hours lecture and one hour laboratory per week.

FCSA 379. Internship Planning (1-5). Same as ME 379; formerly HOCT 399.1. Students may not receive credit for both.

FCSA 389. Fashion Trend Analysis (4). Prerequisite, ME/FCSA 301 and FCSH 166. Fashion forecasting; reflecting the acceptance or rejection of trends; analysis of socioeconomic, demographic, media, and fashion influences. Students will have an opportunity to travel to market.

FCSA 398. Special Topics (1-6).

FCSA 452. History of Fashion (5). Historical changes in fashion and costume design from Egyptian period through Eastern civilization to present. Social, political and religious influences on fashions.

FCSA 485. International Merchandising (4). Prerequisite, ME 330. Emphasis on international retailing and global trade. Focus on cross-cultural differences, work environments, policies and regulations. Same as ME 485. Students may not receive credit for both.

FCSA 489. Retail Buying (4). Prerequisites ME 330. Principles of buying and selling merchandise; analysis of consumer demand, stock inventories and open-to-buy. Same as ME 489. Students may not receive credit for both.

FCSA 491. Workshop (1-6).

FCSA 498. Special Topics (1-6).

FCSA 499. Seminar (1-5).

Interior Design Courses>

FCSH formerly HOHI. Students may not receive credit for both.

FCSH 166. Applied Creativity (3). The creative process; blocks to creativity; creative problem solving; principles and elements of design in housing and interiors.

FCSH 260. Textiles and Materials (3) Students evaluate and apply the appropriate use of textiles for residential design projects. Creative work with interior design materials.

FCSH 265. Interior Design Fundamentals (4). Prerequisite, FCSH 166. The design process, space planning, color analysis, evaluating existing spaces, style trends and scale drawings.
FCSH 298. Special Topics (1-6).
FCSH 366. History of Housing and Furniture I (3). Survey of historic interiors, cabinet-makers, decorative arts, furniture from the antiquity to the middle of the 1700’s.
FCSH 367. Family Housing (3). An evaluative study of the design, quality and cost of housing environment.
FCSH 392. Housing Practicum (3-9). Prerequisites, FCSH 265. Work study experience in various aspects of the housing profession. May be repeated to a limit of 9 credits at each level. Same as FCSH 492.
FCSH 398. Special Topics (1-6).
FCSH 460. Advanced Textiles and Materials (3). Prerequisite, FCSH 265 and FCSA 355. Students evaluate and apply the appropriate use of textiles for design projects. Creative work with interior design materials.
FCSH 465. History of Housing and Furniture II (3). Survey of historic interiors, cabinet-makers, decorative arts, furniture from the late 1700’s to the present.
FCSH 466. Housing Issues (4). Cultural factors and social responsibility in housing; evaluating special needs in space planning; economic/environmental issues in family and group housing.
FCSH 467. Furnishings (5). The different manufacturing and marketing processes of furniture will be explored. Underlying concepts and preparations of documents used by designers for furniture purchases and resale.
FCSH 491. Workshop (1-6).
FCSH 492. Housing Practicum (3-9). Prerequisites, FCSH 265. A work study course including practical experience in a phase of housing of the student’s choice, accompanied with a seminar. Same as FCSH 392.
FCSH 498. Special Topics (1-6).
FCSH 499. Seminar (1-5).

Family and Consumer Sciences Education Courses

FCSE formerly HOEC. Students may not receive credit for both.
FCSE 298. Special Topics (1-6).
FCSE 326. Curriculum and Evaluation in Vocational Family and Consumer Sciences (3). Instructional organization and classroom procedure in Vocational Family and Consumer Sciences programs. Formerly FCSE 425. Students may not receive credit for both.
FCSE 398. Special Topics (1-6).
FCSE 421. Adult Education (3). Prerequisite, permission of instructor. Introduction to working with adults as students, from theory to application. Program planning, implementation, and evaluation, including use of advisory groups.

General Courses

FCSG formerly HOEC. Students may not receive credit for both.
FCSG 205. FCS Entry Assessment (1). This course consists of self-assessment and assessment by the faculty of writing skills, speaking skills, visual/graphic skills, and knowledge of theory and research.
FCSG 296. Individual Study (1-6). Prerequisite, permission of instructor. May be repeated.
FCSG 305. Family and Consumer Sciences Student Leadership (1). Prerequisites, advisor recommendation, chair permission. Students engage in leadership development through identifying, organizing, conducting and assessing course activities. Elective credit for major. May be repeated for credit up to 6 credits. Grade will be S or U.
FCSG 309. Service Learning (2). Student will use program of study content knowledge to improve a community situation. Same as EDCS 309. May be repeated for credit.
FCSG 405. FCS Exit Assessment (1). Prerequisite, FCSG 205. During last quarter of their program, students are assessed on writing skills, speaking skills, visual/graphic skills, and knowledge of theory and research. Grade will be S or U.
FCSG 490. Cooperative Education (5-12). An individualized contracted field experience with business, industry, government, or social service agencies. This contractual arrangement involves a student learning plan, cooperating employer supervision, and faculty coordination. Prior approval required. May be repeated. Grade will be S or U. Fashion Merchandising Internship: Prerequisite, FCSG/ME 379. Available summer only - 10 credit minimum. FCSG 490 and ME 490 are the same class. Students may not receive credit for both.
FCSG 492. Teaching Experience in Family and Consumer Sciences (2). Prerequisite, permission of instructor. Supervised teaching experience in a specific area of Family and Consumer Sciences. May be repeated.

Undergraduate Courses/Programs on Reserve

The following courses are on reserve and may be offered subject to program needs: FCSA 150. Clothing Construction I (3); FCSA 380. Pattern Drafting (4); FCSA 383. Problem Fabric in Clothing Construction (3); FCSA 384. Fitting Analysis (2); FCSA 386. Dress Design by Draping (4); FCSA 387 Tailoring (3); FCSA 388. Advanced Pattern Making (4); FCSA 482. Computer Pattern Making (2); FCSA 484. Advanced Tailoring (3); FCSA 486. Pattern Engineering (5); FCSA 487. Couture Apparel Techniques (3); FCSA 488. Fashion Design Portfolio (5); FCSF 432. Child Development Research (3).

FASHION MERCHANDISING

Contact Vicki Shaffer-White, Family and Consumer Sciences, Michaelsen 327, or Bill Chandler, Information Technology and Administrative Management, Shaw Smyser 254.

General Information

Fashion Merchandising is an interdepartmental major leading to a Bachelor of Science degree. It is administered jointly by the Department of Family and Consumer Sciences, and the Department of Information Technology and Administrative Management. The curriculum provides the necessary skills to work in the fashion merchandising field as a fashion buyer, a fashion retailer, or a fashion merchandise manager.

Courses are primarily selected from Administrative Management, Marketing Education, Information Technology, and Family and Consumer Sciences, providing information relating to the production, distribution, and consumption of clothing and textiles. Students will gain practical work experience in agencies which deal with fashion merchandise during summer quarter internships.

Students enrolled in the major are required to consult regularly with a faculty advisor. All prerequisites must be fulfilled except in cases of special permission.

For additional information please see either the Information Technology and Administrative Management or Family and Consumer Sciences Department Chairs.
Admission Policy
1. The major application form must be completed, then signed by a department advisor and Chair.
2. Students must have a university-level cumulative GPA of at least 2.3 for full admission to a departmental major.

Bachelor of Science
Fashion Merchandising Major
(3425)

Required Courses
- ADMG 146, Basic Accounting: 5
- FCSH 166, Applied Creativity: 3
- ADMG 201, Introduction to Business: 3
- ADMG 271, Business Math Applications: 4
- ADMG 385, Business Communications and Report Writing: 5
- ECON 101, Economic Issues OR ECON 201, Micro/Econ 202 Macro: 5
- FCSA 280, Basic Sewing Techniques: 3
- FCSA/ME 301, Principles of Fashion Merchandising: 4
- ME 330, Principles of Retailing: 4
- ME 340, Principles of Selling: 4
- ME 350, Principles of Advertising: 4
- FCSA 351, Sociocultural Aspects of Dress: 3
- FCSA 353, Apparel Evaluation: 3
- FCSA 355, Consumer Textiles: 4
- FCSA/ME 379, Internship Planning: 1
- FCSA 389, Fashion Trend Analysis: 4
- FCSA 452, History of Fashion: 5
- FCSA/ME 485, International Merchandising: 4
- FCSA/ME 489, Retail Buying: 4
- FCSG/ME 490, Cooperative Education (Summer Only): 9-12
- ME 467, Retail Management: 4

Electives:
- ADMG 310, Business Professional Development: 3
- COM 110, Oral Communications Skills: 3
- COM 208, Beginning News Writing and Reporting: 4
- FCSA 181, Fashion Show Production: 1
- FCSA/ME 251, Visual Merchandising: 3
- HRM 381, Management of Human Resources: 5
- IT 204, Word Processing Applications: 3
- IT 248, Web Fundamentals: 2
- IT 259, Spreadsheet Applications: 3
- IT 286, Business Presentation Applications: 2
- ME 461, Advertising and Sales Promotion: 5
- MKT 360, Principles of Marketing: 5
- MKT 469, Marketing Research: 5
- FCSG 305, Leadership: 1
- FCSG 309, Service Learning: 2

Total: 91

Fashion Merchandising Minor
(3425)

Required Courses
- FCSH 166, Applied Creativity: 3
- ADMG 201, Introduction to Business: 3
- FCSA 280, Basic Sewing Techniques: 3
- FCSA/ME 301, Principles of Fashion Merchandising: 4
- ME 340, Principles of Selling: 4
- FCSA 353, Apparel Evaluation: 3
- FCSA 355, Consumer Textiles: 4
- ME 467, Retail Management: 4

Total: 28

FLIGHT TECHNOLOGY

See Industrial and Engineering Technology, following Mechanical Engineering Technology (MET) courses

FOREIGN LANGUAGES

Faculty
- Chair: Joshua Nelson
- Language and Literature Building 102

Professors
- Kelton W. Knight, French
- Natalie Lefkowitz, Spanish, Applied Linguistics
- Stella Moreno, Spanish
- Joshua Nelson, Japanese
- Rosco N. Tolman, Spanish

Associate Professors
- Rodney Bransdorfer, Spanish, Applied Linguistics
- Javier Martínez de Velasco, Spanish
- Dieter Romboy, German

Assistant Professors
- Dinara Georgiuli, Russian
- Nathalie Kasselis-Smith, Spanish

General Departmental Information

The Department offers Bachelor of Arts degrees. Specializations and minors are available in Chinese, French, German, Japanese, Russian and Spanish. Students interested in teachers certification may complete a major or minor in the target language(s) listed above. Course offerings provide (1) an introduction to the nature of the language as a facet of culture; (2) an acquaintance with the literature and culture of the aforementioned languages; and (3) proficiency in speaking, comprehension and writing. A fully equipped computer language laboratory provides practice in skill building and efficiency through the use of language software programs.

For non-majors or minors, the first and second year sequences of the Foreign Languages Department are designed to provide basic proficiency in a foreign language, and the values of a liberal education. Such proficiency, combined with some other special knowledge or skill, can also lead to many exciting vocational opportunities.

The Department recommends that all majors include some organized study in a foreign country where their major language is spoken. Interested students are reminded that there are various study-abroad programs and exchanges administered by the Director of International Studies and Programs. Credit earned in programs abroad will normally count toward satisfaction of the major or minor requirements, but the student should see a foreign language advisor before enrolling in a study-abroad program. Credit may also be given for special projects completed while traveling in a foreign country. For information on the requirements and types of projects acceptable, contact the Department. Foreign language majors and minors are encouraged to take courses in related disciplines. Please consult with a major advisor. For more information, visit our Web site at http://www.cwu.edu/~forlang/forlanghome.html

Admission to Department Programs

1. Students planning to major or minor in a foreign language must consult with an advisor in the Foreign Languages Department for details of admission requirements, a student handbook, and an application.

2. Potential majors must have a grade point average of at least 3.0 in 2nd-year courses in the language.

3. Potential minors must have a grade point average of at least 2.5 in 2nd-year courses in the language.

4. The Foreign Languages Department reserves the right to modify these requirements as the needs of the Department change and any changes would supersede policies previously published in this catalog.

Departmental Standards

Students must earn a minimum grade of C- in each course allowed toward fulfilling the major and/or minor.
Departmental Honors
To earn honors in a foreign language, student must be a Foreign Languages major, at least a first quarter senior, have a GPA of 3.4 in the foreign language in question. Student must apply in writing to the Department Chair. For details on honors and procedures, please see the Foreign Languages Student Handbook, available in the department office, or contact a member of the Foreign Languages faculty.

Bachelor of Arts
Foreign Language Major with Specialization

<table>
<thead>
<tr>
<th>Language</th>
<th>Code</th>
<th>Required Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese</td>
<td>(3520)</td>
<td>251, 252, 253, Second Year</td>
<td>15</td>
</tr>
<tr>
<td>French</td>
<td>(3525)</td>
<td>301, Introduction to Literature</td>
<td>3</td>
</tr>
<tr>
<td>German</td>
<td>(3530)</td>
<td>310, Civilization and Culture</td>
<td>3</td>
</tr>
<tr>
<td>Japanese</td>
<td>(3535)</td>
<td>385, Phonetics</td>
<td>3</td>
</tr>
<tr>
<td>Russian</td>
<td>(3540)</td>
<td>Language electives</td>
<td>12</td>
</tr>
<tr>
<td>Spanish</td>
<td>(3545)</td>
<td>Literature/Culture electives</td>
<td>9</td>
</tr>
</tbody>
</table>

Total 54

Foreign Language Broad Area Major (3510)
This major does not require a minor. At least 10 credits must be earned abroad, in a country where the target language is spoken.

Required Courses Credits
Completion of the Foreign Language Major courses | 45
Electives in language and/or literature | 15

Total 60

Foreign Language: Teaching Major (3505)
This major satisfies the Primary endorsement for Designed World Language.
This major requires a minor and is open only to students pursuing a teaching certificate. Students taking this major are required to complete the professional education program requirements offered through the Curriculum and Supervision Department.

Required Courses Credits
251, 252, 253, Second Year | 15
301, Introduction to Literature | 3
310, Civilization and Culture | 3
385, Phonetics | 3
Language electives | 12
Literature/Culture electives | 9
FNLA 481, Methods | 4
FNLA 482, Foreign Language Acquisition OR FNLA/ANTH 483, Sociolinguistics | 4
FNLA 492, Practicum | 1

Total 54

Foreign Language: Teaching Broad Area (3515)
This major satisfies the Primary endorsement for Designed World Language.
This major does not require a minor and is open to students pursuing a teaching certificate. At least 10 credits must be earned abroad, in a country where the target language is spoken. Students taking this major are required to complete the professional education program requirements offered through the Curriculum and Supervision Department.

Required Courses Credits
Completion of the above Foreign Language: Teaching Major courses | 54
Electives in language and/or literature | 6

Total 60

Foreign Language Minor

<table>
<thead>
<tr>
<th>Language</th>
<th>Code</th>
<th>Required Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese</td>
<td>(3520)</td>
<td>251, 252, 253, Second Year</td>
<td>15</td>
</tr>
<tr>
<td>French</td>
<td>(3525)</td>
<td>301, Introduction to Literature</td>
<td>3</td>
</tr>
<tr>
<td>German</td>
<td>(3530)</td>
<td>310, Civilization and Culture</td>
<td>3</td>
</tr>
<tr>
<td>Japanese</td>
<td>(3535)</td>
<td>385, Phonetics</td>
<td>3</td>
</tr>
<tr>
<td>Russian</td>
<td>(3540)</td>
<td>Language electives</td>
<td>12</td>
</tr>
<tr>
<td>Spanish</td>
<td>(3545)</td>
<td>Literature/Culture electives</td>
<td>9</td>
</tr>
</tbody>
</table>

Total 27

Foreign Language: Teaching Minor

<table>
<thead>
<tr>
<th>Language</th>
<th>Code</th>
<th>Required Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese</td>
<td>(3560)</td>
<td>251, 252, 253, Second Year</td>
<td>15</td>
</tr>
<tr>
<td>French</td>
<td>(3565)</td>
<td>301, Introduction to Literature</td>
<td>3</td>
</tr>
<tr>
<td>German</td>
<td>(3570)</td>
<td>310, Civilization and Culture</td>
<td>3</td>
</tr>
<tr>
<td>Japanese</td>
<td>(3575)</td>
<td>385, Phonetics</td>
<td>3</td>
</tr>
<tr>
<td>Russian</td>
<td>(3580)</td>
<td>Language electives</td>
<td>12</td>
</tr>
<tr>
<td>Spanish</td>
<td>(3585)</td>
<td>Literature/Culture electives</td>
<td>9</td>
</tr>
</tbody>
</table>

Total 31

American Sign Language Courses
ASL 151, 152, 153. American Sign Language (5). Courses must be taken in sequence. Conversational approach with intensive visual/manual drill. Firm foundation in basic signs and structural principles of the language. Students may not receive credit for both ASL 151,152 and EDSE 427, 428, 429.
ASL 251, 252, 253. Second Year American Sign Language (5). Courses must be taken in sequence. Prerequisite, successful completion of ASL 153 or and equivalent course, demonstration of ASL 153 equivalent skills, or permission of the instructor. How signers construct meaning and messages in ASL, grammatical variation, and discourse strategies is covered with special focus on increasing non-manual behavior.

Foreign Language Courses
FNLA 111, 112, 113. Foreign Languages-Special Instruction (3 or 5). A foreign language not usually taught by the Department. Offerings vary according to student demand, availability of staff, or of instructional programs. FNLA 111 or the
sequence may be repeated for credit in different languages. Interested students should contact the Foreign Languages Department for available offerings.

FNLA 210. Intercultural Experiences (2). A comparison of life, language and culture in the United States and other parts of the world. Grade will be S or U.

FNLA 298. Special Topics (1-6).

FNLA 398. Special Topics (1-6).

FNLA 401. Introduction to Romance Linguistics (3). Prerequisite, two years of a romance language, or equivalent. Analysis of the phonology, morphology and syntax of the romance languages. Credits to be counted toward either French or Spanish major or minor.

FNLA 481: Methods and Materials for the Teaching of Modern Foreign Languages (4). Prerequisite, at least two 300-level courses or equivalent in a foreign language. Emphasizes the practical concerns of second and foreign language instruction. Explores a group the theory underlying approaches incorporated into personalized teaching styles. Formerly FNLA 428.

FNLA 482. Applied Linguistics: Foreign Language Acquisition (4). Prerequisite, FNLA 481, or departmental approval. This course explores second and foreign language acquisition/learning from an applied linguistics perspective. The focus of this course will be on the learner.

FNLA 483. Sociolinguistics (4). Prerequisite, ANTH/ENG 180 or 480, ANTH 381, or FNLA 481, or departmental approval. Concepts and methods of sociolinguistic analysis in first and second languages. Will examine differences among cultures in the relationship between language usage and inequity. Same as ANTH 483. Students may not receive credit for both.

FNLA 490. Cooperative Education (1-12). An individualized contracted field experience with business, industry, government, or social service agencies. This contractual arrangement involves a student learning plan, cooperating employer supervision, and faculty coordination. Prior approval required. May be repeated. Grade will be S or U.

FNLA 491. Workshop (1-6). Prerequisite, departmental permission. May be repeated for credit.

FNLA 492. Practicum (1). Prerequisite, FNLA 481 and FNLA 482 or FNLA 483, or departmental approval. Provides student with a supervised foreign language (FL) teaching opportunity designed to sharpen awareness of the technical, personal and practical elements involved in effective FL teaching through regular observations of FL and second language (L2) classes, daily experience in the FL class, and seminar discussion of issues and problems related to FL and L2 teaching.

FNLA 496. Individual Study (1-6).

FNLA 498. Special Topics (1-6).

Chinese Courses

CHIN 151, 152, 153. First Year Chinese (5,5,5). Courses must be taken in sequence. Conversational approach with intensive oral-aural drill. Firm foundation in basic structural principles of the language.

CHIN 251, 252, 253. Second Year Chinese (5,5,5). Courses must be taken in sequence. Prerequisite, CHIN 153 or equivalent. Graduated readings in modern Chinese writings with discussion conducted in Chinese.

CHIN 298. Special Topics (1-6).

CHIN 341, 342. Intermediate Composition and Grammar (3,3). Prerequisite, CHIN 253 or equivalent. Should be taken in sequence.

CHIN 343, 344. Intermediate Conversation (2,2). Prerequisite, CHIN 253 or equivalent. Should be taken in sequence.

CHIN 398. Special Topics (1-6).

CHIN 496. Individual Study (1-6). Prerequisite, permission of instructor.

CHIN 498. Special Topics (1-6).

French Courses

FR 151, 152, 153. First Year French (5,5,5). Courses must be taken in sequence. Conversational approach with intensive oral-aural drill. Firm foundation in the basic structural principles of the language.

FR 251, 252, 253. Second Year French (5,5,5). Courses must be taken in sequence. Prerequisite, FR 153 or equivalent. Thorough review of French grammar and graduated readings in modern French prose with discussions conducted in French.

FR 298. Special Topics (1-6).

FR 301. Introduction to French Literature (3). Prerequisite, FR 253 or equivalent. This course is designed as a transition course to prepare students for the advanced literature courses. Appreciation of literature and methods of analysis will be taught on a basic level through the careful examination of specific texts.

FR 310. French Civilization and Culture (3). Prerequisite, FR 253 or equivalent. Major aspects of French culture, philosophy and way of life will be emphasized.

FR 341, 342. Intermediate Composition and Grammar (3,3). Prerequisite, FR 253 or equivalent. Should be taken in sequence with FR 441.

FR 343, 344. Intermediate Conversation (2,2). Prerequisite for FR 343 is FR 253 or equivalent. Prerequisite for FR 344 is FR 343 or equivalent, or departmental approval.

FR 385. French Phonetics (3). Prerequisite, French 341, or departmental approval. Designed to show how French is pronounced, and how to attain accuracy which approximates native-like pronunciation as much as possible. Provides an opportunity to improve pronunciation.

FR 398. Special Topics (1-6).

FR 429. 18th Century French Literature (3). Prerequisite, at least two 300-level courses, one of which must be a literature course, or departmental approval. The Enlightenment, with particular emphasis on Montesquieu, Diderot, Voltaire and Rousseau.

FR 441. Advanced Composition and Grammar (3). Prerequisite, FR 341 and 342, or departmental approval.

FR 442. Translation and Interpretation (2). Prerequisite, FR 342 or equivalent, or departmental approval.

FR 450. Contemporary French Novel (3). Prerequisite, at least two 300-level courses, one of which must be a literature course, or departmental approval. From Proust to Camus.

FR 455. French Poetry Through the Ages (3). Prerequisite, at least two 300-level courses, one of which must be a literature course, or departmental approval. Selected masterpieces from the Middle Ages to the present.

FR 491. Workshop (1-6). Prerequisite, departmental permission. May be repeated for credit.

FR 496. Individual Study (1-6). Prerequisite, permission of instructor.

FR 498. Special Topics (1-6).

German Courses

GERM 151, 152, 153. First Year German (5,5,5). Courses must be taken in sequence. Conversational approach with intensive oral-aural drill. Firm foundation in the basic structural principles of the language.

GERM 251, 252, 253. Second Year German (5,5,5). Courses must be taken in sequence. Prerequisite, GERM 153 or equivalent. Graduated readings in modern German prose with discussion conducted in German. Thorough review of German grammar.

GERM 298. Special Topics (1-6).

GERM 301. Introduction to German Literature (3). Prerequisite, GERM, 253 or equivalent. Selected pieces of German literature characteristic of the Middle Ages to the present.

GERM 310. German Civilization and Culture (3). Prerequisite, GERM 253 or equivalent. The background, development, and especially the present-day situation of the German-speaking areas of the world.

GERM 341, 342. Intermediate Composition and Grammar (3,3). Prerequisite, GERM 253 or equivalent. Should be taken in sequence with GERM 441.

GERM 343, 344. Intermediate Conversation (2,2). Prerequisite for GERM 343 is GERM 253 or equivalent. Prerequisite for GERM 344 is GERM 343 or equivalent, or departmental approval.
GERM 385. German Phonetics (3). Prerequisite, German 341, or departmental approval. Designed to show how German is pronounced, and how to attain accuracy which approximates native-like pronunciation as much as possible. Provides an opportunity to improve pronunciation.

GERM 398. Special Topics (1-6).

GERM 431. German Classicism and Romanticism (3). Prerequisite, at least two 300-level courses, one of which must be a literature course, or departmental approval. Course treats individual works and authors. May be offered in English for non-majors and non-minors and may be repeated for credit.

GERM 432. German Poetry (3). Prerequisite, at least two 300-level courses, one of which must be a literature course, or departmental approval.

GERM 441. Advanced Composition and Grammar (3). Prerequisite, GERM 341 and 342, or departmental approval.

GERM 442. Translation and Interpretation (2). Prerequisite, GERM 342 or equivalent, or departmental approval.

GERM 454. The German Narrative (3). Prerequisite, at least two 300-level courses, one of which must be a literature course, or departmental approval. The German short story, Novelle, and novel.

GERM 456. German Drama (3). Prerequisite, at least two 300-level courses, one of which must be a literature course, or departmental approval.

GERM 458. Modern German Literature (3). Prerequisite, at least two 300-level courses, one of which must be a literature course, or the permission of the instructor. Treats Boell, Brecht, Hesse, Kafka, and others. May be offered in English to non-majors and non-minors and may be repeated for credit.

GERM 491. Workshop (1-6). Prerequisite, departmental permission. May be repeated for credit.

GERM 496. Individual Study (1-6). Prerequisite, permission of instructor.

GERM 498. Special Topics (1-6).

Japanese Courses

JAPN 151, 152, 153. First Year Japanese (5,5,5). Courses must be taken in sequence. Conversational approach with intensive oral-aural drill. Foundation in basic structural principles of the language.


JAPN 298. Special Topics (1-6).

JAPN 341, 342. Intermediate Composition and Grammar (3,3). Prerequisite, JAPN 253 or equivalent. JAPN 341 and 441.

JAPN 343, 344. Intermediate Conversation (2,2). Prerequisite for JAPN 343 is JAPN 253 or equivalent. Prerequisite for JAPN 344 is JAPN 343 or equivalent, or departmental approval.

JAPN 398. Special Topics (1-6).

JAPN 441. Advanced Composition and Grammar (3). Prerequisite, JAPN 341 and 342, or departmental approval.

JAPN 442. Translation and Interpretation (2). Prerequisite, JAPN 342 or equivalent, or departmental approval.

JAPN 496. Individual Study (1-6). Prerequisite, permission of instructor.

JAPN 498. Special Topics (1-6).

RUSS 151, 152, 153. First Year Russian (5,5,5). Courses must be taken in sequence. Conversational approach with intensive oral-aural drill. Firm foundation in basic structural principles of the language.

RUSS 251, 252, 253. Second Year Russian (5,5,5). Prerequisite, RUSS 153 or equivalent. Courses must be taken in sequence. Thorough review of Russian grammar and graduated readings in Russian prose and poetry with discussions conducted in Russian.

RUSS 298. Special Topics (1-6).

RUSS 310. Russian Civilization and Culture (3). Prerequisite, RUSS 253 or permission. Literature, art, music, history and philosophy. Lectures and discussions conducted in Russian. Formerly RUSS 254. Student may not receive credit for both.

RUSS 341, 342. Intermediate Composition and Grammar (3,3). Prerequisite, RUSS 253 or equivalent. Should be taken in sequence with RUSS 441.

RUSS 343. Intermediate Conversation (3).

RUSS 398. Special Topics (1-6).

RUSS 441. Advanced Composition and Grammar (3). Prerequisite, RUSS 341 and 342, or departmental approval.

RUSS 496. Individual Study (1-6). Prerequisite, permission of instructor.

RUSS 498. Special Topics (1-6).

Spanish Courses

SPAN 151, 152, 153. First Year Spanish (5,5,5). Courses must be taken in sequence. Conversational approach with intensive oral-aural drill. Firm foundation in basic structural principles of the language.

SPAN 181. Intensive Review of First Year Spanish (5). Prerequisite, minimum of two years of high school Spanish or equivalent. Intensive review of first year Spanish for students with the equivalent of two years of high school Spanish who wish to continue with Second Year Spanish.

SPAN 251, 252, 253. Second Year Spanish (5,5,5). Courses must be taken in sequence. Prerequisite, SPAN 153 or equivalent. Graduated readings in modern Spanish prose with discussions conducted in Spanish. Thorough review of Spanish grammar.

SPAN 298. Special Topics (1-6).

SPAN 301. Introduction to Hispanic Literature (3). Prerequisite, SPAN 253 or equivalent. This course is designed principally as a transition course to prepare students for the advanced literature courses. Appreciation of literature and methods of analysis will be taught on a basic level through the careful examination of specific texts.

SPAN 310. Hispanic Civilization and Culture (3). Prerequisite, SPAN 253 or equivalent. Major aspects of Hispanic cultures, with particular emphasis on contemporary Hispanic customs, philosophy, and way of life.

SPAN 341, 342. Intermediate Composition and Grammar (3,3). Prerequisite, SPAN 253 or equivalent.

SPAN 343, 344. Intermediate Conversation (2,2). Prerequisite for SPAN 343 is SPAN 253 or equivalent. Prerequisite for SPAN 344 is SPAN 343 or equivalent, or departmental approval.

SPAN 345, 346. Spanish for Spanish Speakers (2). Prerequisite for SPAN 345 is SPAN 253 or equivalent. Prerequisite for SPAN 346 is SPAN 345 or equivalent. Advanced grammar, writing techniques and lexicon for heritage or native-like speakers of Spanish.

SPAN 385. Spanish Phonetics (3). Prerequisite, SPAN 341, or departmental approval. Designed to show how Spanish is pronounced, and to attain accuracy which approximates native-like pronunciation as much as possible. Provides an opportunity to improve pronunciation.

SPAN 398. Special Topics (1-6).

SPAN 431. Advanced Grammar (2). Prerequisite, SPAN 342 or equivalent. Study of advanced Spanish grammar and syntax. Focus on areas of grammar especially problematic for English speakers. Students may not receive credit for SPAN 441 and SPAN 431.

SPAN 432. Spanish Advanced Composition and Stylistics (2). Prerequisite, SPAN 342 or equivalent. Develop writing techniques through the analysis of varied texts. Through the process of writing, students will find the appropriate balance of form and content. Students may not receive credit for both SPAN 432 and SPAN 441.
SPAN 440. Spanish for Teachers (3). Prerequisite, at least one grammar class at the 300 or 400 level, or departmental approval. A review of different aspects of the Spanish language with an emphasis on providing teachers with innovative approaches and practice in presenting the material covered.

SPAN 442. Translation and Interpretation (3). Prerequisite, SPAN 342 or equivalent, or departmental approval.

SPAN 444. Chicano Literature (3). Prerequisite, SPAN 301 or departmental approval. A study of works in all genres by Chicano writers. Discussions and most readings will be in Spanish.

SPAN 445. Spanish Medieval Literature (3). Prerequisite, SPAN 301 or departmental approval. This course deals with some of the most representative works, literary genres, and currents of the Spanish Middle Ages.

SPAN 446. Hispanic Cinema (3). Prerequisite, SPAN 301 or departmental approval. A study of major films from Spain and Latin America, in their various national contexts.

SPAN 447. The Hispanic Short Story (3). Prerequisite, SPAN 301 or departmental approval. Familiarization with the genre of short story writing and its reflections in the major Spanish and Latin American authors of that genre in an historical and literary perspective.

SPAN 448. Spanish-American Theater (3). Prerequisite, SPAN 301 or departmental approval. Study of dramatic and performance theories and of theatrical pieces from Latin America.

SPAN 449. Workshop (1-6). Prerequisite, department permission. May be repeated for credit.

SPAN 450. Spanish-American Poetry (3). Prerequisite, SPAN 301 or departmental approval. Study of poetic theories and of main developments in the poetry of Latin America.

SPAN 451. Hispanic Literature and Film (3). Prerequisite, SPAN 301 or departmental approval. Study of fundamental themes in contemporary Hispanic literature and its relation with the art of films.

SPAN 452. Hispanic/Latino Cultures of the U.S. (3). Prerequisite, SPAN 301 and SPAN 310, or concurrent enrollment with SPAN 301 and SPAN 310, or equivalent. The course content focuses on the study of the Hispanic/Latino cultures of the United States. Course is conducted only in Spanish.

SPAN 453. Chicano Literature (3). Prerequisite, SPAN 301 or departmental approval. A study of works in all genres by Chicano writers. Discussions and most readings will be in Spanish.

SPAN 454. Chicano Literature (3). Prerequisite, SPAN 301 or departmental approval. A study of works in all genres by Chicano writers. Discussions and most readings will be in Spanish.

SPAN 455. Hispanic Culture and Civilization (1-6). Offered only in study abroad programs. Major aspects of the culture, philosophy and way of life of the host country will be emphasized. May be repeated for credit.

SPAN 456. The Hispanic Short Story (3). Prerequisite, SPAN 301 or departmental approval. Familiarization with the genre of short story writing and its reflections in the major Spanish and Latin American authors of that genre in an historical and literary perspective.

SPAN 457. Spanish-American Theater (3). Prerequisite, SPAN 301 or departmental approval. Study of dramatic and performance theories and of theatrical pieces from Spain.

SPAN 458. Spanish-American Narrative (3). Prerequisite, SPAN 301 or departmental approval. Study of theories of narrative fiction and of novels and short stories from Latin America.

SPAN 459. Spanish-American Poetry (3). Prerequisite, SPAN 301 or departmental approval. Study of poetic theories and of main developments in the poetry of Latin America.

SPAN 460. Spanish Theater (3). Prerequisite, SPAN 301 or departmental approval. Study of dramatic and performance theories and of theatrical pieces from Spain.

SPAN 461. Spanish Literature and Film (3). Prerequisite, SPAN 301 or departmental approval. Study of fundamental themes in contemporary Hispanic literature and its relation with the art of films.

SPAN 462. Hispanic/Latino Cultures of the U.S. (3). Prerequisite, SPAN 301 and SPAN 310, or concurrent enrollment with SPAN 301 and SPAN 310, or equivalent. The course content focuses on the study of the Hispanic/Latino cultures of the United States. Course is conducted only in Spanish.
Courses Approved for the General Studies – Humanities Major

Art (all courses)
Communication (all courses)
English (all courses)
Foreign Languages (all courses)
History (all courses)
Humanities (all courses)
Music (all courses)
Philosophy (all courses)
Religious Studies (all courses)
Theatre Arts (all courses)

Bachelor of Science

General Studies – Social Sciences

This division of General Studies is for students whose primary interest in the Social Sciences requires interdisciplinary programs and course selections which are not possible within single academic programs or established curricula. Students who wish to earn a Bachelor of Science in Social Sciences will devise an approved, coherent program of study with the coordinator which fulfills an academic or career goal and includes prerequisites consistent with the 300-400-level major course work.

A. 62 Credit Major (3570):

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEN 289, Proposal Colloquium</td>
<td>1</td>
</tr>
<tr>
<td>GEN 489, Senior Colloquium</td>
<td>1</td>
</tr>
</tbody>
</table>

60 credits must be taken from the list of courses approved for the Social Sciences Major, 45 of which must be upper division. Students specializing in Social Sciences must take courses in at least three disciplines within the Major. No more than 15 credits may be numbered 490 . . . 60

Total 62

B. 47 Credit Major (3565):

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEN 289, Proposal Colloquium</td>
<td>1</td>
</tr>
<tr>
<td>GEN 489, Senior Colloquium</td>
<td>1</td>
</tr>
</tbody>
</table>

45 credits must be taken from the list of courses approved for the Social Sciences Major, 30 of which must be upper division. Students specializing in Social Sciences must take courses in at least three disciplines within the Major. No more than 10 credits may be numbered 490 . . . 45

Total 67-92

Courses Approved for the General Studies – Social Sciences Major

Anthropology: All Anthropology Courses EXCEPT Natural Sciences-based courses listed below:
- ANTH 110, Introduction to Biological Anthropology
- ANTH 110.1, Biological Anthropology Laboratory
- ANTH 310, Research/Laboratory in Biological Anthropology
- ANTH 311, Advanced Biological Anthropology
- ANTH 312, Human Origins
- ANTH 313, Primate Social Behavior
- ANTH 314, Human Variations and Adaptations in Living Populations
- ANTH 315, Forensic Skeletal Analysis
- ANTH 412, Long Term Primate Studies
- ANTH 416, Pongid Behavior
- ANTH 418, Primate Evolution
- ANTH 495.1, Methods and Theory of Biological Anthropology

Business (approved courses only):
- BUS 241, Legal Environment of Business
- BUS 341, Advanced Business Law
- HRM 381, Management of Human Resources
- MGT 380, Organizational Management
- MGT 384, Introduction to International Business
- MKT 360, Principles of Marketing
- Economics (all courses)
- Ethnic Studies (all courses)
- Geography (all courses EXCEPT Physical Geography courses listed below)
- GEOG 107, Introduction to Physical Geography
- GEOG 386, Geomorphology
- GEOG 387, Pedology
- GEOG 388, Climatology
- GEOG 453, Wetland Analysis
- GEOG 476, Advanced Geomorphology
- GEOG 477, Advanced Pedology
- GEOG 478, Advanced Climatology
- History (all courses)
- Law and Justice (all courses)
- Political Science (all courses)
- Psychology (all courses)
- Sociology (all courses)
- Women Studies (all courses)

Bachelor of Science

General Studies – Natural Sciences

This division of General Studies is for students whose primary interest in the biological or physical sciences or mathematics which offer broader options in course selections than are possible within single departments. Students who wish to earn a Bachelor of Science degree will devise an approved, coherent program of study with the coordinator which fulfills an academic or career goal and included prerequisites consistent with the 300-400-level major course work.

A. 62 Credit Major (3580):

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEN 289, Proposal Colloquium</td>
<td>1</td>
</tr>
<tr>
<td>GEN 489, Senior Colloquium</td>
<td>1</td>
</tr>
</tbody>
</table>

60 credits must be taken from the list of courses approved for the Natural Science Major, 45 of which must be upper division. Students specializing in Natural Sciences must take courses in at least three disciplines within the Major. No more than 15 credits may be numbered 490 . . . 60

Total 62

B. 47 Credit Major (3575):

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEN 289, Proposal Colloquium</td>
<td>1</td>
</tr>
<tr>
<td>GEN 489, Senior Colloquium</td>
<td>1</td>
</tr>
</tbody>
</table>

45 credits must be taken from the list of courses approved for the Natural Sciences Major, 30 of which must be upper division. Students specializing in Natural Sciences must take courses in at least three disciplines within the Major. No more than 10 credits may be numbered 490 . . . 45

In addition, a 45 credit major must complete either a traditional departmental minor (20-45 credits) or a second major, which may be either a traditional major or a General Studies major with a different major... 20-45

Total 67-92

Courses Approved for the General Studies – Natural Sciences Major

Anthropology (Biological Anthropology)
- ANTH 110, Introduction to Biological Anthropology
- ANTH 110.1, Biological Anthropology Laboratory
- ANTH 310, Research/Laboratory in Biological Anthropology
- ANTH 311, Advanced Biological Anthropology
- ANTH 312, Human Origins
- ANTH 313, Primate Social Behavior
- ANTH 314, Human Variations and Adaptations in Living Populations
- ANTH 315, Forensic Skeletal Analysis
- ANTH 412, Long Term Primate Studies
- ANTH 416, Pongid Behavior
- ANTH 418, Primate Evolution
- ANTH 495.1, Methods and Theory of Biological Anthropology

Biological Sciences (all courses)
- Chemistry (all courses)
- Computer Science (all courses)
- Geography (Physical geography courses only)
- GEOG 107, Introduction to Physical Geography
- GEOG 273, Geography of Rivers
- GEOG 386, Geomorphology
- GEOG 387, Pedology
- GEOG 388, Climatology
General Studies Courses

GEN 289. Proposal Colloquium (1). Prerequisite, permission of the Associate Vice President for Undergraduate Studies. Introduction to the General Studies Major, General Studies degree proposal design and preparation. Grade will be S or U.

GEN 489. Senior Colloquium (1). Prerequisite, permission of the Associate Vice President for Undergraduate Studies. End of program assessment; preparation of comprehensive degree report and/or descriptive portfolio of project. Grade will be S or U.

GEOG 450, Geography of Arid Lands
GEOG 451, Mountain Environments
GEOG 452, Coastal Environments
GEOG 453, Wetland Analysis
GEOG 476, Advanced Geomorphology
GEOG 477, Advanced Pedology
GEOG 478, Advanced Climatology
GEOG 479, Geography of the West
Geological Sciences (all courses)
Mathematics (all courses)
Physics (all courses)

Adjunct Faculty:
Elaine K. Glenn, Middle East, Political Geography
Avery Sullivan, Physical Geography, Natural Resources

General Departmental Information

Geography’s traditional concern with the inter-relatedness of the natural and human environments, and reasons for their differences from place to place, provides important insights into many of the complex problems facing society today.

The Department stresses flexibility in the selection of course sequences for majors and encourages study in related departments among the social and natural sciences. The Department is an active participant in the following university programs: Environmental Studies, Energy Studies, Asia/Pacific Studies, Latin American Studies, International Studies, and Program, and Resource Management graduate program. The department also maintains a well-appointed Geographic Information Systems (GIS) laboratory which benefits majors from other programs in addition to geography.

If you choose to major in Geography, you will be required to take a core sequence of five courses. The B.A. allows great flexibility in working out a major with the help of one of our faculty advisors. Your major will include a combination of courses in Geography and related fields, as approved by one of our departmental advisors, that will best enable you to achieve your goals in life, a Geography-related career (e.g., planning, GIS, environmental/resource management) and/or graduate school.

All students who wish to major in Geography must:
1. have a 2.25 minimum GPA in all coursework taken up to the time of admission;
2. apply for acceptance into the Geography and Land Studies major;
3. upon acceptance into the program, meet with their assigned advisor to develop a Major Contract;
4. earn a C- or better grade in each of the courses in their Major Contract

Geography Core Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG 101, World Regional Geography</td>
<td>5</td>
</tr>
<tr>
<td>GEOG 107, Introduction to Physical Geography</td>
<td>5</td>
</tr>
<tr>
<td>GEOG 108, Introduction to Human Geography</td>
<td>5</td>
</tr>
<tr>
<td>GEOG 203, Map Reading and Interpretation</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 489, Geography Capstone</td>
<td>2</td>
</tr>
</tbody>
</table>

Geography Core Total: 20

The Geography Major includes two options: Bachelor of Arts - 45 credits, and Bachelor of Arts - 60 credits.

Bachelor of Arts

Geography Major 45 credits (3595)

The Geography Major--45 credits is recommended for students who wish to develop a broad knowledge of Geography yet retain the overall flexibility to prepare themselves for a variety of employment opportunities or graduate study. Students taking this major are required to have a second major or a minor.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geography core requirements</td>
<td>20</td>
</tr>
<tr>
<td>Department approved electives</td>
<td>12-20</td>
</tr>
<tr>
<td>Must include an upper division geography course in each of the four subfields: regional, physical, human, and techniques.</td>
<td></td>
</tr>
<tr>
<td>Other Department-approved electives</td>
<td>5-13</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
</tr>
</tbody>
</table>

Bachelor of Arts

Geography Major 60 credits (3600)

This major is intended for students who wish to develop depth and breadth in a particular portion of Geography in preparation for a career or graduate study in Geography. Students may specialize in one of five tracks within the Geography Major--60 credits: Geotechniques, Global and Area Studies, Physical Geography, Planning, Environmental/Resource Geography. Recommended electives for each of these specializations are listed on the department’s Web page. In consultation with a departmental advisor, students may choose a specialization and design a program of component courses which best fits specific career goals and aspirations.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geography core requirements</td>
<td>20</td>
</tr>
<tr>
<td>Department approved electives</td>
<td>12-20</td>
</tr>
<tr>
<td>Must include one advanced geography course in each of the four subfields: regional, physical, human, and techniques.</td>
<td></td>
</tr>
<tr>
<td>Other Department-approved electives</td>
<td>20-28</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
</tr>
</tbody>
</table>

Geography: Teaching Major

(3603)

Senior high school teachers are advised to accompany this with a major in a field in which a major portion of a full-time teaching assignment can be expected. Junior high school teachers must combine this with minors in...
both History and English. GEOG 203, Map Reading and Interpretation, provides map reading skills for all teaching levels. Students taking this major are required to complete the professional education program requirements offered through the Curriculum and Supervision Department. For elementary school teaching see the Department of Teacher Education Programs. Please note: Geography is no longer a valid endorsement for education majors in the state of Washington.

Required Courses
GEOG 101, World Regional Geography 5
GEOG 107, Introduction to Physical Geography 5
GEOG 305, Introduction to Land Use and Planning 5
GEOG 308, Cultural Geography 5
GEOG 409, Quantitative Methods (4)
GEOG 417, Advanced GIS (4)
GEOG 485, Topics in GIS/Remote Sensing (4)
**GEOG 496, Independent Study (GIS Topics) (1-6)
GEOG 490, Cooperative Education (GIS Topics) (1-12)
GEOG 493, Geography Field Experience (GIS Topics) (1-12)
CS 301, Data Structures (4)
Other electives as approved by the Director
*A minimum of 8 credits taken from the list of electives at least 4 credits of which must be a “GIS” class. All electives must be approved by the certificate director.
**Students may also take Advanced GIS or Introduction to Visual Basics for ESRI Software as 1 credit GEOG 496 classes up to a maximum of 4 classes (both to CWU and ESRI).

Total 46

Regional Geography at 300 level or above 5-10
Systematic Geography at 300 level or above 3-7
Department approved electives 3-7

Total 25

Certificate in Geographic Information Systems (GIS)
The GIS certificate provides recognition for students completing the required number of GIS-related classes (26 credits) at a high level of competence (minimum average GPA of 2.7). Certification will provide students with a powerful tool to assist their future job searches.

Required Courses
GEOG 303/403, Introductory GIS 5
GEOG 404, Intermediate GIS 4
GEOG 410, Airphoto Interpretation 4
GEOG 430, Remote Sensing 5
Choose from the following electives* 8
GEOG 409, Quantitative Methods (4)
GEOG 413, Computer Cartography (4)
GEOG 417, Advanced GIS (4)
GEOG 485, Topics in GIS/Remote Sensing (4)
**GEOG 496, Independent Study (GIS Topics) (1-6)
GEOG 490, Cooperative Education (GIS Topics) (1-12)
GEOG 493, Geography Field Experience (GIS Topics) (1-12)
CS 301, Data Structures (4)
Other electives as approved by the Director
*A minimum of 8 credits taken from the list of electives at least 4 credits of which must be a “GIS” class. All electives must be approved by the certificate director.
**Students may also take Advanced GIS or Introduction to Visual Basics for ESRI Software as 1 credit GEOG 496 classes up to a maximum of 4 classes (both to CWU and ESRI).

Total 26

Geography Courses
GEOG 101. World Regional Geography (5). Regions and nations of the world together with the changing elements of the physical and human environment which support them.
GEOG 107. Introduction to Physical Geography (5). The complex weather, climate, water, landforms, soils and vegetation comprising Earth’s physical environments over space and time.
GEOG 108. Introduction to Human Geography (5). Distribution and spatial variation of population, settlement patterns, cultural elements of language, religion, and lifeways, and the economic and political organization of the planet.
GEOG 203. Map Reading and Interpretation (5). An introduction to commonly available maps, including topographic, nautical, weather, land use, and others. Necessary concepts, such as scale, are introduced.
GEOG 215. Concepts of GIS (3). Basic principles and uses of geographic information systems (GIS). Practice with the use of GIS in solving land management and evaluation problems. Two hours lecture and four hours laboratory per week. Formerly ANTH/GEOG 431. Same as ANTH 215. Students may not receive credit for both.
GEOG 221. Introduction to Geography (3). Using maps and other learning tools to understand spatial distributions and interactions of Earth’s peoples, places, resources, and environments. Specifically designed for elementary school teachers.
GEOG 275. Geography of Rivers (5). Global, regional, and local physical and cultural patterns and processes within river basins.

GEOG 304. Economic Geography (5). Geographic survey of human livelihood and interaction with the environment. Agriculture, industry, and urbanization are examined in the context of an increasingly interdependent world system. Formerly GEOG 205. Student may not receive credit for both.
GEOG 305. Introduction to Land Use Planning (5). Investigation into the process and practice of urban and regional planning. Emphasis on historical development, legal foundations, and techniques of planning in the United States.
GEOG 308. Cultural Geography (5). Consequences of cultural diversity in the human occupation of the earth, and the interactions of human and natural systems.
GEOG 310. Introduction to Landscape Analysis (5). Application of concepts and techniques of landscape analysis. Specific landscapes are analyzed utilizing various techniques including remotely sensed imagery, historical records, and field observation and measurement.
GEOG 343. Energy Resource Alternatives (3). Solar, wind, water and biomass alternatives to traditional energy resources. Alternatives in power production, architecture, heating, transportation, agriculture and policies affecting their implementation. (Not open to students with credit in GEOG 398, Low Energy Living.)
GEOG 346. Political Geography (4). The spatial structure of political units. The effect of political, economic, social and earth resource factors on the areas, shapes, and boundaries of these units, and on the distribution of populations and institutions.
GEOG 350. Resources, Population and Conservation (4). The meaning of resources and conservation; population growth and its implications for land management, public control, and environment quality; attitudes regarding the use of resources; conservation thought and activities in the United States.
GEOG 352. Geography of North America (5). Examination of the physical and cultural geography, human-environment
interactions, landscapes, and regional diversity of the United States, Canada and Mexico.

GEOG 355. Geography of the Pacific Northwest (4). Examination of the physical and cultural geography, human-environment interactions, landscapes, and regional diversity of the Pacific Northwest.

GEOG 361. Soils (5). Prerequisite: GEOG 107 or instructors permission. Focus on properties, factors, processes and classifications of Earth’s soils, past and present. Four hours of lecture and four hours of field/labatory per week. Same as GEOG 461, may not receive credit for both.

GEOG 366. Geography of the Middle East (4). Examination of the physical and cultural geography, human-environment interactions, landscapes, and regional diversity of the Middle East.

GEOG 371. Geography of Europe (5). Examination of the physical and cultural geography, human-environment interactions, landscapes, and regional diversity of Europe.

GEOG 373. Water Resources (4). No prerequisites but GEOG 107 is recommended. Foundation course for understanding the physical and social dimensions of water resource use on a global scale. Special attention paid to issues in the American West.

GEOG 382. Hydrology (5). Provides a comprehensive introduction to both the global and local hydrologic cycle. Covers constituent processes, their measurements and quantitative relationships, plus basic water quality parameters. Same as GEOG 482.

GEOG 386. Geomorphology (5). Prerequisites, GEOG 107 or GEOL 145 or 150 and 145.1. Descriptive and interpretive examination of the earth’s land forms. Four lectures and three hours laboratory or field trips. GEOG 386 and GEOG 386 are the same course. Students may not receive credit for both.

GEOG 388. Climatology (5). Prerequisite, GEOG 107 or instructor’s permission. Elements of, and factors and processes affecting Earth’s climates, present, past, and future. Four hours lecture and two hours laboratory/field per week. Course fee required.

GEOG 389. Ecosystems Geography (5). Investigates the functional relationships between biophysical processes and their spatial and temporal patterns at various scales. Introduces approaches to land systems analysis focusing upon ecosystems.

GEOG 398. Seminar (1-5).


GEOG 404. Intermediate GIS (4). Prerequisite, GEOG 303/403 or permission. Applied concepts, principles, and operation of fundamental GIS applications, including raster-vector data models, topology, digitizing, and various analytical techniques such as overlay, buffers, and Boolean queries. Lecture and practical applications. Same as ANTH 404 and GEOL 404. Formerly ANTH/GEOL 385.

GEOG 405. Advanced Topics in Land Use Planning (3). Prerequisite, GEOG 305. Selected issues and problems in land use planning and environmental control. Topics may include growth management, small town and rural planning, or coastal zone management. May be repeated for credit.

GEOG 408. Advanced Topics in Human Geography (3). Focuses on the content of GEOG 308 in greater detail with particular emphasis on land use in non industrial societies. (Topics will vary, consult with instructor.)

GEOG 409. Quantitative Methods in Geography (4). Prerequisite, MATH 130.1; equivalent transfer or HS credit. Quantitative analysis assessment in geography and resource management. Emphasis on spatial statistics.

GEOG 410. Airphoto Interpretation (4). Prerequisite, instructor’s permission. Introduction to airborne photography, and the tools and techniques to apply this photography to geographical issues. Three hours lecture and two hours laboratory per week. Course fee required.

GEOG 412. Computer Cartography (4). Prerequisite, permission of instructor. Computerized mapmaking basics of contour, choropleth, 3-D, and other thematic maps from digitizing to final color product. Applied experience using cartographic software.

GEOG 415. Geography of Oceania (3). Examination of the physical and cultural geography, human-environment interactions, landscapes, and regional diversity of Australia, New Zealand, and the Pacific Islands.

GEOG 417. Advanced GIS (4). Prerequisite, GEOG 404, ANTH 404, or GEOL 404 or permission of instructor. Advanced GIS principles, techniques, analysis, and application. Lecture and practical hands-on experience. Applied experience using GIS software. Same as ANTH 417 and GEOL 417.

GEOG 421. Practical Aids in Teaching Geography (3). Materials and methods appropriate to teaching geography in public schools. Students will be come proficient in using maps, the globe, and other geographic media, including the Internet.

GEOG 425. Field Methods in Geography (5). Prerequisite, permission of instructor. Theory of, and practice in, geography field methods via in-depth field research projects. Topics include field observation, data collection, and data interpretation. Two hours lecture and five hours field per week.

GEOG 430. Remote Sensing (5). Prerequisites, GEOG 410 or GEOL 210, or permission of instructor. Principles of acquisition, analysis, and use of remotely sensed data (LANDSAT, SPOT, IKONOS, etc.). Applied experience using image processing software. Three hours lecture and three hours laboratory per week. Same as GEOG 430 and GEOL 530. Students may not receive credit for more than one course.

GEOG 440. Ecology and Culture (4). Investigation into interdependent environmental and human cultural systems. Traditional agroecologies and subsistence strategies; contemporary problems of resource management, social equity, political ecology, and sustainable development. Same as ANTH 440. Students may not receive credit for both.

GEOG 443. Energy Policy (5). Prerequisite, PHHS 111 or permission. Legal, institutional, and economic frameworks for regional, national and international energy decisions.


GEOG 446. Land Use in the United States (3). Historical geography of settlement and the evolution of subsequent land use patterns in the United States in response to changing economic and environmental conditions.

GEOG 447. Problems in Resource Allocation (4). Prerequisite, permission of instructor. Selected current problems in resource allocation.

GEOG 448. Resource and Environmental Analysis (5). Examination of the techniques and methodologies used for the evaluation and sustainable management of environmental resources from a variety of perspectives.

GEOG 450. Geography of Arid Lands (4). Unique physical environments of arid lands, and human interaction with these environments over space and time. Focus on natural resources and land use conflicts.


GEOG 455. Wine: A Geographical Appreciation (3). World overview of grape and wine industry emphasizing geographic themes. Includes all-day field trip to Yakima Valley viticultural area.

GEOG 456. Urban Geography (4). Prerequisite: GEOG 107 or permission of instructor. Selected advanced topics in geodemography. Focus on urbanization processes, trends, and case studies.

GEOG 457. Geography of South America (3). Examination of the physical and cultural geography, human-environment interactions, landscapes, and regional diversity of South America.

GEOG 458. Geography of the West (3). Prerequisite, permission of instructor. Selected advanced topics in geography. Emphasis on the western hemisphere.

GEOG 459. Geography Field Experience (1-12). Prerequisite, permission of instructor and Department Chair. Individual or group off-campus experience in the field study of geographical phenomena. May be taken more than once by permission of department chair.

GEOG 460. Geography Teaching Experience (1-3). Prerequisites, 15 credits in Geography and permission of instructor. Experience in classroom, laboratory, and/or field teaching. May be repeated for credit with permission of department chair.

GEOG 461. Prerequisites, GEOG 304 or permission of instructor. Geographic basis of international trade with special emphasis on the Pacific Northwest. Field trips required.

GEOG 462. Soils (5). Prerequisite: GEOG 107 or instructor permission. Focus on properties, factors, processes and classifications of Earth's soils, past and present. Four hours of lecture and four hours of field/laboratory per week. Same as GEOG 361, may not receive credit for both.

GEOG 463. Advanced Pedology (2-4). Prerequisites, GEOG 361 or permission of instructor. Selected advanced topics in pedology. Topics may include Quaternary soils and composting. May be repeated to a maximum of 8 credits.

GEOG 464. Advanced Climatology (2-4). Prerequisites, GEOG 388 or permission of instructor. Selected advanced topics in climatology. Topics may include bioclimatology, Quaternary climate change, future climate change and microclimatology.

GEOG 465. Advanced Pedology (2-4). Prerequisites, GEOG 361 or permission of instructor. Selected advanced topics in pedology. Topics may include Quaternary soils and composting. May be repeated to a maximum of 8 credits.

GEOG 466. Advanced Pedology (2-4). Prerequisites, GEOG 361 or permission of instructor. Selected advanced topics in pedology. Topics may include Quaternary soils and composting. May be repeated to a maximum of 8 credits.

GEOG 467. Advanced Pedology (2-4). Prerequisites, GEOG 361 or permission of instructor. Selected advanced topics in pedology. Topics may include Quaternary soils and composting. May be repeated to a maximum of 8 credits.

GEOG 468. Hydrology (5). Provides a comprehensive introduction to both the global and local hydrologic cycle. Covers constituent processes, their measurements and quantitative relationships, plus basic water quality parameters. Same as GEOG 382.

GEOG 469. Advanced Hydrology (2-4). Prerequisites, GEOG 382 or permission of instructor. Selected advanced topics in hydrology. May be repeated for credit with permission of department chair.

GEOG 470. Advanced Hydrology (2-4). Prerequisites, GEOG 382 or permission of instructor. Selected advanced topics in hydrology. May be repeated for credit with permission of department chair.

GEOG 471. Advanced Hydrology (2-4). Prerequisites, GEOG 382 or permission of instructor. Selected advanced topics in hydrology. May be repeated for credit with permission of department chair.

GEOG 472. Advanced Hydrology (2-4). Prerequisites, GEOG 382 or permission of instructor. Selected advanced topics in hydrology. May be repeated for credit with permission of department chair.

GEOG 473. Advanced Hydrology (2-4). Prerequisites, GEOG 382 or permission of instructor. Selected advanced topics in hydrology. May be repeated for credit with permission of department chair.

GEOG 474. Advanced Hydrology (2-4). Prerequisites, GEOG 382 or permission of instructor. Selected advanced topics in hydrology. May be repeated for credit with permission of department chair.

GEOG 475. Advanced Hydrology (2-4). Prerequisites, GEOG 382 or permission of instructor. Selected advanced topics in hydrology. May be repeated for credit with permission of department chair.

GEOG 476. Advanced Hydrology (2-4). Prerequisites, GEOG 382 or permission of instructor. Selected advanced topics in hydrology. May be repeated for credit with permission of department chair.
**General Departmental Information**

Geosciences encompass the scientific study of the origin and evolution of the Earth. Energy, mineral and water resources, geologic hazards, pollution of natural waters, and earthquake prediction are just a few of the pressing societal concerns that are addressed by geoscientists. The Geological Sciences program has two major parts: (1) solid-earth geosciences, such as rocks, minerals, deformation and tectonic evolution of the earth’s crust, and (2) earth processes over the last 10,000 years, such as active faulting, environmental geochemistry, hydrogeology and water resources, geologic hazards, seismology, surface processes, and volcanology. Field, laboratory, and computer skills are essential to the study of the Geological Sciences. Research in the geosciences is active and varied, with faculty and students interacting closely. Bachelor of Science and Bachelor of Arts degrees are offered in geology. A Bachelor of Arts in Earth Sciences is also offered, and is intended for future school teachers. Minors in Geology and Earth Sciences are also available to supplement careers in other fields.

Students who declare a major in geology must register with the department and work out a specific program of studies with the chairperson or an assigned advisor. Course programs can be tailored to the student’s needs and interests with the aid of an academic advisor. Other course requirements may be modified in cases where past performance indicates superior ability. Students must be evaluated for math placement upon declaration of the major with the goal of establishing proficiency at the MATH 163.2 level early in the major program.

**Bachelor of Science Major**

The B.S. curriculum in geosciences prepares students for careers in solid-earth geosciences and environmental geology. This program assures adequate preparation in the basic physical sciences and breadth in the geosciences, so that students are well prepared for graduate school and have flexibility in career decisions. The B.S. requires courses in the Geological Sciences and additional courses in mathematics, chemistry, and physics. The B.S. degree is also appropriate for students who wish to continue in other quantitative scientific fields or directions (e.g., medical school).

**Bachelor of Arts Major**

The B.A. degree is designed for students planning professional careers in the geosciences and for those preparing to incorporate geosciences into broader careers such as teaching, resource management, environmental planning, business, or law. The B.A. degree may be an appropriate prerequisite for some graduate programs, but a B.S. is generally recommended for those in the Geological Sciences. Election of this major will allow students to choose supporting courses from disciplines such as computer science, mathematics, and physics or other physical or biological sciences, or from disciplines as diverse as anthropology, environmental studies, or geography.

**Bachelor of Science and Bachelor of Arts**

**Geology Major (3650)**

**Required Core Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL 145, Physical Geology OR</td>
<td></td>
</tr>
<tr>
<td>GEOL 150, Geology of National Parks</td>
<td>4</td>
</tr>
<tr>
<td>GEOL 145.1, Laboratory, Physical Geology Laboratory</td>
<td></td>
</tr>
<tr>
<td>GEOL 200, Earth Evolution and Global Change</td>
<td>5</td>
</tr>
<tr>
<td>GEOL 210, Introduction to Geologic Field Methods</td>
<td></td>
</tr>
<tr>
<td>GEOL 320, Rocks and Minerals</td>
<td>5</td>
</tr>
<tr>
<td>GEOL 346, Mineralogy</td>
<td>5</td>
</tr>
<tr>
<td>GEOL 360, Structural Geology</td>
<td>5</td>
</tr>
<tr>
<td>GEOL 370, Stratigraphy</td>
<td>5</td>
</tr>
<tr>
<td>GEOL 425, Geophysics OR</td>
<td></td>
</tr>
<tr>
<td>GEOL 480, Geochemistry</td>
<td>4</td>
</tr>
<tr>
<td>GEOL 489, Geologic Field Methods</td>
<td>6-12</td>
</tr>
<tr>
<td>GEOL 487, End of Major Review</td>
<td>1</td>
</tr>
</tbody>
</table>

Electives selected from the following
(take at least one with an asterisk): 

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL 304, Plate Tectonics</td>
<td></td>
</tr>
<tr>
<td>GEOL 377.1 and 377.2, Regional Natural History</td>
<td></td>
</tr>
<tr>
<td>GEOL 380, Environmental Geology and Natural Hazards</td>
<td>4*</td>
</tr>
<tr>
<td>GEOL 386, Geomorphology</td>
<td></td>
</tr>
<tr>
<td>GEOL 415, Earthquake Geology and Neotectonics</td>
<td></td>
</tr>
<tr>
<td>GEOL 420, Tectonics of Western North America</td>
<td></td>
</tr>
<tr>
<td>GEOL 425, Environmental Geochemistry</td>
<td></td>
</tr>
<tr>
<td>GEOL 445, Hydrogeology</td>
<td>5*</td>
</tr>
<tr>
<td>GEOL 452, Geophysics</td>
<td></td>
</tr>
<tr>
<td>GEOL 453, Seismology</td>
<td></td>
</tr>
<tr>
<td>GEOL 455, Applied Geophysics</td>
<td></td>
</tr>
<tr>
<td>GEOL 474, Quaternary Geology</td>
<td></td>
</tr>
<tr>
<td>GEOL 475, Petrography and Petrogenesis</td>
<td></td>
</tr>
<tr>
<td>GEOL 476, Sedimentary Petrology</td>
<td></td>
</tr>
<tr>
<td>GEOL 478, Volcanology</td>
<td></td>
</tr>
<tr>
<td>GEOL 480, Geochemistry</td>
<td></td>
</tr>
<tr>
<td>GEOL 481, Advanced Mineralogy</td>
<td></td>
</tr>
<tr>
<td>GEOL 483, Isotopes as Tracers of Geological Processes</td>
<td>5</td>
</tr>
<tr>
<td>GEOL 488, Senior Colloquium in Geology</td>
<td></td>
</tr>
</tbody>
</table>

**Geology Core Total** 62-71

**Allied science requirements for Bachelor of Science degree**

A **one year** series is required in Math or Chemistry and **two quarters** is required of each of the other two subjects:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 181 and 181.1</td>
<td>5</td>
</tr>
<tr>
<td>CHEM 182 and 182.1</td>
<td>5</td>
</tr>
<tr>
<td>PHYS 181, 181.1 and PHYS 182, 182.1</td>
<td>10-14</td>
</tr>
<tr>
<td>PHYS 181, 181.1 and PHYS 182, 182.1, PHYS 111, 111.1, 112.1, 113, 113.1 may be substituted for 181,181.1 and 182,182.1</td>
<td>10-15</td>
</tr>
<tr>
<td>MATH 172.1 and MATH 172.2 required, choose between 265, 272.1, or 311…10-15</td>
<td>10-15</td>
</tr>
</tbody>
</table>

**Allied Science Total** 34-35

**Bachelor of Science Total** 96-106

**Allied science requirements for Bachelor of Arts degree**

Select from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 111, 111.1, 112, 112.1, 113, 113.1, 181, 181.1, 182, 182.1, 183, 183.1</td>
<td>10</td>
</tr>
<tr>
<td>MATH 172.1, 172.2, 311</td>
<td></td>
</tr>
<tr>
<td>CHEM 182 and 182.1</td>
<td></td>
</tr>
</tbody>
</table>

**Allied Science Total** 15

**Bachelor of Arts Total** 77-86

**Geology Minor (3650)**

**Required Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL 145, Physical Geology OR</td>
<td></td>
</tr>
<tr>
<td>GEOL 150, Geology of National Parks</td>
<td>4</td>
</tr>
<tr>
<td>GEOL 145.1, Physical Geology Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>GEOL 200, Earth Evolution and Global Change</td>
<td>5</td>
</tr>
<tr>
<td>GEOL 210, Introduction to Geologic Field Methods</td>
<td></td>
</tr>
<tr>
<td>GEOL 320, Rocks and Minerals</td>
<td>5</td>
</tr>
<tr>
<td>GEOL 346, Mineralogy</td>
<td>5</td>
</tr>
<tr>
<td>GEOL 360, Structural Geology</td>
<td>5</td>
</tr>
<tr>
<td>GEOL 370, Stratigraphy</td>
<td>5</td>
</tr>
<tr>
<td>GEOL 452, Geophysics</td>
<td></td>
</tr>
<tr>
<td>GEOL 480, Geochemistry</td>
<td></td>
</tr>
<tr>
<td>GEOL 489, Geologic Field Methods</td>
<td>6-12</td>
</tr>
<tr>
<td>GEOL 487, End of Major Review</td>
<td>1</td>
</tr>
</tbody>
</table>

**Department approved Geochemistry electives** 3-5

**Total** 32-34

**Bachelor of Arts**

**Earth Science Major (2600)**

This major satisfies the Primary endorsement for Earth Science. This major is for those who intend to teach in secondary schools. It does not constitute preparation for a career in geology. Senior and junior high school teachers may wish to accompany this major with another endorsable area to obtain certification. Students who declare a major in Earth Science must work
with advisors in the Departments of Geological Sciences and Education to develop a program of study.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL 145, Physical Geology</td>
<td>OR</td>
</tr>
<tr>
<td>GEOL 150, Geology of National Parks</td>
<td>4</td>
</tr>
<tr>
<td>GEOL 145.1, Physical Geology Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>GEOL 200, Earth Evolution and Global Change</td>
<td>5</td>
</tr>
<tr>
<td>GEOL 210, Introduction to Geological Field Methods</td>
<td>4</td>
</tr>
<tr>
<td>GEOL 320, Rocks and Minerals</td>
<td>5</td>
</tr>
<tr>
<td>GEOL 350, Northwest Geology</td>
<td>4</td>
</tr>
<tr>
<td>GEOL 370, Stratigraphy</td>
<td>5</td>
</tr>
<tr>
<td>GEOL 380, Environmental Geology</td>
<td>4</td>
</tr>
<tr>
<td>GEOL 386, Geomorphology</td>
<td>5</td>
</tr>
<tr>
<td>GEOL 394, Laboratory Experience in Teaching Earth Science</td>
<td>2</td>
</tr>
<tr>
<td>MATH 163.1, Pre-Calculus Mathematics</td>
<td>5</td>
</tr>
<tr>
<td>CHEM 111, OR CHEM 181, 181.1, General Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>GEOG 388, Climatology</td>
<td>5</td>
</tr>
<tr>
<td>PHYS 101, 101.1, Astronomy</td>
<td>5</td>
</tr>
<tr>
<td>SCED 324, Science Education in Secondary Schools</td>
<td>4</td>
</tr>
<tr>
<td>SCED 495, Research</td>
<td>1-3</td>
</tr>
</tbody>
</table>

**Total** 65-67

**Earth Science Minor (2600)**

This minor is an Earth Science supporting endorsement.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL 145, Physical Geology</td>
<td>OR</td>
</tr>
<tr>
<td>GEOL 150, Geology of National Parks</td>
<td>4</td>
</tr>
<tr>
<td>GEOL 145.1, Physical Geology Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>GEOL 200, Earth Evolution and Global Change</td>
<td>5</td>
</tr>
<tr>
<td>GEOL 350, Northwest Geology</td>
<td>4</td>
</tr>
<tr>
<td>GEOL 380, Environmental Geology and Natural Hazards</td>
<td>4</td>
</tr>
<tr>
<td>GEOL 394, Laboratory Experience in Teaching Earth Science</td>
<td>2</td>
</tr>
<tr>
<td>GEOG 388, Climatology</td>
<td>5</td>
</tr>
<tr>
<td>PHYS 101, 101.1, Astronomy</td>
<td>5</td>
</tr>
<tr>
<td>SCED 324, Science Education in Secondary Schools</td>
<td>4</td>
</tr>
</tbody>
</table>

**Total** 34

**Geology Courses**

**GEOL 145. Physical Geology (4).** An introduction emphasizing the origin and nature of the common rocks, and the continually changing features of the earth's crust. Four lectures per week. GEOL 145.1 must be taken concurrently. Students may not receive credit on both GEOL 145 and GEOL 150.

**GEOL 145.1. Physical Geology Laboratory (1).** Prerequisite, concurrent enrollment in GEOL 145 or 150. Application of map study to geological processes and land forms, identification of rocks and minerals. Two hours laboratory per week. May require field trips.

**GEOL 150. Geology of National Parks (4).** Fundamentals of geology applied to selected national parks in North America. Four lectures per week. GEOL 145.1 must be taken concurrently. Students may not receive credit in both GEOL 150 and GEOL 145.

**GEOL 170. Volcanoes, Earthquakes, and Civilization (5).** The role of natural geologic processes such as volcanoes, earthquakes, and climate change in shaping the earth, the environment and human civilization. Four hour lecture per week plus required field trips.

**GEOL 180. Introduction to Environmental Geology (5).** Interaction between human activity and geological processes. Scientific discussion of global environmental issues such as ozone depletion, climate change, geologic hazards, natural resources and water use.

**GEOL 188. Field Trips - Geologic Field Studies (1-3).** Travel to field locations and study of specific geologic phenomena. May be repeated twice for trips to areas of significantly different geologic content. Grade will be S or U. Extra fees required.

**GEOL 200. Earth Evolution and Global Change (5).** Prerequisites, GEOL 145 or GEOL 150 and GEOL 145.1. Evolution of Earth, plate tectonics, life, and climate over the last 4.5 billion years. Three lectures, four hours laboratory per week. Formerly GEOL 146. Students may not receive credit for both.

**GEOL 210. Introduction to Geologic Field Methods (4).** Prerequisites, GEOL 145 or GEOL 150 and GEOL 145.1. Introduction to the basic methods of geologic field investigation. Emphasis on constructing geologic maps. The class will consist of two weeks in the field, primarily along the eastern front of the Sierra Nevada, California, or other regions in the western United States. The class will be offered during the summer break or as arranged by the instructor. Students will register for the class during the immediately subsequent academic year quarter. Extra fees required.

**GEOL 295. Sophomore Research (1-6).** By permission only. May be repeated for up to 12 credits.

**GEOL 304. Plate Tectonics (5).** Prerequisites, GEOL 145 or GEOL 150 and GEOL 145.1, GEOL 200. Solid-earth processes, in a plate-tectonic framework, which integrates global marine and terrestrial geologic and geophysical data. Three hours lecture per week plus three hours of lab.

**GEOL 308. Cascade Volcanoes (3).** Study of present and past volcanic activity in the Pacific Northwest, related volcanic deposits, and potential volcanic hazards.

**GEOL 320. Rocks and Minerals (5).** Prerequisites, GEOL 145 or GEOL 150, and GEOL 145.1 and one Chemistry course (may be taken concurrently), or permission of instructor. Identification, classification, and evolution of common igneous and metamorphic rocks. Includes recognition and interpretation of rocks in typical field exposures. Three hours lecture and three hours laboratory per week plus required field trips.

**GEOL 346. Mineralogy (5).** Prerequisites, GEOL 320, or permission of instructor. Physical, chemical and crystallographic properties, and occurrence of minerals. Examination and description of hand specimens and crystal models. Theory and practice in optical mineralogy and X-ray diffraction. Four lectures and three hours laboratory per week.

**GEOL 350. Northwest Geology (4).** Prerequisites, GEOL 145 or 150 and 145. Fundamentals of geology applied to the Pacific Northwest. Specific case studies may include student presentations. Course designed for students planning to teach in Washington public schools. Four hours per week.

**GEOL 360. Structural Geology (5).** Prerequisites, GEOL 145.1 and GEOL 200. Introduction to the basic principles of rock deformation with an emphasis on the geometry, styles, and mechanics of faulting and folding and the stereographic projection and analysis of geologic structures. Three lectures and four hours laboratory per week. Field trips required.

**GEOL 370. Stratigraphy (5).** Prerequisite, GEOL 200. Origin of sedimentary rocks, physical processes and stratigraphic principles. Identification of sedimentary rocks in hand sample. Three hours lecture and four hours laboratory per week. Three day field trip required.

**GEOL 377.1. Regional Natural History (2).** Prerequisite, permission of instructor. Classroom study of the natural history of a selected region as preparation for one-to-two week field trip. Emphasis will be on developing background skills to undertake a field exploration over the quarter (winter, spring, summer) break. Subtitles will identify the selected geological region (e.g. Baja California Natural History). May be repeated for credit under a different subtitle (region). Same as BIOL 377.1.

**GEOL 377.2. Regional Natural History (3).** Prerequisite, GEOL 377.1, permission of instructor. Special fees required. Administered through Continuing Education. One-to-two week field trip to
explore biological and physical patterns and processes in selected regions of North America. Emphasis will be on recording field observations, keeping a field journal, field study techniques, and performing investigations chosen and developed by student participants. Subtitles will identify the region studied. May be repeated for credit under a different subtitle. Same as BIOL 377.2.

GEOL 380. Environmental Geology and Natural Hazards (4). Prerequisites, GEOL 145 or GEOL 150 and GEOL 145.1 or permission of instructor. Examine interactions between humans and their environment from a geologic perspective, evaluating problems such as geologic hazards and the use of earth’s resources. Four lectures per week and required field trips. Students may not receive credit for both GEOG 386 and GEOL 386.

GEOL 386. Geomorphology (5). Prerequisites, GEOL 145 or GEOL 150 and GEOL 145.1 or GEOG 107 or permission. Descriptive and interpretive examination of the Earth’s landforms. Four lectures and three hours laboratory or field trips. Students may not receive credit for both GEOG 386 and GEOL 386.

GEOL 388. Field Trips (1-3). Prerequisite, permission of instructor. Intensive study of geological phenomena on field trips up to two weeks in length. Three days field work for each credit. Course may be repeated for areas of significantly different geographic content. Grade will be S or U. Extra fees required.

GEOL 393. Lab Experience Teaching Physical Geology (1). Prerequisite, permission of instructor. May be taken twice for credit. Grade will be S or U.

GEOL 394. Laboratory Experience Teaching Earth Science (2). Prerequisites, GEOL 145 or 150 and 145.1 and permission of instructor. Course designed for future Earth Science teachers in secondary schools. Assist teaching one laboratory section of GEOL 145.1 and discuss laboratory safety methods. Grade will be S or U.

GEOL 395. Junior Research (1-6). By permission only. May be repeated for up to 12 credits.

GEOL 396. Individual Study (1-6). Prerequisite, permission of instructor.

GEOL 398. Special Topics (1-6).

GEOL 404. Intermediate GIS (4). Prerequisite, GEOG 303/403 or permission. Applied concepts, principles, and operation of fundamental GIS applications, including raster-vector data models, topology, digitizing, and various analytical techniques such as overlay, buffers, and Boolean queries. Lecture and practical applications. Same as ANTH 404 and GEOG 404. Formerly ANTH/GEOG/GEOL 385.

GEOL 415. Earthquake Geology and Neotectonics (5). Prerequisites, GEOL 145 or 150 and 145.1, and permission. Geomorphology, stratigraphy, and structural geology applied to the study of active faults and folds in a variety of tectonic settings. Relation of seismicity and geodetic measurements to geologic structure and active tectonic processes, including case studies of selected earthquakes. Three hours lecture and four hours laboratory per week.

GEOL 417. Advanced GIS (4). Prerequisite, GEOG 404, ANTH 404, or GEOL 404 or permission of instructor. Advanced GIS principles, techniques, analysis, and application. Lecture and practical hands-on experience. Applied experience using GIS software. Same as ANTH 417 and GEOG 417.

GEOL 420. Tectonic evolution of western North America (4). Prerequisites, GEOL 145 or 150 and 145.1, GEOL 200, GEOL 360. Overview of the tectonic, structural, and stratigraphic evolution of western North America Cordillera, from the Proterozoic to the present day. Four lectures per week. Same as GEOL 520. Students may not receive credit for both.

GEOL 425. Environmental Geochemistry (5). Prerequisite, CHEM 181, 181.1, 182 and 182.1, or permission of instructor. Global geochemical cycles, influences of rocks and soils on water chemistry, behavior of isotopes and trace elements. Includes class project studying local environmental geochemistry topic. Three lectures plus one 3-hour lab per week. Same as GEOL 525. Students may not receive credit for both.

GEOL 430. Remote Sensing (5). Prerequisites, GEOG 410 or GEOL 210, or permission of instructor. Principles of acquisition, analysis, and use of remotely sensed data (LANDSAT, SPOT, IKONOS, etc.). Applied experience using image processing software. Three hours lecture and three hours laboratory per week. Same as GEOG 430 and GEOL 530. Students may not receive credit for more than one course.

GEOL 432. Field Geodetic Techniques (3). Training in field geodetic techniques, including scientific application of two or more precision surveying instruments: geodetic GPS, differential GPS, and electronic distance meter. Three hours a week and field project, or one-week field course.

GEOL 445. Hydrogeology (5). Prerequisites, GEOL 145 or GEOL 150 and GEOL 145.1 and MATH 163.2, or permission of instructor. Study of the occurrence and movement of ground water using geology, hydrology and geochemistry, with an emphasis on practical problems in water management. Three hours lecture and three hours laboratory per week. Same as GEOL 545. Student may not receive credit for both.

GEOL 452. Geophysics (4). Prerequisites, MATH 163.2 or permission of instructor. Basic elasticity theory, gravity and geoid analysis. Terrestrial heat flow, Seismology. Three hours lecture per week plus four hours of scientific computing lab. No prior Unix experience required. Formerly GEOL 485; students may not receive credit for both.

GEOL 453. Seismology (5). Prerequisites, MATH 172.2 or permission of instructor. Elasticity theory, the wave equation, ray theory, diffraction, waveform modeling, travel time inversion. Data analysis. Three hours lecture per week plus four hours of scientific computing lab. Offered alternate years. Same as GEOL 553. Students may not receive credit for both.

GEOL 454. Introduction to Scientific Computing (5). Introduction to numerical computation and simulation of problems relevant to Earth science. Three hours of lecture and three hours of lab. No prior Unix experience necessary. Same as GEOL 554. Student may not receive credit for both.

GEOL 455. Applied Geophysics (4). Prerequisites, MATH 172.1 and PHYS 181. Background, principles, and techniques of geophysics as applied to geologic, environmental, and exploration problems. Three hours lecture plus two hours of laboratory or field work per week. Required field trips. Same as GEOL 555. Students may not receive credit for both.

GEOL 474. Quaternary Geology (4). Prerequisite, GEOL 386 or permission. Study of geological processes affecting Earth’s most recent history. Course emphasizes Quaternary environmental change, glacial epochs, paleoclimatic methods, and dating techniques. Same as GEOL 574. Student may not receive credit for both.

GEOL 475. Petrography and Petrogenesis (5). Prerequisites, GEOL 346. Petrogenetic, hand specimen, and thin section study of igneous, metamorphic, or sedimentary rocks. Three hours lecture and four hours laboratory or field work per week plus required field trips. Same as GEOL 575. Students may not receive credit for both. Offered in alternate years.

GEOL 476. Sedimentary Petrography (5). Prerequisites, GEOL 200 and 346. Analysis and interpretation of depositional systems. Study of classic and carbonate rocks in hand sample, thin section, and in the field. Three hours lecture plus four hours laboratory per week. Same as GEOL 576. Students may not receive credit for both. Offered in alternate years.
GEOL 478. Volcanology (5). Prerequisites, GEOL 346 or consent of instructor. Study of volcanoes and associated deposits, styles of eruption, physical and chemical controls on eruption mechanisms, and volcanic hazards and hazard mitigation. Three hours lecture and four hours laboratory per week plus required field trips. Same as GEOL 578. Students may not receive credit for both. Offered in alternate years.

GEOL 480. Geochemistry (4). Prerequisites, GEOL 320, CHEM 182, CHEM 182.1, and MATH 163.2, or permission of instructor. An introduction to the branches of geochemistry, including the origin of elements, age dating, isotope geochemistry, and petrochemistry. Four hours lecture per week plus required field trips.

GEOL 481. Advanced Mineralogy (4). Prerequisites, GEOL 346 and CHEM 182, or permission of instructor. Crystal chemistry of rock-forming minerals. Theory and practice of determinative techniques such as the polarizing microscope, x-ray diffraction, and electron microprobe. Three hours lecture and three hours laboratory per week. Offered in alternate years. Same as GEOL 581. Student may not receive credit for both.

GEOL 483 Isotopes as Tracers of Geological Processes (3). Prerequisites, CHEM 182, CHEM 182.1 and MATH 163.2 or permission of instructor. Covers principles of isotope geochemistry and applications to studies of geological processes such as hydrologic cycling, volcanic petrogenesis, and climate change. Three hours lecture per week plus required laboratory work and field trips. Same as GEOL 583. Students may not receive credit for both. Offered in alternate years.

GEOL 487. End of Major Review Seminar (1). Prerequisite, students must be seniors intending to graduate during the current year. Students must be familiar with the language of geology and possess certain basic geologic skills. Coordinates student participation in program assessment activities and provides a structured avenue for student input into program goals. Grade will be S or U.

GEOL 488. Senior Colloquium in Geology (4). Prerequisite, senior standing or permission of instructor. Lecture, reading, and presentation of various topics in geology. Three hours lecture plus three hours of discussion per week.

GEOL 489. Geologic Field Methods (6-12). Prerequisites, GEOL 145 or GEOL 150 and GEOG 360. Emphasis is placed on observation and recording of lithologic and structural features, measurement of stratigraphic and structural sections, applications of various survey methods, and plotting geologic data on topographic and aerial photographs in the field. The class will be offered during summer or winter break, or as arranged by the instructor. Credits will be carried in concurrent or immediately subsequent academic year quarter. Extra fees required.

GEOL 490. Cooperative Education (1-12). An individualized contracted field experience with business, industry, government, or social service agencies. This contractual arrangement involves a student learning plan, cooperating employer supervision, and faculty coordination. Prior approval required. May be repeated. Grade will be S or U.

GEOL 491. Workshop (1-6).

GEOL 492. Applied GIS Project (2-6). Prerequisite, ANTH/GEOG 215 and permission of instructor. GIS projects in Anthropology, Biology, Geography, Geology, and Resource Management. May be repeated by permission of department chair. Same as ANTH 492 and GEOG 492.

GEOL 493. Experience in Teaching Upper Level Geology (2). Prerequisite, permission of instructor. Assisting in instruction in upper level Geology major lab or field courses. May be repeated once for the same course, and up to a total of four times. Grade will be S or U.

GEOL 495. Senior Research (1-6). By permission only. May be repeated up to 12 credits.

GEOL 496. Individual Study (1-6). Prerequisite, permission of instructor.

GEOL 498. Special Topics (1-6).

GEOL 499. Seminar (1-5).

**GERONTOLOGY**

Faculty
Director: Jeff Penick
Psych Bldg 461

Faculty Associates
Joan Amby, Assistant Professor of Family Studies
Melody Madlem, Assistant Professor of Health Education & Leisure Services
Phillip W. Mattocks, Adjunct Professor of Biological Sciences
Jeffrey M. Penick, Assistant Professor of Psychology
Elizabeth M. Street, Professor of Psychology

General Departmental Information
The Department of Psychology coordinates the interdisciplinary Gerontology major leading to the Bachelor of Science degree as well as a Gerontology minor for students majoring in other fields of study. The major, which includes both theoretical and practical components, is designed for students who wish to pursue a career in service to older people or who wish to learn more about this increasingly important segment of the population. Field experience in public or private agencies concerned with the elderly is a part of the major.

The major prepares students for a variety of professional and para-professional employment opportunities in community education, government agencies, senior centers, nursing homes, retirement villages, hospitals, personnel and business administration, and retirement programs. Prerequisites for the major: for FCSF 435, prerequisite FCSF 234 or permission; for FCSN 441, prerequisite FCSN 245; for PSY 452, PSY 313 or 314 recommended.

**Bachelor of Science**

Gerontology Major 46 credits (3715)
Gerontology Major 60 credits (3720)

Students may choose either a 46 credit major (3715) or a 60 credit major (3720).

**Required Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 201, Human Physiology</td>
<td>5</td>
</tr>
<tr>
<td>PSY 300, Research Methods in Psychology</td>
<td>OR SOC 612, Methods of Social Research</td>
</tr>
<tr>
<td>SOC 325, Aging</td>
<td>4</td>
</tr>
<tr>
<td>HED 412, Health Aspects of Aging</td>
<td>3</td>
</tr>
<tr>
<td>FCSF 435, Family Gerontology</td>
<td>4</td>
</tr>
<tr>
<td>PSY 452, Adult Development and Aging</td>
<td>4</td>
</tr>
<tr>
<td>PSY 454, The Helping Interview</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 496, Biology of Aging</td>
<td>3</td>
</tr>
<tr>
<td>GERO 490, Field Experience</td>
<td>12</td>
</tr>
<tr>
<td>Department approved Electives</td>
<td>3 or 17</td>
</tr>
<tr>
<td>SOC 320, Death and Dying</td>
<td>5</td>
</tr>
<tr>
<td>SOC 327, Sociology of Health</td>
<td>4</td>
</tr>
<tr>
<td>SOC 330, Sociology of Leisure</td>
<td>5</td>
</tr>
<tr>
<td>SOC 373, Social Groups</td>
<td>5</td>
</tr>
<tr>
<td>POSC 320, Public Administration</td>
<td>5</td>
</tr>
<tr>
<td>POSC 325, Introduction to Public Policy</td>
<td>3</td>
</tr>
<tr>
<td>PSY 455, Behavioral Medicine and Health Psychology</td>
<td>4</td>
</tr>
<tr>
<td>FCSN 441, Nutrition and Aging</td>
<td>3</td>
</tr>
<tr>
<td>ADMG 371, Administrative Management</td>
<td>4</td>
</tr>
<tr>
<td>HED 410, Community Health</td>
<td>3</td>
</tr>
<tr>
<td>GERO 496, Individual Studies</td>
<td>1-6</td>
</tr>
</tbody>
</table>

Total 46 or 60
To complete the 46 credit major, you must complete an additional major or a minor in one of the following areas: Business Administration, Community Health Education, Family and Consumer Sciences (concentration in Family Studies and/or Nutrition only), Recreation and Tourism, Psychology, Sociology.

Gerontology Minor (3720)

Required Courses Credits
PSY 452, Adult Development and Aging 4
SOC 325, Aging 4
FCSF 435, Family Gerontology 4

Department approved electives from the following:...

Required Courses

Health, Human Performance and Recreation

Faculty
Chair: Robert McGowan

Physical Education Building 107

Professors
Kenneth Briggs, Health Education - Pedagogy,
Wellness, Substance Abuse
Leo D'Acquisto, Exercise Science,
Biomechanics, Exercise Science,
Graphics Melody Madlem, Physical Education - Health Education
Gary Frederick, Physical Education - Administration
Stephen C. Jeffries, Physical Education - Pedagogy
Andrew Jenkins, Health Education - Community Health, Health Promotion
Vincent Nethery, Exercise Science
William Vance, Recreation Management

Associate Professors
Melody Madlem, Physical Education - Health Education
Barbara Masberg, Recreation and Tourism Management
Kirk E. Mathias, Physical Education, Pedagogy

Assistant Professors
Carolyn Booth, Physical Education - Paramedics
Tim Burnham, Exercise Science
Dorothy Chase - Recreation and Tourism Management
Harry Papadopoulos, Exercise Science
Thense Young, Dance
Mark Perez, Health Education

Emeritus Professor
Walter Artt, Physical Education - Computer Applications

General Departmental Information

The Department of Health, Human Performance and Recreation has many programs which lead to the Bachelor of Science or Bachelor of Arts degree. In addition to professional preparation in exercise science, school and community health, physical education, paramedic studies, and recreation and tourism management, the Department also encourages students to develop skills in physical activities that will enable them to promote their personal fitness, maintain health, build morale, and establish an interest in future recreational activities.

Students majoring in Physical Education, Health Education and Leisure Services can prepare themselves for a variety of career possibilities.

Health, Human Performance and Recreation Programs

Bachelor of Science

Physical Education (6100)

Physical Education: Teaching K-12
Major (6101)

Health Fitness Endorsement

Program Director: Stephen C. Jeffries

This major (6101) satisfies the Primary PhD endorsement for Health/Fitness.

Admission Requirements

Students may enter the Physical Education major in either the fall or winter quarters. Fall quarter admittance is recommended. Graduating Students may receive an endorsement in Health & Fitness. Students complete the Physical Education major as part of a cohort group. And students considering this major should contact the PE Program Director before beginning the program. The following additional requirements also apply:

1. Classes in this major are organized over 6-quarters and must be taken in sequence.
2. Students who fail any classes that are prerequisites for others will not be permitted to continue in the major.
3. The teaching major (6101) qualifies students for teaching, supervising and coordinating physical education and health education in K-12 public schools.
4. Students taking this major who plan to teach in Washington State public schools are required to complete the professional education program requirements offered through the Curriculum and Supervision department.
5. Students may also graduate with a non-teaching B.S. degree in Physical Education (6100).
6. All students must complete a professional portfolio prior to beginning student teaching. Non-teaching majors must complete the portfolio prior to graduation.
7. Professional dress requirements apply to many classes in this major. Students must comply with these requirements to participate in the program.

See the Health, Human Performance and Recreation Program Web site for more information: http://www.cwu.edu/~pehls/pe.htm

For the major application procedure, contact the Health, Human Performance and Recreation Program Director.

Required Courses Credits
PE 245, First Aid.......................... 3
PE 280, Professional Foundations ........... 3
PE 340.1, PE Teaching Practicum I........... 1
PE 340.2, PE Teaching Practicum II.......... 2
PE 340.3, PE Teaching Practicum III........ 2
PE 340.4, PE Teaching Practicum IV........ 3
PE 341.1 Pedagogical Foundations of PE I...3
PE 341.2 Pedagogical Foundations of PE II...3
PE 341.3 Pedagogical Foundations of PE III...3
PE 342.1, Movement Analysis and Application I...4
PE 342.2, Movement Analysis and Application II...4
PE 342.3, Movement Analysis and Application III...6
PE 342.4, Movement Analysis and Application IV...4
PE 230, Anatomical Kinesiology...5
PE 351, Scientific Foundations of Health and Fitness...5
PE 463, Pediatric Issues in Exercise Science...5
HED 101, Health Essentials...4
HED 210, Drugs and Health...3
HED 230, Foundations of Health Education...3
HED 324, Noninfectious Disease...4
HED 345, School Health Curriculum Materials...3
HED 422, Methods for Health Promotion...4
HED 445, Health Education Professionalism...1

Total 78

Bachelor of Science
Exercise Science Major (3290)

Program Director: Vincent M. Nethery, Ph.D.

Program Advisors:
Dr. Leo D’Acquisto
Dr. Tim Burnham
Dr. Harry Papadopoulos

The Exercise Science major prepares students to meet the theoretical and practical requirements necessary to evaluate and plan exercise programs for diverse populations, and to pursue certifications necessary for entry into, and advancement within, various health and fitness employment settings. Exercise Science major graduates work in adult and corporate fitness programs of business, industry, public agencies, and schools. In addition, there are also career opportunities in sectors including fitness clubs, cardiac rehabilitation programs, wellness centers, obesity clinics, and physical/occupational therapy clinics.

Admission Requirements
Admission to the Exercise Science major is selective. Students wishing to attain full admission must meet the following requirements:
Successful completion of the following courses: PE 245, PE 250, PE 254.
Students must be admitted to the Exercise Science major prior to enrolling in 300 or above level courses in the Exercise Science major. Students must receive a grade of C (2.0) or better in all of the major courses.

For the major application procedure, contact the Exercise Science program director.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT 101, Computer Applications</td>
</tr>
<tr>
<td>FCSN 245, Basic Nutrition</td>
</tr>
<tr>
<td>PE 245, First Aid</td>
</tr>
<tr>
<td>PE 250, Anatomical Kinesiology</td>
</tr>
<tr>
<td>PE 254, Foundations of Fitness</td>
</tr>
<tr>
<td>HED 324, Noninfectious Disease</td>
</tr>
<tr>
<td>PE 348, Prevention and Treatment of Athletic Injuries</td>
</tr>
<tr>
<td>PE 351, Scientific Foundations of Health and Fitness</td>
</tr>
<tr>
<td>COM 345, Business and Professional Speaking OR COM 250, Public Speaking/Practice and Criticism</td>
</tr>
<tr>
<td>PE 450, Physiology of Exercise</td>
</tr>
<tr>
<td>PE 318, Aerobic Fitness</td>
</tr>
<tr>
<td>PE 360, Principles of Strength Training</td>
</tr>
<tr>
<td>PE 446, Sports Nutrition and Weight Control</td>
</tr>
<tr>
<td>PE 455, Fitness Assessment and Exercise Prescription</td>
</tr>
<tr>
<td>PE 456, Administration of Programs for Special Populations</td>
</tr>
<tr>
<td>PE 457, Exercise Adherence Strategies</td>
</tr>
<tr>
<td>PE 464, Management of Fitness Facilities and Programs</td>
</tr>
<tr>
<td>PE 461, Current Issues in Fitness and Exercise Science</td>
</tr>
<tr>
<td>PE 495.1, Fitness Centers/Clubs OR PE 495.2, Cardiac Rehabilitation OR PE 495.3, Geriatrics</td>
</tr>
<tr>
<td>PE 495.4, Fitness Assessment Laboratory</td>
</tr>
<tr>
<td>PE 490, Internship</td>
</tr>
</tbody>
</table>

Total 83-85

Bachelor of Science
Paramedic Major (6202)

Program Director: Carolyn Booth

The Paramedic major is designed for students who plan to become the highest level of prehospital professionals in emergency medical services. The curriculum includes classroom lectures, group discussions, laboratory skills training, hospital clinical experience with observations and practice, simulated exercises and on-the-job training with an advanced life support service which will fully prepare the student for occupations related to advanced emergency medical services. This major is not for students interested in physicians assistant programs. This nationally accredited program meets all the national curriculum and State of Washington standards.

In addition to general admissions, all applicants must meet entrance criteria (State EMT certification and prehospital experience) and be approved by the paramedic screening committee before being admitted into the program. AA degree or two years college experience recommended.
Completion of the major listed below and other degree requirements leads to the Bachelor of Science Paramedic degree and eligibility to take the National Registry EMT-P examination for paramedic certification. For students not seeking a degree a certification option is available.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE 245, First Aid</td>
</tr>
<tr>
<td>PE 319, Emergency Medical Technician</td>
</tr>
<tr>
<td>PE 250,1, Human Anatomy Laboratory</td>
</tr>
<tr>
<td>PE 335, Introduction to Paramedic Training</td>
</tr>
<tr>
<td>PE 336, Paramedic Clinical Training I</td>
</tr>
<tr>
<td>PE 337, Paramedic Clinical Training II</td>
</tr>
<tr>
<td>PE 345, Instructor’s First Aid</td>
</tr>
<tr>
<td>PE 440, Medical Measurements and Terminology</td>
</tr>
<tr>
<td>PE 441, General Pharmacology for Paramedics</td>
</tr>
<tr>
<td>PE 443, Myocardial Disease and Arrhythmia Diagnosis</td>
</tr>
<tr>
<td>PE 444, Principles and Therapeutics of Advanced Life Support</td>
</tr>
<tr>
<td>PE 451, Trauma For Advanced Life Support</td>
</tr>
<tr>
<td>PE 459, Emergencies in Pediatric/Geriatric Care</td>
</tr>
<tr>
<td>PE 493, Practicum in Paramedic Training</td>
</tr>
<tr>
<td>BIOL 355, Anatomy/Physiology I</td>
</tr>
<tr>
<td>BIOL 356, Anatomy/Physiology II</td>
</tr>
</tbody>
</table>

Total 39

Physical Education Minors

For minor application procedure, contact the Physical Education Program Director.

Athletic Training Minor (1555)
(non certified program)

This minor provides students with many of the experiences needed to become an athletic trainer. It does not however qualify students as a National Athletic Training Association (NATA) certified Athletic Trainer. Students interested in becoming NATAcertified should contact the NATAfor more information

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>HED 101, Health Essentials</td>
</tr>
<tr>
<td>FCSN 245, Basic Nutrition</td>
</tr>
<tr>
<td>PE 245, First Aid</td>
</tr>
<tr>
<td>PE 250, Anatomical Kinesiology</td>
</tr>
<tr>
<td>PE 319, Emergency Medical Technician</td>
</tr>
<tr>
<td>PE 346, Prevention and Treatment of Athletic Injuries</td>
</tr>
<tr>
<td>PE 351, Scientific Foundations of Health and Fitness</td>
</tr>
<tr>
<td>PE 450, Physiology of Exercise</td>
</tr>
<tr>
<td>PE 452, Advanced Athletic Training</td>
</tr>
</tbody>
</table>

Total 39
Dance Minor (2185)
Program Coordinator: Therese Young

The Dance Minor is designed for students who wish to broaden their academic background and receive a well-rounded dance education, thus preparing them to teach dance and/or dance activities in a wide variety of settings. Students will be required to complete both coursework and technique classes in those areas of dance frequently taught in a K-12 setting. Additionally, students will develop competencies in choreography, rhythmic concepts, dance production and teaching.

Requirement: Minimum of one year active membership in Orchesis.

Required Courses Credits
PED 116, Beginning Folk Dance........................1
PED 118, Beginning Ballroom Dance.........................1
PED 161, Cultural History of Dance.........................4
PED 201.1, Modern Dance I................................2
PED 201.2, Modern Dance II..............................2
PED 202.1, Ballet I.................................................2
PED 211, Music for Dance - Rhythms and Resources......2
PED 302, Dance Production....................................3
PED 309, Teaching Methods: Recreational Dance...........2
PED 314, Dance for Children.................................3
Department approved electives.........................4

Total 27

Dance: Teaching Minor (2190)
Program Coordinator: Therese Young

Requirement: Minimum of one year active membership in Orchesis. This minor satisfies the Supporting endorsement for Dance.

Required Courses Credits
PED 161, Cultural History of Dance.........................4
PED 201.1, Modern Dance I................................2
PED 201.2, Modern Dance II..............................2
PED 202.1, Ballet I.................................................2
PED 211, Music for Dance - Rhythms and Resources......2
PE 250, Anatomy Kinesiology...............................5
PED 301, Choreography..........................................5
PED 302, Dance Production....................................3
PED 309, Teaching Methods: Recreational Dance..........3
PE 329, Teaching Methods: Modern Dance and Ballet (3) OR
PE 330, Teaching Methods: Basic Skills (3).................3
PED 116, Beginning Folk Dance........................1
PED 118, Beginning Ballroom Dance.........................1

Total Endorsement Credits 34

Coaching Minor (1950)

Students are recommended to obtain state teaching certification for permanent employment coaching opportunities. The Coaching Minor course of study at Central Washington University meets the standards of the Washington Interscholastic Athletic Association regarding recommended standards for employment at the preferred Coach Level. Requirements (Item 23.4.1, W.I.A.A. Handbook) for all levels listed below.

These levels are:
- Beginning Coach
- Experienced Coach
- Preferred Coach

Students selecting this minor must complete PE 351 as a prerequisite to PE 450. This course of study qualifies the student to be certified by the W.I.A.A. at the preferred coaching level.

Required Courses Credits
PE 245, First Aid..................................................3
PE 250, Anatomical Kinesiology.........................5
PE 341.1, Pedagogical Foundations I....................3
PE 340.2, Practicum II..........................................2
PE 348, Prevention and Treatment of Athletic Injuries.......................4
PE 351, Scientific Foundations of Health and Fitness........5
PE 453, Psychology and Social Foundations of Coaching........3
PE 346, Administration of Athletics....................3
Required Health Education Class
HED 205, Drugs and Sports..............................2
Electives..........................................................6
PE 442 Field Work in Physical Education (3)
PE 321, Football Coaching (3)
PE 322, Wrestling Coaching (3)
PE 323, Basketball Coaching (3)
PE 324, Track Coaching (3)
PE 325, Baseball Coaching (3)
PE 329, Tennis Coaching (3)
PE 330, Volleyball Coaching (3)
PE 333, Swimming Coaching (3)
PE 521, Advanced Football Coaching (3)
PE 523, Advanced Basketball Coaching (3)
PE 524, Advanced Track Coaching (3)
PE 525, Advanced Baseball Coaching (3)

Total 26-27

Health, Human Performance and Recreation Courses
Program Director: Debra D’Acquisto, M.A.

Fitness Activities Courses

The purpose of the Physical Education Activity Program is to offer students an instructional program that utilizes physical movement as the primary educational medium. This program provides opportunities for students to develop and improve physical skills. In addition, students learn rules, terminology, proper technique and safety issues specific to each particular activity. Some of the following courses meet off-site. Some of the following courses have minimal additional fees.

Check the current class schedule for specific dates and fees.

One credit (meets twice weekly)
PEF 110. Conditioning Exercises.
PEF 111. Intermediate Conditioning Exercises. Prerequisite, PEF 110 or permission.
PEF 112. Ski Conditioning.
PEF 113. Weight Training.
PEF 114. Intermediate Weight Training. Prerequisite, PEF 113 or permission.
PEF 115. Jogging.
PEF 116. Aquacises. Designed to increase the physical fitness of individuals through water exercises. Open to both swimmers and non-swimmers.
PEF 118. Military Conditioning. Physical conditioning activities designed to prepare the Army ROTC Advanced Course student for Advanced Camp and Air Force ROTC students for Field Training. For Army ROTC Advanced Course and Air Force ROTC students only.
PEF 119. Advanced Military Conditioning. Prerequisites, PEF 118 and instructor permission, meets three times weekly.
PEF 121. Step Aerobics.
PEF 122. Dance Aerobics.
PEF 123. Aerobic Walking. Assessment of present level of cardiorespiratory fitness and prescription of an individualized aerobic walking exercise program for increasing and maintaining fitness.
PEF 124. Distance Running.
PEF 125. Athletic Performance Conditioning.
PEF 126. Kick/Box Aerobics. Safe, effective aerobic work-out mimicking basic self-defense, and boxing movements.

Exercise Science Minor (3290)
Program Director: Vincent Nethery, Ph.D.

Required Courses Credits
PE 250, Anatomical Kinesiology........................5
PE 254, Foundations of Fitness..........................3
PE 351, Scientific Foundations of Health and Fitness........5
PE 450, Physiology of Exercise..........................5
PE 455, Fitness Assessment and Exercise Prescription..........5
Select from one of the following:....................3-4
PE 360, Scientific Principles of Strength Training (4)
PE 456, Exercise Programming for Special Populations (4)
PE 457, Exercise Adherence Strategies (3)

Total 26-27
PEF 128. Glute/Abdominal Conditioning. Course emphasizes abdominal conditioning, gluteal toning and core muscle strengthening in a low impact format. Background music and various equipment is used for an effective workout.

PEF 129. Abdominal Strength Conditioning. Course emphasizes strengthening and conditioning the abdominals and core muscles for appearance and for performance. Use of equipment for fun and effectiveness.

PEF 130. Triathlon Training.

PEF 198. Special Topics.

Team Sports Courses

One credit (meets twice weekly)

PETS 110. Basketball.

PETS 113. Soccer.

PETS 114. Softball (Slow Pitch.)

PETS 116. Volleyball.

PETS 117. Advanced Volleyball. Prerequisite, PETS 116 or permission.

PETS 119. Competitive Volleyball. Permission of instructor. Grade will be S or U.

PEF 198. Special Topics.

Dance Courses

Meets twice weekly

PED 112. Dance Rehearsal and Performance. (1-3). Open to individuals participating in performances of Orchesis Dance Company. May be repeated for credit.

PED 113.1 Beginning Jazz Dance (1).

PED 113.2. Jazz Dance II (1). Prerequisite, PED 113 or permission.

PED 113.3. Jazz Dance III (1). Advanced level jazz dance technique.

PED 115. Tap Dance (1).

PED 116. Beginning Folk Dance (1). Traditional recreational dances of various countries.

PED 117. Advanced Folk Dance (1).

PED 118. Beginning Ballroom Dance (1).

PED 119. Advanced Ballroom Dance (1). Prerequisite, PED 118 or permission.

PED 122. Tap Dance II (1). Prerequisite, PED 115 or permission.


PED 130. Beginning Yoga (1). May be repeated for credit.

PED 131. Yoga Level II (1). Prerequisite, PED 130. This class will review & refine techniques learned in the beginning yoga class, as well as further discussion and practice of yoga postures and other topics related to yoga.

PED 161. Cultural History of Dance (4). A survey course in the evolution of dance through the ages with emphasis on the major forces which have influenced dance in the 20th Century. Formerly PE 161. Students may not receive credit for both.

PED 198. Special Topics.

PED 201. Modern Dance I (2). Basic modern dance techniques and beginning composition. One hour lecture; two hours laboratory per week. Formerly PE 201.1. Students may not receive credit for both.

PED 201.2. Modern Dance II (2). Four hours of intermediate modern dance theory and technique. Experience in solo and group compositions. Formerly PE 201.2. Students may not receive credit for both.

PED 201.3. Modern Dance III (2). Prerequisite, PED 201.2. Four hours of advanced modern dance theory and techniques. Emphasis on performance and solo composition. Experience in organizing and presenting programs. Formerly PE 201.3. Students may not receive credit for both.

PED 202.1. Ballet I (2). Beginning technique in classical ballet, including barre, center work and enchainments (center combinations). Formerly PE 202.1. Students may not receive credit for both.

PED 202.2. Ballet II (2). Prerequisite, PED 202.1. Intermediate technique in classical ballet including barre, center work and enchainments (center combinations). Formerly PE 202.2. Students may not receive credit for both.

PED 203. Ballet III (2). Prerequisite, PED 202.2. Advanced technique in classical ballet including barre, center work and enchainments (center combinations). Formerly PE 202.3. Students may not receive credit for both.

PED 211. Music for Dance - Rhythms and Resources (2). Prerequisite, PED 201.1. A study of rhythmic concepts as related to dance movements and composition; an introduction to music resources emphasizing composer/choreographer collaborations. Formerly PE 211. Students may not receive credit for both.

PED 301. Choreography (3). Prerequisite, PE 201.1 or instructor’s permission. The study and practice of choreographic techniques and tools utilizing creative problem solving. Students will meet for two hours laboratory work each week plus two hours lecture. Formerly PE 301. Students may not receive credit for both.

PED 302. Dance Production (3). Aspects of organizing and mounting a dance production, including scheduling, programming, publicity, costuming, lighting, and sound design. Formerly PE 302. Students may not receive credit for both.

PED 309. Teaching Methods: Recreational Dance (3). Prerequisite, PED 116 or permission. Knowledge of skills necessary in the teaching of various forms of recreational dance styles. Two hours lecture and two hours laboratory per week. Formerly PE 309. Students may not receive credit for both.

PED 314. Dance for Children (3). Strategies for teaching dance in elementary education, including creative dance, rhythmic exploration, use of props, unit plan development, and methods of assessment. Formerly PE 314. Students may not receive credit for both.

PED 315. Teaching Methods: Modern and Ballet Dance (3). Prerequisites, PED 201.1 and PED 201.2. Teaching methods for Modern and Ballet technique classes which emphasizes the development of critical and creative thinking skills, observation skills, and assessment skills. Formerly PE 315. Students may not receive credit for both.

Aquatics Courses

One credit (meets twice weekly)

PEAQ 110. Springboard Diving.

PEAQ 111. Beginning Swimming.

PEAQ 112. Intermediate Swimming. Prerequisite, must be able to swim 50 yards.

PEAQ 113. Advanced Swimming. Prerequisite, ability to swim 200 yards continuously, employing at least three strokes. Refinement of standard strokes and dives.

PEAQ 114. Swim Conditioning. Prerequisite, must be an intermediate swimmer.

PEAQ 116. Water Polo. Prerequisite, must be an intermediate swimmer.

PEAQ 198. Special Topics.

Individual and Dual Sports Courses

One credit (meets twice weekly)

PEID 110. Beginning Badminton.

PEID 113. Beginning Bowling.

PEID 114. Intermediate Bowling. Prerequisite, PEID 113 or permission.

PEID 115. Beginning Golf.

PEID 116. Intermediate Golf. Prerequisite, PEID 115 or permission.

PEID 117. Advanced Golf.

PEID 120. Intermediate Fencing.

PEID 121. Intermediate Fencing.

PEID 122. Advanced Fencing.

PEID 123. Beginning Tennis.

PEID 124. Intermediate Tennis. Prerequisite, PEID 123 or permission.

PEID 125. Advanced Tennis. Prerequisite, PEID 124 or permission.

PEID 128. Beginning Skiing.

PEID 129. Intermediate Skiing. Prerequisite, PEID 128 or permission.

PEID 130. Cross Country Skiing.

PEID 131. Snowshoeing.

PEID 133. Backpacking.
PEID 134. Bicycling.
PEID 136. Pickleball/Racquetball.
PEID 137. Hiking and Orienteering.
PEID 138. Karate.
PEID 139. Intermediate Karate. Prerequisite, PEID 138, or permission.
PEID 140. Fly Fishing (1).
PEID 145. Beginning Circus Arts (1). Introduction to juggling, unicycling and similar skills involving balance and coordination.
PEID 146. Intermediate Circus Arts (1). Development of juggling, unicycling and similar skills involving balance and coordination.
PEID 198. Special Topics.

Gymnastics and Tumbling Courses
One credit (meets twice weekly)
PEGT 112. Beginning Tumbling.
PEGT 113. Intermediate Tumbling. Prerequisite, PEGT 112 or permission.
PEGT 198. Special Topics.

Physical Education Courses

PE 221. Lifeguard Training (3) Prerequisites, PE AQ 113 or permission. American Red Cross approved course for which certification may be granted. The course will include rescue technique, preventative lifeguarding and conditioning. Two hours lecture and One hour laboratory per week.

PE 222. Lifeguard Training Instructor (2). Prerequisites, PE 221 and current American Red Cross lifeguard training certificate. Certify students to teach the American Red Cross Basic Water Safety course, Emergency Water Safety course, lifeguard training and lifeguard training review. One hour lecture and two hours laboratory per week.

PE 285. First Aid (3). American Red Cross First Aid Course for which standard certificate may be granted.

PE 250. Anatomical Kinesiology (5). Study of skeletal and muscular systems, the fundamentals of biomechanics, and their applications to human movement, skill development and skill performance.

PE 250.1. Human Anatomy Laboratory (1). Prerequisite, PE 250 or may be taken concurrently, or permission of instructor. Laboratory experience in human anatomy. Two hours per week.

PE 254. Foundations of Fitness (3). Overview of the Fitness Industry, components of fitness and strategies to improve the health and well-being of the individual. Formerly PE 354.

PE 280. Professional Foundations of Physical Education (3). Introduction and orientation to the profession.

PE 298. Special Topics (1-6).

PE 300. Teaching Designs in Physical Education (4). Methodology of subject presentation and organization of teaching content. Three hours lecture and two hours laboratory per week.

PE 303. Basic Skills/Lead-Up Activities (3). Prerequisite, PE 300. The development and practice of basic motor patterns, elementary and complex physical skills, and organized physical activities appropriate for instruction in elementary school physical education. Two hours lecture and two hours laboratory per week.

PE 304. Teaching Methods: Soccer/Track and Field (3). Prerequisites, PE 300 and PETS 113 or permission. Knowledge of skills and the teaching of soccer and track and field. Two hours lecture and two hours laboratory per week.

PE 305. Teaching Methods: Racquet Sports (3). Prerequisites, PE 300, PEID 110, PEID 136, and PEID 123 or permission. Knowledge of skills and the teaching of badminton, handball, pickleball, racquetball, and tennis. Two hours lecture and two hours laboratory per week.

PE 306. Teaching Methods: Basketball/Volleyball (3). Prerequisites, PE 300 PETS 110 and PETS 116 or permission. Knowledge of skills and the teaching of basketball and volleyball. Two hours lecture and two hours laboratory per week.

PE 307. Teaching Methods: Fitness Activities (3). Prerequisites, PE 300, PEF 113, PEF 110, PEF 121 and PE AQ 111 or permission. Knowledge of skills and the teaching of indoor and outdoor fitness activities. Two hours lecture and two hours laboratory per week.

PE 308. Teaching Methods: Tumbling/Stunts/Gymnastics (3). Prerequisites, PE 300, PEGT 110 or PEGT 112 or permission. Knowledge of skills and the teaching of tumbling/stunts/gymnastics. Two hours lecture and two hours laboratory per week.

PE 313. Alternative Physical Education Activities (3). Prerequisite, PE 300. Non-traditional games and activities taught in public school physical education curriculums. Two hours lecture and two hours laboratory per week.

PE 318. Aerobic Fitness (3). Prerequisites, PE 250. This class provides the Fitness and Sports Management major with an in-depth exploration of various cardiovascular exercise activities and equipment.


PE 320. Water Safety Instructor (3). Prerequisite, intermediate swimmer. Students successfully passing the Red Cross requirements will receive a Red Cross Water Safety Instructors Certificate. Two hours lecture and two hours laboratory per week.

PE 321. Football Coaching (3).
PE 322. Wrestling Coaching (3).
PE 323. Basketball Coaching (3).
PE 324. Track Coaching (3).
PE 325. Baseball Coaching (3).
PE 329. Tennis Coaching (3).
PE 330. Volleyball Coaching (3).
PE 333. Swimming Coaching (3).

*PE 334. Physical Education Activities for the Elementary School (3). Selection, organization, and presentation of physical education activities in the elementary school.
*Enrollment is subject to being fully admitted to the Teacher Education Program.

PE 335. Introduction to Paramedic Training (2). Prerequisites, PE 319 and permission. Patient care skills, new equipment for patient treatment, medical-legal requirements.

PE 336. Paramedic Clinical Training I (3). Prerequisites, BIOL 356, PE 335 and permission. Intensive training in Asepsis Procedures, CPR, Dog Lab I, IV Team,
Morgue, Operating Room, Recovery Room, Respiratory Laboratory, and Shock Treatment.


PE 340.2. PE Teaching Practicum II (2). Prerequisite PE 340.1 or permission. Physical education teaching practicum.

PE 340.3. PE Teaching Practicum III (2). Prerequisite, PE 340.2 or permission. Practicum will consist of two parts: 1) Assist in a PE class in Yakima or Wenatchee for 2 hours/week. 2) Plan and instruct at the Ellensburg 8th grade honor’s camp.

PE 340.4. PE Teaching Practicum IV (3). Prerequisite, PE 340.3 or permission. Physical education teaching practicum.

PE 341.1. Pedagogical Foundations of PE I (3). Prerequisite, PE or Health Education majors only. Examination of selected pedagogical principles and their impact on the teaching of human movement.

PE 341.2. Pedagogical Foundations of PE II (3). Prerequisite, PE 341.1 or permission. Examination of selected pedagogical principles and their impact on the teaching of human movement.

PE 341.3. Pedagogical Foundations of PE III (3). Prerequisite, PE 341.2 or permission. Examination of specific pedagogical principles and their impact on the teaching of human movement.

PE 342.1. Movement Analysis and Application I (4). Prerequisite, PE or Health major or permission. Instruction in the analysis and teaching of locomotor and non-locomotor skills.

PE 342.2. Movement Analysis and Application II (4). Prerequisite, PE 342.1 or permission. Identify critical components in manipulative movements. Examination of propulsive and receptive manipulative movements in a variety of application activities.

PE 342.3. Movement Analysis and Application III (6). Prerequisite, PE 342.2 or permission. Identify critical components of selected outdoor pursuits, challenge activities, team sports and field events.

PE 342.4. Movement analysis and Application IV (4). Prerequisite, PE 342.3 or permission. Identify critical components in striking activities. Examination of striking movements in a variety of application activities.

PE 346. Administration of Athletics (3). Prerequisite, FCSN 245 or permission. Study of interrelationship of factors required for successful weight control; modification of diet, activity, and behavior. Role of dietary factors in health and body function. Same as FCSN 446. Students may not receive credit for both.

PE 442. Field Work in Physical Education (1-6). Class to be arranged by college supervisor. Grade will be S or U. May be repeated.

PE 443. Myocardial Disease and Arrhythmia Diagnosis (3). Prerequisite, BIOL 356. Study of conduction abnormalities of the heart and rhythm interpretation. Permission only.

PE 444. Principles and Therapeutics of Advanced Life Support (3). Prerequisite, PE 443. Treatment protocols, decision making with cardiac emergencies, integration of knowledge and skills of previous class content. Follow-up procedures involving drugs, defibrillation and oxygen therapy. Permission only.

PE 446. Sports Nutrition and Weight Control (3). Prerequisite, FCSN 245 or permission. Study of interrelationship of factors required for successful weight control; modification of diet, activity, and behavior. Role of dietary factors in health and body function. Same as FCSN 446. Students may not receive credit for both.

PE 447. Physical Education Equipment and Facilities (3). Knowledge relating to purchase and care of equipment; planning of areas and facilities for athletics, recreation and physical education.

PE 448. Ethics in Sports (3). Ethical considerations involved in coaching, playing and administering sports.

PE 449. Past and Current Concepts in Physical Education (3). The historical background of physical education and sport; their roles in society and education.

PE 450. Physiology of Exercise (5). Prerequisite, PE 351 or permission. Acute and chronic responses of the metabolic, muscular, cardiovascular, pulmonary, endocrine, and thermoregulatory systems to physical work. Four hours lecture, two hours laboratory per week.

PE 451. Trauma for Advanced Life Support (3). Prerequisite, PE 319. Trauma and related topics is a comprehensive course that provides an essential overview of care of the patient who has sustained accidental injury.


PE 454. Motor Learning Theories (3). Theories dealing with factors which affect individual performance and learning differences in relation to human movement and skill learning. Two hours lecture and two hours laboratory per week.

PE 455. Fitness Assessment and Exercise Prescription (5). Prerequisite, PE 254. Concepts and principles of appraising level of fitness, evaluating the results and designing physical fitness/exercise programs. Three hours lecture and four hours laboratory.

PE 456. Administration of Programs for Special Populations (4). Prerequisite, PE 455. Philosophy, principles, policies and procedures of fitness administration to special populations.

PE 458. Measurement and Evaluation in Physical Education (3). The construction and use of tests which are unique to the field of physical education; physical fitness tests, skill tests, knowledge tests, attitude tests and medical tests.

PE 459. Emergencies in Pediatric/Geriatric Care (3). Emergency training in assessing, treating and transporting pediatric/geriatric patients.

PE 461. Current Issues in Fitness and Exercise Science (2). This seminar course discusses current trends and issues in the fitness and exercise science world.

PE 463. Pediatric Issues in Exercise Science (5). Prerequisites, PE 250 and PE 351. Essential principles of growth, development and exercise science and the application of these principles to children and youth. Four hours of lecture and two hours of laboratory per week.

PE 464. Management of Fitness Facilities and Programs (4). Prerequisites, PE 455 and PE 456. This course covers conventional business management principles and operational guidelines to the unconventional business of health and fitness facilities.

PE 466. Supervision and Evaluation of Program (3).


PE 471. Philosophy of Elementary School Physical Education (3).

PE 475. Racism in Sport (3). The study of how racism may manifest itself psychologically, sociologically, and politically in the realm of sport.

PE 481. Organization of Physical Education and Intramurals (3). The nature, processes, and philosophy of physical education and intramural sports.

PE 484. Legal Liability and Risk Management (3). Aspects of personnel law and premises liability in public, private and “not for profit” education, human and social services organizations. Procedures for managing risks. Open to Recreation and Tourism Management and Physical Education majors, and P.E.H.L.S. graduate students only. Same as RT 484, formerly LES 484/PE 460. Students may not receive credit for more than one.

PE 485. Physical Growth and Motor Development (3). Prerequisites, PE 450 and PE 454. Study of patterns of physical growth and motor development that affect the learning and performance of physical skills from birth through senescence.

PE 490. Cooperative Education (1-12). Prerequisites: 1) satisfactory completion of practica; 2) a minimum GPA of 2.7 in the major. An individualized contracted field experience with business, industry, government, medical, or social service agencies. This contractual arrangement involves a student learning plan, cooperating employer supervision, and faculty coordination. Prior approval required. May be repeated. Grade will be S or U.

PE 491. Workshop Clinic (1-6). Letter grades or S or U grades may be given at the option of the Physical Education Department.

PE 492. Practicum (1-4). Prerequisite, permission of elementary physical education advisor. Practical experience working with children in physical education activities. May be repeated for credit. Four credits required in major.

PE 493. Practicum in Paramedic Training (3-12). Prerequisites, PE 444 and permission of instructor. Experience in the following: hospital, ambulance, emergency room, ICU/CCU. Paramed majors must complete 12 credits. Grade will be S or U.

PE 495.1. Practicum in Fitness Centers/Clubs (2). Prerequisite, PE 455. Observation of and assistance in fitness programs. Grade will be S or U.

PE 495.2. Practicum in Fitness: Cardiac Rehabilitation (2). Prerequisite, PE 455. Observation, monitoring and supervised leadership of fitness activity applied to physician referred adults. Grade will be S or U.

PE 495.3. Practicum in Fitness: Geriatric Fitness (2). Prerequisite, PE 455. Observation, monitoring, and supervised leadership of fitness programs applied to the elderly. Grade will be S or U.

PE 495.4. Practicum in Fitness: Laboratory Assessment (2). Prerequisite, PE 455. Practical application of testing procedures in cardiovascular fitness, body composition, muscular fitness and flexibility. Grade will be S or U.

PE 496. Individual Study (1-6). Prerequisite, permission of instructor. May be repeated.

PE 498. Special Topics (1-6).

PE 499. Seminar (1-5). May be repeated.

HEALTH EDUCATION

Program Director: Kenneth A. Briggs
Advisors: Dr. Andrew Jenkins, Dr. Melody Madlem, Mr. Mark Perez

General Program Information

Health Education is a field of interest, a discipline, and a profession. As a profession, Health Education is one of the most meaningful and important careers available to college students today. Our ability to be healthy as individuals, families, and as a community is dependent on health education and health educators. Central’s Health Education Programs are recognized throughout the state as the premier provider of health education graduates that are needed to fill the multitude of jobs available in the profession.

Students can choose to major in the following:

1. Bachelor of Science in Community Health with a specialization in Community Health Education.
2. Bachelor of Arts in School Health Education.

Students interested in majoring in Health Education should make an appointment with a Health Education major advisor to learn more about the major and obtain an application packet. The major advisors are:

1. School Health Education-Dr. Briggs (509-963-1792)
2. Community Health CWU main campus-Dr. Jenkins (509-963-1041) or Dr. Madlem (509-963-1971)

Community Health Major (2020)

Community Health Education Specialization (2026)

The Community Health Education specialization is a dynamic and diverse program that offers many employment options. Employing agencies include, but are not limited to, governmental health departments, hospitals, clinics, non-profit health agencies, voluntary health agencies, international health programs, corporations, consulting firms, youth or school-based health programs, wellness clubs/clinics, and health-care delivery programs.

Prerequisites:
HED 230 must be taken prior to HED 422. HED 230 and HED 410 must be taken prior to HED 475, and HED 230 and HED 422 (pre/corequisite) should be taken prior to HED 460.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HED 209, Consumer Health</td>
<td>3</td>
</tr>
<tr>
<td>HED 210, Drugs and Health</td>
<td>3</td>
</tr>
<tr>
<td>HED 230, Foundations of Health Education</td>
<td>3</td>
</tr>
<tr>
<td>HED 323, Infectious Disease</td>
<td>3</td>
</tr>
<tr>
<td>HED 324, Noninfectious Disease</td>
<td>4</td>
</tr>
<tr>
<td>HED 330, Health Assessment</td>
<td>4</td>
</tr>
<tr>
<td>HED 340, Technological Applications in Health Education</td>
<td>4</td>
</tr>
<tr>
<td>HED 370, Current Trends in Health Education</td>
<td>3</td>
</tr>
<tr>
<td>HED 387, Principles of Fitness and Stress Management</td>
<td>3</td>
</tr>
<tr>
<td>HED 410, Community Health</td>
<td>3</td>
</tr>
<tr>
<td>HED 422, Methods for Health Promotion</td>
<td>4</td>
</tr>
<tr>
<td>HED 440, Social Marketing of Health Education Programs</td>
<td>3</td>
</tr>
</tbody>
</table>
Health/Fitness Endorsement

This major satisfies the Primary endorsement for Health/Fitness.

"You can't educate a child who isn't healthy and you can't keep a child healthy who isn't educated."

Anonymous

The School Health Education major is a lively and dynamic major that will prepare you to teach health in the secondary schools. Additionally, with the inclusion of required physical education courses, students will acquire a state certified primary endorsement in Health/Fitness that will also prepare you to teach K-12 physical education in the schools.

"No one should teach who is not a little bit awed by the importance of the profession."

Anonymous

Application Requirements and Procedure

Students wanting to major in School Health Education need to apply with Dr. Briggs in the Physical Education building, room 108 As a School Health Education major you also need to make application for admission to the Teacher Education Program during your sophomore or junior year. Application packets are located in Black Hall 228. Remember you must have a minimum 2.8 grade point average over your last 45 credits for conditional acceptance. Students taking this major are required to complete the professional education program requirements offered through the Curriculum and Supervision Department.

As teacher education majors, no grade less than a C is allowed for any course in your major (primary endorsement area) or in your teacher education program. Also, in order to student teach you must have a 3.0 GPA for the last 45 graded credits or overall accumulative.

Prerequisites

Students should keep in mind that HED 230 is the introductory professional preparation course and must be taken prior to HED 345. HED 345 needs to be completed prior to HED 422. HED 422 must be taken one or two quarters prior to student teaching. HED 445 must be taken the quarter before student teaching.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HED 210, Drugs and Health</td>
<td>3</td>
</tr>
<tr>
<td>HED 230, Foundations of Health Education</td>
<td>3</td>
</tr>
<tr>
<td>HED 234, Noninfectious Disease</td>
<td>4</td>
</tr>
<tr>
<td>HED 345, School Health Curriculum and Materials</td>
<td>3</td>
</tr>
<tr>
<td>HED 387, Principles of Fitness and Stress Management</td>
<td>3</td>
</tr>
<tr>
<td>HED 422, Methods for Health Promotion</td>
<td>4</td>
</tr>
<tr>
<td>HED 445, Health Education Professionalism</td>
<td>3</td>
</tr>
<tr>
<td>HED 460, Controversial Issues in Health Education</td>
<td>3</td>
</tr>
</tbody>
</table>

Total 42

Bachelor of Arts

School Health Education Major (3900)

Health/Fitness: Teaching Minor

This minor replaced the former Physical Education teaching minor and satisfies the Supporting Area Endorsement for Health/Fitness.

The Health/Fitness Supporting Area Endorsement certifies teacher education majors to teach health and/or physical education (health/fitness) in the state of Washington.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE 340.2, Practicum II</td>
<td>2</td>
</tr>
<tr>
<td>PE 341.1, Pedagogical Foundations in Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>PE 341.2, Pedagogical Foundations in Physical Education</td>
<td>3</td>
</tr>
</tbody>
</table>

Total 71
HED 360. Legal and Ethical Issues in Education (4). Prerequisite, HED 230 or permission of instructor. Theories and practice of evaluating the health or condition of individuals and groups.

HED 366. Dependency Behavior and Drug Education (4). Prerequisite, HED 230 or permission of instructor. Individual and social problems of habituation and addiction. Current information and techniques for drug education in the school and community setting.

HED 340. Technological Applications in Health Education (3). Assist students in utilizing computerized sources of information, methods of instruction, and understanding technology applied to training, and better use computers for resources for health information.


HED 349. Wellness Training for Peer Educators (3).

HED 350. Substance Abuse (3). Prerequisite, admission to the Chemical Dependency specialization or permission of instructor.

HED 360. Legal and Ethical Issues in Chemical Dependency (3). Prerequisite, HED 230 or permission of instructor. A review of legal and ethical issues related to professional practice.

HED 370. Current Trends in Health and Health Education (3). Contemporary health education topics and issues are explored through classroom and community contacts, visual, web-based, and interactive media. May be repeated for up to 6 credits.

HED 380. Epidemiology (3). Prerequisites, HED 323 and 324, or permission of instructor.

HED 387. Principles of Fitness and Stress Management (3). Prerequisite, HED 230 or permission of instructor. Theories and practice of health enhancement through fitness and stress management.

HED 390. Special Topics (1-6).

HED 410. Community Health (3). An overview of contemporary community health programs; problems in community health at the local, national, and international levels.

HED 412. Health Aspects of Aging (3). Prerequisite, HED 101 or permission of instructor. Examination of total health as it relates to the aged and the aging process.

HED 422. Methods for Health Promotion (4). Prerequisites HED 101 and HED 230, or permission of instructor.

HED 436. Chemical Dependency and the Schools (4). Prerequisite, admission to the Chemical Dependency specialization or permission of the instructor. The course will familiarize the student with programs that provide assistance to chemically dependent students within the school and/or the community.

HED 440. Social Marketing of Health Education Programs (3). Social marketing theory and practice, health communication strategies, and basic qualitative research methods applied to social marketing theory.

HED 442. Field Work and Experience in Health Education (1-15). Prerequisite, permission of the instructor. Observation and participation in health programs, and/or HED 101. May be repeated to a maximum of 15 credits.

HED 445. Health Education Professionalism (1). Prerequisite, to be taken the quarter before student teaching or placement in community health internship. Professional ethics, job readiness, and job search in health education.

HED 446. Health Education Curriculum for Elementary Teachers (3). Examination of available curricula and teaching materials in health education for elementary school teachers. Students must develop an elementary health education curriculum.


HED 471. Program Planning I (5). Prerequisite, HED 230. Health program planning; needs assessment and goal setting. Formerly HED 371. Students may not receive credit for both.

HED 472. Program Planning II (5). Prerequisite, HED 471. Health program planning; implementation and evaluation. Formerly HED 372. Students may not receive credit for both.

HED 475. Community Health Administration (3). Prerequisites, HED 230 and 410. Understanding and application of knowledge to various administrative tasks in community health. Grants, management, and personnel issues will be covered.

HED 490. Practicum (4). Prerequisite, HED 345 or 472 or permission of instructor. Practical experience and application of responsibilities and competencies necessary for practicing health education.

HED 496. Individual Study (1-6). Prerequisite, permission of instructor. May be repeated.

HED 498. Special Topics (1-6).

HED 499. Seminar (1-5). May be repeated.

RECREATION AND TOURISM

Bachelor of Science

Recreation and Tourism (6760)

Program Director: Dr. William Vance

Program General Information

The Recreation and Tourism Program prepares students for professional positions in a wide variety of government, private, commercial, not-for-profit and other parks, recreation, tourism organizations. Students choose one of two major areas of specialization: Tourism Management or Recreation Management. Each specialization has both a major program and a minor program. Detailed descriptions of each major specialization are provided below.

Tourism Management Specialization (6764)

Advisors:
Dr. Barbara Masberg
Dr. Dorothy Chase

The student with a specialization in Tourism Management may choose a career in a wide variety of travel and tourism related industries including directing operations in hotels, resorts, convention centers, cruises, airlines, visitor centers, casinos, tour companies, meeting and destination planning businesses, and cultural and heritage facilities. The career options within each industry are extremely varied and include: management, special event planning, sales and marketing, catering or food and beverage coordination, casino, games supervision, and control.

Contact advisors for information related to articulation with community colleges and high school tourism related programs.

Admission Requirements: Tourism Management Specialization

Students wishing to apply for admission must have a minimum GPA of 2.5 in all courses OR a minimum cumulative GPA of 3.0 in the first 12 credits of Recreation and Tourism coursework. Interested students must complete and submit a major application which may be obtained by contacting a tourism management advisor.
Admission Requirements: Recreation Management Specialization

Admission to the Recreation Management specialization requires a minimum cumulative grade point average of 2.0 in at least 45 hours of undergraduate study OR a minimum grade point average of at least 2.5 in the first twelve credits of Recreation Management coursework exclusive of those obtained through experiential learning courses (RT 292 and RT 490 or their equivalents).

Required Courses Credits
RT 210, Introduction to Recreation Management...........................................3
RT 221, Community Recreation Leadership.............................................2
RT 292, Practicum..........................................................4
RT 321, Program Supervision....................................................4
RT 325, Promotions in Tourism and Recreation...........................................4
RT 350, Recreation and Tourism for Special Groups........................................2
RT 480, Recreation and Tourism Administration........................................3
RT 483, Budget and Finance in Recreation Management.................................2
RT 484, Legal Liability and Risk Management............................................2
RT 490, Cooperative Education..................................................12
RT 492, Practicum or Cooperative Education.............................................12
RT 490 or their equivalents).  
RT 201, Introduction to Recreation Management...........................................3
RT 221, Community Recreation Leadership.............................................2
RT 292, Practicum..........................................................4
RT 321, Program Supervision....................................................4
RT 325, Promotions in Tourism and Recreation...........................................4
RT 350, Recreation and Tourism for Special Groups........................................2
RT 480, Recreation and Tourism Administration........................................3
RT 483, Budget and Finance in Recreation Management.................................2
RT 484, Legal Liability and Risk Management............................................2
RT 490, Cooperative Education..................................................12
RT 492, Practicum or Cooperative Education.............................................12
RT 490 or their equivalents).  

Advisory services are required to complete a 3-credit practicum in which they are employed in a tourism setting. Also required is a cooperative education/internship experience in which the student has directed and supervised study under the guidance of a tourism mentor; actually working and learning in a professional setting.

Electives must be approved by the student's advisor prior to registration for coursework.

Recreation Management Specialization (6762)
Advisor: Dr. William Vance

The Recreation Management specialization prepares students for entry level supervisory/managerial positions with government parks and recreation departments, Y.M.C.A.'s and Boys and Girls Clubs, armed forces recreation, university recreation and campus recreation services. Emphasis areas include various populations such as children, at-risk youth, the elderly or the disabled and/or program areas such as sports and athletics, outdoor recreation and camp management, social/cultural activities, and many others.
Recreation Management specialization. Four (4) additional hours may be applied toward the RT "elective" area. No more than three credits may be earned in the same agency/program. May be repeated for credit. Formerly LES 292.

RT 296. Individual Study (1-6). May be repeated. Formerly LES 296.

RT 298. Special Topics (1-6). Formerly LES 298.

RT 299. Seminar (1-5). Formerly LES 299.


RT 309. Planning and Development of Park and Recreation Areas (1-2). Prerequisite, RT 201. Objectives, procedures, and techniques for the planning, development and construction of park and recreation facilities. Two field trips required. May be repeated under different categories. Formerly LES 309.

A. Parks, playgrounds and open spaces
   B. Athletic and fitness facilities
   C. Recreation centers/stadiums/auditoriums
   D. Camps and outdoor recreation sites


RT 325. Promotions in Tourism and Recreation (4). Prerequisite, RT 201, RT 271 or permission. Practical projects in written, verbal, and visual communications vital to information needs for recreation and tourism. Planning and organizing a promotions program. Formerly LES 325.

RT 330. Outdoor Recreation (3). Prerequisite, permission. Historical antecedents and current issues and practices in the use and management of parks, forests, wilderness areas and other North American outdoor recreation resources. Formerly LES 330.

RT 337. Tour and Interpretive Program Development (3). Methods, techniques and skills used in the planning, development and presentation of resource based interpretive programs and visitor tours. This course will include theoretical understanding of the interpretive process and practice of new skills. Formerly LES 337.

RT 350. Tourism and Recreation for Special Groups (2). Prerequisite, RT 201, RT 271 or permission. Distinguishing needs of special populations; mentally ill, disabled, aged, and others. Attention to the ADA. Observations of selected population groups. Formerly LES 350.

RT 371. Tourism Essentials (3). Prerequisite, RT 271 or permission of instructor. Travel and tourism, including history, spatial aspects, economics, planning, marketing, research and trends for domestic and international tourism. Formerly LES 371.

RT 373. Hospitality Management (5). Presentation of management topics applied to the hospitality industry. May be repeated for credit under different Letters/Titles. Formerly LES 373.

B. Strategic Marketing in Hospitality
   C. Hospitality Sales and Advertising
   D. Convention Management
   E. Resort Management
   F. Front Office

RT 377. Introduction to Casino Management (3). An overview of the casino industry including: traditional casinos, riverboats; limited stakes casinos; historical perspective; legal, social, cultural and economic impacts; Indian gaming; regulation and control of gaming; and future trends in gaming industry. Formerly LES 377.

RT 379. Introduction to Cruise Line Management (3). An overview of the cruise industry including: cruise lines, ships, history of cruising, human resource practices, marketing, design, terminology and future trends. Formerly LES 379.

RT 380. Supervision in the Hospitality Industry (3). Prerequisite, RT 271 or permission. Basics of supervising programs, personnel, and facilities with emphasis on practical supervisory skill development. Formerly RT 373A. Student may not receive credit for both.

RT 381. Recreational Sports Management (3). Organization and implementation of recreational sports programs in community recreation settings. Emphasis on facilities, personnel, materials and supplies, tournament bracketing and other practical considerations. Formerly LES 381.

RT 393. Leisure Service Agency Visitations (1-3). Off campus field visits, usually from two to three days in duration. Review of facilities, programs and clientele. Lecture and discussion by and with agency leader/supervisor/manager personnel pertaining to agency operations. Grade will be S or U. May be repeated for credit under different titles. Formerly LES 393.

A. Public Recreation Agencies
   B. Voluntary/Youth Serving Agencies
   C. Military Recreation Agencies
   D. Commercial Recreation Agencies
   E. Employee/Industrial Recreation Agencies
   F. Tourism Related Agencies
   G. Therapeutic/Rehabilitation Related Agencies
   H. Senior Centers/Nursing Homes
   I. Outdoor Recreation/Education Agencies
   J. Resident Camps

K. Parks and Playgrounds
   L. Sports and Aquatics
   M. Community Centers
   N. Destinations
   O. Attractions
   P. Hospitality
   Q. Transportation

RT 398. Special Topics (1-5). Formerly LES 398.

RT 419. Applied Research for Recreation and Tourism (5). Prerequisite, senior class standing or permission of instructor. Develops critical thinking and research methods applied to current problems existing in recreation and tourism agencies/businesses. Problem identification, conceptualization, operationalization, literature review, research skills, research methods, and report writing. Formerly LES 419. In effect Fall 2002.

RT 420. Research Analysis (4). Prerequisite, RT 419. Student research and presentation of an array of contemporary problems, issues and trends in the leisure services profession. Formerly LES 420.

RT 431. Resident Camp Programming (3). Prerequisite, permission of instructor. Methods, techniques and skills used in the organization and operation of a resident camp program. Formerly LES 431.

RT 437. Interpretive Writing and Design (3). Prerequisite, RT 337. Advanced application of interpretive techniques to the design and development of interpretive publications, visitor center exhibits, and wayside exhibits and signs. Instruction will include an experiential field trip. Formerly LES 437.

RT 471. Planning and Development of Tourism (3). Prerequisite, RT 271. Economic, social, fiscal, environmental and political impacts of tourism; identifying and accessing tourism markets and destinations; the tourism planning and development process. Formerly LES 471.

RT 472. Issues in Gaming Management (3). Prerequisite, RT 377 or permission of instructor. Examines current social, economic, legal, geographic, technology, and marketing issues and trends in the gaming industry with emphasis on Indian gaming and responsible gaming issues. Students must be 21 years of age due to the age requirement for students to enter a casino during the course field trip. Formerly LES 472.

RT 473. Airline Operations (3). Prerequisite, RT 271. Examines the airline industry, its components and methods of operation. Also the interaction with other segments of the industry. Procedures for working with the airlines.

RT 475. Professionalism in Tourism (2). Prerequisite, RT 292. Students will develop skills related to professionalism in the tourism industry along with assessing
themselves in order to successfully enter their careers.

RT 480. Recreation and Tourism Administration (3). Prerequisite, RT 321, RT 380 or permission. Contemporary problems and issues; basic applied research; organizational development; policy formulation; human resources, inventory and program/personnel evaluation processes. Formerly LES 480.

RT 483. Budget and Finance (2). Budget types commonly used in leisure services agencies. Budget preparation skills, funding sources, budget presentation and defense, execution of allocated financial resources. Formerly LES 483.

RT 484. Legal Liability and Risk Management (3). Aspects of personnel law and premises liability in public, private and “not for profit” education, human and social services organizations. Procedures for managing risks. Open to recreation and tourism and physical education majors, and P.E.H.L.S. graduate students only. Same as PE 484, formerly PE 460/LES 484. Students may not receive credit for both.

RT 485. Games and Adventure Activities (2). Prerequisite, Recreation Tourism major or minor. Games and activities appropriate for playgrounds, camps & community centers. Socialization, education, trust building, outdoor adventure and other activities. Field trips required. One hour lecture, 2 hours lab per week. Formerly LES 485.

RT 487. Outdoor Recreation Issues (3). Prerequisite, RT 330. This course addresses recent and breaking issues in the outdoor recreation field. The course involves readings and discussions in both the classroom and field environments. Formerly LES 487.

RT 490. Cooperative Education (1-12). Prerequisite, permission of instructor. An individualized contracted field experience with business, industry, government, or social service agencies. This contractual arrangement involves a student learning plan, cooperating employer supervision, and faculty coordination. Prior approval required. May be repeated. Grade will be S or U. Formerly LES 490.

RT 491. Workshop (1-6). Formerly LES 491.

RT 496. Individual Study (1-6). May be repeated. Formerly LES 496.

RT 498. Special Topics (1-6). Formerly LES 498.

RT 499. Seminar (1-5). Formerly LES 499.

Undergraduate Courses/Programs on Reserve
The following programs and courses are on reserve and may be offered subject to program needs: Community Health, Chemical Dependency Specialization, PE 221, Life Saving (5), PE 362, Dance in Education (4), PE 471, Philosophy of Elementary School Physical Education (3), PEAQ 118, Canoeing (1), PEGT 110, Beginning Gymnastics (1), PEID 117, Advanced Golf (1), PEID 121, Intermediate Fencing (1), PEID 122, Advanced Fencing (1), PEID 131, Snowshoeing (1), or PEID 133, Backpacking (1), PETS 115, Touch Football (1), PETS 118 Rugby (1).

HISTORY

Faculty
Chair: Karen J. Blair

Language and Literature 100

Professors
Karen J. Blair, 20th Century U.S., Women’s History
Beverly A. Heckart, Germany, Social and Economic History

Associate Professor
Thomas Wellock, Contemporary U.S., Environmental, American West

Assistant Professors
James Cook, East Asia
Roxanne Easley, Russia, Eastern Europe
Michael Ervin, Latin American History
Daniel Herman, U.S. Pre 1877
Merle Kunz, History Education

Emeritus Professor
Kent Richards, American West, Pacific Northwest

General Departmental Information

The faculty of History offers courses leading to the degrees of Bachelor of Arts and Master of Arts. Majors who desire to qualify for the program, students must complete 25 credits in their major and have an overall GPA of 3.0 and 3.25 in history honors. Honors students will complete the following requirements:

1. an elective course in addition to those required for their major in an area of concentration (United States, Europe, or Non-Western)

2. a year of coursework in one departmentally-approved foreign language at an accredited college or university. If it is the same language as that taken in high school, the student must complete the course work at the 200 level.

3. an honors research paper (25 page minimum) completed during HIST 481. A faculty committee will judge whether the paper meets departmental standards for honors.

Students who complete the above requirements will graduate with departmental honors. Please contact the Department Chair for more information.

Bachelor of Arts

History Major (4000)

It is recommended that students who plan to enter graduate school should complete two years of a foreign language at the college level.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 101, 102, 103, World Civilization*</td>
<td>20</td>
</tr>
<tr>
<td>HIST 143, 144, United States History</td>
<td></td>
</tr>
<tr>
<td>HIST 302, Introduction to History</td>
<td>3</td>
</tr>
<tr>
<td>HIST 481, Understanding History</td>
<td>3</td>
</tr>
<tr>
<td>Upper Division United States History</td>
<td>5</td>
</tr>
<tr>
<td>Upper Division European History</td>
<td>5</td>
</tr>
<tr>
<td>Upper Division African, Asian, Middle Eastern or Latin American History</td>
<td>10</td>
</tr>
<tr>
<td>Upper division History electives</td>
<td>12-14</td>
</tr>
</tbody>
</table>

Total: 58-60**

*Western Civilization may be substituted.

**Students with fewer than 60 credits must have a minor in order to graduate.

History: Teaching Broad Area Major (4011)

This major satisfies the Primary endorsements for History and Social Studies.

This major is designed for students in the secondary teacher training program. Students taking this major are required to complete the professional education program requirements offered through the Curriculum and Supervision Department.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 101, 102, 103, World Civilization</td>
<td>15</td>
</tr>
<tr>
<td>HIST 143, 144, United States History</td>
<td>10</td>
</tr>
<tr>
<td>HIST 301, Pacific Northwest History</td>
<td>3</td>
</tr>
<tr>
<td>HIST 302, Introduction to History</td>
<td>3</td>
</tr>
<tr>
<td>HIST 421, Methods and Materials in the Social Studies, Secondary OR **EDEL 420, Methods and Materials in the Social Sciences, Elementary</td>
<td>3</td>
</tr>
<tr>
<td>HIST 481, Understanding History</td>
<td>3</td>
</tr>
</tbody>
</table>

Select from the following: **EDEL 420, Methods and Materials in the Social Sciences, Elementary |

Total: 15

Upper Division U.S. History (5)

Upper Division European History (5)

Upper Division African, Asian, Middle Eastern or Latin American History (5)
HIST 302. Introduction to History .......................... 3
HIST 143 or 144, United States History ................. 5
Prior completion of EDCS 311 recommended.

Required courses Credits
HIST 313. History of Rome 500 B.C. to 500 A.D. (5). Beginning, city-state, republican period; world empire; decline.
HIST 314. Military History of the United States (5). A comprehensive and systematic survey and analysis of the American military experience from Colonial times through the Vietnam war. Same as MSL 314.1. Students may not receive credit for both.
HIST 315. Muslim Middle East (3-5). The origins and spread of Islamic civilization and its interaction with Graeco-Roman, Persian, and Indian civilizations. Crusades and the rise and fall of the Ottoman Empire.
HIST 316. Modern Middle East 1914 to the Present (3-5). The Arab revolt, the British-French mandates, nationalism, modernization, independence movements, Arab-Israeli struggle, Palestinians and oil politics.
HIST 322. World Prehistory (4). Old and New World prehistory from late Pliocene to the early historic period, including the ecology and development of hunting-gathering, agriculture and state-level societies. Same as ANTH 322. Students may not receive credit for both.
HIST 328. Modern Latin America (5). Analyzes the history of Latin America in the past two centuries, from the Wars of Independence until the present day. Same as HIST 528. Students may not receive credit for both.
HIST 329. The Tropics and the Modern World (5). Analyzes the history of the modern world through the history of tropical commodities. Cross listed with HIST 529. Students may not receive credit for both.
HIST 330. Africa to 1800 (5). This course is designed to explore Africa’s earliest civilizations; internal processes of change; external influences; state formation; complex societies; connections to the world economy.
HIST 331. Colonial Africa (3-5). Africa on the eve of colonial conquest; causes of imperialism; colonial rule and African reactions and initiatives; independence and colonial legacy.
HIST 338. Conquests and Compromises: American Indian History since 1492 (5). Discussion and lecture course on interactions between American Indians and Europeans since the arrival of Columbus. Corresponds to History 538. Credit given for only one of the two courses.
HIST 339. Colonial British America (5). Social, cultural, political, and economic life in the British Colonies of North America to 1763.
HIST 340. The American Revolution (5). Causes and consequences of the American Revolution, 1688-1789. Corresponds to HIST 440 and HIST 540; credit given for only one course.

HIST 341. The United States: Early National Period 1789-1844 (3-5).


HIST 344. Women in American History (5). A survey of the role of women, their treatment and response, in American society from colonial times to the present. Corresponds to HIST 446 and 546; credit given for only one.

HIST 345. History of Social Services in the United States (3-5). Attitudes, policies and practices with regard to those people who require charitable assistance, public or private, from colonial times to the present.

HIST 346. Women in American History (5). A survey of the role of women, their treatment and response, in American society from colonial times to the present. Corresponds to HIST 446 and 546; credit given for only one.

HIST 347. On the Border: Excursions in Southwestern History (3-5). Discussion and lecture course on ethnic collisions, environmental revolutions, and urban developments in the American Southwest since the time of the Ancestral Puebloans.

HIST 348. Economic History of the United States (5). Economic factors in the development of the American nation from the European background to the present. Same as ECON 348. Students may not receive credit for both.

HIST 352. The History of the American Family (3). American family patterns from early settlement to the present; demography, gender roles, courtship, marriage, child-raising, aging, ethnicity and alternative life styles.

HIST 354. American Environmental History (5). Environmental values and practices of the diverse populations of America. Corresponds to HIST 454 and 554. Credit given for only one of three courses.

HIST 370. Medieval European History (5). From the breakup of the Roman Empire to the 16th century; political, economic, social, religious, and intellectual institutions. Corresponds to HIST 371, credit given for only one. Formerly HIST 371.

HIST 373. History of Modern East Europe (5). Poland, Czech and Slovak Republics, Austria, Hungary, Romania, Yugoslavia, Bulgaria, Greece, Albania, with special attention to multi-ethnicity, economic underdevelopment and modernization, political dependence and nationalism.

HIST 380. Modern East Asia (5). A survey of the modern histories of China, Japan, and Korea from 1600 to the present. Imperialism, nationalism, and the rise of communism are covered. Corresponds to HIST 580; credit given for only one of the two. Formerly HIST 385.

HIST 381. History of Modern Southeast Asia: Colonial Era to the Present (5). This is a survey course in the political and cultural history of modern Southeast Asia. It will examine European colonialism, nationalism, decolonization, and post WWII configuration.

HIST 383. East Asian Civilization (5). A general survey of the development of civilization in China, Japan, Korea, and Southeast Asia to about 1600.

HIST 386. The Latin American Colonies (5). Spanish and Portuguese colonial empires to completion of Latin American wars of independence (1825), focusing primarily on Peru and Brazil.

HIST 388. Economic History of Europe Since 1760 (3-5). The Industrial Revolution in Great Britain and on the Continent; the rise of trade unionism, socialism, anarchism, and imperialism in the 20th century. Same as ECON 388. Students may not receive credit for both.

HIST 395. Research in Local History (1-6). Comparative local history with emphasis on research techniques and the utilization of sources.

HIST 398. Special Topics (1-6).

HIST 421. Methods and Materials in the Social Studies, Secondary (3). Same as SOSC 421. Students may not receive credit for both. Prior completion of EDCS 311 recommended. Students must be admitted to the Teacher Education Program prior to enrolling in this course.

HIST 425. Renaissance and Reformation (5). Same as HIST 525. Students may not receive credit for both.

HIST 430.1. Tudor-Stuart England (3-5). Same as HIST 530.1. Students may not receive credit for both.

HIST 431. Africa: The Crisis of Nation Building (5). An in-depth multi-disciplinary approach to the present political and socio-economic issues, problems and tensions in selected areas of Africa. Same as HIST 531. Students may not receive credit for both.

HIST 433. Selected Topics in African History (5). Specific matter will vary but emphasis will be on the social and cultural development of African states since pre-colonial times. Same as HIST 533. Students may not receive credit for both.

HIST 440. The American Revolution (5). Causes and consequences of the American Revolution, 1688-1789. Corresponds to HIST 340 and HIST 540; credit given for only one course.

HIST 441. American Environmental History (3-5). Exploration, territorial acquisition, patterns of settlement, economic development, and the influence of the frontier on American institutions. Same as HIST 543. Students may not receive credit for both.

HIST 444. Sectionalism, Civil War and Reconstruction (3-5). Slavery, the Old South, sectionalism, the breakdown of the Union, and secession. A military, political, social history of North and South during the Civil War, and the aftermath of the war. Same as HIST 544. Students may not receive credit for both.

HIST 446. Women in American History (5). A survey of the role of women, their treatment and response, in American society from colonial times to the present. Corresponds to HIST 346 and 546; credit given for only one.

HIST 449. History of Women and the West (5). Women in the western United States, with emphasis on the nineteenth and twentieth centuries: myths and stereotypes; women’s work; community roles; class and racial/ethnic differences. Same as HIST 549. Students may not receive credit for both.

HIST 450. Exploring U.S. Cultural History (5). Thematic approach to nineteenth-century cultural transformations in U.S. Selected topics; mesmerism, utopias, true womanhood, women’s rights, slave spirituals, confidence men, gold rushes. Same as HIST 550. Students may not receive credit for both.


HIST 452. 20th Century U.S. 1919-1945 (3-5). Prosperity and depression; the New Deal and its implications; World War II, origins and conclusion. Same as HIST 552. Students may not receive credit for both.

HIST 453. 20th Century U.S. 1945 to the Present (3-5). Cold War, sedentary 50s, rebellious 60s, the Watergate era. Same as HIST 553. Students may not receive credit for both.

HIST 454. American Environmental History (5). Environmental values and practices of the diverse populations of America. Corresponds to HIST 394 and 554. Credit given for only one of three courses.

HIST 463.2. History of American Foreign Relations Since 1941 (3-5). From Pearl Harbor to the present. Same as HIST 563.2. Students may not receive credit for both.

HIST 465. History of the People's Republic of China (5). Evaluates the historical record of the Chinese Communists in power since the establishment of the People’s Republic of China in 1949. Same as HIST 565. Students may not receive credit for both.
HIST 471. German History, 1815-1918 (3-5).
A political, diplomatic, socio-economic, and intellectual study of Germany from the end of the Napoleonic Era through World War I. Emphasis on German unification and the socio-economic background to World War I. Same as HIST 571. Students may not receive credit for both.

HIST 472. German History, 1918 to the Present (3-5). A political, socio-economic, and intellectual study of Germany with special attention to the causes, progress, and aftermath of the National Socialist State. Same as HIST 572. Students may not receive credit for both.

HIST 473. Russia to 1881 (3-5). The political, social, economic and cultural development of Russia from ancient times to the assassination of Alexander II. Same as HIST 573. Students may not receive credit for both.

HIST 474. Russia Since 1881 (3-5). The political, economic, social and cultural history of Russia and the Soviet Union since 1881. Same as HIST 574. Students may not receive credit for both.

HIST 479. Europe in the 20th Century (3-5). Events and movements which led to two wars; change in governmental structure in the cycles of war and peace. Same as HIST 579. Students may not receive credit for both.

HIST 481. Understanding History (3-5). Analysis of the nature of history, of the way historians reason, and of the search for meaning in history. Limited to seniors only.

HIST 482. Revolutionary China (3). The causes, course, and effects of the 20th century Chinese Revolution 1911-present. Same as HIST 582. Students may not receive credit for both.

HIST 483. Modern China (5). The history of China in the 19th and 20th centuries, including the nature of China’s response to the West and the Chinese Revolution of the 20th century. Emphasis on internal social and economic change. Same as HIST 583. Students may not receive credit for both.

HIST 484. Modern Japan (3-5). The recent historical development of Japan beginning with the collapse of the Tokugawa Shogunate and the resumption of foreign contacts in the mid-19th century. Emphasis is given to the modernization process with its concomitant political, social, economic, and intellectual changes. Same as HIST 584. Students may not receive credit for both.

HIST 487. The Russian Revolutionary Movement (3-5). Origins and development of Russian radicalism through the Bolshevik Revolution of 1917. Same as HIST 587. Students may not receive credit for both.

HIST 488. Mexico in the Modern Era (5). The modernization and nationalization of Mexico, with emphasis on the social history of Mexico’s frontiers. Same as HIST 588. Students may not receive credit for both.

HIST 489. Cuba and the Caribbean (5). Foreign intervention and the domestic social structure of Caribbean America. Same as HIST 589. Students may not receive credit for both.

HIST 490. Cooperative Education (1-8). An individualized contracted field experience with business, industry, government, or social service agencies. This contractual arrangement involves a student learning plan, cooperating employer supervision, and faculty coordination. Prior approval required. May be repeated. Grade will be S or U. Same as ENG 190. Students may not receive credit for both.

HIST 496. Individual Study (1-6). Prerequisite, permission of instructor.

HIST 497. Honors Individual Study (1-6). Open to students accepted into the departmental honors program. This course may be repeated once, but no more than an over-all total of six credits per quarter is permitted.

HIST 498. Special Topics (1-6).

*The depth of coverage of the content of variable credit courses will vary according to the number of credits offered.

Undergraduate Courses/Programs on Reserve
The following courses are on reserve and may be offered subject to program needs: HIST 463.1 History of American Foreign Relations 1900 to 1941 (3-5).

HUMANITIES
Contact Person: Gerald J. Stacy
Language and Literature Building 408C

Humanities Courses
HUM 101. Exploring Cultures in Modern and Contemporary Societies (5). Prerequisite, grade of C- or above in ENG 101. An interdisciplinary exploration of literature, history, philosophy, and the arts of selected world civilizations of the twentieth century.

HUM 150. Introduction to Film and Video Studies (4). Overview of film and video studies including film viewing and analysis, motion picture language and film genres and production aspects.

HUM 298. Special Topics (1-6).
HUM 398. Special Topics (1-6).
HUM 498. Special Topics (1-6).

INDIVIDUAL STUDIES
Program Director: Associate Vice President for Undergraduate Studies
Barge 303

Individual Studies Major (1100)
Bachelor of Arts
Bachelor of Science
Bachelor of Music

General Program Information
Students interested in pursuing an area of scholarly inquiry which falls outside the purview of an established academic department or program of the University may apply for admission to the Individual Studies program. This academic program offers students an opportunity to develop, under the guidance of faculty advisors, a major which meets their specific needs. The program is available in the Bachelor of Arts, Bachelor of Music and Bachelor of Science degrees. Major areas of study are typically interdisciplinary.

Detailed written procedures and advice about preparing a proposal are available from the office of the Associate Vice President for Undergraduate Studies. The proposal must include a title, statement of purpose, a listing of courses which comprise the major, and support from a faculty advisor. The Course of Study should include courses from at least two separate subject areas and total at least 60 credits. All proposal materials must be submitted to the Associate Vice President for Undergraduate Studies at least three quarters prior to anticipated graduation, unless otherwise stipulated by the Associate Vice President for Undergraduate Studies. Proposals are subject to the review and approval of an advisory committee which meets quarterly.

Application forms, guidelines, and policies are available in the Office of the Associate Vice President for Undergraduate Studies, Barge 303.
Individual Studies Courses

**IS 193. Field Study (1).** Prerequisite, permission of the Associate Vice President for Undergraduate Studies. Field research projects and report writing.

**IS 290. Cooperative Education (1-5).** An individualized contracted field experience with business, industry, government, or social service agencies. This contractual arrangement involves a student learning plan, cooperating employer supervision, and faculty coordination. Prior approval required. May be repeated to a maximum of 10 credits. Grade will be S or U.

**IS 296. Individual Study (1-6).** Prerequisite, permission of the Associate Vice President for Undergraduate Studies.

**IS 298. Special Topics (1-6).** Prerequisite, permission of the Associate Vice President for Undergraduate Studies.

**IS 487. Individual Study (1).** End-of-program assessment. Prerequisite, senior standing and permission of Associate Vice President for Undergraduate Studies. An individual study for students enrolled in the individual studies major program. Grade will be S or U.

**IS 496. Individual Study (1-6).** Prerequisite, permission of Associate Vice President for Undergraduate Studies.

**IS 498. Special Topics (1-6).** Prerequisite, permission of Associate Vice President for Undergraduate Studies.

---

**INDUSTRIAL AND ENGINEERING TECHNOLOGY**

**Faculty**

**Chair:** Walt Kaminski

Hogue 107

**Professors**

D. Ken Calhoun, Woods, Construction Management

David Carns, Construction Management

Walter Kaminski, Mechanical Engineering Technology

Robert Wieking, Power, Professional

Tim Yoxtheimer, Electronics

**Associate Professors**

William Bender, Construction Management

Craig Johnson, Mechanical Engineering Technology

Lad Holden, Electronics

Teresa Sloan, Flight Technology

Dale Wilson, Flight Technology

T.Q. Yang, Electronics

**Assistant Professors**

Scott Calahan, Safety & Health Management

Carlos Oricinia, Mechanical Engineering Technology

Joe Price, Safety & Health Management

William Trippett, Flight Technology

**Emeritus Professor:**

G.W. Beed, Mechanical Engineering Technology, Foundry

**Adjunct Professor:**

Autumn Cooper

New positions to be filled by fall quarter, 2003:

New FLT Professor (TBA)

---

**General Departmental Information**

The curricula of the Department falls into three categories: Engineering Technology, Industrial Technology and Industrial Education.

Engineering Technology is a baccalaureate degree program. It is that part of the technological field which requires the application of scientific and engineering knowledge and methods combined with technical skills in support of engineering activities; it lies in the occupational spectrum between the craftsman and the engineer at the end of the spectrum closest to the engineer.

Industrial Technology is a baccalaureate degree program designed to prepare individuals for technical managerial, production supervisory, and related types of professional leadership positions. The curriculum, even though built on technical education, has a balanced program of studies drawn from a variety of disciplines relating to industry. Included are a sound knowledge and understanding of materials and manufacturing processes, principles of distribution, and concepts of industrial management and human relations; experience in communications skills, humanities, and social sciences, and a proficiency level in the physical sciences, mathematics, design, and technical skills to permit the graduate to capably cope with typical technical, managerial, and production problems.

Industrial Education curriculum leads to the degree of Bachelor of Science for one of the following: industrial art teachers at junior and senior high school levels; or individuals who are, or plan to become, teachers in either a community college or other trade and industrial or technical programs and who, in addition to state requirements, need or desire a college degree.

Students desiring vocational certification should see their major advisor about additional requirements.

The Industrial and Engineering Technology department also offers a Master’s Degree in Engineering Technology. See the Graduate Studies section of this catalog.

---

**Bachelor of Science**

**Construction Management Major (2105)**

**Advisors:** D. Carns (Coordinator), K. Calhoun, W. Bender

The Construction Management program is fully accredited by the American Council for Construction Education (ACCE), and also is a member of the Associated Schools of Construction (ASC).

This major prepares the graduate for management positions in the construction industry. Recent graduates are working in cost estimating, project scheduling, cost control, and project management. Students selecting this major should have a basic background in mathematics, physics, and chemistry. In the absence of an appropriate background the student may find it necessary to take MATH 163.2. Students must be accepted into the major prior to taking upper division CMGT courses. Major applications are accepted on October 15 each year. Students pursuing this degree should work closely with their program advisor to assure that prerequisites for entry into the major have been satisfied. Due to the number of hours in this program, some students may find that this program requires additional time to complete.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMGT 245</td>
<td>Light Commercial Construction Management</td>
<td>3</td>
</tr>
<tr>
<td>CMGT 265</td>
<td>Blueprint Reading and Construction Graphics</td>
<td>4</td>
</tr>
<tr>
<td>CMGT 267</td>
<td>Plane Surveying/Lab</td>
<td>3.1</td>
</tr>
<tr>
<td>CMGT 320</td>
<td>Electrical Systems Design</td>
<td>3</td>
</tr>
<tr>
<td>CMGT 343, 343.1</td>
<td>Construction Estimating I/Lab</td>
<td>3,1</td>
</tr>
<tr>
<td>CMGT 344, 344.1</td>
<td>Construction Estimating II/Lab</td>
<td>3,1</td>
</tr>
<tr>
<td>CMGT 346, Construction Materials and Methods</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CMGT 411</td>
<td>Wood and Steel Construction</td>
<td>4</td>
</tr>
<tr>
<td>CMGT 442</td>
<td>Building Service Systems</td>
<td>3</td>
</tr>
<tr>
<td>CMGT 444, 444.1</td>
<td>Codes, Contracts and Specifications</td>
<td>3,1</td>
</tr>
<tr>
<td>CMGT 447</td>
<td>Construction Planning, Scheduling and Control</td>
<td>4</td>
</tr>
<tr>
<td>CMGT 450, 450.1</td>
<td>Soils and Foundations</td>
<td>4</td>
</tr>
<tr>
<td>CMGT 455, Principles of Construction Management</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CMGT 460</td>
<td>Concrete Construction</td>
<td>4</td>
</tr>
<tr>
<td>CMGT 485</td>
<td>Construction Accounting, Finance and Contemporary Topics</td>
<td>4</td>
</tr>
<tr>
<td>CMGT 488, Professional Certification</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>CMGT 499</td>
<td>Seminar</td>
<td>1</td>
</tr>
<tr>
<td>IET 161</td>
<td>Architectural CAD</td>
<td>3</td>
</tr>
<tr>
<td>IET 301, Engineering Project Cost Analysis</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>IET 311</td>
<td>Statistics</td>
<td>4</td>
</tr>
</tbody>
</table>
### Industrial Technology Major (4200)

**Advisors:** L. Holden (Coordinator), K. Calhoun, C. Johnson, R. Wieking, T. Yoxtheimer

This major prepares the graduate for leadership positions in industry and technical distribution. The program applies algebra, trigonometry, and the physical sciences to industrial systems. Graduate students receive 40-41 credits by advisement in an area of technical specialization. Specializations exist in Industrial Distribution, Industrial Electronics, Industrial Manufacturing, Power Systems, Cast Metals, Metal Fabrication, Non-destructive Testing, Wood Production, and computer applications by departmental advisement. Students pursuing this degree should work closely with their department advisor to assure that they have met the prerequisites for the upper-division electives.

#### Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IET 160, Computer Aided Design</td>
<td>4</td>
</tr>
<tr>
<td>IET 301, Engineering Project Cost Analysis</td>
<td>4</td>
</tr>
<tr>
<td>IET 380, Quality Control</td>
<td>5</td>
</tr>
<tr>
<td>IET 385, Industrial Design</td>
<td>3</td>
</tr>
<tr>
<td>IET 389, Technical Communications</td>
<td>3</td>
</tr>
<tr>
<td>EET 221, Basic Electricity (with laboratory)</td>
<td>4</td>
</tr>
<tr>
<td>EET 312, Basic Electronics</td>
<td>4</td>
</tr>
<tr>
<td>EET 314, Network Analysis</td>
<td>4</td>
</tr>
<tr>
<td>EET 372, Intermediate Electronics</td>
<td>4</td>
</tr>
<tr>
<td>EET 375, Microprocessor Applications</td>
<td>4</td>
</tr>
<tr>
<td>EET 376, Microprocessors and Instrumentation</td>
<td>4</td>
</tr>
<tr>
<td>CS 110, Programming Fundamentals I</td>
<td>4</td>
</tr>
<tr>
<td>CS 111, Programming Fundamentals II</td>
<td>4</td>
</tr>
<tr>
<td>IET 301, Engineering Project Cost Analysis</td>
<td>4</td>
</tr>
<tr>
<td>IET 380, Quality Control</td>
<td>5</td>
</tr>
<tr>
<td>IET 389, Technical Presentations</td>
<td>3</td>
</tr>
<tr>
<td>MATH 172.1, Calculus</td>
<td>5</td>
</tr>
<tr>
<td>MATH 172.2, Calculus</td>
<td>5</td>
</tr>
<tr>
<td>MATH 265, Linear Algebra</td>
<td>4</td>
</tr>
</tbody>
</table>

#### Sub Total 68-69

#### Technical Specialization

By advisement

#### Sub Total 41-42

#### Total 110

Transfer students MUST complete a minimum of 25 credits from the IET Department.

### Electronics Engineering Technology Major with Specialization (2790)

**Advisor:** L. Holden (Coordinator), T. Q. Yang, T. Yoxtheimer

The Electronic Engineering Technology degree is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering Technology (TAC/ABET), 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, Telephone (410) 347-7700.

The technologists graduating from this program are applications oriented, building upon a background of mathematics, science, and technology. They interface with engineers at the product level and produce practical, workable results quickly; install and operate technical systems; devise electronic hardware and software from proven concepts; develop and produce products; service machines, programs, and systems; manage production facilities and work groups; and provide support for technical systems hardware and software.

The core of the major’s coursework is electronics, digital principles, programming, math, and science. There are two specializations: Computer Engineering Technology for students specializing in software, and Electronic Systems for those specializing in hardware.

Students interested in engineering courses after graduation should complete PHY 211, 212, 213 and MATH through differential equations. Students pursuing this degree should work with the departmental advisors to assure that they have met the prerequisites for the upper-division electives. Due to the number of hours required, some students may find that this program requires additional time to complete.

### Electronics Engineering Technology Required Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EET 221, Basic Electricity</td>
<td>3</td>
</tr>
<tr>
<td>EET 221.1, Basic Electricity Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>EET 312, Basic Electronics</td>
<td>4</td>
</tr>
<tr>
<td>EET 314, Network Analysis</td>
<td>4</td>
</tr>
<tr>
<td>EET 372, Intermediate Electronics</td>
<td>4</td>
</tr>
<tr>
<td>EET 375, Microprocessor Applications</td>
<td>4</td>
</tr>
<tr>
<td>EET 376, Microprocessors and Instrumentation</td>
<td>4</td>
</tr>
<tr>
<td>CS 110, Programming Fundamentals I</td>
<td>4</td>
</tr>
<tr>
<td>CS 111, Programming Fundamentals II</td>
<td>4</td>
</tr>
<tr>
<td>IET 301, Engineering Project Cost Analysis</td>
<td>4</td>
</tr>
<tr>
<td>IET 380, Quality Control</td>
<td>5</td>
</tr>
<tr>
<td>IET 389, Technical Presentations</td>
<td>3</td>
</tr>
<tr>
<td>MATH 172.1, Calculus</td>
<td>5</td>
</tr>
<tr>
<td>MATH 172.2, Calculus</td>
<td>5</td>
</tr>
<tr>
<td>MATH 265, Linear Algebra</td>
<td>4</td>
</tr>
<tr>
<td>MATH 260, Sets and Logic</td>
<td>3-5</td>
</tr>
<tr>
<td>MATH 330, Discrete Mathematics</td>
<td>5</td>
</tr>
<tr>
<td>MATH 272.1, Multivariable Calculus</td>
<td>5</td>
</tr>
<tr>
<td>MATH 311, Statistical Concepts and Methods</td>
<td>5</td>
</tr>
<tr>
<td>MATH 376.1, Differential Equations</td>
<td>3-5</td>
</tr>
<tr>
<td>PHY 211, 212, 213, 213.1, Introductory Physics OR PHY 181, 181.1, 182, 182.1, 183, 183.1, General Physics</td>
<td>15</td>
</tr>
<tr>
<td>CS 325, Technical Writing in Computer Science</td>
<td>3</td>
</tr>
<tr>
<td>EET 385, Business Communication and Report Writing</td>
<td>5</td>
</tr>
</tbody>
</table>

#### EET Core Total 87-91

### Computer Engineering Technology Specialization (2792)

**Advisors:** L. Holden, James Schwing, Tim Yoxtheimer

#### Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EET 301, Data Structures</td>
<td>4</td>
</tr>
<tr>
<td>CS 302, Advanced Data Structures and File Processing</td>
<td>4</td>
</tr>
</tbody>
</table>

#### EET Core Requirements 87-91
Electronic Systems Specialization (2794)
Advisors: Lad Holden, Tim Yoxtheimer

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EET Core Requirements</td>
<td>87-91</td>
</tr>
<tr>
<td>EET 323, Active Linear Circuits</td>
<td>4</td>
</tr>
<tr>
<td>EET 324, Advanced Electrical Networks</td>
<td>4</td>
</tr>
<tr>
<td>EET 332, Electric Power and Machinery</td>
<td>4</td>
</tr>
<tr>
<td>EET 342, Instrumentation</td>
<td>4</td>
</tr>
<tr>
<td>EET 343, Process Control</td>
<td>4</td>
</tr>
<tr>
<td>EET 370, Microprocessor Assembly Language</td>
<td>3</td>
</tr>
<tr>
<td>EET 489, Senior Technical Presentations</td>
<td>2</td>
</tr>
<tr>
<td>Department Approved Technical Electives</td>
<td>18-22</td>
</tr>
</tbody>
</table>

Total 134

Mechanical Engineering Technology Major with Specialization (5200)
Advisor: C. Johnson, (Coordinator), W. Kaminski, C. Oncina

The Mechanical Engineering Technology degree is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering Technology (TAC/ABET), 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, Telephone (410) 347-7700.

The Industrial and Engineering Technology Department offers a Bachelor of Science degree in Mechanical Engineering Technology (MET) with specializations in Mechanical or Manufacturing Technology. The major provides a broad foundation in the practical application of mechanical engineering principles. Graduates concentrating in Mechanical Technology may pursue one of the following career paths: machine and product design, product and system evaluation, plant operation and management, technical sales, field service, environmental quality control and energy production. Graduates specializing in Manufacturing Technology are prepared to enter career paths as tool designers, tool and production planners, numerical control programmers, machine planners, computer assisted machine planners, manufacturing process analysts, quality assurance, and technical field representatives.

In the absence of an appropriate background, the student may find it necessary to take IET 165, Engineering Drawing I. Those students who are interested in engineering courses after graduation should complete the engineering physics sequence (PHYS 181, 182, 183) and mathematics through differential equations.

Due to the number of hours in this program, some students may find that this program requires additional time to complete. Students pursuing this degree should work with the departmental advisor to assure that the prerequisites for the upper division electives have been met.

Mechanical Engineering Technology Core Requirements

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 163.1, Pre-Calculus Mathematics I</td>
<td>5</td>
</tr>
<tr>
<td>MATH 163.2, Pre-Calculus Mathematics II</td>
<td>5</td>
</tr>
<tr>
<td>MATH 172.1, Calculus</td>
<td>5</td>
</tr>
<tr>
<td>MATH 172.2, Calculus</td>
<td>5</td>
</tr>
<tr>
<td>PHYS 181, 181.1, or PHYS 111, 111.1, General or Introductory Physics</td>
<td>5</td>
</tr>
<tr>
<td>PHYS 182, 182.1, or PHYS 112, 112.1, General or Introductory Physics</td>
<td>5</td>
</tr>
<tr>
<td>PHYS 183, 183.1 or PHYS 113,113.1 General or Introductory Physics</td>
<td>5</td>
</tr>
<tr>
<td>CHEM 181, General Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 181.1 General Chemistry Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>ENG 310, Technical Writing</td>
<td>4</td>
</tr>
<tr>
<td>COM 345, Business and Professional Speaking</td>
<td>4</td>
</tr>
<tr>
<td>Computer Science Elective</td>
<td>4</td>
</tr>
<tr>
<td>IET 160, Computer Aided Design and Drafting</td>
<td>4</td>
</tr>
<tr>
<td>IET 265, Engineering Drawing II</td>
<td>4</td>
</tr>
<tr>
<td>IET 311, Statics</td>
<td>4</td>
</tr>
<tr>
<td>IET 312, Strength of Materials</td>
<td>4</td>
</tr>
<tr>
<td>EET 221, Basic Electricity</td>
<td>3</td>
</tr>
<tr>
<td>EET 221.1, Basic Electricity Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>MET 255, Machining</td>
<td>4</td>
</tr>
<tr>
<td>MET 314, Applied Thermodynamics</td>
<td>4</td>
</tr>
<tr>
<td>MET 314.1, Applied Thermodynamics Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>MET 315, Fluid Mechanics</td>
<td>5</td>
</tr>
<tr>
<td>MET 426, Applications in Strength of Materials</td>
<td>2</td>
</tr>
<tr>
<td>MET 327, Technical Dynamics</td>
<td>4</td>
</tr>
<tr>
<td>MET 327.1, Technical Dynamics Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>MET 351, Metallurgy/Materials and Processes</td>
<td>4</td>
</tr>
<tr>
<td>MET 418, Mechanical Design I</td>
<td>5</td>
</tr>
<tr>
<td>MET 419, Mechanical Design II</td>
<td>5</td>
</tr>
<tr>
<td>MET 495A, B, C, Senior Project</td>
<td>6</td>
</tr>
</tbody>
</table>

MET Core Total 113

Mechanical Technology Specialization (5201)

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>METCore Requirements</td>
<td>113</td>
</tr>
<tr>
<td>MET 316, Applied Heat Transfer</td>
<td>5</td>
</tr>
<tr>
<td>MET 411, Energy Systems</td>
<td>5</td>
</tr>
<tr>
<td>EET 332, Electrical Power and Machinery</td>
<td>4</td>
</tr>
<tr>
<td>Department approved technical electives selected from the following:</td>
<td>8-9</td>
</tr>
<tr>
<td>IET 301, Engineering Project Cost Analysis</td>
<td>4</td>
</tr>
<tr>
<td>MET 320, Fundamentals of Laser Technology</td>
<td>4</td>
</tr>
<tr>
<td>EET 342, Instrumentation</td>
<td>4</td>
</tr>
<tr>
<td>MET 382, Plastics and Composite Materials</td>
<td>4</td>
</tr>
<tr>
<td>MET 412, Alternative Energy Systems</td>
<td>5</td>
</tr>
<tr>
<td>MET 420, Finite Element Analysis</td>
<td>4</td>
</tr>
<tr>
<td>MET 423, Computer Aided Design and Manufacturing</td>
<td>4</td>
</tr>
<tr>
<td>MET 483, Ceramics and Composites</td>
<td>4</td>
</tr>
</tbody>
</table>

Total 135-136

Manufacturing Technology Specialization (5202)

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>METCore Requirements</td>
<td>113</td>
</tr>
<tr>
<td>MET 423, Computer Aided Design and Manufacturing</td>
<td>4</td>
</tr>
<tr>
<td>MET 345, Production Technology</td>
<td>4</td>
</tr>
<tr>
<td>MET 355, Advanced Machining and NC Programming</td>
<td>4</td>
</tr>
<tr>
<td>MET 388, Tool Design</td>
<td>4</td>
</tr>
<tr>
<td>Department approved technical electives selected from the following:</td>
<td>8</td>
</tr>
<tr>
<td>MET 257, Casting Processes</td>
<td>4</td>
</tr>
<tr>
<td>MET 357, Welding</td>
<td>4</td>
</tr>
<tr>
<td>MET 310, Hydraulics/Pneumatics</td>
<td>4</td>
</tr>
<tr>
<td>IET 380, Quality Control</td>
<td>5</td>
</tr>
<tr>
<td>MET 382, Plastics and Composite Materials</td>
<td>4</td>
</tr>
<tr>
<td>MET 483, Ceramics and Composites</td>
<td>4</td>
</tr>
<tr>
<td>OMIS 221, Introductory Business Statistics</td>
<td>5</td>
</tr>
</tbody>
</table>

Total 137

Industrial Education Broad Area Major (4160)
Advisor: Robert Wieking

This major satisfies the Primary endorsement for Technology Education. Qualifies for teaching secondary industrial arts and technology education. Students
selecting this major must have a basic background in industrial arts - woods, metals, and drafting; mathematics through trigonometry. One year high school proficiency in these subjects will normally suffice. Admission to this program requires that students must have completed CHEM 111, MATH 163.1 and PHY 111. (Equivalent courses will be allowed.) In absence of this background, courses may be taken at this University. IET 430 is a prerequisite for student teaching. Students taking this major are required to complete the professional education program requirements offered through the Curriculum and Supervision Department.

### Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IET 145</td>
<td>Machine Woodworking</td>
<td>4</td>
</tr>
<tr>
<td>IET 160</td>
<td>Computer Aided Design and Drafting</td>
<td>4</td>
</tr>
<tr>
<td>IET 210</td>
<td>Energy Sources and Power</td>
<td>3</td>
</tr>
<tr>
<td>MET 255</td>
<td>Metal Machining</td>
<td>4</td>
</tr>
<tr>
<td>IET 265</td>
<td>Engineering Drawing II</td>
<td>4</td>
</tr>
<tr>
<td>EET 221</td>
<td>Basic Electricity</td>
<td>3</td>
</tr>
<tr>
<td>EET 221.1</td>
<td>Basic Electricity Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>EET 312</td>
<td>Basic Electronics</td>
<td>4</td>
</tr>
<tr>
<td>EET 371</td>
<td>Digital Circuits</td>
<td>4</td>
</tr>
<tr>
<td>MET 345</td>
<td>Production Technology</td>
<td>4</td>
</tr>
<tr>
<td>MET 357</td>
<td>Welding/Fabrication</td>
<td>4</td>
</tr>
<tr>
<td>IET 385</td>
<td>Industrial Design</td>
<td>3</td>
</tr>
<tr>
<td>SHM 386</td>
<td>Occupational Safety and Health</td>
<td>3</td>
</tr>
<tr>
<td>MET 382</td>
<td>Plastics and Composites</td>
<td>4</td>
</tr>
<tr>
<td>IET 430</td>
<td>Methods in Teaching Industrial Education</td>
<td>3</td>
</tr>
<tr>
<td>IET 433</td>
<td>Industrial Education Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>IET 446</td>
<td>Shop and Tool Maintenance</td>
<td>4</td>
</tr>
<tr>
<td>Select from one of the following groups: 7-10:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
- Group I, General
- IET 341, Furniture Construction (4)
- MET 355, Advanced Machining and CNC Programming (4)
- EET 322, Intermediate Electronics (4)
- Group II, Wood
- IET 341, Furniture Construction (4)
- IET 353, Pattern Making (4)
- CMGT 245, Light Commercial Construction (5)
- IET 447, Wood and Metal Finishing (3)
- Group III, Drafting
- MET 388, Tool Design (4)
- Department approved electives (3-6)
- Group IV, Metals
- MET 257, Casting Processes (4)
- MET 351, Metallurgy/Materials and Processes (4)
- MET 355, Advanced Machining and CNC Programming (4)
- IET 457, Advanced Foundry (4)

### Group V, Electronics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EET 322</td>
<td>Intermediate Electronics</td>
<td>4</td>
</tr>
<tr>
<td>EET 342</td>
<td>Instrumentation</td>
<td>4</td>
</tr>
<tr>
<td>EET 372</td>
<td>Advanced Digital</td>
<td>4</td>
</tr>
<tr>
<td>EET 455</td>
<td>Electronics Communication</td>
<td>4</td>
</tr>
</tbody>
</table>

Group VI, Power

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IET 215</td>
<td>Small Engines</td>
<td>4</td>
</tr>
<tr>
<td>IET 219</td>
<td>Engine Performance Measurement</td>
<td>4</td>
</tr>
<tr>
<td>IET 315</td>
<td>Vehicle Electric Systems</td>
<td>4</td>
</tr>
<tr>
<td>IET 411</td>
<td>Mechanical Power Transmission</td>
<td>4</td>
</tr>
</tbody>
</table>

Group VII, Occupational Cluster

1-15 credit hours. This cluster would allow transfer students from a community college to obtain credit for technical work taken at that institution in which we do not have similar programs here on campus.

**Total 65-68**

### Industrial Education Major

(4150)

**Advisor: Robert Wiegand**

This major satisfies the Primary endorsement for Technology Education. Qualifies for teaching industrial technology education at the junior or senior high level. Students selecting this major must have a basic background equivalent to one year of high school wood, metals, and drafting and high school mathematics through trigonometry. Admission to this program requires that students must have completed CHEM 111, MATH 163.1, and PHY 111. (Equivalent courses will be allowed.) In absence of this background, courses may be taken at this University.

**Total 28**

### Electronics - Computer Hardware Minor (2755)

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>EET 221</em></td>
<td>Basic Electricity</td>
<td>3</td>
</tr>
<tr>
<td>EET 221.1</td>
<td>Basic Electricity Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>EET 312</td>
<td>Basic Electronics</td>
<td>4</td>
</tr>
<tr>
<td>EET 371</td>
<td>Digital Circuits</td>
<td>4</td>
</tr>
<tr>
<td>EET 375</td>
<td>Advanced Digital Circuits</td>
<td>4</td>
</tr>
<tr>
<td>EET 376</td>
<td>Microprocessor Applications</td>
<td>4</td>
</tr>
<tr>
<td>EET 476</td>
<td>Microminiature Computer</td>
<td>4</td>
</tr>
</tbody>
</table>

**Total 25**

### Construction Management Courses

**CMGT 245. Light Commercial Construction** (5). Prerequisite, CMGT 265 or permission of the instructor. Construction of building foundations, commercial carpentry, and enclosing of wood frame structures. Students participate in construction of a building.

**CMGT 265. Blueprint Reading and Construction Graphics** (4). Prerequisite, high school drafting or permission of instructor. Introduction to plan reading, construction terminology and the construction process. Extensive work with plans of significant scope. Not open to students with credit in CMGT 266.

**CMGT 267. Plane Surveying** (3). Prerequisites, MATH 163.2, IT 101, and CMGT 265. Corequisite, CMGT 267.1. General surveying theory and practice pertaining to distance, elevation and angle measurement. Includes traverse calculations and an emphasis on
construction applications.
CMGT 267.1. Plane Surveying Field Session (1). Corequisite, CMGT 267. One surveying field session weekly.
CMGT 320. Electrical Systems Design (3). Prerequisite, MATH 72.1 or permission of instructor. Design and specification of building electrical systems including circuit principles, power distribution and low voltage controls.
CMGT 346. Construction Methods and Materials (4). Prerequisite, CMGT 265. Materials commonly used and the various methods employed in construction. Introduction to materials testing.
CMGT 441. Wood and Steel Construction (4). Prerequisites, IET 312, and CMGT 346. A comprehensive study of the materials, design and erection of wood and steel structures.
CMGT 442. Building Service Systems (3). Prerequisite CMGT 344. An introduction to building service systems. Study the interfaces and specifications of mechanical and plumbing systems in building construction. Topics include: plumbing, fire suppression, storm drainage, heat gain/loss, heating and cooling systems, and elevators.
CMGT 444. Codes, Contracts and Specifications (4). Prerequisites CMGT 343, BUS 241 and ENG 102. Construction contracts and liability, bonding, arbitration, specifications, and building codes administration.
CMGT 450. Soils and Foundations (4). Prerequisites, IET 312 and CMGT 346 and GEOL 145, 145.1 or GEOL 180. An introduction to soil mechanics and analysis and design of both shallow and deep foundations.
CMGT 455. Principles of Construction Management (4). Prerequisites CMGT 447 and CMGT 444. Fundamental tools of construction management. Topics; contract management, scheduling, cost estimating, cost control, conflict management, negotiating, team building, quality control, safety, and a capstone project.
CMGT 460. Concrete Construction (4). Prerequisites CMGT 346, CMGT 441 and CHEM 181. Manufacturing and testing of concrete; field practices; and formwork. Two hours lecture and two hours laboratory per week.
CMGT 485. Construction Accounting, Finance and Contemporary Topics (4). Prerequisite, CMGT 444. Project cost accounting principles, applications and impact on profitability. Includes principles of activity based costing; WBS, earned value, cash management, value engineering and contemporary topics.
CMGT 488. Professional Certification (1). Prerequisite CMGT 444. A comprehensive review of professional construction management principles and technical skills in preparation for a national certification examination.
CMGT 499. Seminar (1-5). May be repeated.

Industrial and Engineering Technology Courses
IET 101. Modern Technology (5). A study of how basic scientific principles are applied daily in industrial societies through a survey of transportation, electrical power, construction, and consumer product technologies.
IET 145. Machine Woodworking (4). Machine and tool operations, wood technology, designing and construction principles, finishing methods and materials. Two hours lecture and four hours laboratory per week.
IET 160. Computer Aided Design and Drafting (4). Hands-on training in the operation of AutoCAD’s design and drafting software system with emphasis on features, limitations and dimensioning strategy.
IET 165. Engineering Drawing I (4). Fundamentals of orthographic projection, isometric drawings, applied geometry, sections, auxiliary view, developments, lettering and drawing reproductions. Two hours lecture and three hours laboratory per week.
IET 210. Energy Sources and Power (3). A study of the various forms of power, its generation, application and implications for technology and a technological society.
IET 215. Small Engines (4). Prerequisite, IET 210 or permission of instructor. Maintenance and repair of one and two cylinder internal combustion engines. Two hours lecture and four hours laboratory per week.
IET 219. Engine Performance Measurement (4). Prerequisite, IET 210 or permission of instructor. Vehicle fuel and ignition systems and their import on heat. Two hours lecture and four hours laboratory per week.
IET 265. Engineering Drawing II (4). Prerequisites, IET 160 and IET 165 or permission of instructor. Advanced working drawings, sections, auxiliary projection, revolutions, gears and cams, threads and fasteners, and technical illustrations. Two hours lecture and four hours laboratory per week.
IET 290. Cooperative Education (1-15). An individualized contracted field experience with business, industry, government, or social service agencies. This contractual arrangement involves a student learning plan, cooperating employer supervision, and faculty coordination. Prior approval required. May be repeated. Grade will be S or U.
IET 296. Individual Study (1-6). Prerequisite, permission of instructor. May be repeated.
IET 298. Special Topics (1-6).
IET 299. Seminar (1-5). May be repeated.
IET 311. Statics (4). Prerequisites, PHYS 111, 211 and MATH 172.2 or permission of instructor. Introductory statics including forces and equilibrium. Principles of structures including trusses, beams, frames, machines and friction. Formerly CMGT 314/MET 214. Students may not receive credit for both.
IET 315. Vehicle Electric Systems (4). Prerequisite, IET 210. Starting, charging, regulation, ignition, and onboard microprocessor systems as used in automobiles, industrial materials handling
IET 341. Furniture Construction (4). Prerequisite, IET 145 or permission of instructor. Design and construction of contemporary furniture. Individual problems. Two hours lecture and four hours laboratory per week.

IET 353. Pattern Making (4). Prerequisite, MET 257 or permission of instructor. Two hours lecture and four hours laboratory per week.

IET 373. Programmable Logic Controller Applications (4). Prerequisite, permission of instructor. A study of programmable logic controller concepts, components, systems, programming and applications. Three hours lecture and two hours laboratory per week.

IET 380. Quality Control (5). Prerequisite, OMIS 221 or permission of instructor. Provides the foundation necessary to understand and apply statistical quality control techniques, product reliability procedures and the management aspects of quality assurance.

IET 384. Industrial Processes and Materials (3). A technical study of modern industrial materials and processes used in manufacturing. Metallic and nonmetallic materials are treated along with industrial aspects of each.

IET 385. Industrial Design (3). Principles of design as related to materials and construction methods, and their application to industrial problems. Three hours lecture per week.

IET 386. Methods Analysis in Manufacturing (4). Prerequisites, intermediate algebra or equivalent and junior standing, or permission of instructor. Methods study and work measurement for improved efficiency. Three hours lecture and two hours laboratory per week.

IET 389. Technical Presentations (3). Prerequisite, permission of instructor. Written and oral presentations based on technical reference material utilizing the library, technical society publications, and the Internet.

IET 398. Special Topics (1-6).

IET 411. Mechanical Power Transmission (4). Prerequisite, permission of instructor. Design, analysis and construction of mechanical power transmission systems. Emphasis on design principles and calculations, product knowledge, use of catalogues and references, and troubleshooting techniques. Laboratory experiences include work on gear drives, chain, belt and couplings. Two hours lecture and four hours laboratory per week.

IET 415. Air Logic (4). Prerequisites, EET 221, 221.1 and MET 310. Techniques of pneumatic logic control, design, analysis, proof, circuit layout, building and troubleshooting. Two hours lecture and four hours laboratory per week.

IET 430. Methods of Teaching Industrial Education (3).

IET 433. Industrial Education Laboratory Planning (3). Planning of school shop and labs, new construction and remodeling of facilities. Management of industrial education facilities, inventories; records of tools, equipment, materials; safety and student personnel.

IET 446. Shop and Tool Maintenance (3). Prerequisites, IET 145 and 235, or permission of instructor. Adjustment, maintenance, and repair of industrial machines. Demonstrations and lectures by factory representatives. Two lectures and two hours laboratory per week.

IET 448. Cabinetmaking (3). Prerequisites, IET 145 and 345 or permission of instructor. Design, construction and finishing of kitchen, bath and utility cabinets.

IET 457. Advanced Foundry (4). Prerequisite, MET 257, IET 353, or permission of instructor. Two hours lecture and four hours laboratory per week.

IET 490. Cooperative Education (1-12). An individualized contracted field experience with business, industry, government, or social service agencies. This contractual arrangement involves a student learning plan, cooperating employer supervision, and faculty coordination. Prior approval required. May be repeated. Grade will be S or U.

IET 491. Workshop (1-6).

IET 495. A,B,C, Senior Project I,II,III (2,2,2). Prerequisites, senior standing and permission of Department Chair. Must be taken in sequence. Application and integration of previous course material in the solution of industrial problems. Results of the project to be presented to the Department in writing and orally before the technology faculty, students and selected industrial representatives.

IET 496. Individual Study (1-6). Prerequisite, permission of instructor. May be repeated.

IET 498. Special Topics (1-6).

IET 499. Seminar (1-5). May be repeated.

Electronic Engineering Technology Courses

EET 221. Basic Electricity (3). Prerequisite, MATH 162 or MATH 163.1. Corequisite, EET 221.1 (laboratory). Fundamental principles of electricity, Ohms law, Kirchoffs laws, and the power equation applied to DC and AC circuits.

EET 221.1. Basic Electricity Laboratory (1). Corequisite EET 221. Basic principles of electrical measurement and testing of DC and AC Circuits. Three hours laboratory per week.

EET 312. Basic Electronics (4). Prerequisites, EET 221 and EET 221.1. Solid state electronic devices and their application to power supplies and amplification utilizing both discrete and integrated circuit techniques. Lecture/laboratory.

EET 314. Network Analysis (4). Prerequisites, EET 221, 221.1, MATH 162 or MATH 163.2. Network analysis techniques including computer solutions, loop and nodal equations, complex impedance, Thevenin and Norton equivalents, superposition, and Gauss elimination. Lecture/laboratory.

EET 322. Intermediate Electronics (4). Prerequisite, EET 312 or permission of instructor. Linear circuits utilizing discrete and integrated components. EET’s, SCR’s, multistage sensors, oscillators, regulators, timers and op-amps. Two hours lecture and four hours laboratory per week.

EET 323. Active Linear Circuits (4). Prerequisites, EET 322 or equivalent and MATH 172.1. Analysis and design of multistage transistor amplifier with emphasis on the operational amplifier and its applications. Low-frequency and high-frequency limitations, Miller effect, pulse testing, Bode Plots, Nyquist stability criteria, Barkhausen criteria for oscillation. Power amplifiers, heat sinks, integrated circuit voltage regulators.

EET 324. Advanced Electrical Network (4). Prerequisites, EET 314, EET 370, MATH 172.2. An advanced course in analysis techniques applied to dynamic systems. Solution of time and frequency domain problems stressing the relationship between electrical and mechanical systems, including linear differential equations and transformation techniques.

EET 332. Electrical Power and Machinery (4). Prerequisite, EET 221 or equivalent. A study of power transformers, single and polyphase circuits. The study of DC machines and AC single and polyphase synchronous and induction machines.

EET 342. Instrumentation (4). Prerequisite, EET 312. Analysis of instrumentation
systems in the broad context of signal conditioning and data collection. Accuracy, transducers, analog and digital signal conditioning, information transmission and data collection. Lecture/laboratory.

EET 343. Process Control (4). Prerequisite, EET 342. Application of analog and digital controller principles to process control systems. Three hours lecture and two hours laboratory per week.

EET 361. MATLAB Applications (1). An introduction to MATLAB computation software applications, functions, and graphics.

EET 362. Electronics Workbench Applications (1). An introduction to Electronic Workbench circuit simulation software. Techniques used to simulate AC and DC electric and electronic circuits will be introduced.

EET 363. Lab View Applications (1). An introduction to Lab VIEW instrumentation software. Techniques used to simulate instrumentation systems will be introduced.

EET 370. Microprocessor Assembly Language (3). A basic introduction to microprocessors and their programming using assembly language.

EET 371. Digital Circuits (4). An introduction to number systems, logic equations, Boolean algebra, DeMorgan’s theorem, Karnaugh Maps, Quine-McClusky reduction techniques, and combination logic elements. Three hours lecture and two hours laboratory per week.

EET 372. Advanced Digital Circuits (4). Prerequisite, EET 371 or equivalent. Analysis of electronic digital circuits. Topics include: Bipolar and MOS logic gates, loading and interfacing, counters, adders, memories, encoders, decoders, digital displays, AD and DA converters. Two hours lecture and four hours laboratory per week.

EET 375. Microprocessor Applications (4). Prerequisites, EET 312. Examine and compare the basic components of microprocessor systems as applied to numerical control and robotics. Three hours lecture and two hours laboratory per week.

EET 376. Microprocessors and Instrumentation (4). Prerequisite, EET 375 or equivalent. Use of microprocessors and related components in the design of microprocessor-based systems. Interfacing of microprocessors and measuring instruments are studied. Consideration is given to the trade-offs between hardware and software.

EET 418. Electronic Fault Detection (2). Prerequisite, EET 376. Advanced testing of analog and digital systems. Both manual and automatic test systems will be considered. One hour lecture and three hours laboratory per week.

EET 432. Generation and Transmission of Electrical Power (4). Prerequisite, EET 332. A study of the generation and transmission of electrical energy. Includes techniques used by electric utilities for the protection of generating equipment and transmission lines, an introduction to the economic considerations of power plant operation and three-winding transformers, and methods of solving unbalanced three-phase systems.

EET 445. Electro-Mechanical Controls (4). Prerequisites, EET 324 and EET 343 or equivalent. A study of the components in open-loop and closed-looped systems. Included are sensing devices, error detectors, potentiometers, synchros, resolvers, modulators, demodulators, amplifiers, motors, generators, and network. An analysis course that stresses operation time and frequency-response characteristics, and proper adjustment of the components.

EET 451. Communications - Optical Systems (4). Prerequisite, EET 323. Application of fiber optics to communications systems including measurement of parameters, sources, detectors, construction of fiber optic communication links. Three hours lecture and two hours laboratory per week.

EET 452. Communications - Local Area Networks (4). Prerequisites, EET 323 and 375 or permission. Local Area Network communication systems, Manufacturing-Automation-Protocol, time domain to frequency domain conversions, and modulation techniques. Three hours lecture and two hours laboratory per week.

EET 453. Communications - Microwave Systems (4). Prerequisite, EET 323. Analysis of the radiative and/or propagation of the communication signal, and the application of antennas for impedance matching and for providing systems gain. Two hours lecture and four hours laboratory per week. Formerly EET 473. Students may not receive credit for both.

EET 455. Electronic Communications (4). Prerequisite, EET 322 or permission of instructor. An introduction to electronic communications circuits. Two hours lecture and four hours laboratory per week.

EET 476. Mini-Computer Technology (4). Prerequisite, EET 376. Analysis of mini-computer circuits. Organization of circuits into a complete computing system. Special purpose assembly language programming techniques for location of circuit malfunctions with the aid of computer maintenance manuals and laboratory equipment. Three hours lecture and two hours laboratory per week.

EET 477. Robotics (4). Prerequisites, EET 375 and EET 342. Microprocessor applications in robotics, automated systems, and digital control. Three hours lecture and two hours laboratory per week.

EET 478. Senior Project I (2). Prerequisite, permission of instructor. An extensive individual design and/or analytical project performed in consultation with one or more faculty advisor. Collaboration with representatives of industry, government agencies, or community institutions is encouraged. Evidence of extensive and thorough laboratory performance is required.

EET 479. Senior Project II (2). Prerequisite, EET 478. An extensive individual design and/or analytical project performed in consultation with one or more faculty advisor. Collaboration with representatives of industry, government agencies, or community institutions is encouraged. Evidence of extensive performance is required.

EET 489. Senior Technical Presentations (2). Prerequisites, senior standing and completion of the technical core.

Mechanical Engineering Technology Courses

MET 255. Machining (4). Basic operations and technical information concerning common metal working machines and metal machining processes. Two hours lecture and four hours laboratory per week.

MET 257. Casting Processes (4). Theory and practice in green sand, shell core, permanent mold, no bake and evaporation casting processes. Two hours lecture and four hours laboratory per week. Formerly EET 257. Students may not receive credit for both.

MET 310. Hydraulics/Pneumatics (4). Prerequisite, EET 210 or permission of instructor. A study of the application, controls and uses of air and liquid for the transmission of power. Two hours lecture and four hours laboratory per week. Formerly EET 310. Students may not receive credit for both.

MET 314. Applied Thermodynamics (4). Prerequisite PHYS 182 or 112 and MATH 172.2; corequisite MET 314.1. Properties of pure substances, first and second laws of thermodynamics, enthalpy and entropy, perfect gases, Carnot cycle, steam cycles, refrigeration cycles, mixtures of perfect gases, chemical reactions and combustion. Four hours lecture per week.

MET 314.1. Applied Thermodynamics Laboratory (1). Prerequisites, PHYS 182 or 112 and MATH 172.2; corequisite, MET 314 or permission of instructor. Practical application of thermodynamics systems teaching First and Second Law of Thermodynamics principles. Lab work includes usage of state-of-the-art instrumentation and data systems.

MET 315. Fluid Dynamics (5). Prerequisite MET 314. Fluid statics, continuity, Bernoulli and the general energy equation, laminar and turbulent flow, friction losses in pipes and ducts, pump performance and selection, compressible flow, and fluid measurements. Four hours lecture and two hours laboratory per week.

MET 316. Applied Heat Transfer (5). Prerequisite, MET 314. Steady and unsteady state heat conduction, free convection, forced
convection in tubes, forced convection over exterior surfaces, radiation heat transfer, change in phase heat transfer, heat exchangers and heat pipes. Four hours lecture and two hours laboratory per week.

**MET 320. Fundamentals of Laser Technology**
- Prerequisite: PHYS 113 or permission of instructor. Overview of laser technology with emphasis on laser characteristics, safety and applications. Four hours lecture per week. Formerly IET 320. Students may not receive credit for both.

**MET 327. Technical Dynamics (4).** Prerequisite, IET 311 or permission of instructor, corequisite, MET 327.1. Topics: rectilinear and curvilinear motion, rotational kinematics, work, energy and power, linear impulse and momentum, angular impulse and momentum, rigid body motion, relative motion and vibrations. Formerly MET 213. Students may not receive credit for both.

**MET 327.1. Technical Dynamics Laboratory (1).** Prerequisite, IET 311; corequisite, MET 327 or permission of instructor. Practical application of dynamical systems including usage of state-of-the-art instrumentation and data recording systems.

**MET 345. Production Technology (4).** Prerequisite, permission of instructor. Mass production principles, organization for production, product engineering, production system design, jig and fixture development, special problems in production. Formerly IET 345. Students may not receive credit for both.

**MET 351. Metallurgy/Materials and Processes (4).** Prerequisite, CHEM 181/181.1 or permission of instructor. Ferrous and nonferrous metals and alloys; polymeric, ceramic and cellular materials; use of phase diagrams, cooling curves, stress-strain diagrams and metallography. Formerly IET 351. Students may not receive credit for both.

**MET 355. Advanced Machining and CNC Programming (4).** Prerequisite, MET 255 or permission of instructor. Machining of metallic and non-metallic materials on automated equipment; mass production technology; programming and operation of CNC equipment. Formerly IET 355. Students may not receive credit for both.

**MET 357. Welding/Fabrication (4).** Theory and practice in arc welding, oxyacetylene welding and cutting, MIG, TIG, and plastic welding. Two hours lecture and four hours laboratory per week. Formerly IET 357. Students may not receive credit for both.

**MET 382. Plastics and Composites (4).** Prerequisite, CHEM 111/.1 or CHEM 181/.1. Composition, characteristics and classifications of plastics and composite materials incorporating industrial applications, processing and fabrication. Formerly MET 382. Students may not receive credit for both.

**MET 388. Tool Design (4).** Prerequisites, IET 160, IET 165, and MET 255 or permission of instructor. Principles of tool design for material removal, workholding, prework, joining and inspection processes with emphasis on inventive ability and problem solving. Formerly IET 388. Students may not receive credit for both.

**MET 411. Energy Systems I (5).** Prerequisite MET 316. Power generation, energy reserves, fuels, reciprocating machines, internal combustion engines, rotating compressors, axial flow turbines and gas turbine power. Four hours lecture and two hours laboratory per week.

**MET 412. Alternative Energy Systems (5).** Prerequisite permission of instructor. Comprehensive overview of alternative energy technology including societal issues, energy reserves, fossil, nuclear, solar, wind, geothermal, hydrogen and biomass energy sources, and advanced energy conversion systems.

**MET 418. Mechanical Design I (5).** Prerequisites, MET 426, MET 327, IET 265. Study of shafts, springs, couplings, clutches, bearings, cams, linkages and crank mechanisms. Four hours lecture and two hours laboratory per week.

**MET 419. Mechanical Design II (5).** Prerequisite, MET 418. Fasteners, welds, machine frames, pressure vessels, hydraulic cylinders, electrical motors and actuators. Four hours lecture and two hours laboratory per week.

**MET 420. Finite Element Analysis (4).** Prerequisites, IET 160, MET 326, or permission of instructor. Computerized modeling of structural, vibrational and thermal design problems. Two hours lecture and four hours laboratory.

**MET 423. Computer Aided Design and Manufacturing (4).** Prerequisites MET 418, IET 160 and MET 255 or permission of instructor. Integrates Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM). Three hours lecture and two hours laboratory per week.

**MET 426. Applications in Strength of Materials (2).** Prerequisite, IET 312 and MET 351. Topics support stress analysis and design. Laboratory activities include material strength, hardness, impact testing, strain gage technology, photoelasticity, ultrasound and eddy current. Formerly MET 326. Students may not receive credit for both.

**MET 483. Ceramics and Composites (4).** Composition, characterization and classification of ceramics and related composite materials incorporating industrial applications, processing and fabrication.

**MET 495. A, B, C. Senior Project I, II, III (2,2,2).** Prerequisites, senior standing and permission of MET advisor. Courses must be taken in sequence. The senior project is a capstone course that integrates all the major elements of the MET curriculum in a project related activity. The topic is chosen by the student in concurrence with the instructor and must include elements of planning, design and analysis (Phase I), construction (Phase II) and test and evaluation (Phase III). Collaboration with representatives of industry, government agencies or community institutions is encouraged. As an alternative, it will be possible to select a design study for the senior project for all the three quarters, providing it is sufficiently comprehensive and approved by the MET advisor.
Pilot Specialization

The two emphases in the Pilot specialization are designed to prepare graduates for entry level into careers and leadership roles in the aviation community. Special program rules and procedures as stated in the CWU Flight Technology / Midstate Aviation, inc Standard Operating Procedures (SOP's) apply to the Pilot specialization. A minor is required of students graduating with this specialization. The Pilot specialization offers two areas of emphasis:

Flight Officer
General Aviation Pilot

The following core classes are required for ALL Pilot specialization majors.

**Pilot Specialization Core Requirements Credits**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLT 101, Private Pilot Flight Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>FLT 102, Private Pilot Flight Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>FLT 103, Private Pilot Flight Laboratory III</td>
<td>1</td>
</tr>
<tr>
<td>FLT 130, Introduction to Aviation</td>
<td>1</td>
</tr>
<tr>
<td>FLT 141, Principles of Flight I</td>
<td>4</td>
</tr>
<tr>
<td>FLT 142, Principles of Flight II</td>
<td>4</td>
</tr>
<tr>
<td>FLT 201, Instrument Pilot Flight Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>FLT 202, Instrument Pilot Flight Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>FLT 203, Instrument Pilot Flight Laboratory III</td>
<td>1</td>
</tr>
<tr>
<td>FLT 211, Meteorology for Pilots</td>
<td>4</td>
</tr>
<tr>
<td>FLT 221, Aircraft Systems I</td>
<td>4</td>
</tr>
<tr>
<td>FLT 232, History of Aviation</td>
<td>2</td>
</tr>
<tr>
<td>FLT 241, Instrument Flight I</td>
<td>3</td>
</tr>
<tr>
<td>FLT 242, Instrument Flight II</td>
<td>2</td>
</tr>
<tr>
<td>FLT 304, Commercial Pilot Flight Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>FLT 305, Commercial Pilot Flight Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>FLT 306, Commercial Pilot Flight Laboratory III</td>
<td>1</td>
</tr>
<tr>
<td>FLT 312, Aviation Weather Services</td>
<td>3</td>
</tr>
<tr>
<td>FLT 319, Applied Aerodynamics for Pilots</td>
<td>3</td>
</tr>
<tr>
<td>FLT 322, Aircraft Systems II</td>
<td>3</td>
</tr>
<tr>
<td>FLT 337, Aviation Physiology and Survival.</td>
<td>3</td>
</tr>
<tr>
<td>FLT 354, Commercial Pilot</td>
<td>4</td>
</tr>
<tr>
<td>FLT 417, Aviation Safety Management</td>
<td>3</td>
</tr>
</tbody>
</table>

**Pilot Specialization Core Total** 52

In addition to the core requirements, students will select and complete one of the areas of emphasis. It is essential that students selecting the Pilot specialization consult a department advisor early in their freshman year to plan an efficient schedule. Failure to do so will require additional time to complete degree requirements.

**Flight Officer Emphasis (3463)**

Completion of this emphasis assists the student to prepare for professional pilot positions. A minor is required of students graduating with this emphasis. The following certificates and ratings are required for graduation: Instrument Rating, Commercial Pilot Certificate, Certified Flight Instructor, and Multiengine Rating. Flight training fees are paid by the student and will be in addition to normal university tuition and fees. Students enrolled in the Flight Officer emphasis are eligible to complete advanced multiengine simulator training and may qualify for approved airline internships, and after graduation, the Direct Hire program with Horizon Airlines. To graduate with this emphasis, students must complete the Commercial Pilot Certificate, Multiengine Rating, and Certified Flight Instructor Certificate at Central Washington University’s approved flight training operator at Bowers Field in Ellensburg, Washington. Once a student has enrolled at Central Washington University, all subsequent flight training must be conducted by Central Washington University’s approved flight training operator at Bowers Field in Ellensburg, Washington, and shall be done in a manner approved by the FAA under FAR Part 141.

**Required Courses Credits**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLT 301, CFI Flight Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>FLT 323, Advanced Navigation</td>
<td>2</td>
</tr>
<tr>
<td>FLT 333, Air Transportation</td>
<td>3</td>
</tr>
<tr>
<td>FLT 340, Human Factors in Flight</td>
<td>3</td>
</tr>
<tr>
<td>FLT 346, Air Carrier Operations</td>
<td>3</td>
</tr>
<tr>
<td>FLT 352, Multiengine Principles</td>
<td>2</td>
</tr>
<tr>
<td>FLT 356, Fundamentals of Flight Instruction</td>
<td>4</td>
</tr>
<tr>
<td>FLT 401, Multiengine Flight Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>FLT 422, Aircraft Systems II</td>
<td>2</td>
</tr>
<tr>
<td>FLT 444, Multiengine Simulator, EFIS</td>
<td>2</td>
</tr>
<tr>
<td>FLT 445, Multiengine Simulator, Turboprop</td>
<td>2</td>
</tr>
<tr>
<td>FLT 489, Pilot Performance</td>
<td>1</td>
</tr>
<tr>
<td>Department approved FLT electives</td>
<td>10</td>
</tr>
</tbody>
</table>

**Total 89**

**General Aviation Emphasis (3464)**

Completion of this emphasis assists the student to prepare for general aviation employment opportunities. A minor is required of students graduating with this emphasis. The following certificates and ratings are required for graduation: Private Pilot Certificate, Instrument Rating and Commercial Pilot Certificate. Flight training fees are paid by the student and will be in addition to normal university tuition and fees. Once a student has enrolled at Central Washington University, all subsequent flight training must be conducted by Central Washington University’s approved flight training operator at Bowers Field in Ellensburg, Washington, and shall be done in a manner approved by the FAA under FAR Part 141.

**Required Courses Credits**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLT 330, Aviation Law</td>
<td>3</td>
</tr>
<tr>
<td>FLT 335, Aviation Management</td>
<td>4</td>
</tr>
<tr>
<td>Department approved FLT electives</td>
<td>14</td>
</tr>
<tr>
<td>Department approved electives</td>
<td>11</td>
</tr>
</tbody>
</table>

**General Aviation Pilot Total** 83

**Aviation Management Specialization (3455)**

Coursework in the Aviation Management specialization will prepare students for a variety of administrative and management positions in the aviation community. Management career opportunities related to aviation activities, such as airport manager, general operations manager and air carrier management exist in the industry.

**Required Courses Credits**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT 101, Computer Applications</td>
<td>3</td>
</tr>
<tr>
<td>ADMG 385, Business Communications and Report Writing</td>
<td>5</td>
</tr>
<tr>
<td>IT 288, Business Presentation Applications</td>
<td>2</td>
</tr>
<tr>
<td>IT 389, Desktop Publishing</td>
<td>3</td>
</tr>
<tr>
<td>COM 345, Business and Professional Speaking</td>
<td>4</td>
</tr>
<tr>
<td>IET 160, Computer Aided Design</td>
<td>4</td>
</tr>
<tr>
<td>MATH 130.1, Finite Mathematics</td>
<td>5</td>
</tr>
<tr>
<td>ACCT 301, Financial Accounting Analysis</td>
<td>5</td>
</tr>
<tr>
<td>ECON 201, Principles of Economics, Micro</td>
<td>5</td>
</tr>
<tr>
<td>FIN 370, Introductory Financial Management</td>
<td>5</td>
</tr>
<tr>
<td>HRM 381, Management of Human Resources</td>
<td>5</td>
</tr>
<tr>
<td>MGT 380, Organizational Management</td>
<td>5</td>
</tr>
<tr>
<td>MGT 481, Organizational Behavior</td>
<td>5</td>
</tr>
<tr>
<td>OMIS 221, Introductory Business Statistics</td>
<td>5</td>
</tr>
<tr>
<td>POSC 320, Public Administration</td>
<td>5</td>
</tr>
<tr>
<td>FLT 141, Principles of Flight I</td>
<td>4</td>
</tr>
<tr>
<td>FLT 142, Principles of Flight II</td>
<td>4</td>
</tr>
<tr>
<td>FLT 330, Aviation Law</td>
<td>3</td>
</tr>
<tr>
<td>FLT 335, Air Transportation</td>
<td>4</td>
</tr>
<tr>
<td>FLT 335, Aviation Management</td>
<td>3</td>
</tr>
<tr>
<td>FLT 417, Aviation Safety Management</td>
<td>3</td>
</tr>
<tr>
<td>Department Approved Electives</td>
<td>21</td>
</tr>
</tbody>
</table>

**Total 108**

**Airway Science Specialization**

The areas of emphasis in the Airway Science specialization are designed to prepare graduates for entry level position within the aviation industry or the Federal Aviation Administration. Airway Science offers a curriculum based upon a strong foundation in
the liberal arts in addition to technical competence gained through one of two emphases. The curriculum is disciplined and structured to educate the future technical managers of government and the aviation industry. Basic and breadth requirements must be carefully selected to meet graduation requirements. Graduation requirements exceed 180 credits. Airway Science offers two areas of emphasis:

**Aircraft Systems Management**

**Aviation Maintenance Management**

The following core courses are required of all Airway Science majors. In the absence of an appropriate math/science background, the student may find it necessary to take one or more of the following: MATH 162.1, MATH 163.2.

### Airway Science Core Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT 101, Computer Applications</td>
<td>3</td>
</tr>
<tr>
<td>CS 110, Programming Fundamentals I</td>
<td>4</td>
</tr>
<tr>
<td>CS 111, Programming Fundamentals II OR Department approved CS elective</td>
<td>4</td>
</tr>
<tr>
<td>EET 221, Basic Electricity</td>
<td>3</td>
</tr>
<tr>
<td>EET 221.1, Basic Electricity Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>FLT 141, Principles of Flight I</td>
<td>4</td>
</tr>
<tr>
<td>FLT 142, Principles of Flight II</td>
<td>4</td>
</tr>
<tr>
<td>FLT 330, Aviation Law</td>
<td>3</td>
</tr>
<tr>
<td>FLT 417, Aviation Safety Management</td>
<td>3</td>
</tr>
<tr>
<td>IET 160, Computer Aided Design OR Department-approved CS elective</td>
<td>4</td>
</tr>
<tr>
<td>MATH 170, Intuitive Calculus OR MATH 172.1, Calculus</td>
<td>5</td>
</tr>
<tr>
<td>MGT 380, Organizational Management</td>
<td>5</td>
</tr>
<tr>
<td>MGT 481, Organizational Behavior</td>
<td>5</td>
</tr>
<tr>
<td>OMIS 221, Introductory Business Statistics</td>
<td>5</td>
</tr>
<tr>
<td>PHYS 111, 111.1, Introductory Physics</td>
<td>5</td>
</tr>
<tr>
<td>Department-approved upper division electives</td>
<td>6</td>
</tr>
<tr>
<td>(AWS Systems majors must take FLT 348)</td>
<td></td>
</tr>
</tbody>
</table>

**Airway Science Core Total** 64

In addition to the core requirements, students will select and complete one of the areas of emphasis. It is essential that students selecting the Airway Science specialization consult a department advisor early in their freshman year to plan an efficient schedule. Failure to do so will require additional time to complete degree requirements.

### Aircraft Systems Management Emphasis (3460)

This emphasis focuses on aircraft flight operations. Students must obtain the following ratings prior to graduation: Instrument Rating, Commercial Pilot Certificate Airplane, Single and Multiengine Land; Certified Flight Instructor, Airplane and Instrument. Flight training fees are paid by the student and will be in addition to normal university tuition and fees. Students enrolled in the Aircraft Systems Management Emphasis are eligible to complete advanced multiengine simulator training and may qualify for approved airline internships, and after graduation, the Direct Hire program with Horizon Airlines. To graduate with this emphasis, students must complete the Commercial Pilot Certificate, Multiengine Rating and Certified Flight Instructor Certificates at Central Washington University’s approved flight training operator at Bowers Field in Ellensburg, Washington. Once a student has enrolled at Central Washington University, all subsequent flight training must be conducted by Central Washington University’s approved flight training operator at Bowers Field in Ellensburg, Washington, and shall be done in a manner approved by the FAA under FAR Part 141.

#### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLT 211, Meteorology for Pilots</td>
<td>4</td>
</tr>
<tr>
<td>FLT 221, Aircraft Systems I</td>
<td>4</td>
</tr>
<tr>
<td>FLT 241, Instrument Flight I</td>
<td>3</td>
</tr>
<tr>
<td>FLT 242, Instrument Flight II</td>
<td>2</td>
</tr>
<tr>
<td>FLT 312, Aviation Weather Services</td>
<td>3</td>
</tr>
<tr>
<td>FLT 322, Aircraft Systems II</td>
<td>3</td>
</tr>
<tr>
<td>FLT 333, Air Transportation</td>
<td>4</td>
</tr>
<tr>
<td>FLT 354, Commercial Pilot</td>
<td>4</td>
</tr>
<tr>
<td>FLT 358, Fundamentals of Flight Inst.</td>
<td>4</td>
</tr>
<tr>
<td>FLT 423, Aircraft Systems IV</td>
<td>3</td>
</tr>
<tr>
<td>FLT 444, Multiengine Simulator, EFIS</td>
<td>2</td>
</tr>
<tr>
<td>FLT 445, Multiengine Simulator, Turboprop.</td>
<td>2</td>
</tr>
<tr>
<td>FLT 458, Advanced Flight Instruction, Instrument</td>
<td>2</td>
</tr>
<tr>
<td>FLT 489, Pilot Performance</td>
<td>1</td>
</tr>
<tr>
<td>Department-approved upper division electives</td>
<td>15</td>
</tr>
</tbody>
</table>

**Total** 123

### Aviation Maintenance Management Emphasis (3461)

Aviation Maintenance Management students will receive in depth coverage of the theoretical and practical application and an Airframe and Powerplant certificate from a Federal Aviation Administration approved curriculum under the Federal Aviation Regulation 147. Graduates from this concentration will be qualified for careers not only in maintenance, but also in supervision and management. Opportunities exist both in government and the private sectors of aviation. 

**NOTE:** Sixty upper division credits are required for graduation. Without careful planning, one could be deficient in this requirement.

#### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airframe and Powerplant Certificate</td>
<td>45</td>
</tr>
<tr>
<td>CHEM 101, Contemporary Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>Department-approved upper division FLT electives</td>
<td>10</td>
</tr>
</tbody>
</table>

**Total** 124

*Certificate not offered at Central Washington University. Forty-five credits of the Airframe and Powerplant Certificate will be accepted upon completion of all other degree requirements. See program advisor.

### Flight Technology Minor (3458)

A program designed for students who wish to earn a pilot’s license (Private Pilot certificate). Private Pilot flight training is taken through CWU’s approved flight training operator at Bowers Field in Ellensburg, Washington.

#### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLT 101, Private Pilot Flight Lab I</td>
<td>1</td>
</tr>
<tr>
<td>FLT 102, Private Pilot Flight Lab II</td>
<td>1</td>
</tr>
<tr>
<td>FLT 103, Private Pilot Flight Lab III</td>
<td>1</td>
</tr>
<tr>
<td>FLT 141, Principles of Flight I</td>
<td>4</td>
</tr>
<tr>
<td>FLT 142, Principles of Flight II</td>
<td>4</td>
</tr>
<tr>
<td>FLT 211, Meteorology for Pilots</td>
<td>4</td>
</tr>
<tr>
<td>FLT 221, Aircraft Systems I</td>
<td>4</td>
</tr>
</tbody>
</table>

**Total** 25

### Flight Technology Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLT 101, Private Pilot Flight Laboratory I (1). Corequisite, FLT 141</td>
<td>1</td>
</tr>
</tbody>
</table>
| FLT 122.1, Basic flight planning, one could be deficient in this requirement.  
  Basic flight maneuvers, solo flight in local area, and introduction of maximum performance takeoff and landing procedures. |
| FLT 102, Private Pilot Flight Laboratory II (1). Prerequisite, FLT 101 | 1       |
| FLT 142. Plan and conduct cross-country flights and perform short-field and soft-field takeoffs and landings. |
| FLT 103, Private Pilot Flight Laboratory III (1). Prerequisite, FLT 102 | 1       |
| FLT 130. Introduction to Aviation (1). An overview of the aviation program, industry, career options and opportunities. Grade will be S or U. |
| FLT 141. Principles of Flight I (4). Corequisite, FLT 221. Basic knowledge of airplanes and their systems, aerodynamics, flight safety, airports, aeronautical charts, airspace, radio communications, air |
traffic control services, and aviation regulations. Formerly FLT 151/FLT 151.1. Students may not receive credit for both.

FLT 142. Principles of Flight II (4). Prerequisite, FLT 141. Corequisite FLT 211. Basic knowledge of airplane performance and loading, preflight planning including weather analysis, visual and radio (VOR/ADF) navigation, flight physiology, and aeronautical decision making. Preflight planning for cross-country flights. Formerly FLT 152/152.1. Students may not receive credit for both.

FLT 201. Instrument Pilot Flight Laboratory I (1). Prerequisite, Private Pilot Certificate. Attitude control by instrument reference only, use of full and partial panel, and radio navigation.


FLT 211. Meteorology for Pilots (4). Corequisite, FLT 142. Meteorological processes and weather hazards peculiar to the flight environment. Formerly FLT 210. Students may not receive credit for both.

FLT 221. Aircraft Systems I (4). Corequisite, FLT 141. Light training aircraft engines, propellers and engine systems, flight controls, fuel systems, instrumentation, tires, wheels and brakes. Formerly 220/220.1. Students may not receive credit for both.

FLT 232. History of Aviation (2). Prerequisite, ENG 101. A brief overview of the major developments in the history of powered flight. Formerly FLT 132. Students may not receive credit for both.


FLT 296. Individual Study (1-6). Prerequisite, permission of instructor. May be repeated.

FLT 298. Special Topics (1-5).

FLT 301. Certified Flight Instructor Laboratory (1). Prerequisite, Commercial Pilot Certificate, FLT 358. Analyze and perform maneuvers from the right seat. Demonstrate proficiency and instructional knowledge to FAA practical test standards.

FLT 304. Commercial Pilot Flight Laboratory I (1). Prerequisite, FLT 203. Plan and conduct VFR cross-country flights using pilotage, dead reckoning, and radio navigation. Night flight operations. Formerly FLT 204. Student may not receive credit for both.

FLT 305. Commercial Pilot Flight Laboratory II (1). Prerequisite, FLT 304. Operation of complex aircraft and basic knowledge of advanced commercial maneuvers. Formerly FLT 205. Student may not receive credit for both.

FLT 306. Commercial Pilot Flight Laboratory III (1). Prerequisite, FLT 305. Perform flight maneuvers and procedures to FAA commercial pilot practical test standards. Formerly FLT 206. Student may not receive credit for both.

FLT 312. Aviation Weather Services (3). Corequisite FLT 242. Comprehensive analysis of weather service for flight crews, including interpretation of applicable alpha-numeric and graphic weather reports and forecasts. Formerly FLT 311, students may not receive credit for both.

FLT 319. Applied Aerodynamics for Pilots (3). Prerequisite, FLT 242. Theories of flight and flight factors including airfoil shape, drag, velocity, lift and thrust, stability and control.


FLT 323. Advanced Navigation (2). Prerequisite, FLT 354. Advanced navigation systems, their function, operation and application. Formerly FLT 321. Students may not receive credit for both.

FLT 330. Aviation Law (3). Prerequisite, Instrument Rating or junior standing. Basic understanding of aviation law, the legal system, the principles of law, and how they may be applied to aspects of air transportation.

FLT 331. National Airspace System (3). The national air traffic control system, control procedures, the integration of centers, approach communications, navigation procedures, radar operations, and facilities.

FLT 333. Air Transportation (4). Prerequisite, ENG 101. The air transportation system including facilities, regulations, problems encountered in commercial air transportation, airline operations, economic and social considerations.

FLT 334. Airport Management (3). Airport operations and management, including analysis of the role of the airport manager in planning, finance, and administration; public relations, social, political, and environmental considerations; operational requirements and facilities maintenance.

FLT 335. Aviation Management (3). Management of aviation activities, manpower, facilities, regulations, and flight operations.

FLT 336. Air Cargo Operations (3). Domestic and international air cargo operations, the air freight market, rates and tariffs, terminal facilities, competition and future prospects.

FLT 337. Aviation Physiology and Survival (3). Prerequisite, Private Pilot Certificate. Physiological aspects of flight crew performance, including effects of high altitude, accelerations, disorientation, and fatigue. Normally requires altitude chamber flight. Basic introduction to wilderness survival.

FLT 339. International Air Transportation (3). Current problems in international air transportation operations, regulations, law, and factors affecting globalization of this industry.


FLT 348. Air Carrier Operations (3). Prerequisite, FLT 334. Dispatch procedures, weather analysis (real time), flight operations, and crew utilization. Formerly FLT 338. Students may not receive credit for both.

FLT 352. Multiengine Principles (2). Prerequisite, FLT 354. Multiengine aircraft systems and operations, normal and emergency procedures and flight characteristics.


FLT 358. Fundamentals of Flight Instruction (4). Prerequisites, Instrument Rating and Commercial Pilot Certificate Course Stage V. Instructional knowledge to teach required subject matter to include recognition, analysis and correction of common student errors. Formerly FLT 357/357.1. Students may not receive credit for both.


FLT 417. Aviation Safety Management (3). Prerequisite, Commercial Pilot Certificate Course Stage IV. Fundamentals of aviation safety management, including
evaluation of specific hazards peculiar to the flight environment. Formerly FLT 317. Students may not receive credit for both.

FLT 422. Aircraft Systems III (2). Prerequisite, FLT 322 and FLT 354. Turbine engines and turboprop aircraft systems. Formerly FLT 420. Students may not receive credit for both.

FLT 423. Aircraft Systems IV (3). Prerequisite, FLT 422. Transport category aircraft systems. Formerly FLT 421. Students may not receive credit for both.

FLT 431. Flight Simulator Instructor (2). Prerequisite, FLT 358. Instruction of basic instrument flying using single and multiengine ground trainers.

FLT 434. Airport Operations (3). Prerequisites, FLT 333 and FLT 334.

FLT 438. Planning and Design of Airports (4). Prerequisite, FLT 434. Methodologies necessary to the planning and design of airports.

FLT 444. Multiengine Simulator, EFIS (2). Prerequisites, admission to the Flight Officer emphasis or the Aircraft Systems Management emphasis, FLT 352, and Commercial Pilot Certificate Course Stage V complete. Introduction to and familiarization of electronic flight instrument systems, use of flight director, and autopilot. Beginning crew coordination.

FLT 445. Multiengine Simulator, Turboprop (2). Prerequisites; admission to the Flight Officer or the Aircraft Systems Management emphasis, FLT 422, FLT 444, and Multi engine Rating. Operation of turbine powered aircraft; CRM, and FMS.


FLT 459. Advanced Flight Instruction, Multiengine (2). Prerequisites, ME Rating and CFI certificate. Principles and methodology of teaching multiengine flight.

FLT 475. Speciality Flight Laboratory (1). Prerequisites, FAA Pilot Certificate or equivalent and permission. Instruction in the listed specialties. Flight hours will vary with specialty. A minimum of 12 flying hours normally required for credit except as approved by Flight Technology. Hang gliders are specifically omitted. May be repeated.

A. Single Engine Seaplane
B. Multiengine Seaplane
C. Helicopters
D. Mountain Flying
E. Aerobatics
F. Other by advisement and permission

FLT 489 Pilot Performance (1). Prerequisites, FLT 445 and permission of instructor. Oral and skill demonstration in the simulator covering those areas required of graduates entering an aircraft pilot career. Formerly FLT 488. Students may not receive credit for both.

FLT 490. Cooperative Education (1–12). An individualized contracted field experience with business, industry, government, or social service agencies. This contractual arrangement involves a student learning plan, cooperating employer supervision, and faculty coordination. Prior approval required. May be repeated. Grade will be S or U.

FLT 496. Individual Study (1–6). Prerequisite, permission of instructor. May be repeated.

FLT 498. Special Topics (1–5).


SAFETY AND HEALTH MANAGEMENT PROGRAM (SHM)

Faculty
Joe Price, Safety and Health Management Program
Scott Calahan, Traffic Safety Education (Summer Only)

Program Description:
Students desiring to major in the Safety and Health Management program will be ultimately prepared to obtain employment in a diverse range of occupations such as Occupational Safety Management, Industrial Hygiene, Environmental Management, Emergency Response and preparation, governmental agencies, private industry, and other aligned specializations. The curriculum incorporates a wide range of subjects important to the successful performance of duties typically expected of professionals employed in this field, and will provide the student with an array of skills and knowledge to offer future employers. The program has a history of high employment rates, competitive starting salaries and presents significant opportunity for career advancement.

The Traffic Safety Education Minor is attached to the Safety and Health Management program and is geared at students seeking endorsement for teaching traffic safety education in public schools.

Bachelor of Science
Safety and Health Management Program (SHM) (6910)

SHM Required Core Courses Credits
PSY 456, Industrial and Organizational Psychology ........................................... 4
SHM 386, Occupational Safety and Health ........................................... 3
SHM 387, Accident Investigation ........................................... 3

SHM 388, System Safety ....................................... 3
SHM 389, Industrial Fire Protection and Prevention ....................................... 3
SHM 444, Fundamentals of Hazardous Materials ....................................... 4
SHM 483, Ergonomics ....................................... 4
SHM 484, Environmental Management ....................................... 4
SHM 485, Safety Management ....................................... 4
SHM 486, Industrial Operations Safety ....................................... 3
SHM 487, Fundamentals of Industrial Hygiene I ....................................... 4
SHM 488, Fundamentals of Industrial Hygiene II ....................................... 4
SHM 490, Cooperative Education ....................................... 6
SHM 499, Seminar ....................................... 1

Total Core 50

Construction Safety Specialization (6915)

Required Courses Credits
Core Courses ............................................................... 50
IT 101, Computer Applications ....................................... 3
ADMG 201, Introduction to Business ....................................... 3
ADMG 385, Business Communications and Report Writing ....................................... 5
BUS 241, Legal Environment of Business ....................................... 5
CHEM 112, Introduction to Organic Chemistry ....................................... 4
CHEM 112.1, Introduction to Organic Chemistry Laboratory ....................................... 1
COMM 345, Business and Professional Speaking ....................................... 4
CMGT 265, Blueprint Reading and Construction Graphics ....................................... 4
CMGT 343, 343.1 Construction Estimating I/Lab ....................................... 3.1
CMGT 346, Construction Methods and Materials ....................................... 4
CMGT 444, Codes, Contracts and Specifications ....................................... 4
EET 221, Basic Electricity (3) and EET 221.1, Basic Electricity Lab (1) OR PHYS 111, Introductory Physics Lab (1) ....................................... 4.5
IET 380, Quality Control (5) OR IET 301, Engineering Project Cost Analysis(4) ....................................... 4.5
IET 430, Methods of Teaching Industrial Education ....................................... 3
MATH 163.1, Pre-Calculus Mathematics Lab ....................................... 5
Electives .............................................................. 3.5

Total Credits 112

Risk Management Specialization (6920)

Required Courses Credits
Core Courses ............................................................... 50
IT 101, Computer Applications ....................................... 3
ADMG 201, Introduction to Business ....................................... 3
ADMG 385, Business Communications and Report Writing ....................................... 5
BUS 241, Legal Environment of Business ....................................... 5

Total Credits 112

FLIGHT TECHNOLOGY – SAFETY AND HEALTH MANAGEMENT PROGRAMS 141
**CHEM 112**, Introduction to Organic Chemistry...4  
**CHEM 112.1**, Introduction to Organic Chemistry Lab..................................................1  
**COM 345**, Business and Professional Speaking...4  
**IET 430**, Methods of Teaching Industrial Education ..............................................3  
**MGT 380**, Organizational Management.................................................................5  
**HRM 381**, Management of Human Resources...5  
**IET 380**, Quality Control OR  
**OMIS 221**, Introductory Business Statistics........5  
Electives .................................................................19  

Total Credits 113

**Safety and Health Management Specialization (6925)**

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Courses</td>
<td>50</td>
</tr>
<tr>
<td>IT 101, Computer Applications</td>
<td>3</td>
</tr>
<tr>
<td>ADMG 201, Introduction to Business</td>
<td>3</td>
</tr>
<tr>
<td>ADMG 385, Business Communication and Report Writing</td>
<td>5</td>
</tr>
<tr>
<td>BUS 241, Legal Environment of Business</td>
<td>5</td>
</tr>
<tr>
<td>CHEM 112, Introduction to Organic Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 112.1, Introduction to Organic Chemistry Lab</td>
<td>1</td>
</tr>
<tr>
<td>COM 345, Business and Professional Speaking</td>
<td>4</td>
</tr>
<tr>
<td>IET 301, Engineering Project Cost Analysis</td>
<td>4</td>
</tr>
<tr>
<td>IET 430, Methods of Teaching Industrial Education</td>
<td>3</td>
</tr>
<tr>
<td>MATH 163.1, Pre-Calculus Mathematics</td>
<td>5</td>
</tr>
<tr>
<td>MGT 380, Organizational Management</td>
<td>5</td>
</tr>
<tr>
<td>HRM 381, Management of Human Resources</td>
<td>5</td>
</tr>
<tr>
<td>EET 221, Basic Electricity (3)</td>
<td>3</td>
</tr>
<tr>
<td>EET 221.1, Basic Electricity Lab (1)</td>
<td>OR</td>
</tr>
<tr>
<td>PHYS 111, Introductory Physics (4)</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 111.1, Introductory Physics Lab (1)</td>
<td>4-5</td>
</tr>
<tr>
<td>IET 380, Quality Control or OMIS 221, Introductory Business Statistics</td>
<td>5-6</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
</tr>
</tbody>
</table>

Total 113

**Collaborative Certificate Program Industrial Safety and Health**

In cooperation with the Central Washington University Industrial and Engineering Technology department and the Office of Continuing Education the following series of courses are offered leading to a certificate in Industrial Safety and Health.

The certificate in Industrial Safety and Health is designed primarily for nonmatriculating students who are currently working in safety and health in business or industry and who may or may not have a four-year degree.

**Required Courses**

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHM 386, Occupational Safety and Health</td>
<td>3</td>
</tr>
<tr>
<td>SHM 387, Accident Investigation</td>
<td>3</td>
</tr>
<tr>
<td>SHM 388, System Safety</td>
<td></td>
</tr>
<tr>
<td>SHM 389, Industrial Fire Protection and Prevention</td>
<td>3</td>
</tr>
<tr>
<td>SHM 444, Fundamentals of Hazardous Materials</td>
<td>4</td>
</tr>
<tr>
<td>SHM 485, Safety Management</td>
<td>4</td>
</tr>
<tr>
<td>SHM 486, Ergonomics (4) OR SHM 487, Fundamentals of Industrial Hygiene I (4) OR SHM 484, Environmental Management (4)</td>
<td>3-4</td>
</tr>
</tbody>
</table>

Total Credits 23-24

**Traffic Safety Education Minor (6950)**

Students desiring endorsement for teaching traffic safety education in the public schools are required to take SED 382, 481, 482 and one other course listed in the minor as approved by the Safety Education advisor. For the most comprehensive background with the best opportunity for employment students should plan to take all courses listed in the safety education teaching minor.

**Required Courses**

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SED 180, Principles of Accident Prevention</td>
<td>3</td>
</tr>
<tr>
<td>*SED 382, Driver Task Analysis</td>
<td></td>
</tr>
<tr>
<td>SHM 383, Transportation Safety</td>
<td></td>
</tr>
<tr>
<td>SED 480, Teaching Safety Education: K-12</td>
<td>3</td>
</tr>
<tr>
<td>*SED 481, Teaching Traffic Safety Education: Classroom and Simulation</td>
<td>3</td>
</tr>
<tr>
<td>SED 482, Teaching Traffic Safety Education: In Car</td>
<td>3</td>
</tr>
<tr>
<td>SED 484, Safety Program Supervision</td>
<td>3</td>
</tr>
</tbody>
</table>

Total 21

*Required for state endorsement, plus one additional course approved by the Safety Education advisor for a total of 12 credits (SED 180 or SED 484).

**Safety and Health Management Courses**

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHM 383, Transportation Safety</td>
<td>3</td>
</tr>
<tr>
<td>SED 180 recommended prior to enrollment.</td>
<td></td>
</tr>
<tr>
<td>Transportation systems loss control management. Formerly LCM 383; students may not receive credit for both.</td>
<td></td>
</tr>
<tr>
<td>SHM 386, Occupational Safety and Health</td>
<td>3</td>
</tr>
<tr>
<td>SED 180 recommended prior to enrollment.</td>
<td></td>
</tr>
<tr>
<td>Occupational safety and health legislation,</td>
<td></td>
</tr>
<tr>
<td>hazard control management for school and</td>
<td></td>
</tr>
<tr>
<td>industry personnel. Formerly LCM 386;</td>
<td></td>
</tr>
<tr>
<td>students may not receive credit for both.</td>
<td></td>
</tr>
<tr>
<td>SHM 387, Accident Investigation</td>
<td>3</td>
</tr>
<tr>
<td>*Prerequisite, SHM 386. Application of the accident investigation process to safety and health management. Formerly LCM 387; students may not receive credit for both.</td>
<td></td>
</tr>
<tr>
<td>SHM 388, System Safety</td>
<td>3</td>
</tr>
<tr>
<td>*Prerequisite, SHM 386 recommended prior to enrollment. Systems concepts applied to the management of safety and health programs. Formerly LCM 388; students may not receive credit for both.</td>
<td></td>
</tr>
<tr>
<td>SHM 389, Industrial Fire Prevention and</td>
<td>3</td>
</tr>
<tr>
<td>Protection (3). Prerequisite, SHM 386. An</td>
<td></td>
</tr>
<tr>
<td>overview of the fire science field.</td>
<td></td>
</tr>
<tr>
<td>Characteristics, causes, protection measures,</td>
<td></td>
</tr>
<tr>
<td>and detection of fire. Alarm systems, codes,</td>
<td></td>
</tr>
<tr>
<td>standards, building construction, and</td>
<td></td>
</tr>
<tr>
<td>occupancy limitations for risk assessment.</td>
<td></td>
</tr>
<tr>
<td>Formerly LCM 389; students may not receive</td>
<td></td>
</tr>
<tr>
<td>credit for both.</td>
<td></td>
</tr>
<tr>
<td>SHM 444, Fundamentals of Hazardous Materials</td>
<td>4</td>
</tr>
<tr>
<td>(4). Prerequisite, CHEM 111 or CHEM 112 or</td>
<td></td>
</tr>
<tr>
<td>by instructor permission. An examination into</td>
<td></td>
</tr>
<tr>
<td>issues concerning the use of hazardous</td>
<td></td>
</tr>
<tr>
<td>materials in industry. Chemical and physical</td>
<td></td>
</tr>
<tr>
<td>properties, including issues related to its</td>
<td></td>
</tr>
<tr>
<td>transportation.</td>
<td></td>
</tr>
<tr>
<td>SHM 483, Ergonomics (4). Prerequisite, SHM</td>
<td></td>
</tr>
<tr>
<td>386. Study of human characteristics for the</td>
<td></td>
</tr>
<tr>
<td>appropriate design of the work environment</td>
<td></td>
</tr>
<tr>
<td>to promote safety, well being and work</td>
<td></td>
</tr>
<tr>
<td>efficiency.</td>
<td></td>
</tr>
<tr>
<td>SHM 484, Environmental Management</td>
<td>4</td>
</tr>
<tr>
<td>*Prerequisite, SHM 386. Overview of present</td>
<td></td>
</tr>
<tr>
<td>and future environmental safety and health</td>
<td></td>
</tr>
<tr>
<td>issues that impact business and industry.</td>
<td></td>
</tr>
<tr>
<td>SHM 485, Safety Management</td>
<td>4</td>
</tr>
<tr>
<td>*Prerequisite, SHM 386 or permission of</td>
<td></td>
</tr>
<tr>
<td>instructor. The role of the safety and health</td>
<td></td>
</tr>
<tr>
<td>professional in the management process.</td>
<td></td>
</tr>
<tr>
<td>Formerly LCM 485; students may not receive</td>
<td></td>
</tr>
<tr>
<td>credit for both.</td>
<td></td>
</tr>
<tr>
<td>SHM 486, Industrial Operations Safety (3).</td>
<td>3</td>
</tr>
<tr>
<td>Prerequisite, SHM 386. Concepts of industrial</td>
<td></td>
</tr>
<tr>
<td>loss control and an overview of industrial</td>
<td></td>
</tr>
<tr>
<td>processes. Formerly LCM 486; students may</td>
<td></td>
</tr>
<tr>
<td>not receive credit for both.</td>
<td></td>
</tr>
<tr>
<td>SHM 487, Fundamentals of Industrial Hygiene</td>
<td>4</td>
</tr>
<tr>
<td>I (4). Prerequisite, SHM 386.</td>
<td></td>
</tr>
</tbody>
</table>

**SAFETY AND HEALTH MANAGEMENT PROGRAMS**
overview of the reasons for, benefits of, and activities related to occupational environment control programming and industrial hygiene practice. Formerly LCM 487; students may not receive credit for both.

SHM 488. Fundamentals of Industrial Hygiene II (4). Prerequisite, SHM 487. Measurement procedures to monitor and audit organizational safety and health programs. Procedures to determine incident rates and trends as a basis to determine risks and implementing loss control measures. Inspection and instrumentation practice. Formerly LCM 488; students may not receive credit for both.

SHM 490. Cooperative Education (1-12). An individualized contracted field experience with business, industry, government, or social service agencies. This contractual arrangement involves a student learning plan, cooperating employer supervision, and faculty coordination. Prior approval required. May be repeated. Grade will be S or U.

SHM 491. Workshop (1-6).

SHM 496. Individual Study (1-6). Prerequisite, permission of instructor.

SHM 498. Special Topics (1-6).

SHM 499. Seminar (1-5). May be repeated.

Safety Education Courses

SED 180. Principles of Accident Prevention (3). The underlying principles and theories of accident on society today, psychological factors related to accidents, legal requirements, accident prevention in business and industry, the schools and community.

SED 298. Special Topics (1-6).

SED 382. Driver Task Analysis (3). Prerequisite, SED 180. Introduction to traffic safety education, the highway transportation system, driver task analysis, classroom instruction techniques.

SED 398. Special Topics (1-6).

SED 480. Teaching Safety Education: K-12 (3). Concepts, methods, techniques and instructional materials of safety education integrated into the school curriculum, kindergarten through high school, including student and teacher rights and responsibilities.

SED 481. Teaching Traffic Safety Education: Classroom and Simulation Instruction (3). Prerequisite, SED 382 or permission of instructor. Methods, materials and techniques for teaching classroom and simulation. Experience in teaching beginning drivers.

SED 482. Teaching Traffic Safety Education: In Car (3). Prerequisite, SED 382 or permission of instructor. Methods, materials and techniques for teaching in dual-control vehicles. Experience teaching beginning drivers.

SED 484. Safety Program Supervision (3). Prerequisite, SED 382 or permission of instructor. Development and management of a total school safety program.

SED 491. Workshop (1-6).

SED 496. Individual Study (1-6). Prerequisite, permission of instructor.

SED 498. Special Topics (1-6).

SED 499. Seminar (1-5). May be repeated.

INFORMATION TECHNOLOGY AND ADMINISTRATIVE MANAGEMENT

Faculty
Chair: Catherine Bertelson
Shaw-Smyser 223
www.cwu.edu/~ITAM

Professors
Catherine Bertelson, Information Technology, Administrative Management
V. Wayne Klemm, Information Technology, Administrative Management
Robert Perkins, Information Technology, Administrative Management
Connie M. Roberts, Information Technology, Administrative Management

Associate Professors:
Kimberlee Bartel, Information Technology, Administrative Management, Business Education
Lori Braunstein, Information Technology, Administrative Management
Mary Lochrie, Administrative Management
Robert Lupton, Retail Management and Technology, Marketing Education

Assistant Professor:
William Chandler, Administrative Management, Retail Management and Technology, Fashion Merchandising

Lecturers:
Yvonne Alder, Information Technology, Administrative Management
Irene Cheyne, Administrative Management
Angela Unruh, Information Technology

General Information
The Information Technology and Administrative Management program prepares students for a Bachelor of Science degree in Information Technology, Administrative Management, Retail Management, and Technology, Network Administration, Web Administration, or Database Administration. students completing this major will take the core courses (50-53 credits) and select one of the three areas of specialization: Information Technology, Administrative Management, or Retail Management.

Several of the elective courses have prerequisites noted in the course description. IT 101, Computer Applications or equivalent, or demonstration of computer competence is a prerequisite to this major. Students must complete at least 60 credits of upper division courses.

Information Technology and Administrative Management

Major (4250)

The program is designed to prepare students for information technology, administrative management, or retail management careers. Students completing this major will take the core courses (50-53 credits) and select one of the three areas of specialization: Information Technology, Administrative Management, or Retail Management and Technology.

Several of the elective courses have prerequisites noted in the course description. IT 101, Computer Applications or equivalent, or demonstration of computer competence is a prerequisite to this major. Students must complete at least 60 credits of upper division courses.

Information Technology and Administrative Management

Core Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 301, Financial Accounting Analysis</td>
<td>5</td>
</tr>
<tr>
<td>ADMG 201, Introduction to Business</td>
<td>3</td>
</tr>
<tr>
<td>ADMG 271, Business Math Applications</td>
<td>4</td>
</tr>
<tr>
<td>ADMG 310, Business Professional</td>
<td>3</td>
</tr>
<tr>
<td>ECON 101, Economic Issues</td>
<td>5</td>
</tr>
<tr>
<td>IT 204, Word Processing Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 248, Web Fundamentals</td>
<td>2</td>
</tr>
<tr>
<td>IT 258, Spreadsheet Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 268, Database Applications</td>
<td>3</td>
</tr>
</tbody>
</table>
IT 228, Business Presentation
Applications ........................................ 2
ADMG/IT/ME 490, Internship .................... 9-12

Core Total 51-54

Administrative Management Specialization (4255)

Administrative Management students become qualified administrative professionals prepared to pursue careers that apply a blend of management, administrative, and information technology skills in contemporary administrative environments. These qualifications are complemented by job-ready business communications and human relations skills. Graduates in the Administrative Management specialization secure careers as entry- and mid-level administrative managers, administrative assistants, legislative assistants, account specialists, and customer service consultants.

Information Technology and Administrative Management Core ............... 51-54

Administrative Management Specialization 24
ADMG 335, Workplace Administration .......... 4
ADMG 372, Leadership and Supervision .......... 4
ADMG 374, Project Management .................. 4
ADMG 485, Managerial Communications ....... 3
HRM 381, Management of Human Resources .......... 5
IT 228, Introduction to Information Technology ........................................ 4

Sub Total 75

Electives for Administrative Management Specialization: ............ 12-15
HRM 442, Training and Development (5)
IT 339, Advanced Spreadsheet Applications (3)
IT 361, Hardware Management (4)
IT 452, Telecommunications and Micro Network Applications (4)
IT 462, Administrative Systems Analysis and Design (4)
IT 468, Projects in Database (4)

Total 90

Information Technology Specialization (4260)

Information Technology students become qualified information technology professionals prepared to pursue careers that apply information systems, web design and publishing, network administration, spreadsheet, and database management, multimedia presentations, and desktop publishing. These qualifications are complemented by job-ready business communications and human relations skills. Graduates in the Information Technology specialization secure careers in information technology such as Web page design and administration, computer sales and support, network administration, and computer training and consulting.

Information Technology and Administrative Management Core 51-54

IT Specialization

IT 228, Introduction to Information Technology ........................................ 4
IT 361, Hardware Management ................. 4
IT 452, Telecommunications and Micro-Computer Networks .................... 4

Sub Total 63-66

Electives for Information Technology Specialization: ...................... 24-27
Select a minimum of one course from this category: .......................... 4
IT 374, Project Management (4)
IT 462, Administrative Systems Analysis and Design (4)
Select a minimum of one course from this category: .......................... 4
IT 422, Web Site Construction (4)
IT 426, Application of Web Languages (4)
IT 438, Management of Computer Networks (4)
Select a minimum of one course from this category: .......................... 3-5
ACCT 455, Accounting Information Systems (5)
CS 167, Visual Basic Beginning (4)
CS 367, Visual Basic Advanced (4)
CS 420, Database Systems (5)
IT 359, Advanced Spreadsheet Applications (3)
IT 468, Projects in Database (4)
IT 470, Database and the Web (4)
OMIS 386, Management Information Systems (5)
OMIS 420, Database Systems in Business (4)
PSY 462, Computer Methods for Social Science (4)
SOC 464, Applied Data Analysis (3)

Total 90

Retail Management and Technology Specialization (4265)

Retail Management and Technology students become qualified professionals prepared to pursue careers in retail environments that apply e-commerce, management, selling, advertising, purchasing, and information technology. These qualifications are complemented by job-ready business communications and human relations skills. Graduates in the Retail Management and Technology specialization secure careers such as store managers, e-retailing, sales associates, and buyers.

Information Technology and Administrative Management Core ............... 51-54

Retail Management and Technology Specialization Requirements .... 28
ME 330, Principles of Retailing, .......... 4
ME 340, Principles of Selling, ............ 4
ME 350, Principles of Advertising .......... 4
ME 467, Retail Management ................. 4
ME 470, Critical Issues in Retailing .......... 4
ME 486, Retailing and E-commerce .......... 4
ME/FCSA 489, Retail Buying ................ 4

Sub Total 79-82

Electives for Retail Management and Technology Specialization: ........ 8-11
BUS 241, Legal Environment of Business (5)
HRM 381, Management of Human Resources (5)
IT 422, Web Site Construction (4)
IT 470, Database and the Web (4)
ME 410, Retail Information Technology (4)
ME 455, Research in Advertising and Retailing (4)
ME 461, Advertising & Sales Promotion (5)
ME/FCSA 485, International Merchandising (4)
ME 498, International Comparative Retail Management Study Abroad (10)
MGT 380, Organizational Management (5)
MKT 361, Channels of Distribution Management (5)
MKT 367, Consumer Behavior (5)
MKT 467, International Marketing (5)

Total 90

Networking Administrative Specialization (4266)

Network Administration students become qualified business professionals prepared to pursue careers that apply a wide variety of network administration skills. These qualifications are complemented by job-ready business communications and human relations skills. Graduates in the Network Administration specialization secure positions as network administrators, network analysts, network managers, data communications analysts, network operations analysts, network specialists, network technicians, PC support specialists, PC network engineers, and user support specialists.

Information Technology and Administrative Management Core ............... 51-54

Network Administrative Courses 35
ADMG 485, Managerial Communications .... 3
ADMG/IT 374, Project Management ........ 4
IT 228, Introduction to Information Technology ........................................ 4
IT 361, Hardware Management ............ 4
IT 452, Telecom and Microcomputer Networks .................... 4
IT 457, Network Security .................. 4
IT 458, Management of Computer Networks ............................ 4
IT 459, Workstation Administration .................................... 4
IT 462, Administrative Systems Analysis and Design ............. 4
Electives ........................................................................... 1-4
IT 359, Advanced Spreadsheet Applications (3) ........................
IT 422, Web Site Construction (4) ................................. 4
IT 468, Projects in Database ........................................... 4
IT 496, Individual Studies (1) ........................................... 4
OMIS 386, Management Information Systems (5) .................

Total 90

Web Administration Specialization (4254)

Web administration students become qualified business professionals prepared to pursue careers that apply a wide variety of web administration skills. These qualifications are complemented by job-ready business communications and human relations skills. Graduates in the Web Administration specialization secure positions as Web administrators, Web designers, Web page developers, Web producers, Web site developers, and Web masters. A minor and certification in this area is available.

Information Technology and Administrative Management Core ........................................ 51-54
Web Administration Courses ........................................... 36
IT 228, Introduction to Information Technology ..................... 4
IT 374, Project Management ........................................... 4
IT 422, Web Site Construction ........................................... 4
IT 424, Managing a Web Site Team .................................... 4
IT 426, Web Languages .................................................. 4
IT 428, Web Applications ................................................ 4
IT 452, Telecom & Microcomputer Networks ............................ 4
IT 470, Database and the Web ........................................... 4
OMIS 386, Management Information Systems (5) .................

Sub Total 87-90
Electives ........................................................................... 9-12
IT 167, Beginning Visual Basic (4) ....................................
IT 367, Advanced Visual Basic (4) ....................................
IT 420, Database Management Systems (4) ...........................
IT 361, Hardware Management (4) ....................................
IT 359, Advanced Spreadsheet Applications (3) ....................
OMIS 386, Management Information Systems (5) .................
OMIS 420, Database Systems (5) ......................................

Total 90

Database Administration Specialization (4252)

Database Administration students become qualified business professionals prepared to pursue careers that apply to a wide variety of database administration skills. These qualifications are complemented by job-ready business communications and human relation skills. Graduates in the Database Administration specialization secure positions as data administrators, data analysts, data modelers, database developers, and database managers.

Information Technology and Administrative Management Core ........................................ 51-54
Database Specialization .................................................. 27
IT 228, Introduction to Information Technology ..................... 4
IT 374, Project Management ........................................... 4
IT 452, Telecom and Microcomputer Networks ....................... 4
IT 462, Administrative Systems Analysis and Design ............. 4
IT 468, Projects in Database ........................................... 4
IT 470, Database and the Web ........................................... 4
OMIS 485, Managerial Communications ............................

Minimum 36

Administrative Management Minor (1055)
The minor in Administrative Management provides recognition for students who complete the specified minor courses. Such recognition will benefit students in gaining professional employment or advancing in their current professional position. Several of the electives have prerequisites noted in the course description. Administrative Management minors are recommended to take ECON 101, 201 or 202, IT 101, Computer Applications (or equivalent) is a prerequisite to this minor. A student fulfilling the requirements for an ITAM program degree specialization cannot earn a minor within the same program. However, a student may earn a minor in any other area or departmental certificate.

Required Courses .................................................. Credits
IT 204, Word Processing Applications ................................ 3
IT 228, Introduction to Information Technology ..................... 4
IT 248, Web Fundamentals ........................................... 2
IT 258, Spreadsheet Applications ..................................... 3
IT 268, Database Applications ....................................... 3
IT 288, Business Presentation Applications .......................... 2
IT 359, Advanced Spreadsheet Applications ...........................
IT 389, Desktop Publishing ........................................... 3

Electives: ........................................................................... 12
ACCT 455, Accounting Information Systems (5)
CS 167, Visual Basic Beginning (4)
CS 367, Visual Basic Advanced (4)
CS 420, Database Systems (5)
CS or PSY 462, Computer Methods for Social Science (4)
IT 361, Hardware Management (4)
IT 422, Web Site Construction (4)
IT 426, Application of Web Languages (4)
IT 458, Management of Computer Networks (4)
IT 468, Projects in Database (4)
MIS 386, Management Information Systems (5)
MIS 420, Database Systems in Business (5)
SOC 464, Applied Data Analysis (3)

Total 35

Personal Computer Applications Minor (6030)
The Personal Computer Applications minor provides recognition for students who complete the specified minor courses. Such recognition will benefit students in gaining professional employment or advancing in their current professional position. Required and elective courses in the minor may have prerequisites. IT 101, Computer Applications (or equivalent) is a prerequisite to this minor. A student fulfilling the requirements for an ITAM program degree specialization cannot earn a minor within the same program. However, a student may earn a minor in any other area or departmental certificate.
Retail Management and Technology Minor (6840)

The minor in Retail Management and Technology provides recognition for students who complete the specified minor courses. Such recognition will benefit students in gaining professional employment or advancing in their current professional position.

The Retail Management and Technology Minor develops competence in retail planning implementation, and management. IT 101, Computer Applications, (or equivalent) is a prerequisite to the minor. Required and elective courses in the minor may have prerequisites. A student fulfilling the requirements for an ITAM program degree specialization cannot earn a minor within the same program. However, a student may earn a minor in any other area or departmental certificate.

### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADMG 371, Administrative Management</td>
<td>4</td>
</tr>
<tr>
<td>ADMG 385, Business Communications</td>
<td>3</td>
</tr>
<tr>
<td>ME 330, Principles of Retailing</td>
<td>4</td>
</tr>
<tr>
<td>ME 340, Principles of Selling</td>
<td>4</td>
</tr>
<tr>
<td>ME 467, Retailing Management</td>
<td>4</td>
</tr>
<tr>
<td>ME 468, Retailing and E-Commerce</td>
<td>4</td>
</tr>
<tr>
<td>IT 258, Spreadsheet Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 268, Database Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 288, Business Presentation</td>
<td>3</td>
</tr>
<tr>
<td>IT 361, Hardware Management</td>
<td>4</td>
</tr>
<tr>
<td>IT 374, Project Management</td>
<td>4</td>
</tr>
<tr>
<td>IT 422, Managing a Web Site Team</td>
<td>4</td>
</tr>
<tr>
<td>IT 426, Application of Web Languages</td>
<td>4</td>
</tr>
<tr>
<td>MIS 386, Management Information Systems</td>
<td>5</td>
</tr>
<tr>
<td>IT 452, Telecom. &amp; Microcomputer</td>
<td>4</td>
</tr>
<tr>
<td>Networks</td>
<td></td>
</tr>
<tr>
<td>IT 458, Management of Computer Networks</td>
<td>4</td>
</tr>
<tr>
<td>IT 459, Workstation Administration</td>
<td>4</td>
</tr>
<tr>
<td>MIS 386, Management Information</td>
<td>5</td>
</tr>
<tr>
<td>Systems</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>32</td>
</tr>
</tbody>
</table>

### Electives

- ADMG 371, Administrative Management (4)
- ADMG 385, Business Communications and Report Writing (5)
- ME 330, Principles of Retailing (4)
- ME 340, Principles of Selling (4)
- ME 467, Retailing Management (4)
- ME 468, Retailing and E-Commerce (4)
- IT 258, Spreadsheet Applications (3)
- IT 268, Database Applications (3)
- IT 288, Business Presentation Applications (2)
- IT 361, Hardware Management (4)
- IT 374, Project Management (4)
- IT 422, Managing a Web Site Team (4)
- IT 426, Application of Web Languages (4)
- IT 428, Web Applications (4)
- Total 30-32

Network Administration Minor (4256)

The minor in Network Administration provides recognition for students who complete the specified minor courses. Such recognition will benefit students in gaining professional employment or advancing in their current professional position.

Required and elective courses in the minor may have prerequisites. IT 101, Computer Applications (or equivalent) is a prerequisite to this minor. A student fulfilling the requirements for an ITAM program degree specialization cannot earn a minor within the same program. However, a student may earn a minor in any other area or departmental certificate.

### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADMG 371, Administrative Management</td>
<td>4</td>
</tr>
<tr>
<td>ADMG 385, Business Communications</td>
<td>3</td>
</tr>
<tr>
<td>IT 258, Spreadsheet Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 268, Database Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 288, Business Presentation</td>
<td>3</td>
</tr>
<tr>
<td>IT 389, Desktop Publishing</td>
<td>3</td>
</tr>
<tr>
<td>IT 452, Telecom and Microcomputer</td>
<td>4</td>
</tr>
<tr>
<td>Networks</td>
<td></td>
</tr>
<tr>
<td>IT 459, Workstation Administration</td>
<td>4</td>
</tr>
<tr>
<td>MIS 386, Management Information</td>
<td>5</td>
</tr>
<tr>
<td>Systems</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>36</td>
</tr>
</tbody>
</table>

### Database Administration Minor (4252)

The minor in Database Administration provides recognition for students who complete the specified minor courses. Such recognition will benefit students in gaining professional employment or advancing in their current professional position.

Required and elective courses in the minor may have prerequisites. IT 101, Computer Applications, (or equivalent) is a prerequisite to this minor. A student fulfilling the requirements for an ITAM program degree specialization cannot earn a minor within the same program. However, a student may earn a minor in any other area or departmental certificate.

### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT 204, Word Processing Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 228, Introduction to Information Technology</td>
<td>4</td>
</tr>
<tr>
<td>IT 248, Web Fundamentals</td>
<td>2</td>
</tr>
<tr>
<td>IT 268, Database Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 374, Project Management</td>
<td>4</td>
</tr>
<tr>
<td>IT 468, Projects in Database</td>
<td>4</td>
</tr>
<tr>
<td>IT 470, Database and the Web</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
</tr>
</tbody>
</table>

Advertising Minor (1110)

The minor in advertising provides recognition for students who complete the specified minor courses. Such recognition will benefit students in gaining professional employment or advancing in their current professional position.

Required and elective courses in the minor may have prerequisites. IT 101, Computer Applications, CS 101, Computer Basics, or demonstration of computer competence is a prerequisite to the minor.

### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM 270, Introduction to Public Relations</td>
<td>4</td>
</tr>
<tr>
<td>COM 300, Research Methods</td>
<td>4</td>
</tr>
<tr>
<td>COM 305, Advertising Consulting and Placement</td>
<td>4</td>
</tr>
<tr>
<td>ME 340, Principles of Selling</td>
<td>4</td>
</tr>
<tr>
<td>ME 350, Principles of Advertising</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>36</td>
</tr>
</tbody>
</table>
Certificate in Administrative Management – Type B (ADMG)
By Permission Only

The Certificate in Administrative Management provides recognition for students who complete the specified certificate courses. Such recognition will benefit students in gaining professional employment or advancing in their current professional position.

Required and elective courses in the certificate may have prerequisites. It is recommended that students take ECON 101, Computer Applications (or equivalent) is a prerequisite to this certificate.

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT 248, Web Fundamentals</td>
<td>2</td>
</tr>
<tr>
<td>IT 258, Spreadsheet Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 268, Database Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 288, Business Presentation Applications</td>
<td>2</td>
</tr>
<tr>
<td>IT 399, Advanced Spreadsheet Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 389, Desktop Publishing</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives

<table>
<thead>
<tr>
<th>Electives</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 455, Accounting Information Systems (5)</td>
</tr>
<tr>
<td>IT 361, Hardware Management (4)</td>
</tr>
<tr>
<td>IT 422, Web Site Construction (4)</td>
</tr>
<tr>
<td>IT 426, Application of Web Languages (4)</td>
</tr>
<tr>
<td>IT 458, Management of Computer Networks (4)</td>
</tr>
<tr>
<td>IT 468, Projects in Database Projects (4)</td>
</tr>
<tr>
<td>MIS 386, Management Information Systems (5)</td>
</tr>
<tr>
<td>MIS 420, Database Systems in Business (5)</td>
</tr>
<tr>
<td>IT 422, Web Site Construction (4)</td>
</tr>
<tr>
<td>IT 426, Application of Web Languages (4)</td>
</tr>
<tr>
<td>IT 458, Management of Computer Networks (4)</td>
</tr>
<tr>
<td>IT 468, Projects in Database Projects (4)</td>
</tr>
</tbody>
</table>

Total 35

Certificate in Retail Management and Technology – Type B (RMT)
By Permission Only

The Certificate in Retail Management and Technology provides recognition for students who complete the specified certificate courses. Such recognition will benefit students in gaining professional employment or advancing in their current professional position.

Required and elective courses in the certificate may have prerequisites. It is recommended that students take ECON 101, Computer Applications (or equivalent) is a prerequisite to this certificate.

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT 228, Introduction to Information Technology</td>
<td>4</td>
</tr>
<tr>
<td>IT 248, Web Fundamentals</td>
<td>2</td>
</tr>
<tr>
<td>IT 258, Spreadsheet Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 268, Database Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 288, Business Presentation Applications</td>
<td>2</td>
</tr>
<tr>
<td>IT 389, Desktop Publishing</td>
<td>3</td>
</tr>
<tr>
<td>IT 462, Systems Analysis and Design</td>
<td>4</td>
</tr>
</tbody>
</table>

Total 33

Certificate in Personal Computer Applications – Type B (PCA)
By Permission Only

ME 461, Advertising and Sales Promotion | 5 |
Select one of the following: 
- COM 306, Introduction to Online Media | 4 |
- COM 309, Broadcast Advertising and Scriptwriting | 4 |
- COM 341, Television Field Production | 4 |
- COM 348, Publication Design | 3 |
- IT 389, Desktop Publishing | 3 |
Select one of the following: 
- ME 455, Consumer Research | 5 |
- IT 440, Corporate Television | 4 |
- COM 475, P.R. & Advertising Agency Management | 4 |

Total 32-34

Certificate in Networking Administration – Type B (NET)
By Permission Only

The Certificate in Network Administration provides recognition for students who complete the specified certificate courses. Such recognition will benefit students in gaining professional employment or advancing in their current professional position.

Required and elective courses in the certificate may have prerequisites. It is recommended that students take ECON 101, Computer Applications (or equivalent) is a prerequisite to this certificate.

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT 204, Word Processing Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 228, Introduction to Information Technology</td>
<td>4</td>
</tr>
<tr>
<td>IT 248, Web Fundamentals</td>
<td>2</td>
</tr>
<tr>
<td>IT 258, Spreadsheet Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 268, Database Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 389, Desktop Publishing</td>
<td>3</td>
</tr>
<tr>
<td>IT 468, Projects in Database Projects</td>
<td>4</td>
</tr>
<tr>
<td>MIS 386, Management Information Systems (5)</td>
<td></td>
</tr>
<tr>
<td>MIS 420, Database Systems in Business (5)</td>
<td></td>
</tr>
<tr>
<td>IT 422, Web Site Construction (4)</td>
<td></td>
</tr>
<tr>
<td>IT 426, Application of Web Languages (4)</td>
<td></td>
</tr>
<tr>
<td>IT 458, Management of Computer Networks (4)</td>
<td></td>
</tr>
<tr>
<td>IT 468, Projects in Database Projects (4)</td>
<td></td>
</tr>
</tbody>
</table>

Total 35

Electives

<table>
<thead>
<tr>
<th>Electives</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 455, Accounting Information Systems (5)</td>
</tr>
<tr>
<td>IT 361, Hardware Management (4)</td>
</tr>
<tr>
<td>IT 422, Web Site Construction (4)</td>
</tr>
<tr>
<td>IT 426, Application of Web Languages (4)</td>
</tr>
<tr>
<td>IT 458, Management of Computer Networks (4)</td>
</tr>
<tr>
<td>IT 468, Projects in Database Projects (4)</td>
</tr>
</tbody>
</table>

Total 32

Total 147
Certificate in Web Administration
– Type B (WEB)
By Permission Only

The Certificate in Web Administration provides recognition for students who complete the specified certificate courses. Such recognition will benefit students in gaining professional employment or advancing in their current professional position.

Required and elective courses in the certificate may have prerequisites. IT 101, Computer Applications (or equivalent) is prerequisite to this certificate.

Required Courses 30 Credits

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADMG 385, Business Communications and Report Writing</td>
<td>5</td>
</tr>
<tr>
<td>IT 204, Word Processing Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 248, Web Fundamentals</td>
<td>2</td>
</tr>
<tr>
<td>IT 268, Database Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 468, Projects in Database</td>
<td>4</td>
</tr>
<tr>
<td>IT 470, Database and the Web</td>
<td>4</td>
</tr>
</tbody>
</table>

Electives: 10 Credits

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 167, Beginning Visual Basic</td>
<td>4</td>
</tr>
<tr>
<td>CS 367, Advanced Visual Basic</td>
<td>4</td>
</tr>
<tr>
<td>IT 242, Web Site Construction</td>
<td>4</td>
</tr>
<tr>
<td>IT 424, Managing a Web Site Team</td>
<td>4</td>
</tr>
<tr>
<td>IT 426, Application of Web languages</td>
<td>4</td>
</tr>
<tr>
<td>IT 428, Web Applications</td>
<td>4</td>
</tr>
</tbody>
</table>

Certificate in Database
– Type B (DATA)
By Permission Only

The Certificate in Database Administration provides recognition for students who complete the specified certificate courses. Such recognition will benefit students in gaining professional employment or advancing in their current professional position.

Required and elective courses in the certificate may have prerequisites. IT 101, Computer Applications (or equivalent) is a prerequisite to this certificate.

Required Courses 36 Credits

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADMG 371, Administrative Management</td>
<td>4</td>
</tr>
<tr>
<td>IT 258, Spreadsheet Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 268, Database Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 288, Business Presentation Applications</td>
<td>2</td>
</tr>
<tr>
<td>IT 306, Advanced Word Processing Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 361, Hardware Management</td>
<td>4</td>
</tr>
<tr>
<td>IT 359, Advanced Spreadsheet Applications</td>
<td>3</td>
</tr>
<tr>
<td>OCED 410, Vocational School to Work Program</td>
<td>4</td>
</tr>
</tbody>
</table>

Electives: 10 Credits

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 167, Beginning Visual Basic</td>
<td>4</td>
</tr>
<tr>
<td>CS 367, Advanced Visual Basic</td>
<td>4</td>
</tr>
<tr>
<td>IT 242, Web Site Construction</td>
<td>4</td>
</tr>
<tr>
<td>IT 424, Managing a Web Site Team</td>
<td>4</td>
</tr>
<tr>
<td>IT 426, Application of Web languages</td>
<td>4</td>
</tr>
<tr>
<td>IT 428, Web Applications</td>
<td>4</td>
</tr>
</tbody>
</table>

Total 74

Bachelor of Science
Business Education Major (1800)

This major satisfies the primary endorsement for Business Education.

Completion of the major and the primary education sequence (52-56 credits) qualifies you for teaching business education at the secondary and middle school levels. State vocational certification requirements should be satisfied: 2,000 hours of recent, related work experience and completion of OCED 410. See the program advisors.

BSED 432 must be completed with a C+ or better to be endorsed to teach keyboarding, accounting, computer applications, and basic business subjects. Keyboarding competence and IT 101, Computer Applications or equivalent are prerequisites to this minor.

The Business Education program includes coursework, pre-autumn field experience, campus-based practicum, and student teaching or an eight-credit teaching practicum.

Required Courses 48 Credits

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADMG 201, Introduction to Business</td>
<td>3</td>
</tr>
<tr>
<td>ADMG 271, Business Math Applications</td>
<td>4</td>
</tr>
<tr>
<td>ADMG 355, Workplace Administration</td>
<td>4</td>
</tr>
<tr>
<td>ADMG 385, Business Communications and Report Writing</td>
<td>4</td>
</tr>
<tr>
<td>ADMG 485, Managerial Communications</td>
<td>3</td>
</tr>
<tr>
<td>BSED 432, Methods of Teaching Business and Marketing Education</td>
<td>5</td>
</tr>
<tr>
<td>BSED 458, Management of Computer Networks</td>
<td>4</td>
</tr>
<tr>
<td>BSED 492, Business Education Practicum</td>
<td>5</td>
</tr>
<tr>
<td>BUS 241, Legal Environment of Business</td>
<td>5</td>
</tr>
<tr>
<td>ECON 101, Economic Issues OR ECON 201 or 202, Principles of Economics Micro or Macro</td>
<td>5</td>
</tr>
<tr>
<td>IT 204, Word Processing Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 228, Introduction to Information Technology</td>
<td>4</td>
</tr>
<tr>
<td>IT 248, Web Fundamentals</td>
<td>2</td>
</tr>
<tr>
<td>IT 258, Spreadsheet Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 268, Database Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 288, Business Presentation Applications</td>
<td>2</td>
</tr>
<tr>
<td>IT 306, Advanced Word Processing Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 361, Hardware Management</td>
<td>4</td>
</tr>
<tr>
<td>IT 359, Advanced Spreadsheet Applications</td>
<td>3</td>
</tr>
<tr>
<td>OCED 410, Vocational School to Work Program</td>
<td>4</td>
</tr>
</tbody>
</table>

Total 74
secondary school level. Also, state vocational certification requirements should be satisfied: 2,000 hours of recent, related work experience and completion of OCED 410. See the program advisor.

Students are required to complete EDCS 311 before taking ME 432. ME 432 must be completed with a C+ or better to be endorsed to teach marketing subjects. Keyboarding competence and IT 101, Computer Applications, or equivalent are prerequisites to this major.

The Marketing Education program includes coursework, pre-autumn field experience, campus-based practicum, and student teaching.

Required Courses Credits
ADMG 146, Basic Accounting, .......................... 5
ADMG 201, Introduction to Business ............... 3
ADMG 271, Business Math Applications .......... 4
ADMG 385, Business Communications and Report Writing, .............................. 5
ECON 101, Economic Issues OR ECON 201 or 202, Principles of Economics Micro or Macro ........................................... 5
IT 204, Word Processing Applications .......... 3
IT 248, Web Fundamentals ............................ 2
IT 258, Spreadsheet Applications .................. 3
IT 268, Database Applications ..................... 3
IT 288, Business Presentation Applications .... 2
ME 330, Principles of Retailing ..................... 4
ME 340, Principles of Selling ......................... 4
ME 350, Principles of Advertising .................. 4
ME 432, Methods of Teaching Business and Marketing Education .................. 5
ME 486, Retailing and E-Commerce .......... 4
MKT 360, Principles of Marketing ................. 5
OCED 410, Vocational School to Work Programs .................................. 4
Marketing Minor Electives:
ITAM Department Approved Electives . 7

Total 51

Administrative Management Courses
ADMG 146, Basic Accounting (5). For office workers who are required to keep a simple set of books and complete various government reports. May not be taken for college credit if any other college accounting course or courses have been completed. May be audited.

ADMG 201, Introduction to Business (3). Functions, practices, and organization of the business enterprise.

ADMG 271, Business Math Applications (4). Business and merchandising mathematics applications.

ADMG 296, Individual Study (1-6). Prerequisite, permission of instructor. May be repeated.

ADMG 298, Special Topics (1-6).
ADMG 299, Seminar (1-5). May be repeated.

ADMG 310, Business Professional Development (3). Prerequisite, junior standing. Develops strategies to enhance career success through professional image, attitudes, and ethics.

ADMG 335, Workplace Administration (4). Knowledge and skills necessary for working efficiently and effectively in today's workplace. Course topics include basic business communications, meeting and conference management, office equipment, office health and safety, records management, and scheduling. Formerly ADMG 255. Students may not receive credit for both.

ADMG 371, Administrative Management (4). Administrative management techniques and practices.

ADMG 372, Leadership and Supervision (4). Supervision and leadership techniques to improve productivity in administrative settings.

ADMG 374, Project Management (4). Development of project management skills and their application in workplace environments. Same as IT 374. Students may not receive credit for both.

ADMG 375, Personal Finance via the Internet (4). Prerequisite, access to course Web site, and e-mail. Buymanship, choice making, money management, insurance, investments, shelter, personal legal aspects, and taxes.

ADMG 385, Business Communications and Report Writing (5). Prerequisite, ENG 102 or equivalent and junior standing. Planning and writing skills for business letters, memos, and employment, and reports.

ADMG 386, Records Management (3). Prerequisite, ADMG 355 and junior standing. Prerequisite or corequisite, IT 368. Manual and electronic records systems selection and control, business forms design, and records facilities planning.

ADMG 398, Special Topics (1-6).

ADMG 485, Managerial Communications (3). Prerequisite, ADMG 385. Advanced written oral, and non-verbal business communications including proposals, crisis management, international communication, international/domestic etiquette, meeting management, conflict resolution, negotiation, and collaboration.

ADMG 490, Cooperative Education (5-12). An individualized contracted field experience with business, industry, government, or social service agencies. This contractual arrangement involves a student learning plan, cooperating employer supervision, and faculty coordination. Prior approval required. May be repeated. Grade will be S or U. Summers only.

ADMG 491, Workshop (1-6).

ADMG 493.1, Undergraduate Research Practicum (1-3). Conduct research under direct supervision of a professor with specific learning agreement required. Department requirements must be met. Grade will be S/U. Same as ME/IT/BSED 493.1. May be repeated for a total of 3 credits.

ADMG 493.2, Undergraduate Assistant.
ADMG 499. Seminar

ADMG 498. Special Topics (1-6).
ADMG 499. Seminar (1-5).

Business Education Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisite</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSED 101</td>
<td>Computer Keyboarding (2)</td>
<td>(1-5). May be repeated. Prerequisite, knowledge of computer competence.</td>
<td>Provides a foundation for using computer equipment.</td>
</tr>
<tr>
<td>BSED 102</td>
<td>Computer Keyboarding Skill Building (2)</td>
<td>(1-6). May be repeated. Prerequisite, BSED 101 or equivalent touch keyboarding skill.</td>
<td>Development of touch keyboarding skills.</td>
</tr>
<tr>
<td>BSED 296</td>
<td>Individual Study (1-6)</td>
<td>May be repeated. Prerequisite, permission of instructor.</td>
<td>Focuses on individual skill development.</td>
</tr>
<tr>
<td>BSED 298</td>
<td>Special Topics (1-6).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSED 491</td>
<td>Workshop (1-6).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSED 492</td>
<td>Practicum (5-15).</td>
<td>(1-5). May be repeated. Prerequisite, permission of instructor.</td>
<td>Focuses on practical application skills.</td>
</tr>
<tr>
<td>BSED 493</td>
<td>Undergraduate Research Practicum (1-3)</td>
<td>Conduct research under direct supervision of a professor with specific learning agreement required.</td>
<td>Provides research opportunity.</td>
</tr>
<tr>
<td>BSED 493.1</td>
<td>Undergraduate Assistant Practicum (1-3)</td>
<td>Assist in monitoring, supervising, and tutoring instruction.</td>
<td></td>
</tr>
<tr>
<td>BSED 496</td>
<td>Individual Study (1-6).</td>
<td>May be repeated. Prerequisite, permission of instructor.</td>
<td></td>
</tr>
<tr>
<td>BSED 498</td>
<td>Special Topics (1-6).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSED 499</td>
<td>Seminar (1-5).</td>
<td>May be repeated. Prerequisite, permission of instructor.</td>
<td></td>
</tr>
</tbody>
</table>

Information Technology Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT 101</td>
<td>Computer Applications (3).</td>
<td>Basic keyboarding skills recommended.</td>
</tr>
<tr>
<td>IT 150</td>
<td>Marketing Education (5).</td>
<td>Marketing and related management skills.</td>
</tr>
<tr>
<td>IT 204</td>
<td>Word Processing Applications (3).</td>
<td>Development of microcomputer word processing skills.</td>
</tr>
<tr>
<td>IT 228</td>
<td>Introduction to Information Technology (4).</td>
<td>Exploring information technology principles, practices, and applications.</td>
</tr>
<tr>
<td>IT 248</td>
<td>Web Fundamentals (2).</td>
<td>Development of web pages, electronic mail skills, and Internet skills.</td>
</tr>
<tr>
<td>IT 258</td>
<td>Spreadsheet Applications (3).</td>
<td>Development of spreadsheets for business applications.</td>
</tr>
<tr>
<td>IT 268</td>
<td>Database Applications (3).</td>
<td>Development of database skills in producing business-related documents.</td>
</tr>
<tr>
<td>IT 288</td>
<td>Business Presentation Applications (2).</td>
<td>Development of multimedia presentations for business and workplace environments.</td>
</tr>
<tr>
<td>IT 306</td>
<td>Advanced Word Processing Applications (3).</td>
<td>Development of advanced word processing skills.</td>
</tr>
<tr>
<td>IT 359</td>
<td>Advanced Spreadsheet Applications (3).</td>
<td>Design of multiple sheet workbooks and templates.</td>
</tr>
<tr>
<td>IT 361</td>
<td>Hardware Management (4).</td>
<td>Development of hardware management related to business environments.</td>
</tr>
<tr>
<td>IT 374</td>
<td>Project Management (4).</td>
<td>Development of project management skills and their application.</td>
</tr>
</tbody>
</table>
IT 422. Web Site Construction (4). Prerequisite, IT 248. Design and implementation of the information technology infrastructure needed to operate a business Web site.

IT 424. Managing a Web Site Team (4). Prerequisite, IT 422. Web site team management including planning, implementation, operation, quality assurance, and legal issue.

IT 426. Application of Web Languages (4). Prerequisite, IT 422. Web languages for the non-computer science student.

IT 428. Web Applications (4). Prerequisite, IT 422. Web design using Web applications software such as Dreamweaver, Fireworks, and Flash or equivalent; digital hardware, graphic design, and page layout.

IT 452. Telecommunications and Microcomputer Network Applications (4). Prerequisite, IT 228 or permission of instructor. Personal Computer networks communications including: Networking Basics; LAN Topologies, LAN Protocols; and Network Operating Systems; and telecommunications, including voice, data, message, and image communications. Formerly ADMG 452.


IT 458. Management of Computer Networks (4). Prerequisite, basic level of understanding of computer networks. Develop and improve network administration and management skills within the Server environment. Cross listed with BSED 458. Students may not receive credit for both.

IT 459. Workstation Administration (4). Prerequisite, IT 228. Implementation, administration, and troubleshooting workstations as a desktop operating system in any network environment.

IT 462. Administrative Systems Analysis and Design (4). Prerequisite IT 361. Analyze office information systems through selected analysis tools and procedures. Students will apply this knowledge by designing improved systems.

IT 468. Projects in Database (4). Prerequisites, IT 268 and IT 462. Advanced techniques in database design, even-driven and object-driven programming, VBA statements and modules, debugging, creating Index files, and security issues.

IT 470. Database and the Web (4). Prerequisites, IT 228 and IT 268. Developing dynamic web pages that interact with a database.

IT 488. Multimedia Presentations (3). Prerequisite, IT 101 or equivalent or demonstration of computer competence. Plan, design, and produce clear, complete, accurate, and attractive linear and non-linear multimedia presentations using common multimedia hardware and software. Same as BSED 488. Students may not receive credit for both. Formerly ADMG 488.

IT 489. Web Page Construction (3). Design, development, and publishing Internet Web pages including web page evaluation.

IT 490. Cooperative Education (5-12). Ad individualized contracted field experience with business, industry, government, or social service agencies. This contractual arrangement involves a student learning plan, cooperating employer supervision, and faculty coordination. Prior approval required. May be repeated. Grade will be S or U.

IT 491. Workshop (1-6). May be repeated.

IT 493.1. Undergraduate Research Practicum (1-3). Conduct research under direct supervision of a professor with specific learning agreement required. Department requirements must be met. Grade will be S/U. Same as ME/ADMG/BSED 493.1. May be repeated for a total of 3 credits.

IT 493.2. Undergraduate Assistant Practicum (1-3). Assist in monitoring, supervising, supporting, and tutoring instruction under direct supervision of a professor with specific learning agreements required. Department requirements must be met. Grade will be S/U. Same as ADMG/ME/BSED 493.2. May be repeated for a total of 3 credits.

IT 496. Individual Study (1-6). Prerequisite, permission of the instructor. May be repeated.

Marketing Education Courses

ME 251. Visual Merchandising (3). Prerequisite FCHS 166, ADMG 201. Organization, planning, preparation, and arrangement of effective visual merchandise sales presentation. One hour lecture and four hours lab per week. Same as FCSA 251. Students may not receive credit for both.

ME 296. Individual Study (1-6). May be repeated. Prerequisite, permission of instructor.

ME 301. Principles of Fashion Merchandising (4). The development of the fashion industry; historical, economic and technological influences; apparel manufacturing, product development, fashion styles and markets. Formerly ME/FCSA 180. Same as FCSA 301. Students may not receive credit for both.

ME 330. Principles of Retailing (4). An introduction to the field of retailing including retail stores, merchandising, operations, store location and layout, internal organization, buying, personnel management, inventory control, and sales promotion.

ME 340. Principles of Selling (4). The field of selling, its role in the economy, the sales process, types of selling, planning the sale and the sales organization.

ME 350. Principles of Advertising (4). An introduction to the field of advertising and its fit into society including integrated marketing communication, consumer behavior, segmentation and target marketing, application of advertising research, creative and media strategy, copy, layout, production, budgeting, agency organization, and international and local advertising.

ME 355. Advertising Media Planning (4). A study of the role of media in marketing related advertising decisions with emphasis on media research, technology, market analysis, market strategy, psychodynamics of media, reach and frequency, budgeting, and buying.

ME 379. Internship Planning (1-5). Same as FCSA 379; formerly ME 399.1. Students may not receive credit for both.

ME 410. Retail Information Technology (4). Prerequisite, ME 330 and senior standing. Use of contemporary technology in collecting, analyzing, and interpreting retail management data and writing and presenting retail management reports.

ME 432. Methods of Teaching Business and Marketing Education (5). Prerequisite, a majority of the business or marketing major completed and EDCS 311. Cross listed with BSED 432. Students may not receive credit for both.

ME 445. Techniques of Cooperative Education (3). Philosophy, place, methods, and techniques of coordinating work experience. Same as BSED 445. Students may not receive credit for both.

ME 455. Research in Advertising and Retailing (4). Prerequisites, ME 330 or ME 350. Primary and secondary data collection, compilation, analysis, interpretation, and reporting in advertising and retailing.

ME 461. Advertising and Sales Promotion (5). Prerequisite, senior standing. IT 389 and ME 350. This capstone course provides the student with the opportunity to apply all that they have learned in their major and in other fields by the development of a comprehensive advertising campaign. The focus of the course is to apply learned theory-base to practice application.

ME 467. Retail Management (4). Prerequisites, ME 330. Senior standing. Retail store ownership and management, including startup, location, market analysis, customer service, organization, merchandise management, human resource management, sales promotion, and financial planning. Formerly ME 367. Student may not receive credit for both.
ME 470. Critical Issues in Retailing (4). Prerequisites, ME 330 and senior standing. Capstone course in retailing that focuses on current retail management and technology literature and case studies.

ME 479. Fashion Merchandising Seminar (3). Prerequisites, ME 467 and ME 461. Same as FCSA 479. Students may not receive credit for both.

ME 485. International Merchandising (4). Prerequisite, ME 330. Emphasis on international retailing and global trade. Focus on cross-cultural differences, work environments, policies and regulations. Same as ME 485. Students may not receive credit for both.

ME 486. Retailing and Electronic Commerce (4). Prerequisite/corequisite, ME 330 and access to the Internet. Examines the progress and potential of the WWW for the marketing, selling, promoting, and distributing of retail goods and services.

ME 489. Retail Buying (4). Prerequisites ME 330. Principles of buying and selling merchandise; analysis of consumer demand, stock inventories and open-to-buy. Same as FCSA 489. Students may not receive credit for both.

ME 490. Cooperative Education (5-12). An individualized contracted field experience with business, industry, government, or social service agencies. This contractual arrangement involves a student learning plan, cooperating employer supervision, and faculty coordination. Prior approval required. May be repeated. Grade will be S or U. Fashion Merchandising Internship: prerequisite, FCSA/ME 379. Available summer only - 10 credit minimum. Same as FCSG 490. Students may not receive credit for both.

ME 492. Practicum (5-15). Prerequisite, permission of Department Chair. Grading will be S or U. Same as BSED 492. Students may not receive credit for both.

ME 493. Undergraduate Research Practicum (1-3). Conduct research under direct supervision of a professor with specific learning agreement required. Department requirements must be met. Grade will be S/U. Same as ADMG/IT/BSED 493.1. May be repeated for a total of 3 credits.

ME 493.2, Undergraduate Assistant Practicum (1-3). Assist in monitoring, supervising, supporting, and tutoring instruction under direct supervision of a professor with specific learning agreements required. Department requirements must be met. Grade will be S/U. Same as ADMG/IT/BSED 493.2. May be repeated for a total of 3 credits.

ME 496. Individual Study (1-6). May be repeated. Prerequisite, permission of instructor.

ME 498. Special Topics (1-6).

ME 499. Seminar (1-5). May be repeated.

ITAM Programs and Courses on Reserve
BSED 420. Teaching Accounting (3); BSED 425. Teaching Keyboarding and Computer Applications (3); BSED 426. Teaching Basic Business Subjects (3); IT 352. Windows and File Management (2); IT 369. Advanced Database Applications (2); IT 386. Records Management; IT 461. Administrative Systems Analysis (5); ME 331. Teaching Marketing Education (3).

INTERNATIONAL STUDIES AND PROGRAMS

Director: Carlos Martin
International Center

General Program Information
The Office of International Studies and Programs (OISP) coordinates all internationally related activities on campus. This includes maintaining institutional linkages, facilitating faculty exchanges, providing study abroad/exchange and academic advising for both international students and American students, promoting English language acquisition through the Asia University America Program and the University English as a Second Language Program, and collaborating with the academic Deans and departments in support of the overall internationalization of the university curriculum.

OISP provides a variety of services to all segments of Central Washington University in order to meet the diverse needs of CWU’s students, faculty, international students, research scholars and professors. The following services are offered through the OISP: study abroad/exchange advising (SA/EA), advising to international students and scholars (AISS), English language training through the University English as a Second Language (UESL) program, and a unique English language and cultural learning experience for Japanese students from Asia University in Japan through the Asia University America Program (AUAP).

Institutional Linkages
Central Washington University and the Office of International Studies and Programs (OISP) maintain active inter-institutional and organizational relationships with the following universities: Anhui University, China; Gunma Prefectural Women’s University, Japan; Hezen State Pedagogical University, Russia; Janus Pannonius University, Hungary; International Student Exchange Program, various countries; Instituto Tecnologico y de Estudios Superiores de Monterey (ITESM), Mexico; Kyoto University of Foreign Studies, Japan; Northern Jiaotong University, China; Queensland University of Technology, Australia; Shimane University, Japan; Shimane Women’s Junior College, Japan; Shimane International College, Japan; Takushoku University, Japan; University of New Castle, Australia; Universidad de Guadalajara, Mexico; University of Hull, United Kingdom; Universidad Austral de Chile, Chile; Pukyong National University, Korea; American Heritage Association, various countries; Universidad de la Coruna, Spain; Beijing University, China; Universidad Anahuac del Sur, Mexico; Centro Mexicano Internacional; Universite de Pau et des Pays de l’Adour, France; College Consortium for International Studies, various countries; American Institute for Foreign Studies, various countries; Australian Education Connection, Australia; Centro de Investigaciones en Medio Ambiente y Salud (CIMAS), Ecuador; University of Washington Cadiz Program, Spain; Institute for Study Abroad, Butler University, various countries; Universidad Autonoma de Guadalajara, Mexico; Council of International Educational Exchange, various countries; Asia University, Japan; Napier University, Scotland; and Universitas Udayana, Indonesia. Active student and faculty exchange opportunities exist between CWU and these institutions.

INTERNATIONAL AND AREA STUDIES

CWU offers Chinese, French, German, Japanese, Russian and Spanish language courses. Students studying a language are encouraged to have international experience in order to learn more about the cultural context of the language. Regular degree programs are offered in Foreign Languages with specializations in Chinese, French, German, Japanese, Russian and Spanish. The Foreign Language Broad Area major may include studying abroad in a country where the target language is taken. Students can internationalize their undergraduate education by completing a major or minor in Asia/Pacific Studies and/or Latin American Studies. These programs of study are interdisciplinary and incorporate courses in anthropology, art, economics, geography, history, languages, philosophy, and political science. Other area-focused courses are also available throughout the academic year.

LATIN AMERICAN STUDIES PROGRAM
Program Director: Stella Moreno
Foreign Languages

General Program Information
The minor is designed to provide a broad, interdisciplinary base of studies on Latin America which will supplement the academic major for those students who intend to teach as well as those who plan to seek employment in government or private enterprise. Students minoring in Latin American studies can do so under one of the following options or a preapproved combination of both.

**Latin American Studies Minor I**

(4610)

Prerequisite: Spanish language proficiency equivalent to the end of second year level (253).

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAS 102</td>
<td>Multi-disciplinary Introduction to Latin America Studies</td>
<td>5</td>
</tr>
</tbody>
</table>

Total 5 credits

**Latin American Studies Minor II**

(4615)

(On-campus)

Prerequisite: Spanish language proficiency equivalent to the end of second year level (253).

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAS 102</td>
<td>Multi-disciplinary Introduction to Latin America Studies</td>
<td>5</td>
</tr>
</tbody>
</table>

Total 5 credits

The minor is designed to provide a broad, interdisciplinary base of studies on Latin America which will supplement the academic major for those students who intend to teach as well as those who plan to seek employment in government or private enterprise. Students minoring in Latin American studies can do so under one of the following options or a preapproved combination of both.

**Latin American Studies Minor I**

(4610)

Prerequisite: Spanish language proficiency equivalent to the end of second year level (253).

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAS 102</td>
<td>Multi-disciplinary Introduction to Latin America Studies</td>
<td>5</td>
</tr>
</tbody>
</table>

Total 5 credits

**Latin American Studies Minor II**

(4615)

(On-campus)

Prerequisite: Spanish language proficiency equivalent to the end of second year level (253).

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAS 102</td>
<td>Multi-disciplinary Introduction to Latin America Studies</td>
<td>5</td>
</tr>
</tbody>
</table>

Total 5 credits

**Latin American Studies Courses**


LAS 398. Special Topics (1-6).

LAS 399. Multi-disciplinary Seminar on Latin America (5).

LAS 496. Individual Study (1-6).

**Undergraduate Courses/Programs on Reserve**

The following courses are on reserve and may be offered subject to program needs: LAS 360 Survey of Modern Mexico (taught in Mexico only) (5), and LAS 460 Comparative Cultures-Mexico (taught in Mexico only) (5).

**STUDY ABROAD/EXCHANGE PROGRAMS**

Study abroad and exchange program advising is available to all students who are interested in studying on a national or international program during their studies at CWU. There are more than two dozen international programs that offer study in over 40 countries including Japan, England, Australia, Ireland, Spain, France, Germany, Mexico, Hungary, Russia and China. Students can study abroad for as briefly as one month or as long as one year. Programs are available all quarters, including summer, and program fees are similar to, and, in some cases, lower than fees for studying at CWU. The OISP has a library of resources that includes international opportunities for study, scholarships, travel, volunteer work, internships, and careers.

Through the National Student Exchange (NSE) program, students can study for a semester or a year at one of CWU’s collegiate institutions within the United States. CWU has national exchange with more than 100 universities in 48 states and U.S. territories. NSE also provides students with the opportunity to study at many predominantly minority institutions within the United States. Exchange participants have the option of paying the in-state tuition of either the host institution or CWU. Students interested in any study abroad exchange, or internship opportunity should visit the Office of International Studies and Programs.

**ADVISING TO INTERNATIONAL STUDENTS AND SCHOLARS**

International students and scholars receive academic advising, advocacy, and immigration regulations and procedures assistance through the Office of International Studies and Programs. Support services are available to all international students including those here for language training in the UESL Department, to take part in an academic year exchange, or to obtain a Bachelor’s or Master’s degree.

**UNIVERSITY ENGLISH AS A SECOND LANGUAGE PROGRAM**

Program Director: Steve Horowitz

International Center

Lecturers

Matt Britschgi

Randi Freeman

Meiqi He

Beiyin Hu

Carl Rosser

The University English as a Second Language Program consists of a year-round intensive English program and short-term special programs. The year-round intensive program provides English language instruction (20 hours a week), orientation to American culture, and academic preparation for international students from around the world. Students can enter the program four times a year and progress through the 5-level program at their own rate. Content courses and elective courses, including TOEFL Preparation, are offered in addition to work in the core skill areas (reading, writing, integrated grammar, listening comprehension, and speaking). Educational field trips, social activities, and outside-of-class communication opportunities with native speakers of English serve to enhance the learning experience. In addition, conditional admission to undergraduate study at CWU is an option through the UESL Program.

Short-term special programs are arranged for specific groups from schools, companies and organizations. Students from many of CWU’s sister institutions come to campus each year for such programs.

The Program provides practical training in Teaching English as a Second Language for education majors as well as English Department graduate students. American students can volunteer to be a Conversation Partner with a UESL student.

**ASIA UNIVERSITY AMERICA PROGRAM**

Program Director: Cynthia A. Green

International Center

Lecturers

Kent DaVault

James Harthorn

Stephanie Johnson

Sally Weitz

The Asia University America Program
Arrives at the beginning of fall quarter and stays until the end of July, and a group of approximately 60 students arrives at the beginning of fall quarter and stays until the end of the semester of Asia University credit during their studies at CWU.

The purpose of the AUAP is to provide students from Asia University the opportunity to improve their English skills, learn about American culture and experience university life in the US. Students receive instruction in English, American History, Human Environment, and their major areas of study such as business, international relations, economics and law. The classes are taught by AUAP instructors following a curriculum set up by Asia University. The students earn one semester of Asia University credit during their studies at CWU. CWU students are employed in the AUAP as International Peer Advisors and also as teaching assistants in the classes. Many CWU students volunteer to participate in the Campus Friends program in which AUAP students are matched with CWU students for conversation and activities.

**LAW AND JUSTICE**

**Web Site**
http://www.cwu.edu/~lajhome/

**Faculty**

*Interim Chair: James Roberts*

**Psychology Building 465**

**Professors:**
J. Michael Olivero, Ph.D., M.S.W., Corrections, Criminal Justice, Psychology (Steilacoom Center Director)

Lecturer
Yvonne Chapman, M.A., J.D., Pre Law
(Lynwood Center Director)

**General Departmental Information**

The Law and Justice curriculum is designed to give students a foundation in law and justice, and a broadly based education in the liberal arts tradition, not a police or corrections training experience. This major primarily focuses on the disciplines of criminal justice and legal studies, as well as political science, psychology, and sociology. The core courses are designed to provide an infrastructure in law and justice. Approved elective courses provide opportunity for the students to develop a broad perspective on social and legal issues.

**Standards for Admission to the Law and Justice Major**

1. Admission into the LAJ major will be based upon overall grade point average (GPA) of 2.25.
2. The Department Chair may admit a limited number of students with GPAs under 2.25.
3. Students applying to the LAJ major must submit a major application form.
4. The Department of Law and Justice reserves the right to modify these requirements in special cases or as the needs of the Department change.

**Department Standing:** A minimum grade of C- (1.7) must be earned in each course used to fulfill major requirements.

**Bachelor of Arts**

**Law and Justice Major (4650)**

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAJ 300, Administration in Criminal Justice</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 302, Evidence and Arrest</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 303, Legal Research</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 400, Research Methods in Criminal Justice</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 401, Ethics, Diversity and Conflict in Criminal Justice</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 459, Current Issues</td>
<td>4</td>
</tr>
</tbody>
</table>

**Law and Justice Core Total** 24

Students may obtain a degree without a specialization or select a specialization based upon interest and future plans. Each specialization — Paralegal/PreLaw, Corrections and Law Enforcement — has a core group of courses which must be taken.

**LAJ Degree, no specialization (4645)**

| Classes selected from requirements of any of the specializations | 28 |
| Select 8 credits from the list of approved electives | 8 |

**Total 60**

**Prelaw/Paralegal Specialization (4653)**

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAJCore Requirements</td>
<td>24</td>
</tr>
<tr>
<td>LAJ 311, Family Law</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 313, Introduction to Criminal Law</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 316, Introduction to Paralegal Studies</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 317, Introduction to Civil Practice</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 410, Legal Writing</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 451, Crime in America</td>
<td>4</td>
</tr>
<tr>
<td>Select 16 credits from the list of approved electives</td>
<td>16</td>
</tr>
</tbody>
</table>

**Total 60**

**Corrections Specialization (4651)**

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAJCore Requirements</td>
<td>24</td>
</tr>
<tr>
<td>LAJ 324, Correctional Law</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 326, Correctional Counseling</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 327, Community Corrections</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 450, Report Writing</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 451, Crime in America</td>
<td>4</td>
</tr>
<tr>
<td>Select 16 credits from the list of approved electives</td>
<td>16</td>
</tr>
</tbody>
</table>

**Total 60**

**Law Enforcement Specialization (4652)**

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAJCore Requirements</td>
<td>24</td>
</tr>
<tr>
<td>LAJ 331, Police Personnel Administration</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 313, Introduction to Criminal Law</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 332, Police-Community Relations</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 450, Report Writing</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 451, Crime in America</td>
<td>4</td>
</tr>
<tr>
<td>Select 16 credits from the list of approved electives</td>
<td>16</td>
</tr>
</tbody>
</table>

**Total 60**

*See Department for a complete listing of approved electives.

**Law Enforcement Minor (4652)**

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAJ 300, Administration of Criminal Justice</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 313, Introduction to Criminal Law</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 332, Police Community Relations</td>
<td>4</td>
</tr>
<tr>
<td>LAJ 333, Police Personnel Administration</td>
<td>4</td>
</tr>
</tbody>
</table>

**Total 60**
LAJ 450, Report Writing .......................... 4
LAJ 451, Crime in America ........................ 4

Total  24

Corrections Minor (4651)
Required Courses  Credits
LAJ 300, Administration of Criminal Justice  4
LAJ 324, Correctional Law .......................... 4
LAJ 326, Correctional Counseling ..................... 4
LAJ 327, Community Corrections  ..................... 4
LAJ 450, Report Writing .......................... 4
LAJ 451, Crime in America ........................ 4

Total  24

Pre-Law/Paralegal Minor (4653)
Required Courses  Credits
LAJ 300, Administration of Criminal Justice  4
LAJ 311, Family Law ............................... 4
LAJ 313, Introduction to Criminal Law ............... 4
LAJ 316, Introduction to Paralegal Studies ............ 4
LAJ 317, Introduction to Civil Practice ................. 4
LAJ 410, Legal Writing ........................... 4

Total  24

Law and Justice Courses
LAJ 101, Introduction to Law and Justice (4). A basic overview of the nature and sources of law and the application of law to our everyday life.

LAJ 300, Administration of Criminal Justice (4). The sources of police power and authority in a democratic society, the internal organization and administration of federal, state and local agencies, their interaction with each other and with the communities they serve. Formerly LAJ 347. Students may not receive credit for both.

LAJ 302, Evidence and Arrest (4). Prerequisite LAJ 300 or permission of instructor. A review of guidelines for police arrest, search, interrogation and identification procedures based upon rules of criminal procedure derived from the U.S. Constitution. Formerly LAJ 245 and LAJ 320. Students may not receive credit for both.

LAJ 303, Legal Research (4). Prerequisite LAJ 300 or permission of instructor. Techniques of legal research; the case system, statutes, court decisions, Shepardizing. Formerly LAJ 250 and LAJ 314. Students may not receive credit for both.

LAJ 311, Family Law (4). Prerequisite for LAJ majors only: LAJ 300 or permission of instructor. Marriage, divorce, state regulation, custody, and care and supervision of children. Formerly LAJ 348. Students may not receive credit for both.

LAJ 313, Introduction to Criminal Law (4). Prerequisite LAJ 300 or permission of instructor. Scope and nature of law; classification of offenses; act and intent; capacity to commit crime and defenses. Elements of major criminal statutes. Formerly LAJ 255. Students may not receive credit for both.

LAJ 316, Introduction to Paralegal Studies (4). Prerequisite LAJ 300 or permission of instructor. This course provides an introduction to paralegal studies. It provides analysis of the role of paralegal and the tasks involved in being a paralegal including interviewing clients and witnesses, legal research, writing and legal writing and attending trials.

LAJ 317, Introduction to Civil Practice (4). Prerequisite LAJ 300 or permission of instructor. This course is designed to provide students with a comprehensive overview of civil litigation from investigation through discovery.

LAJ 324, Correctional Law (4). Prerequisite LAJ 300 or permission of instructor. This course examines transitions in prisoner civil rights since the U.S. Supreme Court ruled that inmates hold all rights as other citizens with the exception of those necessarily taken by fact of incarceration. Constitutional issues will be analyzed, including standards for shelter and medical care, discipline, religion and access to the courts. Formerly LAJ 312. Students may not receive credit for both.

LAJ 326, Correctional Counseling (4). Prerequisite LAJ 300 or permission of instructor. This course provides an analysis of the role of correctional counselor in rehabilitative efforts with offenders. Course focuses include criminal offender treatment methods and correctional or rehabilitative policy. Formerly LAJ 315. Students may not receive credit for both.

LAJ 327, Community Corrections (4). Prerequisite LAJ 300 or permission of instructor. Maintaining, supervising and counseling offenders in the community based setting. Formerly LAJ 330. Students may not receive credit for both.

LAJ 331, Investigation (4). Prerequisite LAJ 300 or permission of instructor. Function and propriety of investigations; methods of gathering evidence. Formerly LAJ 247 and LAJ 321. Students may not receive credit for both.

LAJ 332, Police Community Relations (4). Prerequisite LAJ 300 or permission of instructor. This course examines the relationship between the police and community, and how to make this relationship a positive one. Analysis will be made of the history of police and friction with various groups in society. Attempts at positive police communication and community participation will also be examined. Formerly LAJ 322. Students may not receive credit for both.

LAJ 333, Police Personnel Administration (4). Prerequisite LAJ 300 or permission of instructor. History and philosophy of federal, state and local police personnel programs; overview of personnel functions. Formerly LAJ 256 and LAJ 301. Students may not receive credit for both.

LAJ 334, Issues in Policing (4). Prerequisite LAJ 300 or permission of instructor. This course provides a comprehensive examination of the current critical issues and policy dilemmas within the American criminal justice system. Formerly LAJ 323. Students may not receive credit for both.

LAJ 342, Juvenile Justice Process (4). Prerequisite LAJ 300 or permission of instructor. Includes historical, ideological development of juvenile justice process; analyses policies, mechanisms; examines integrated network of agencies; examines juvenile law, rights, treatment; examines current research.

LAJ 398, Special Topics (1-6).

LAJ 400, Research Methods in Criminal Justice (4). Prerequisite LAJ 300 or permission of instructor. This course examines current research in criminal justice and research methods and statistics. Students will critique current methods. Formerly LAJ 341. Students may not receive credit for both.

LAJ 401, Ethics, Diversity, and Conflict in Criminal Justice (4). Junior or Senior status, or by permission of instructor. Introduce students to a multi-cultural approach to practical legal ethics within the criminal justice system. The course covers law enforcement, corrections, and Alternative Dispute Resolution.

LAJ 410, Legal Writing (4). Prerequisite, Junior or Senior status or by permission of instructor. The pre-law or paralegal student will learn fundamental legal writing tools, in conjunction with basic rules on correspondence, retainee agreements and other commonly used documents.

LAJ 426, Advanced Correctional Counseling (4). Prerequisite LAJ 300 or permission of instructor. This course will provide students with specialized training in theory, and techniques required in the rapidly evolving practice of correctional counseling. Formerly LAJ 318. Students may not receive credit for both.

LAJ 440, Basic Mediation (4). Course provides an introduction to the philosophy, practice and skills required for basic mediation, which are explored through readings, lectures, demonstrations and skill building role plays.

LAJ 450, Report Writing (4). Prerequisite, Junior or Senior standing or by permission of instructor. Law enforcement and corrections students will learn basic writing in the context of specialized reports utilized in their fields.

LAJ 451, Crime in America (4). Prerequisite LAJ 300 or permission of instructor. American crime problems in historical

LAJ 459. Current Issues (4). Prerequisites: Junior or Senior standing or by permission of instructor and senior standing. Current legal, correctional and enforcement issues will be explored. Course restricted to seniors only.

LAJ 490. Cooperative Education (1-12). An individualized contracted field experience with business, industry, government, or social service agencies. This contractual arrangement involves a student learning plan, cooperating employer supervision, and faculty coordination. Prior approval required. May be repeated. Grade will be S or U.

LAJ 491. Workshop (1-6). Specialists will lead discussion of a variety of problems concerning the law and justice system. With the approval of the director of the program the course may be designated for S or U grades.

LAJ 496. Individual Study (1-6). Prerequisite, permission of instructor.

LAJ 498. Special Topics (1-6). Prerequisite, LAJ 300. These courses will offer in-depth information on various special topics relating to current issues.

LAJ 499. Seminar (1-5). Prerequisite, permission of the instructor. With approval of the program director the course may be designated for regular letter grade or S or U depending upon course and method of instruction.

Undergraduate Courses/Programs on Reserve

The following courses are on reserve and may be offered subject to program needs: LAJ 340.

LIBRARY SCIENCE

Library Science Course

LIB 145. Library Research Methods (2). Development of Information Literacy through the use of library resources and the Internet. Characteristics of classification systems. Organization of print and non-print resources. Selection/evaluation processes. Open to all students. Grade will be S or U.

MATHEMATICS

Faculty
Chair: Scott M. Lewis
Bouillion 107F

Professors
Alla Ditta Raza Choudary, Algebraic Topology
James D. Harper, Harmonic Analysis
Scott M. Lewis, Mathematics Education, History of Mathematics
Cen Tsong Lin, Probability and Mathematical Statistics, Actuarial Science

Associate Professors
Stuart F. Boersma, Differential Geometry, General Relativity
Stephen P. Glasby, Computational Algebra, Representation Theory
Mark Oursland, Mathematics Education

Assistant Professors
Yvonne Chueh, Actuarial Science, Statistics
Tim Englund, Algebra
Jonathan Fassett, Topology, Dynamical Systems
Michael Lundin, Mathematics Education
Aaron Montgomery, Topology, Algebra
W. Dan Curtis, Applied Mathematics

General Departmental Information

Mathematics is an expanding and evolving body of knowledge as well as a way of perceiving, formulating and solving problems in many disciplines. The subject is a constant interplay between the worlds of thought and application. The student of mathematics will find worthy challenges and the subsequent rewards in meeting them.

The general student will find preparatory courses in precalculus mathematics and traditional mathematics courses such as calculus, linear algebra, geometry, abstract algebra, and analysis. Also, more specialized courses in discrete mathematics, number theory and the history of mathematics are offered. Special needs of Computer Science majors, Elementary Education majors and general education requirements are also met by courses in the Mathematics Department.

For those desiring concentrated work in mathematics, the Mathematics Department offers four programs leading to Bachelor degrees. A Bachelor of Arts or Bachelor of Science in Mathematics prepares the student as a mathematician for industry or graduate work. A Bachelor of Arts in Secondary Teaching prepares the student to teach at the junior, middle or high school levels. A Bachelor of Science in Mathematics with an Actuarial Science specialization prepares the student to work as an actuary or in applied statistics. A Bachelor of Arts minor and a Secondary Teaching minor are also available.

One graduate degree is offered: the Master of Arts for teachers. This is described in the graduate section of the catalog.

All programs (major, minor, including electives) must be on file and approved by the Department at least one academic year preceding graduation.

Admission and Placement Notes

1. Enrollment in MATH 100c, MATH 101, MATH 130.1, MATH 164.1 requires a satisfactory score on one of the following tests: SAT, ACT, the California Achievement Test (for teacher preparation), Central’s Computerized Placement Test (CPT) or the Intermediate Assessment Test. The scores on the SAT or ACT tests must have been achieved within the last three years before math placement. The student with insufficient test scores is encouraged to seek remediation through the Academic Achievement Office prior to re-testing.

2. Students who wish to enroll in Precalculus (MATH 163.1 or MATH 163.2) or Calculus (MATH 170 or MATH 172.1) and who have not had the necessary prerequisite course at a college or university must take the mathematics placement test. Student will be placed in accor with their results on this test as determined by the Mathematics Department. See the Mathematics Department for more details.

3. Admission to any mathematics course having prerequisites requires either a suitable math placement test score or a grade of 2.0 or better in each listed prerequisite to that course.

4. Admission to any major in the Mathematics Department will be considered after the first two quarters of calculus are taken (MATH 172.1, MATH 172.2). Transfer students with the calculus background will generally take and successfully complete (2.0 or better) ten hours of math beyond calculus to be admitted to a major. Application forms are available from the Mathematics Department office. Students must meet with an advisor in the Mathematics Department before being considered for major or minor. In addition, students must earn a minimum grade of C in any course which fulfills a major or minor requirement.

Bachelor of Arts

Mathematics Major (5100)

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 172.1, 172.2, Calculus</td>
<td>10</td>
</tr>
<tr>
<td>MATH 260, Sets and Logic</td>
<td>5</td>
</tr>
<tr>
<td>MATH 265, Linear Algebra I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 272.1, 272.2, Multivariable Calculus</td>
<td>10</td>
</tr>
<tr>
<td>MATH 461.1, 461.2, 461.3, Abstract Algebra</td>
<td>9</td>
</tr>
<tr>
<td>MATH 471.1, 471.2, 471.3, Advanced Analysis</td>
<td>9</td>
</tr>
</tbody>
</table>

Department-approved upper division

MATH electives | 13 |

Total 60
### Mathematics Minor (5100)

**Required Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 172.1, 172.2, Calculus</td>
<td>10</td>
</tr>
<tr>
<td>MATH 225, Intuitive Geometry for</td>
<td></td>
</tr>
<tr>
<td>Secondary Teachers</td>
<td></td>
</tr>
<tr>
<td>MATH 260, Sets and Logic</td>
<td>5</td>
</tr>
<tr>
<td>MATH 265, Linear Algebra I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 272.1, 272.2, Multivariable</td>
<td>10</td>
</tr>
<tr>
<td>Calculus</td>
<td></td>
</tr>
<tr>
<td>MATH 311, Statistical Concepts</td>
<td>3</td>
</tr>
<tr>
<td>and Methods</td>
<td></td>
</tr>
<tr>
<td>MATH 360, Algebraic Structures</td>
<td>5</td>
</tr>
<tr>
<td>MATH 365, Linear Algebra II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 376.1, 376.2, Elementary Differential Equations</td>
<td>6</td>
</tr>
<tr>
<td>Select one:</td>
<td></td>
</tr>
<tr>
<td>CS 110, Programming Fundamentals I</td>
<td>4</td>
</tr>
<tr>
<td>(4)</td>
<td></td>
</tr>
<tr>
<td>CS 157, Introduction to COBOL</td>
<td></td>
</tr>
<tr>
<td>Programming (4)</td>
<td></td>
</tr>
<tr>
<td>CS 177, Introduction to FORTTRAN</td>
<td></td>
</tr>
<tr>
<td>Programming (4) OR</td>
<td></td>
</tr>
<tr>
<td>CS 187, Introduction to C Programming</td>
<td></td>
</tr>
<tr>
<td>(4)</td>
<td></td>
</tr>
<tr>
<td>PHYS 181, 181.1, 182, 181.1, 183,</td>
<td></td>
</tr>
<tr>
<td>183.1, General Physics</td>
<td>15</td>
</tr>
<tr>
<td>MATH 413, Introduction to Stochastic</td>
<td></td>
</tr>
<tr>
<td>Processes (5) OR</td>
<td></td>
</tr>
<tr>
<td>MATH 464, Optimization Theory</td>
<td>5</td>
</tr>
<tr>
<td>(5)</td>
<td></td>
</tr>
<tr>
<td>MATH 411.1, 411.2, Theory of Interest</td>
<td></td>
</tr>
<tr>
<td>I, II, III</td>
<td>3, 3, 3</td>
</tr>
<tr>
<td>MATH 419.1, 419.2, 419.3, Actuarial</td>
<td></td>
</tr>
<tr>
<td>Mathematics I, II, III</td>
<td>3, 3, 3</td>
</tr>
<tr>
<td>ACCT 251, Accounting I</td>
<td>5</td>
</tr>
<tr>
<td>ECON 201, Principles of Economics,</td>
<td></td>
</tr>
<tr>
<td>Micro</td>
<td>5</td>
</tr>
<tr>
<td>ECON 202, Principles of Economics,</td>
<td></td>
</tr>
<tr>
<td>Macro</td>
<td>5</td>
</tr>
<tr>
<td>ECON 301, Intermediate Macroeconomic</td>
<td></td>
</tr>
<tr>
<td>Analysis</td>
<td>5</td>
</tr>
<tr>
<td>ECON 302, Intermediate Macroeconomic</td>
<td></td>
</tr>
<tr>
<td>Analysis</td>
<td>5</td>
</tr>
<tr>
<td>FIN 370, Introductory Financial</td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>5</td>
</tr>
<tr>
<td>FIN 475, Investments</td>
<td></td>
</tr>
<tr>
<td>CS 110, Programming Fundamentals</td>
<td>4</td>
</tr>
<tr>
<td>Programs I</td>
<td></td>
</tr>
<tr>
<td>CS 167, Visual Basic Programming</td>
<td>4</td>
</tr>
</tbody>
</table>

**Total 65**

### Mathematics: Teaching Secondary Major (5101)

This major satisfies the Primary endorsement for Mathematics. Students taking this major are required to complete the professional education program requirements offered through the Curriculum and Supervision Department.

**Required Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 172.1, 172.2, Calculus</td>
<td>10</td>
</tr>
<tr>
<td>MATH 225, Intuitive Geometry for</td>
<td></td>
</tr>
<tr>
<td>Secondary Teachers</td>
<td></td>
</tr>
<tr>
<td>MATH 260, Sets and Logic</td>
<td>5</td>
</tr>
<tr>
<td>MATH 265, Linear Algebra I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 272.1, 272.2, Multivariable</td>
<td>10</td>
</tr>
<tr>
<td>Calculus</td>
<td></td>
</tr>
<tr>
<td>MATH 311, Statistical Concepts</td>
<td>3</td>
</tr>
<tr>
<td>and Methods</td>
<td></td>
</tr>
<tr>
<td>MATH 360, Algebraic Structures</td>
<td>5</td>
</tr>
<tr>
<td>MATH 365, Linear Algebra II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 376.1, 376.2, Elementary Differential Equations</td>
<td>6</td>
</tr>
<tr>
<td>Select one:</td>
<td></td>
</tr>
<tr>
<td>CS 110, Programming Fundamentals I</td>
<td>4</td>
</tr>
<tr>
<td>(4)</td>
<td></td>
</tr>
<tr>
<td>CS 157, Introduction to COBOL</td>
<td></td>
</tr>
<tr>
<td>Programming (4)</td>
<td></td>
</tr>
<tr>
<td>CS 177, Introduction to FORTTRAN</td>
<td></td>
</tr>
<tr>
<td>Programming (4) OR</td>
<td></td>
</tr>
<tr>
<td>CS 187, Introduction to C Programming</td>
<td></td>
</tr>
<tr>
<td>(4)</td>
<td></td>
</tr>
<tr>
<td>PHYS 181, 181.1, 182, 181.1, 183,</td>
<td></td>
</tr>
<tr>
<td>183.1, General Physics</td>
<td>15</td>
</tr>
<tr>
<td>MATH 413, Introduction to Stochastic</td>
<td></td>
</tr>
<tr>
<td>Processes (5) OR</td>
<td></td>
</tr>
<tr>
<td>MATH 464, Optimization Theory</td>
<td>5</td>
</tr>
<tr>
<td>(5)</td>
<td></td>
</tr>
<tr>
<td>MATH 411.1, 411.2, Theory of Interest</td>
<td></td>
</tr>
<tr>
<td>I, II, III</td>
<td>3, 3, 3</td>
</tr>
<tr>
<td>MATH 419.1, 419.2, 419.3, Actuarial</td>
<td></td>
</tr>
<tr>
<td>Mathematics I, II, III</td>
<td>3, 3, 3</td>
</tr>
<tr>
<td>ACCT 251, Accounting I</td>
<td>5</td>
</tr>
<tr>
<td>ECON 201, Principles of Economics,</td>
<td></td>
</tr>
<tr>
<td>Micro</td>
<td>5</td>
</tr>
<tr>
<td>ECON 202, Principles of Economics,</td>
<td></td>
</tr>
<tr>
<td>Macro</td>
<td>5</td>
</tr>
<tr>
<td>ECON 301, Intermediate Macroeconomic</td>
<td></td>
</tr>
<tr>
<td>Analysis</td>
<td>5</td>
</tr>
<tr>
<td>ECON 302, Intermediate Macroeconomic</td>
<td></td>
</tr>
<tr>
<td>Analysis</td>
<td>5</td>
</tr>
<tr>
<td>FIN 370, Introductory Financial</td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>5</td>
</tr>
<tr>
<td>FIN 475, Investments</td>
<td></td>
</tr>
<tr>
<td>CS 110, Programming Fundamentals</td>
<td>4</td>
</tr>
<tr>
<td>Programs I</td>
<td></td>
</tr>
<tr>
<td>CS 167, Visual Basic Programming</td>
<td>4</td>
</tr>
</tbody>
</table>

**Total 108**

### Mathematics Courses

**MATH 100A. PreAlgebra (5).** This course is designed to prepare students for college mathematics. Symbolic, graphical, and numeric representations will be studied to understand and apply the concepts underlying algebra.

**MATH 100B. Introductory Algebra (5).** This course is designed to prepare students for college mathematics. Symbolic, graphical, and numeric representations will be studied to understand and apply the concepts of algebra.

**MATH 100C. Intermediate Algebra (5).** This course is designed to prepare students for college level precalculus mathematics. Symbolic, graphical, and numeric representations will be studied to understand and apply the concepts needed to be successful in precalculus.
MATH 101. Mathematics in the Modern World (3). Selected topics from the historical development and applications of mathematics together with their relationship to the development of our present society.

MATH 130.1. Finite Mathematics I (5). The language of sets, counting procedures, introductory probability and decision-making, introductory descriptive statistics. Meets General Education “reasoning” requirement and prepares students for introductory statistics courses in various departments.

MATH 163.1. Pre-Calculus Mathematics I (5). Prerequisite, MATH 100C or equivalent, or permission of Department Chair. A foundation course which stresses those algebraic and elementary function concepts together with the manipulative skills essential to the study of calculus.

MATH 163.2. Pre-Calculus Mathematics II (5). Prerequisite, MATH 163.1 or equivalent, or permission of Department Chair. A continuation of MATH 163.1 with emphasis on trigonometric functions, vectors, systems of equations, the complex numbers, and an introduction to analytic geometry.

MATH 164.1. Foundations of Arithmetic I (5). Structure of the real number system. Properties of and operations on integers, rationals, decimal representation, percentages, proportion, graphing and elementary problem solving. Recommended for the prospective elementary school teacher.

MATH 170. Intuitive Calculus (5). Prerequisite, MATH 163.1 or permission. An intuitive approach to the differential and integral calculus specifically designed for students in the behavioral, managerial, and social sciences. Not open to students with credit for MATH 172.1 or higher.

MATH 172.1, 172.2. Calculus (5,5). Prerequisites, MATH 163.1 and 163.2 or equivalents, or permission of Department Chair. Theory, techniques and applications of differentiation and integration of the elementary functions.

MATH 250. Intuitive Geometry for Elementary Teachers (4). Prerequisite, MATH 164.1. An intuitive approach to the geometry topics relative to the elementary school curriculum.

MATH 255. Intuitive Geometry for Secondary Teachers (4). Concepts of intuitive geometry that are taught at the secondary level. Not open to students with credit in MATH 250.

MATH 260. Sets and Logic (5). Prerequisite, MATH 172.2 or CS 301 and MATH 172.1 or equivalents. Essentials of mathematical proofs, including use of quantifiers and principles of valid inference. Set theory as a mathematical system.

MATH 265. Linear Algebra I (4). Prerequisite, MATH 172.2 or permission of instructor. Vector spaces, linear systems, matrices and determinants.

MATH 272.1, 272.2. Multivariable Calculus (5,5). Prerequisite, MATH 172.2. Differential and integral calculus of multivariable functions and related topics.

MATH 298. Special Topics (1-6).

MATH 299. Seminar (1-5).

MATH 299.1. Seminar: Actuarial Science Problems I (2). Prerequisite, MATH 272.1 or permission of instructor. Students discuss and present problems using techniques from calculus and linear algebra important for actuaries.


MATH 311. Statistical Concepts and Methods (5). Prerequisite, MATH 130.1 or MATH 330 or basic knowledge of probability and counting techniques. Hands-on activities for exploring data. Surveys, planned experiments and observational studies. Modeling, sampling, distributions and statistical inference. MINITAB statistical computing language introduced and used extensively.


MATH 324. Methods and Materials in Mathematics-Secondary (4). Prerequisites, MATH 255, MATH 265, EDSCS 311 and permission of instructor.


MATH 360. Algebraic Structures (5). Prerequisites, MATH 260 and MATH 265. An introduction to the structure of the real number system and other algebraic systems such as groups, rings, and fields.

MATH 365. Linear Algebra II (3). Prerequisite, MATH 265 or permission. Vector spaces, linear transformations, bilinear and quadratic forms, eigenvalues, eigenvectors, similarity, inner products and norms.


MATH 410.1, 410.2. Advanced Statistical Methods (3,3). Prerequisite, MATH 311, or permission. A thorough treatment of regression and correlation. Chi-square and other enumeration statistics. Non-parametric statistical principles of experimental design. Examples will be from a variety of fields.

MATH 411.1. Introduction to Probability Theory (4). Prerequisite, MATH 272.2 or permission. Principal topics include: combinatorial theory, conditional probability, random variables, expectation and moments, generating functions, various discrete and continuous distributions, law of large numbers, central limit theorem.


MATH 412. Applied Numerical Methods (5). Prerequisites, MATH 272.1 and MATH 265 or permission. Linear systems and their solutions; error analysis; iteration; interpolation; numerical integrations; splines.


MATH 415. Advanced Topics in Actuarial Sciences (3). Prerequisites, MATH 411.1 and permission. Topics chosen from credibility and loss distributions, risk theory, and the mathematical theory of interest.

MATH 416.1. Actuarial Science Problems II (1-2). Prerequisite, MATH 411.1 or concurrent registration. Students discuss and present problems in probability and mathematical statistics important for actuaries. Formerly taught as MATH 499.1. May be repeated for a total of 3 credits.

MATH 416.2. Actuarial Science Problems III (1-2). Prerequisite, MATH 410.2 or concurrent registration. Students discuss and present problems in applied statistics important for actuaries. Formerly taught as MATH 499.2. May be repeated for a total of 3 credits.


MATH 417.2. Loss Models II (3). Prerequisite, MATH 417.1. Modeling process, calibration and evaluation. Analyzing data, determining
a suitable model including parameter values, and providing measures of confidence for decisions based upon the model.

MATH 417.3. Loss Models III (3). Prerequisite, MATH 417.2. Modeling process, calibration and evaluation. Analyzing data, determining a suitable model including parameter values, and providing measures of confidence for decisions based upon the model.

MATH 418.1. Theory of Interest I (3). Prerequisites, MATH 172.2 and permission. Applications of discrete and calculus-based methods to simple and compound interest, force of interest, bonds, annuities, amortization and sinking funds.

MATH 418.2. Theory of Interest II (3). Prerequisites, MATH 418.1 and permission. Applications of discrete and calculus-based methods to simple and compound interest, force of interest, bonds, annuities, amortization and sinking funds.


MATH 419.3. Actuarial Mathematics III (3). Prerequisites, MATH 419.2 and permission. Mathematics of analyzing and pricing insurance, annuities and pension products. Life contingencies, risk theory, and techniques in reserving and valuation.

MATH 420. Problem Solving Techniques for Secondary Teachers (3). Prerequisite, MATH 260. Patterns and techniques of problem solving; formulating hypotheses; eliminating erroneous creating problems.

MATH 424. Technology in the Mathematics Classroom (3). Prerequisites, MATH 260 and permission of instructor. How to use technology such as graphing calculators and computers in the mathematics classroom.

MATH 425. Problem-Solving Techniques in Mathematics for Elementary School Teachers (3). Prerequisite, MATH 164.1. Patterns and techniques of problem-solving; formulating hypotheses; programming solutions; generalizing; investigating and creating problems.

MATH 430. Introduction to Theory of Numbers (3). Prerequisite, MATH 260. Euclidean algorithm, fundamental theorem of arithmetic, diophantine equations, primitive roots and indices and other number theory topics.

MATH 451.1. Introduction to Topology I (3). Prerequisites, MATH 260 and MATH 265. An introduction to point-set and algebraic topology. Topics may include metric spaces, topological spaces, homotopy theory and the fundamental group.

MATH 451.2. Introduction to Topology II (3). Prerequisite, MATH 451.1. An introduction to point-set and algebraic topology. Topics may include metric spaces, topological spaces, homotopy theory and the fundamental group.

MATH 455.1. Principles of Geometry (3). Prerequisites, MATH 255 and MATH 260. Geometry as a logical system; postulational systems; includes Euclidean and non-Euclidean geometry.

MATH 461.1, 461.2, 461.3. Abstract Algebra (3,3,3). Prerequisite, MATH 260 and MATH 265. Algebraic structures such as groupoids, groups, rings and fields.

MATH 464. Optimization Theory (5). Prerequisite, MATH 263 and MATH 311, or permission. Decision analysis, simulation theory, queuing theory; linear and dynamic programming.

MATH 471.1, 471.2, 471.3. Advanced Analysis (3,3,3). Prerequisite, MATH 260, 272.2. Further development of properties of calculus.

MATH 472.1, 472.2, 472.3. Applied Analysis (3,3,3). Prerequisite, MATH 376 or permission. Selected topics from advanced analysis especially useful to the engineer, chemist, physicist and applied mathematician.

MATH 490. Cooperative Education (1-12). An individualized contracted field experience with business, industry, government, or social service agencies. This contractual arrangement involves a student learning plan, cooperating employer supervision, and faculty coordination. Prior approval required. May be repeated. Grade will be S or U.

MATH 491. Workshop (1-6). The title of the workshop and the credit to be earned shall be determined at the time the workshop is approved. Designed to provide an opportunity for individual and group study of problems in mathematics.

MATH 492.1, 492.2. Laboratory Experience in Teaching Mathematics (2,2). Prerequisite, 30 credits in mathematics and permission of student’s degree program advisor. Serves the purpose of providing the opportunity for competent senior or graduate students to receive credit and experience in developing procedures and techniques in college teaching level mathematics.

MATH 496. Individual Study (1-6). Prerequisite, permission of instructor.

MATH 498. Special Topics (1-6).

MATH 499. Seminar (1-5).

Undergraduate Courses/Programs on Reserve

The following courses are on reserve and may be offered subject to program needs:
MATH 130.2 Finite Mathematics II (5); MATH 162. Technical Mathematics (5); MATH 164.2 Foundations of Arithmetic II (3); MATH 165. Plane Trigonometry (3); MATH 197. Honors Individual Study (1-12); MATH 397. Honors Individual Study (1-12); MATH 465.2 Principles of Geometry (3); and MATH 456. Differential Geometry (3); MATH 481.1, 481.2, 481.3. Numerical Analysis (3,3,3).

MCNAIR SCHOLARS PROGRAM

Program Director: Virginia B. Mack

General Program Information

The Ronald E. McNair Scholars Program at CWU is funded by a grant from the U. S. Department of Education under TRIO Programs. This is a service-intensive program, not a scholarship. The program is designed to provide underrepresented (low-income and first-generation and/or ethnic minority) students with the training and opportunity to prepare for and successfully apply to graduate school programs. The goal of the program is for scholars to attain their doctorates and teach at universities.

A cornerstone of this program is the linking of scholars with faculty mentors. Students are expected to complete a summer research internship under the supervision of a research mentor. Scholars also have the option of a teaching internship during one academic quarter. Their teaching mentor may be different from their research mentor. This internship is designed to expose scholars to the role of a university professor and to give them “hands-on” experience with teaching at the university level (under the supervision of the teaching mentor).

CWU Students are encouraged to apply to the McNair Scholars Program as sophomores or juniors and are selected on the basis of their academic excellence, career objectives, and faculty recommendations. The McNair office is located in the Language and Literature Building room 103. The phone number is 963-2793.

McNair Scholar Courses

MCNA 299.1. McNair Scholars Seminar (1). Prerequisite, student must be accepted into the McNair Scholars Program. A seminar series taking McNair scholars through all steps needed to build a portfolio for the graduate school application process. Grade will be S or U.

MCNA 395. Undergraduate Research Methods (2). Prerequisite, student must be accepted into the McNair Scholars Program. An introductory research methods course in preparation for an undergraduate summer research internship. Grade will be S or U.