

Department of Engineering and Technology Education

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Degrees offered: Bachelor of Science (BS) and Master of Science (MS) in Engineering and Technology Education, BS in Aviation Technology—Maintenance Management, BS in Aviation Technology—Professional Pilot, A&P Certificate in Aircraft Maintenance Technician—Airframe & Powerplant, Doctor of Philosophy (PhD) in Engineering Education

Undergraduate emphases: *BS in Engineering and Technology Education*—Technology Education and Trade and Technical Education

Undergraduate Programs

Objectives

The Department of Engineering and Technology Education offers degrees in two fields: **engineering and technology education** and **aviation technology**. The department values the integration of academic knowledge with hands-on technical skills. This is achieved by emphasizing the application of scientific and technological principles in extensive laboratory activities. The department strives to ensure that all graduates will obtain employment to match their interests and preparation.

The **Engineering and Technology Education** programs prepare graduates to teach in public schools, applied technology colleges, and community colleges. **Aviation Technology—Maintenance Management** graduates fill aviation maintenance management positions in government and industry. The **Aviation Technology—Professional Pilot** program prepares graduates to be professional pilots. The **A&P Certificate in Aircraft Maintenance Technician—Airframe & Powerplant** provides training and FAA licensing for graduates to perform maintenance and repairs on aircraft.

Admission Requirements

Admission requirements for incoming freshmen are commensurate with those outlined for the University. See pages 30-35 in this catalog.

For the **Aviation Technology—Maintenance Management** and **Aviation Technology—Professional Pilot** majors, transfer students from other institutions need a 2.5 total GPA for admission in good standing. Students transferring from other USU majors need a total GPA of 2.4 in major courses for admission to these majors in good standing. A cumulative GPA of 2.5 must be maintained.

For the **Engineering and Technology Education** major, transfer students from other institutions need a 2.75 total GPA for admission in good standing. Students transferring from other USU majors need a total GPA of 2.75 for admission to this major in good standing.

Graduation Requirements for Aviation Technology Majors (Professional Pilot and Maintenance Management)

A student can repeat no more than six of the required courses in order to satisfy the graduation requirements. Multiple repeats of the same course are included in the total of six repeats. Audits count as a time taking a class unless prior written approval is obtained from a college academic advisor.

Although transfer credit accepted by the department and the college may be applied toward graduation requirements, the grades received will not be used in the USU GPA calculation.

For all aviation technology majors, the following academic regulations apply in addition to University regulations:

1. A minimum GPA of 2.4 must be maintained in technology/math/science/business courses required for, or used as technical electives in, the chosen major. University Studies courses are not included in this GPA calculation.
2. No more than 6 credits of *D* or *D+* credit may be applied toward meeting graduation requirements in technology/math/science/business classes.
3. College of Engineering courses may be repeated only once. Audits count as a time taking a class unless prior written approval is obtained from the department head. A maximum of six required or elective courses can be repeated in order to meet graduation requirements.
4. The *P-D-F* grading option may not be used in required or elective courses. (The *P-D-F* grading option is approved for University Studies courses.)
5. The academic regulations listed above (1-4) apply to required coursework and any technology/math/science/business course which could be used to satisfy graduation requirements for the chosen degree. That is, once a student completes a particular technical elective, it becomes a required course for that student.
6. Students in violation of departmental or college academic regulations, no longer eligible for graduation, or not making satisfactory progress toward a degree will have a registration hold placed on their record.
 - a. Students will be placed on probation (registration hold) if they (i) have more than 6 credits of *D* credit (see item 2 above); or (ii) have a GPA of less than 2.4 (see item 1 above).
 - b. The hold remains until they improve their standing by repeating classes to reduce the number of *D* credits to 6 or less, and/or by raising their GPA above 2.4. Students must meet with their advisor to have the hold removed.

The student must meet with a college academic advisor at least once each semester to work out a schedule having the primary goal of correcting the existing academic problems.

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Bachelor of Science in Engineering and Technology Education (124-125 credits)

Technology Education Emphasis

The Technology Education emphasis is designed to prepare students for teaching in junior and senior high schools. Students should follow the suggested semester schedule presented below, completing all courses listed. Consult with an advisor when choosing elective courses. All students in this program must maintain a cumulative GPA of 2.75 and gain admission to teacher education, in order to student teach and to receive secondary education licensure (Emma Eccles Jones College of Education and Human Services).

The Department of Engineering and Technology Education is partnered with Project Lead the Way (PLTW) and provides pre-service training for students to become qualified to teach selected PLTW courses. PLTW is a national program that has developed a curriculum introducing students to the scope, rigor, and discipline of engineering prior to entering college. Students opting to become qualified to teach selected PLTW courses must include MATH 1100 in their program of study, as well as an additional science course with a laboratory experience.

The suggested semester schedule is as follows:

Freshman Year (32 credits)

Fall Semester (17 credits)

ETE 1000	Orientation to Engineering and Technology Education.....	1
ETE 1010	Communications Technology.....	3
ETE 1030	Material Processing Systems.....	3
ETE 1200	Computer-Aided Drafting and Design.....	3
ENGL 1010 (CL1)	Introduction to Writing: Academic Prose.....	3
MATH 1050 (QL) ⁴	College Algebra.....	4

Spring Semester (15 credits)

ETE 1040	Construction and Estimating.....	3
ETE 2300 (QI) ⁶	Electronic Fundamentals.....	4
MATH 1060	Trigonometry.....	2
USU 1350 (BLS)	Integrated Life Science.....	3
	University Studies Breadth American Institutions (BAI) course.....	3

Sophomore Year (31-32 credits)

Fall Semester (15-16 credits)

Note: Students should apply to the Secondary Teacher Education Program (STEP) *early* (see advisor).

ETE 2030	Wood-Based Manufacturing Systems.....	3
ETE 2220	Civil Engineering and Architecture.....	3
	University Studies Breadth Humanities (BHU) course.....	3
	Elective course(s).....	3
	Exploration Requirement course.....	3-4

Spring Semester (16 credits)

ETE 1020	Energy, Power, Transportation Systems Control Technology.....	3
ENGL 2010 (CL2)	Intermediate Writing: Research Writing in a Persuasive Mode.....	3
PHYS 1800 (BPS) ^{5,7}	Physics of Technology.....	4
SPED 4000 ^{2,3}	Education of Exceptional Individuals.....	2
	Elective course(s).....	4

Junior Year (33 credits)

Fall Semester (16 credits)

ETE 3200 ^{2,3}	Methods of Teaching Engineering and Technology Education I.....	3
ETE 3300 ^{2,3}	Clinical Experience I.....	1
SCED 3100 ^{2,3}	Motivation and Classroom Management.....	3
SCED 3210 (CI/DSS) ^{2,3,5}	Educational and Multicultural Foundations ...	3
	University Studies Breadth Creative Arts (BCA) and Breadth Social Sciences (BSS) courses.....	6

Spring Semester (17 credits)

ETE 2020	Computer-Integrated Manufacturing Systems.....	3
ETE 3440 (DSC)	Science, Technology, and Modern Society.....	3
ETE 4300 ^{2,3}	Clinical Experience II.....	1
ETE 4400 ^{2,3}	Methods of Teaching Engineering and Technology Education II.....	3
SCED 4200 (CI) ^{2,3}	Reading, Writing and Technology.....	3
SCED 4210 ²	Cognition and Evaluation of Student Learning.....	3
INST 3500 ¹	Technology Tools for Secondary Teachers.....	1

Note: Prior to Student Teaching, the Praxis Content Exam must be passed.

Senior Year (28 credits)

Fall Semester (12 credits)

ETE 5500 ^{2,3}	Student Teaching Seminar.....	2
ETE 5630 ^{2,3}	Student Teaching in Secondary Schools.....	10

Spring Semester (16 credits)

ETE 2660	Principles of Engineering Education.....	3
ETE 3050	Computer Systems and Networking.....	3
ETE 5220 (CI)	Program and Course Development.....	3
	University Studies Depth Humanities and Creative Arts (DHA) course.....	3
	Elective course(s).....	4

Project Lead The Way (PLTW) Option (7-8 credits)

Required Course (3 credits)

MATH 1100 (QL) ⁶	Calculus Techniques (F,Sp,Su).....	3
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Additional Science Course(s) with Laboratory Experience (4-5 credits)

In addition to completing MATH 1100, students must also complete one of the following three science options, as shown below.

CHEM 1110 (BPS) ⁶	General Chemistry I (F,Sp) (4 cr) and	
CHEM 1115	General Chemistry Laboratory (F,Sp) (1 cr).....	5
Or		
BIOL 1010 (BLS)	Biology and the Citizen (F,Sp,Su) (3 cr) and	
BIOL 1020	Biological Discovery: A Lab Course (F,Sp) (1 cr).....	4
Or		
PHYS 2110	The Physics of Living Systems I.....	4

Trade and Technical Education Emphasis

The Trade and Technical Education emphasis is designed to prepare students to teach vocational courses at the high school or post-high school level. Students should complete all courses listed below. All students in this emphasis must maintain a GPA of 2.75 in order to student teach.

INST 3500 ¹	Technology Tools for Secondary Teachers (F,Sp,Su).....	1
ETE 3200	Methods of Teaching Engineering and Technology Education I (F).....	3
ETE 3300	Clinical Experience I (F).....	1
ETE 3900	Principles and Objectives of Career and Technical Education.....	3
ETE 3930	Evaluation of Career and Technical Education.....	2

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ETE 4300 Clinical Experience II (Sp)	1
ETE 4400 Methods of Teaching Engineering and Technology Education II (Sp).....	3
ETE 4700 Student Teaching in Postsecondary Schools	4
ETE 5220 (CI) Program and Course Development (Sp)	3
ETE 5910 Special Problems in Engineering and Technology Education	1-4
SPED 4000 Education of Exceptional Individuals (F,Sp,Su)	2
ENGL 1010 (CL1) Introduction to Writing: Academic Prose (F,Sp,Su) 3	
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode (F,Sp,Su).....	3
MATH 1050 (QL) College Algebra (F,Sp,Su).....	4
SPCH 1020 (CI) Public Speaking (F,Sp)	3
STAT 2000 (QI) Statistical Methods (F,Sp) (3 cr) or Any Quantitative Intensive (QI) approved course (3 cr)	3
University Studies courses	24
General elective courses	12

State licensure requires a minimum of two years of approved vocational experience. Successful completion of a trade competency examination is accepted in lieu of vocational experience.

¹The INST 3500 requirement has been waived. However, INST 4500 is recommended.
²This course is included in the Secondary Education Licensure Requirements. Prior to enrolling in this course, students must be admitted to the STEP.
³Students must maintain a cumulative 2.75 GPA for admission to the Emma Eccles Jones College of Education and Human Services, for student teaching, and to receive secondary education licensure.
⁴A Math ACT score of 23 or higher is required for enrolment in MATH 1050. If Math ACT score is between 18 and 22, student should enroll in MATH 1010 first.
⁵PHYS 1800 fulfills the University Studies Breadth Physical Sciences (BPS) requirement. SCED 3210 fulfills the University Studies Depth Social Sciences (DSS) requirement.
⁶MATH 1050 is a prerequisite for these courses.
⁷PHYS 1800 needs to be completed during the sophomore year.

Bachelor of Science in Aviation Technology—Maintenance Management (126 credits)

Aviation Technology—Maintenance Management graduates are qualified to enter the work force in many rewarding career fields in aviation. Employment opportunities exist in target industries such as major airline carrier maintenance management, commuter airline maintenance management, fixed-base operator (FBO) maintenance, and Federal Aviation Administration (FAA) aircraft inspection after some field experience. This major has a great deal of depth in general maintenance, which applies to most industrial maintenance operations. Although the major's focus is aviation, the knowledge and skills gained can be used in other fields.

The suggested semester schedule for **Aviation Technology—Maintenance Management** is as follows:

Freshman Year (32 credits)

Fall Semester (17 credits)

AV 1130 Flight Principles.....	2
AV 1140 Aircraft Components and Principles.....	2
AV 1170 Aircraft Structures	3
AV 2180 Aircraft Hydraulic and Pneumatic Systems.....	2
AV 2200 Aircraft Hydraulics and Pneumatic Systems Lab	1
MATH 1050 (QL) ⁹ College Algebra	4
University Studies Breadth American Institutions (BAI) course ^{11,12}	3

Spring Semester (15 credits)

AV 1240 Aircraft Maintenance	3
AV 2170 Aircraft Systems	2
AV 2190 Aircraft Systems Lab	1
ETE 1030 ¹¹ Material Processing Systems	3
ETE 2300 (QI) ⁹ Electronic Fundamentals	4
MATH 1060 Trigonometry	2

Sophomore Year (32 credits)⁸

Fall Semester (15 credits)

AV 2100 Aircraft Reciprocating Powerplants and Accessories.....	3
AV 2110 Aircraft Reciprocating Powerplants and Accessories Lab	3
ETE 1200 ¹¹ Computer-Aided Drafting and Design	3
ENGL 1010 (CL1) ^{11,12} Introduction to Writing: Academic Prose	3
MATH 1100 (QL) ^{11,12,14} Calculus Techniques.....	3

Spring Semester (17 credits)

AV 1100 ¹¹ The Aviation Profession	1
AV 2140 Aircraft Turbine Powerplants and Maintenance Operations....	3
AV 2150 Aircraft Turbine Powerplant Maintenance Operations Lab	3
AV 2430 Aircraft Electrical Systems and Components	2
AV 2440 Aircraft Electrical Systems Laboratory	2
ENGL 2010 (CL2) ^{11,12} Intermediate Writing: Research Writing in a Persuasive Mode.....	3
University Studies Breadth Life Sciences (BLS) course ^{11,12}	3

Junior Year (31 credits)

Fall Semester (15 credits)

AV 3280 Advanced Turbine Engines	2
AV 4280 ¹¹ Airline Management.....	3
STAT 2300 (QL) ^{9,12} Business Statistics	4
Elective course(s)	3
Technical Elective course ¹³	3

Spring Semester (16 credits)

AV 2420 FAA Regulations, Records, and Certification	2
AV 3610 AeroTechnology Design I	1
AV 4490 Human Factors in Aviation Safety.....	3
MGT 3110 (DSS) ^{10,11,12,14} Managing Organizations and People	3
PHYS 1800 (BPS) ¹⁴ Physics of Technology	4
University Studies Breadth Humanities (BHU) course ^{11,12}	3

Senior Year (31 credits)

Fall Semester (15 credits)

AV 3120 Aviation Law.....	3
AV 4610 (CI) AeroTechnology Design II	3
MGT 3710 ^{10,11,12} Developing Team and Interpersonal Skills	3
University Studies Breadth Creative Arts (BCA) and Breadth Social Sciences (BSS) courses ^{11,12}	6

Spring Semester (16 credits)

AV 4200 Composite Manufacturing Processes and Repair	3
AV 4620 (CI) AeroTechnology Design III	3
University Studies Depth Humanities and Creative Arts (DHA) course ^{11,12}	3
Technical Elective courses ¹³	7

Students must complete a total of 40 credits of stipulated upper-division coursework.

⁸Completion of the Computer and Information Literacy (CIL) exams with passing grades is required by the end of the sophomore year.
⁹A Math ACT score of 23 or higher is required to enroll in MATH 1050. If Math ACT score is between 18 and 22, student should enroll in MATH 1010 first. MATH 1050 is a prerequisite for STAT 2300 and ETE 2300.
¹⁰Students must have a cumulative GPA of at least 2.67 and have professional status to be admitted to these Huntsman School of Business courses.
¹¹Due to teaching load constraints, these courses may be offered during semesters other than those listed here. Check with the department regularly for possible changes. Most of these classes are offered only once each year.
¹²These courses may be taken during summer semester to allow for more reasonable course loads during the academic year.
¹³Students must take 10 credits of related technical electives which must be in upper-division courses (3000-level and above).
¹⁴PHYS 1800 fulfills the University Studies Breadth Physical Sciences (BPS) requirement. MGT 3110 fulfills the University Studies Depth Social Sciences (DSS) requirement. MATH 1100 fulfills the University Studies Exploration requirement.

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Bachelor of Science in Aviation Technology— Professional Pilot (126 credits)

Aviation Technology—Professional Pilot graduates are trained to be commercial pilots. The degree requirements include completion of the following FAA licenses: private, instrument, commercial, CFI, CFII, and Multi-Engine. The suggested semester schedule for this degree is as follows:

Freshman Year (30 credits)

Fall Semester (15 credits)

AV 1100 The Aviation Profession	1
AV 1130 Flight Principles	2
AV 2330 Private Pilot Ground School	4
AV 2350 ¹⁸ Private Pilot Certification	1
MATH 1050 (QL) ²⁰ College Algebra	4
University Studies Breadth American Institutions (BAI) course	3

Spring Semester (15 credits)

AV 2170 Aircraft Systems	2
AV 2510 ¹⁸ Intermediate Flight	1
CLIM 2000 (BPS) ¹⁷ The Atmosphere and Weather	3
ETE 2300 (QI) ¹⁹ Electronic Fundamentals	4
MATH 1060 Trigonometry	2
Elective courses	3

Sophomore Year (31 credits)¹⁵

Fall Semester (16 credits)

AV 2180 Aircraft Hydraulic and Pneumatic Systems	2
AV 2520 ²¹ Instrument Pilot Ground School	4
AV 2540 ¹⁸ Instrument Pilot Certification I	1
ENGL 1010 (CL1) Introduction to Writing: Academic Prose	3
MATH 1100 (QL) ¹⁹ Calculus Techniques	3
University Studies Breadth Life Sciences (BLS) course	3

Spring Semester (15 credits)

AV 2430 Aircraft Electrical Systems and Components	2
AV 2550 ¹⁸ Instrument Pilot Certification II	1
CLIM 3250 ²¹ Aviation Weather	3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode	3
Any Communications Intensive (CI) approved course	3
University Studies Breadth Humanities (BHU) course	3

Junior Year (31 credits)

Fall Semester (15 credits)

AV 2620 Commercial Pilot Ground School	2
AV 2660 ¹⁸ Commercial Pilot Certification	1
AV 3010 National Airspace, Air Traffic Control, and Airport Administration	3
AV 3120 Aviation Law	3
AV 3140 Advanced Avionics Systems and Flight Simulation	3
AV 4280 Airline Management	3

Spring Semester (16 credits)

AV 2720 CFI and CFII Ground School	3
AV 2880 ¹⁸ Multi-Engine Certification	1
AV 4490 Human Factors in Aviation Safety	3
AV 5400 Regional Jet Ground School I	4
MGT 3110 (DSS) ^{16,17,22} Managing Operations and People	3
Elective course(s)	2

Senior Year (34 credits)

Fall Semester (17 credits)

AV 2740 ¹⁸ CFI Certification	1
AV 4660 (CI) Flight Senior Project	3
AV 5410 Regional Jet Ground School II	4
Elective course(s)	3
University Studies Breadth Creative Arts (BCA) course	3
University Studies Breadth Social Sciences (BSS) course	3

Spring Semester (17 credits)

AV 2860 ¹⁸ CFII Certification	1
AV 5420 Advanced Regional Jet Simulation	3
PHYS 1800 (BPS) ¹⁷ Physics of Technology	4
Upper-division elective courses ¹⁶	6
University Studies Depth Humanities and Creative Arts (DHA) course	3

¹⁵Completion of the Computer and Information Literacy (CIL) exams with passing grades is required by the end of the sophomore year.

¹⁶Students should contact their advisor for a list of approved upper-division electives.

¹⁷MGT 3110 fulfills the University Studies Depth Social Sciences (DSS) requirement. PHYS 1800 fulfills the University Studies Breadth Physical Sciences (BPS) requirement. CLIM 2000 fulfills the University Studies Exploration requirement.

¹⁸Depending on weather and other factors, flying courses may be taken during semesters other than those indicated. It is imperative that students work with their advisors and flight instructor to determine the best arrangement for these courses.

¹⁹MATH 1050 is a prerequisite for ETE 2300 and MATH 1100.

²⁰A Math ACT score of 23 or higher is required to enroll in MATH 1050. If Math ACT score is between 18 and 22, student should enroll in MATH 1010 first.

²¹Students should take CLIM 2000 prior to taking AV 2520 and CLIM 3250.

²²All students must have a cumulative GPA of at least 2.67 and have professional status in order to be admitted to Huntsman School of Business classes.

Students must complete a total of 40 credits of stipulated upper-division coursework.

A&P Certificate in Aircraft Maintenance Technician— Airframe & Powerplant

This two-year technical program emphasizes aircraft repair and maintenance. Required courses are:

AV 1130 Flight Principles (F)	2
AV 1140 Aircraft Components and Principles (F)	2
AV 1170 Aircraft Structures (F)	3
AV 1240 Aircraft Maintenance (Sp)	3
AV 2100 Aircraft Reciprocating Powerplants and Accessories (F)	3
AV 2110 Aircraft Reciprocating Powerplants and Accessories Lab (F)	3
AV 2140 Aircraft Turbine Powerplants and Maintenance Operations (Sp)	3
AV 2150 Aircraft Turbine Powerplant Maintenance Operations Lab (Sp)	3
AV 2170 Aircraft Systems (Sp)	2
AV 2180 Aircraft Hydraulic and Pneumatic Systems (F)	2
AV 2190 Aircraft Systems Lab (Sp)	1
AV 2200 Aircraft Hydraulics and Pneumatics Systems Lab (F)	1
AV 2420 FAA Regulations, Records, and Certification (Sp)	2
AV 2430 Aircraft Electrical Systems and Components (Sp)	2
AV 2440 Aircraft Electrical Systems Laboratory (Sp)	2
AV 3280 Advanced Turbine Engines (F)	2
AV 4200 Composite Manufacturing Processes and Repair (Sp)	3
ETE 1030 Material Processing Systems (F,Sp)	3
ETE 1200 Computer-Aided Drafting and Design (F,Sp)	3
ETE 2300 (QI) Electronic Fundamentals (Sp)	4
MATH 1050 (QL) College Algebra (F,Sp,Su)	4
MATH 1060 Trigonometry (F,Sp,Su)	2
PHYS 1800 (BPS) Physics of Technology (Sp)	4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose (F,Sp,Su)	3

FAA regulations require students to earn a 70 percent or higher score to pass each course.

Department of Engineering and Technology Education

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@usu.edu. Additional information can be found online at: <http://www.usu.edu/honors/>

Additional Information

For more information about Bachelor of Science requirements and the sequence in which courses should be taken, see major requirement sheets, available from the Engineering and Technology Education Department, or online at: <http://www.usu.edu/majorsheets/>

Graduate Programs

The Master of Science (MS) degree in Engineering and Technology Education is offered by the department. Candidates may choose the Plan A thesis option, the Plan B nonthesis program, or the Plan C coursework option. The department also offers the PhD/EdD degree in Education (Curriculum and Instruction) and the PhD degree in Engineering Education. Further details about these degrees are shown below.

Admission Requirements

See the general admission requirements for graduate study in this catalog (pages 36-37). Students applying for admission to the MS program must complete the GRE with a minimum quantitative and verbal score of 1,000 and a 40th percentile minimum score on the verbal and quantitative tests or must complete the MAT with a minimum score of 43. Admission committees also consider experience, undergraduate record, and formal recommendations.

MS Degree

The degree is designed for technology educators who want to strengthen their background in current educational theory and practice. Students are required to complete a professional core of courses relating to technology education or applied technology education and to select additional courses from a list of related courses. Plan A requires a minimum of 30 semester credits, including a thesis. Plan B is a nonthesis option that requires 33 semester credits, including a creative project. The core courses for this specialization are as follows: ETE 6090, 6100, 6150, 6450, and 6750. The Plan C option consists entirely of coursework. Students should contact the Engineering and Technology Education Department for information about the availability of this option.

PhD Degree in Engineering Education

This degree is the culmination of a multi-year initiative to refocus the department and develop a new emphasis in engineering education. This new focus was supported by a ten million dollar grant from the National Science Foundation to establish the National Center for Engineering and Technology Education at Utah State. Because the new emphasis in engineering education within the department is sufficiently different than the technology education program, a new doctoral degree with a very different set of requirements is warranted.

This program will produce graduates who:

1. Are familiar with the theory and practice of engineering education and are adept at these aspects within their specific area of engineering specialization.
2. Have the ability to conduct research in engineering education in areas such as engineering epistemologies, engineering learning mechanisms, engineering learning systems, engineering diversity and inclusiveness, and engineering assessment.
3. Have the ability to develop/implement/assess engineering curricula at both the high school and university levels.

PhD/EdD Degree in Education (Curriculum and Instruction)

This degree is a doctoral specialization in Curriculum and Instruction (C&I) and is offered through the School of Teacher Education and Leadership (TEAL). (See *Education, Interdepartmental Doctoral Program in Curriculum and Instruction* on pages 234-235.) Students who complete the C&I specialization program receive a degree with an area of emphasis in engineering and technology education. This is a research degree and is primarily chosen by people seeking teaching/research positions in colleges and universities. Depending on students' professional goals and their ability or inability to attend graduate school full time during the academic year, students will *either* be accepted into the Doctorate of Education (EdD) program *or* the Doctorate of Philosophy (PhD) program.

Financial Assistance

The department offers a limited number of graduate research and teaching assistantships. For further information, contact the Engineering and Technology Education Department.

Engineering and Technology Education Faculty

Professors

Kurt Becker, technology education, construction technology, computer aided drafting

Edward M. Reeve, technology education, communication technology

Professors Emeritus

Jay C. Hicken, technology education, wood technology, power/energy/transportation

Maurice G. Thomas, technology education

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Associate Professors

Ward P. Belliston, electronics technology
Ning Fang, dynamics, manufacturing engineering
Gary A. Stewardson, technology education, manufacturing technology

Assistant Professors

Oenardi Lawanto, engineering education
Paul D. Schreuders, engineering education

Principal Lecturers

Nolan D. Clifford, director of Aviation Program, aviation technology, professional pilot
Lawrence Hemingway, aviation technology, professional pilot

Lecturer

Randall W. Chesley, aviation maintenance

Chief Flight Instructor

Sean E. Heiner

Assistant Chief Flight Instructors

Aaron C. Dyches
Gregory P. Walton

Course Descriptions

Aviation Technology (AV), pages 509-510

Engineering and Technology Education (ETE), pages 557-560