The vision of the College of Applied Science & Technology is to be the leader in the State in technology and technology related programs through service to our students and the businesses and industries in our region. The mission of the College is to serve the citizens of Northern Utah and the State of Utah by:

- Preparing students for employment upon graduation and ensuring that they are productive, accountable and responsible individuals able to function effectively in today’s workplace.
- Engaging in scholarly activities which expand the technological education our students receive and provide a service to business and industry.
- Utilizing the College’s resources and faculty expertise to benefit students, business, industry, education, government and society in general.

**Department/Area Listing**

**Engineering Technology Programs** ..................................................54
Center for Automotive Science and Technology .............................54
Technology Assistance Center ..........................................................54
Automotive Technology .......................................................................54
Computer and Electronics Engineering Technology .......................62
Computer Engineering Technology ....................................................62
Electronics Engineering Technology ....................................................63
Computer Science ...............................................................................67
Manufacturing and Mechanical Engineering Technology ..............73
Mechanical Engineering Technology .................................................80
Apprenticeship ....................................................................................83
Parson Construction Management Technology ............................83
Design Graphics Engineering Technology ........................................87
Pre-Engineering ................................................................................90
Sales and Service Technology ............................................................92
Interior Design Technology .................................................................92
Sales and Merchandising .................................................................92
Technical Sales ................................................................................93
Telecommunications & Business Education .................................97
Telecommunications Administration ..............................................98
Business Education Composite Teaching ..................................100
Business/Multimedia Technologies ....................................................100

**Department Chairs**  
(area code 801)
Automotive Technology: Mr. John Kelly ..................................626-6679
Computer and Electronics Engineering Technology: Mr. William G. Clapp 626-6898
Computer Science: Mr. Greg Anderson ........................................626-7929
Manufacturing & Mechanical Engineering Technology: Mr. Andy Drake 626-6305
Sales and Service Technology: Mr. Vel Casler 626-6913
Telecommunications & Business Education: Dr. Alden A. Talbot 626-6059

**Degrees Offered**

Bachelor of Arts or Bachelor of Science degree programs are offered in the following areas:
- Business Education Composite Teaching
- Business/Multimedia Technologies
- Computer Science
- Interior Design – Technical Sales
- Technical Sales
- Telecommunications Administration

Bachelors of Science degree programs are offered in:
- Automotive Technology
- Computer Engineering Technology
- Construction Management Technology
- Design Graphics Engineering Technology
- Electronics Engineering Technology
- Manufacturing Engineering Technology
- emphasis in Welding Technology
- Mechanical Engineering Technology

Bachelor of Arts and Bachelor of Science composite/teaching degree programs are offered in:
- Business Education

**Associate of Applied Science degree programs are offered in:**
- Apprenticeship
- Automotive Service Technology
- Business/Multimedia Technologies
- Computer Engineering Technology
- Computer Science
- Construction Management Technology
- Design Graphics Engineering Technology
- Electronics Engineering Technology
- Interior Design Technology
- Manufacturing Engineering Technology
- Mechanical Engineering Technology
- Sales & Merchandising
- Telecommunications

An Associate of Pre-Engineering is also offered.

Minors are offered in:
- Business Education Teaching
- Business/Marketing Education Teaching
- Business/Multimedia Technologies
- Computer Science and Computer Science Teaching
- Electronics Engineering Technology
- Sales and Service Technology
- emphasis in Fashion Merchandising, Interior Design & Sales
- Telecommunications

Institutional Certificates offered in:
- Automotive Service Technology
- Telecommunications
- Quality and Lean Manufacturing (Graduate Certificate)

A Game Development Certificate program is planned. For more information, contact the Computer Science Department.

Certification offered in Professional Network - Cisco
**Engineering Technology Programs**

Engineering technology education focuses primarily on the applied aspects of science and engineering aimed at preparing graduates for practice in that portion of the technological spectrum closest to product improvement, industrial processes, and operational functions. The engineering technology programs at Weber State prepare individuals for a wide variety of positions in technology-based business and industries. The study of engineering technology requires a knowledge of mathematical, scientific, and engineering principles in combination with a strong applications-orientation in support of engineering activities. The College of Applied Science & Technology offers AAS and BS degrees in the following engineering technology programs:

- Computer Engineering Technology
- Design Graphics Engineering Technology
- Electronics Engineering Technology
- Manufacturing Engineering Technology
- Mechanical Engineering Technology

The BS degrees in these programs are accredited by the Technology Accreditation Commission of ABET, Inc., 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone 410-347-7700.

**Center for Automotive Science and Technology**

Director: Joe Thomas  
Location: TE 201  
Telephone: 801-626-7836

The Center for Automotive Science and Technology was established in 1991 to assist in developing a better understanding of vehicle emissions among academic, regulatory, and private sector entities, both locally and nationally. To do this, the Center provides training to automotive technicians, instructors, regulatory officials, field engineers, and consumer groups as well as doing applied research on vehicular emissions. Additionally, the Center gathers and disseminates information about the impact of emissions, design for emission abatement, and efficiency of vehicles. The Center is a cooperative endeavor of the University, the Utah Department of Environmental Quality, and multiple private companies.

**Technology Assistance Center**

Director: Rick Orr  
Location: ET 218F  
Telephone: 801-626-7514

The Technology Assistance Center was established in 1991 to provide various types of technical assistance to regional business and industry. The goal of the Center is to furnish technical and managerial support in support of manufacturing development and diversification. As part of this mission, the Center also works closely with economic development and other assistance organizations within the state.

The Technology Assistance Center responds to the technical support needs of businesses, local governments, and economic development groups by acting as an information clearing house, conducting data base searches, providing technical assistance in product or process development or testing, and demonstrating new or emerging technologies. This assistance, which is provided by faculty and students, includes but is not limited to problem solving, decision support for new technology or systems, product or process design assistance, material handling, cost analysis, quality control assistance, team building, and technical training.

**Automotive Technology Programs**

The Automotive Technology Department curriculum is a "2 + 2" design leading to an Associate of Applied Science degree in Automotive Service Technology and a Bachelor of Science degree in Automotive Technology.

**Chrysler Training Center**

Coordinator: John Kelly  
Advisor: Robert Wilkes  
Telephone: 801-626-7743

The Chrysler Training Center provides short, current product information courses for Chrysler technicians and service management personnel throughout Utah and several western states. The Center's resources are shared with a broader automotive community through activities such as automotive faculty development workshops.

**General Motors Training Center**

Coordinator: John Kelly  
Advisor: Matthew Stagg  
Telephone: 801-626-6229

The General Motors Training Center provides short, current product information courses for GM technicians and service management personnel throughout Utah and several western states. The Center's resources are shared with a broader automotive community through activities such as automotive faculty development workshops.

**Toyota Training Center**

Coordinator: John Kelly  
Advisor: William Carroll  
Telephone: 801-626-7056

The Toyota Training Center provides short, current product information courses for Toyota technicians and service management personnel throughout Utah and several western states. The Center's resources are shared with a broader automotive community through activities such as automotive faculty development workshops.

**Automotive Service Technology**

Automotive Service Technology is the field of study dealing with diagnosis, service, and repair of automobiles and light trucks. Lab and classroom courses are oriented toward high levels of technical understanding, current developments such as electronic control systems and environmental issues, the development of the students' diagnostic capabilities, and proficiency with recommended service procedures. In addition to specific technical training, supporting courses provide for growth of interpersonal and other skills needed to advance within the automotive service industry.

There are seven options available under the Automotive Service Technology Associate of Applied Science degree.
Chrysler College Automotive Program (CAP) is a program with technical coverage specializing exclusively in current Chrysler products.

General Motors Automotive Service Educational Program (ASEP) is a program with technical coverage specializing exclusively in current General Motors products.

Collision Repair is a program with an Inter-Industry Conference On Auto Collision Repair (I-CAR) based curriculum. I-CAR training is recommended by most major automobile and truck manufacturers.

Honda Professional Automotive Career Training (PACT) is a program with technical coverage specializing exclusively in current Honda and Acura products.

Toyota Toyota Technical Education Network (T-TEN) is a program with technical coverage specializing exclusively in current Toyota and Lexus products.

Automotive Technology Educational Program (ATEP) is a comprehensive training program covering all major manufacturers’ products.

Heavy Duty Truck Technology is an articulated program with Davis Applied Technology Center, specializing in current Mack and Volvo White products.

Additionally, an Institutional Certificate is offered that prepares students for entry level automotive technician positions in Ford, Lincoln, or Mercury dealerships or at independent shops that repair Ford vehicles.

The Automotive Service Technology degree options are fully accredited by the National Automotive Technicians Education Foundation (NATEF). Partnerships with five of the world’s largest automotive corporations, Chrysler, Ford, General Motors, Honda and Toyota assure direct access to state-of-the-art automotive technology. Although it is normally advantageous to complete one of the specified options, a student may elect to take an individual course or courses to meet their particular needs (provided the prerequisites have been met).

To assure optimum functioning, individual program options may have limited enrollment. See department for details.

In addition to the above degree options, the Automotive program also has the following manufacturer’s training centers located on campus allowing faculty and students access to the latest equipment, data, and vehicles.

**Automotive Service Technology**

**ASSOCIATE OF APPLIED SCIENCE DEGREE (AAS)**

**Program Coordinator for the ASEP, CAP, PACT, and T-Ten Programs:** Lisa Burr, 801-626-7350

**Program Coordinator for the ATEP Program:** Steven Stuart, 801-626-6903

**Program Coordinator for the Collision Repair Program:** Justin Tate, 801-626-8735

**Program Information for the HD-Truck Program:** Steven Stuart, 801-626-6903

- **Program Prerequisite:** An interview with the program coordinator or advisor in the desired option is necessary prior to acceptance into the program.

- **Grade Requirements:** Minimum grade of “C” in courses required for this major in addition to an overall GPA of 2.0 or higher.

- **Credit Hour Requirements:** A total of 63 credit hours is required except for the Heavy Duty Truck option which requires a total of 68 credit hours.

- **Assessment Requirements:** Students will be required to complete certain assessment instruments as part of the overall requirements for receiving their associate’s degree. Please see the program coordinator or your advisor for more information regarding assessment.

**Advisement**

Automotive Service students should meet each program with the program coordinator or faculty advisor for their specific option for advisement. Call 801-626-6579 for more information or to schedule an appointment.

**Admission Requirements**

Declare your program of study (see page 17) and meet with your specific program coordinator or faculty advisor.

**National Institute for Automotive Service Excellence (ASE) Certification Requirement**

Automotive Services students are required to take all eight automotive ASE exams. The student must pass at least four of the eight exams to qualify for graduation. See www.asecert.org for testing information. ASE exam fees are included in the student fees for each course. Exams will be taken twice per year at the end of each semester. Only Collision Repair and Heavy Duty Truck Technology students will be exempt from this requirement.

**General Education**

Refer to pages 38-43 for Associate of Applied Science requirements. The following general education courses are required for this degree: CHEM PS1010 (3) or CHEM PS/SI1110 (5), COMM HU2110 (3), and a Social Science course (3). Computer Literacy as defined in this catalog is also required for the AAS degree.

**Course Requirements for AAS Degree**

**Automotive Service Courses Required for All Options (8 credit hours)**

- **AUSV 1000** Introduction to Automotive Service (3)
- **AUSV 1100** Principles of Technology I (2)
- **AUSV 1300** Technical Mathematics (3)
- **AUSV 2899** Associate’s Degree Assessment (0)

**Support Courses Required for All Options (9 credit hours)**

- **ENGL EN1010** Introductory College Writing (3)
- **SST 3203** Customer Service Techniques (3)*
- **SST 4203** Ethical Sales and Service (3)*
- **SST 4203** Introductory College Writing (3)*
- **TBE TE1700** Intro to Microcomputer Applications (3)
- **AUSV 1250** Chrysler Manual
- **AUSV 1000** Introduction to Automotive Service (3)
- **AUSV 1100** Principles of Technology I (2)
- **AUSV 1300** Technical Mathematics (3)
- **AUSV 2899** Associate’s Degree Assessment (0)

**Elective Course (3 credit hours)**

Choose one of the following

- **BSAD 3000** Small Business Management (3)*
- **SST 3363** Contract & Sales Negotiation Techniques (3)*
- **SST 4203** Ethical Sales and Service (3)*

* Students wishing to complete a Bachelor of Science (BS) in Automotive Technology after completing their Associate of Applied Science (AAS) degree should take the courses marked with an asterisk.

**OPTION REQUIREMENTS**

Select one of the following options (see the option coordinator for a suggested course sequence):

**CHRYSLER CAP OPTION**

**Automotive Service Courses Required (34 credit hours)**

- **AUSV 1050** Chrysler Braking, Steering, Suspension & Climate Control Systems (8) or **AUSV 1051**
- **AUSV 1250** Chrysler Manual
- **AUSV 2350** Drivetrain Systems (3)
AUSV SI1355  Chrysler Electronics, Electrical and Body Control Systems (7)
AUSV 2550  Chrysler Automatic Transmissions (4)
AUSV 2655  Chrysler Engine Mechanical and Engine Control Systems (6)
AUSV 2880  Cooperative Practicum (6)

GENERAL MOTORS ASE Option
Automotive Service Courses Required (34 credit hours)
AUSV 1040  General Motors Braking, Steering, Suspension and Climate Control Systems (8)
AUSV 1240  General Motors Manual Drivetrain Systems (3)
AUSV SI1345  General Motors Electronics, Electrical and Body Control Systems (7)
AUSV 2540  General Motors Automatic Transmissions (4)
AUSV 2645  General Motors Engine Mechanical and Engine Control Systems (6)
AUSV 2880  Cooperative Practicum (6)

Collision Repair Option
Automotive Service Courses Required (32 credit hours)
AUSV 1020  Braking, Steering, Suspension, and Climate Control Systems (8)
AUSV 1080  Non-Structural Analysis and Damage Repair (4)
AUSV 1180  Structural Analysis and Damage Repair (4)
AUSV SI1320  Automotive Electronics (4)
AUSV 2080  Painting and Refinishing (4)
AUSV 2480  Auto Body Business Practices (2)
AUSV 2860  Automotive Shop Practice (6)

Automotive Technology Courses Required (2 credit hours)
ATTC 3020  Intro to Hazardous Materials (2)

Honda Pact Option
Automotive Service Courses Required (34 credit hours)
AUSV 1030  Honda Braking, Steering, Suspension, and Climate Control Systems (8)
AUSV 1230  Honda Manual Drivetrain Systems (3)
AUSV SI1335  Honda Electronics, Electrical and Body Control Systems (7)
AUSV 2530  Honda Automatic Transmissions (4)
AUSV 2635  Honda Engine Mechanical and Engine Control Systems (6)
AUSV 2880  Cooperative Practicum (6)

Toyota T-Ten Option
Automotive Service Courses Required (34 credit hours)
AUSV 1060  Toyota Braking, Steering, Suspension, and Climate Control Systems (8)
AUSV 1260  Toyota Manual Drivetrain Systems (3)
AUSV SI1365  Toyota Electronics, Electrical and Body Control Systems (7)
AUSV 2560  Toyota Automatic Transmissions (4)
AUSV 2665  Toyota Engine Mechanical and Engine Control Systems (6)
AUSV 2880  Cooperative Practicum (6)

Independent Shop ATEP Option
Automotive Service Courses Required (34 credit hours)
AUSV 1020  Braking, Steering, Suspension, and Climate Control Systems (8)
AUSV 1220  Automotive Manual Drivetrain Systems (3)
AUSV SI1325  Automotive Electronics, Electrical and Body Control Systems (7)
AUSV 2520  Automatic Transmissions (4)
AUSV 2625  Engine Mechanical and Engine Control Systems (6)
AUSV 2860  Automotive Shop Practice (6)

Heavy Duty Truck Option
Automotive Service Courses Required (44 credit hours)
AUSV 1071  Heavy Duty Truck Brakes (2)
AUSV 1072  Heavy Duty Truck Steering & Suspension (3)
AUSV 1170  Heavy Duty Truck Engines (5)
AUSV 1270  Heavy Duty Truck Drive Mechanism (8)
AUSV 1321/1322  Specialized Electricity/Electronics (2/2)
AUSV 2170  Heavy Duty Truck Electrical Systems (3)
AUSV 2270  Heavy Duty Truck Engine Diagnosis (3)
AUSV 2370  Heavy Duty Truck Air Conditioning (2)
AUSV 2860  Automotive Shop Practice (14)

Automotive Service Technology - Institutional Certificate
The Institutional Certificate in Automotive Service Technology prepares students for entry level automotive technician positions in Ford, Lincoln, or Mercury dealerships or at independent shops that repair Ford vehicles.

Program Advisor: Wayne Burbank 801-626-6321

Course Requirements for Institutional Certificate
Automotive Service Courses Required
AUSV 1000  Introduction to Automotive Service (3)
AUSV 1021  Automotive Braking Systems (3)
AUSV 1022  Steering and Suspension Systems (2)
AUSV SI1320  Automotive Electronics (4)
AUSV 2320  Automotive Climate Control Systems (3)

AUTOMOTIVE SERVICE TECH COURSES - AUSV
AUSV 1000. Introduction to Automotive Service (3)
An introduction to automotive shop safety, pollution prevention, hazardous waste handling, Internet-based electronic service information, diagnostic scan tools, ASE certifications, safety inspection certifications, emissions inspection certifications, developing job interview skills, and resume writing. (This course is a prerequisite for all automotive service courses.)
AUSV 1020. Braking, Steering, Suspension, and Climate Control Systems (8)
Theory, operation, diagnosis and repair of braking, steering, and suspension systems. The use of electronic service information, the proper diagnostic process, and proper diagnostic service tools is emphasized. (AUSV 1020 is equivalent to AUSV 1021, AUSV 1022, and AUSV 2320.) Prerequisites: AUSV 1000, AUSV SI1325.

AUSV 1021. Automotive Braking Systems (3)
Theory, operation, diagnosis, and repair of braking systems. (AUSV 1021, AUSV 1022, and AUSV 2320 are equivalent to AUSV 1000, AUSV 1020.)

AUSV 1022. Steering and Suspension Systems (2)
Theory, operation, diagnosis, and repair of steering and suspension systems. (AUSV 1021, AUSV 1022, and AUSV 2320 are equivalent to AUSV 1000, AUSV 1020.)

AUSV 1031. Honda Braking Systems (3)
Theory, operation, diagnosis, and repair of Honda braking systems. (AUSV 1030 is equivalent to AUSV 1031, AUSV 1032, and AUSV 2330.) Prerequisite: AUSV 1000.

AUSV 1032. Honda Steering and Suspension Systems (2)
Theory, operation, diagnosis, and repair of Honda steering and suspension systems. (AUSV 1031, AUSV 1032, and AUSV 2330 are equivalent to AUSV 1000, AUSV 1030.)

AUSV 1040. General Motors Braking, Steering, Suspension, and Climate Control Systems (8)
Theory, operation, diagnosis, and repair of General Motors braking, steering, suspension, and climate control systems. The use of electronic service information, the proper diagnostic process, and proper diagnostic service tools is emphasized. (AUSV 1040 is comprised of AUSV 1041, AUSV 1042, and AUSV 2340.) Prerequisites: AUSV 1000, AUSV SI1345.

AUSV 1041. General Motors Braking Systems (3)
Theory, operation, diagnosis, and repair of General Motors braking systems. (AUSV 1040 is equivalent to AUSV 1041, AUSV 1042, and AUSV 2340.) Prerequisites: AUSV 1000, AUSV SI1345.

AUSV 1042. General Motors Steering and Suspension Systems (2)
Theory, operation, diagnosis, and repair of General Motors steering and suspension systems. (AUSV 1041, AUSV 1042, and AUSV 2340 are equivalent to AUSV 1000, AUSV 1040.) Prerequisites: AUSV 1000, AUSV SI1345.

AUSV 1050. Chrysler Braking, Steering, Suspension and Climate Control Systems (8)
Theory, operation, diagnosis, and repair of Chrysler braking, steering, suspension, and climate control systems. The use of electronic service information, the proper diagnostic process, and proper diagnostic service tools is emphasized. (AUSV 1050 is comprised of AUSV 1051, AUSV 1052, and AUSV 2350.) Prerequisites: AUSV 1000, AUSV SI1355.

AUSV 1051. Chrysler Braking Systems (3)
Theory, operation, diagnosis, and repair of Chrysler braking systems. (AUSV 1050 is equivalent to AUSV 1051, AUSV 1052, and AUSV 2350.) Prerequisites: AUSV 1000, AUSV SI1355.

AUSV 1052. Chrysler Steering and Suspension Systems (2)
Theory, operation, diagnosis, and repair of Chrysler steering and suspension systems. (AUSV 1051, AUSV 1052, and AUSV 2350 are equivalent to AUSV 1000, AUSV 1050.) Prerequisites: AUSV 1000, AUSV SI1355.

AUSV 1060. Toyota Braking, Steering, Suspension, and Climate Control Systems (8)
Theory, operation, diagnosis, and repair of Toyota braking, steering, suspension, and climate control systems. The use of electronic service information, the proper diagnostic process, and proper diagnostic service tools is emphasized. (AUSV 1060 is comprised of AUSV 1061, AUSV 1062 and AUSV 2360.) Prerequisites: AUSV 1000, AUSV SI1365.

AUSV 1061. Toyota Braking Systems (3)
Theory, operation, diagnosis, and repair of Toyota braking systems. (AUSV 1060 is equivalent to 1061, AUSV 1062 and AUSV 2360.) Prerequisites: AUSV 1000, AUSV SI1365.

AUSV 1062. Toyota Steering and Suspension Systems (2)
Theory, operation, diagnosis, and repair of Toyota steering and suspension systems. (AUSV 1061, AUSV 1062, and AUSV 2360 are equivalent to AUSV 1000, AUSV 1060.) Prerequisites: AUSV 1000, AUSV SI1365.

AUSV 1071. H D Truck Brakes (2)
Operation, diagnosis, inspection, and repair of air brake systems. Equivalent to DATC proficiency #48530, 48601.

AUSV 1072. H D Truck Steering & Suspension (3)
Operation, diagnosis, and repair of heavy duty steering and suspension systems. Equivalent to DATC proficiency #48540, 48550.

AUSV 1080. Non-Structural Analysis and Damage Repair (4)
Safety, welding processes, panel repair and replacement, trim application, water and wind leakage. I-CAR training modules are included. Prerequisite: AUSV 1000.

AUSV 1100. Principles of Technology I (2)
Scientific concepts of force, work, rate, resistance and energy are applied to mechanical and fluid systems found in modern industry. Laboratory activities featuring measurement and instrumentation are emphasized.

AUSV 1120. Automotive Engines (3)
Theory, operation, diagnosis, repair, and overhaul of automotive engines. Prerequisite: AUSV 1000.

AUSV 1130. Honda Engines (3)
Theory, operation, diagnosis, repair, and overhaul of Honda engines. Prerequisite: AUSV 1000.

AUSV 1140. General Motors Engines (3)
Theory, operation, diagnosis, repair, and overhaul of General Motors engines. Prerequisite: AUSV 1000.

AUSV 1150. Chrysler Engines (3)
Theory, operation, diagnosis, repair, and overhaul of Chrysler engines. Prerequisite: AUSV 1000.

AUSV 1160. Toyota Engines (3)
Theory, operation, diagnosis, repair, and overhaul of Toyota engines. Prerequisite: AUSV 1000.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUSV 1170.</td>
<td>H D Truck Engines (5)</td>
</tr>
<tr>
<td>AUSV 1180.</td>
<td>Structural Analysis and Damage Repair (4)</td>
</tr>
<tr>
<td>AUSV 1200.</td>
<td>Principles of Technology II (2)</td>
</tr>
<tr>
<td>AUSV 1220.</td>
<td>Automotive Manual Drivetrain Systems (3)</td>
</tr>
<tr>
<td>AUSV 1230.</td>
<td>Honda Manual Drivetrain Systems (3)</td>
</tr>
<tr>
<td>AUSV 1240.</td>
<td>General Motors Manual Drivetrain Systems (3)</td>
</tr>
<tr>
<td>AUSV 1250.</td>
<td>Chrysler Manual Drivetrain Systems (3)</td>
</tr>
<tr>
<td>AUSV 1260.</td>
<td>Toyota Manual Drivetrain Systems (3)</td>
</tr>
<tr>
<td>AUSV 1270.</td>
<td>H D Truck Drive Mechanisms (8)</td>
</tr>
<tr>
<td>AUSV 1300.</td>
<td>Technical Mathematics (3)</td>
</tr>
<tr>
<td>AUSV 11320.</td>
<td>Automotive Electronics (4)</td>
</tr>
<tr>
<td>AUSV 11325.</td>
<td>Automotive Electronics, Electrical and Body Control Systems (7)</td>
</tr>
<tr>
<td>AUSV SI1330.</td>
<td>Honda Automotive Electronics (4)</td>
</tr>
<tr>
<td>AUSV SI1335.</td>
<td>Honda Electronics, Electrical and Body Control Systems (7)</td>
</tr>
<tr>
<td>AUSV SI1340.</td>
<td>General Motors Automotive Electronics (4)</td>
</tr>
<tr>
<td>AUSV SI1345.</td>
<td>General Motors Electronics, Electrical and Body Control Systems (7)</td>
</tr>
<tr>
<td>AUSV SI1350.</td>
<td>Chrysler Automotive Electronics (4)</td>
</tr>
<tr>
<td>AUSV SI1355.</td>
<td>Chrysler Electronics, Electrical and Body Control Systems (7)</td>
</tr>
<tr>
<td>AUSV SI1360.</td>
<td>Toyota Automotive Electronics (4)</td>
</tr>
</tbody>
</table>

**AUSV 1170. H D Truck Engines (5)**
Operational principles, diagnosis and complete overhaul of diesel engines. Equivalent to DATC proficiency #48140, 48141, 48142, 48143, 48160, 48162, 48163.

**AUSV 1180. Structural Analysis and Damage Repair (4)**
Frame and unibody repair. Replacement of major panels, measuring and corrective pulling, and occupant safety systems. I-CAR training modules are included.

**AUSV 1200. Principles of Technology II (2)**
Scientific concepts pertaining to electricity, heat, sound and light are applied to systems found in modern industry. Laboratory activities featuring measurement and instrumentation are emphasized. Prerequisite: AUSV 1000.

Theory, operation, diagnosis, maintenance, and overhaul of manual transmissions and transaxles, front and rear drive axles and differentials, drivelines, and transfer cases. Prerequisite: AUSV 1000.

Theory, operation, diagnosis, maintenance, and overhaul of Honda manual transmissions and transaxles, drive axles and differentials, drivelines, and transfer units. Prerequisite: AUSV 1000.

**AUSV 1240. General Motors Manual Drivetrain Systems (3)**
Theory, operation, diagnosis, maintenance, and overhaul of General Motors manual transmissions and transaxles, front and rear drive axles and differentials, drivelines, and transfer cases. Prerequisite: AUSV 1000.

Theory, operation, diagnosis, maintenance, and overhaul of Chrysler manual transmissions and transaxles, front and rear drive axles and differentials, drivelines, and transfer cases. Prerequisite: AUSV 1000.

Theory, operation, diagnosis, maintenance, and overhaul of Toyota manual transmissions and transaxles, front and rear drive axles and differentials, drivelines, and transfer cases. Prerequisite: AUSV 1000.

**AUSV 1270. H D Truck Drive Mechanisms (8)**
Theory, operation, diagnosis, and overhaul of the clutch, transmission, drive lines, differentials, and wheel bearings. Equivalent to DATC proficiency #48401, 48403, 48603.

**AUSV 1300. Technical Mathematics (3)**
Measurements, common and decimal fractions, square roots, surfaces, columns, capacities. Principles of algebra and geometry.

**AUSV 11320. Automotive Electronics (4)**
Electrical fundamentals, use of meters and wiring diagrams, wiring repair. Theory, diagnosis, and repair of computer inputs, outputs, and communication systems. The use of electronic service information, the proper diagnostic process, and proper diagnostic service tools are emphasized. Recommended prerequisite: AUSV 1000.

**AUSV 11325. Automotive Electronics, Electrical and Body Control Systems (7)**
Electrical fundamentals, use of meters and wiring diagrams, wiring repair. Theory, diagnosis, and repair of computer inputs, outputs, and communication systems, starting, charging, lighting, air-bags, power accessories, and various body computer control systems. The use of electronic service information, the proper diagnostic process, and proper diagnostic service tools is emphasized. (AUSV 1320, AUSV 2120 are equivalent to AUSV SI1325.)

**AUSV SI1330. Honda Automotive Electronics (4)**
Electrical fundamentals, use of meters and Honda wiring diagrams, wiring repair. Theory, diagnosis, and repair of Honda computer inputs, outputs, and communication systems. The use of Honda electronic service information, the proper diagnostic process, and proper diagnostic service tools are emphasized. Recommended prerequisite: AUSV 1000.

**AUSV SI1335. Honda Electronics, Electrical and Body Control Systems (7)**
Electrical fundamentals, use of meters and Honda wiring diagrams, wiring repair. Theory, diagnosis, and repair of Honda computer inputs, outputs, and communication systems, starting, charging, lighting, air-bags, power accessories, and various body computer control systems. The use of Honda electronic service information, the proper diagnostic process, and proper diagnostic service tools is emphasized. (AUSV SI1330, AUSV 2130 are equivalent to AUSV SI1335.)

**AUSV SI1340. General Motors Automotive Electronics (4)**
Electrical fundamentals, use of meters and General Motors wiring diagrams, wiring repair. Theory, diagnosis, and repair of General Motors computer inputs, outputs, and communication systems. The use of General Motors electronic service information, the proper diagnostic process, and proper diagnostic service tools are emphasized. Recommended prerequisite: AUSV 1000.

**AUSV SI1345. General Motors Electronics, Electrical and Body Control Systems (7)**
Electrical fundamentals, use of meters and General Motors wiring diagrams, wiring repair. Theory, diagnosis, and repair of General Motors computer inputs, outputs, and communication systems, starting, charging, lighting, air-bags, power accessories, and various body computer control systems. The use of General Motors electronic service information, the proper diagnostic process, and proper diagnostic service tools is emphasized. (AUSV 1340, AUSV 2140 are equivalent to AUSV SI1345.)

**AUSV SI1350. Chrysler Automotive Electronics (4)**
Electrical fundamentals, use of meters and Chrysler wiring diagrams, wiring repair. Theory, diagnosis, and repair of Chrysler computer inputs, outputs, and communication systems. The use of Chrysler electronic service information, the proper diagnostic process, and proper diagnostic service tools are emphasized. Recommended prerequisite: AUSV 1000.

**AUSV SI1355. Chrysler Electronics, Electrical and Body Control Systems (7)**
Electrical fundamentals, use of meters and Chrysler wiring diagrams, wiring repair. Theory, diagnosis, and repair of Chrysler computer inputs, outputs, and communication systems, starting, charging, lighting, air-bags, power accessories, and various body computer control systems. The use of Chrysler electronic service information, the proper diagnostic process, and proper diagnostic service tools is emphasized. (AUSV 1350, AUSV 2150 are equivalent to AUSV SI1355.)

**AUSV SI1360. Toyota Automotive Electronics (4)**
Electrical fundamentals, use of meters and Toyota wiring diagrams, wiring repair. Theory, diagnosis, and repair of Toyota computer inputs, outputs, and communication systems. The use of Toyota electronic service information, the proper diagnostic process, and proper diagnostic service tools are emphasized. Recommended prerequisite: AUSV 1000.
AUSV SI1365. Toyota Electronics, Electrical and Body Control Systems (7)
Electrical fundamentals, use of meters and Toyota wiring diagrams, wiring repair. Theory, diagnosis, and repair of Toyota computer inputs, outputs, and communication systems, starting, charging, lighting, air-bags, power accessories, and various body computer control systems. The use of Toyota electronic service information, the proper diagnostic process, and proper diagnostic service tools is emphasized. (AUSV 1360, AUSV 2160 are equivalent to AUSV SI1365.)

AUSV 1400. Automotive Fundamentals (2)
Operation, diagnosis and repair of selected automotive systems, as well as general auto shop orientation for beginners and non-automotive majors.

AUSV 1890. Cooperative Work Experience (1-6)
Open to all first year students in Automotive Service. Provides academic credit for on-the-job experience. Grade and amount of credit will be determined by the department.

AUSV 2020. Engine Control Systems (3)
Theory, operation, diagnosis, and repair of automotive fuel systems, OBD-II and Tier-2 emission control systems, and ignition systems. (AUSV 1120, AUSV 2020 are equivalent to AUSV 2625.) Prerequisites: AUSV 1000, AUSV SI1325.

AUSV 2030. Honda Engine Control Systems (3)
Theory, operation, diagnosis, and repair of Honda automotive fuel systems, OBD-II and Tier-2 emission control systems, and ignition systems. (AUSV 1130, AUSV 2030 are equivalent to AUSV 2635.) Prerequisites: AUSV 1000, AUSV SI1335.

AUSV 2040. General Motors Engine Control Systems (3)
Theory, operation, diagnosis, and repair of General Motors automotive fuel systems, OBD-II and Tier-2 emission control systems, and ignition systems. (AUSV 1140, AUSV 2040 are equivalent to AUSV 2645.) Prerequisites: AUSV 1000, AUSV SI1345.

AUSV 2050. Chrysler Engine Control Systems (3)
Theory, operation, diagnosis, and repair of Chrysler automotive fuel systems, OBD-II and Tier-2 emission control systems, and ignition systems. (AUSV 1150, AUSV 2050 are equivalent to AUSV 2655.) Prerequisites: AUSV 1000, AUSV SI1355.

AUSV 2060. Toyota Engine Control Systems (3)
Theory, operation, diagnosis, and repair of Toyota automotive fuel systems, OBD-II and Tier-2 emission control systems, and ignition systems. (AUSV 1160, AUSV 2060 are equivalent to AUSV 2665.) Prerequisites: AUSV 1000, AUSV SI1365.

AUSV 2080. Painting and Refinishing (4)
Surface preparation and application of contemporary paints. Matching, blending and complete vehicle refinishing. I-CAR training modules are included. Prerequisite: AUSV 1000.

AUSV 2120. Automotive Electrical and Body Control Systems (3)
Theory, diagnosis, and repair of starting, charging, lighting, air-bags, power accessories, and various body computer control systems. The use of electronic service information, the proper diagnostic process, and proper diagnostic service tools are emphasized. (AUSV 1320, AUSV 2120 are equivalent to AUSV SI1325.) Recommended prerequisite: AUSV 1000. Prerequisite: AUSV SI1320.

AUSV 2130. Honda Electrical and Body Control Systems (3)
Theory, diagnosis, and repair of Honda starting, charging, lighting, air-bags, power accessories, and various body computer control systems. The use of electronic service information, the proper diagnostic process, and proper diagnostic service tools are emphasized. (AUSV 1330, AUSV 2130 are equivalent to AUSV SI1335.) Recommended prerequisite: AUSV 1000. Prerequisite: AUSV SI1330.

AUSV 2140. General Motors Electrical and Body Control Systems (3)
Theory, diagnosis, and repair of General Motors starting, charging, lighting, air-bags, power accessories, and various body computer control systems. The use of electronic service information, the proper diagnostic process, and proper diagnostic service tools are emphasized. (AUSV 1340, AUSV 2140 are equivalent to AUSV SI1345.) Recommended prerequisite: AUSV 1000. Prerequisite: AUSV SI1340.

AUSV 2160. Toyota Electrical and Body Control Systems (3)
Theory, diagnosis, and repair of Toyota starting, charging, lighting, air-bags, power accessories, and various body computer control systems. The use of electronic service information, the proper diagnostic process, and proper diagnostic service tools are emphasized. (AUSV 1350, AUSV 2150 are equivalent to AUSV SI1355.) Recommended prerequisite: AUSV 1000. Prerequisite: AUSV SI1350.

AUSV 2170. H D Truck Electrical Systems (3)
Theory, operation, diagnosis and repair of batteries, starting, charging and electrical accessories. Equivalent to DATC proficiency #48304, 48305.

AUSV 2270. H D Truck Engine Diagnosis (3)
Engine starting, diagnosis, fuel pump timing, compression and cylinder leakage testing, and tune-up. Equivalent to DATC proficiency #48144, 48164, 48302.

AUSV 2320. Automotive Climate Control Systems (3)
Theory, operation, diagnosis and repair of climate control systems. (AUSV 1020 is equivalent to AUSV 1021, AUSV 1022, and AUSV 2320.) Prerequisites: AUSV 1000, AUSV SI1320.

AUSV 2330. Honda Climate Control Systems (3)
Theory, operation, diagnosis and repair of Honda climate control systems. (AUSV 1030 is equivalent to AUSV 1031, AUSV 1032 and AUSV 2330.) Prerequisites: AUSV 1000, AUSV SI1330.

AUSV 2340. General Motors Climate Control Systems (3)
Theory, operation, diagnosis and repair of General Motors climate control systems. (AUSV 1040 is equivalent to AUSV 1041, AUSV 1042 and AUSV 2340.) Prerequisites: AUSV 1000, AUSV SI1340.

AUSV 2350. Chrysler Climate Control Systems (3)
Theory, operation, diagnosis and repair of Chrysler climate control systems. (AUSV 1050 is equivalent to AUSV 1051, AUSV 1052 and AUSV 2350.) Prerequisites: AUSV 1000, AUSV SI1350.

AUSV 2360. Toyota Climate Control Systems (3)
Theory, operation, diagnosis and repair of Toyota climate control systems. (AUSV 1060 is equivalent to AUSV 1061, AUSV 1062 and AUSV 2360.) Prerequisites: AUSV 1000, AUSV SI1360.

AUSV 2370. H D Truck Air Conditioning (2)
Operation, environmental concerns, diagnosis and repair of air conditioning and heating systems and components. Equivalent to DATC proficiency #48800, 48801.
AUSV 2480. Auto Body Business Practices (2)
Estimating, scheduling work, purchasing, inventory, insurance practices and applied customer relations.

AUSV 2520. Automatic Transmissions (4)
Theory, operation, diagnosis and overhaul procedures of automatic transmissions. Prerequisites: AUSV 1000, AUSV SI1325.

AUSV 2530. Honda Automatic Transmissions (4)
Theory, operation, diagnosis and overhaul procedures of Honda automatic transmissions. Prerequisites: AUSV 1000, AUSV SI1335.

AUSV 2540. General Motors Automatic Transmissions (4)
Theory, operation, diagnosis and overhaul procedures of General Motors automatic transmissions. Prerequisites: AUSV 1000, AUSV SI1345.

AUSV 2550. Chrysler Automatic Transmissions (4)
Theory, operation, diagnosis and overhaul procedures of Chrysler automatic transmissions. Prerequisites: AUSV 1000, AUSV SI1355.

AUSV 2560. Toyota Automatic Transmissions (4)
Theory, operation, diagnosis and overhaul procedures of Toyota automatic transmissions. Prerequisites: AUSV 1000, AUSV SI1365.

AUSV 2625. Engine Mechanical and Engine Control Systems (6)
Theory, operation, diagnosis, and repair of automotive engines, fuel systems, OBD-II and Tier-2 emission control systems, ignition systems. The use of electronic service information, the proper diagnostic process, and proper diagnostic service tools is emphasized. (AUSV 1120, AUSV 2020 are equivalent to AUSV 2625.) Prerequisites: AUSV 1000, AUSV SI1325.

AUSV 2635. Honda Engine Mechanical and Engine Control Systems (6)
Theory, operation, diagnosis, and repair of Honda automotive engines, fuel systems, OBD-II and Tier-2 emission control systems, ignition systems. The use of electronic service information, the proper diagnostic process, and proper diagnostic service tools is emphasized. (AUSV 1130, AUSV 2030 are equivalent to AUSV 2635.) Prerequisites: AUSV 1000, AUSV SI1335.

AUSV 2645. General Motors Engine Mechanical and Engine Control Systems (6)
Theory, operation, diagnosis, and repair of General Motors automotive engines, fuel systems, OBD-II and Tier-2 emission control systems, ignition systems. The use of electronic service information, the proper diagnostic process, and proper diagnostic service tools is emphasized. (AUSV 1140, AUSV 2040 are equivalent to AUSV 2645.) Prerequisites: AUSV 1000, AUSV SI1345.

AUSV 2655. Chrysler Engine Mechanical and Engine Control Systems (6)
Theory, operation, diagnosis, and repair of Chrysler automotive engines, fuel systems, OBD-II and Tier-2 emission control systems, ignition systems. The use of electronic service information, the proper diagnostic process, and proper diagnostic service tools is emphasized. (AUSV 1150, AUSV 2050 are equivalent to AUSV 2655.) Prerequisites: AUSV 1000, AUSV SI1355.

AUSV 2665. Toyota Engine Mechanical and Engine Control Systems (6)
Theory, operation, diagnosis, and repair of Toyota automotive engines, fuel systems, OBD-II and Tier-2 emission control systems, ignition systems. The use of electronic service information, the proper diagnostic process, and proper diagnostic service tools is emphasized. (AUSV 1160, AUSV 2060 are equivalent to AUSV 2665.) Prerequisites: AUSV 1000, AUSV SI1365.

AUSV 2860. Automotive Shop Practice (3-8)
Provides an opportunity to practice skills needed by Automotive Service technicians derived from classroom and shop experience. Simulates line mechanic work. Instructor approval required.

AUSV 2880. Cooperative Practicum (3-8)
Supervised work experience, at the sponsoring dealership, which applies directly to previous academic courses. Full-time employment and approval of faculty supervisor required.

AUSV 2890. Cooperative Work Experience (1-6)
Open to second year Automotive Service students. A continuation of AUSV 1890. NOTE: AUSV 2890 may be taken in lieu of AUSV 2860, when appropriate work experience is available and the student obtains departmental approval.

AUSV 2899. Associate's Degree Assessment (0)
This course is to serve as an assessment tool whereby all AAS degree seeking students in the College of Applied Science & Technology demonstrate their learned knowledge in at least three areas of Applied Technology study. At present, this knowledge will be demonstrated through the use of the Work Keys exams administered through the Campus Testing Center.

AUSV 2920. Short Courses, Workshops, Institutes and Special Programs (1-4)
Consult the semester class schedule for the current offering under this number. The specific title and credit authorized will appear on the student transcript.

### Automotive Technology

**Program Coordinator: John Kelly 801-626-7183**

Automotive Technology is a dynamic program designed in cooperation with industry and focused on service operations, fleet management, service engineering, and technical support activities.

Lower division courses offer a thorough background in vehicle systems and product service procedures. Upper division studies include business, communication, supervision and advanced technical subjects. Interpersonal, analytical and computer skills as well as general education are emphasized throughout the program, providing the foundation for long term professional and personal growth.

A close affiliation between the department and leading automotive companies ensures that students will have state-of-the-art instruction, industry supported practicums and excellent opportunities for employment with major corporation, dealerships, fleet operators, utilities, government agencies and small companies.

The Automotive Technology curriculum is a "2 + 2" design facilitating articulation with programs in automotive service, collision repair, diesel mechanics, etc. Students who have obtained associate's degrees in appropriate high quality programs are admitted as juniors, and can complete the baccalaureate degree in two years. There are also provisions to recognize those with significant automotive industry experience.

### Automotive Technology

**Bachelor of Science Degree (BS)**

- **Program Prerequisite:** An interview with the program coordinator is necessary prior to acceptance into the program. Students are advised to complete an appropriate Associate's degree prior to entering upper division curriculum.
- **Minor:** Not required.
Support Courses Required (4 credit hours)

TBE 3070  Advanced Spreadsheet Applications (1)
TBE 3250  Business Communication (3)

Electives - Select one course (3 credit hours)

BSAD 3200  Legal Environment of Business (3)
COMM DV3080  Intercultural Communication (3)
ENGL 3100  Professional and Technical Writing (3)
SST 3153  Sales Engineering Techniques (3)
SST 4203  Ethical Sales & Service (3)

Suggested Course Sequence

Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.

AUTOMOTIVE TECHNOLOGY COURSES - ATTC

ATTC 2680. Collision Repair Methods (3)
An overview of modern collision repair covering the areas of non-structural, structural, and painting and refinishing. A study of the methods and procedures of collision repair that will provide students with an understanding of body design including the frame, refinishing, and safety. Prerequisite: Junior standing.

ATTC 3020. Introduction to Hazardous Materials (2)
Environmental regulations, safe practices, disposal of hazardous substances, such as paints and solvents. Suggested prerequisite: CHEM PS1010 or PS/SI1110.

ATTC 3520. Fleet Management (2)
Overview of fleet operations and common management practices.

ATTC 3620. Automotive Business Practices (2)
Study of fleet and dealership fixed operations financial policies and procedures. Includes financial statement analysis.

ATTC 3990. Seminar in Automotive Technology (1)
Preparation for the practicum. Guest lecturers, group discussions and overview of new or upcoming automotive issues. Prerequisite: Junior standing.

ATTC 4020. Environmental Issues (2)
An overview of the environmental issues related to the use and service of vehicles, with emphasis on air quality topics.

ATTC 41220. Capstone Project (2)
The use of sophisticated diagnostic tools and equipment. Emphasis is on computer-aided diagnosis and the development of analytical thinking as it applies to technical problems. Includes lab. Prerequisite: AUSV 2200 or equivalent.

ATTC 4830. Directed Readings (1-3)
Individual readings supervised by a faculty member. Prerequisite: Approval of instructor.

ATTC 4880. Cooperative Practicum (3-8)
Supervised work experience with a sponsoring employer, designed to synthesize theory and practice. Full-time, upper division related employment and approval of faculty supervisor required.

ATTC 4990. Seminar in Automotive Technology (1)
Directed studies, group discussions and analysis of selected topics. Emphasis on environmental, regulatory, legal, safety, new product and other contemporary issues.

ATTC 5920. Short Courses and Workshops (1-4)
Consult the semester class schedule for the current offerings under this number.
Computer and Electronics Engineering Technology

Chair: Dr. William G. Clapp
Location: Building 4, Room 421
Telephone Contact: Linda Thornock 801-626-6898
Professors: William Clapp, Jay Smith, Robert Summers; Associate Professor: Verne Hansen; Assistant Professor: Jeffrey Ward;
Instructor Specialist: Steve Green; Instructors: Justin Jackson, Julanne McCulley

The Computer and Electronics Engineering Technology Department (CEET) provides applications-oriented education which produces graduates who are prepared to make significant contributions in technology based career fields. The programs in the department prepare students to incorporate computer and electronic systems in solving engineering, technology, science, and manufacturing problems.

The Department offers an Associate of Applied Science degree and a Bachelor of Science degree in either Computer Engineering Technology (CET) or Electronics Engineering Technology (EET). The department also offers a minor in Electronics Engineering Technology.

AAS Degree. The AAS degree prepares graduates to specify, install, operate, troubleshoot, and modify computers, automated programmable controllers, and electronic systems. It is designed to give the student fundamental knowledge and basic skills in robotics, automation, electronic manufacturing, fabrication, testing, and troubleshooting.

CET. The Computer Engineering Technology AAS program is a combination of software and hardware courses supporting electronic devices, communications, and embedded computer systems.

EET. The Electronics Engineering Technology AAS program is more hardware oriented in support of electronic devices, communications, and embedded computer systems.

BS Degree. The Bachelor of Science (BS) degree is designed to continue a student's education beyond the associate's degree level. It is intended to provide the student with knowledge and skills in problem solving, critical thinking, project management, team building, and engineering research to identify, evaluate, analyze, and solve complex computer and electronic related technical problems.

CET. The Computer Engineering Technology BS program is a combination of advanced software and hardware courses supporting embedded microcontrollers.

EET. The Electronics Engineering Technology BS program is more hardware oriented in support of electronic devices, circuit design, power systems, automated control, and embedded computer systems.

Computer Engineering Technology

ASSOCIATE OF APPLIED SCIENCE DEGREE (AAS)

Grade Requirements: A grade of "C" or better in all CEET and support courses (a grade of "C-" is not acceptable). Students must have an overall GPA of 2.5 or higher to graduate.

Credit Hour Requirements: A minimum of 63 credit hours is required with a minimum of 33 credit hours in the major.

Transfer students are required to take a minimum of 20 credit hours at Weber State University.

Assessment Requirements: Students will be required to complete certain assessment instruments as part of the overall requirements for receiving their associate's degree. Please see your advisor or your department for specific information regarding assessment.

Advisement

All Computer Engineering Technology students are required to meet with their faculty advisor at least annually for course and program advisement. Please call the department secretary at 801-626-6898 for the name of your advisor and to schedule an appointment. Individual student records are accessible through the WSU Home Page.

Admission Requirements

See the department secretary to declare your program of study (major - see page 17). There are no special admission or application requirements for this program.

Course Requirements for AAS Degree

Required CET Courses (29 credit hours)

CEET 1105  PC Fundamentals (4)
CEET 1110  Basic Electronics (2)
CEET 1120  Information Technology (2)
CEET 1130  Digital Systems (4)
CEET 1140  AC & DC Circuits (4)
CEET 2000  Engineering Seminar (1)
CEET 2100  Semiconductor Devices (4)
CEET 2140  Communications Circuits (4)
CEET 2150  Embedded Controllers (4)
CEET 2899  Associate's Degree Assessment (0)

Required Support Courses (28 credit hours)

MATH QL1080* Pre-Calculus (5)
MATH SI1210  Calculus I (4)
MATH 1220  Calculus II (4)
or CEET 2120  Power and Control Circuits (4)
or CEET 2130  PC Board Design (4) for students not continuing on for the BS CET degree
ENGL EN1010  Introductory College Writing (3)
ENGL EN2010  Intermediate College Writing (3)
CS 2250  Structured Computing in a Selected Language (4)
PHYS PS/SI2210  Physics for Scientists & Engineers I (5)

* Students without previous university-level math (1010 or higher) should consult with an advisor prior to enrolling in MATH QL1080.

Other Courses Required (6 credit hours)

Gen Ed Social Science Elective (3)
COMM HU2110  Interpersonal and Small Group Communication (3)

Suggested Course Sequence

Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.

Computer Engineering Technology

BACHELOR OF SCIENCE DEGREE (BS)

Program Prerequisite: AAS degree in Computer Engineering Technology (CET) from Weber State University or an equivalent degree or coursework from an accredited AAS program.

Minor: Not required.

Grade Requirements: A grade of "C" or better in all CEET and support courses is required for this major (a grade of "C-" is not acceptable). Students must have an overall GPA of 2.5 or higher to graduate.
Suggested Course Sequence

Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.

Electronics Engineering Technology

Graduate Course Requirements:

- Credit Hour Requirements: A total of 124 credit hours is required for graduation – a minimum of 66 credit hours (29 for AAS and 37 for the BS) in the major. A total of 40 upper division credit hours is also required (courses numbered 3000 and above).

Advisement

All Computer Engineering Technology students are required to meet with their faculty advisor at least annually for course and program advisement. Please call the department secretary at 801-626-6898 for the name of your advisor and to schedule an appointment. Individual student records are accessible through the WSU Home Page.

Admission Requirements

See the department secretary to declare your program of study (major - see page 17). Refer to the Program Prerequisite above. There are no additional special admission or application requirements for this program.

General Education

Refer to pages 37-43 for Bachelor of Science degrees. Consult with your advisor for specific general education guidelines.

Course Requirements for BS Degree

To be taken in addition to the requirements for the AAS degree in CET.

Required CEET Courses (29 credit hours)

CEET 31010 Advanced Circuit Analysis I (4)
CEET 3030 FPGA & ASIC Design (4)
CEET 3050 Assembly Language & Device Drivers (4)
CEET 3060 Real-Time Embedded Controllers (4)
CEET 3080 Digital Communications (4)
CEET 4000 Engineering Seminar (1)
CEET 4051 Project Management (3)
CEET 4020 Senior Project (3)
CEET 4890 Cooperative Work Experience (2)
CEET 4899 Bachelor's Degree Assessment (0)

Elective Courses (8 credit hours required)

CEET 3040 Instrumentation and Measurements (4)
CEET 4030 Controls & Systems (4)
CEET 4040 Digital Signal Processing (4)
CEET 4060 Advanced Communications (4)

Required Writing Course (3 credit hours)

CEET 3070 Engineering Technology Research (3)
or ENGL 3100 Technical Writing (3)
or TBE 3250 Business Communication (3)

Required Support Course (5 credit hours)

PHYS PS/2220 Physics for Scientists & Engineers II (5)

Other Required Courses (16 credit hours)

Gen Ed Humanities Elective (3)
Gen Ed Creative Arts Elective (3)
Gen Ed American Institutions Elective (3)
Gen Ed Social Science Elective (3)
Gen Ed Life Science Elective (4)

Suggested Course Sequence

Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.

Electronics Engineering Technology

Associate of Applied Science Degree (AAS)

- Credit Hour Requirements: A minimum of 63 credit hours is required for graduation – a minimum of 26 credit hours in the major.

Advisement

All Electronics Engineering Technology students are required to meet with their faculty advisor at least annually for course and program advisement. Please call the department secretary at 801-626-6898 for the name of your advisor and to schedule an appointment. Individual student records are accessible through the WSU Home Page.

Admission Requirements

See the department secretary to declare your program of study (major - see page 17). There are no special admission or application requirements for this program.

General Education

Refer to pages 38-43 for Associate of Applied Science requirements. Computer Literacy as defined in this catalog is also required for the AAS degree. Consult with your advisor for specific general education guidelines.

Course Requirements for AAS Degree

Required CEET Courses (29 credit hours)

CEET 1110 Basic Electronics (2)
CEET 1120 Information Technology (2)
CEET 1130 Digital Systems (4)
CEET 1140 AC and DC Circuits (4)
CEET 2000 Engineering Seminar (1)
CEET 2110 Semiconductor Devices (4)
CEET 2120 Power and Control Circuits (4)

Required Support Courses (28 credit hours)

MATH QL1080* Pre-Calculus (5)
MATH SI1210 Calculus I (4)
MATH 1220 Calculus II (4)
or CEET 2120 Power and Control Circuits (4) for students not continuing on for the BS EET degree.

Continuing students should take MATH 1220 instead of CEET 2120

CEET 2120 PC Board Design (4)
CEET 2140 Communications Circuits (4)
CEET 2150 Embedded Controllers (4)
CEET 2899 Associate Degree Assessment (0)

* Students without previous university-level math (1010 or higher) should consult with an advisor prior to enrolling in MATH QL1080.

Other Courses Required (6 credit hours)

Gen Ed Social Science Elective (3)
COMM HU2110 Interpersonal & Small Group Communication (3)

Suggested Course Sequence

Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.
### Electronics Engineering Technology

**BACHELOR OF SCIENCE DEGREE (BS)**

- **Program Prerequisite:** AAS degree in Electronics Engineering Technology (EET) from Weber State University or an equivalent degree or coursework from an accredited AAS program.
- **Minor:** Not required.
- **Grade Requirements:** A grade of "C" or better in all CEET and support courses is required for this major (a grade of "C-" is not acceptable). Students must have an overall GPA of 2.5 or higher to graduate.
- **Credit Hour Requirements:** A total of 124 credit hours is required for graduation – a minimum of 66 credit hours (29 for AAS and 37 for the BS) in the major. A total of 40 upper division credit hours is also required (courses numbered 3000 and above). Transfer students are required to take a minimum of 30 credit hours at Weber State University.

### Advisement

All Electronics Engineering Technology students are required to meet with their faculty advisor at least annually for course and program advisement. Please call the department secretary at 801-626-6898 for the name of your advisor and to schedule an appointment. Individual student records are accessible through the WSU Home Page.

### Admission Requirements

See the department secretary to declare your program of study (major - see page 17). Refer to the Program Prerequisite above. There are no additional special admission or application requirements for this program.

### General Education

Refer to pages 37-43 for Bachelor of Science degrees. Consult with your advisor for specific general education guidelines.

### Course Requirements for BS Degree

To be taken in addition to the requirements for the AAS degree in Electronics Engineering Technology.

#### Required CEET Courses (29 credit hours)
- **CEET 1130** Advanced Circuit Analysis I (4)
- **CEET 3020** Advanced Circuit Analysis II (4)
- **CEET 3040** Instrumentation & Measurements (4)
- **CEET 4000** Engineering Seminar (1)
- **CEET 4010** Project Management (3)
- **CEET 4020** Senior Project (3)
- **CEET 4030** Controls & Systems (4)
- **CEET 4040** Digital Signal Processing (4)
- **CEET 4890** Cooperative Work Experience (2)
- **CEET 4899** Bachelor's Degree Assessment (0)

#### Elective Courses (8 credit hours required)
- **CEET 3030** FPGA & ASIC Design (4)
- **CEET 3050** Assembly Language & Device Drivers (4)
- **CEET 3060** Real-Time Embedded Controllers (4)
- **CEET 3080** Digital Communications (4)
- **CEET 4060** Advanced Communications (4)

#### Required Writing Course (3 credit hours)
- **CEET 3070** Engineering Technology Research (3)
  or **ENGL 3100** Technical Writing (3)
  or **TBE 3250** Business Communication (3)

#### Required Support Course (5 credit hours)
- **PHYS 2220** Physics for Scientists & Engineers II (5)

#### Other Required Courses (16 credit hours)
- Gen Ed Humanities Elective (3)
- Gen Ed Creative Arts Elective (3)
- Gen Ed American Institutions Elective (3)
- Gen Ed Social Science Elective (3)
- Gen Ed Life Science Elective (4)

### Suggested Course Sequence

Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.

### Computer and Electronics Engineering Technology

#### DEPARTMENTAL HONORS

- **Program Prerequisite:** Declare intent to obtain Department Honors in Computer/Electronics Engineering Technology – both with the Honors office (Library 225) and with the Computer and Electronics Engineering Technology Department Chair. (See also the Honors Program on page 45).
- **Grade Requirements:** Maintain an overall GPA of 3.3.
- **Credit Hour Requirements:** Fulfill three (3) hours of the general education requirement in the social sciences with HNRS SS1520. Fulfill the requirements for the Computer/Electronics Engineering Technology major with at least 12 hours of required upper division courses completed with an Honors component. Component contracts are available in the Honors Center, Library 225. As part of the 12 hours, students are required to complete CEET 4020 (Senior Project) on an Honors basis. Students will fulfill a minimum of 15 Honors hours to complete Computer/Electronics Engineering Technology Department Honors.

### Electronics Engineering Technology

#### MINOR

- **Grade Requirements:** A grade of "C" or better in courses used toward the minor (a grade of "C-" is not acceptable).
- **Credit Hour Requirements:** A minimum of 20 credit hours of CEET courses.

This program offers students who major in another discipline the option to obtain a minor in Electronics Engineering Technology.

### Course Requirements for Minor

#### CEET Courses Required (20 credit hours)
- CEET 1110 Basic Electronics (2)
- CEET 1120 Information Technology (2)
- CEET 1130 Digital Systems (4)
- CEET 1140 AC and DC Circuits (4)
- CEET 2150 Embedded Controllers (4)
- CEET 3050 Assembly Language and Device Drivers (4)

### Computer and Electronics Engineering Technology Courses - CEET

- **CEET 1105.** Personal Computer Fundamentals (4) F, S
  - Introduction to personal computers and computer architecture. Includes computer hardware and software principles, products, and applications. A+ certification concepts emphasized. Lecture and lab combination. Laboratory activities to include configuring, installing, testing, troubleshooting, and analyzing personal computers. Prerequisite: Credit for or concurrent enrollment in MATH 1010.

- **CEET 1110.** Basic Electronics (2) F, S
  - Introduction to the concepts and fundamentals of electronic devices, circuits and systems. An electronics overview course for technology majors. Topics include direct current electricity, alternating current electricity, transistors and integrated circuits, amplifiers and oscillators, transmitters and receivers, digital logic circuits, electronic memory, and computers. Prerequisite: Credit for or concurrent enrollment in MATH 1010.
CEET 1120. Information Technology (2) F, S
Introduction to the concepts and fundamentals of information technology. An information technology overview course for technology majors. Topics include the World Wide Web, data protocols, graphics and visual information, data compression, bandwidth and information technology, transmission and storage technology, networks and the Internet, voice over IP, and electronic commerce. Prerequisite: Credit for or concurrent enrollment in MATH 1010.

CEET 1130. Digital Systems (4) F, S
Introduction to digital electronics, integrated circuits, numbering systems, Boolean algebra, gates, flip-flops, multiplexers, sequential circuits, combinational circuits, programmable logic devices, and computer architecture. Lecture and lab combination. Laboratory activities to include the design, construction, analysis, and measurement of basic digital systems. Prerequisite: Credit for or concurrent enrollment in MATH 1010.

CEET 1140. AC and DC Circuits (4) F, S
Introduction to AC and DC circuit fundamentals, analysis, theorems, laws, components, measuring devices, and equipment. Lecture and lab combination. Laboratory activities to include circuit design, construction, and analysis of AC/DC circuits. The introduction and use of measuring instruments, power supplies, and signal generators. Prerequisite: CEET 1110 and MATH QL1080 or concurrent enrollment in MATH 1060.

CEET 1850. Industrial Electronics (4) S
Industrial electronics course for Mechanical and Manufacturing Engineering Technology majors. Introduction to DC and AC circuits, machines, and power systems. Lecture and lab combination. Laboratory activities to include the design, construction, and analysis of DC/AC circuits and machines. Prerequisite: MATH 1010.

An introduction to science, engineering and technology career fields. Industrial leaders, as guest speakers, will share their engineering experiences and provide insight into career opportunities, hiring criteria, job responsibilities, engineering ethics, and professional development. The student will identify and contact industrial companies using online searches, personal interviews, and library resources. The student will attend senior project design reviews.

CEET 2110. Semiconductor Devices (4) F
Introduction to the design and analysis of semiconductor circuits using diodes, transistors, op-amps, field effect devices, thyristors, and regulators. Lecture and lab combination. Laboratory activities to include the design, construction, computer simulation, and analysis of semiconductor circuits, amplifiers and power supplies. Prerequisite: CEET 1140.

CEET 2120. Power and Control Circuits (4) F
Introduction to AC and DC motors, relays, transformers, power measurements, National Electrical Code, ladder logic, wiring, and programmable logic controllers (PLCs). Lecture and lab combination. Laboratory activities to include the design, construction, and analysis of basic power circuits and machinery configurations. Prerequisite: CEET 1140.

CEET 2130. PC Board Design (4) S
Introduction to the design of printed circuit boards and packaging with emphasis on the design, simulation, analysis and packaging of circuits. Lecture and lab combination. Laboratory activities include the design, construction, and testing of prototype circuit boards. CAD programs will be used for the design and layout of circuit boards. Prerequisite: CEET 2110.

CEET 2140. Communications Circuits (4) S
Introduction to digital and wireless communication circuits. Topics include radio frequency circuits, modulation, detection, transmitters, receivers, transmission lines, antennas, and measurement instruments. Digital communications topics to include parallel and serial data transmission. Lecture and lab combination. Laboratory activities to include the design, construction, computer simulation, and analysis of communication circuits. Prerequisites: CEET 2110 and MATH SI1210.

CEET 2150. Embedded Controllers (4) F, S
A study of microprocessors, embedded controllers, operational characteristics, computer architecture, machine code programming, memory devices, and interfacing. Lecture and lab combination. Laboratory activities include the design, construction, and analysis of microprocessor based systems. Analysis techniques include the use of assemblers, cross-assemblers, and emulators. Prerequisite: CEET 1130, CS 2250 (preferred) or CS 1400.

CEET 2850. Telecommunications Circuits (2)
Telecommunications technology course for Telecommunications majors. Introduction to telecommunications technology. The course introduces the fundamentals of DC theory, AC theory, power, electronic components, semiconductor devices, digital fundamentals, integrated circuits, computer circuits, frequency, fiber optics, and wireless communications. Two one-hour lectures per week.

CEET 2899. Associate's Degree Assessment (0)
This course is to serve as an assessment tool whereby all AAS degree seeking students in the College of Applied Science & Technology demonstrate their learned knowledge in at least three areas of Applied Technology study. At present, this knowledge will be demonstrated through the use of the Work Keys exams administered through the Campus Testing Center.

CEET 3000. Engineering Ethics (1)
Scope and aims of engineering ethics, moral reasoning, ethical theories, social experimentation, responsibility for safety and to employees, rights, global issues, management, consulting, and leadership. Prerequisite: PHIL HU1120.

CEET SI3010. Advanced Circuit Analysis I (4) F
Advanced topics related to electronic circuit analysis, Laplace transforms, differential equations, Fourier series, Fourier transforms, and applications. Lecture and lab combination. Laboratory activities to include circuit design, construction, computer simulation, and analysis. Prerequisites: CEET 2110 and MATH SI1210.

CEET SI3020. Advanced Circuit Analysis II (4) S
Continuation of Advanced Circuit Analysis I, CEET SI3010. Active and passive filters, Z-transforms, Pole-zero analysis, stability, Bode diagrams, frequency response, and applications. Lecture and lab combination. Laboratory activities to include circuit design, construction, computer simulation, and analysis. Prerequisite: CEET SI3010.

CEET SI3030. FPGA and ASIC Design (4) F
Introduction to field programmable gate arrays (FPGA) and application specific integrated circuit (ASIC) design. Lecture and lab combination. Laboratory activities to include the use of computer design tools to design, model, simulate, and program gate arrays and application specific integrated circuits. Prerequisite: CEET 2150.

CEET SI3040. Instrumentation and Measurements (4) F
Introduction to electronic data acquisition, data analysis, error analysis, signal measurement, and automatic testing techniques. Lecture and lab combination. Laboratory activities to include the design, construction, and analysis of measurement circuits, data acquisition circuits, instrumentation devices, and automatic testing. Prerequisite: CEET 2110.
CEET 3050. Assembly Language & Device Drivers (4) S
Small computer architecture, computer I/O, graphics, assembly language fundamentals, BIOS, device drivers, advanced assembly language techniques. Lecture and lab combination. Laboratory activities to include design, simulation, computer programming, analysis, and troubleshooting. Prerequisite: CEET 2150.

CEET 3060. Real-Time Embedded Controllers (4) F
An introduction to real-time kernels and operating systems. Priority-based pre-emptive scheduling, interrupt communication, and intertask synchronization will be studied. Other topics include priority inversions, semaphores, mutexes, context switches, rate monotonic analysis (RMA), various kernel services, finite state machines, and nested state machines. Prerequisites: CEET 2110, C Programming Language, CEET 2150.

CEET 3070. Engineering Technology Research (3) F, S
Engineering problem solving using the Internet, professional journals, and human networking. Three styles of writing emphasized: technical descriptions, historical perspectives of technology, and technical defensible arguments. Prerequisite: AAS degree in CET or EET.

CEET 3080. Digital Communications (4) S
This course provides an in-depth study of a variety of communication standards and how to implement them in embedded systems. The standards addressed in this class include RS232, RS485, Controller Area Network (CAN), and Ethernet. Emphasis will be placed on utilizing the stacks and protocols for each standard. The channel bandwidth, noise, and data error rate will be addressed. Wireless methods of serial communication will be surveyed. Prerequisites: CEET 2110, CEET 2150, MATH 1210.

CEET 4000. Engineering Seminar (1) F, S
An introduction to science, engineering and technology career fields. Industrial leaders, as guest speakers, will share their engineering experiences and provide insight into career opportunities, hiring criteria, job responsibilities, engineering ethics, and professional development. The student will identify and contact industrial companies using online searches, personal interviews, and library resources. The student will conduct one class period by interviewing, inviting, and introducing a guest speaker. Prerequisite: CEET 2000.

CEET 4010. Project Management (3) F, S
Introduction to project management. Selection of a team and a senior project. Project management and problem solving techniques to include the design, construction, test, analysis, and documentation of the senior project. Lecture and lab combination. Laboratory activities to include goal preparation, research, reporting, team meetings, design reviews, and demonstrations. Prerequisite: Department approval.

CEET 4020. Senior Project (3) F, S
Continuation of Project Management, CEET 4010. Completion of the senior project. Lecture and lab combination. Laboratory activities to include design, construction, documentation, analysis and demonstration of the senior project. Presentations and demonstrations are required to confirm the completion of the senior project. Presentation, team building, and writing skills are emphasized. Prerequisite: CEET 4010.

CEET 4030. Controls & Systems (4) F
Introduction to automatic control theory, analysis, and testing, pole, zero, Bode plots, and frequency response. The design and application of programmable controllers using ladder logic, sequential functions charts, PID, and data highway. Lecture and lab combination. Laboratory activities to include computer simulation, servo-system construction, and analysis. Prerequisite: CEET 3020.

CEET 4040. Digital Signal Processing (4) S
An introduction to digital signal processing, digital filters, discrete and fast Fourier transforms, quantization, introduction to adaptive filters, industrial applications, and DSP hardware. Lecture and lab combination. Laboratory activities include the design, construction, computer simulation, and analysis of digital signal processing circuits. Prerequisite: CEET 3010.

CEET 4050. Engineering Fundamentals Exam (F.E.) Prep (2) S
A review of materials that are typically found on the Engineering Fundamentals Exam (F.E.). Topics are taught by faculty members according to their area of expertise. Topics included are mathematics, DC electricity, AC electricity, logic, engineering economics, statics, dynamics, strength of materials, fluid mechanics, chemistry, and thermodynamics. Two one-hour lectures per week. Prerequisite: Departmental approval required.

CEET 4060. Advanced Communications (4)
Introduction to satellite communications, spread spectrum techniques, digital satellite communications, antennas, small signal amplifiers, Smith charts, and "S" parameter analysis. Lecture and lab combination. Laboratory activities to include the design, construction, computer simulation and analysis of wireless communications circuits and systems. Prerequisites: CEET 3020.

CEET 4800. Individual Studies (1-4) F, S
The student will receive credit for approved studies in an area not covered in the CEET program. A maximum of four credits can be counted as electives for CEET majors.

CEET 4890. Cooperative Work Experience (2) F, S
The student will receive credit for approved electronics industrial experience. Professional development activities will include resume writing, goal setting, progress reports, and a supervisor’s evaluation. Two credits are required for the BS CET and EET major. The course can be taken a maximum of three times for a total of 6 credits.

CEET 4899. Bachelor’s Degree Assessment (0)
This course is to serve as an assessment tool, whereby BS degree-seeking students in the Department of Computer and Electronics Engineering Technology demonstrate their learned knowledge of electronics and engineering principles. This knowledge will be demonstrated through the use of the Fundamentals of Engineering exam (FE) administered by the State of Utah.

CEET 4900. Special Topics (1-4) F, S
A one-time special study course designed to introduce a new relevant topic that is not covered in the CEET program. Lecture and lab combination. Laboratory activities to support the selected course topic. A maximum of four credits can be counted for CEET majors.

CEET 5200. Digital Electronics (DE) (5) Su
DE is a course in applied digital logic. The use of digital circuits is increasing so rapidly that it’s hard to imagine the limits. Students are introduced to the digital circuits found in video games, watches, calculators, digital cameras, and thousands of other devices. Students study the application of digital logic and how digital devices are used to control automated equipment. Students use industry-standard, electronic design software to build circuits and to export designs to a printed circuit autorouting program that generates printed circuit boards using chips and other components. The course meets for a total of 75 hours over a two-week period and focuses on the content as well as teaching methods appropriate for the course. This course is designed specifically and only for current high school teachers who have been assigned by their schools and districts to teach the Project Lead the Way courses in their respective schools. These courses carry graduate credit for those teachers who would use them as part of a master’s degree program or for recertification.
The Department of Computer Science offers an Associate of Applied Science Degree in Computer Science and a Bachelor's Degree in Computer Science with emphases in Network Security and Administration; Software Engineering; or a Customized Option, which requires a minor. The Department also offers a minor, a teaching minor, and a BIS concentration.

The program in Computer Science blends scientific and engineering principles. It contains actual, practical, applications-oriented experience as well as the intellectual study of computing. It is designed to provide a sound fundamental understanding of logic and of digital computer organization as well as the interaction between hardware, software and the interconnection of system components. Also emphasized is software engineering which includes understanding of operating systems and other software systems design with implementation of the theory of computing, analysis of algorithms, simulation, and knowledge-based systems.

The Computer Science Associate of Applied Science and Bachelor curricula have a required common core of courses at the Freshman/Sophomore level. The bachelor’s degree upper division work is divided into three selected areas. The Network Security and Administration Emphasis is a system integration and hardware approach emphasizing network security. The Software Engineering Emphasis is a technical, scientific approach requiring a solid foundation in mathematics. The Customized Option provides a flexible approach for students pursuing a minor in another academic area, working toward a concurrent baccalaureate degree in another program, or who already have a first bachelor's degree.

The Computer Science Department plans to add a Game Development Certificate program. For more information, refer to the online catalog and/or contact the department.

## Computer Science

### Associate of Applied Science Degree (AAS)

- **Grade Requirements:** A grade of “C” or better must be earned in all required CS and support courses (a grade of “C-” is not acceptable). In addition, an overall GPA for a 2.70 or higher must be attained for these required courses.
- **Credit Hour requirements:** This degree requires 64 credit hours.
- **Assessment Requirements:** Students will be required to complete certain assessment instruments as part of the overall requirements for receiving their associate's degree. Please see your advisor or your department for specific information regarding assessment.

### Advisement

It is strongly suggested that Computer Science students see the departmental advisor on a regular basis. Call the department secretary at 801-626-7929 for an appointment with the advisor.

### Admission Requirements

Declare your program of study (refer to page 17) as Associate of Applied Science in Computer Science. There are no special admission or application requirements for this program, with the exception of a mandatory placement exam. If a student passes the placement test with a score of 73% or better then the student may enter the program beginning with the first course of CS SI1400. If the score of 73% is not achieved then the student must take the College General Education course as a prerequisite to begin course work for the program. The student will have 2 attempts to achieve the 73% score. The last score received will be the score used to determine placement.

### General Education

Refer to pages 37-43 for the AAS general education requirements (core and breadth). COMM/HU2110, ENGL EN2010 and MATH QL1080 are required. In addition to the AAS General Education Requirements and the College General Education Requirements, students must take one additional general education course which can be a Creative Arts or Humanities, a Life Science, a Physical Science, or a Social Science course. Computer Literacy as defined in this catalog is also required for the AAS degree.

### Course Requirements for AAS Degree

#### Computer Science Courses Required (28 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS SI2899</td>
<td>Associate's Degree Assessment (0)</td>
</tr>
</tbody>
</table>

### Support Courses Required (16 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 2400</td>
<td>Project Management (3)</td>
</tr>
<tr>
<td>MATH QL1080</td>
<td>Pre-Calculus (5)</td>
</tr>
<tr>
<td>MATH 1630</td>
<td>Discrete Math (4)</td>
</tr>
<tr>
<td>CEET 1105</td>
<td>PC Fundamentals (4)</td>
</tr>
</tbody>
</table>

### Suggested Course Sequence

Contact the department advisor for a suggested course sequence.

## Computer Science Major

### Bachelor's Degree (BS or BA)

- **Program Prerequisite:** Completion or equivalent of a Weber State AAS degree in Computer Science and acceptance into the baccalaureate degree program.
- **Minor:** Required for the Customized Option; not required for the other two emphasis areas.
- **Grade Requirements:** A grade of “C” or better in all required CS and support courses. A grade of “C-” is not acceptable. In addition, an overall GPA of 2.70 or higher must be attained for these courses. Also refer to the General Requirements on page 37.
Support Courses Required (9 credit hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 3100</td>
<td>Professional &amp; Technical Writing (3)</td>
</tr>
<tr>
<td>or TBE 3250</td>
<td>Business Communication (3)</td>
</tr>
<tr>
<td>MATH 1040</td>
<td>Intro to Statistics (3)</td>
</tr>
<tr>
<td>or MATH 3410</td>
<td>Probability &amp; Statistics (3)</td>
</tr>
<tr>
<td>MGMT 2400</td>
<td>Project Management (3)</td>
</tr>
</tbody>
</table>

Support Courses - Select one course from the following OR a Computer Science course (minimum of 3 credit hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBE 2415</td>
<td>Cisco TCP/IP Routing Protocols and Router Configuration (3)</td>
</tr>
<tr>
<td>MATH SI1210</td>
<td>Calculus I (4)</td>
</tr>
<tr>
<td>PHIL QL2200</td>
<td>Deductive Logic (3)</td>
</tr>
</tbody>
</table>

Software Engineering Emphasis (47-48 credit hours)

Required Courses (24 credit hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 3100</td>
<td>Operating Systems (4)</td>
</tr>
<tr>
<td>CS 3230</td>
<td>Internet Multimedia Services and Applications Using Java (4)</td>
</tr>
<tr>
<td>CS SI3750</td>
<td>Software Engineering (4)</td>
</tr>
<tr>
<td>CS 4110</td>
<td>Concepts of Formal Languages and Algorithms for Computing (4)</td>
</tr>
<tr>
<td>CS 4350</td>
<td>Advanced Internet Programming (4)</td>
</tr>
<tr>
<td>or CS 4790</td>
<td>N-Tier Web Programming (4)</td>
</tr>
<tr>
<td>or CS 4230</td>
<td>Java Application Development (4)</td>
</tr>
<tr>
<td>CS 4750</td>
<td>Advanced Software Engineering (4)</td>
</tr>
<tr>
<td>CS 4899</td>
<td>Bachelor's Degree Assessment (0)</td>
</tr>
</tbody>
</table>

Electives (13 credit hours)

Choose 3 from the following (12 credit hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 3210</td>
<td>UNIX System Programming and Internals (4)</td>
</tr>
<tr>
<td>CS 3250</td>
<td>Advanced Object Oriented Programming (4)</td>
</tr>
<tr>
<td>CS 3550</td>
<td>Distributed Database Architecture Management and Application (4)</td>
</tr>
<tr>
<td>CS 4280</td>
<td>Computer Graphics (4)</td>
</tr>
<tr>
<td>CS 4500</td>
<td>Artificial Intelligence and Neural Networks (4)</td>
</tr>
<tr>
<td>CS 4730</td>
<td>Applied Cryptography (4)</td>
</tr>
<tr>
<td>CS 4780</td>
<td>Object Oriented Windows Application Development (4)</td>
</tr>
<tr>
<td>CS 4790</td>
<td>N-Tier Web Programming (4)</td>
</tr>
<tr>
<td>CS 4820</td>
<td>Compiler Design (4)</td>
</tr>
</tbody>
</table>

The following suggested tracks are provided in order to assist students in determining the course electives that should be completed depending on student interests:

Recommended electives for students desiring to pursue a Master's Degree in Computer Science

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 3550</td>
<td>Distributed Database Architecture Management and Application (4)</td>
</tr>
<tr>
<td>CS 4280</td>
<td>Computer Graphics (4)</td>
</tr>
<tr>
<td>CS 4500</td>
<td>Artificial Intelligence and Neural Networks (4)</td>
</tr>
<tr>
<td>CS 4820</td>
<td>Compiler Design (4)</td>
</tr>
</tbody>
</table>

Recommended electives for students desiring to emphasize on Web Development

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 3550</td>
<td>Distributed Database Architecture Management and Application (4)</td>
</tr>
<tr>
<td>CS 4230</td>
<td>Java Application Development (4)</td>
</tr>
<tr>
<td>CS 4350</td>
<td>Advanced Internet Programming (4)</td>
</tr>
<tr>
<td>CS 4790</td>
<td>N-Tier Web Programming (4)</td>
</tr>
</tbody>
</table>

Recommended electives for students desiring to emphasize on Secure Software Engineering

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 3210</td>
<td>UNIX System Programming and Internals (4)</td>
</tr>
<tr>
<td>CS 3730</td>
<td>Client/Server Network Programming (4)</td>
</tr>
<tr>
<td>CS 3830</td>
<td>Writing Secure Code (4)</td>
</tr>
<tr>
<td>CS 4730</td>
<td>Applied Cryptography (4)</td>
</tr>
</tbody>
</table>

Choose any combination from the following (minimum of 1 credit hour)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 4800</td>
<td>Individual Projects and Research (1-4)</td>
</tr>
<tr>
<td>CS 4830</td>
<td>Advanced Topics in Computer Science (1-4)</td>
</tr>
<tr>
<td>CS 4890</td>
<td>Cooperative Work Experience (1-4)</td>
</tr>
</tbody>
</table>
**Credit Hour Requirements:**

- **Grade Requirements:** Permission from the department chair should be sought before registering in a course for Honors credit. A written agreement should be reached with the appropriate professor regarding the work expected for Computer Science Honors credit. (See the Honors Program on page 43.)

**Support Courses Required (10-11 credit hours)**
- ENGL 3100 Technical Writing (3)
- or TBE 3250 Business Communication (3)
- MATH SI1210 Calculus I (4)
- MATH SI2210 Calculus II (4) (recommended for those wishing to pursue a Master's degree in Computer Science)
- or MATH QL1040 Introduction to Statistics (3)

- **Customized Option (27 credit hours)**
  - plus a minor or first bachelor's degree
  - CS 3230 Internet Multimedia Services & Applications Using Java (4)
  - or CS 4780 Object Oriented Windows Application Development (4)
  - or CS 4790 N-Tier Web Programming (4)
  - CS 4899 Bachelor's Degree Assessment (0)
  - Any four upper division computer science electives (16)
  - Complete a minor in any academic area or a concurrent second bachelor's degree, or have completed a first bachelor's degree.

Additional hours of upper division computer science courses may be taken to satisfy the University upper division requirement of 40 hours (CS 4890 is recommended).

**Support Courses Required**
- ENGL 3100 Professional & Technical Writing (3)
- or TBE 3250 Business Communication (3)
- MATH SI1210 Calculus I (4)

**Other CS Electives**
When selecting additional CS electives to satisfy the University 40 hour upper division requirement or the 120 hour total hour requirement, students may choose additional courses from the other emphases.

**Suggested Course Sequence**
Contact the department advisor for a suggested course sequence.

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**COMPUTER SCIENCE**

**DEPARTMENTAL HONORS**

- **Program Prerequisite:** Enroll in General Honors and complete at least 8 hours in general Honors courses.
- **Grade Requirements:** Maintain an overall GPA of 3.4
- **Credit Hour Requirements:** Fulfill requirements for the Computer Science major leading to a Bachelor of Science or Bachelor of Arts degree, of which at least 16 hours of Computer Science courses must be completed on an Honors basis. A student may receive Honors credit for any Computer Science course except CS 2890 and CS 4890. In addition, complete an Honors Senior Project (CS 4800).

- Permission from the department chair should be sought before registering in a course for Honors credit. A written agreement should be reached with the appropriate professor regarding the work expected for Computer Science Honors credit. (See the Honors Program on page 43.)

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**COMPUTER SCIENCE**

**MINOR, TEACHING MINOR, BIS CONCENTRATION**

- **Grade Requirements:** A grade of "C" or better in courses used toward the minor. A grade of "C-" is not acceptable. In addition an overall GPA of 2.70 or higher must be attained for those required courses.
- **Credit Hour Requirements:** 24 hours for the Minor and BIS Concentration, and 23 hours for the Teaching Minor.

---

**Course Requirements for Minor or BIS Concentration (24 credit hours)**

- **CS Course Recommended** or equivalent background at entrance
- CS 1030 Foundations of Computer Science (4)

- **Required Courses (12 credit hours)**
  - CS SI1400 Fundamentals of Programming (4)
  - CS SI1410 Object-Oriented Programming (4)
  - CS SI2420 Introduction to Data Structures and Algorithms (4)

- **E lectives (12 credit hours)**
  - Select two of the following courses (8 credit hours)
    - CS 2300 World Wide Web and the Internet (4)
    - CS 2550 Database Design & Application Development (4)
    - CS SI2650 Computer Architecture/Organization (4)
    - CS 2705 Network Fundamentals and Design (4)
    - CS 3040 Windows/Unix/Linux Infrastructure & Administration (4)
  - Select one additional course (4 credit hours total) in approved upper division Computer Science (courses numbered 3000 or higher) other than CS 4800 or CS 4890. An upper division programming language course (CS 3210, CS 3230, CS 4780 or CS 4790) is recommended.

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**Course Requirements for Teaching Minor (23 credit hours)**

- **CS Course Recommended** or equivalent background at entrance
- CS 1030 Foundations of Computer Science (4)

- **Required Courses (15 credit hours)**
  - CS SI1400 Fundamentals of Programming (4)
  - CS SI1410 Object-Oriented Programming (4)
  - CS SI2650 Computer Architecture/Organization (4)
  - or CEET 1105 Personal Computer Fundamentals (4)
  - EDUC 3370 Advanced Technology Education (3)

- **Electives (8 credit hours)**
  - Select one of the following
    - CS SI1022 Software Development (4)
    - CS SI1023 Selected Programming Language (4)
    - CS 2350 World Wide Web and the Internet (4)
    - CS SI2420 Introduction to Data Structures and Algorithms (4)
    - CS 2550 Database Design & Application Development (4)
  - Select one additional course (4 credit hours) in approved upper division Computer Science (courses numbered 3000 or higher) other than CS 4800 or CS 4890. An upper division programming language course (CS 3210, CS 3230, CS 4780 or CS 4790) is recommended.

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**COMPUTER SCIENCE COURSES - CS**

Computer Programming Methods require a significant amount of data entry through a video display terminal; therefore, keyboard skill is strongly recommended.

CS SI1022. Software Development (4) F, S
Application of the most recent implementations of the Pascal language to the solution of technical and scientific problems. Developing applications for Windows in Object Oriented Pascal using Borland's Delphi Rapid Application Development system. Prerequisites: CS 1030 and basic skills in Algebra.
CS SI1023. Selected Programming Language (4)
Introduction and application of the most recent implementation of a selected programming language to the solution of technical and scientific problems. The language for a particular instance of this course will be based upon demand. Prerequisites: CS 1030 and basic skills in Algebra.

CS 1030. Foundations of Computer Science (4) F, S
This course follows the core body of knowledge specified by the ACM which provides students with a broad overview of topics they might encounter within the Computer Science curriculum. The course is taught at an introductory level and includes topics such as: history of computers, computer architecture, operating systems, world-wide web and HTML, programming with Java, database, software engineering, networking, and more. Co-requisite: Computer Literacy.

CS SI1400. Fundamentals of Programming (4)
This course covers basic operating system operation and components of the development environment. The majority of the course covers basic problem solving and program design of a software application using a selected language. Topics presented and discussed depending on selected language include: thinking logically to solve problems, working with input/output devices, compilation and library use, structured programming and modularity concepts, conditional and iterative structures including recursion, data types and structures, and pointers. Prerequisite: CS 1030.

CS SI1410. Object-Oriented Programming (4) F, S
An introduction to the C++ language. Topics will include data types, control structures, functions, pointers, arrays, I/O streams, classes, objects, encapsulation, overloading, inheritance and use of these concepts in problem solving. Prerequisite: CS SI1400. Recommended: MATH QL1080.

CS 2140. Computer Systems Administration (4)
An introduction to managing computer operating systems. Covers installation of the operating system, network, and application software. The course will cover the UNIX operating system. Topics include working with disk drives, allocation of resources, security, administering user accounts, monitoring system performance, tuning concepts, remote mounting of file systems, and setting up systems on networks. Prerequisite: CS SI1400.

CS 2250. Structured Computing in a Selected Language (4)
Introduction to structured problem solving using objects, data enumeration and encapsulation in a selected language. The language for a particular instance of this course will be based upon demand. Prerequisite: Basic skills in fundamental Algebra. This course is for Computer and Electronics Engineering Technology students only.

CS 2350. World Wide Web and the Internet (4) F, S
An examination of the issues, operation and design of World Wide Web and Internet applications. Topics include client and server side systems and programming such as HTML, DHTML, XML, Javascript, VBScript, ASP, CGI/Perl; server side file access; technologies such as Dreamweaver, Cold Fusion, and Flash; web page usability, browser and systems compatibility issues; and an understanding of e-commerce. Prerequisite: CS SI1410. Co-requisite: CS 2550.

CS SI2420. Introduction to Data Structures and Algorithms (4) F, S
General principles of common data structures and design of efficient algorithms. Topics include: arrays, linked-lists, stacks, queues, trees, graphs, tables, storage and retrieval structures, searching, sorting, hashing, and algorithmic analysis. Emphasis will be on abstraction, efficiency, re-usable code, and object-oriented implementation. Prerequisites: CS SI1410 and MATH QL1080.

CS SI2450. Object Oriented Analysis and Design (4) F, S
An Object Oriented Analysis and Design course which provides practical guidance on the construction of object-oriented systems. Its specific goals are: to provide a sound understanding of the fundamental concepts of the Software and Project Development Life-Cycle for the object model; to facilitate a mastery of the notion and process of object oriented analysis and design, and to teach quality design and development style through applications of object-oriented project development within a variety of problem domains. In depth coverage of UML and current Software Engineering models. Prerequisites: CS SI1410.

CS 2550. Database Design and Application Development (4) F, S
An introduction to relational database concepts, design and application development. The course will cover the SQL language, the design of a database using an entity-relation design tool, and the creation of applications using a development tool such as PowerBuilder. Topics will include normalization rules, triggers, stored procedures, and rules. Extensive time will be spent in the lab learning to use the tool and develop applications. Prerequisite: CS SI1410. Recommended prerequisite/co-requisite: MATH 1630.

CS SI2650. Computer Architecture/Organization (4) F, S
A fundamental course designed to explore the specific physical and functional characteristics of computer systems. Topics will include the architecture of the PC including BIOS, interrupts, addressing, memory management, types of disk drives (such as SCSI and IDE), types of buses, video cards, modems, network cards, hardware compatibility issues, number representations, and/or gates and basic digital circuit concepts. The course also introduces assembly language skills in popular 16 and 32 bit microprocessors. Prerequisite: CS 1030. Recommended prerequisite: CEET 1105.

CS 2705. Network Fundamentals and Design (4) F, S
A comprehensive examination of the hardware and software components of a network and the practical techniques for designing and implementing computer systems in a network. Topics will include the purpose and use of various LAN, MAN, WAN configurations (Ethernet, rings HDLC, SMDS, ATM, Frame Relay, ISDN, xDSL, TCP/IP UDP/IP, x.25, PPP, Sonet and new protocols. Media type and structures (repeaters, bridges, switches, hubs, routers with routing algorithms, and gateways), signaling/data encoding, multiplexing, error detection/correction and flow control, packet formats, network classes, and subnetworking. Introduction to Cisco routing commands and setup (will help students to take the basic Cisco test). Prerequisite: CS SI1400.

CS 2780. Windows Application Programming (4)
This course provides participants with a working knowledge of the Windows Operating System. The students will develop applications to run under Windows, using the C/C++ languages. Concepts of Memory Management, DLLs, Resources, and Child Window development will be emphasized. The course also introduces the student to the use of OLE controls and MFC architecture. Prerequisites: CS SI1410 and basic algebra skills.

CS 2800. Individual Projects & Research (1-4) Su, F, S
Special independent projects or research as contracted with instructor. Enrollment by permission only. This course may be taken up to three times for a maximum of 6 credit hours. Prerequisite: CS SI1410.

CS 2890. Cooperative Work Experience (1-4) Su, F, S
Open to students meeting criteria established from time to time by the department and on file either in the department or the Cooperative Education Office. Provides academic credit for on-the-job experience. Grade and amount of credit will be determined by
the department. This course can be taken up to three times for a maximum of 6 credit hours. Prerequisite: CS SI1410.

CS 2899. Associate’s Degree Assessment (0)
This course is to serve as an assessment tool whereby all AAS degree seeking students in the College of Applied Science & Technology demonstrate their learned knowledge in at least three areas of Applied Technology study. At present, this knowledge will be demonstrated through the use of the Work Keys exams administered through the Campus Testing Center.

CS 2920. Short Courses, Workshops, Institutes and Special Programs (1-4)
Consult the semester class schedule for the current offering under this number. The specific title and credit authorized will appear on the student transcript.

CS 3040. Windows/Unix/Linux Infrastructure and Administration (4) F, S
This is the second course for understanding Windows operating systems and the first in the Unix/Linux operating system. It includes administration in a client/server directory services environment. Taught in a networking setting, it builds upon complex issues learned in previous courses. Provides the knowledge and skills necessary to install, configure, network and administer both operating systems. Prerequisite: CS 2705.

CS 3100. Operating Systems (4) F, S
An overview of computer operating systems concepts, system software components with emphasis on installation, management, monitor/supervisor and I/O management, control commands, network installation, and device drivers. The operating systems studied will be Microsoft® Windows NT or UNIX. Prerequisite/Co-requisite: CS SI2420.

CS 3210. UNIX System Programming and Internals (4) F, S
This course provides hands-on experience with writing programs using UNIX system calls and inter-process Communication mechanisms, from simple file I/O and I/O management subsystems to network client and server programs. The internal design and operation of the UNIX operating systems are studied. A detailed examination of the UNIX SVR4 source code will be included in the course. Prerequisite: CS SI2420.

CS 3230. Internet Multimedia Services and Applications Using Java (4) F, S
An introduction to the design and coding of applications using threads. Topics will include the use of threads in the design of operating systems, device drivers, utility programs and general applications. Language used in the course will be Java. Applications will include multimedia, Web Servers, search engines, security issues, and the use of the Java language in the development of applets for home pages. Prerequisite: CS SI2420.

CS 3250. Advanced Object Oriented Programming (4)
Develop and expand abilities in solving lengthy, advanced problems, multiple parallel tasks, generic packages, and other object-oriented techniques using selected languages. Prerequisite: CS SI2420.

CS 3350. Database Administration (4)
This course describes the role of the Database Administrator in managing an organization’s most valuable asset - its data. Topics covered include DBMS architecture, database layout, database development, data fragmentation, rollback segments, database tuning, database security, backup and recovery, database networking, and distributed databases. Special emphasis is given to working with current database management systems such as Oracle, SQL Server and DB2. Prerequisite: CS 2550.

CS 3550. Distributed Database Architecture Management and Application (4) F, S
Covers the architecture and applications of a distributed client/server type database system, as well as the installation, management, and operation of such a system. Also covers the interfacing of database applications with the WEB. Topics include system tuning and performance, interfacing written imbedded code, and the use of WEB development tools. Prerequisite: CS 2550.

CS 3705. Advanced Networking (4) F, S
This course provides an in depth look at the fundamentals of what protocols do and how they work, how addresses and routing are used to move data through the network, how to set up your network connection, and how information is exchanged over the Internet. Topics include: advanced routing protocols (RIPv2, OSPF, and BGP), configuring important network services, DNS, Apache, sendmail, Samba, PPP, DHCP, TCP, IP, and UDP troubleshooting, and security. Prerequisite: CS 2705.

CS 3720. Network Architectures and Protocols (4)
A practical applications course designed to teach the basic concepts associated with local and wide area networks and protocols. The course will concentrate on the TCP/IP and other protocols in the UNIX and Windows NT environments. Covers TCP/IP extensively, NFS, Sockets, RPC and TLI interfaces. The course also covers the use of Domain Name Servers, remote system calls, ports, services, configuration, IP addressing, and UNIX and Windows NT monitoring commands. Prerequisite: CS 3705.

CS 3730. Client/Server Network Programming (4)
Covers client/server architecture and application development using TCP/IP and other protocols. The course covers client/server operations on a single machine and across an Ethernet network to multiple machines. The course will also cover distributed processing concepts and applications. Applications include the use of STREAMS, Sockets, TLI, network listener facility, drivers, RPC, and ONC. The course will concentrate mainly on UNIX but will cover some concepts and applications using Windows NT. Prerequisites: CS 2705 and CS 3210.

CS SI3750. Software Engineering (4) F, S
This is an in-depth course in the SDLC (Software Development Life Cycle). Students will demonstrate an understanding of the SDLC phases and develop the following individual documents: Software Requirements, Software Design, Code, Test Plan and User Manual. A team programming project is included. Prerequisites: SI2420 and ENGL 3100 or CS 3250. Recommended prerequisite: CS 3100.

CS 3805. Network Intrusion Detection and Security Vulnerabilities (4) F, S
This course is designed to provide students with a solid foundation in network security. The primary emphasis is on intrusion detection and covers topics such as developing and implementing a security policy; incident response, packet filtering, proxy servers, firewalls, and virtual private networks (VPNs). A team project is included. Prerequisites: CS SI2420, ENGL 3100 or TBE 3250, and CS 3705. Recommended prerequisite: CS 3100.

CS 3830. Writing Secure Code (4)
This course focuses on how to develop software systems that are robust and can withstand repeated attacks from malicious intruders. The course coverage includes the need for secure systems, basic security principles and strategies, designing secure applications, secure coding techniques, dangerous APIs, data input issues, network security problems, testing secure applications, security code reviews, secure software installation, and writing security documentation. Prerequisite: CS 2420.
CS 3840. Computer Architecture for Security Assurance (4)  
This course is a foundational course in file system analysis, digital forensics and computer media analysis. A combination of lectures and labs will give students a strong understanding of low-level file system knowledge to prepare them for involvement in digital forensic analysis, data recovery and other related tasks. Students will examine widely used file systems such as Windows NTFS and FAT32, UFS, EXT2 and UFS2. Students will also become familiar with software tools used in computer forensic work. Prerequisites: CS SI2420 and CS 3040. Recommended prerequisite: CS 3100.

CS 4110. Concepts of Formal Languages and Algorithms for Computing (4) F  
Concepts of formal language definition, automata theory, Turing theory, and solvability, with an introduction of algorithms and computational methods used in advanced computer science courses. Prerequisite: CS SI2420 and MATH 1630.

CS 4230. Java Application Development (4) S  
This course is a continuation of CS 3230 and examines the development of Java applications intended for an enterprise environment. The course is programming intensive and concentrates on designing and implementing multi-tier and Web applications based on the Java Enterprise Edition (Java EE) specification. Topics include JavaBeans, Java Database Connectivity, client/server interactions, servlets, session tracking, JavaServer Pages, JavaServer Faces, struts, the Model-View-Controller approach, remote method invocation, Enterprise JavaBeans, and application servers. Lab exercises will emphasize how Java Enterprise programming supports the operation of robust, distributed object architectures. Prerequisite: CS 3230.

CS 4280. Computer Graphics (4) S  
Selected algorithms and computational methods used in the design of graphical software and applications developed for UNIX and Windows NT based machines. Topics will include the use of OpenGL, 3D Studio MAX, Auto-Cad, Adobe Photoshop, and other popular graphics software. The course will include X-Window programming and the use of Sun, SGI, and PC (Intel/Cyrix) machines. Prerequisite: CS SI2420.

CS 4350. Advanced Internet Programming (4)  
This course builds on the knowledge of CS 2350 to go deeper into the areas of eBusiness, multimedia, HTML, DHTML, XML, Javascript, Java, ASP, PHP, Python, Perl, Flash, and other technologies focusing on the server-side coding and database manipulation required for enterprise level web applications. It requires a high level of programming skill and knowledge of databases. Prerequisites: CS 2350, CS 2550.

CS 4500. Artificial Intelligence and Neural Networks (4) F, S  
This course covers basic artificial intelligence principles and introduces students to AI languages. Concepts of programming parallel architecture machines are introduced and developed. The neural network design of parallel computing is studied, along with its implications in Artificial Intelligence software development. Prerequisites: CS SI2420 and MATH 1630.

CS 4610. Introduction to Game Industry (4)  
This is an introduction to the game industry and the skills and best practices needed in order to become a game developer. The course will evaluate different gaming hardware, genre, skills, tools, and roles. Students will also understand the elements in creating a game including the game design document, story line, vision, virtual worlds, playfields, and the mathematics and physics that are involved with game development. Pre/Co-requisites: CS SI3750, MATH SI1210. Prerequisites: PHYS PS/SI2010 or PHYS PS/SI2210.

CS 4640. Game Development II (4)  
Senior project Game Development II course focuses on 3D game programming in a team work project environment using a game engine. At conclusion student should be able to add the resulting program into their game portfolio. Pre/Co-requisites: MATH 2270 or MATH 2250, CS 4280, CS 4500, CS 4750, CS 4820. Prerequisite: CS 4640.

CS 4730. Applied Cryptography (4) F  
This course provides an introduction to the principles of number theory and how they are applied to cryptographic algorithms. Different topics that will be examined are: several classic ciphers, modern cryptographic methods, symmetric encryption, public key cryptography, hash functions, key management, digital signatures, certificates, electronic mail security, steganography, and recent developments affecting security and privacy on the Internet. The focus will be on how cryptography and their application can maintain privacy and security in computer networks. Prerequisites: CS 2420 and MATH 1630.

CS 4740. Computer and Network Security (4) F, S  
A treatment of security issues related to computers and computer networking. This course is designed for advanced users, system administrators and network administrators. The course covers TCP/IP security issues, security policies, packet filtering, Internet firewall architecture and theory, detecting and monitoring unauthorized activity, password authentication, and other security issues involving UNIX and Microsoft Windows operating systems. A team project is included. Prerequisites: CS SI2420, MATH QL1040 or MATH 3410, ENGL 3100 or TBE 3250, and CS 3705 or CS 3540. Recommended prerequisite: CS 3100.

CS 4750. Advanced Software Engineering (4) S  
This is the second of a two-part series, with CS SI3750 being the first class. Rapid programming techniques and issues in distributed systems are examined. Includes issues relating to large programming projects such as software metrics. A large team programming project is included. Prerequisite: CS SI3750.

CS 4780. Object Oriented Windows Application Development (4) F  
This course is designed to teach students how to write Windows programs in C# using the .NET environment. The student will learn how to develop programs based on Microsoft Windows Forms and the .NET Framework. They will also be introduced to APIs and MFC/AFX styles of Windows programming and to become familiar with various data sharing methods and .NET services. Prerequisite: CS SI2420.

CS 4790. N-Tier Web Programming (4) F  
This course is designed to teach sound concepts in n-tier development of web applications using ASP.NET. Students will develop multiple applications using RAD and OOP techniques using the n-tier model. Skills mastered in this course will include: Use of C# and VB within the Microsoft .NET framework, ADO.NET, SQL Server, Oracle, DHTML, XML and layered application design. Prerequisite: CS 2350.
CS 4800. Individual Projects and Research (1-4) Su, F, S
The purpose of this course is to permit senior Computer Science majors to propose to the faculty for approval an individual project, program, system or research. This course may be taken up to three times for a maximum of 6 credit hours. Prerequisite: CS 12420.

CS 4820. Compiler Design (4) S
A study of compilers, grammars, finite-state and push-down automata, scanning, parsing, error handling, semantic analysis and code generation. Prerequisite: CS 12420.

CS 4830. Advanced Topics in Computer Science (1-4) F, S - Variable Title
Advanced topics which are demanded by industry, are currently popular in this rapidly changing field, or which meet special needs of students in Computer Science will be offered. Individualized material will be taught on a one time basis as needed. Time and credit to be arranged. May be repeated. Prerequisite: Consent of instructor.

CS 4890. Cooperative Work Experience (1-4) Su, F, S
Open to students meeting criteria established by department or Cooperative Education office. Provides academic credit for on-the-job experience. Grade and amount of credit determined by department. This course may be taken up to three times for a maximum of 6 credit hours. Prerequisite: CS 12420.

CS 4899. Bachelor's Degree Assessment (0) F, S
This course is to serve as an assessment tool whereby all BS/BA degree seeking students in the Computer Science Department demonstrate their learned knowledge in at least three areas of computer science. At present, this knowledge will be demonstrated through the use of Chi-Tester exams administered through the Campus Testing Center. The course is taken during the last term prior to receiving the BS/BA degree. Prereq/Coreq: Successful completion of requirements for the Bachelor's Degree.

CS 4920. Short Courses, Workshops, Institutes and Special Projects (1-4) F
Consult the semester class schedule for the current offering under this number. The specific title and credit authorized will appear on the student transcript.

DEPARTMENT
MANUFACTURING AND MECHANICAL ENGINEERING TECHNOLOGY

Chair: Andy Drake
Location: Engineering Technology Building, Room 214
Telephone Contact: 801-626-6305
E-Mail: mmetdepartment@weber.edu

Professors: Andy Drake, Kirk Hagen, Larry Leavitt; Associate Professors: Keith Allred, George Comber, Kelly A. Harward, Daniel Magda, Robert Milner, Rick Orr, Kerry Tobin; Assistant Professors: Ingrid Allen, Mark R. Baugh, Steven Peterson, Chris Soelberg, Glen West, Joseph Wolfe

The Department of Manufacturing and Mechanical Engineering Technology offers Associate of Applied Science degrees in Apprenticeship, Construction Management Technology, Design Graphics Engineering Technology, Manufacturing Engineering Technology, and Mechanical Engineering Technology; an Associate of Pre-Engineering degree; and Bachelor of Science degrees in Manufacturing Engineering Technology, Mechanical Engineering Technology, Construction Management Technology, and Design Graphics Engineering Technology. Also offered is a Graduate Institutional Certificate in Quality and Lean Manufacturing that prepares students to take the ASQ green belt certification exam or to go on in the MSETM program at Oklahoma State University.

MANUFACTURING ENGINEERING TECHNOLOGY

Location: Engineering Technology Building, Room 214
Telephone Contact: 801-626-6305
E-Mail: mfet@weber.edu

Advisors: George Comber, Andy Drake, Kelly Harward, Robert Milner, Rick Orr, Kerry Tobin

The Weber State Manufacturing Engineering Technology program has been recognized as one of the outstanding manufacturing technology programs in the country. The program is accredited by the Technology Accreditation Commission of ABET, Inc., 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone (410) 347-7700. The curriculum is designed to prepare the student for professional employment in industry by giving them fundamental knowledge and skills in a broad range of manufacturing disciplines. These include process planning, tool and machine design, material selection and treatment, process automation, manufacturing resource planning. Six Sigma methods and tools in manufacturing, and lean manufacturing. State-of-the-art laboratories give the students hands-on experiences with CNC machine tools, robotics, programmable logic controllers, systems integration and the latest in a variety of CAD/CAM systems. Year long required senior projects have included satellites, hybrid electric vehicles and computer integrated manufacturing cells and others which help students gain confidence in their abilities while gaining additional insight and skills in both teamwork and human relations.

MANUFACTURING ENGINEERING TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE DEGREE (AAS)

- Grade Requirements: A grade of "C" or better in all MFET courses is required (a grade of "C-" is not acceptable) in addition to an overall GPA for all courses of 2.00 or higher. Also refer to the general grade requirements for graduation on page 37.

- Credit Hour Requirements: A total of 66 credit hours is required for graduation with a minimum of 19 credit hours required within the major. Transfer students are required to take a minimum of 30 credit hours at Weber State University.

- Assessment Requirements: Students will be required to complete certain assessment instruments as part of the overall requirements for receiving their associate's degree. Please see your advisor or your department for specific information regarding assessment.

Advisement
All Manufacturing Engineering Technology students are required to meet with their faculty advisor at least annually for course and program advisement. Please call the department secretary at 801-626-6305 for the name of your advisor and to schedule an appointment.

Admission Requirements
Declare your program of study (see page 17). There are no special admission or application requirements for this program.

General Education
Refer to pages 38-43 for Associate of Applied Science requirements. Computer and Information Literacy as defined in this catalog is also required for the AAS degree. Consult with your advisor for specific general education guidelines.
Course Requirements for the AAS Degree

Manufacturing Engineering Technology

Courses Required (19 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFET 1150</td>
<td>Pre-Professional Seminar in Manufacturing</td>
<td>(1)</td>
</tr>
<tr>
<td>MFET 1210</td>
<td>Machining Principles Lecture/Lab I</td>
<td>(3)</td>
</tr>
<tr>
<td>MFET 2150/L</td>
<td>Metal Form, Casting, &amp; Welding (w/lab)</td>
<td>(4)</td>
</tr>
<tr>
<td>MFET SI2300</td>
<td>Statics &amp; Strength of Materials</td>
<td>(5)</td>
</tr>
<tr>
<td>MFET SI2410</td>
<td>Quality Concepts and Statistical Applications</td>
<td>(3)</td>
</tr>
<tr>
<td>MFET 2440/L</td>
<td>Computer Numeric Control (CNC) in Manufacturing (w/lab)</td>
<td>(3)</td>
</tr>
<tr>
<td>MFET 2899</td>
<td>Associate's Degree Assessment</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Technical Courses Required (13 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGET 1060</td>
<td>Fundamentals of Drafting Using 3D CAD</td>
<td>(3)</td>
</tr>
<tr>
<td>DGET 1160</td>
<td>Documentation Using 3D CAD</td>
<td>(3)</td>
</tr>
<tr>
<td>DGET 2460</td>
<td>Design Fundamentals Using 3D CAD</td>
<td>(3)</td>
</tr>
<tr>
<td>CEET 1110</td>
<td>Basic Electronics</td>
<td>(2)</td>
</tr>
</tbody>
</table>

Support Courses Required (22 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM HU2110</td>
<td>Interpersonal and Small Group Communication</td>
<td>(3)</td>
</tr>
<tr>
<td>CHEM PS/SI1110</td>
<td>Elementary Chemistry</td>
<td>(5)</td>
</tr>
<tr>
<td>MATH QL1080</td>
<td>Pre-Calculus</td>
<td>(5)</td>
</tr>
<tr>
<td>MATH SI1210</td>
<td>Calculus I</td>
<td>(4)</td>
</tr>
<tr>
<td>PHYS PS/SI210/L</td>
<td>College Physics I (w/lab)</td>
<td>(5)</td>
</tr>
<tr>
<td>or PHYS PS/SI2210/L</td>
<td>Physics for Scientists &amp; Engineers (w/lab)</td>
<td>(5)</td>
</tr>
</tbody>
</table>

Other Courses Required (12 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL EN1010</td>
<td>Introductory College Writing</td>
<td>(3)</td>
</tr>
<tr>
<td>ENGL EN2010</td>
<td>Intermediate College Writing</td>
<td>(3)</td>
</tr>
<tr>
<td>ECON SS1010</td>
<td>Economics as a Social Science</td>
<td>(3)</td>
</tr>
<tr>
<td>GenEd HU/CA</td>
<td>Elective</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Suggested Course Sequence

Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.

MANUFACTURING ENGINEERING TECHNOLOGY & WELDING ENGINEERING TECHNOLOGY EMPHASIS

BACHELOR OF SCIENCE DEGREE (BS)

Program Prerequisite: Complete the requirements for the AAS Degree in Manufacturing Engineering Technology.

Minor: Not required.

Grade: A grade of "C" or better in all MFET courses, support courses, and technical electives is required for this major (a grade of "C-" is not acceptable) in addition to an overall GPA for all courses of 2.0 or higher. Also refer to the general grade requirements for graduation on page 37.

Credit Hour Requirements: A total of 126 credit hours for the general Manufacturing Engineering Technology BS degree and 125 credit hours for the Welding Engineering Technology Emphasis BS degree are required for graduation. A total of 40 upper division credit hours is also required (courses numbered 3000 and above). Transfer students are required to take a minimum of 30 credit hours at Weber State University.

Advisement

All Manufacturing Engineering Technology and Welding Engineering Technology Emphasis students are required to meet with their faculty advisor at least annually for course and program advisement. Please call the department secretary at 801-626-6305 for the name of your advisor and to schedule an appointment.

Admission Requirements

Declare your program of study (see page 17). Refer to the Program Prerequisite above. There are no additional special admission or application requirements for this program.

General Education

Refer to pages 37-43 for Bachelor of Science requirements. Consult with your advisor for specific general education guidelines.

MANUFACTURING ENGINEERING TECHNOLOGY

Course Requirements for BS Degree

To be taken in addition to the courses required for the AAS Degree in Manufacturing Engineering Technology.

Manufacturing Engineering Technology

Courses Required (45 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFET 3010</td>
<td>Tool Design</td>
<td>(3)</td>
</tr>
<tr>
<td>MFET 3320</td>
<td>Machine Design</td>
<td>(2)</td>
</tr>
<tr>
<td>MFET 3340/3340L</td>
<td>Applied Fluid Power (3)</td>
<td>(3)</td>
</tr>
<tr>
<td>MFET 3350/3350L</td>
<td>Plastic &amp; Composite Manufacturing (4)</td>
<td>(4)</td>
</tr>
<tr>
<td>MFET 3550</td>
<td>Manufacturing Supervision</td>
<td>(3)</td>
</tr>
<tr>
<td>MFET 3610</td>
<td>Machining Processes Lecture/Lab II</td>
<td>(3)</td>
</tr>
<tr>
<td>MFET 3710/3710L</td>
<td>Computer Aided Manufacturing and Rapid Prototyping</td>
<td>(3)</td>
</tr>
<tr>
<td>MFET 3810</td>
<td>Statistical Process Control &amp; Reliability</td>
<td>(3)</td>
</tr>
<tr>
<td>MFET 3910</td>
<td>Six Sigma Methods and Tools</td>
<td>(3)</td>
</tr>
<tr>
<td>MFET 4580/4850L</td>
<td>Process Automation</td>
<td>(3)</td>
</tr>
<tr>
<td>MFET 4610</td>
<td>Senior Project Production</td>
<td>(2)</td>
</tr>
<tr>
<td>MFET 4610L</td>
<td>Planning and Estimating</td>
<td>(5)</td>
</tr>
<tr>
<td>MFET 4620L</td>
<td>Senior Project Lab</td>
<td>(2)</td>
</tr>
<tr>
<td>MFET 4995</td>
<td>Certified Manufacturing Technologist (CMfgT) Exam</td>
<td>(1)</td>
</tr>
<tr>
<td>MET 3150</td>
<td>Engineering Technology Materials</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Technical Electives for the Manufacturing Engineering Technology BS degree.

A minimum of 3 credit hours of technical electives chosen from the following list are required.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGET 3470</td>
<td>Applications in CAD</td>
<td>(3)</td>
</tr>
<tr>
<td>MFET 3460/3460L</td>
<td>Engineering Design using Solid Modeling (3)</td>
<td>(3)</td>
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<tr>
<td>MFET SI4600</td>
<td>Manufacturing Simulation</td>
<td>(2)</td>
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<tr>
<td>MFET 3890 or MFET 4890</td>
<td>Cooperative Work Experience (3)</td>
<td>(3)</td>
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<tr>
<td>SST 4102</td>
<td>Developing Team Leadership</td>
<td>(2)</td>
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<tr>
<td>Other classes approved by your MFET advisor</td>
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</tbody>
</table>

Suggested Course Sequence

Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.

WELDING ENGINEERING TECHNOLOGY EMPHASIS

Course Requirements for BS Degree

To be taken in addition to the courses required for the AAS Degree in Manufacturing Engineering Technology.

Manufacturing Engineering Technology

Courses Required (46 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFET 2670/2670L</td>
<td>GMA, FCA and GTA Welding</td>
<td>(3)</td>
</tr>
<tr>
<td>MFET 3060</td>
<td>Codes, Weld Inspection</td>
<td>(3)</td>
</tr>
<tr>
<td>MFET 3550</td>
<td>Manufacturing Supervision</td>
<td>(3)</td>
</tr>
</tbody>
</table>
Advisor: Andy Drake 801-626-7107

Program Prerequisite: Refer to the Bachelor of Integrated Studies Program for the general and specific requirements for the BIS degree.

BIS Option in Production and Inventory Control
The Manufacturing Engineering Technology department offers those courses required by APICS. The Association for Operations Management for a continuing education certificate in Production and Inventory Control Technology. The courses indicated below with an asterisk (*) prepare one to take the APICS Certification Exam as well as receive the above certificate. In addition, if these courses are taken in conjunction with the other courses listed below or other courses approved by the department chair, all of these may then be used to fill one of the three areas required for a Bachelor of Integrated Studies degree. The courses must be taken for credit and the area of emphasis will be in Production and Inventory Control (not Manufacturing Engineering Technology).

The course of study described below must be approved by the MFET department chair.

Course Requirements for BIS Emphasis

Manufacturing Engineering Technology

Courses Required (18 credit hours)

- MFET 3510* Basics of Supply Chain Management (2)
- MFET 3550 Manufacturing Supervision (3)
- MFET 4050* Detailed Scheduling and Planning I (2)
- MFET 4150* Execution and Control of Operations (2)
- MFET 4250* Detailed Scheduling and Planning (2)
- MFET 4750* Master Planning of Resources (2)
- MFET 4770* Strategic Management of Resources (2)

* Electives to be determined by an MFET Advisor (3)

ETM 3630/3630L Fusion Joining and Brazing Processes (3)
ETM 3750/3750L Welding Metallurgy I (3)
ETM 3760/3760L Welding Metallurgy II (3)
ETM 3810 Statistical Process Control and Reliability (3)
ETM 3820 Nondestructive Testing (3)
ETM 3910 Six Sigma Methods and Tools in Manufacturing (5)
ETM 4090 Welding Power Sources (2)
ETM 4310 Corrosion and Corrosion Control (2)
ETM 4580/4850L Process Automation (3)
ETM 4610 Senior Project Planning and Estimating (5)
ETM 4610L Senior Project Lab (2)
ETM 4620L Senior Project Lab (2)
ETM 4995 Certified Manufacturing Technologist (CMfgT) Exam Review (1)

Technical Course Required (4 credit hours)

CEET 1850 Industrial Electronics (4)

Technical Electives (3 credit hours minimum)
A minimum of 3 credit hours of technical electives chosen from the following list are required.

DGET 3470 Applications in CAD (3)
DGET 3350/3350L Plastic and Composite Manufacturing (4)
MFET 3460/3460L Engineering Design using Solid Modeling (3)
MFET 3610 Machining Processes Lecture/Lab II (3)
MFET 3640 Manufacturing Simulation (2)
MFET 3890 or MFET 4890 Cooperative Work Experience (3)
SST 4102 Developing Team Leadership Skills (1)

Other classes approved by your MFET advisor

Suggested Course Sequence

Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.

QUALITY AND LEAN MANUFACTURING

GRADUATE INSTITUTIONAL CERTIFICATE

The Graduate Institutional Certificate in Quality and Lean Manufacturing prepares students to take the ASQ green belt certification exam or to go on in the MSETM program at Oklahoma State University. Contact the Department of Manufacturing and Mechanical Engineering Technology for more information.

Program Prerequisite: Applicants must possess a bachelor's degree from a regionally accredited institution in an appropriate field and be working in industry.

Grade Requirements: Students must receive a grade of B or better in every course.

Credit Hour Requirements: 12 credit hours as specified below.

Course Requirements for Institutional Certificate

Required Courses (12 credit hours)

ETM 5913 Six Sigma Tools I (3)
ETM 5923 Six Sigma Tools II (3)
ETM 5933 Lean Tools (3)
ETM 5943 Lean Sigma (3)

ETM course descriptions are listed following the MFET course descriptions.

Manufacturing Engineering Technology

BACHELOR OF INTEGRATED STUDIES (BIS) EMPHASIS

PRODUCTION AND INVENTORY CONTROL (APICS)

Advisor: Andy Drake 801-626-7107

Program Prerequisite: Refer to the Bachelor of Integrated Studies Program for the general and specific requirements for the BIS degree.

Continuing Ed
Davis Campus
MFET SI2300. Statics and Strength of Materials (5) S
Principles of forces, moments, resultants & static equilibrium of force systems, center of gravity, friction, and free body diagram analysis. Also concept of stress and strain, shear, bending moments, torsion, bending stresses in beams and stress resolution and shear. Five lectures per week. Prerequisite: PHYS PS/SI2010/L or PHYS PS/SI2210/L and MATH SI1210.

MFET 2360. Manufacturing Processes and Materials (3) F
Survey of industrially important processes used to change material shape and condition for industrial use. Survey of industrially important materials and the principles of material behavior.

MFET SI2410. Quality Concepts and Statistical Applications (3) S
This is the first course in a series of three designed to impart the Six Sigma body of knowledge. It integrates managerial, technological and statistical concepts across all functions of an organization to ensure that a product is fit for use. Provides a foundation in current quality paradigms and introduces students to software tools (MS Excel and Minitab) used to statistically analyze problems encountered in manufacturing firms. Three lectures per week. Prerequisite: MATH 1010.

MFET 2440. Computer Numeric Control (CNC) in Manufacturing (2) S
This course is designed for those who have little or no experience with CNC programming, setup or operations. Manual programming, APT programming, and Mazatrol (a conversational programming language) will be taught. In addition, an introduction to CAD/CAM will also be discussed. A three-hour lab, once a week is required. Prerequisites: MATH 1080 and MFET 1210 or MFET 1110, MFET 1030/1030L and MFET 1050/1050L. Co-requisite: MFET 2440L.

MFET 2440L. CNC in Manufacturing Lab (1) S
Applications of the theory taught in MFET 2440. Introduction to the setup & operation of the CNC lathe and mill. One 3-hour lab per week. Co-requisite: MFET 2440.

MFET 2550. Basics of Quality Engineering (2)
Approaches quality from the perspective of the production technician using applied statistics, total quality concepts, inspection techniques and methods and nonconforming material control. Addresses sampling principles used in production management as well as a review of industry accepted standards. (ASQC) Series
Evening classes only.

MFET 2610. Quality Improvement Principles and Techniques (2)
This course assesses vital knowledge of quality tools and their uses by individuals, from non traditional quality areas, who are involved in quality improvement projects. The course examines the rapid spread of quality principles and practices throughout organizations, and covers the essentials of quality management for individuals who manage quality programs, but who are not necessarily specialized in traditional quality areas. The course prepares students for the Certified Quality Improvement Associate examination administered by the American Society for Quality.

MFET 2670. GMA, FCA and GTA Welding (1) F
Theory and skills course covering Gas Metal Arc Welding, Flux Core Arc Welding, and Gas Tungsten Arc Welding. Prerequisites: MFET 2150/L. Co-requisite: MFET 2670L.

MFET 2670L. GMA, FCA and GTA Welding Lab (2) F
A “hands on” lab that reinforces the theory and skills course (MFET 2670) covering Gas Metal Arc Welding, Flux Core Arc Welding, and Gas Tungsten Arc Welding. Prerequisites: MFET 2150/L. Co-requisite: MFET 2670.

MFET 2830. Directed Readings in Manufacturing Engineering Technology (1-3) F, S
Individual research on topics requested by industry or which meet special needs of Manufacturing Engineering Technology students. Prerequisite: Departmental approval.

MFET 2890. Cooperative Work Experience (1-3) F, S
Open to all second year students in Manufacturing Engineering Technology. A continuation of MFET 1890.

MFET 2899. Associate's Degree Assessment (0)
This course is to serve as an assessment tool whereby all AAS degree seeking students in the College of Applied Science & Technology demonstrate their learned knowledge in at least three areas of Applied Technology study. At present, this knowledge will be demonstrated through the use of the Work Keys exams administered through the Campus Testing Center.

MFET 2920. Short Courses, Workshops, Institutes and Special Programs (1-3)
Consult the semester class schedule for the current offering under this number. The specific title and credit authorized will appear on the student transcript. Prerequisite: Departmental approval.

MFET 3010. Tool Design (3) F
Principles of workpiece control including: Geometric, dimensional, and mechanical control. Other topics include: process tolerance stacks, design of special tools and gauges, applications in the production of manufactured parts, tool drawings, specifications, and modular tooling. Three lectures per week. Prerequisites: MFET 1210; DGET 1160.

MFET 3060. Codes, Weld Inspection, and Quality Assurance (3) F
Study of ASME and AWS codes as relating to procedure qualification and welder qualification for fabrication of pressure vessels and structures, and how codes relate to quality assurance and ISO 9000. Prerequisite: MFET 2150/L.

MFET SI3310. Material Selection and Heat Treat (2)
Terminology, concepts and principles involved in the selection, specification and processing of engineering materials so they meet design criteria including load, life, and appearance. Testing methods to determine those properties and characteristics. Manual and computer assessing of material data. Two lectures per week. Prerequisites: MFET1210/L, MFET SI3300, CHEM PS/SI1110. Co-requisite: MFET SI3310L.

MFET SI3310L. Material Selection and Heat treat Lab (1)
Application of theory taught in MFET SI3310. One 2-hour lab per week. Co-requisite: MFET SI3310.

MFET 3320. Machine Design (2) F
Application of engineering fundamentals to the design of individual machine components such as shafts, couplings, springs, bearings, gears, fasteners, clutches, and breaks. Students will be required to complete a design project emphasizing manufacturing equipment. Two lectures per week. Prerequisite: MFET SI2300.

MFET 3340. Applied Fluid Power (2) F
Principles of fluid mechanics and component operation as they apply to the design of hydraulic and pneumatic systems. Computer programs may be used to analyze and design systems. Two lectures per week. Prerequisites: MFET SI2300; PHYS PS/SI2010/L or PHYS PS/SI2210/L. Co-requisite: MFET 3340L.

MFET 3340L. Applied Fluid Power Lab (1) F
Application of the theory taught in MFET 3340. One 2-hr lab per week. Co-requisite: MFET 3340.
MFET 3350. Plastic and Composite Manufacturing (2) F
Design and processing of plastic and composite materials for industrial applications. Two lectures per week. Prerequisites: CHEM PS/SI1110 or CHEM PS/SI2120. Co-requisite: MFET 3350L.

MFET 3350L. Plastic and Composite Manufacturing Lab (2) F
Application of the theory taught in MFET 3350. Two 2-hr labs per week. Prerequisite/Co-requisite: MFET 3350.

MFET 3460. Engineering Design using Solid Modeling (2)
An advanced computer-aided design course using state-of-the-art solid modeling CAD/CAM software. Topics include: 3D parametric solid modeling, applications associativity, design-by-assembly, assembly modeling, injection mold design, flat pattern development, design analysis using FEA, realistic rendering, and detailing. Prerequisites: DGET 1060 and TBE TE1700. Co-requisite: MFET 3460L.

MFET 3460L. Engineering Design using Solid Modeling Lab (1)

MFET 3510. Basics of Supply Chain Management (2)
Introductory course for production and inventory management personnel which provides basic definitions and concepts for planning and controlling flow of materials into, through, and out of an organization. Explains fundamental relationships of supply chain from suppliers to customers. Addresses manufacturing systems, forecasting, master planning, material requirements planning, capacity management, production activity control, purchasing, inventory management, distribution, quality management, and Just-in-Time manufacturing. (APICS Series). Evening classes only.

MFET 3550. Manufacturing Supervision (3) S
The application of supervision skills. Students will gain an understanding of; motivation of subordinates, personal leadership theories, problem-solving and decision-making techniques, organizational communication, employee selection, evaluation and training process, and organizational structures. Topics will include; the American Disabilities Act, OSHA and environmental issues, Equal opportunity Employment, and Affirmative Action issues. Three lectures per week.

MFET 3560. Advanced Quality Engineering (2)
Addresses the application of advanced quality techniques by personnel in positions of responsibility such as manufacturing leads and supervisors. Uses statistics, metrology, inspection methods, quality management concepts, and sampling principles to address process decisions involving both overall quality and costs. (ASQC Series). Prerequisite: MFET 2550. Evening classes only.

MFET 3570. Manufacturing Quality Auditing (2)
Utilizes auditing principles and quality management tools and techniques to prepare an individual to plan and conduct, or prepare an organization, for a quality audit. Links directly to process associated with implementation of ISO 9000 standards. Two one-hour lectures per week. (ASQC Series). Prerequisite: MFET SI2410 or equivalent. Evening classes only.

MFET 3580. Certified Mechanical Inspector (2)
Provides the student with terminology, concepts and tools needed to be professionally competent in advanced quality management. The course will also be helpful to those preparing to take the ASQC CMI Certification Exam. (ASQC Series) Evening classes only.

MFET 3610. Machining Processes Lecture/Lab II (3) S
The manufacture and assembly of precision and interchange-able parts using conventional lathes, mills, drills, and grinders. Introduction to geometric dimensioning & tolerancing (GD&T), and advanced inspection techniques. Students will utilize lab time to complete assignments as required. One lecture per week and two 3-hour labs per week are required. Prerequisite: MFET 1210.

MFET 3630. Fusion Joining and Brazing Processes (2) S

MFET 3630L. Fusion Joining and Brazing Processes (1) S
A “hands-on” lab that reinforces the concepts taught in MFET 3630 of SAW, ESW, GMAW, EG, RW, PAW, PAC, Electron Beam, Laser, Friction, Brazing, and other welding processes. Prerequisites: MFET 2670/L. Co-requisite: MFET 3630.

MFET 3650. Quality Management Institute (3)
This course consists of application process control and problem solving techniques including statistical process control (SPC), measurement systems analysis, and process capability analysis. Students will apply cause-and-effect diagrams, check sheets, sampling, line and bar charts, Pareto charts, scatter diagrams, variation, probability plots, x-R charts, gate repeatability and reproducibility (gage R & R) on course projects. Curriculum will include practical application exercises. Prerequisites: MFET 2410, MATH 1010 Intermediate Algebra or equivalent, and Basic Statistics course (MATH 1040) or equivalent.

MFET 3710. Computer Aided Manufacturing (2)
This course will introduce and explain concepts behind Computer-Automated Manufacturing (CAM). It will define elements, terms, and concepts involved with CAM. Elements of rapid prototyping will also be covered from conceptual design in solids to production of tooling and parts. This course is designed for those who have the basic understanding of the setup and operation of CNC machine tools and programming. Software will be used to perform the CAM operations, such as part generation and post processing. Prerequisites: MFET 2440/2440L, DGET 1060, DGET 1160 or MFET 3460. Co-requisite: MFET 3710L.

MFET 3710L. Computer Aided Manufacturing and Rapid Prototyping Lab (1) F
A “hands-on” lab that reinforces the concepts taught in MFET 3710. Students will learn how to transfer CNC part programs from a PC to the CNC machine controller. Testing, editing and running their part programs on the CNC machines will also be covered.

MFET 3750. Welding Metallurgy I (2) F
Metallurgical principles applied to welding and weldability of ferrous metals. Prerequisites: MFET 2150/L, CHEM 1110. Co-requisite: MFET 3750L.

MFET 3750L. Welding Metallurgy I Lab (1) F
A “hands-on” lab that reinforces the concepts taught in MFET 3750 of metallurgical principles applied to welding and weldability of ferrous metals. Prerequisites: MFET 2150/L, CHEM 1110. Co-requisite: MFET 3750.

MFET 3760. Welding Metallurgy II (2) S
Metallurgical principles applied to welding and weldability of nonferrous metals. Prerequisites: MFET 3760/L. Co-requisite: MFET 3760L.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Rationale</th>
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</thead>
<tbody>
<tr>
<td>MFET 3760L</td>
<td>Welding Metallurgy II Lab (1) S</td>
<td>A “hands-on” lab that reinforces the concepts taught in MFET 3760 of metallurgical principles applied to welding and weld-ability of nonferrous metals. Prerequisites: MFET 3750/L Co-requisite: MFET 3760.</td>
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<tr>
<td>MFET 3810</td>
<td>Statistical Process Control and Reliability (3) F</td>
<td>This is the second course in the Quality series for the MFET program. The course will focus on statistical techniques used in industrial process control charting, acceptance sampling, reliability practices and preventative maintenance. Course will utilize Minitab and Microsoft Excel Spreadsheet software. Three lectures per week. Prerequisite: MFET 2410.</td>
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<tr>
<td>MFET 3820</td>
<td>Nondestructive Testing (3) S</td>
<td>Fundamental concepts relating to liquid penetrant, magnetic particle, ultrasonics, and radiography and other NDT processes. Prerequisites: MATH 1210 and PHYS PS/SI2010 or PS/SI2210.</td>
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<tr>
<td>MFET 3890</td>
<td>Cooperative Work Experience (1-3) F, S</td>
<td>Open to all third year students in Manufacturing Engineering Technology. A continuation of MFET 1890.</td>
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<tr>
<td>MFET 3910</td>
<td>Six Sigma Methods and Tools in Manufacturing (5) S</td>
<td>This is the third and final course in the Quality series for the MFET program. Six Sigma methods use statistical tools to bring about continual improvement of quality in manufactured goods and services to document that positive change has occurred. These tools include: Failure Mode and Effects Analysis (FMEA), Measurement Systems, Control Charts, Multi-Vari and Multivariate charts, Process Capability Analysis, and Design of Experiments. Students will learn and apply these methods and tools through class participation and completion of required projects. Course will utilize Minitab and Microsoft Excel Spreadsheet software. Five lectures per week. Prerequisite: MFET 2410 and MFET 3810.</td>
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<tr>
<td>MFET 4050</td>
<td>Detailed Scheduling and Planning I (2)</td>
<td>Techniques and practices of detailed scheduling and planning of inventory management including order review methodologies, policies and functions of inventory. Covers lot sizing, safety stock techniques, demand, and Just-in-Time as they relate to detailed scheduling and planning. Prerequisite: MFET 3510 or equivalent. (APICS series). Evening classes only.</td>
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<tr>
<td>MFET 4090</td>
<td>Welding Power Sources (2) S</td>
<td>Study of power sources used to generate and control voltage and amperage for welding. Two lectures per week. Prerequisite: CEET 1140.</td>
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<tr>
<td>MFET 4150</td>
<td>Execution and Control of Operations (2)</td>
<td>Focuses on prioritizing and sequencing work, executing work plans, implementing controls, reporting activity results, and evaluating and providing feedback on performance. Eval. Prerequisite: MFET 3510 or equivalent. (APICS Series). Evening classes only.</td>
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<tr>
<td>MFET 4200</td>
<td>Manufacturing Processes (2)</td>
<td>Manufacturing processes define the methods that companies use in designing, producing, and delivering goods and services required by customers. The manufacturing processes provide the execution component to the other activities of the integrated manufacturing system. Beginning with customer requirements and needs, they design, build, operate, upgrade, and maintain a manufacturing process which is most supportive of and consistent with those needs and requirements. To achieve these objectives, manufacturing processes draw on three different but very interrelated subsystems: industrial facilities management, process design and development, and manufacturing. (APICS Series) Evening classes only.</td>
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<tr>
<td>MFET 4210</td>
<td>Cost Estimating and Engineering Economics (2)</td>
<td>Production cost structure, operation costing, break-even analysis, make buy decision, and capital equipment justification. Computer aids are used to analyze cost data. Three lectures per week. Prerequisites: MATH QL1080; TBE TE1700. Co-requisite: MFET 4610.</td>
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<tr>
<td>MFET 4250</td>
<td>Detailed Scheduling and Planning (2)</td>
<td>Detailed explanation of inventory management including order review methodologies, policies and functions of inventory. Covers material requirements planning (MRP) and other material planning and capacity requirements planning techniques. Includes concepts, principles, interfaces, desired characteristics, applications, and supplier relations. Prerequisite: MFET 3510 or equivalent. (APICS Series) Evening classes only.</td>
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<tr>
<td>MFET 4300</td>
<td>Design of Experiments (2)</td>
<td>A step-by-step description of procedures used to organize, conduct and evaluate industrial experiments. Emphasizes the usefulness of results and the decision criteria for choosing the proper design. Prerequisite: MFET SI2410.</td>
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<tr>
<td>MFET 4310</td>
<td>Corrosion and Corrosion Control (2) S</td>
<td>Analysis of corrosion mechanisms for ferrous metals, nonferrous metals, and nonmetallic materials, as well as the control of corrosion. Prerequisites: CHEM PS/SI1110 and MATH QL1080.</td>
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<tr>
<td>MFET 4350</td>
<td>Principles of Lean Manufacturing (2)</td>
<td>This course introduces students to lean manufacturing and waste reduction concepts such as work standardization, visual manufacturing &amp; workplace organization, value stream mapping, setup reduction &amp; batch size reduction, quality at the source, point of use storage, total productive maintenance, pull systems/kanbans, takt time calculation and cellular/synchronous manufacturing design concepts. A combination of lectures, videos and hands on exercise will be used.</td>
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<tr>
<td>MFET 4550</td>
<td>Advanced Quality Principles (2)</td>
<td>Provides advanced study in all aspects of the application of quality principles to a production environment. The course will involve case study and application of quality theory. Students should have a broad knowledge of organizational structure and planning, quality techniques, customer satisfaction and focus, project management, and human resource management. Cooperative experience in a business/industry is recommended. (ASQC Series) Prerequisite: MFET SI2410 or equivalent. Evening classes only.</td>
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<tr>
<td>MFET 4580</td>
<td>Process Automation (1) F</td>
<td>A study of the elements used in the automation of manufacturing processes including: programmable logic controllers, robotics (servo and non-servo), vision systems, and material handling devices. Prerequisites: MFET 2440/2440L, MFET 3010, TBE TE1700; CEET 1850. Co-requisite: MFET 4580L. One 1-hour lecture per week.</td>
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<tr>
<td>MFET 4580L</td>
<td>Process Automation Lab (2) F</td>
<td>Students duplicate demonstration sequence of automation equipment and develop new routines in: Controlling servo and non-servo robots, computer-aided manufacturing systems and CIM cell, programmable logic controllers, and other devices used in process automation. Co-requisite: MFET 4580.</td>
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<tr>
<td>MFET 4590</td>
<td>Production Planning and Process Control (3)</td>
<td>Organization, design, and management of production systems. Includes topics addressing Manufacturing Analysis, Inventory Control, Process Capability, Equipment specifications and Manufacturing Economics. Fundamentals of Ergonomics and OSHA requirements will also be discussed. Three lectures per week.</td>
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<tr>
<td>MFET SI4600</td>
<td>Manufacturing Simulation (2)</td>
<td>Discrete-event simulation of manufacturing systems, as a tool for developing more responsive systems. Simulation is shown to be a</td>
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</table>
viable method of predicting outcomes in a stochastic system. Modeling assignments include: material handling constructs, probability distributions, logical branching, and report analysis. Prerequisites: MFET 3010, MFET SI2410 and MFET 4590.

MFET 4610. Senior Project Planning and Estimating (5) F, S
This is designed as a capstone course for students and is to be taken in the senior year of their program. The course will teach students, entering Senior Project, fundamental principles in Project Management, Cost Estimating, Engineering Economics and Production Management that will be necessary to successfully complete their Senior Project experience. Students must apply and gain departmental approval before entering Senior Project. Approval is based on an interview with department faculty and fulfilling the prerequisites listed on the “Senior Project Requirements Sheet” available from the department secretary. All students approved for Senior project will register for this course regardless of individual project group assignments. Five lectures per week. Co-requisite: MFET 4610 Lab.

MFET 4610L, 4620L. Senior Project Lab (2-2) F, S
Must apply for senior project before March 1 of the previous year. Must have department approval. Approval is based on an interview with department faculty and fulfilling the prerequisites listed on the “Senior Project Requirements Sheet” available from the department secretary. Time: as required to complete the project. Two consecutive semesters. Co-requisite: MFET 4610 (with MFET 4610L only).

MFET 4650. Software Quality Engineering Principles (2) F
This course prepares the student to incorporate quality development and implementation as a software design team member. The course provides instruction on concepts, principles and techniques to develop a comprehensive understanding of software inspection, testing, verification, and validation. Participants will learn to implement software development and maintenance processes and methods. This course also prepares the student for the Certified Software Quality Engineer examination administered through American Society for Quality.

MFET 4670. Reliability Engineering Principles (2) F
This course prepares the student to work as a design team member to incorporate reliability considerations into a basic design. Course provides information on application of proven techniques to achieve quality product results. This course also prepares the student for the Certified Systems Quality Engineer examination administered through American Society for Quality.

MFET 4750. Master Planning of Resources (2)
Explore processes used to develop sales and operations plans, forecast internal and external demand, create the master schedule containing assignments include: material handling constructs, probability distributions, logical branching, and report analysis. Prerequisites: MFET 3010, MFET SI2410 and MFET 4590.

MFET 4800. Individual Research in Manufacturing Technology (1-3) F, S
Special individual research and development projects in Manufacturing and Engineering Technology. Credit and time determined by the student and the faculty project supervisor. Prerequisite: Permission of instructor.

MFET 4830. Directed Readings in Manufacturing Engineering Technology (1-3) F, S
Must have department approval.

MFET 4890. Cooperative Work Experience (1-3) F, S
Open to all fourth year students in Manufacturing Engineering Technology. A continuation of MFET 1890.

MFET 4920. Short Courses, Workshops, Institutes and Special Programs (1-3)
Consult the semester class schedule for the current offering under this number. The specific title and credit authorized will appear on the student transcript. Juniors and Seniors only. Faculty approval required.

MFET 4995. Certified Manufacturing Technologist (CMfgT) Exam Review (1) F, S
This course is designed to provide a structured review for the student to take the Certified Manufacturing Technologist (CMfgT) Exam.

MFET 5050. Gateway to Technology (5) Su
Gateway to Technology is a course designed specifically and only for current high school teachers who have been assigned by districts to teach the related Project Lead the Way course in their respective schools. Gateway to Technology introduces the Project Lead the Way series of courses covering the principles of engineering and technology. The course promotes an understanding of the field of technology and covers the continuous evolution of technology, the positive and negative impact of technology on our society, and career opportunities in technology. This course will utilize a training the trainer approach, meaning that the high school teachers will learn both technical content as well as the teaching methodologies they will use in the presentation of the course at their high schools.

MFET 5100. Introduction to Engineering Design (IED) (5) Su
IED provides students with opportunities to be creative and to apply their decision-making and problem-solving skills to design problems. Students use powerful computer hardware and software (Inventor) to develop 3-D models or solid renderings of objects. Using a Computer Aided Design System, students learn the product design process through creating, analyzing, rendering and producing a model. The course meets for a total of 75 hours over a two-week period and focuses on the content as well as teaching methods appropriate for the course. This course is designed specifically and only for current high school teachers who have been assigned by their schools and districts to teach the Project Lead the Way courses in their respective schools. These courses carry graduate credit for those teachers who would use them as part of a master’s degree program or for recertification.

MFET 5300. Principles of Engineering (POE) (5) Su
POE is designed to help students understand the field and the career possibilities of engineering and engineering technology. Students work on the problem-solving skills that are used at the college level and in the workplace, and they explore engineering systems and manufacturing processes. Students learn how engineers address concerns about the social and political consequences of technologi-}

General
PROFILE
ENROLLMENT
STUDENT AFFAIRS
ACADEMIC INFO
DEGREE REQ
GEN ED

Interdisciplinary
FYE
HINS
BIS
LIBS
INTRO MINORS

Applied Science & Technology
AUSV/ATTC
CEET
CS
MFET/ETM
MET
CMT
DGET
ENGR
IDT
SST
TBE

Arts & Humanities
MENG
COMM
ENGL
FL
DANC
MUSC
THEA
ART/ARTH

Business & Econ
MBA
MACC/ACTG
BSAD
FIN
MGMT
MKETG
SCM
ECON/QUAN
IST

Education
MSAT
MED
CHF
ATHL/AT
HHT/HNTR
PE/PEP/REC
EDUC

Health Professions
MHA
MSN
CLS
DENT
PAR
PHYS
HAS/HIM
NRSG
RADI
DM/NUCM
RATH
REST

Science
BTRY
CHEM
GEO
MATH/MTHE
MICR
PHYS
ZOOI

Social & Behavioral Sciences
MC/J/CJ
ECON
GEOG
HIST
POL/PHIL
PSY
SW/GERT
SOC/ANTH
AERO
MELS
NAPS

Continuing Ed
Davis Campus

Weber State University 2008 – 2009 Catalog
MFET 5400. Computer Integrated Manufacturing (CIM) (5) Su
CIM is a course that applies principles of prototyping, robotics, and automation. It builds on the solid modeling skills developed in Introduction to Engineering Design. Students use computer-controlled equipment to solve problems by constructing models of their three-dimensional designs. Students are also introduced to the fundamentals of robotics and to how this equipment is used in an automated environment. Students evaluate their design solutions using various techniques and modifications before they produce the prototype. The course meets for a total of 75 hours over a two-week period and focuses on the content as well as teaching methods appropriate for the course. This course is designed specifically and only for current high school teachers who have been assigned by their schools and districts to teach the Project Lead the Way courses in their respective schools. These courses carry graduate credit for those teachers who would use them as part of a master's degree program or for recertification.

MFET 5500. Engineering Design and Development (EDD) (5) Su
In this course, students work on a team with one or two others to design and construct the solution to an engineering problem. The problems involve a wide range of engineering applications (e.g., a school robo-mascot, automated solar water heater, remote control hover craft). The course serves as a capstone course where students apply the principles they developed in previous courses. A journal is part of each student's portfolio. Each team is responsible for delivering progress reports and making final presentations to an outside review panel. The course meets for a total of 75 hours over a two-week period and focuses on the content as well as teaching methods appropriate for the course. This course is designed specifically and only for current high school teachers who have been assigned by their schools and districts to teach the Project Lead the Way courses in their respective schools. These courses carry graduate credit for those teachers who would use them as part of a master's degree program or for recertification.

QUALITY AND LEAN MANUFACTURING COURSES - ETM

ETM 5913. Six Sigma Tools I (3)
This distance learning course provides an introduction to the six sigma body of knowledge as defined by the American Society of Quality (ASQ). The course will examine the foundations of six sigma and the statistical tools used in the initial stages of the DMAIC problem solving methodology. Prerequisite: BS with three years relevant experience & an engineering statistics undergraduate course or equivalent such as Math 3410 is required, or instructor's approval. Students also must be able to work on an approved six sigma project at a firm.

ETM 5923. Six Sigma Tools II (3)
This distance learning course is a follow-on to the initial six sigma course and provides additional detail on the analyze, improve and control portions of the DMAIC problem solving methodology. This course is required for the Institutional Certificate in Quality and Lean Manufacturing, and can be used as a technical elective for the Oklahoma State University Engineering Technology Management Masters Degree. Prerequisite: ETM 5913, Six Sigma Tools I.

ETM 5933. Lean Tools (3)
This course teaches students lean manufacturing tools for continuous improvement in a manufacturing environment. Prerequisite: BS with three years relevant experience & an engineering statistics undergraduate course or equivalent such as Math 3410 is required, or instructor's approval. Students also must be able to work on an approved six sigma project at a firm.

This distance learning course is required for the Institutional Certificate in Quality and Lean Manufacturing, and can be used as a technical elective for the Oklahoma State University Engineering Technology Management Masters Degree. Prerequisites: ETM 5923, ETM 5933.

MECHANICAL ENGINEERING TECHNOLOGY
Location: Engineering Technology Building, Room 214
Telephone Contact: 801-626-6305
E-Mail: met@weber.edu
Advisors: Kirk D. Hagen, Daniel J. Magda

Mechanical engineering technology is the practical application of mechanical engineering. Mechanical engineering technologists play an integral role in product design and manufacturing process cycles which include planning, design, analysis, testing and documentation. They utilize skills in materials science, engineering mechanics, thermal science, design, instrumentation and technical writing.

The program is accredited by the Technology Accreditation Commission of ABET, Inc., 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone (410) 347-7700. The curriculum includes problem-solving courses such as statics, strength of materials, dynamics, machine design, thermodynamics, fluid mechanics and heat transfer that are based on engineering science and mathematics. Integrated into many of the courses are laboratory and project oriented experiences that teach the practical, hands-on aspects of mechanical engineering technology. A balanced blend of engineering science and practical applications provides the mechanical engineering technologist the knowledge and skills needed to be successful in today's technical workplace. Mechanical engineering technology has lead to numerous opportunities for exciting, creative and rewarding careers in a wide range of industries including aerospace, automotive, electronics, manufacturing, medical equipment, mining and power generation.

MECHANICAL ENGINEERING TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE DEGREE (AAS)

» Grade Requirements: A grade of "C" or better in MET courses and support courses is required (a grade of "C-" is not acceptable) in addition to an overall GPA for all courses of 2.00 or higher. Also refer to the general grade requirements for graduation on page 37.

» Credit Hour Requirements: A total of 64 credits is required, 20 of which are within the Manufacturing and Mechanical Engineering Technology Department. Transfer students are required to take a minimum of 30 credit hours at Weber State University.

» Assessment Requirements: Students will be required to complete certain assessment instruments as part of the overall requirements for receiving their associate's degree. Please see your advisor or your department for specific information regarding assessment.
Advisement
All Mechanical Engineering Technology students are required to meet with their faculty advisor at least annually for course and program advisement. Please call the department secretary at 801-626-6305 for the name of your advisor and to schedule an appointment.

Admission Requirements
Declare your program of study (see page 17). There are no special admission or application requirements for this program.

General Education
Refer to pages 38-43 for Associated of Applied Science requirements. Computer & Information Literacy as defined in this catalog is also required for the AAS degree. Consult with your advisor for specific general education guidelines.

Course Requirements for the AAS Degree

**MET Core and Support Courses Required (49 credit hours)**
- MET 1000 Introduction to Mechanical Engineering Technology & Design (3)
- MET 1500 Mechanical Design Engineering (3)
- MET 2500 Modern Engineering Technologies (3)
- MET 2899 Associate’s Degree Assessment (0)
- METF 2300 Statics and Strength of Materials (5)
- MFET 2360 Manufacturing Processes (3)
- CEET 1850 Industrial Electronics (4)
- CHEM PS/SI1110 Elementary Chemistry (5)
- DGET 1060 Fundamentals of Drafting Using 3D CAD (3)

**Computer and Information Literacy (2)**
- MATH QL1080 Precalculus (5)
- MATH SI2120 Calculus I (4)
- MATH 1220 Calculus II (4)
- PHYS PS/SI2210/L Physics for Scientists & Engineers (w/lab) (5)

**Other General Education Support Courses Required (15 credit hours)**
- COMM HU2110 Interpersonal Communication (3)
- ENGL EN1010 Introductory College Writing (3)
- ENGL EN2010 Intermediate College Writing (3)
- ECON SS1010 Economics as a Social Science (3)
- Gen Ed Creative Arts Elective (3)

Suggested Course Sequence
Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.

**MECHANICAL ENGINEERING TECHNOLOGY BACHELOR OF SCIENCE DEGREE (BS)**

- **Program Prerequisite:** Complete the requirements for the AAS Degree in Mechanical Engineering Technology.
- **Minor:** Not Required.
- **Grade Requirements:** A grade of “C” or better in all MET courses, support courses and technical electives is required for this major (a grade of “C-” is not acceptable) in addition to overall GPA for all courses of 2.00 or higher. Also refer to the general grade requirements for graduation on page 37.
- **Credit Hour Requirements:** A total of 127 credit hours is required for graduation, 57 of which are within the Manufacturing and Mechanical Engineering Technology Department. A total of 42 upper division credits is also required (courses numbered 3000 and above), 39 of which are within the Manufacturing and Mechanical Engineering Technology Department. Transfer students are required to take a minimum of 30 credit hours at Weber State University.
- **Assessment Requirement:** Students will be required to complete certain assessment instruments as part of the overall requirements for receiving their bachelor's degree. Please see your advisor or your department for specific information regarding assessment.

Advisement
All Mechanical Engineering Technology students are required to meet with their faculty advisor at least annually for course and program advisement. Please call the department secretary at 801-626-6305 for the name of your advisor and to schedule an appointment.

Admission Requirements
Declare your program of study (see page 17). Refer to the Program Prerequisite listed on the previous page. There are no additional special admission or application requirements for this program.

Course Requirements for BS Degree

**To be taken in addition to the courses required for the AAS Degree in Mechanical Engineering Technology**

**Mechanical Engineering Technology Courses Required (33 credit hours)**
- MET 3050 Dynamics (3)
- MET 3150 Engineering Technology Materials (3)
- MET 3300 Computer Programming Applications of MET (3)
- MET 3400 Machine Design (3)
- MET 3500 Mechanical Measurements & Instrumentation (3)
- MET 3700 Testing and Failure Analysis (3)
- MET 4200 Mechanical Design with FEA (3)
- MET 4500, 4510 Senior Project (6)
- MET 4650 Thermal-fluid Sciences (5)
- MET 4990 Seminar in MET (1)

**Support Courses Required (9 credit hours)**
- MFET 1210 Machining Principles Lecture/Lab I (3)
- MET 3340/L Applied Fluid Power (3)
- TBE 3250 Business Communications (3)
- or ENGL 3100 Professional & Technical Writing (3)

**Technical Electives (9 credit hours)**
A minimum of 9 credit hours of technical electives chosen from the following list are required. At least 3 credit hours must be upper division.
- DGET 2650 Advanced Mechanical Design (3)
- DGET 4470 Advanced 3D CAD Modeling (3)
- MATH 2210 Calculus III (4)
- MATH 2270 Elementary Linear Algebra (3)
- MET 2280 Ordinary Differential Equations (3)
- MET 4300 Heating, Ventilating, & Air Conditioning (3)
- MFET SI2410 Quality Concepts & Statistical Applications (3)
- MFET 3010 Tool Design (3)
- MFET 3350/L Plastic & Composite Manufacturing (4)
- MFET 3460/L Engineering Design using Solid Modeling (3)
- MFET 3750 Welding Metallurgy I (3)
- MFET 3820 Nondestructive Testing (3)
- MFET 4310 Corrosion (3)
- PHYS SI2220 Physics for Scientists and Engineers II (5)

**Other Required Courses (12 credit hours)**
- Gen Ed Humanities Elective (3)
- Gen Ed Social Science Diversity Elective (3)
- Gen Ed Life Science Elective (3)
- Gen Ed American Institutions Elective (3)
Suggested Course Sequence
Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.

MECHANICAL ENGINEERING TECHNOLOGY COURSES - MET

MET 1000. Introduction to Mechanical Engineering Technology and Design (3) F
Introductory course for students majoring in mechanical engineering technology. The role of mechanical engineering technology and its place in the occupational spectrum. The experimental and analytical tools used in mechanical engineering technology and fundamentals of mechanical design and problem solving. Prerequisite: Credit or concurrent enrollment in MATH QL1080 or equivalent.

MET 1500. Mechanical Design Engineering (3) S
This course will focus on understanding the engineering design process within the MET discipline. Students will develop problem statements and use brainstorming techniques to generate design concepts. These design concepts are evaluated and implemented for possible solutions to bring a factious engineered product to market. Prerequisite: MET 1000.

MET 1890. Cooperative Work Experience (1-3)
Provides academic credit for on-the-job experience. Grade and amount of credit will be determined by the department. Prior consent of the department chair and the employer are required. Prerequisites: DGET 1250, MATH QL1080.

MET 2500. Modern Engineering Technologies (3) S
A survey of modern engineering technologies including, but not necessarily limited to, energy generation, nano systems, smart materials, robotics, lasers, transportation systems, and bioengineering. Prerequisite: MET 1500.

MET 2890. Cooperative Work Experience (1-3)
Provides academic credit for on-the-job experience. Grade and amount of credit will be determined by the department. Prior consent of the department chair and the employer are required. Prerequisite: Credit or concurrent enrollment in MET SI2300.

MET 2899. Associate's Degree Assessment (0)
This course is to serve as an assessment tool whereby all AAS degree seeking students in the College of Applied Science & Technology demonstrate their learned knowledge in at least three areas of Applied Technology study. At present, this knowledge will be demonstrated through the use of the Work Keys exams administered through the Campus Testing Center.

MET 3050. Dynamics (3) F
Fundamentals of force, mass and acceleration, work and energy, and impulse and momentum applied to particles and rigid bodies. Prerequisites: MATH SI1210, PHYS PS/SI2210 and MFET SI2300.

MET 3150. Engineering Technology Materials (3) S
Material properties, processing and selection of materials for technological applications. Design parameters for material selection of metals and nonmetals. Mechanical behavior and service failures of metallic alloys and other engineering materials at high and low temperatures. Lecture plus laboratory work in materials testing. Prerequisites: CHEM PS/SI1110 and MFET SI2300.

MET 3300. Computer Programming Applications of Mechanical Engineering Technology (3) F
Applications of computer programming and computer software to problems in mechanical engineering technology. Lecture plus computer-based laboratory work. Prerequisites: TBE TE1700 or equivalent, MFET SI2300.

MET 3400. Machine Design (3) F
Application of engineering technology fundamentals to machine design. Techniques involved in designing and selecting individual machine parts. Prerequisite: MFET 2300.

MET 3500. Mechanical Measurements and Instrumentation (3) S
Principles of temperature, pressure, strain, flow, force, and vibration measurements. Techniques of computerized data acquisition and reduction. Students will learn how to specify instrumentation systems, take data and interpret the results. Lecture plus laboratory work in selected topics. Prerequisites: CEET 1850 or ENGR 2270 and ENGR 3300.

MET 3700. Testing and Failure Analysis (3) F
Mechanical testing of materials, fatigue, fracture, wear, corrosion, embrittlement, failure mechanisms and analysis, case studies of failures. Lecture plus laboratory work. Prerequisite: MET 3150.

MET 3890. Cooperative Work Experience (1-3)
Provides academic credit for on-the-job experience. Grade and amount of credit will be determined by the department. Prior consent of the department chair and the employer are required. Prerequisite: Credit or concurrent enrollment in MET 3400.

MET 4200. Mechanical Design with FEA (3) S
Application of engineering technology fundamentals in mechanical design using Finite Element Analysis. Lecture plus computer-based laboratory work. Prerequisite: MET 3400 or ENGR 3330 and ENGR 3340.

MET 4300. Heating, Ventilating & Air Conditioning (3)
Principles of heating, ventilating and air conditioning of buildings. Refrigeration systems, air and water distribution and solar energy. Indoor thermal environmental control. Prerequisite: Permission of instructor.

MET 4500, 4510. Senior Project (3,3)
A mechanical engineering technology project will be selected for team participation. Projects will require planning, analysis, design, development, production, testing and documentation. Prerequisite: MET 4200.

MET 4650. Thermal-fluid Sciences (5) S
Fundamentals of thermodynamics, fluid mechanics and heat transfer. First and second laws of thermodynamics, thermodynamic cycles, fluid statics and fluid dynamics, basic principles of heat transfer by conduction, convection and radiation. Lecture plus laboratory work in thermal-fluid sciences. Prerequisites: MATH SI1210, PHYS PS/SI2210 and CHEM PS/SI1110.

MET 4800. Individual Research in Mechanical Engineering Technology (1-3) F, S
Special individual research and development projects in mechanical engineering technology. Credit and time determined by the student and the faculty project supervisor. Prerequisite: Permission of instructor.

MET 4830. Directed Readings (1-3) F, S
Directed individual readings in mechanical engineering technology. Topic selected in consultation with instructor. Prerequisite: Permission of instructor.

MET 4890. Cooperative Work Experience (1-3)
Provides academic credit for on-the-job experience. Grade and amount of credit will be determined by the department. Prior consent of the department chair and the employer are required. Prerequisite: MET 3400.
MET 4920. Short Courses, Workshops, Institutes, and Special Programs (1-3)
Consult the semester class schedule for the current offering under this number. The specific title with the credit authorized for the particular offering will appear on the student transcript.

MET 4990. Seminar in Mechanical Engineering Technology (1) S
Guest lectures from local industry, professionalism and engineering ethics, technology and society, and employment preparation. Prerequisite: MET 4500.

Apprenticeship

ASSOCIATE OF APPLIED SCIENCE DEGREE (AAS)
The Associate of Applied Science in Apprenticeship degree is a generic degree that is specifically designed for students who have completed or are completing an apprenticeship program under the auspices of the Bureau of Apprenticeship and Training (BAT). This degree consists of the apprenticeship courses and on-the-job training from the Ogden Weber Applied Technology College (OWATC) coupled with general education and two additional required courses from Weber State University. It is also open to anyone who meets the qualifications for an apprenticeship as defined by the BAT.

In order for a student to receive this degree they must complete the course requirements listed below and provide one of the following:
- State of Utah Journeyman's License
- Certificate of Completion from the BAT
- Certificate of Completion from the post-secondary institution offering the BAT certified program

Course Requirements for the AAS Degree
ENGL EN1010 Introductory College Writing (3)
COMM HU2110 Interpersonal & Small Group Communication (3)
Social Science General Education (SS) Elective (3)
AUSV 1300 Technical Mathematics (3)
BTNY LS1403** Environment Appreciation (3)
TBE TE1700 Intro to Microcomputer Applications (3)
SST 3563 Principles of Supervision (3)
SST 4102*** Developing Team Leadership Skills (2)

* Recommended - Math 1010 or above is acceptable.
** Recommended - Any general education science course is acceptable.
***To register for these two courses, students must be in the third year of their apprenticeship program and have completed COMM HU2110.

Parson Construction Management Technology

Location: Engineering Technology Building, Room 236
Telephone Contact: 801-626-7761
E-Mail: ParsonCMT@weber.edu
Faculty: Associate Professor - Steven Peterson; Assistant Professors - Chris Soelberg, Joseph Wolfe; Instructor - Ken McGuire

The Parson Construction Management Technology program teaches the processes, procedures and management techniques necessary to function as a "Professional Constructor" as defined by the American Institute of Constructors and the American Council of Construction Education. It is designed to prepare students for immediate professional level employment or further study by developing a cohesive, solid technical foundation bolstered by practical, hands-on experiences, at the same time providing the education necessary for lifelong learning in a changing world. The process of learning is emphasized, as well as accumulation of knowledge. The multi-disciplinary curriculum is composed of courses in the areas of construction science, construction practice, business and management as well as general education. The program is accredited by the American Council of Construction Education (ACCE).

The Parson Construction Management Technology curriculum is a "2+2" designing facilitating articulation with programs in architecture, building construction, design graphics, facilities and other construction-related degrees. In this regard, articulation agreements have been developed with Salt Lake Community College's Associate's Degree programs in Architectural Technology and the Partnership Construction/Construction Management. The partnership between the two schools gives construction management students more flexibility in earning WSU bachelor's degrees through the university's center at SLCC. Students who have obtained associate's degrees in appropriate high quality programs are admitted as juniors and can normally complete the baccalaureate degree in two years.

Construction Management Technology

ASSOCIATE OF APPLIED SCIENCE DEGREE (AAS)

- Grade Requirements: A grade of "C" or better in all CMT Program required courses (a grade of "C-" is not acceptable) in addition to an overall GPA for all courses of 2.00 or higher.
- Credit Hour Requirements: 63 total credit hours are required as listed below. A minimum of 20 hours in residence at WSU is required. A student must also complete a minimum of 18 hours of CMT major courses at WSU to obtain an AAS degree.
- Assessment Requirements: Students will be required to complete certain assessment instruments as part of the overall requirements for receiving their associate's degree. Please see your advisor or your department for specific information regarding assessment requirements.

Advisement

All Construction Management Technology students are encouraged to meet with a faculty advisor at the beginning of their freshman year for course and program advisement. Call the CMT program secretary at 801-626-7761 to schedule an appointment.

Admission Requirements

Declare your program of study (see page 17). There are no special admission or application requirements for this program.

General Education

Refer to pages 38-43 for Associate of Applied Science requirements. The following courses required for the Construction Management Technology AAS degree will also fulfill general education requirements: COMM HU2110 (Oral Communication), ECON SS2010 (Social Science) and MATH QL1080 (Math and Statistics). Computer and Information Literacy as defined in this catalog is also required for the AAS degree.

Course Requirements for AAS Degree

Construction Management Technology

Courses Required (19 credit hours)
CMT 1100 Construction Management Orientation (1)
CMT 1150 Construction Graphics (3)
CMT 1210 Residential Construction Materials & Methods (3)
CMT 1310 Commercial Construction Materials & Methods (3)
CMT 1500 Computer Applications in Construction (2)
CMT 2220 Construction Contracts & Spec's (3)
CMT 3230 Concrete Technology (3)
CMT 2340 Construction Surveying (2)
CMT 2360 Building Codes & Inspection (2)
Suggested Course Sequence

Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.

CONSTRUCTION MANAGEMENT TECHNOLOGY

BACHELOR OF SCIENCE DEGREE (BS)

» Program Prerequisite: Declare a Program of Study in CMT
» Minor: Not required; Business minor is recommended.
» Grade Requirements: A grade of 'C' or better in all CMT Program required courses and math, business and management courses is required (a grade of 'C-' is not acceptable) in addition to an overall GPA for all courses of 2.0 or higher. Also refer to the general grade requirements for graduation on page 37.
» Credit Hour Requirements: A total of 124 credit hours is required for graduation. A total of 40 upper division credit hours is required (courses numbered 3000 and above).
» Work Experience Requirements: A total of 800 hours of approved work experience is also required for graduation. There are provisions to recognize those with significant construction industry experience. Contact Karen Doutre at Career Services/College of Applied Science & Technology; Phone: 801-626-6877 (ksdoutre@weber.edu) for possible internships.

Advisement

All Construction Management Technology students are encouraged to meet with a faculty advisor at the beginning of their freshman and junior year for course and program advisement. Call the CMT program secretary at 801-626-7761 to schedule an appointment.

Admission Requirements

Declare your program of study (see page 17). There are no special admission or application requirements for this program.

General Education

Refer to pages 37-43 for Bachelor of Science requirements. Consult with an academic advisor for specific general education guidelines. The following courses required for the Construction Management Technology BS degree will also fulfill general education requirements: COMM HU2110 (Oral Communication), MATH QL1080 (Math and Statistics), ECON SS2010 (Social Science) and PHYS PS/SI2010, GEO PS1060 (Physical Sciences), and BTNY LS1403 (Life Sciences). Computer and Information Literacy as defined in this catalog is also required.

Course Requirements for BS Degree

Course requirements are subject to change. Check with program advisor for current requirements.

Construction Management Technology

Courses Required (58 credit hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMT 1100</td>
<td>Construction Management Orientation (1)</td>
</tr>
<tr>
<td>CMT 1150</td>
<td>Construction Graphics (3)</td>
</tr>
<tr>
<td>CMT 1210</td>
<td>Residential Construction Materials &amp; Methods (3)</td>
</tr>
<tr>
<td>CMT 1310</td>
<td>Commercial Construction Materials &amp; Methods (3)</td>
</tr>
<tr>
<td>CMT 1500</td>
<td>Computer Applications in Construction (2)</td>
</tr>
<tr>
<td>CMT 2220</td>
<td>Construction Contracts &amp; Specs (3)</td>
</tr>
<tr>
<td>CMT SI2330</td>
<td>Concrete Technology (3)</td>
</tr>
<tr>
<td>CMT 2340</td>
<td>Construction Surveying (2)</td>
</tr>
<tr>
<td>CMT 2360</td>
<td>Building Codes &amp; Inspection (2)</td>
</tr>
<tr>
<td>CMT 2640</td>
<td>Architectural Estimating (2)</td>
</tr>
<tr>
<td>CMT 2880</td>
<td>Internship (3)</td>
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<tr>
<td>CMT 3115</td>
<td>Construction Cost Estimating (3)</td>
</tr>
<tr>
<td>CMT 3130</td>
<td>Construction Planning &amp; Scheduling (3)</td>
</tr>
<tr>
<td>CMT 3210</td>
<td>Construction Management (3)</td>
</tr>
<tr>
<td>CMT 3260</td>
<td>Mechanical &amp; Electrical Systems (4)</td>
</tr>
<tr>
<td>CMT 3350</td>
<td>Applied Structures (4)</td>
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<tr>
<td>CMT 4120</td>
<td>Construction Accounting &amp; Finance (3)</td>
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<tr>
<td>CMT 4150</td>
<td>Construction Equipment &amp; Methods (3)</td>
</tr>
<tr>
<td>CMT 4550</td>
<td>Construction Safety (2)</td>
</tr>
<tr>
<td>CMT 4610/20</td>
<td>Senior Project (2/2)</td>
</tr>
<tr>
<td>CMT 4890</td>
<td>Practicum (2)</td>
</tr>
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</table>

Business Courses Required (21 credit hours)

<table>
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<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTG 2010</td>
<td>Survey of Accounting I (3)</td>
</tr>
<tr>
<td>ECON SS2010</td>
<td>Principles of Microeconomics (3)</td>
</tr>
<tr>
<td>BSAD 3200</td>
<td>Legal Environment of Business (3)</td>
</tr>
<tr>
<td>MGMT 3010</td>
<td>Organizational Behavior &amp; Management (3)</td>
</tr>
<tr>
<td>Approved Business Electives from list below (9)</td>
<td></td>
</tr>
</tbody>
</table>

Approved Business Elective Courses

Select 9 hours from the following recommended courses (6 hours must be upper level):

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON SS2020</td>
<td>Principles of Macroeconomics (3)</td>
</tr>
<tr>
<td>ECON 3400</td>
<td>Labor Economics (3)</td>
</tr>
<tr>
<td>BSAD 3000</td>
<td>Small Business Management (3)</td>
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<tr>
<td>BSAD 3330</td>
<td>Business Ethics (3)</td>
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<tr>
<td>FIN 3200</td>
<td>Financial Management (3)</td>
</tr>
<tr>
<td>FIN 3400</td>
<td>Real Estate Principles &amp; Practices (3)</td>
</tr>
<tr>
<td>MKTG 3010</td>
<td>Marketing Concepts &amp; Practices (3)</td>
</tr>
<tr>
<td>MKTG 3300</td>
<td>Human Resource Management (3)</td>
</tr>
<tr>
<td>SST 3563</td>
<td>Principles of Supervision (3)</td>
</tr>
<tr>
<td>SST 4102</td>
<td>Developing Team Leadership Skills (2)</td>
</tr>
<tr>
<td>Advisor Approved Elective (3)</td>
<td></td>
</tr>
</tbody>
</table>

Students designing a minor in Business Administration should receive approval of their program by the Business Administration Department Chair.

Support Courses Required (23 credit hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM HU2110</td>
<td>Interpersonal and Small Group Communication (3)</td>
</tr>
<tr>
<td>BTNY LS1403</td>
<td>Environment Appreciation (3)</td>
</tr>
<tr>
<td>PHYS PS/SI2010</td>
<td>College Physics I (5)</td>
</tr>
<tr>
<td>MATH QL1080</td>
<td>Pre-calculus (5)</td>
</tr>
<tr>
<td>GEO PS1060</td>
<td>Environmental Geosciences (3)</td>
</tr>
<tr>
<td>GEO 1065</td>
<td>Environmental Geosciences Lab (1)</td>
</tr>
<tr>
<td>GEO 4100</td>
<td>Engineering Geology (3)</td>
</tr>
</tbody>
</table>
Course Requirements for CMT BS Major with Business Administration Minor for Non-Business Majors

Note: The Business Administration Minor requires an additional 9-10 hours of Business/Management courses with BS CMT degree. Be sure to consult with an advisor. Students pursuing a business administration minor must receive approval of the program by the Business Administration Department Chair. Check the college catalog for specific requirements.

Additional courses required to satisfy business minor requirements with CMT BS degree

ECON 2020 Principles of Macroeconomics (3) (satisfied with CMT Business Elective)
QUAN SI2600 Business Statistics I (3)
QUAN SI3610 Business Statistics II (3)
Business Electives - Business/Management/Finance/Marketing Electives (6)
Check the college catalog under BSAD for possible selections.

Suggested Course Sequence

Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.

CONSTRUCTION MANAGEMENT TECHNOLOGY

MINOR

- Grade Requirements: A grade of "C" or better in all courses used toward the minor (a grade of "C-" is not acceptable) in addition to an overall GPA of 2.50 or better in all CMT courses.
- Credit Hour Requirements: 21 total credit hours are required as listed below.

Advisement

The CMT Minor must be cleared with the CMT Program Coordinator. Call the CMT program secretary at 801-626-7761 to schedule an appointment.

Course Requirements for Minor

Construction Management Technology

Courses Required (15 credit hours)

CMT 1100 Construction Management Orientation (1)
CMT 1150 Construction Graphics (3)
CMT 1210 Residential Construction Materials & Methods (3)
CMT 1310 Commercial Construction Materials & Methods (3)
CMT 2220 Construction Contracts & Specifications (3)
CMT 2360 Building Codes & Inspection (2)

Recommended Electives (6 credit hours)

Select 6 hours from the following courses as approved by the CMT program coordinator.

CMT 1500 Computer Applications in Construction
CMTSI2330 Concrete Technology (3)
CMT 2340 Construction Surveying (2)
CMT 2640 Architectural Estimating (2)
CMT 3115 Construction Cost Estimating (3)
CMT 3130 Construction Planning & Scheduling (3)
CMT 3210 Construction Management (3)
CMT 3260 Mechanical & Electrical Systems (4)
CMT 3350 Applied Structures (4)
CMT 4120 Construction Accounting and Finance (3)
CMT 4150 Construction Equipment & Methods (3)
CMT 4550 Construction Safety (2)

PARSON CONSTRUCTION MANAGEMENT TECHNOLOGY COURSES - CMT

CMT 1100. Construction Management Orientation (1) F
This course provides an overview of the history of the U.S. construction industry with particular focus on the social, cultural, and economic trends, issues and events that impact the industry and its occupations. The course is also designed to help students develop a clearer focus on their educational and occupational goals. (Available online)

CMT 1150. Construction Graphics (3) F
Students will gain knowledge of and experience graphical communications as used in the construction industry. Students will print reading and interpretation of all architectural, electrical, and mechanical systems diagrams. Residential and commercial plans will be used. Prerequisite: CMT 1210 (can be taken concurrent). (Available online)

CMT 1210. Residential Construction Materials and Methods (3) F
The purpose of this course is to provide students with knowledge of residential building techniques and materials. The course will examine common construction materials, components, and systems as related to wood frame structures. Applicable building codes are also discussed as they relate to various materials and the methods of construction for Utah. The residential construction process will be analyzed from site planning to finish construction. The course also includes editing related specifications and determining cost estimates. Site visits and a glossary project will be used to document the construction process along with the student development of presentations. (Available online)

CMT 1310. Commercial Construction Materials & Methods (3) S
The purpose of this course is to provide students with knowledge of commercial building techniques and materials. Basic material and installation methods for commercial construction are studied; which include Site work, Concrete, Masonry, Metals, Curtain-walls, Finishes. Applicable building codes, written specifications, and cost estimating will be discussed as they relate to these various construction methods. Students will build scale models or draw details of these construction methods, and make construction site visits to enhance their understanding of construction techniques. (Available online)

CMT 1500. Computer Applications in Construction (2) S
Computer applications used in the construction field will be examined in areas of cost estimating, project scheduling, CAD design, and construction management. Various software packages will be introduced and examined specifically to their application in the construction industry. Prerequisite: CMT 1210.

CMT 2220. Construction Contracts and Specifications (3) S
Students will gain knowledge in the legal aspects of contracts and bidding; types of construction documents including bonds; interpretation of technical building specifications and their application to selection and installation of materials, equipment and systems. The Construction Specification Institute Index System (CSI) data base will be used. Students will study contracts and specifications as supplied by architects, government agencies, and professional contracting organizations such as the AGC (Association of General Contractors), ABC (Associated Building Contractors), and the NAHB (National Association of Home Builders).

Course Requirements for Minor

Construction Management Technology

Courses Required (15 credit hours)

CMT 1100 Construction Management Orientation (1)
CMT 1150 Construction Graphics (3)
CMT 1210 Residential Construction Materials & Methods (3)
CMT 1310 Commercial Construction Materials & Methods (3)
CMT 2220 Construction Contracts & Specifications (3)
CMT 2360 Building Codes & Inspection (2)

Recommended Electives (6 credit hours)

Select 6 hours from the following courses as approved by the CMT program coordinator.

CMT 1500 Computer Applications in Construction
CMTSI2330 Concrete Technology (3)
CMT 2340 Construction Surveying (2)
CMT 2640 Architectural Estimating (2)
CMT 3115 Construction Cost Estimating (3)
CMT 3130 Construction Planning & Scheduling (3)
CMT 3210 Construction Management (3)
CMT 3260 Mechanical & Electrical Systems (4)
CMT 3350 Applied Structures (4)
CMT 4120 Construction Accounting and Finance (3)
CMT 4150 Construction Equipment & Methods (3)
CMT 4550 Construction Safety (2)

PARSON CONSTRUCTION MANAGEMENT TECHNOLOGY COURSES - CMT

CMT 1100. Construction Management Orientation (1) F
This course provides an overview of the history of the U.S. construction industry with particular focus on the social, cultural, and economic trends, issues and events that impact the industry and its occupations. The course is also designed to help students develop a clearer focus on their educational and occupational goals. (Available online)

CMT 1150. Construction Graphics (3) F
Students will gain knowledge of and experience graphical communications as used in the construction industry. Students will print reading and interpretation of all architectural, electrical, and mechanical systems diagrams. Residential and commercial plans will be used. Prerequisite: CMT 1210 (can be taken concurrent). (Available online)

CMT 1210. Residential Construction Materials and Methods (3) F
The purpose of this course is to provide students with knowledge of residential building techniques and materials. The course will examine common construction materials, components, and systems as related to wood frame structures. Applicable building codes are also discussed as they relate to various materials and the methods of construction for Utah. The residential construction process will be analyzed from site planning to finish construction. The course also includes editing related specifications and determining cost estimates. Site visits and a glossary project will be used to document the construction process along with the student development of presentations. (Available online)

CMT 1310. Commercial Construction Materials & Methods (3) S
The purpose of this course is to provide students with knowledge of commercial building techniques and materials. Basic material and installation methods for commercial construction are studied; which include Site work, Concrete, Masonry, Metals, Curtain-walls, Finishes. Applicable building codes, written specifications, and cost estimating will be discussed as they relate to these various construction methods. Students will build scale models or draw details of these construction methods, and make construction site visits to enhance their understanding of construction techniques. (Available online)

CMT 1500. Computer Applications in Construction (2) S
Computer applications used in the construction field will be examined in areas of cost estimating, project scheduling, CAD design, and construction management. Various software packages will be introduced and examined specifically to their application in the construction industry. Prerequisite: CMT 1210.

CMT 2220. Construction Contracts and Specifications (3) S
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<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMT SI2330</td>
<td>Concrete Technology (3) S</td>
<td>The student will obtain knowledge of concrete, its physical and mechanical properties, and the design and control of the concrete mixes. They will also obtain knowledge in the various forming systems used in residential and commercial construction.</td>
</tr>
<tr>
<td>CMT 2340</td>
<td>Construction Surveying (2) S</td>
<td>The student will perform basic surveying operations necessary for the location, layout, and construction of a building. Interpretation of plot books, site plans, and topographic maps is included. Prerequisite: MATH QL1080 (or MATH QL1050 and MATH 1060). (Available online)</td>
</tr>
<tr>
<td>CMT 2360</td>
<td>Building Codes and Inspection (2) F</td>
<td>Familiarizes students with current building codes and zoning ordinances as they apply to the construction and use of buildings. Inspection procedures used to enforce codes are also discussed. (Available online)</td>
</tr>
<tr>
<td>CMT 2640</td>
<td>Architectural Estimating (2) S</td>
<td>Developing cost and material estimates of a building project. Involves manual and computer applications in working with architectural drawings and reference materials. Prerequisites: MATH 1010 or higher, CMT 1150, CMT 1310, and CMT 1500. (Available online)</td>
</tr>
<tr>
<td>CMT 2880</td>
<td>Internship (3) S</td>
<td>Supervised work experience in the construction industry with placement and course objectives approved by the faculty supervisor. (Available online)</td>
</tr>
<tr>
<td>CMT 2899</td>
<td>Associate's Degree Assessment (0)</td>
<td>This course is to serve as an assessment tool whereby all AAS degree seeking students in the College of Applied Science &amp; Technology demonstrate their learned knowledge in at least three areas of Applied Technology study. At present, this knowledge will be demonstrated through the use of the Work Keys exams administered through the Campus Testing Center.</td>
</tr>
<tr>
<td>CMT 3115</td>
<td>Construction Cost Estimating (3) F</td>
<td>The student will learn the methods and procedures for estimating and bidding construction projects. Actual working drawings and specifications are used. The course will emphasize computer estimating, development of unit costs, and advanced estimating principles. Ethics as it relates to bidding will be discussed. Prerequisites: MATH QL1080 (or MATH QL1050 and MATH 1060) and CMT/DGET 2640.</td>
</tr>
<tr>
<td>CMT 3130</td>
<td>Construction Planning &amp; Scheduling (3) S</td>
<td>This course will provide students with the fundamental skills necessary to plan and schedule the entire construction process and familiarize them with computer scheduling software packages. Students will learn to mix and match available resources in the most efficient combinations to complete projects on time and within budget. Prerequisite: MATH QL1080 (or MATH QL1050 and MATH 1060) and CMT 1500.</td>
</tr>
<tr>
<td>CMT 3210</td>
<td>Construction Management (3) F</td>
<td>This course focuses on the processes and tasks required for management of building projects. Students will study the skills necessary to successfully manage construction projects, including: record-keeping and documentation, interpreting contracts and specifications, and other duties necessary for efficient project operation and successful completion. Ethics as it relates to project management and customer relations will be discussed. Prerequisite: CMT 2220.</td>
</tr>
<tr>
<td>CMT 3260</td>
<td>Mechanical and Electrical Systems (4) F</td>
<td>This course is designed to provide basic knowledge of electrical, plumbing, and HVAC systems used in residential and light commercial buildings. Emphasis is placed on advantages and disadvantages of various systems, and how their design and installation integrates into the management of the building process. Particular attention is given to soliciting and managing mechanical and electrical subcontractors. (Available online)</td>
</tr>
<tr>
<td>CMT 3350</td>
<td>Applied Structures (4) S</td>
<td>Students will evaluate the structural behavior of buildings and other engineered structures. Includes properties of materials and mechanics as it relates to the structural behavior of load resisting components. Students will learn how loads and stresses are determined and apply this information to the design and selection of structural components in residential and commercial buildings. Prerequisites: MATH QL1080 (or MATH QL1050 and MATH 1060) and PHYS PS/SI2010.</td>
</tr>
<tr>
<td>CMT 4120</td>
<td>Construction Accounting and Finance (3) F</td>
<td>Construction finance and accounting familiarizes students with construction finance, accounting, and cost control concepts, including: developing an overhead budget, analyzing financial statements, projecting cash flows, profit center analysis, taxes, depreciation, and pro forma development. Students will be introduced to computer accounting packages. Prerequisites: ACTG 2010, MATH QL1080 (or MATH QL1050 and MATH 1060), and CMT 1500.</td>
</tr>
<tr>
<td>CMT 4150</td>
<td>Construction Equipment and Methods (3) F</td>
<td>This course will provide students with the fundamental skills necessary to plan and manage construction projects, including: estimating, developing an overhead budget, analyzing financial statements, projecting cash flows, profit center analysis, taxes, depreciation, and pro forma development. Students will be introduced to computer accounting packages. Prerequisites: ACTG 2010, MATH QL1080 (or MATH QL1050 and MATH 1060), and CMT 1500.</td>
</tr>
<tr>
<td>CMT 4550</td>
<td>Construction Safety (2) S</td>
<td>This course is to serve as an assessment tool whereby all AAS degree seeking students in the College of Applied Science &amp; Technology demonstrate their learned knowledge in at least three areas of Applied Technology study. At present, this knowledge will be demonstrated through the use of the Work Keys exams administered through the Campus Testing Center.</td>
</tr>
<tr>
<td>CMT 4610/4620</td>
<td>Senior Project (2/2) F, S</td>
<td>Students must apply the semester before they plan to take Senior Project. Capstone project which spans two consecutive semesters and student's senior year. The application of skills, knowledge, techniques and concepts to an actual project or construction company. Emphasis on integrated project management, including: estimating and bidding, project organization and control, and documentation. CMT 4610/4620 should be taken the last two semesters before graduation. Faculty must approve each student's application. At a minimum the following courses must have been taken: CMT 3115, CMT 3130, and CMT 4150. CMT 4610 and CMT 4150 may be taken concurrently with approval of instructor.</td>
</tr>
<tr>
<td>CMT 4800</td>
<td>Individual Projects and Research (1-3) S</td>
<td>Individual research or projects in Construction Management Technology. Credit and time determined by the student and faculty advisor. Prerequisite: Junior or Senior standing and consent of instructor.</td>
</tr>
<tr>
<td>CMT 4830</td>
<td>Directed Studies (1-3) S</td>
<td>Students will receive credit for approved studies in an area not covered in the CMT program. Credit and time determined by the student and faculty advisor. Prerequisite: Junior or Senior standing and consent of instructor.</td>
</tr>
<tr>
<td>CMT 4890</td>
<td>Practicum (2) S</td>
<td>Supervised work experience in the construction industry with placement and course objectives approved by the faculty supervisor. This course can be used to help the student satisfy the CMT program requirement of 800 hours of approved supervised work experience. Should be taken during the final two semesters. Prerequisite: Senior standing and consent of instructor. (Available online)</td>
</tr>
</tbody>
</table>
CMT 4920. Short Courses, Workshops, Institutes, and Special Programs (.5-4) Su, F, S
Consult the semester class schedule for the current offering under this number. The specific title and credit authorized for the particular offering will appear on the student transcript. Can be repeated for credit. Prerequisite: Junior or Senior standing and consent of instructor.

CMT 5100. Civil Engineering and Architecture (5)
CEA is designed to help students understand the fields and career possibilities in civil engineering and architecture. Students gain an understanding of the process of developing land into a viable building as they explore the role and skills used by architects and civil engineers during the process of planning a site and designing a building. The course meets for a total of 75 hours over a two-week period and focuses on the content as well as teaching methods appropriate for the course. This course is designed specifically and only for current high school teachers who have been assigned by their schools and districts to teach the Project Lead the Way courses. This course carries graduate credit for those teachers who would use it for recertification.

**Design Graphics Engineering Technology**

**Location:** Engineering Technology Building, Room 214
**Telephone Contact:** 801-626-6305
**E-Mail:** designgraphics@weber.edu
**Advisors:** Ingrid Allen, Keith Allred, Larry Leavitt

The Design Graphics Engineering Technology program prepares students to develop engineering and architectural drawings and models, technical manuals, reports, presentations, training textbooks, technical illustrations, interactive multimedia, and animations for industry. The students will develop their graphical skills, techniques, concepts, and management skills through exercises and projects. They will work in mechanical, electrical, architectural, structural, and overall project management areas. The students will use calculators, computers, handbooks, and engineering reference materials while applying various mathematical concepts from geometry, algebra, and trigonometry.

**Design Graphics Engineering Technology**

**Associate of Applied Science Degree (AAS)**

» **Grade Requirements:** A grade of C or better in all DGET courses (a grade of "C-" is not acceptable) in addition to an overall GPA for all courses of 2.00 or higher.

» **Credit Hour Requirements:** 63 total hours are required – 24 of which are required within the Design Graphics Engineering Technology AAS program.

» **Assessment Requirements:** Students will be required to complete certain assessment instruments as part of the overall requirements for receiving their associate's degree. Please see your advisor or your department for specific information regarding assessment.

**Advisement**

All Design Graphics Engineering Technology students are required to meet with a faculty advisor at least annually for course and program advisement. Call 801-626-6305 for more information or to schedule an appointment. Advisement may also be obtained in Engineering Technology, room 214.

**Admission Requirements**

Declare your program of study (see page 17). There are no special admission or application requirements for this program.

**General Education**

Refer to pages 38-43 for Associate of Applied Science requirements. Computer and Information Literacy as defined in this catalog is also required for the AAS degree.

**Course Requirements for AAS Degree**

**Design Graphics Engineering Technology**

**Courses Required (24 credit hours)**

- DGET 1060 Fundamentals of Drafting Using 3D CAD (3)
- DGET 1160 Documentation Using 3D CAD (3)
- DGET 1360 Fundamentals of Architectural Drafting Using CAD (5)
- DGET 2350 Advanced Architectural Drafting (4)
- DGET 2460 Design Fundamentals Using 3D CAD (3)
- DGET 2650 Advanced Mechanical Drafting & Design (3)
- DGET 2660 Structural Detailing (3)
- DGET 2899 Associate's Degree Assessment (0)

**Technical Courses Required (9 credit hours)**

- MFET 1210 Machining Principles Lecture/Lab I (3)
- MFET 2360 Manufacturing Processes and Materials (3)
- MFET 2410 Quality Assurance and Improvement (3)

**Technical Electives (2 credit hours minimum)**

A minimum of 2 credit hours of technical electives chosen from the following list or approved by the program coordinator are required.

- CEET 1110 Basic Electronics (2)
- MFET 2150 Metal Forming, Casting & Welding (4)
- MFET 2440 Computer Numeric Control (CNC) in Manufacturing (3)
- MFET 2670/2670L GMA, FCA and GTA Welding (3)
- CMT 1210 Residential Construction Materials and Methods (3)
- CMT 1500 Computer Applications in Construction (2)
- CMT 2220 Construction Contracts & Specifications (3)
- CMT 2340 Construction Surveying (2)
- CMT 2360 Building Codes and Inspection (2)

**Support Courses Required (22 credit hours)**

- ENGL EN1010 Introductory College Writing (3)
- ENGL EN2010 Intermediate College Writing (3)
- COMM HU2110 Intro to Interpersonal & Small Group Communication (3)
- MATH QL1050 College Algebra (4) or MATH QL1080 Pre-Calculus (5)
- & MATH 1060 Trigonometry (3)
- PHYS PS/SI2010 College Physics I with lab (5)
- TBE TE1700 Intro to Microcomputer Applications (3)

**Suggested Course Sequence**

Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.

**Design Graphics Engineering Technology**

**Bachelor of Science Degree (BS)**

» **Program Prerequisite:** AAS degree in Design Graphics Engineering Technology from Weber State University or equivalent degree or coursework from an accredited AAS program.

» **Minor:** Not required.

» **Grade Requirements:** A grade of "C-" or better in all DGET courses is required (a grade of "C-" is not acceptable) in addition to an overall GPA for all courses of 2.50 or higher. Also refer to the general grade requirements for graduation page 37.

» **Credit Hour Requirements:** A total of 124 credit hours is required for graduation. A total of 40 upper division credit hours is required (courses numbered 3000 and above.)
Advisement
All four-year design graphics engineering technology students are required to meet at least annually with a faculty advisor for course and program advisement. Call 801-626-6305 for more information or to schedule an appointment. Advisement may also be obtained in Engineering Technology, room 214.

Admission Requirements
Declare your program of study (see page 17). Refer to the Program Prerequisite on the previous page. There are no additional special admission or application requirements for this program.

General Education
Refer to pages 37-43 for Bachelor of Science requirements. TBE TE1700, Microcomputer Applications, will fill part of the Computer Literacy requirement and COMM HU2110 will fulfill both program and general education requirements.

Course Requirements for BS Degree
To be taken in addition to the requirements for the AAS degree in Design Graphics Engineering Technology.

Design Graphics Engineering Technology
Courses Required (34 credit hours)
DGET 3100 Tool Design (3)
DGET 3300 Graphical Kinematics & Animation (3)
DGET 3400 Technical Illustration & Documentation I (3)
DGET 3470 Applications in CAD (3)
DGET 3640 Cost Estimation & Control (3)
DGET 4350 Architectural Design (3)
DGET 4400 Technical Illustration & Documentation II (3)
DGET 4470 Advanced 3D CAD Modeling (3)
DGET 4500 Pneumatic, Electrical & Hydraulic Applications (3)
DGET 4600 Senior Project (2)
DGET 4610 Senior Project (2)
DGET 4890 or DGET 4890 Cooperative Work Experience (1-3)

Technical Electives (4 credit hours minimum)
A minimum of 4 credit hours of technical electives approved by the program coordinator are required. Three hours of elective credits must be upper division.

Support Courses Required (10 credit hours)
MFET 2300 Statics & Strength of Materials (5)
MFET 3320 Machine Design (2)
MFET 3550 Supervision Principles (3)

Suggested Course Sequence
Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.

DGET 1050. Basic Drafting (3) Su, F, S
A beginning course for two and four year technology students who need a related drafting class, and students wanting to explore a drafting class. Includes sketching, instruments and their use, lettering, geometric construction, shape and size description, sectional views, auxiliary views, threads and fasteners, and an introduction to working drawings.

DGET 1060. Fundamentals of Drafting Using 3D CAD (3) Su, F, S
A beginning course for two and four year technology majors, students who need a related drafting class, and students wanting to explore a drafting class. Includes sketching, CAD modeling, geometric construction, shape and size description, orthographic projection, sectional views, auxiliary views, threads and fasteners, and an introduction to working drawings. Three hours of lectures per week. Lab time as required.

DGET 1150. Blueprint Reading (3) F, S
The abbreviations, symbols, terms, principles, and procedures for reading blueprints. Introduction to orthographics, oblique, isometric and perspective sketching.

DGET 1160. Documentation Using 3D CAD (3) F, S
The use of CAD to create industrial level production working drawings. Includes ANSI standards, precision dimensions, fits and tolerances, surface finishes, symbols for welding, piping, etc., machine elements and processes, sheet metal, 3D wireframe, menu customization, and surface and solid modeling. Geometric Dimensioning and Tolerancing (GD&T) basics, and descriptive geometry. Three lectures per week, Prerequisite: DGET 1060.

DGET 1250. Computer Aided Drafting (3) Su, F, S
An introduction to the fundamentals of computer aided drafting. An overview of CAD terminology and hardware. The use of CAD to create working drawings. Prerequisite: DGET 1050 or equivalent. This course may be taken concurrently with DGET 1050.

DGET 1260. 3D Computer Aided Drafting (3) F, S
The use of CAD to create industrial level production workings. Includes ANSI standards, precision dimensions, fits and tolerances, surface finishes, machining processes, 3D wireframe, menu customization, and surface and solid modeling. Prerequisites: DGET 1150 and 1250.

DGET 1340. Architectural Drafting for Interior Design (3) F
A beginning course for Interior Design students who need an introduction to basic drafting board skills including sketching, instruments and their use, lettering, geometric construction, shape and size description. Also an introduction to the fundamentals of architectural working drawings and procedures used in developing a set of residential plans, including architectural standards, design procedures and building requirements.

DGET 1350. Basic Architectural Drafting (3) F, S
The study of architectural working drawings. Covers procedures used in developing a complete set of residential plans using CAD. Includes architectural drafting standards, design procedures, and building code requirements. Prerequisites: DGET 1050 and DGET 1250.

DGET 1360. Fundamentals of Architectural Drafting Using CAD (5) F, S
The study of architectural working drawings. Covers procedures used in developing a complete set of residential plans. Includes architectural drafting standards, design procedures, and building code requirements. CAD applications will be used in the development of architectural documents.

DGET 1890. Cooperative Work Experience (1-3) Su, F, S
Open to all first year students in Design Graphics Engineering Technology. Department approval required before registration. Provides academic credit for on-the-job experience. Grade and amount of credit will be determined by the department.

DGET 2350. Advanced Architectural Drafting (4) F, S
The use of CAD in generating the working drawings for a small commercial structure. Includes layout and dimensioning of an index sheet, floor plan, footing and foundation plan, elevations, site plan and the detail drawings needed to support the commercial structure. Prerequisite: DGET 1360.
DGET 2440. Descriptive Geometry (2) F
Instruction in view relationships, special visualization and graphical solutions of problems concerning true length, true angles, true size and shape, directions, intersections, and shortest distance between lines and planes. Prerequisite: DGET 1250.

DGET 2450. Geometric Dimensioning and Tolerancing (2) F, S
Instruction in geometric dimensioning and tolerancing per current ANSI standards as it applies to dimensioning machine parts for interchangeability. Hands-on verification of geometric tolerances. Prerequisite: DGET 1250 and MFET 1210.

DGET 2460. Design Fundamentals Using 3D CAD (3)
Design is the creative process of applying scientific and mathematical principles, experience, and judgment to the development of the solution of a technical product or system to meet a specific need. Turning ideas into design will incorporate problem identification, market research and brainstorming possible solutions, develop detailed part and assembly drawings, implementation, and evaluation. Sketching, gears/cams_shafts, advanced GD&T, tolerance buildup, tolerances for assemblies, introduction to rapid prototyping, and CNC design for manufacturing concepts will be presented. Advanced 3-D modeling software applications will include: library of parts, assembly constraints, motion constraints, drive constraints, and adaptive design. Three lectures per week. Prerequisite: DGET 1160.

DGET 2640. Architectural Estimating (2) S
Developing cost and material estimates of a building project. Involves manual and computer applications in working with architectural drawings and reference materials. Prerequisites: MATH 1010 or higher, DGET 1360 or CMT 1150, CMT 1310, and CMT 1500. (Available online) Cross-listed with CMT 2640.

DGET 2650. Advanced Mechanical Drafting and Design (3)
Uses CAD to lay out advanced production drawings and design. Uses the Machinery’s Handbook, ANSI standards, geometric dimensioning and tolerances and manufacturer’s reference materials. Supports the design and drafting required for senior project. Prerequisites: DGET 1160 and DGET 2460.

DGET 2660. Structural Detailing (3) S
General course using CAD covering AISC standard detailing, welding symbols, connections, details, shapes and plates. Design of bolted and welded connectors, beams, columns and framing. Prerequisites: MATH QL1080 (or MATH QL1050 & 1060) and DGET 1360.

DGET 2830. Directed Readings (1-3) F, S
Directed readings in Design Graphics Engineering Technology including mechanical and architectural areas. Must have department approval.

DGET 2890. Cooperative Work Experience (1-3) Su, F, S
Open to all advanced students in Design Graphics Engineering Technology. Department approval required before registration. Provides academic credit for on-the-job experience. Grade and amount of credit will be determined by the department.

DGET 2899. Associate’s Degree Assessment (0)
This course is to serve as an assessment tool whereby all AAS degree seeking students in the College of Applied Science & Technology demonstrate their learned knowledge in at least three areas of Applied Technology study. At present, this knowledge will be demonstrated through the use of the Work Keys exams administered through the Campus Testing Center.

DGET 2920. Short Courses, Workshops, Institutes and Special Programs (1-4) F, S
Faculty approval required. Consult the semester class schedule for the current offering under this number. The specific title and credit authorized will appear on the student transcript.

DGET 3100. Tool Design (3) F
Tool design principals used for workpiece control in manufacturing and production. Topics include responsibilities of a tool designer, the design process, economics of design, tooling materials, and tool drawings and specifications. Other topics will include jigs, fixtures, gages, dies and tooling required by specialized manufacturing processes. Prerequisites: MFET 1210 and DGET 2460, DGET 2650 and MATH QL1080 (or MATH QL1060 and MATH 1060).

DGET 3300. Graphical Kinematics and Animations (3) S
Graphical representation of the motion of bodies without reference to the forces that cause the motion. Devices will be modeled and the limits of movement of components defined so that overall machine design can be animated and analyzed. Prerequisites: DGET 1160 and MFET 2300.

DGET 3400. Technical Illustration and Documentation I (3) F
Projects in design presentation using CAD and other computer graphics software as the primary medium. Image capture, image processing and manipulation, types of color, composition, page layout, integration of text, and forms of output. Prerequisites: DGET 1160 and DGET 2350.

DGET 3460. Parametric Design Graphics (3)
An advanced design graphics course using state-of-the-art parametric modeling software. Topics include: parametric modeling fundamentals, constructive solid geometry concepts, model history, parent/child relationships, parametric constraints & relations, datum features, symmetrical features, 3D construction tools, advanced modeling tools, and assembly modeling. Prerequisites: DGET 1060 and TBE TE1700.

DGET 3470. Applications in CAD (3) F
Use of 2D and 3D modeling to prepare engineering documentation and model analysis for manufacturing. Course uses commercially available software. Students will complete a series of laboratory assignments and term projects in an open lab environment. Prerequisites: TBE TE1700 and DGET 1160.

DGET 3640. Cost Estimating and Control (3)
Project management and cost structure, including cost of engineering, CAD systems, marketing, production and inventory. Calculate break-even analysis, make/buy decisions and capital equipment justifications. Computer aids will be used to analyze data. Prerequisites: MATH QL1080 (or MATH QL1050 and MATH 1060) and TBE TE1700.

DGET 3890. Cooperative Work Experience (1-3) Su, F, S
Open to all advanced students in Design Graphics Engineering Technology. Department approval required before registration. Provides academic credit for on-the-job experience. Grade and amount of credit will be determined by the department.

DGET 4350. Architectural Design 3D (3)
An advanced CAD course dealing with presentation graphics and the use of 3-D CAD in creating models of houses and small commercial structures. Includes applying surfaces, rendering, creating walkthroughs, and the generation of complete documentation drawings. Prerequisites: DGET 2350 and DGET 2660.
DGET 4400. Technical Illustration and Documentation II (3) S
The study of professional design presentation and the processes, tools, and media used. Problem definition, visual organization, incorporating visual identity, integrating word and image, information design and design for interactive media. Prerequisites: DGET 3300 and DGET 3400.

DGET 4470. Advanced 3D CAD Modeling (3) S
An advanced CAD course featuring 3-D parametric modeling using commercially available software. Studies in parametric design and design intent, applying surfaces, rendering, and creating animated presentations. Prerequisite: DGET 3470.

DGET 4500. Pneumatics, Electrical and Hydraulic Applications (3) S
Examines the components of pneumatics, electrical and hydraulic systems, including a detailed study of each type of system and the integration of all components required for machine design. The symbols used to document pneumatics, electrical and hydraulic systems and the selection of components from vendor catalogs will be included in the detailing of a complete machine. Prerequisite: MFET 3320.

DGET 4600, 4610. Senior Project (2-2) F, S
A Capstone project spanning two consecutive semesters. The project includes application of skills, knowledge, techniques and concepts to the design and manufacturing project. Emphasis placed on integrated project management including preparation of drawings, creation of presentations, project organization and control, and documentation. Prerequisite: Senior standing and approval of the department. A student must apply for senior project one semester before the start of the senior project.

DGET 4830. Directed Readings (1-3) Su, F, S
Directed readings in Design Graphics Engineering Technology including mechanical and architectural areas. Must have department approval.

DGET 4890. Cooperative Work Experience (1-3) Su, F, S
Open to all advanced students in Design Graphics Engineering Technology. Department approval required before registration. Provides academic credit for on-the-job experience. Grade and amount of credit will be determined by the department.

In planning a program of study, students should be aware that most pre-engineering courses have mathematics and science prerequisites and that improper scheduling of courses can lengthen the time required to complete the engineering degree. Students should also be aware that requirements may vary according to the university to which the student wishes to transfer. Students are therefore strongly encouraged to meet with the Pre-Engineering coordinator prior to beginning their program.

The Associate of Pre-Engineering degree has fewer general education credit hours than the Associate of Science (A.S.) degree. Therefore, in order for a student to obtain a Bachelor of Science (B.S.) degree in engineering, he or she will have to take additional general education courses at WSU and/or the receiving university. Alternatively, a student may earn the A.S. degree, but this degree normally takes longer to complete than the A.P.E. degree because it contains not only pre-engineering courses but also a full complement of general education courses. The A.S. degree has the potential benefit, however, of satisfying all the general education requirements at the receiving university, which for most students is the University of Utah or Utah State University.

PRE-ENGINEERING
ASSOCIATE OF PRE-ENGINEERING DEGREE (A.P.E.)

- Grade Requirements: A minimum overall GPA of 2.00 is required.
- Credit Hour Requirements: A minimum of 60 credit hours is required. A minimum of 20 hours in residence (for transfer students).

Admisson
All Pre-Engineering students are strongly encouraged to meet with the Pre-Engineering coordinator at the beginning of the program and at least once annually for course and program advisement. Pre-Engineering students are also encouraged to obtain advisement from the applicable engineering department at the receiving university.

Advisement
All Pre-Engineering students are strongly encouraged to meet with the Pre-Engineering coordinator at the beginning of the program and at least once annually for course and program advisement. Pre-Engineering students are also encouraged to obtain advisement from the applicable engineering department at the receiving university.

Declaration
Declare your program of study (see page 17). There are no special admission or application requirements for this program. However, students entering the Pre-Engineering program are expected to have taken college preparatory mathematics and physical science courses in high school. The standard entry level mathematics course for pre-engineering majors is MATH 1210 Calculus I. The prerequisite for MATH 1210 is MATH QL1080 Pre-calculus, or MATH QL1050 College Algebra plus MATH 1060 Trigonometry, or placement through examination. Students who are not ready to take MATH 1210 upon entering the Pre-Engineering program should consult with the Pre-Engineering coordinator, who will recommend remedial courses that will prepare the student for calculus, physics and engineering courses.

Course Requirements for A.P.E. Degree
General Education Core Requirements (18 credit hours)
1. Composition (6 credit hours)
   ENGL EN1010 Introductory College Writing (3)
   ENGL EN2010 Intermediate College Writing (3)
2. American Institutions (3 credit hours)
   POLS AI1100 American National Government (3) or
   HIST AI1700 American Civilization (3) or
   ECON AI1740 Economic History of the United States (3)
3. Computer and Information Literacy (2 to 5 credit hours)
   Refer to the Computer and Information Literacy requirements listed under the General Requirements section of this catalog.
   The credit hours for this requirement do not count toward the 60 credit hour total for this degree.
### Pre-Engineering Core Requirements (20 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 1000</td>
<td>Introduction to Engineering</td>
<td>(2)</td>
</tr>
<tr>
<td>MATH SI4210</td>
<td>Calculus I (4)</td>
<td></td>
</tr>
<tr>
<td>MATH SI4210</td>
<td>Calculus II (4)</td>
<td></td>
</tr>
<tr>
<td>PHYS PS/SI2120/L</td>
<td>Physics for Sci &amp; Eng (w/lab) (5)</td>
<td></td>
</tr>
<tr>
<td>PHYS SI2220/L</td>
<td>Physics for Sci &amp; Eng II (w/lab) (5)</td>
<td></td>
</tr>
</tbody>
</table>

### Engineering Specialty Courses (22 credit hours minimum)

Engineering specialty courses are those that are required for specific engineering disciplines at the receiving universities. With the assistance of the Pre-Engineering Coordinator, students should take courses that apply to their particular engineering major at the university to which they plan to transfer. The specialty courses listed below apply generally to the primary engineering disciplines, but do not constitute a list of specific course requirements for that discipline at any particular receiving university. Engineering specialty course requirements for the University of Utah and Utah State University may be obtained from the Pre-Engineering Coordinator or the applicable engineering department at those institutions.

### Biological and Biomedical Engineering

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 2020</td>
<td>Calculus III (4)</td>
<td>(4)</td>
</tr>
<tr>
<td>MATH 2050</td>
<td>Linear Algebra &amp; Differential Equations (4)</td>
<td></td>
</tr>
<tr>
<td>MATH 3410</td>
<td>Probability and Statistics (3)</td>
<td></td>
</tr>
<tr>
<td>CHEM PS/SI2120</td>
<td>Principles of Chemistry I (5)</td>
<td></td>
</tr>
<tr>
<td>CHEM SI2120</td>
<td>Principles of Chemistry II (5)</td>
<td></td>
</tr>
<tr>
<td>CHEM 2310</td>
<td>Organic Chemistry I (5)</td>
<td></td>
</tr>
<tr>
<td>CHEM 2320</td>
<td>Organic Chemistry II (5)</td>
<td></td>
</tr>
<tr>
<td>ENGR 2010</td>
<td>Statics (3)</td>
<td></td>
</tr>
<tr>
<td>ENGR 2080</td>
<td>Dynamics (4)</td>
<td></td>
</tr>
<tr>
<td>MICR LS/SI2054</td>
<td>Principles of Microbiology (4)</td>
<td></td>
</tr>
<tr>
<td>DGET 1060</td>
<td>Fundamentals of Drafting Using 3D CAD (3)</td>
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</tr>
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</table>

### Chemical Engineering

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 2020</td>
<td>Calculus III (4)</td>
<td>(4)</td>
</tr>
<tr>
<td>MATH 2050</td>
<td>Linear Algebra &amp; Differential Equations (4)</td>
<td></td>
</tr>
<tr>
<td>CHEM PS/SI2120</td>
<td>Principles of Chemistry I (5)</td>
<td></td>
</tr>
<tr>
<td>CHEM SI2120</td>
<td>Principles of Chemistry II (5)</td>
<td></td>
</tr>
<tr>
<td>CHEM 2310</td>
<td>Organic Chemistry I (5)</td>
<td></td>
</tr>
<tr>
<td>ENGR 2010</td>
<td>Statics (3)</td>
<td></td>
</tr>
<tr>
<td>ENGR 2140</td>
<td>Strength of Materials (3)</td>
<td></td>
</tr>
<tr>
<td>ENGR 2300</td>
<td>Thermodynamics I (3)</td>
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### Civil and Environmental Engineering

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MATH 2020</td>
<td>Calculus III (4)</td>
<td>(4)</td>
</tr>
<tr>
<td>MATH 2050</td>
<td>Linear Algebra &amp; Differential Equations (4)</td>
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</tr>
<tr>
<td>CHEM PS/SI2120</td>
<td>Principles of Chemistry I (5)</td>
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</tr>
<tr>
<td>CHEM SI2120</td>
<td>Principles of Chemistry II (5)</td>
<td></td>
</tr>
<tr>
<td>PHYS 2300</td>
<td>Scientific Computing for Physical Systems (3)</td>
<td></td>
</tr>
<tr>
<td>ENGR 2010</td>
<td>Statics (3)</td>
<td></td>
</tr>
<tr>
<td>ENGR 2080</td>
<td>Dynamics (4)</td>
<td></td>
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<tr>
<td>ENGR 2140</td>
<td>Strength of Materials (3)</td>
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<tr>
<td>MICR LS/SI2054</td>
<td>Principles of Microbiology (4)</td>
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</tr>
<tr>
<td>DGET 1060</td>
<td>Fundamentals of Drafting Using 3D CAD (3)</td>
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### Electrical and Computer Engineering

<table>
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<th>Course Title</th>
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<tr>
<td>MATH 2020</td>
<td>Calculus III (4)</td>
<td>(4)</td>
</tr>
<tr>
<td>MATH 2050</td>
<td>Linear Algebra &amp; Differential Equations (4)</td>
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</tr>
<tr>
<td>CHEM PS/SI2120</td>
<td>Principles of Chemistry I (5)</td>
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</tr>
<tr>
<td>MATH 3410</td>
<td>Probability and Statistics (3)</td>
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<tr>
<td>ENGR 2270</td>
<td>Electrical Circuits (4)</td>
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<tr>
<td>ENGR 2700</td>
<td>Digital Circuits (4)</td>
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<tr>
<td>CS 1030</td>
<td>Foundations of Computer Science (4)</td>
<td></td>
</tr>
<tr>
<td>CS SI1023</td>
<td>Selected Programming Language (4)</td>
<td></td>
</tr>
<tr>
<td>CS SI1400</td>
<td>Fundamentals of Programming (4)</td>
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</tr>
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</table>

### Mechanical Engineering

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MATH 2120</td>
<td>Calculus III (4)</td>
<td>(4)</td>
</tr>
<tr>
<td>MATH 2250</td>
<td>Linear Algebra &amp; Differential Equations (4)</td>
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</tr>
<tr>
<td>CHEM PS/SI2120</td>
<td>Principles of Chemistry I (5)</td>
<td></td>
</tr>
<tr>
<td>PHYS 2300</td>
<td>Scientific Computing for Physical Systems (3)</td>
<td></td>
</tr>
<tr>
<td>ENGR 2210</td>
<td>Electrical Engineering for Non-majors (4)</td>
<td></td>
</tr>
<tr>
<td>ENGR 2010</td>
<td>Statics (3)</td>
<td></td>
</tr>
<tr>
<td>ENGR 2080</td>
<td>Dynamics (3)</td>
<td></td>
</tr>
<tr>
<td>ENGR 2140</td>
<td>Strength of Materials (3)</td>
<td></td>
</tr>
<tr>
<td>ENGR 2160</td>
<td>Materials Science and Engineering (3)</td>
<td></td>
</tr>
<tr>
<td>ENGR 2300</td>
<td>Thermodynamics I (3)</td>
<td></td>
</tr>
</tbody>
</table>

**Pre-Engineering Courses - ENGR**

ENGR 1000. Introduction to Engineering (2) F

Introduction to engineering for students in the pre-engineering program. Engineering as a profession and career opportunities. Fundamentals of engineering design and analysis using the computer. College algebra and trigonometry strongly recommended.

ENGR 2010. Statics (3) F

Vector mechanics, force and moment systems, equilibrium of particles and rigid bodies, friction and moments of inertia. Prerequisites: MATH SI1210 and PHYS PS/SI2210.

ENGR 2080. Dynamics (4) S

Fundamentals of position, velocity and acceleration. Kinematics and kinetics of particles. Newton’s laws, conservation of momentum and energy. Dynamics of rigid bodies. Prerequisite: ENGR 2010 with a grade of “C” or higher.

ENGR 2140. Strength of Materials (3) S

Fundamentals of stress and strain, Hooke’s law, torsion, bending of beams, combined stresses and design of members. Prerequisite: ENGR 2010 with a grade of “C” or higher.

ENGR 2160. Materials Science and Engineering (3) S

Combined lecture/laboratory course that introduces the fundamentals of atomic and microscopic structure of metals, polymers, ceramics and composite materials, and how these structures affect mechanical, thermal, electrical and optical properties. Prerequisite: CHEM PS/SI1210. Co-requisite: ENGR 2140.

ENGR 2210. Electrical Engineering for Non-majors (4) S

Combined lecture/laboratory course as an introduction to electrical engineering for non-engineering students. Fundamentals of DC and AC circuits, digital circuits, and power circuits. Prerequisite: CHEM SI1210.

ENGR 2270. Electrical Circuits (4) S

Ohm’s law, Kirchoff’s laws and network theorems. Power in DC and AC circuits, digital circuits, and Fourier analysis of functions. Prerequisite: MATH SI1220.

ENGR 2300. Thermodynamics I (3) F

Thermodynamic properties, equations of state, first and second laws of thermodynamics. Analysis of open and closed systems, availability and irreversibility, power and refrigeration cycles. Prerequisites: MATH SI1210 and PHYS PS/SI2210.

ENGR 2700. Digital Circuits (4) F

Combined lecture/laboratory course that introduces the fundamentals of digital circuits; e.g., number systems, codes, combinational logic, etc.
ENGR 2920. Short Courses, Workshops, Institutes and Special Programs (1-4)
Consult the class schedule for the current offering under this number. The specific title and credit authorized will appear on the student transcript.

DEPARTMENT
SALES AND SERVICE TECHNOLOGY
Chair: Mr. Vel S. Casler
Location: Technical Education Building, Room 101
Telephone: Ranee Dearden 801-626-6913
Professors: Desiree Cooper Larsen, Steven Eichmeier, Carl L. Grunander, C. Daniel Litchford, Lloyd Ott, Jan Slabaugh;
Associate Professors: Vel S. Casler, Rick L. Dove; Instructor Specialist: Shauna Morris

The Department of Sales and Service Technology offers associate of applied science degrees in the areas of Interior Design Technology and Sales & Merchandising Technology and bachelor’s degrees in Technical Sales and Interior Design – Technical Sales.

INTERIOR DESIGN TECHNOLOGY
Advisors: Jan Slabaugh 801-626-7920
Shauna Morris 801-626-6913

Interior Design Technology is a two-year program that drops into the four-year Interior Design Technical Sales degree. The two-year AAS degree provides students academic preparation for employment as assistant designers, wholesale showrooms, and retail sales positions.

See also the four-year Interior Design – Technical Sales degree on page 94.

ASSOCIATE OF APPLIED SCIENCE DEGREE (AAS)

» Program Prerequisite: An interview with the program advisor is necessary prior to acceptance into the program.
» Grade Requirements: An overall GPA of 3.0 or "B"
» Credit Hour Requirements: A total of 63 credit hours is required.
» Assessment Requirements: Students will be required to complete certain assessment instruments as part of the overall requirements for receiving their associate's degree (IDT 2899).

Advisement
All Interior Design students are required to meet with a faculty advisor each semester for course and program advisement. Call 801-626-6913 or 801-626-7920 for more information or to schedule an appointment.

Admission Requirements
Declare your program of study (see page 17). There are no admission or application requirements for this program.

General Education
Refer to pages 38-43 for Associate of Applied Science requirements. The degree requires the following general education courses: ENGL EN1010 (3), COMM HU2110 (3), MATH QL1030 (3) and ART CA1010 (3) or ART CA1030 (3). Students also need to complete Life Science or Physical Science (3), Social Science (3), and Computer and Information Literacy (minimum 2). A minimum of 20 hours in residence is required.

Course Requirements for AAS Degree

<table>
<thead>
<tr>
<th>Interior Design Courses Required (28 credit hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDT 1010  Introduction to Interior Design (3)</td>
</tr>
<tr>
<td>IDT 1020  Presentation Techniques (2)</td>
</tr>
<tr>
<td>IDT 2010  Textiles (3)</td>
</tr>
<tr>
<td>IDT 2020  Computer-aided Design &amp; Drafting (3)</td>
</tr>
<tr>
<td>IDT 2035  Design Process/Space Planning (3)</td>
</tr>
<tr>
<td>IDT 2040  Architectural Detailing (1)</td>
</tr>
<tr>
<td>IDT 2050  Codes and Specifications (2)</td>
</tr>
<tr>
<td>IDT 2860  Practicum (2)</td>
</tr>
<tr>
<td>IDT 2899  Associate’s Degree Assessment (0)</td>
</tr>
<tr>
<td>IDT 3010  Historical Interiors (3)</td>
</tr>
<tr>
<td>IDT 3020  American &amp; Modern Interiors (3)</td>
</tr>
<tr>
<td>IDT 3030  Materials (3)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Support Courses Required (15 credit hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 1130  Design: 3D (3)</td>
</tr>
<tr>
<td>ART 1140  Color Theory (3)</td>
</tr>
<tr>
<td>DGET 1340  Architectural Drafting for Interior Design (3)</td>
</tr>
<tr>
<td>SST 1143  Fundamental Selling Techniques (3)</td>
</tr>
<tr>
<td>SST 3103  Sales Personalities and Profiles (3)</td>
</tr>
</tbody>
</table>

Suggested Course Sequence
Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.

See page 95 for a list of Interior Design course descriptions.

SALES AND MERCHANDISING

ASSOCIATE OF APPLIED SCIENCE DEGREE (AAS)

» Program Prerequisite: An interview with the program advisor is necessary prior to acceptance into the program.
» Grade Requirements: An overall GPA of 2.00 or "C."
» Credit Hour Requirements: A total of 63 credit hours is required.
» Assessment Requirements: Students will be required to complete certain assessment instruments as part of the overall requirements for receiving their associate’s degree. Please see your advisor or your department for specific information regarding assessment.

Advisement
All Sales and Merchandising students are required to meet with a faculty advisor at least annually for course and program advisement. Contact Ranee Dearden at 801-626-6913 for more information or to schedule an appointment.

Admission Requirements
Declare your program of study (see page 17). There are no special admission or application requirements for this program.
Courses Required for AAS Degree

**Courses Required (14 credit hours)**

- SST 1143  Fundamental Selling Techniques (3)
- SST 1303  Distribution Principles (3)
- SST 1602  Advanced Selling Techniques (2)
- SST 2899  Associate's Degree Assessment (0)
- SST 3203  Customer Service Techniques (3)
- SST 3563  Principles of Supervision (3)

**Support Courses (23 credit hours)**

- IDT 2010  Textiles (3)
- SST 1503  Intro to Fashion Merchandising (3)
- SST 1890  Cooperative Work Experience (3)
- SST 2182  Credit & Collection Methods (2)
- SST 2383  Retail Merchandising & Buying Methods (3)
- SST 2443  Advertising Methods (3)
- SST 2703  Internet Sales and Service (3)
- SST 2991  Sales/Service Tech Seminar (3)

SALES AND SERVICE TECHNOLOGY MINOR

- **Grade Requirements:** A grade of "C" or better in all courses used toward the minor.
- **Credit Hour Requirements:** Minimum of 15-16 credit hours.

Program emphasizes specific or concentrated minor emphasis. Check with the SST Department for approval of substitute courses.

**Course Requirements for Fashion Merchandising Emphasis**

**Courses Required (minimum of 15 credit hours)**

- IDT 2010  Textiles (3)
- SST 1503  Intro to Fashion Merchandising (3)
- SST 2703  Internet Sales and Service (3)
- SST 2383  Retail Merchandising & Buying Methods (3)
- SST 2443  Advertising Methods (3)
- SST 3563  Principles of Supervision (3)
- THEA 3243  Costume History (3)

**Course Requirements for Interior Design Emphasis**

**Courses Required (minimum of 16 credit hours)**

- IDT 1010  Introduction to Interior Design (3)
- IDT 1020  Presentation Techniques (3)
- IDT 2020  Computer Aided Design & Drafting (3)
- IDT 2990  Interior Design Seminar (1-2)
- IDT 3010  Historical Interiors (3)
- IDT 3020  American & Modern Interiors (3)
- IDT 3025  Professional Practice (3)
- IDT 3030  Materials (3)
- IDT 3045  Residential Design (3)
- IDT 4020  Commercial Design (3)
- DGET 1350  Basic Architectural Draftering (3)

**Course Requirements for Sales Emphasis**

**Courses Required (16 credit hours)**

- SST 1143  Fundamental Selling Techniques (3)
- SST 1303  Distribution Principles (3)
- SST 1602  Advanced Selling Techniques (2)
- SST 3103  Sales Personalities & Profiles (3)
- SST 3153  Sales Engineering Techniques (3)
- SST 3203  Customer Service Techniques (3)
- SST 3603  Sales Presentation Strategies (3)

## Technical Sales

This program prepares individuals to serve as agents or sales representatives in selling technical products/services to other businesses, plants, professionals, and public and private institutions. This program offers a technical sales emphasis tailored toward specific technical fields such as:

- Manufacturing Rep
- Pharmaceutical Rep
- Financial Planning
- Technology Sales
- Wholesale Rep
- Electronic Rep

**Technical Sales Bachelor's Degree (BS or BA)**

**Program Prerequisite:** An interview with the department chair or designee is necessary prior to acceptance into the program.

**Minor:** Not required.

**Grade Requirements:** A grade of "C" or better in courses required for this major (a grade of "C-" is not acceptable) in addition to an overall GPA of 2.00 or higher.

**Credit Hour Requirements:** A total of 120 hours is required for graduation – a minimum of 43 of these is required within the major. A total of 40 upper division credit hours is required (courses number 3000 and above) – a minimum of 31 of these is required within the major.

**Advisement:**

All Technical Sales students are required to meet with a faculty advisor at least annually for course and program advisement. Call 801-626-6913 for more information or to schedule an appointment with an advisor.

**Admission Requirements:**

Declare your program of study (see page 17). There are no special admission or application requirements for this program.

**General Education**

Refer to pages 37-43 for Bachelor of Science or Bachelor of Arts requirements.

**Course Requirements for BS Degree**

**SST Courses Required (43 credit hours)**

- SST 1143  Fundamental Selling Techniques (3)
- SST 1303  Distribution Principles (3)
- SST 1401  Introduction to Sales & Services Technology (1)
- SST 1602  Advanced Selling Techniques (2)
- SST 2383  Retail Merchandising & Buying Methods (3)
- SST 3103  Sales Personalities & Profiles (3)
- SST 3153  Sales Engineering Techniques (3)
- SST 3203  Customer Service Techniques (3)
- SST 3363  Contract & Sales Negotiation (3)
- SST 3563  Principles of Supervision (3)
- SST 3603  Sales Presentation Strategies (3)
- SST 4102  Developing Team Leadership Skills (2)
- SST 4203  Ethical Sales & Service (3)
- SST 4610  Senior Project I (3)
- SST 4620  Senior Project II (3)
- SST 4992  Senior Seminar (2)
**Technical Sales Core (minimum 20 credit hours)**
Select a minimum of 20 hours in consultation with the department chair.

**Support Course Required (1 credit hour)**
- TBE 3090 Advanced Electronic Presentations (1)

**Support Course Electives (minimum 10 credit hours)**
Select from the following:
- ACTG 2010 Survey of Accounting I (3)
- ACTG 2020 Survey of Accounting II (3)
- ATTC 3520 Fleet Management (2)
- ATTC 3620 Automotive Business Practices (2)
- ATTC 4020 Environmental Issues (2)
- BSAD 1010 Business and Society (3)
- BSAD 3000 Small Business Management (3)
- CHF 4400 The Family in Stress (3)
- COMM 3050 Theory and Literature of Interpersonal Communication (3)
- COMM 3120 Advanced Public Speaking (3)
- COMM 3810 Persuasive Communication (3)
- COMM 3850 Advertising (3)
- ENGL 3100 Professional & Technical Writing (3)
- PSY SS2000 Interpersonal Relationships (3)
- PSY 3460 Social Psychology (3)
- SST 1503 Introduction to Fashion Merchandising (3)
- SST 2182 Credit and Collection Methods (2)
- SST 2443 Advertising Methods (3)
- SST 2703 Internet Sales and Service (3)
- SST 2903 Professional Selling on the Internet (3)
- SST 4910 Directed Readings (1-3)
- SST 4920 Short Courses, Workshops... (1-2)
- TBE 3070 Advanced Spreadsheet Applications (1)
- TBE 3080 Database Applications (1)
- TBE 3100 Desktop Publishing (3)
- TBE 3110 Advanced Desktop Publishing (3)
- TBE 3250 Business Communication (3)
- TBE 3400 Training the Trainer (3)

**INTERIOR DESIGN – TECHNICAL SALES**

**BACHELOR’S DEGREE (BS OR BA)**

The four-year Interior Design – Technical Sales degree provides students academic preparation for employment in kitchen & bath design, residential and commercial design and as product representatives for architects and interior designers.

Students develop skills in sales, business practices, CAD, drafting, sketching, rendering, space planning, specification of materials, as well as history and theory. Art and drafting are essential to the program of study.

In addition to classroom projects, students participate in various community projects, attend field trips, and participate locally in professional organizations such as ASID, IIDA and NKBA.

Students graduating with the Interior Design Technical Sales degree meet guidelines for the practice of residential and commercial interior design, are academically prepared to sit for the CKD (Certified Kitchen Design) exam, gain membership in professional organizations, become licensed, and after two years of experience in the field can sit for the NCIDQ (National Council for Interior Design Qualification) exam. The program is accredited by National Kitchen & Bath Association, NKBA.

The practice of interior design has become complex, technical, and demanding, thus graduates have the technical and sales skills to compete in the profession.

» **Program Prerequisite:** None.

» **Minor:** Not required.

» **Grade Requirements:** A grade of "B" or better in courses required for this major (a grade of "B-" is not acceptable) in addition to an overall GPA of 3.0 or higher.

» **Credit Hour Requirements:** A total of 126 hours is required for this program for graduation.

Transfer students and students coming into the program with an AAS, AA, or AS will take six semesters to complete the program.

**Advisement**

All Interior Design students are required to meet with a faculty advisor each semester for course and program advisement. Call 801-626-6913 or 801-626-7920 for more information or to schedule an appointment.

**Admission Requirements**

Declare your program of study (see page 17). There are no admission or application requirements for this program.

**General Education**

Refer to pages 37-43 for Bachelor of Science or Bachelor of Arts requirements. Either MATH QL1030 (3) or QL1050 (4) may be taken to fulfill the Quantitative Literacy requirement. To fulfill the Humanities/Creative Arts requirement, the following courses are required:
- ART CA1010 (3) or ART CA1030 (3), ARTH CA1100 (4), and COMM HU2110 (3). Transfer students entering the program with an AAS, AA or AS degree will need Scientific Inquiry (6 credit hours) for the BS. BA students must meet the language requirement (refer to the Foreign Language Requirement for Bachelor of Arts on page 37).

**Course Requirements for BS Degree**

**Interior Design Courses Required (53 credit hours)**
- IDT 1010 Introduction to Interior Design (3)
- IDT 1020 Presentation Techniques (2)
- IDT 2010 Textiles (3)
- IDT 2020 Computer-aided Design & Drafting (3)
- IDT 2035 Design Process/Space Planning (3)
- IDT 2040 Architectural Detailing (1)
- IDT 2050 Codes and Specifications (2)
- IDT 2860 Practicum (2)
- IDT 2899 Associate's Degree Assessment (0)
- IDT 3000 Lighting (2)
- IDT 3010 Historical Interiors (3)
- IDT 3020 American & Modern Interiors (3)
- IDT 3025 Professional Practice (3)
- IDT 3030 Materials (3)
- IDT 3040 Perspective/Rendering (2)
- IDT 3045 Residential Design (3)
- IDT 3060 Kitchen & Bath (3)
- IDT 4020 Commercial Design (3)
- IDT 4045 Senior Program Development (2)
- IDT 4050 Senior Project (3)
- IDT 4040 Portfolio (1)
- IDT 4860 Internship for Interior Design (3)

**Support Courses Required (28 credit hours)**
- ART 1130 Design: 3D (3)
- ART 1140 Color Theory (3)
- DGET 1340 Architectural Drafting for Interior Design (3)
- SST 1143 Fundamental Selling Techniques (3)
- SST 1602 Advanced Selling Techniques (2)
- SST 3103 Sales Personalities and Profiles (3)
- SST 3203 Customer Service Techniques (3)
- SST 3363 Contract & Sales Negotiation Techniques (3)
- SST 3603 Sales Presentation Strategies (3)
- SST 4102 Developing Team Leadership Skills (2)

**Suggested Course Sequence**

Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.
IDT 1010. Introduction to Interior Design (3) F, S
Explores interior design as it relates to human factors. Introduces the elements and principles of design as they relate to interiors. Introduces a brief survey of American architecture and furnishings.

IDT 1020. Presentation Techniques (2) F, S
Exploration of materials and applications of methods required for visual communications with interior design presentation. Emphasis in conceptualizing and quick-sketching techniques. Studio: four hours per week. One credit hour of IDT 2830, Directed Readings, is suggested with this course.

IDT 1860. Practicum (1-2) F, S
A course of occupational experiences in the interior design industry. A plan is created by the instructor and student to provide meaningful training in the student's career field.

IDT 2010. Textiles (3) S
A study of fibers, yarns, fabric structure, codes and finishes as they relate to residential and commercial interiors. Prerequisite: IDT 1020.

IDT 2020. Computer-aided Design and Drafting (3) S
Application of basic computer-aided drafting and design as it relates to current professional practice in interior design. Use of current software. Two one-hour lectures and three two-hour labs per week. Prerequisite: DGET 1340.

IDT 2035. Design Process/Space Planning (3) F
Experiences in programming, research development, and schematic design development. Emphasis on problem solving and space planning for residential and non-residential spaces. One hour lecture, four studio hours per week. Prerequisites: IDT 1020 and IDT 2020.

IDT 2040. Architectural Detailing (1) F
This course develops interior detailing technical skills, emphasizing stairways, fireplaces, ceilings, and millwork (built-in furniture) details for residential and commercial spaces. Preparation of construction drawings, specifications, and finish schedules for use by the trade. One hour lecture and two hour studio per week. Prerequisite: IDT 2020.

IDT 2050. Codes and Specifications (2) F
The study and application of interior building codes and specifications that insures the health, safety, and welfare of individuals who occupy the structure. Prerequisite: IDT 2020.

IDT 2830. Directed Readings (1-3) F, S
Individually chosen readings or specialized topics supervised by a faculty member. Instructor's approval required.

IDT 2860. Practicum (1-2) Su, F, S
A course of occupational experiences in the interior design industry. A plan is created by the instructor and student to provide meaningful training in the student's career field. Instructor's approval required.

IDT 2899. Associate's Degree Assessment (0)
This course is to serve as an assessment tool whereby all AAS degree seeking students in the College of Applied Science & Technology demonstrate their learned knowledge in at least three areas of Applied Technology study. At present, this knowledge will be demonstrated through the use of the Work Keys exams administered through the Campus Testing Center.

IDT 2990. Interior Design Seminar (1-2) F, S
Professional issues presented by guest lecturers, field trips, and current discussions in interior design. Total of three credit hours required; may be repeated up to six credit hours.

IDT 3000. Lighting (2) F
A study of lighting principles, lighting systems, light sources, calculation of lighting levels, communication of lighting design and specifications. Emphasis is placed on communicating a design solution by practical application of learned principles in project format. One hour lecture, two hour studio per week. Prerequisites: IDT 2020.

IDT 3010. Historical Interiors (3) F
Historical survey and research of interior furnishing and architecture from Egyptian through Victorian. Three one-hour lectures and one three-hour lab per week. Prerequisite IDT 1020.

IDT 3020. American and Modern Interiors (3) S
Historical survey and research of interiors, furnishings, and architecture from the 1880's to the present. Application of modern design in today's interiors. Three one-hour lectures and one three-hour lab per week. Prerequisite IDT 1020.

IDT 3025. Professional Practice (3) F
A study of the business aspect of Interior Design. Information will be presented regarding forms and professional practices for the Interior Designer, i.e., ethics, contracts, fees, purchase orders, letters of agreement, business formations and terminology of business practice. Job seeking skills will also be covered. Prerequisites: IDT 2050.

IDT 3030. Materials (3) S
Exploration and research of finishes and materials used within interiors. Practical application for specifying and installation of materials will be emphasized. Three one hour lectures and one three-hour lab per week. Prerequisite: IDT 2035.

IDT 3040. Perspective/Rendering (2) F
A continuation of Presentation Techniques. Techniques, methods and approaches to graphic presentations. Emphasis is on perspective/rendering using pens and markers. Studio: four hours per week. Prerequisite IDT 3030.

IDT 3045. Residential Design (3) S
This course provides experience in research development, programing, schematic design development, problem solving, space planning, furniture selection and layout, material surfaces and finishes. Specification, budgets, and sustainable design consideration will be part of project requirements. Presentation will be rendering, color boards, detailing, sketching, model construction, and a written document. One hour lecture and four hours of studio per week. Prerequisites: IDT 3040/3000.

IDT 3060. Kitchen & Bath (3) F
Application of basic kitchen and bath design layout principles which will meet the needs of families. Prepares the student for membership in the National Kitchen and Bath Association (NKBA) certification exams. One hour lecture, four studio hours per week. Prerequisite: IDT 3045.

IDT 4010. Barrier-Free Design (3)
Application of practices and procedures for barrier-free interiors. Emphasis will be on design for the disabled and elderly. One hour lecture, four hours studio per week.

IDT 4020. Commercial Design (3) Su, S
Application of practices and procedures of designing commercial interiors. Emphasis will be presentation and layouts for office, health care, and hospitality design. Three one-hour lectures and one three-hour lab per week. Prerequisite: IDT 3000 and IDT 3040.

IDT 4025. Senior Program Development (2) F
Interior Design programming, ideation and model studies for the Senior Project. Schematics, space planning, project specifications. Senior rank. One hour lecture, two hour lab per week. Prerequisite: IDT 4020.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDT 4030</td>
<td>Senior Project (3) S</td>
<td>An in-depth study of problem solving for residential or commercial interiors involving the design process of offices, health care facilities, hospitality or public institutions. One hour lecture, four hours studio per week. Prerequisite: IDT 4025.</td>
</tr>
<tr>
<td>IDT 4040</td>
<td>Portfolio (1) S</td>
<td>Developing and presenting a uniform portfolio for job search in the field of interior design. Emphasis is to compile a portfolio for presentation to prospective employers and clients. Studio: two hours per week. Students may add IDT 4830 (2 cr). Two credit hours of IDT 4860, Internship, is suggested with this course. Prerequisite: IDT 4025.</td>
</tr>
<tr>
<td>IDT 4830</td>
<td>Directed Readings (1-3)</td>
<td>Individual readings supervised by a faculty member. Junior/Senior level with the approval of the instructor.</td>
</tr>
<tr>
<td>IDT 4860</td>
<td>Internship for Interior Design (3) Su, F, S</td>
<td>A structured professional-level field experience. The student will be counseled and supervised as he/she applies and integrates their knowledge and skills through work experience with a qualified interior designer. The internship requires a minimum of 240 contact hours or 20 hours per week for twelve (12) weeks of on-the-job training. Junior/Senior level with the approval of the instructor. Prerequisite: IDT 4025.</td>
</tr>
<tr>
<td>SST 1143</td>
<td>Fundamental Selling Techniques (3) Su, F, S</td>
<td>A retail, wholesale, and direct selling course. Emphasis upon mastering and applying the fundamentals of selling. Preparation for and execution of sales demonstrations required.</td>
</tr>
<tr>
<td>SST 1303</td>
<td>Distribution Principles (3) Su, F, S</td>
<td>Examination of the distribution process of goods and services, the interrelationships of customer demands, production, pricing, promotion, and the movement of goods from producer to consumer.</td>
</tr>
<tr>
<td>SST 1401</td>
<td>Introduction to Sales and Service Technology (1) Su, F, S</td>
<td>This course is designed to help those new SST majors or those exploring the SST major field learn more about the career/employment options available. This course is also designed to review the various academic emphases, major requirements, and decision making process.</td>
</tr>
<tr>
<td>SST 1503</td>
<td>Introduction to Fashion Merchandising (3) Su, F, S</td>
<td>A study of the Fashion Merchandising industry, including careers in design, manufacturing, wholesaling, promotion, and retailing, including well-known designers, manufacturers, promotion media and apparel and accessory retail institutions.</td>
</tr>
<tr>
<td>SST 1602</td>
<td>Advanced Selling Techniques (2) Su, F, S</td>
<td>Study of advanced selling techniques, including persuasion, prospecting, client analysis, sales presentation organization and territory and time organization.</td>
</tr>
<tr>
<td>SST 1890</td>
<td>Cooperative Work Experience (1-2) Su, F, S</td>
<td>Open to all first year declared majors in Sales &amp; Service. Provides academic credit for on-the-job experience. Grade and amount of credit will be determined by department.</td>
</tr>
<tr>
<td>SST 2182</td>
<td>Credit and Collection Methods (2) Su, F, S</td>
<td>The study of specific credit and collection methods for retail, wholesale, and service industries; including cost of retail credit, credit investigation, methods of collecting bad accounts, securing new business through credit applications, and credit control.</td>
</tr>
<tr>
<td>SST 2383</td>
<td>Retail Merchandising and Buying Methods (3) Su, F, S</td>
<td>The study of the retail buyer's duties, different buying organizations, and techniques, procedures of purchasing merchandise for resale and retail merchandising strategies.</td>
</tr>
<tr>
<td>SST 2443</td>
<td>Advertising Methods (3) Su, F, S</td>
<td>A study of advertising methods as they relate to local retail, wholesale, and service industries, including newspaper, magazine, radio, TV, mail, outdoor and special promotion events.</td>
</tr>
<tr>
<td>SST 2703</td>
<td>Internet Sales and Service (3) Su, F, S</td>
<td>The study of Internet sales, service and technology. Understanding the process of establishing an online business, setting up online shopping capabilities and database integration. Online customer service and retention, buyer behavior and current Internet sales issues are presented.</td>
</tr>
<tr>
<td>SST 2890</td>
<td>Cooperative Work Experience II (1-2) Su, F, S</td>
<td>Open to second year declared majors in Sales and Service. A continuation of SST 1890.</td>
</tr>
<tr>
<td>SST 2899</td>
<td>Associate's Degree Assessment (0)</td>
<td>This course is to serve as an assessment tool whereby all AAS degree seeking students in the College of Applied Science &amp; Technology demonstrate their learned knowledge in at least three areas of Applied Technology study. At present, this knowledge will be demonstrated through the use of the Work Keys exams administered through the Campus Testing Center.</td>
</tr>
<tr>
<td>SST 2903</td>
<td>Professional Selling on the Internet (3) Su, F, S</td>
<td>The study of selling and customer service techniques as they are applied to web site development and Internet sales.</td>
</tr>
<tr>
<td>SST 2991</td>
<td>Sales/Service Technology Seminar (3) S</td>
<td>Directed studies, group discussions, and analysis of selected topics pertinent to sales and service technology. Also designed to prepare sales and service majors for the job market and career opportunities.</td>
</tr>
<tr>
<td>SST 3103</td>
<td>Sales Personalities and Profiles (3) Su, F, S</td>
<td>Utilization of personality profiling and behavioral styles profiling assessment instruments as applied to account representatives, retail salespersons, sales engineers, industrial product salespersons non-technical and service salespersons. Prerequisite: SST 1143.</td>
</tr>
<tr>
<td>SST 3153</td>
<td>Sales Engineering Techniques (2 contact, 1 lab) Su, F, S</td>
<td>A study of selling techniques required in order to sell products, systems, or services needed by industrial manufacturing, processing, mining, construction firms, or other related technical areas. Prerequisite: SST 3563 and TBE 3090.</td>
</tr>
<tr>
<td>SST 3203</td>
<td>Customer Service Techniques (3) Su, F, S</td>
<td>A study of customer service techniques required in order to sell and service products, systems, or services needed by industrial manufacturing, processing, mining, construction firms, or other related technical areas.</td>
</tr>
<tr>
<td>SST 3363</td>
<td>Contract and Sales Negotiation Techniques (3) Su, F, S</td>
<td>Principles, techniques and analysis of strategies involved in contract and sales negotiations. Development of integrated strategies through group and individual interaction. Prerequisite: SST 1143.</td>
</tr>
<tr>
<td>SST 3563</td>
<td>Principles of Supervision (3) Su, F, S</td>
<td>Practical application of first-line supervisory skills including choosing, organizing, training, and evaluating entry-level employees; making supervisory decisions; and solving first-line supervisory problems. Understanding the basic responsibilities of a supervisor in production organizations and service organizations.</td>
</tr>
</tbody>
</table>
SST 3603. Sales Presentation Strategies and Techniques (3) Su, F, S
Principles and practices for the five major categories of professional sales consultants. Prerequisites: SST 1143, 3153 and TBE 3090.

SST 4102. Developing Team Leadership Skills (2) Su, F, S
A skills based course designed to develop the interpersonal and leadership skills necessary to work effectively in teams and guide teams through the group stages of development. This course will be facilitated in such a way the participants will learn how to diagnose team developmental level and develop a high performing team by applying the principles of situational leadership and the DISC personality profiles system. Prerequisite: SST 3563.

SST 4203. Ethical Sales and Service (3) Su, F, S
Principles, techniques and analysis of ethics in the sales and service professions. Utilizes group interaction, individualized hands-on experiences and a field based experience.

SST 4610. Senior Project I (3) Su, F, S
A capstone project for students in their final year of the technical sales degree. Provides hands-on experiences in the areas of sales and service including sales, customer service techniques, presentation strategies, and team leadership development. This course focuses on working with sales and service problems in a departmentally approved work environment. Prerequisites: SST 3103, 3363, 3603.

SST 4620. Senior Project II (3) Su, F, S
A continuation of SST 4610. Prerequisites: SST 3103, 3363, 3603.

SST 4830. Directed Readings (1-3) F, S
Individual readings supervised by a faculty member. Prerequisite: Approval of instructor.

SST 4920. Short Courses, Workshops, etc. (1-2) F
Consult the semester class schedule for the current offering under this number. The specific title and credit authorized will appear on the student transcript.

SST 4992. Senior Seminar (2) Su, F, S
Research and discussion of sales and service related problems.

DEPARTMENT

Telecommunications & Business Education

Chair: Dr. Alden A. Talbot
Location: Building 4, Room 402
Telephone Contact: Julie Warnick 801-626-6059
Professors: Diana J. Green, Alden A. Talbot; Associate Professors: Kenneth R. Cuddeback, Laura MacLeod, Allyson Saunders;
Instructor Specialist: Laura Anderson; Instructor: Joyce Porter

Telecommunications Administration graduates study both the voice side and the data side of the discipline. On the voice side, students learn about designing, installing, and managing phone systems, and making decisions regarding the purchase and operation of hardware and software. On the data side, students learn about computer networks, network operating systems, and computer application programs.

The Business Education Composite Teaching major qualifies individuals to teach business and marketing-related subjects at the secondary school level. The Business/Multimedia Technologies major qualifies individuals for careers in information processing, administrative services, office administration, and supervision.

Business/Multimedia Technologies Associate of Applied Science graduates are trained for employment as administrative assistants, information technology specialists, records managers, and other office-related positions.

Departmental Policies
Students for any degree from the Telecommunications & Business Education (TBE) programs are subject to the following policies:
1. To enroll in any intermediate or advanced computer course, the student must have a grade of C- or better in the preceding course.
2. TBE credits earned more than six years earlier than the proposed date of graduation must be evaluated by the department or validated through a challenge examination.
3. A student in TBE cannot obtain a degree from the department if any required course in the department has been taken for a grade more than three times.
4. Any deviation from the printed graduation requirements must be approved by the department chair PRIOR to taking the course(s) in question.

TELECOMMUNICATIONS

ASSOCIATE OF APPLIED SCIENCE DEGREE (AAS)

Grade Requirements: A grade of “C-” or better in courses required for this program in addition to an overall GPA of 2.50 or higher for all required Specific Major Courses and a minimum cumulative GPA for all courses of 2.00.

Credit Hour Requirements: A total of 63 credit hours is required – 62 of these are required within the program. A total of 6 upper division credit hours (numbered 3000 or higher) is required within the program.

Assessment Requirements: Students will be required to complete certain assessment instruments as part of the overall requirements for receiving their associate’s degree. Please see your advisor or your department for specific information regarding assessment.

Advisement
All two-year telecommunications students should meet with a faculty advisor for course and program advisement. Call Dr. Diana Green at 801-626-6026 or Kenneth Cuddeback at 801-626-6059 for more information or to schedule an appointment. Advisement may also be obtained in Building 2 room 218.

Admission Requirements
Declare a program of study (see page 17) with the department secretary (Building 2 room 218). There are no special admission or application requirements for this program.

General Education
Refer to pages 38-43 for Associate of Applied Science requirements. Computer Literacy as defined in this catalog is also required for the AAS degree. TBE TE1700, Introduction to Microcomputer...
Applications, will partially fill the Computer Literacy requirement and COMM HU2110 and ECON SS1010 will be used to help fill both program and general education requirements.

**Course Requirements for AAS Degree**

**Core Courses Required (11-14 credit hours)**
- ENGL EN1010 Introductory College Writing (3)
- ENGL EN2010 Intermediate College Writing (3)
- Computer Literacy as defined in this catalog (2-4)
- MATH QL1040 Intro to Statistics (3)

**Specific Major Courses Required (43 credit hours)**
- TBE TE1700, Intro to Microcomputer Applications, or University Computer Literacy Exams (TBE TA1501, TB1502 and TC1503) are a prerequisite for all TBE courses listed below.
- TBE 1040 Speedbuilding Keyboarding (1)
- TBE 2010 Business English (3)
- TBE 2080 Database Applications (1)
- TBE 2200 Microcomputer Operating Systems (3)
- TBE 2300 Intro to LAN Management (3)
- TBE 2500 Intro to Telecommunications (3)
- TBE 2532 Web Page Design and Development (3)
- TBE 2710 Digital Switching Systems (3)
- TBE 2720 Transport Media & Emerging Technologies (3)
- TBE 2730 Digital Switching & Transport Applications (3)
- TBE 2899 Associate's Degree Assessment (0)
- TBE 3070 Advanced Spreadsheet Applications (1)
- TBE 3090 Advanced Electronic Presentations (1)
- TBE 3250 Business Communications (3)
- CEET 1105 Personal Computer Fundamentals (4)
- CEET 1110 Basic Electronics (2)

Students in this program are required to take courses equivalent to a major related certification. Courses offered through the program to meet this requirement are:
- TBE 2415 Cisco TCP/IP Routing Protocols and Router Configuration (3)
- TBE 2435 Cisco Advanced LAN and WAN Switching and Routing Theory and Design (3)

**Or**
- TBE 3200 Linux Systems Administration (3)
- TBE 3210 Advanced Linux Systems Administration (3)

**Support Courses Required (9 credit hours)**
- ECON SS1010 Economics as a Social Science (3)
- COMM HU2110 Interpersonal & Small Group Communication (3)
- ACTG 2010 Survey of Accounting I (3)

**Suggested Course Sequence**

Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.

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**Telecommunications Administration Major**

**Bachelor’s Degree (BS or BA)**

- **Program Prerequisite:** Completion or equivalent of a Weber State AAS Degree in Telecommunication.
- **Minor:** Not required.
- **Grade Requirements:** A grade of “C-” or better in courses required for this major in addition to an overall GPA in TBE courses of 2.50 or higher. Also refer to page 37 for graduation requirements.
- **Credit Hour Requirements:** A total of 120-126 credit hours is required for graduation. A total of 40 upper division credit hours is required (courses numbered 3000 and above) – 38 of these credit hours are required within the major.

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**Advisement**

All Telecommunications Administration students should meet with a faculty advisor for course and program advisement. Call Kenneth Cuddeback at 801-626-6026 or Dr. Diana J. Green at 801-626-6821 or call 801-626-6059 for more information or to schedule an appointment. Advisement may also be obtained in Building 2 room 218.

**Admission Requirements**

Complete an AAS Degree in Telecommunication or equivalent. Declare a program of study (see page 17) with the department secretary (Building 2 room 218). There are no special admission or application requirements for this program.

**General Education**

Refer to pages 37-43 for either Bachelor of Science or Bachelor of Arts requirements. TBE TE1700, Introduction to Microcomputer Applications, will partially fill the Computer Literacy requirement. COMM HU2110 and ECON SS1010 will fill 6 credits of both program and general education requirements. TBE 4710 will fill 3 credits of the Bachelor of Science requirement.

**Course Requirements for BS or BA Degree**

*To be taken in addition to the requirements for the AAS Degree in Telecommunication.*

**Specific Major Courses Required (32 credit hours)**
- TBE 3532 Internet/Database Integration (3)
- TBE 3550 Supervising Information Technology (3)
- TBE 3730 Telecommunications Policy (3)
- TBE 4700 Data Network Design (3)
- TBE SI4710 Traffic Technology & Voice Network Design (3)
- TBE 4760 Telecommunications Internship (3)
- TBE 4790 Telecommunications Senior Project (2)

**Select four courses from the following (12 credit hours)**
- TBE 3200 Linux Systems Administration (3)
- TBE 3210 Advanced Linux Systems Administration (3)
- TBE 3300 Advanced LAN Management (3)
- TBE 3710 Fiber Optics in Telecommunications (3)
- TBE 3720 Wireless Telephony (3)

**Support Courses Required (6 credit hours)**

The following requirements must be completed with a grade of C- or higher.
- MGMT 3010 Organizational Behavior & Management (3)
- MKTG 3010 Marketing Concepts & Practices (3)

**Suggested Course Sequence**

Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.
## Course Requirements for Minor

**General Requirements (6 credit hours)**

Students must demonstrate computer competency in one of the Computer Competency Requirement (2-4 credit hours)

<table>
<thead>
<tr>
<th>Credit Hour Requirements:</th>
<th>Grade Requirements:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A total of 18 credit hours is required in addition to Computer Competency (at least 10 of which must be residence hours taken from WSU).</td>
<td>A minimum overall GPA of 2.00 or &quot;C&quot;.</td>
</tr>
</tbody>
</table>

### Courses Required (23 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBE 2200</td>
<td>Microcomputer Operating Systems (3)</td>
</tr>
<tr>
<td>TBE 2300</td>
<td>Intro to LAN Management (3)</td>
</tr>
<tr>
<td>TBE 2500</td>
<td>Intro to Telecommunications (3)</td>
</tr>
<tr>
<td>TBE 2710</td>
<td>Digital Switching Systems (3)</td>
</tr>
<tr>
<td>TBE 2720</td>
<td>Transport Media &amp; Emerging Technologies (3)</td>
</tr>
<tr>
<td>TBE 2730</td>
<td>Digital Switching &amp; Transport Applications (3)</td>
</tr>
<tr>
<td>TBE 4700</td>
<td>Data Network Design (3)</td>
</tr>
<tr>
<td>or TBE SI4710</td>
<td>Voice Network Design (3)</td>
</tr>
<tr>
<td>CEET 1110</td>
<td>Basic Electronics (2)</td>
</tr>
</tbody>
</table>

### Telecommunications INSTITUTIONAL CERTIFICATE

**Professional Network Cisco Option CERTIFICATION PROGRAM**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBE TE1700</td>
<td>Intro to Microcomputer Applications (3)</td>
</tr>
<tr>
<td>or University Computer Competency Exams (TBE TA1501, TB1502, &amp; TC1503)</td>
<td></td>
</tr>
</tbody>
</table>

### Telecommunications Course Requirements (18 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBE 2300</td>
<td>Intro to LAN Management (3)</td>
</tr>
<tr>
<td>TBE 2500</td>
<td>Intro to Telecommunications (3)</td>
</tr>
<tr>
<td>TBE 2710</td>
<td>Digital Switching Systems (3)</td>
</tr>
<tr>
<td>TBE 2720</td>
<td>Transport Media &amp; Emerging Technologies (3)</td>
</tr>
<tr>
<td>TBE 2730</td>
<td>Digital Switching &amp; Transport Applications (3)</td>
</tr>
<tr>
<td>TBE 4700</td>
<td>Data Network Design (3)</td>
</tr>
<tr>
<td>or TBE SI4710</td>
<td>Traffic Technology &amp; Voice Network Design (3)</td>
</tr>
</tbody>
</table>

## Business/Multimedia Technologies

### Associate of Applied Science Degree (AAS)

**Course Requirements for AAS Degree**

### Core Courses Required (11-13 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL EN1010</td>
<td>Introductory College Writing (3)</td>
</tr>
<tr>
<td>ENGL EN2010</td>
<td>Intermediate College Writing (3)</td>
</tr>
<tr>
<td>Computer Literacy as defined in this catalog is also required for this program in addition to an overall GPA of 2.50 or higher for all required TBE courses and a minimum cumulative GPA for all courses of 2.00.</td>
<td></td>
</tr>
</tbody>
</table>

### Credit Hour Requirements: A total of 63 credit hours is required – 53 of these are required within the program. A total of 9 upper division credit hours (courses numbered 2000 or higher) is required within the program.

### Assessment Requirements: Students will be required to complete certain assessment instruments as part of the overall requirements for receiving their associate's degree. Please see your advisor or your department for specific information regarding assessment.

### Advisement

All Business/Multimedia Technologies students should meet with a faculty advisor for course and program advisement. Call Dr. Laura MacLeod at 801-626-6822 for more information or to schedule an appointment. Advisement may also be obtained in room 218 of building B2 or call 801-626-6059.

### Admission Requirements

Declare your program of study (see page 17). There are no special admission or application requirements for this program.

### General Education

Refer to pages 38-43 for Associate of Applied Science requirements. Computer Literacy as defined in this catalog is also required for the AAS degree. TBE1700, Introduction to Microcomputer Applications, will partially fill the Computer Literacy requirement and COMM HU2110 and ECON SS1010 will partially fill the Computer Literacy requirement and general education requirements.

### Course Requirements for AAS Degree

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBE TE1700</td>
<td>Intro to Microcomputer Applications, or University Computer Literacy Exams (TBE TA1501, TB1502 and TC1503) are a prerequisite for all TBE courses listed below.</td>
</tr>
<tr>
<td>TBE 1040</td>
<td>Speedbuilding Keyboarding (1)</td>
</tr>
<tr>
<td>TBE 2010</td>
<td>Business English Applications (3)</td>
</tr>
<tr>
<td>TBE 2080</td>
<td>Database Applications (1)</td>
</tr>
<tr>
<td>TBE 2200</td>
<td>Microcomputer Operating Systems (3)</td>
</tr>
<tr>
<td>TBE 2300</td>
<td>Intro to LAN Management (3)</td>
</tr>
<tr>
<td>TBE 2331</td>
<td>Image Editing Solutions (3)</td>
</tr>
<tr>
<td>TBE 2899</td>
<td>Associate's Degree Assessment (0)</td>
</tr>
<tr>
<td>TBE 3000</td>
<td>Advanced Word Processing (1)</td>
</tr>
</tbody>
</table>

### Cisco Courses Required (6 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBE 2415</td>
<td>Cisco TCP/IP Routing Protocols and Router Configuration (3)</td>
</tr>
<tr>
<td>TBE 2435</td>
<td>Cisco Advanced LAN and WAN Switching and Routing Theory and Design (3)</td>
</tr>
</tbody>
</table>

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**Weber State University 2008 – 2009 Catalog**
**Specific Major Courses Required (6 credit hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBE 3090</td>
<td>Advanced Electronic Presentations (1)</td>
</tr>
<tr>
<td>TBE 3600*</td>
<td>Principles of Business/Marketing Ed (2)</td>
</tr>
<tr>
<td>TBE 3610*</td>
<td>Methods of Teaching Business/Marketing Education Subjects (3)</td>
</tr>
</tbody>
</table>

*Must be taken prior to student teaching.*

**Support Courses Required (12 credit hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 3010</td>
<td>Organization Behavior &amp; MGMT (3)</td>
</tr>
<tr>
<td>MKTG 3010</td>
<td>Marketing Concepts &amp; Practices (3)</td>
</tr>
<tr>
<td>BSAD 3200</td>
<td>Legal Environment of Business (3)</td>
</tr>
<tr>
<td>FIN 1010</td>
<td>Personal Finance (3)</td>
</tr>
</tbody>
</table>

**Secondary Education Requirements for the Jerry and Vickie Moyes College of Education must also be met. (27-30 credit hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBE 3250</td>
<td>Business Communication (3)</td>
</tr>
</tbody>
</table>

**Suggested Course Sequence**

Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.

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### BUSINESS EDUCATION

**COMPOSITE TEACHING MAJOR**

**BACHELOR’S DEGREE (BS OR BA)**

- **Program Prerequisite:** Completion or equivalent of a Weber State AAS Degree in Business/Multimedia Technologies. Composite Teaching majors must satisfy Teacher Education admission and licensure requirements (see Teacher Education Department).
- **Minor:** Not required.
- **Grade Requirements:** A grade of "C-" or better in courses required for this major in addition to an overall GPA in TBE courses of 2.50 or higher. An overall GPA of 3.00 is required for admission to the Teacher Education program.
- **Credit Hour Requirements:** A total of 120-126 credit hours is required for graduation. A total of 40 upper division credit hours is required (courses numbered 3000 and above) – all of these credit hours are required within the major.

**Advisement**

Business Education Composite Teaching Major students should meet with a faculty advisor for course and program advisement. Call Dr. Allyson Saunders at 801-626-6823 or call 801-626-6059 for more information or to schedule an appointment. Advisement may also be obtained in room 218 of building B2. Teaching majors should also consult with an advisor in the Jerry and Vickie Moyes College of Education (call 801-626-6269).

**Admission Requirements**

Complete the AAS Degree in Business/Multimedia Technologies or equivalent. Declare your program of study (see page 17). Composite Teaching majors must also satisfy Teacher Education admission and licensure requirements (see Teacher Education Department).

**General Education**

Refer to pages 37-43 for either Bachelor of Science or Bachelor of Arts requirements. The following courses required for the Business Education teaching major will also satisfy general education requirements: CHF SS1500, COMM HU2110, and ECON SS1010.

**Course Requirements for BS or BA Degree**

**To be taken in addition to the requirements for the AAS Degree in Business/Multimedia Technologies.**

**Specific Major Courses Required (13 credit hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBE 3090</td>
<td>Advanced Electronic Presentations (1)</td>
</tr>
<tr>
<td>TBE 3090*</td>
<td>Principles of Business/Marketing Ed (2)</td>
</tr>
<tr>
<td>TBE 3533</td>
<td>Multimedia Web Animation (3)</td>
</tr>
<tr>
<td>TBE 3534</td>
<td>Video Editing Techniques (3)</td>
</tr>
<tr>
<td>TBE 3534*</td>
<td>Internet/Database Integration (3)</td>
</tr>
<tr>
<td>TBE 3534</td>
<td>Advanced Multimedia Applications (3)</td>
</tr>
<tr>
<td>TBE 3535</td>
<td>Creating Computer Illustrations (3)</td>
</tr>
</tbody>
</table>

Select 9 credit hours not previously taken from the following:
Credit Hour Requirements:

Select 3 credit hours from the following:

- Elective Courses (3 credit hours)
  - Must be taken before student teaching.

Credit Hour Requirements:

- A minimum of 24 credit hours.

Advisement

The Business Education Teaching Minor must be cleared with the TBE Department by the beginning of a student's junior year. Students should meet with a faculty advisor for course and program advisement. Call Dr. Allyson Saunders at 801-626-6823 or call 801-626-6059 for more information or to schedule an appointment. Advisement may also be obtained in room 218 of building B2.

Course Requirements for Minor

TBE TE1700, Introduction to Microcomputer Applications, or Computer Literacy requirement is a prerequisite for all TBE courses listed below.

Required Courses (30 credit hours)

- TBE 2200  Microcomputer Operating Systems (3)
- TBE 2531  Exploring Multimedia Applications (3)
- TBE 2532  Web Page Design and Development (3)
- TBE 3000  Advanced Word Processing (1)
- TBE 3250  Business Communication (3)
- TBE 3600  Principles of Business/Marketing Ed (2)
- TBE 3610  Methods of Teaching Business/Marketing Education Subjects (3)
- ACTG 2010  Survey of Accounting I (3)
- MKTG 3010  Marketing Concepts & Practices (3)
- SST 2443  Advertising Methods (3)
- SST 3203  Customer Service Techniques (3)

*Must be taken before student teaching.

Suggested Course Sequence

Please refer to this program in the online catalog (weber.edu/catalog) and/or contact the department for a suggested course sequence.

BUSINESS EDUCATION

TEACHING MINOR

- Grade Requirements: A grade of “C-” or better in courses used toward the minor with an overall GPA of 2.50 or better in TBE courses. Students must have correct keyboarding ability with at least 40 wpm proficiency.

- Credit Hour Requirements: A minimum of 40 wpm proficiency.

Advisement

The Business Education Teaching Minor must be cleared with the TBE Department by the beginning of a student's junior year. Students should meet with a faculty advisor for course and program advisement. Call Dr. Allyson Saunders at 801-626-6823 or call 801-626-6059 for more information or to schedule an appointment. Advisement may also be obtained in room 218 of building B2.

Students who select the Business/Marketing Education Teaching Minor must satisfy the Teacher Education admission and licensure requirements (see Teacher Education Department in this catalog) and must have a teaching major. They must also student teach at least one class in relation to the minor.

Course Requirements for Minor

TBE TE1700, Introduction to Microcomputer Applications, or Computer Literacy requirement is a prerequisite for all TBE courses listed below.

Required Courses (30 credit hours)

- TBE 2200  Microcomputer Operating Systems (3)
- TBE 2531  Exploring Multimedia Applications (3)
- TBE 2532  Web Page Design and Development (3)
- TBE 3000  Advanced Word Processing (1)
- TBE 3250  Business Communication (3)
- TBE 3600  Principles of Business/Marketing Ed (2)
- TBE 3610  Methods of Teaching Business/Marketing Education Subjects (3)
- ACTG 2010  Survey of Accounting I (3)
- MKTG 3010  Marketing Concepts & Practices (3)
- SST 2443  Advertising Methods (3)
- SST 3203  Customer Service Techniques (3)

*Must be taken before student teaching.

BUSINESS/MULTIMEDIA TECHNOLOGIES

MINOR OR BIS EMPHASIS

For the BIS emphasis, refer to Bachelor of Integrated Studies (BIS) in the Interdisciplinary Programs section of this catalog.

- Grade Requirements: A grade of “C-” or better in courses used toward the minor with an overall GPA of 2.50 or higher in all TBE courses.

- Credit Hour Requirements: Minimum of 18 credit hours.

Students must have a correct keyboarding ability of at least 40 wpm proficiency.

The TBE Department accepts transfer of a maximum of nine (9) hours from another institution. Courses older than seven (7) years will not be accepted.

Advisement

Students should meet with a faculty advisor for course and program advisement. Call Dr. Laura MacLeod (for the Minor) at 801-626-6823 or call 801-626-6059 for more information or to schedule an appointment. Advisement may also be obtained in room 218 of Building B2.

Course Requirements for Minor or BIS Emphasis

TBE TE1700, Introduction to Microcomputer Applications, or Computer Literacy requirement is a prerequisite for all TBE courses listed below.

Emphasis Areas

Select 18 credit hours from one of the following emphasis areas:

- Business Technologies Emphasis:
  - TBE 2010  Business English Applications (3)
  - TBE 2080  Database Applications (1)
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBE 2200</td>
<td>Microcomputer Operating Systems</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TBE 2300</td>
<td>Introduction to LAN Management</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TBE 2500</td>
<td>Introduction to Telecommunications</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TBE 2531</td>
<td>Exploring Multimedia Applications</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TBE 2533</td>
<td>Image Editing Solutions</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TBE 3000</td>
<td>Advanced Word Processing</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>TBE 3070</td>
<td>Advanced Spreadsheet Applications</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>TBE 3090</td>
<td>Advanced Electronic Presentations</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>TBE 3010</td>
<td>Desktop Publishing</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TBE 3250</td>
<td>Business Communications</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TBE 3400</td>
<td>Training the Trainer</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TBE 2080</td>
<td>Database Applications</td>
<td>1</td>
<td>TBE TE1700 or TBE TA1701 recommended</td>
</tr>
<tr>
<td>TBE 2040</td>
<td>Speedbuilding Keyboarding</td>
<td>1</td>
<td>F</td>
</tr>
<tr>
<td>TBE TA1501</td>
<td>Word Processing Competency Exam</td>
<td>.5</td>
<td>Su, F, S</td>
</tr>
<tr>
<td>TBE TB1502</td>
<td>Microcomputers, Operating Systems, and Electronic Presentations Competency Exam</td>
<td>.5</td>
<td>Su, F, S</td>
</tr>
<tr>
<td>TBE TC1503</td>
<td>Spreadsheets Competency Exam</td>
<td>.5</td>
<td>Su, F, S</td>
</tr>
<tr>
<td>TBE TD1504</td>
<td>Information Literacy Competency Exam</td>
<td>.5</td>
<td>Su, F, S</td>
</tr>
</tbody>
</table>

TBE TD1504.* Information Literacy Competency Exam (.5) Su, F, S
This exam verifies a student's information literacy competency. Web tutorials and an online course are available for students to study for this exam at their own pace. Sample questions and a practice test will be available. Students may also request assistance with studying for this exam at the library reference desk. The exam must be completed during the semester registered. Repeats of the exam may be taken during the semester with an additional fee charged for each time the exam is taken after the first time. The grade for this course will be credit/no credit. Students may also fulfill this exam requirement by passing (with a C- or better) LIBS TD1704.

* Note: After registering for any of the Computer & Information Literacy exams (TBE TD1501-TD1504), schedule an exam time online at http://weber.edu/edu/tbe (click on Computer Literacy and “Schedule Exam Time”). Failure to do this constitutes non-attendance and may result in no credit for the exam. No exams are given during final exam week.
TBE 2415. Cisco TCP/IP Routing Protocols and Router Configuration (3) F
This course is the first in a two-course series designed to prepare students to pass the examinations for Cisco Certified Network Associate (CCNA). This course covers the OSI model, network components and topologies, IP addressing, beginning router configuration and routing protocols. Prerequisite: TBE 2300.

TBE 2435. Cisco Advanced LAN and WAN Switching and Routing Theory and Design (3) S
This course is the second in a two-course series designed to prepare students to pass the examinations for Cisco Certified Network Associate (CCNA). This course covers advanced router configurations, LAN switching theory and VLANs, advanced LAN and LAN switched design, Novell IPX, WAN theory design and technology, PPP, frame relay, ISDN, network troubleshooting, national SCANS skills, and threaded case studies. Prerequisite: TBE 2415 or CS 2705.

TBE 2500. Introduction to Telecommunications (3) F, S
Fundamental voice and data concepts of telecommunications, including state-of-the-art technologies and applications.

TBE 2531. Exploring Multimedia Applications (3) F, S
Capabilities and limitations of multimedia technology, evaluation of multimedia products, and creation of a multimedia portfolio. Prerequisite: TBE TE1700 or TA1701.

TBE 2532. Web Page Design and Development (3) Su, F, S
Build familiarity with features of software in order to plan, design, and implement a successful web site, and to understand the technicalities of the World Wide Web and the Internet. Prerequisite: TBE TE1700 or TA1701 or equivalent.

TBE 2533. Image Editing Solutions (3) F
In this course you will be introduced to the fundamentals of a bitmap image editing program such as Adobe Photoshop. You will work primarily with digital photos and scanned images. The following image editing workflow will be learned: image capture, cropping, color correction, tonal adjustments, noise reduction, retouch, creative effects, and exporting. You will merge images into a collage using masking, blend modes, and adjustment layer techniques. Prerequisite: TBE TE1700 or 1701 and 1702 or equivalent.

TBE 2534. Video Editing Techniques (3) F
Using video editing software such as Adobe Premiere, students will combine many separate video recordings to create short digital movies. The following steps of the video production process will be completed: creating storyboards; writing a script; shooting the video and recording the audio; capturing resources to the computer; importing resources into a video project; adding titles, graphics, transitions, and effects; and exporting the video to formats for the computer, television, DVDs, and the Web. Prerequisite: TBE TE1700.

TBE 2610. NetWare Administration (3)
This is the introductory course to Novell Administration involving setting up, managing, and using basic network services, including file systems, network printing, security, and Z.E.N. Works. After completing this course and successfully passing the Novell test, the candidate becomes a Certified Novell Administrator (CNA). Prerequisite: Computer Competency or TBE TE1700.

TBE 2710. Digital Switching Systems (3) F
The management and the financial impact of switching systems and their technologies from central offices to PBXs and key systems. Prerequisite: TBE 2500.

TBE 2720. Transport Media & Emerging Technologies (3) F
Investigation into the common types of telecommunications transport media, including the typical uses, operating characteristics, business applications, and emerging technologies in the marketplace. Prerequisite: TBE 2500.

TBE 2730. Digital Switching and Transport Applications (3) F, S
Study of a telephone switch including planning, managing, and troubleshooting. Security issues are discussed and incorporated when students complete hands-on lab projects. Prerequisites or Co-requisites: TBE 2710 and TBE 2720.

TBE 2860. Business Systems Technologies Practicum (1-6) S
Open to all students who meet the minimum requirements of the department for business-related on-the-job experiences. Approval of instructor and employer is required. Amount of credit will be determined by the department.

TBE 2899. Associate's Degree Assessment (0) Su, F, S
This course is to serve as an assessment tool whereby all AAS degree seeking students in the College of Applied Science & Technology demonstrate their learned knowledge in at least three areas of Applied Technology study. At present, this knowledge will be demonstrated through the use of the Work Keys exams administered through the Campus Testing Center.

TBE 2920. Short Courses, Workshops, Institutes, and Special Programs (1-4) Su, F, S
Consult the class schedule for the current offering under this number. The specific title and credit authorized will appear on the student transcript.

TBE 3000. Advanced Word Processing (1) F, S
Use of word processing software including sorts, tables, columns, reports, merges, graphics, and macros. Prerequisite: TBE TE1700 or TA1701.

TBE 3070. Advanced Spreadsheet Applications (1) Su, F, S
Use of spreadsheet software including macros, sorts, advanced formulas, graphs, and creative presentations. Prerequisite: TBE TE1700 or 1703.

TBE 3090. Advanced Electronic Presentations (1) Su, F, S
Use of electronic slide presentation software to create slides consisting of short paragraphs, bulleted lists, graphic images, movie clips, audio clips, data charts, diagrams, and imported data from other software. Emphasis will also be placed on slide design and animation of slide elements. Prerequisite: TBE TE1700 or equivalent.

TBE 3100. Desktop Publishing (3) F, S
Use of desktop publishing software including analyzing, designing, creating, and editing brochures, flyers, and other publications. Prerequisite: Word processing background.

TBE 3200. Linux Systems Administration (3) F
This course gives students a solid foundation in the fundamentals of the Linux operating system. Students gain system-level experience through problem-solving exercises at the command line and in the graphical user interface (GUI). By the end of this course, students will have learned the major, essential, command-line commands necessary to be accomplished users of Linux. Prerequisite: TBE 2200.

TBE 3210. Advanced Linux Systems Administration (3) S
This course presents advanced administrative skills common to mid- to senior-level administrators in an enterprise environment.
Students learn how to apply security to network users and resources, manage and compile the Linux kernel, and troubleshoot network processes and services. Prerequisite: TBE 3200.

**TBE 3250. Business Communication (3)**  
Su, F, S  
Application of oral and written communication, including diversity and international aspects of communication. Prerequisite: ENGL EN2010.

**TBE 3300. Advanced LAN Security Management (3)**  
S  
Advanced concepts of Local Area Network management including performance, maintenance, security, and TCP/IP protocols using hands-on labs. Course will utilize common security tools for all current operating systems. Extensive use of Linux network security tools will be used. Prerequisite: TBE 2300 and TBE 3200 or instructor permission.

**TBE 3400. Training the Trainer (3)**  
S  
Real-world strategies and techniques to provide better employee training, including development of materials and methods to enhance the learning process. Prerequisites: TBE 1700 or TBE 1701, 1702, and 1703 or TBE 1501, 1502, and 1503.

**TBE 3415. Cisco CCNP–Advanced Router Configuration (3)**  
Building Scalable Cisco Networks (BSCN). Addresses tasks network managers and administrators need to perform when managing access and controlling overhead traffic in growing routed networks once basic connectivity has been established. Discusses router capabilities used to control traffic over LANS and WANs, as well as connecting corporate networks to an Internet Service Provider (ISP). Prerequisite: TBE 2435 or CCNA Certification.

**TBE 3425. Cisco CCNP–Building Cisco Switched Networks (3)**  
Building Cisco Multilayer Switched Networks (BCMSN). Teaches network administrators how to build campus networks using multi-layer switching technologies over high speed Ethernet. Teaches how routing and switching concepts and implementations technologies work together. Prerequisite: TBE 2435 or CCNA Certification.

**TBE 3435. Cisco CCNP–Remote Access Networks (3)**  
Teaches how to build a remote access network to interconnect central sites to branch offices and home office/telecommuters. Further teaches students how to control access to the central site as well as maximizes bandwidth utilization over remote links. Prerequisite: TBE 2435 or CCNA Certification.

**TBE 3445. Cisco CCNP–Internetwork Troubleshooting (3)**  
Hands-on lab exercises. Covers developments in Cisco IOS and Catalyst software. Teaches how to baseline and troubleshoot an environment using Cisco routers and switches for multiprotocol client hosts and servers connected with: Ethernet, Fast Ethernet, and Token Ring LANS; and Serial, Frame Relay and ISDN BRI WANs. Prerequisite: TBE 2435 or CCNA Certification.

**TBE 3532. Internet/Database Integration (3)**  
S  
With the basic knowledge of both web design software and database software, students in this course take the knowledge to the next level using web technology such as ASP and XML. Advanced database material using Visual Basic and SQL combined with the web technology create dynamic and active web pages. Prerequisites: TBE 2080 and TBE 2532 or equivalent.

**TBE 3533. Multimedia Web Animation (3)**  
F  
Introduces various types of current motion-related technologies. Students discuss technical issues affecting animation such as speed and compression. Students go in-depth into two software packages to create movies and animated GIFs. Programs such as Macromedia Flash, Paint Shop Pro, and Photoshop will be used. Prerequisite: TBE TE1700.

**TBE 3534. Advanced Multimedia Applications (3)**  
S  
Students will design and produce advanced multimedia projects applicable for business and industry. These projects will be produced by combining animation, audio, graphics, video, and text into interactive multimedia presentations. Prerequisites: TBE TE1700 and TBE 3533.

**TBE 3535. Creating Computer Illustrations (3)**  
S  
In this course you will learn the fundamentals of a vector drawing program such as Adobe Illustrator. You will become skilled using the Pen Tool to create vector drawings and will learn various techniques for applying color, attributes, styles, and effects to your artwork. You will also create, edit, and format type to add to your artwork. At the end of the course you will create a project that integrates vector and bitmap images. Prerequisite: TBE 2533.

**TBE 3550. Supervising Information Technology (3)**  
S  
Analyzing Information Technology (IT) systems and procedures including planning and implementation, departmental structure and operations, and the responsibilities and productivity of IT personnel. Prerequisite: TBE 2500 required.

**TBE 3600. Principles of Business/Marketing Education (2)**  
F  
Professionalism, curriculum, standards, counseling, tech prep, competency-based testing, research, and current issues and trends in Business/Marketing Education. Must be taken before student teaching.

**TBE 3610. Methods of Teaching Business/Marketing Education Subjects (3)**  
F  
Analysis and research into methods of teaching business and marketing subjects with emphasis on teaching demonstrations and practices, objectives, outcome measurements, testing, and grading. Must be taken before student teaching. Prerequisite: TBE TE1700.

**TBE 3710. Fiber Optics in Telecommunications (3)**  
S  
Introduction to Fiber Optical Communications prepares tomorrow's information system professionals with fundamental concepts and skills needed to bring them to the forefront of the information transformation as it is characterized by broadband high-speed optical networks for Internets, WAN, and LAN. Prerequisites: TBE 2710 and TBE 2720.

**TBE 3720. Wireless Telephony (3)**  
F  
An examination of the growing wireless telecommunications market and wireless applications for industry and commercial use. An analysis of competing technologies in relation to network design, equipment configurations, hardware technologies, and a study of emerging wireless technologies versus traditional wire-based services. Prerequisites: TBE 2710 and TBE 2720.

**TBE 3730. Telecommunications Policy (3)**  
F  
Explores how the structural, competitive economic, and environmental forces affect the continuing transformation of the telecommunications industry both domestically and internationally. Discussion of the impact of contemporary issues on the provider and the consumer of telecommunication services including the taxation of electronic commerce. Prerequisite: TBE 2710 and TBE 2720.

**TBE 4700. Data Network Design (3)**  
S  
Architecture, technologies, and standards associated with the design and management of modern data networks. Hands-on experience in configuring and troubleshooting various network components and architectures. Prerequisite: TBE 2710 and TBE 2720.
TBE SI4710. Traffic Technology & Voice Network Design (3) S  
Develop an understanding of network facilities and their uses. Understand and use correct network design principles in stand-alone and multi-PBX environments. Prerequisite: TBE 2710, 2720, and MATH QL1050.

TBE 4760. Telecommunications Internship (1-4) Su, F, S  
Must be completed senior year in a telecommunications environment with company placement and objectives approved by the department. Simultaneous enrollment in TBE 4790 is required. Prerequisite: TBE 4700 and 4710.

TBE 4790. Telecommunications Senior Project (2) Su, F, S  
Capstone project applying the principles of telecommunications to the development of a telecommunications system within a company. Simultaneous enrollment in TBE 4760 is required. Prerequisite: TBE 4700 and 4710.

TBE 4800. Independent Research (1-4) Su, F, S  
Directed research and study on an individual basis. Prerequisite: Permission of instructor.

TBE 4860. Business/Multimedia Technologies Internship (3) S  
Student works in a business/multimedia technologies environment. The student fulfills at least four objectives and a major capstone project that has been approved by a business/organization supervisor and a faculty advisor. Must have Senior standing or approval of instructor.

TBE 4920. Short Courses, Workshops, Institutes, and Special Programs (1-4) Su, F, S  
Consult the semester class schedule for the current offering under this number. The specific title and credit authorized will appear on the student transcript.

TBE 4990. Senior Project (3) S  
Research, analysis, presentation, and discussion of topics relative to graduating majors and minors. Prerequisite: TBE 2860 or equivalent.