Department of Integrated Engineering and Technology

Department Chair: Richard Wittwer
Engineering and Technology Building 129 ~ (435) 586-7708
Department Secretary: Shari Grider
Engineering and Technology 129 ~ (435) 586-7977
Director of Career & Technology Education: Richard Wittwer
Engineering and Technology Building 129A ~ (435) 586-7986

Academic Advisor: Nancy DeLaet
Engineering and Technology Building 118 ~ (435) 865-8702
Website: http://www.suu.edu/ciet/et/

Faculty
Professor: Desmond Penny; *Associate Professors*: Idir Azouz, L. Scott Hansen, Blair McDonald, Michael McGarvey, C. Jeff Salehi, David Ward, Richard L Wittwer; *Assistant Professors:* Boyd Fife, William Pratt; *Lecturer:* Wade Esplin; *Professional in Residence:* Richard Cozzens; *Professional Staff:* Roger Greener

Degrees Offered

Engineering
Bachelor of Science
- Integrated Engineering

Associate of Pre-Engineering
- Biological Engineering
- Chemical Engineering
- Civil Engineering
- Computer Engineering
- Electrical Engineering
- Environmental Engineering
- Materials Engineering
- Mechanical Engineering

Technology
Bachelor of Arts and Bachelor of Science
- Construction Management Composite
- Engineering Technology Composite-CAD/CAM emphasis
- Engineering Technology Composite-CAD/GIS emphasis
- Engineering Technology Composite-Electronics emphasis
- Technology Education Composite-Career and Technical Emphasis

Associate of Applied Science
- Automotive Technology
- Cabinetmaking and Millwork
- Construction Technology
- CAD/CAM Technology
- Electronics Technology

Minors
- Automotive Technology
- Construction Technology
- CAD/CAM Technology
- Electronics Technology

Certificates
- Automotive Technology
- Civil Drafting/CAD
- Construction Technology

Department Statement

The integrated engineering and technology department houses professional-track engineering programs and technology-track programs. It supports the mission of the College of Computing, Integrated Engineering, and Technology and the mission of the University by providing a high quality undergraduate education to students through baccalaureate, associate, and certificate degree programs.

ENGINEERING

Well-trained engineers play an increasingly important role in solving the problems of a complex technological society. There are many job opportunities in the various engineering fields, requiring competent skills and leadership, and providing high salaries. Two engineering programs are offered: Integrated Engineering and Pre-Engineering. The Integrated Engineering program is a four-year program leading to the B.S. degree in Integrated Engineering. The pre-engineering program leads to the Associate of Pre-Engineering (APE) degree. All courses offered are professional-track engineering courses.

Credit Transfer
Southern Utah University has course articulation agreements with the other schools of higher education in the state of Utah. Students transferring to SUU from any of these schools will be able to transfer courses taken at any of these schools provided: the courses are equivalent in content and number of credit hours to those in the engineering curricula; a grade of C or better has been earned for the courses.

In all other instances, transfer of credit will be determined by the engineering faculty on a case-by-case basis.

Integrated Engineering - Mission
The mission of the integrated engineering program is to support and realize with excellence the overall mission and vision of the University and to provide a broadly based, cross-disciplinary engineering education founded upon a design-oriented curriculum which integrates several disciplines into a whole, enabling graduates to undertake the wide variety of design and manufacturing challenges that modern industry faces.

Integrated Engineering – Educational Objectives
Students completing the baccalaureate degree in Integrated Engineering will have,

A. a solid understanding of the fundamentals of mathematics, physical science, and engineering science, which re-occur in diverse technical applications and form the foundation for work in all fields of engineering;
B. the ability to practice engineering design and analysis and to integrate several engineering concepts into a system or process;
C. the ability to pursue professional careers in multidisciplinary fields by the development of effective teaming abilities and communication skills;
D. the ability to pursue advanced studies and/or assume leadership roles along diverse career paths;
E. a strong appreciation for and commitment to ethical responsibilities, professionalism, lifelong learning, and a concern for society and the environment.

Integrated Engineering – Program Outcomes
The outcomes of the Integrated Engineering program are those proposed by the Accreditation Board for Engineering and Technology (ABET). Each graduate will have:

1. an ability to apply knowledge of mathematics, science, and engineering;
2. an ability to design and conduct experiments, as well as to analyze and interpret data;
3. an ability to design a system, component, or process to meet desired needs;
4. an ability to function on multidisciplinary teams;

5. an ability to identify, formulate, and solve engineering problems;
6. an understanding of professional and ethical responsibility;
7. an ability to communicate effectively;
8. the broad education necessary to understand the impact of engineering solutions in a global and societal context;
9. a recognition of the need for, and an ability to engage in life-long learning
10. a knowledge of contemporary issues;
11. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Integrated Engineering – The Discipline
Engineers work to meet the varied and intertwined needs of society. They design and build systems that provide everything from basic necessities such as power, fuel and water to the highly advanced and sophisticated systems associated with modern wonders such as satellite communications, space travel, high rise office buildings, and supersonic aircraft. The technologies and materials available to use in providing modern engineering solutions are rapidly increasing and also highly varied. Successful engineers today are well versed and practiced in a wide range of engineering fundamentals. They communicate with the public, other engineers and with scientists in many different disciplines all over the world to better understand society's needs and what is available to meet a specific need. They are proficient problem solvers and well trained in the latest, as well as traditional, methods of analysis, design and construction.

The Bachelor of Science degree in Integrated Engineering combines and emphasizes study in fundamental and advanced areas of science and engineering that are traditionally taught in a wide variety of engineering disciplines. This integrated course of study prepares Southern Utah University graduates to provide cross discipline design solutions for the wide range of demands encountered by today's practicing engineers in consulting offices, manufacturing businesses, industrial companies, and government agencies utilizing smaller, highly versatile engineering staffs. Cross discipline engineering solutions encompass traditional as well as emerging methodology, technology and materials in order to optimize economical solutions for the complex problems encountered in a constantly changing world. Integrated Engineering graduates are equipped with the knowledge and broad background necessary to effectively function in a multidisciplinary problem-solving environment. They achieve a level of mastery in engineering science and design that enables them to pursue successful careers in industry, consulting, or public service, or to continue their education in graduate studies.

Integrated Engineering – Curriculum
The Integrated Engineering curriculum is founded upon fundamentals in mathematics, sciences, and engineering, and includes courses common to many Civil, Mechanical, Electrical, Industrial, and Manufacturing engineering programs. Advanced engineering topics maintain an emphasis on cross-discipline applications, versatility, and improving problem solving and communication skills. Engineering study culminates in multidisciplinary team projects that integrate the principles of scientific research and analysis with the applied art of engineering design.

Integrated Engineering – Graduation Requirements
To be awarded the Bachelor of Science degree in Integrated Engineering the student must:

1. achieve a grade of "C" or better in each and every prescribed course in the Integrated Engineering curriculum;
2. achieve a cumulative GPA of 2.3 or better;
3. pass the Fundamentals of Engineering (FE) exam.

Pre-Engineering – mission
The Associate of Pre-Engineering (APE) program is designed for students who plan to complete the first two years of their engineering education at Southern Utah University and then transfer to another institution of their choice to complete the requirements of the curriculum in the specialized discipline of their choice. Students in the APE program may also transfer to the Integrated Engineering program, with the approval of the engineering faculty.

Pre-Engineering – Disciplines and Curricula
Note: the student must complete a total of at least 64 credit hours in the discipline of his/her choice. Different disciplines may require different number of credit hours. The Quantitative Literacy and Science requirements of General Education are automatically satisfied. ENGR 1010 is not transferable as an Interdisciplinary course.

TECHNOLOGY

Technology programs provide students with in-depth skill development in the program discipline areas of construction technology/construction management, electronics engineering technology, CAD/CAM engineering technology, CAD/GIS engineering technology, automotive technology, and cabinetmaking and millwork, through professional, credentialed faculty using state of the art facilities and equipment. In addition, it offers Technology Education teacher certification with a secondary endorsement. Furthermore, we aim to provide meaningful service to industry, government, and all communities served by the university.

Technology Education majors must earn a "C" or better in all courses in their major. All other majors must earn a "C-" or better in courses required for the major and an overall GPA of at least 2.0.

Students are strongly encouraged to work closely with a faculty and academic advisor in their major emphasis area, both at initial registration and throughout their program experience.

Degree Requirements

Integrated Engineering (no minor required) Bachelor of Science Degree	
Course Number and Title	**Credits**
Required General Education (38 hours)	
English Requirements - must take the following: ENGL 1010 Academic Writing ENGL 2010 Intermediate Writing	 3 3
Quantitative Literacy Requirement: must take MATH 1210 Calculus I	 4
Information Literacy Requirement: must take LM 1010 Information Literacy	 1
Student Success Requirement: must take UNIV 1000 Student Success	 1
Computer Literacy Requirement: must take CSIS 1400 Fundamentals of Programming	 3
American Institutions Requirement: (see page 103)	3
Knowledge Area Requirements: (see page 103) One course from each of the following areas: Humanities, Fine Arts, Social & Behavioral Sciences, and Life Science.	 12
Interdisciplinary Requirement: must take ENGR 1010 Engineering in the 21st Century	 3
Physical Science Requirement: must take CHEM 1210 Principles of Chemistry I CHEM 1215 Principles of Chemistry I Lab	 5

University Requirements	
BS Degree – Math or Science minimum requirement (12 hours)	
Core Requirements (82 hours)	
ENGR 1030 Computer-Assisted Drafting OR CCET 1640 Computer Aided Design	3
ENGR 2010 Statics	3
ENGR 2030 Dynamics	3
ENGR 2140 Strength of Materials	3
ENGR 2145 Strength of Materials Lab	1
ENGR 3000 Thermodynamics	3
ENGR 3010 Material Science Engineering	3
ENGR 3020 Material Science Engineering Lab	1
ENGR 3030 Project Management Processes	3
ENGR 3045 Engineering Design Lab I	2
ENGR 3050 Fluid Mechanics	3
ENGR 3060 Fluid Mechanics Lab	1
ENGR 3070 Electric Circuits	3
ENGR 3080 Electric Circuits Lab	1
ENGR 3095 Engineering Design Lab II	2
ENGR 4000 Mechatronics	3
ENGR 4010 Heat Transfer	3
ENGR 4025 Integrated Engineering Design Lab I	2
ENGR 4030 Electronics	3
ENGR 4040 Electronics Lab	1
ENGR 4050 Structural Analysis	3
ENGR 4060 Manufacturing	3
ENGR 4070 Facilities and Infrastructure	3
ENGR 4085 Integrated Engineering Design Lab II	2
MATH 1220 Calculus II	4
MATH 2210 Calculus III	4
MATH 2270 Linear Algebra	3
MATH 2280 Differential Equations	3
PHYS 2210 Physics for Scientists & Engineers I	4
PHYS 2215 Physics for Scientists & Engineers I Lab	1
PHYS 2220 Physics for Scientists and Engineers II	4
PHYS 2225 Physics for Scientists and Engineers II Lab	1
Total Credits	**120**
Comment: This is a composite major, no minor required.	

Pre-Engineering
Biological Engineering
Associate Degree

Course Number and Title	Credits
General Education Requirements (17 hours)	
ENGL 1010 Introduction to Academic Writing	3
ENGL 2010 Intermediate Writing	3
LM 1010 Information Literacy	1
UNIV 1000 Student Success	1
Choose three courses from the following areas (no more than one course can be chosen from any given area): Humanities, Fine Arts, Social & Behavioral Sciences, and Interdisciplinary	9
Pre-Engineering Core (12 hours)	
ENGR 1010 Engineering in the 21st Century	3
CSIS 1400 Fundamentals of Programming	3
ENGR 2010 Statics	3
ENGR 3000 Thermodynamics	3
Biological Engineering Requirements (37 hours)	
BIOL 1610 General Biology I	3
BIOL 1615 General Biology I Lab	1
CHEM 1210 Principles of Chemistry I	4
CHEM 1215 Principles of Chemistry I Lab	1
CHEM 2310 Organic Chemistry I	4
MATH 1210 Calculus I	4
MATH 1220 Calculus II	4
MATH 2270 Linear Algebra	3
MATH 2280 Differential Equations	3
PHYS 2210 Physics for Scientists and Engineers I	4
PHYS 2215 Physics for Scientists and Engineers I Lab	1
PHYS 2220 Physics for Scientists and Engineers II	4
PHYS 2225 Physics for Scientists and Engineers II Lab	1
Total Credits	**66**

Pre-Engineering
Chemical Engineering
Associate Degree

Course Number and Title	Credits
General Education Requirements (17 hours)	
ENGL 1010 Introduction to Academic Writing	3
ENGL 2010 Intermediate Writing	3
LM 1010 Information Literacy	1
UNIV 1000 Student Success	1
Choose three courses from the following areas (no more than one course can be chosen from any given area): Humanities, Fine Arts, Social & Behavioral Sciences, and Interdisciplinary	9
Pre-Engineering Core (15 hours)	
ENGR 1010 Engineering in the 21st Century	3
CSIS 1400 Fundamentals of Programming	3
ENGR 2010 Statics	3
ENGR 2140 Strength of Materials	3
ENGR 3000 Thermodynamics	3
Chemical Engineering Requirements (38 hours)	
CHEM 1210 Principles of Chemistry I	4
CHEM 1215 Principles of Chemistry I Lab	4
CHEM 1220 Principles of Chemistry II	1
CHEM 1225 Principles of Chemistry II Lab	1

CHEM 2310 Organic Chemistry I	4
MATH 1210 Calculus I	4
MATH 1220 Calculus II	4
MATH 2270 Linear Algebra	3
MATH 2280 Differential Equations	3
PHYS 2210 Physics for Scientists and Engineers I	4
PHYS 2215 Physics for Scientists and Engineers I Lab	1
PHYS 2220 Physics for Scientists and Engineers II	4
PHYS 2225 Physics for Scientists and Engineers II Lab	1
Total Credits	**70**

Pre-Engineering
Civil Engineering
Associate Degree

Course Number and Title	Credits
General Education Requirements (17 hours)	
ENGL 1010 Introduction to Academic Writing	3
ENGL 2010 Intermediate Writing	3
LM 1010 Information Literacy	1
UNIV 1000 Student Success	1
Choose three courses from the following areas (no more than one course can be chosen from any given area): Humanities, Fine Arts, Social & Behavioral Sciences, and Interdisciplinary	9
Pre-Engineering Core (22 hours)	
ENGR 2240 Surveying and Global Positioning	2
ENGR 2245 Surveying and GPS Lab	1
ENGR 1010 Engineering in the 21st Century	3
CSIS 1400 Fundamentals of Programming	3
ENGR 2010 Statics	3
ENGR 2030 Dynamics	3
ENGR 2140 Strength of Materials	3
ENGR 2140 Strengths of Materials Lab	1*
ENGR 3000 Thermodynamics	3
Civil Engineering Requirements (28 hours)	
CHEM 1210 Principles of Chemistry I	3
CHEM 1215 Principles of Chemistry I Lab	1
MATH 1210 Calculus I	4
MATH 1220 Calculus II	4
MATH 2270 Linear Algebra	3
MATH 2280 Differential Equations	3
PHYS 2210 Physics for Scientists and Engineers I	4
PHYS 2215 Physics for Scientists and Engineers I Lab	1*
PHYS 2220 Physics for Scientists and Engineers II	4
PHYS 2225 Physics for Scientists and Engineers II Lab	1*
Total Credits	**67**

***** Labs that are a co-requisite may be waived through CIET Advisor. Signature required for registration.

Pre-Engineering
Computer Engineering
Associate Degree

Course Number and Title	Credits
General Education Requirements (17 hours)	
ENGL 1010 Introduction to Academic Writing	3
ENGL 2010 Intermediate Writing	3
LM 1010 Information Literacy	1
UNIV 1000 Student Success	1
Choose three courses from the following areas (no more than one course can be chosen from any given area): Humanities, Fine Arts, Social & Behavioral Sciences, and Interdisciplinary	9
Pre-Engineering Core (12 hours)	
EET 1700 Circuit Analysis I	3
EET 2700 Circuit Analysis II	3
ENGR 1010 Engineering in the 21st Century	3
ENGR 3070 Electric Circuits	3
ENGR 3080 Electric Circuits Lab	1
Computer Engineering Requirements (36 hours)	
CSIS 1410 Object-Oriented Programming	3
CSIS 2420 Intro to Algorithms & Data Structures	3
CSIS 2810 Computer Organization and Architecture	3
CSIS 3000 Advanced Algorithms & Data Structures	3
MATH 1210 Calculus I	4
MATH 1220 Calculus II	4
MATH 2270 Linear Algebra	3
MATH 2280 Differential Equations	3
PHYS 2210 Physics for Scientists and Engineers I	4
PHYS 2215 Physics for Scientists and Engineers I Lab	1
PHYS 2220 Physics for Scientists and Engineers II	4
PHYS 2225 Physics for Scientists and Engineers II Lab	1
Total Credits	**66**

Pre-Engineering
Electrical Engineering
Associate Degree

Course Number and Title	Credits
General Education Requirements (17 hours)	
ENGL 1010 Introduction to Academic Writing	3
ENGL 2010 Intermediate Writing	3
LM 1010 Information Literacy	1
UNIV 1000 Student Success	1
Choose three courses from the following areas (no more than one course can be chosen from any given area): Humanities, Fine Arts, Social & Behavioral Sciences, and Interdisciplinary	9
Pre-Engineering Core (13 hours)	
EET 2780 Digital Electronics I	3
EET 3780 Applications of Microprocessors	3

ENGR 1010 Engineering in the 21st Century	3
ENGR 3070 Electric Circuits	3
ENGR 3080 Electric Circuits Lab	1
Electrical Engineering Requirements (36 hours)	
CSIS 1400 Fundamentals of Programming	3
CHEM 1210 Principles of Chemistry I	4
CHEM 1215 Principles of Chemistry I Lab	1
MATH 1210 Calculus I	4
MATH 1230 Calculus II	4
MATH 2210 Calculus III	4
MATH 2270 Linear Algebra	3
MATH 2280 Differential Equations	3
PHYS 2210 Physics for Scientists and Engineers I	4
PHYS 2215 Physics for Scientists and Engineers I Lab	1
PHYS 2220 Physics for Scientists and Engineers II	4
PHYS 2225 Physics for Scientists and Engineers II Lab	1
Total Credits	**66**

Pre-Engineering
Environmental Engineering
Associate Degree

Course Number and Title	Credits
General Education Requirements (17 hours)	
ENGL 1010 Introduction to Academic Writing	3
ENGL 2010 Intermediate Writing	3
LM 1010 Information Literacy	1
UNIV 1000 Student Success	1
Choose three courses from the following areas (no more than one course can be chosen from any given area): Humanities, Fine Arts, Social & Behavioral Sciences, and Interdisciplinary	9
Pre-Engineering Core (22 hours)	
ENGR 2240 Surveying and Global Positioning	2
ENGR 2245 Surveying and GPS Lab	1
ENGR 1010 Engineering in the 21st Century	3
CSIS 1400 Fundamentals of Programming	3
ENGR 2010 Statics	3
ENGR 2030 Dynamics	3
ENGR 2140 Strength of Materials	3
ENGR 2145* Strength of Materials Lab	1*
ENGR 3000 Thermodynamics	3
Environmental Engineering Requirements (32 hours)	
BIOL 1610 General Biology I	3
BIOL 1615 General Biology I Lab	1
CHEM 1210 Principles of Chemistry I	4
CHEM 1215 Principles of Chemistry I Lab	1
CHEM 2310 Organic Chemistry I	4
MATH 1210 Calculus I	4
MATH 1220 Calculus II	4
MATH 2270 Linear Algebra	3
MATH 2280 Differential Equations	3
PHYS 2210 Physics for Scientists and Engineers I	4
PHYS 2215 Physics for Scientists and Engineers I Lab	1
Total Credits	**71**

***** Labs that are a co-requisite may be waived through CIET Advisor. Signature required for registration.

Pre-Engineering
Materials Engineering
Associate Degree

Course Number and Title	Credits
General Education Requirements (17 hours)	
ENGL 1010 Introduction to Academic Writing	3
ENGL 2010 Intermediate Writing	3
LM 1010 Information Literacy	1
UNIV 1000 Student Success	1
Choose three courses from the following areas (no more than one course can be chosen from any given area): Humanities, Fine Arts, Social & Behavioral Sciences, and Interdisciplinary	9
Pre-Engineering Core (19 hours)	
ENGR 1010 Engineering in the 21st Century	3
ENGR 2010 Statics	3
ENGR 2030 Dynamics	3
ENGR 2140 Strength of Materials	3
ENGR 2145* Strength of Materials Lab	1*
ENGR 3000 Thermodynamics	3
ENGR 3010 Materials Science Engineering	3
Material Science Engineering Requirements (33 hours)	
CHEM 1210 Principles of Chemistry I	4
CHEM 1215 Principles of Chemistry I Lab	1
MATH 1210 Calculus I	4
MATH 1220 Calculus II	4
MATH 2210 Calculus III	4
MATH 2270 Linear Algebra	3
MATH 2280 Differential Equations	3
PHYS 2210 Physics for Scientists and Engineers I	4
PHYS 2215* Physics for Scientists and Engineers I Lab	1*
PHYS 2220 Physics for Scientists and Engineers II	4
PHYS 2225* Physics for Scientists & Engineers II Lab	1*
Total Credits	**66**

***** Labs that are a co-requisite may be waived through CIET Advisor. Signature required for registration.

Pre-Engineering Mechanical Engineering Associate Degree	
Course Number and Title	**Credits**
General Education Requirements (17 hours)	
ENGL 1010 Introduction to Academic Writing	3
ENGL 2010 Intermediate Writing	3
LM 1010 Information Literacy	1
UNIV 1000 Student Success	1
Choose three courses from the following areas (no more than one course can be chosen from any given area): Humanities, Fine Arts, Social & Behavioral Sciences, and Interdisciplinary	9
Pre-Engineering Core (22 hours)	
CSIS 1400 Fundamentals of Programming	3
ENGR 1010 Engineering in the 21st Century	3
ENGR 2010 Statics	3
ENGR 2030 Dynamics	3
ENGR 2140 Strength of Materials	3
ENGR 2145* Strength of Materials	1*
ENGR 3000 Thermodynamics	3
ENGR 3010 Materials Science Engineering	3
Mechanical Engineering Requirements (33 hours)	
CHEM 1210 Principles of Chemistry I	4
CHEM 1215 Principles of Chemistry I Lab	1
MATH 1210 Calculus I	4
MATH 1220 Calculus II	4
MATH 2210 Calculus III	4
MATH 2270 Linear Algebra	3
MATH 2280 Differential Equations	3
PHYS 2210 Physics for Scientists and Engineers I	4
PHYS 2215* Physics for Scientists and Engineers I Lab	1*
PHYS 2220 Physics for Scientists and Engineers II	4
PHYS 2225* Physics for Scientists & Engineers II Lab	1*
Total Credits	**72**

***** Labs that are a co-requisite may be waived through CIET Advisor. Signature required for registration.

Construction Management Composite Bachelor of Arts/Bachelor of Science	
Course Number and Title	**Credits**
General Education Core (see page 103)	
Core Course Requirements	18
Knowledge Areas Requirements	19
University Requirements	
BA Degree – Foreign Language/ASL Requirement (16 hours or proficiency test) BS Degree – Math or Science minimum requirement (12 hours)	
Core Requirements (79 hours)	
ACCT 2010 Accounting Principles	3
ACCT 2020 Managerial Accounting	3
ACCT 2050 Business Law I	3
CCET 1640 Computer Aided Design	3
CM 1290 Electrical Systems	2
CM 2010 Framing Systems	3
CM 2050 Concrete and Masonry	3
CM 2100 Finishing Systems	3
CM 3240 Estimating	3
CM 3270 Building Codes	3
CM 3650 Residential Drafting	3
CM 3880 Scheduling	3
CM 4400 HVAC & Plumbing Principles & Design	3
ECON 2010 Principles of Microeconomics OR ECON 2020 Principles of Macroeconomics	3
CM 2000 Statics for Construction Management	2
ENGR 2240 Surveying and Global Positioning	2
ENGR 2245 Surveying and GPS Lab	1
MATH 1050 College Algebra	4
MATH 1060 Trigonometry	3
MATH 1210 Calculus I	4
MATH 2040 Business Statistics	4
MGMT 3100* Operations Management	3
MGMT 3180* Management & Organizations	3
MGMT 3210* Entrepreneurship	3
MGMT 3240* Human Resource Management	3
MGMT 4100* Organizational Behavior	3
TECH 3000 Occupational Safety	3
Free Electives	4
Total Credits, B.A. degree	**126**
Total Credits, B.S. degree	**120**

*Upper division management courses must be approved through Business Advisor to waive pre-requisite requirements. Signature required for registration.

Engineering Technology Composite CAD/CAM Emphasis Bachelor of Arts/Bachelor of Science	
Course Number and Title	**Credits**
General Education Core (see page 103)	
Core Course Requirements	18
Knowledge Areas Requirements	19
University Requirements	
BA Degree – Foreign Language/ASL Requirement (16 hours or proficiency test) BS Degree – Math or Science minimum requirement (12 hours)	
Engineering Technology Core (22 hours)	
COMM 1010 Essentials of Communication Lecture	3
CCET 4960 Capstone Project for CAD/CAM	3
CSIS 1410 Object Oriented Programming	3
MATH 1210 Calculus I	3

PHYS 2010 College Physics I	4
TE 4100 Manufacturing Problem Solving & Design	3
TECH 3000 Occupational Safety	3
CAD/CAM Engineering Technology (CCET) Composite (46 hours)	
CCET 1610 Engineering Technology Graphics	3
CCET 1630 Intro to CAD 3-D	3
CCET 1640 Computer Aided Design	3
CCET 2650 Mechanical Blueprint Reading	2
CCET 3610 Architectural Design	3
CCET 3620 3-D Design	3
CCET 3630 Fundamentals of CATIA	3
CCET 3670 Civil Design	3
CCET 3680 CNC Design	3
CCET 4600 Engineering Design	3
CCET 4690 CNC Software and Applications	3
EET 3760 Electronic Design and Fabrication	3
ENGR 2010 Statics	3
ENGR 2140 Strength of Materials	3
ENGR 2145 Strength of Materials Lab	1
ENGR 3010 Materials Science Engineering	3
ENGR 3020 Materials Science Engineering Lab	1
Major CAD/CAM Electives (13 Hours)	
CCET 4610 Advanced Application in CATIA	3
CM 3650 Residential Drafting	3
ENGR 2240 Surveying and Global Positioning	2
ENGR 2245 Surveying and GPS Lab	1
GEOG 3500 Intro to Cartography	3
GEOG 3510 Intro to Cartography Lab	1
CAD/CAM Free Elective:	
(Any course(s) in SUU Curriculum totaling 3 credits)	3
Total Credits B.S. degree	**121**
Total Credits B.A. degree	**128**

Engineering Technology Composite
CAD/GIS Emphasis
Bachelor of Arts/Bachelor of Science

Course Number and Title	Credits
General Education Core (see page 103)	
Core Course Requirements	18
Knowledge Areas Requirements	19
University Requirements	
BA Degree – Foreign Language/ASL Requirement (16 hours or proficiency test) BS Degree – Math or Science minimum requirement (12 hours)	
Core Requirements (22 hours)	
COMM 1010 Essentials of Communication Lecture	3
CCET 4960 Capstone Project for CAD/CAM OR GEOG 4500 GIS Research Project	3
CSIS 1410 Object Oriented Programming	3
MATH 1210 Calculus I	3
PHYS 2010 College Physics I	4
TE 4100 Manufacturing Problem Solving & Design	3
TECH 3000 Occupational Safety	3
CAD/GIS Emphasis (35 hours)	
CCET 1610 Engineering Technology Graphics	3
CCET 1640 Computer Aided Design	3
CCET 3630 Fundamentals of CATIA	3
CCET 3670 Civil Design	3
EET 2750 Computer Hardware (A+ Certification)	3
ENGR 2010 Statics	3
ENGR 2240 Surveying and Global Positioning	2
ENGR 2245 Surveying and GPS Lab	1
GEOG 2900 GPS Theory, Techniques and Methods	2
GEOG 3500 Intro to Cartography	3
GEOG 3510 Intro to Cartography Lab	1
GEOG 3550 Principles of GIS	3
GEOG 3560 Principles of GIS Lab	2
GEOG 4150 Advance GIS Analysis Methods Lab	3
One of the following (3 hours):	
GEOG 4893 GIS Internship	3
GEOG 3993 Undergraduate Research in Geography/GIS	3
TECH 4893 Technology Internship	3
Free Electives (includes completing B.A. or B.S. requirement)	23
Total Credits	**120**

Engineering Technology Composite
Electronics Emphasis
Bachelor of Arts/Bachelor of Science

Course Number and Title	Credits
General Education Core (see page 103)	
Core Course Requirements	18
Knowledge Areas Requirements	19
University Requirements	
BA Degree – Foreign Language/ASL Requirement (16 hours or proficiency test) BS Degree – Math or Science minimum requirement (12 hours)	
Core Requirements for EET (22 hours)	
COMM 1010 Essentials of Communication Lecture	3
CSIS 1410 Object Oriented Programming	3
EET 4960 Capstone Project for EET	3
MATH 1210 Calculus I	3
PHYS 2010 College Physics I	4
TE 4100 Manufacturing Problem Solving & Design	3
TECH 3000 Occupational Safety	3
Electronic Engineering Technology Composite (EET Composite, 52 hours)	

CSIS 2810 Computer Organization & Architecture	3
CSIS 2420 Intro to Algorithms & Data Structures	3
CSIS 3150 C & C++ Programming	3
CSIS 3600 Operating Systems	3
EET 1700 Circuit Analysis I	3
EET 1730 Electronic Devices I	3
EET 2700 Circuit Analysis II	3
EET 2710 Electronic Devices II	3
EET 2730 Network Routers & Switches	3
EET 2750 PC Hardware	3
EET 2760 Industrial Control Systems	3
EET 2770 Digital Electronics II	3
EET 2780 Digital Electronics I	3
EET 3710 Op-Amps & Linear Integrated Circuits	3
EET 3760 Electronic Design & Fabrication	3
EET 3780 Apps of Microprocessors	3
MATH 1040 Intro To Statistics	4
Total Credits	**52**
Major EET Electives (Choose 6 Hours)	
EET 2740 Network Routers and Switches II	3
EET 3720 Communication Circuits	3
EET 3790 Computer Interfacing	3
MGMT 3180 Management & Organizations	3
Upper Division Elective Credit Hours (12 Hours)	
(required to meet minimum graduation requirements	12
Total Credits, B.S. degree	**129**
Total Credits, B.A. degree	**139**

Technology Education Composite with Career and Technical Emphasis Bachelor of Arts/Bachelor of Science	
Course Number and Title	**Credits**
General Education Core (see page 103)	
Core Course Requirements	18
Knowledge Areas Requirements	19
University Requirements	
BA Degree – Foreign Language/ASL Requirement (16 hours or proficiency test) BS Degree – Math or Science minimum requirement (12 hours)	
Professional Education Requirements for Secondary Licensure (29 hours)	
EDUC 2000 Exploring Education in Society	3
EDUC 3170 Instructional Technology for Educators	3
SCED 3200 Secondary Educational Psychology	3
SPED 3030 Foundations of Special Education	2
Secondary Block as noted below	
SCED 3570 Motivation and the Management of Diverse Instructional Environments for Secondary Teachers	3
SCED 3590 Instructional Planning, Delivery, and Assessment Secondary Teachers	3
SCED 3720 Content Literacy	2
SCED 4520 Secondary Practicum/Seminar Clinical Practice (student teaching) is taken the semester prior to secondary block as noted below	3
SCED 4980 Clinical Practice	7
Technology Education Requirements (44 hours)	
CCET 1610 Engineering Technology Graphics	3
CCET 1640 Computer Aided Design	3
TE 1040 Professional Voc Leadership	1
TE 1700 Electricity and Electronics	3
TE 1820 Material Processing	3
TE 3150 Industrial Materials	3
TE 3160 Communication Systems	3
TE 3550 Transportation & Power	2
TE 3850 Construction	3
TE 4100 Manufacturing, Problem Solving and Design	3
TE 4820 Foundations of Technology/Tech Life Careers	3
TE 4900 Methods of Teaching Technology, Testing & Law	3
TE 4930 Principles of Technology	3
TE 4980 Clinical Practice (student teaching in the content area(s) of licensure is taken the semester following the secondary block	2
TE 4950 Facilities Management	3
TECH 3000 Occupational Safety	3
Career and Technical Emphasis Vocational Endorsement (Optional, select 1 of 4)	
Auto Power select 12 credits from the following	
AUTO 1500 Suspension and Steering	5
AUTO 1501 Suspension and Steering Lab	0
AUTO 1510 Engine Repair	6
AUTO 1511 Engine Repair Lab	0
AUTO 1520 Manual Drive Train	5
AUTO 1521 Manual Drive Train Lab	0
AUTO 1530 General Automotive	2
AUTO 1531 General Automotive Lab	0
AUTO 1540 Brake Systems	5
AUTO 1541 Brake Systems Lab	0
AUTO 2510 Automotive Electrical I	5
AUTO 2511 Automotive Electrical I Lab	0
AUTO 2520 Automotive Electrical II	5
AUTO 2521 Automotive Electrical II Lab	0
AUTO 2540 Engine Performance I	5
AUTO 2541 Engine Performance I Lab	0
AUTO 2560 Engine Performance II	5
AUTO 2561 Engine Performance II Lab	0
AUTO 2570 Automotive Heating & A/C	5
AUTO 2571 Automotive Heating & A/C Lab	0
AUTO 2580 Automotive Transmission & Transaxle	6
AUTO 2581 Automotive Transmission & Transaxle Lab	0
CAD/CAM select 12 credits from the following	
CCET 1630 Introduction to CAD/CAM 3D Design	3

CCET 2620 3-D Design	3
CCET 2650 Mechanical Blueprint Reading	3
CCET 3610 Architectural Design	3
CCET 3670 Civil Design	3
CCET 3680 CNC Design	3
CCET 4600 Engineering Design	3
CCET 4690 CNC Software and Applications	3
Electronics select 12 credits from the following	
EET 1700 Circuit Analysis I	3
EET 1730 Electronic Devices	3
EET 2700 Circuit Analysis II	3
EET 2710 Electronic Devices II	3
EET 2730 Network Routers & Switches I	3
EET 2740 Network Routers & Switches II	3
EET 2750 PC Hardware	3
EET 2760 Industrial Control Systems	3
EET 2770 Digital Electronics II	3
EET 2780 Digital Electronics I	3
EET 3710 Op-Amps & Linear Integrated Circuits	3
EET 3720 Communications Circuits	3
EET 3760 Electronic Design & Fabrication	3
EET 3780 Apps of Microprocessors	3
EET 3790 Computer Interfacing	3
Woods-Construction select 12 credits from the following	
CM 1290 Electrical Systems	2
CM 2010 Framing Systems	3
CM 2050 Concrete & Masonry	3
CM 2100 Finishing Systems	3
CM 3270 Building Codes	3
TE 2650 Cabinet Design	3
TE 3870 Cabinet & Furniture I	3
TE 3880 Cabinet & Furniture II	3
TE 3890 Cabinetmaking & Millwork	3
Free Electives (without Technical Specialty option)	10
Total Credits, B.S. degree (without Technical Specialty Option)	**120**
Total Credits, B.S. degree (with Technical Specialty Option)	**122**
Total Credits, B.A. degree (without Technical Specialty Option)	**122**
Total Credits, B.A. degree (with Technical Specialty Option)	**132**

Vocational Endorsement

An applicant for the Basic Vocational-Technical Certificate with endorsement(s) must have: A bachelor's degree in an approved teacher education program, including 12 semester hours of course work in the endorsement area in which the applicant intends to teach and at least two years of successful related occupational experience.

A. The trade, industrial and technical work experience requirement will be waived if the applicant successfully passes a state-approved competency examination at or above the established cut off score. Cut off scores are one-half standard deviation below the national mean.

B. Vocational Emphasis Courses
Complete an emphasis comprised of a minimum of twelve (12) credit hours in an area listed below.

Automotive Technology Associate of Applied Science	
Course Number and Title	**Credits**
General Education Core (see page 103)	
General Education	20-21
Core Requirements (1-3 hours)	
TECH 1040 Professional Voc Leadership	1
AUTO 1530 General Automotive (only if no previous automotive experience-See faculty advisor)	2
Automotive Emphasis (52 credit hours)	
AUTO 1500 Suspension and Steering	5
AUTO 1501 Suspension and Steering Lab	0
AUTO 1510 Engine Repair	6
AUTO 1511 Engine Repair Lab	0
AUTO 1520 Manual Drive Trains and Axles	5
AUTO 1521 Manual Drive Trains and Axles Lab	0
AUTO 1540 Brake Systems	5
AUTO 1541 Brake Systems Lab	0
AUTO 2510 Automotive Electrical I	5
AUTO 2511 Automotive Electrical I Lab	0
AUTO 2520 Automotive Electrical II	5
AUTO 2521 Automotive Electrical II Lab	0
AUTO 2540 Engine Performance I	5
AUTO 2541 Engine Performance I Lab	0
AUTO 2560 Engine Performance II	5
AUTO 2561 Engine Performance II Lab	0
AUTO 2570 Automotive Heating & A/C	5
AUTO 2571 Automotive Heating & A/C Lab	0
AUTO 2580 Automatic Transmission & Transaxle	6
AUTO 2581 Automatic Transmission & Transaxle Lab	**0**
Total Credits	**73-76**

Cabinetmaking & Millwork Associate of Applied Science	
Course Number and Title	**Credits**
General Education Core (see page 103)	
General Education	20-21
Core Requirements (30 hours)	
CCET 1610 Engineering Technology Graphics	3
CCET 1640 Computer Aided Design	3
CCET 3610 Architectural Design	3
CM 3240 Estimating & Bidding	3

TE 1820 Material Processing	3
TE 2650 Cabinet Design	3
TE 3850 Construction	3
TE 3870 Cabinetmaking and Furniture I	3
TE 3880 Cabinetmaking and Furniture II	3
TE 3890 Cabinetmaking and Millwork	3
Business Requirements (9 hours)	
ACCT 2010 Accounting Principles	3
BA 2350 Legal Issues in Society (GE)	3
MKTG 4930 Sales Management	3
Elective Credit (4-5 hours)	
Elective	4-5
Total Credits	**64**

Construction Technology Associate of Applied Science	
Course Number and Title	**Credits**
General Education Core (see page 103)	
General Education	20-21
Core Requirements (10 hours)	
BA 2350 Legal Issues in Society	3
CM 3650 Residential Drafting	3
TECH 1040 Prof Vocational Leadership	1
TECH 3000 Occupational Safety	3
Construction Emphasis Required (35 hours)	
CM 1290 Electrical Systems	2
CM 2010 Framing Systems	3
CM 2050 Concrete & Masonry	3
CM 2100 Finishing Systems	3
CM 3240 Estimating & Bidding	3
CM 3270 Building Codes	3
CM 3880 Scheduling	3
TE 1820 Material Processing	3
CSIS 1000 Introduction to Computer Applications and the Internet	3
TE 3870 Cabinet and Furniture I	3
TE 3880 Cabinet and Furniture II	3
TE 3890 Cabinet Making & Millwork	3
Total Credits	**65-66**

CAD/CAM Technology Associate of Applied Science	
Course Number and Title	**Credits**
General Education Core (see page 103)	
General Education (must take MATH 1050)	20-21
Core Requirements (7 hours)	
CCET 1610 Engineering Technology Graphics	3
TECH 1040 Professional Voc Leadership	1
TECH 3000 Occupational Safety	3
DT Emphasis Required Credit (18 hours)	
CCET 1630 Intro to CAD/CAM 3D Design	3
CCET 1640 Computer Aided Design	3
CCET 3670 Civil Design	3
CCET 3680 CNC Design	3
CCET 4600 Engineering Design	3
MATH 1060 Trigonometry	3
DT Courses selected with approval of advisor (12 hours)	
CCET 2620 3-D Design	3
CCET 2650 Mechanical Blueprint Reading	2
CCET 3610 Architectural Design	3
CCET 3630 Fundamentals of CATIA	3
CCET 4610 Advanced Application of CATIA	3
CCET 4690 CNC Software & Applications	3
CM 3650 Residential Drafting	3
EET 3760 Electronic Design and Fabrication	3
ENGR 2240 Surveying and Global Positioning	2
ENGR 2245 Surveying and GPS Lab	1
GEOG 2900 GPS Theory, Techniques and Methods	2
GEOG 2920 Workshop	1-3
GEOG 3500 Intro to Cartography	3
GEOG 3505 Intro to Cartography Lab	1
GEOG 3550 Principles of GIS	3
GEOG 3555 Principles of GIS Lab	2
GEOG 4150 Advanced GIS Analysis Methods Lab	3
GEOG 4500 GIS Research Project	3
GEOG 4920 Workshop	1-3
Electives (6-7 credit hours)	6-7
Total Credits	**64**

Engineering Technology Electronics Emphasis Associate of Applied Science	
Course Number and Title	**Credits**
General Education Core (see page 103)	
General Education (must take MATH 1050)	20-21
Core Required Courses (7 hours)	
MATH 1060 Trigonometry	3
TECH 1040 Professional Voc. Leadership I	1
TECH 3000 Occupational Safety	3
Electronic Technology Emphasis (27 hours)	
CSIS 1400 Fundamentals of Programming	3
EET 1700 Circuit Analysis I	3
EET 1730 Electronic Devices II	3
EET 2700 Circuit Analysis II	3
EET 2710 Electronic Devices II	3
EET 2760 Industrial Control Systems	3

EET 2780 Digital Electronics I	3
EET 3720 Communications Circuits	3
EET 3780 Applications of Microprocessors	3
Recommended Electives (9 hours)	
EET 2730 Network Routers & Switches I	3
EET 2740 Network Routers & Switches II	3
EET 2750 PC Hardware	3
EET 2770 Digital Electronics II	3
EET 3710 Op-Amps and Linear Integrated Circuits	3
EET 3760 Electronic Design and Fabrication	3
EET 3790 Computer Interfacing	3
Total Credits	**63-64**

Automotive Technology Minor

Required Credit Hours (minimum 16)

The automotive program offers a number of possible areas of study for a minor. For this reason there is not a specified program of study. Students wishing to minor in automotive must meet with their advisor to plan the course of study.

Construction Technology Minor

Course Number and Title	Credits
Required	
CM 2010 Framing Systems	3
CM 2050 Concrete and Masonry	3
CM 2100 Finishing Systems	3
CM 3240 Estimating	3
CM 3270 Building Codes	3
CM 3650 Residential Drafting	3
Total Credits	**18**

CAD/CAM Technology Minor

Course Number and Title	Credits
Core Requirements (6 hours)	
CCET 1610 Engineering Technology Graphics	3
CCET 1640 Computer Aided Design	3
Minimum of 10 elective hours selected from the following. See faculty advisor for individual program needs.	
CCET 1630 Intro to CAD/CAM 3-D Design	3
CCET 2620 3-D Design	3
CCET 2650 Mechanical Blueprint Reading	3
CCET 3610 Architectural Design	3
CCET 3630 Fundamentals of CATIA	3
CCET 3670 Civil Design	3
CCET 3680 CNC Design	3
CCET 4600 Engineering Design	3
CCET 4610 Advanced Application of CATIA	3
CCET 4690 CNC Software and Applications	3
CM 3650 Residential Drafting	3
Total Credits	**16**

Electronics Technology Minor

Total Credits (minimum 16)

The electronics program offers a number of possible areas of study for a minor. For this reason there is not a specified program of study. Students wishing to minor in electronics must consult with an advisor in that field to work out a program of study which will best suit the students' needs. Areas of study include general electronics, digital and computer electronics, communication, and servicing.

Automotive Technology Certificate

Certification for 8 major areas of automotive service as identified by the National Automotive Technicians Education Foundation (ASE). Students who pass courses with a grade of "C" or better receive a Certificate of Competency in the specific course of study.

AUTO 1500 Suspension and Steering	5
AUTO 1501 Suspension and Steering Lab	0
AUTO 1510 Engine Repair	6
AUTO 1511 Engine Repair Lab	0
AUTO 1520 Manual Drive Trains and Axles	5
AUTO 1521 Manual Drive Trains and Axles Lab	0
AUTO 1540 Brake Systems	5
AUTO 1541 Brake Systems Lab	0
AUTO 2510 Automotive Electrical I	5
AUTO 2511 Automotive Electrical I Lab	0
AUTO 2520 Automotive Electrical II	5
AUTO 2521 Automotive Electrical II Lab	0
AUTO 2540 Engine Performance I	5
AUTO 2541 Engine Performance I Lab	0
AUTO 2560 Engine Performance II	5
AUTO 2561 Engine Performance II Lab	0
AUTO 2570 Automotive Heating & A/C	5
AUTO 2571 Automotive Heating & A/C Lab	0
AUTO 2580 Automatic Transmission & Transaxle	6
AUTO 2581 Automatic Transmission & Transaxle Lab	0
Total Credits (will vary dependent upon number of courses completed)	

Civil Drafting/CAD Certificate	
Course Number and Title	**Credits**
Core Requirements (15 hours)	
CCET 1610 Engineering Technology Graphics	3
CCET 1640 Computer Aided Design	3
CCET 3670 Civil Design	3
ENGR 2240 Surveying and Global Positioning	2
ENGR 2245 Survey and GPS Lab	1
MATH 1060 Trigonometry	3
Electives Required (2 hours)	
CCET 1630 Intro to CAD/CAM 3D Design	3
CCET 2620 3-D Design	3
CCET 2650 Mechanical Blueprint Reading	3
CCET 3610 Architectural Design	3
CCET 3630 Fundamentals of CATIA	3
CCET 3670 Civil Design	3
CCET 3680 CNC Design	3
CCET 4600 Engineering Design	3
CCET 4610 Advanced Application of CATIA	3
CCET 4690 CNC Software and Applications	3
ENGR 2010 Statics	3
ENGR 2140 Strength of Materials	3
ENGR 2145 Strength of Materials Lab	1
ENGR 3010 Materials Science Engineering	3
CM 3650 Residential Drafting	3
COMM 1010 Essentials of Communications	3
EET 3760 Electronic Design and Fabrication	3
GEOG 2900 GPS Theory, Techniques and Methods	2
GEOG 2920 Workshop	1-3
GEOG 3500 Intro to Cartography	3
GEOG 3505 Intro to Cartography Lab	1
GEOG 3550 Principles of GIS	3
GEOG 3555 Principles of GIS Lab	2
GEOG 4150 Advanced GIS Analysis Methods Lab	3
GEOG 4500 GIS Research Project (Capstone)	3
GEOG 4920 Workshop	1-3
Total Credits	**17**

Construction Technology Certificate	
Course Number and Title	**Credits**
CM 1290 Electrical Systems	2
CM 2010 Framing Systems	3
CM 2050 Concrete & Masonry	3
CM 2100 Finishing Systems	3
CM 3240 Estimating & Bidding	3
CM 3270 Building Codes	3
CM 3650 Residential Drafting	3
CM 3880 Scheduling	3
Elective (optional)	
TE 1820 Material Processing	3
Total Credits	**23**