DBA 298C  Advanced Broadcast Internships  (3)
9 hours laboratory
Prerequisite: A minimum grade of 'C' in DBA 298B.
Note: Cross listed as ENTT 298C; may not be taken for Pass/No Pass grading.
Transfer acceptability: CSU
Work on advanced television production including individual research, work on advanced college produced programs, or internships at local Network affiliate broadcast stations, radio stations, cable companies, and other professional communications facilities.

Disability Resource (DR)

Contact the Disability Resource Center for further information.
(760) 744-1150, ext. 2375
Office: DSPS

COURSE OFFERINGS

Courses numbered under 50 are non-degree courses. Courses numbered under 100 are not intended for transfer credit.

DR 15  English Essentials for Students with Disabilities  (3)
3 hours lecture
Note: Pass/No Pass grading only; Students must have the ability to learn in a group setting. Students must be able to produce computer generated work by using the keyboard or other assistive technology.
Non-degree Applicable
Provides special assistance for students with disabilities to develop basic skills in written communication. Working with computers is part of the class format.

DR 18  Phonics for Students with Disabilities  (3)
3 hours lecture
Non-degree Applicable
This course is designed to meet the needs of students with disabilities. It teaches the use of phonics as a spelling and reading strategy.

DR 20  Pre-Algebra Support  (3)
3 hours lecture
Note: Pass/No Pass grading only
Non-degree Applicable
Provides programmed instruction on an individual and/or small group basis to students with disabilities. Practice in understanding and performing basic arithmetic tasks necessary for successful functioning in society.

DR 25  Algebra Support  (1.5,3)
1½ or 3 hours lecture
Recommended preparation: MATH 15 or eligibility for MATH 50
Note: Pass/No Pass grading only
Non-degree Applicable
Provides personalized instruction in basic study management techniques for the support of students with disabilities in mainstream classes. The course will help students with disabilities to develop specialized study techniques and interpersonal skills needed for success in mainstream classes.

DR 26  Composition Skills and Strategies for the Intermediate Writer  (3)
3 hours lecture
Recommended preparation: ENG 10 or eligibility for ENG 50
Non-degree Applicable
This class is designed to help students with disabilities improve their intermediate composition skills through methods and strategies specific to their disabilities.

DR 40  Adapted Computer Skills  (3)
3 hours lecture
Non-degree Applicable
Provides computer training using specialized software and hardware adaptations to assist students with disabilities to develop skills in word processing and Internet research.

DR 41  Advanced Adapted Computers for Students with Disabilities  (3)
3 hours lecture
Recommended preparation: DR 40
Non-degree Applicable
Provides training in more advanced software for students with disabilities by using their prescribed access technology.

DR 43.1  Software for Students with Vision Loss I  (3)
3 hours lecture
Recommended Preparation: Keyboarding skills with a minimum of 15 words per minute
Non-degree Applicable
Provides training using specialized software and hardware adaptations to assist students with blindness/low vision to develop computer skills.

DR 43.2  Software for Students with Vision Loss II  (3)
3 hours lecture
Recommended Preparation: Keyboarding skills with a minimum of 15 words per minute along with prior experience with a screen reading or magnification application
Non-degree Applicable
Provides training using specialized software and hardware adaptations in combination with Microsoft Office, Internet Explorer, and other academic applications.

DR 44  Study Skills with Technology  (0.5)
0.5 hours lecture
Improve study skills through the use of software and other assistive technologies.

DR 45L  Adapted Computer Laboratory  (1)
3 hours laboratory
Note: Pass/No Pass grading only
Non-degree Applicable
Provides supervised hands on opportunities to acquire and reinforce skills on computer equipment adapted for students with disabilities.

DR 47  Topics in Disability Resource  (.5-3)
Units awarded in topics courses are dependent upon the number of hours required of the student. Any combination of lecture and/or laboratory may be scheduled by the department. Refer to Class Schedule.
Non-degree Applicable
Topics in disability resource. See Class Schedule for specific topic offered. Course title will designate subject covered.

Drafting Technology (DT)

Contact the Trade and Industry Department for further information.
(760) 744-1150, ext. 2545
Office: T-102A

Associate in Science Degrees -
AS Degree requirements are listed in Section 6 (green pages).
• Computer Assisted Drafting
• Drafting Technology - Multimedia
• Drafting Technology - Technical
• Electro-Mechanical Drafting and Design
• Interactive Media Design - Emphasis in 3D Modeling and Animation
• Interactive Media Design - Emphasis in Multimedia Design

Certificates of Achievement -
Certificate of Achievement requirements are listed in Section 6 (green pages).
• Computer Assisted Drafting
• Drafting Technology - Multimedia
• Drafting Technology - Technical
• Electro-Mechanical Drafting and Design
• Interactive Media Design - Emphasis in 3D Modeling and Animation
• Interactive Media Design - Emphasis in Multimedia Design
PROGRAMS OF STUDY

Computer Assisted Drafting
Prepares students in the skills necessary for employment as a computer assisted drafting operator.

A.S. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements Units
DDT/ENGR 101 AutoCAD Introduction to Computer Aided Drafting 3
DDT/ENGR 102 Advanced AutoCAD 3
DT/ENGR 103 SolidWorks Introduction to 3D Design and Presentation 3
DT/ENGR 104 SolidWorks Advanced 3D Design and Presentation 3
IT/WELD 108 Technical Mathematics 3
or
MATH 50 Beginning Algebra 4
or
MATH 50A Beginning Algebra Part I 2
and
MATH 50B Beginning Algebra Part II 2
or
MATH 56 Beginning/Intermediate Algebra 6
or
MATH 60 Intermediate Algebra 4

Electives (Select 9 units)
ARTD 150 Digital Concepts and Techniques in Art 3
ARTD 220 Motion Design 3
ARTI 246 Digital 3D Design and Modeling 3
ARTI 247 Digital 3D Design and Animation 3
COMM 100 Introduction to Mass Communication 3
DT/ENGR 104 SolidWorks Advanced 3D Design and Presentation 3
DT 196 Special Problems in Computer Aided Drafting 3
ARCH 202 Introduction to Revit Architecture 3
GCIP 140 Digital Imaging/Photoshop I 3
GCMW 101 Multimedia I 3
GCMW 201 Multimedia II 3
MATH 110 College Algebra 4
or
MATH 115 Trigonometry 3
MUS 180 Computer Music I 3
CE 100 Cooperative Education 1 - 4

TOTAL UNITS 30 – 33

Drafting Technology - Multimedia
Prepares students in the skills necessary for employment in the multimedia presentation field.

A.S. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements Units
DDT/ENGR 101 AutoCAD Introduction to Computer Aided Drafting 3
DDT/ENGR 102 Advanced AutoCAD 3
DT/ENGR 103 SolidWorks Introduction to 3D Design and Presentation 3
DT/ENGR 104 SolidWorks Advanced 3D Design and Presentation 3
IT/WELD 108 Technical Mathematics 3
or
MATH 50 Beginning Algebra 4
or
MATH 50A Beginning Algebra Part I 2
and
MATH 50B Beginning Algebra Part II 2
or
MATH 56 Beginning/Intermediate Algebra 6
or
MATH 60 Intermediate Algebra 4

Electives (Select 9 units)
ARTD 150 Digital Concepts and Techniques in Art 3
ARTD 220 Motion Design 3
ARTI 246 Digital 3D Design and Modeling 3
ARTI 247 Digital 3D Design and Animation 3
COMM 100 Introduction to Mass Communication 3
DT/ENGR 104 SolidWorks Advanced 3D Design and Presentation 3
DT 196 Special Problems in Computer Aided Drafting 3
ARCH 202 Introduction to Revit Architecture 3
GCIP 140 Digital Imaging/Photoshop I 3
GCMW 101 Multimedia I 3
GCMW 201 Multimedia II 3
MATH 110 College Algebra 4
or
MATH 115 Trigonometry 3
MUS 180 Computer Music I 3
CE 100 Cooperative Education 1 - 4

TOTAL UNITS 30 – 33

Drafting Technology - Technical
Prepares students in the skills necessary for employment as a drafter in machine, mechanical, electrical, aeronautical, civil, and other related engineering fields.

A.S. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements Units
DT/ENGR 101 AutoCAD Introduction to Computer Aided Drafting 3
DT/ENGR 103 SolidWorks Introduction to 3D Design and Presentation 3
DT/ENGR 104 SolidWorks Advanced 3D Design and Presentation 3
DT/ENGR 111 Technical Drafting II with AutoCAD 3
DT/ENGR 110 Technical Drafting I with AutoCAD 3
DT/ENGR 117 Geometric Dimensioning and Tolerancing 2
IT/WELD 108 Technical Mathematics 3
or
MATH 50A Beginning Algebra Part I 2
and
MATH 50B Beginning Algebra Part II 2
or
MATH 56 Beginning/Intermediate Algebra 6
or
MATH 60 Intermediate Algebra 4

Electives (Select 4 units)
CE 100 Cooperative Education 1 - 4
DT 100 Basic Mechanical Drawing 3
DT/ENGR 102 Advanced AutoCAD 3
DT 180 3D Studio Max - Introduction to 3D Modeling and Animation 3
DT 182 3D Studio Max-Advanced 3D Modeling and Animation 3
DT 184 Real Time 3D Technical/Game Animation 2
DT 196 Special Problems in Computer Aided Drafting 1 - 3
or
DT 197 Drafting Technology Topics 0.5 - 4
ARCH 202 Introduction to Revit Architecture 3
MATH 110 College Algebra 4
or
MATH 115 Trigonometry 3
MUS 180 Computer Music I 3
CE 100 Cooperative Education 1 - 4

TOTAL UNITS 27-28

Electro-Mechanical Drafting and Design
Drafts detailed working drawings of electro-mechanical equipment and devices. Indicates dimensions, tolerances, materials, and manufacturing procedures for electro-mechanical drafting industry.
### A.S. Degree Major or Certificate of Achievement

**Program Requirements**

<table>
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<tr>
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**TOTAL UNITS:** 26-27

**Interactive Media Design**

Prepares students with specific skills necessary for employment in the field of multimedia design and production. Students may choose an emphasis in either 3D modeling and animation, which emphasizes production skills and authoring systems, or multimedia design, which emphasizes content development and visual design of multimedia productions. Both areas of emphasis collaborate on an actual multimedia production.

**Emphasis in Multimedia Design**

**Program Requirements**

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**Electives (Select two courses)**

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**TOTAL UNITS:** 29 – 30

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**Emphasis in 3D Modeling and Animation**

**Program Requirements**

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**TOTAL UNITS:** 29 – 30

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**A.S. Degree Major or Certificate of Achievement**

**Program Requirements**

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<td>MUS 180</td>
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**TOTAL UNITS:** 30

Interactive Media Design A.S. Degree or Certificate of Achievement is also listed in Art and in Graphic Communications – Multimedia and Web.

**Course Offerings**

**DT 101** AutoCAD Introduction to Computer Aided Drafting (3)

- 1½ hours lecture - 4½ hours laboratory
- **Note:** Cross listed as ENGR 101.
- **Transfer acceptability:** CSU; UC – DT/ENGR 101 and 102 combined: maximum credit, one course
- An introduction to computer aided drafting using AutoCAD software and IBM compatible computers. Hands on experience with AutoCAD to include the following operations: preparing and editing drawings, storage and retrieval of drawings, and production of commercial quality drawings on a plotter. Introductory computer terminology and techniques in Windows.

**DT 102** Advanced AutoCAD (3)

- 1½ hours lecture - 4½ hours laboratory
- **Prerequisite:** A minimum grade of ‘C’ in DT/ENGR 101
- **Note:** Cross listed as ENGR 102.
- **Transfer acceptability:** CSU; UC – DT 101 and 102 combined: maximum credit, one course
- Advanced theory and hands on operation of a CAD system. Emphasis is placed on large scale drawings, three dimensional software techniques, orthographic projections, and complex computer aided manufacturing applications.

**DT 103** SolidWorks Introduction to 3D Design and Presentation (3)

- 1½ hours lecture - 4½ hours laboratory
- **Note:** Cross listed as ENGR 103.
- **Transfer acceptability:** CSU
- Advanced theory and hands on operation of three-dimensional software techniques. Emphasis is placed on wireframe, surface, solid, and parametric three-dimensional modeling.
DT 104  SolidWorks Advanced 3D Design and Presentation  (3)
1 1/2 hours lecture - 4 1/2 hours laboratory
Prerequisite: A minimum grade of "C" in DT/ENGR 103
Note: Cross listed as ENGR 104
Transfer acceptability: CSU
Advanced theory and hands-on operation of solid and parametric three-dimensional models. Emphasis is placed on creating molds, advanced sheet metal design and developing dynamic assemblies.

DT 110  Technical Drafting I with AutoCAD  (3)
1 1/2 hours lecture - 4 1/2 hours laboratory
Prerequisite: A minimum grade of "C" in DT/ENGR 101, or concurrent enrollment in DT/ENGR 101
Transfer acceptability: CSU
Note: Cross listed as ENGR 110.
Fundamentals of drafting including lettering, sketching, geometric constructions, orthographic projections, basic dimensioning, sectional views and auxiliary views. Drafting will be performed on the computer using AutoCAD, SolidWORKS, and Creo software.

DT 111  Technical Drafting II with AutoCAD  (3)
1 1/2 hours lecture - 4 1/2 hours laboratory
Prerequisite: A minimum grade of "C" in DT/ENGR 110
Note: Cross listed as ENGR 111.
Transfer acceptability: CSU
Advanced drafting practices using customized AutoCAD software. Basic studies will include pictorial drafting, descriptive geometry, and revolutions. Working/ shop drawings in topography, developments, cabinet/millwork, structural steel, and welding will be performed. Emphasis is placed on increased productivity by customizing AutoCAD to the student's requirements.

DT 117  Geometric Dimensioning and Tolerancing  (2)
1 hour lecture - 3 hours laboratory
Note: Cross listed as ENGR/WELD 117
Transfer acceptability: CSU
An introduction to geometric dimensioning and tolerancing ASME Y14.5-2009. Students will learn to identify, use appropriate geometric symbols and techniques of geometric dimension, and produce industrial quality drawings. Students will also learn to measure and verify geometric dimensions and tolerances of manufactured items.

DT 151  CAD/CAM Machining  (3)
1 1/2 hours lecture - 4 1/2 hours laboratory
Note: Cross listed as ENGR/WELD 151
Transfer acceptability: CSU
Hands-on operation of importing three-dimensional solid and parametric three-dimensional models into CAD/CAM operations.

DT 180  3D Studio Max – Introduction to 3D Modeling and Animation  (3)
1 1/2 hours lecture - 4 1/2 hours laboratory
Transfer acceptability: CSU
An overview of 3D Studio Max. Hands-on operation of the software to produce basic three-dimensional models and basic technical animations.

DT 182  3D Studio Max – Advanced 3D Modeling and Animation  (3)
1 1/2 hours lecture - 4 1/2 hours laboratory
Prerequisite: A minimum grade of "C" in DT 180
Transfer acceptability: CSU
Advanced 3D Studio Max applications to create special visual effects for high-end image production. Advanced keyframing, time-based editing, controllers, and video post will be employed to master state-of-the-art rendering and animation. The class is structured to help students start using 3D Studio Max in a production environment.

DT 184  RealTime 3D Technical/Game Animation  (2)
1 hour lecture - 3 hours laboratory
Transfer acceptability: CSU
Students will create interactive 3D applications using a direct X base real time engine for the game industry, computer based training and product visualization.

DT 196  Special Problems in Computer Aided Drafting  (1, 2, 3)
3, 6, or 9 hours laboratory
Transfer acceptability: CSU
An advanced course designed to aid the student in the enrichment of an area of concentration in AutoCAD and third party drafting software and is a research nature. Content to be determined by the need of the student under signed contract with the instructor.

DT 197  Drafting Technology Topics  (.5 - 4)
Units awarded in topics courses are dependent upon the number of hours required of the student. Any combination of lecture and/or laboratory may be scheduled by the department. Refer to Class Schedule.
Transfer acceptability: CSU
Topics in Drafting. See class schedule for specific topic covered. Course title will designate subject covered.

DT 226  Printed Circuit Board Design  (3)
1 1/2 hours lecture - 4 1/2 hours laboratory
Note: Cross listed as ENGR 226
Transfer acceptability: CSU
Instruction in printed circuit board design generally required for entry level positions in the electronic industry. Includes artwork and complete documentation for analog and digital multi-layer, flexible and high-speed boards using current IPC standards. Drafting will be performed on the computer using high-end printed circuit board software.

DT 227  Advanced Printed Circuit Board Design  (3)
1 1/2 hours lecture - 4 1/2 hours laboratory
Prerequisite: A minimum grade of "C" in DT/ENGR 226
Note: Cross listed as ENGR 227
Transfer acceptability: CSU
Advanced problems and instruction in printed circuit board design generally required for entry-level position in the electronic industry. Special emphasis will be placed on advanced applications including surface mount technology. Includes artwork and complete documentation for analog and digital multi-layer, flexible and high-speed boards using current IPC standards. Drafting will be performed on the computer using AutoCAD and PADS software.

Earth Sciences (ES)
Contact the Earth, Space, and Aviation Sciences Department for further information.
(760) 744-1150, ext. 2512
Office: NS-110G

COURSE OFFERINGS

ES 100  The Earth as a System: Case Studies of Change in Space and Time  (3)
3 hours lecture
Transfer acceptability: CSU; UC
C-ID GEOL 120
An overview of the fields of geology, geography, oceanography, and astronomy that approach Earth as a system. Areas of study include those related to plate tectonics, earthquakes, volcanoes, geologic time, landscape evolution, weather systems, ocean circulation, climate change, and exploration of the solar system.

ES 100L  Earth Systems Laboratory  (1)
3 hours laboratory
Prerequisite: Completion of, or concurrent enrollment in ES 100
Transfer acceptability: CSU; UC
C-ID GEOL 120L
Laboratory and field investigations of the Earth as a system including the geosphere, atmosphere, hydrosphere, and exosphere (solar system) as well as an assessment of society’s role in Earth’s processes. Focuses on the physical and chemical systems of the Earth such as the tectonic cycle, rock cycle, hydrologic cycle, weather, and climate.