

1. Program Description

The Engineering Drafting and Design Technologies Department(EDDT) at Utah State University Eastern has the role of teaching not only drafting but also engineering trade and technical support courses for other programs on the campus. The department's primary role is to prepare their students to work in an industrial occupation. At the present time, the only degree offered by the department is a one-year certificate of completion that enables students to enter the work force with entry level skills after one year of course work.

The program is now located in the new West Instructional Building. This location provides additional space for computer labs, as well as much needed office space for faculty. The program offers both conventional board drafting and computer aided drafting. The faculty is keenly interested in providing state of the art training. Recent changes and upgrades in both computer software and hardware reflect this perceptive interest.

The program is now outfitted with state of the art equipment for both its board drafting and CAD courses.

2. Program offerings

Courses offered as part of the certificate and degree programs reflect the needs of those programs. Specific courses reflect results of accreditation teams and industry requests.

They are expressly related to department objectives.

All courses in the drafting program have course outlines on file in the Division Chair's office. Courses are reviewed for demonstrated need; content (meeting objectives); teaching techniques, e.g., hands on or classroom use, and evaluation methods including cognitive skills, psychomotor skills, outcomes assessment, and use of teacher judgement.

The drafting department offers two courses that can be used to fill the computer component of general education. These courses include EDDT 1040 CAD 1 and EDDT 1500 Introduction to GIS. It should be noted that many of the courses offered in the drafting program are dual-listed in the Trade and Technical area.

There are no special admission standards or conditions for students entering the drafting classes.

Curricula offered in the drafting/engineering department include the following:

EDDT 1010 Technical Drafting - 5 credit hours. Lecture and drafting problems in orthographic projections, auxiliary views, sections, the standards for threads and fasteners, and the general practices for beginning engineering drawing. . Lettering, geometric construction, sketching, multi view drawings, pictorials, dimensioning theory and practice, sectional views, and axillary views.

EDDT 1070 CAD Level II -3 credit hours. Intro to 3-D Isometric oblique and axonometric drawing; revolutions, gear and cam work and other drafting work used in the various branches

of engineering. Industrial applications in machine drawings involving threads, fits, keys, working drawings and specifications. Technical thinking will be emphasized in the course work.

CEE 2240 Surveying - 3 credit hours. A course in the fundamentals of surveying, including note keeping, leveling, property boundaries, cut and fills, slope staking and plotting coordinates.

EDDT 1040 CAD Level I - 3 credit hours. Will fill Computer Literacy requirement. A course in the fundamentals of computer-aided drafting (CAD). The course will cover the interactive use of computers to carry out the tasks of design and drafting.

EDDT 2970 Cooperative Education - 3-6 credit hours. Pre-engineering Work Experience. This course provides on-the-job experience for students majoring in pre-engineering. Positions as surveyor aids, engineer aids, etc., may be available. The student meets with the instructor/coordinator and employer at the beginning and periodically during the course to determine and evaluate objectives, hours to be worked and credit agreement. Prerequisite: Instructor's permission.

EDDT 2988 Special Problems - 1-5 credit hours. Individual work approved by instructor. Time and credit to be arranged.

EDDT 2650 Mechanical Blueprint Reading - 2 credit hours. An introduction to blueprints, machine drawings, hydraulic drawings, electrical drawings, pipe-system drawings, and sketching where the student will identify and draw portions of the preceding.

EDDT 1100 Residential Drafting and Design - 3 credit hours. Introduction to the basic principles of efficient house planning. Includes the preparation of floor plans, plot plan, elevations, details, and sections. Drawings will be CAD designed. Prerequisite:

3. Degrees and/or Certificates:

The USU Eastern Drafting Department offers a one-year certificate of completion in Drafting Technology.

Utah State University Eastern Engineering Drafting and Design Technology Certificate of Completion

	Credit	Notes	Semester Completed	Grade
Engineering Drafting & Design Core Courses	22			
EDDT 1010 Technical Drafting	5			
EDDT 1040 CAD Level I: Intro to CAD	3			
EDDT 1070 CAD Level II: Advanced CAD	3	Pre-requisite: EDDT 1040		
EDDT 1100 Residential Architectural Drafting	3	Pre-requisite: EDDT 1040		
EDDT 2620 3-D Modeling Advanced	3			
EDDT 2650 Mechanical Blueprint Reading	2			
CEE 2240 Surveying	3	Pre-requisite: MATH 1050 & MATH 1060 or an ACT Math score of 27		
Elective -Choose <u>3</u> credits	3			
GEO 1800 Intro to Geographic Information Systems	3			
ENGN 1000 Introduction to Engineering	2			
ENGN 1005 Introduction to Engineering Lab	1			
Math	7			
MATH 1050 College Algebra	4	Pre-requisite: MATH 1010 or Placement Exam.		
MATH 1060 Trigonometry	3	Pre-requisite: MATH 1010 or Placement Exam		
Human Relations -Choose <u>ONE</u>	3			
BUSN 2320 Small Business Management CTE	3			
BUSN 2390 Organizational Behavior	3			
CMST 2110 Interpersonal Communication	3			
CMST 2120 Group Communication	3			
Written Communication	3			
ENGL 1010 Introduction to Writing (CL1)	3			
Degree Total	38			

Students who participate in the Engineering Drafting and Design Technology program are prepared to pursue a career within the engineering industry as an Engineering Design Technician.

Engineering Design Technicians usually find employment at engineering or architectural firms, and at manufacturing companies. Students may also choose to pursue additional education in the Engineering field.

4. Program consistency with Institutional Mission & Goals:

Student evaluations, internal (school) evaluations, Utah State Office of Education Accreditation evaluation, and industry demands confirm the department's role in maintaining consistency with the college's mission and goals.

5. Interaction with Other Programs on Campus:

The Drafting Department faculty serve on various college committees as requested. In addition to this, departmental courses are offered that support other departments such as auto mechanics, machine shop, mining and welding.

Support from Drafting/Engineering Department for other vocational programs.

Auto mechanics	none
Machine Tool Technology	EDDT 1010 Drafting EDDT 1040 Introduction to Computer Drafting EDDT 2650 Blueprint reading
Welding	EDDT 2620 3-D modeling EDDT 1040 Introduction to Computer Aided Drafting

6. Special Departmental Characteristics:

The department has a dedicated, energetic, knowledgeable instructor. He teaches additional workshops and courses as requested by the community, i.e. CAD drafting workshops and Guitar Making.

7. Drafting Department Advisory Committee:

The department has employed the assistance of an advisory committee. The Engineering faculty has felt that with the broadness of the many areas supported by the engineering program, that an advisory committee would be ineffectual. Subsequently, this report reflects a recent accreditation direction to organize as well as utilize an advisory committee.

8. Faculty:

The drafting program instructor, Elias Perez, holds a B.S. in Education (1978) and a Masters Technology in Education (2011), He has completed additional course work at the, Utah State University, Brigham Young University He holds a Secondary Teaching certificate in Utah, tenured USU Eastern, SolidWorks Teaching certificate.

9. Department Goals:

- Further develop a plan to attract students and build enrollment.
- Develop a plan to visit more high schools and improve recruitment.
- Design departmental brochure to promote drafting program.
- Continually upgrade competency-based curriculum to help better train the students for industry.
- Develop a CAD needs survey to be sent out to local industry.

10. Methods of Teaching Within the Department:

The department uses various successful teaching methods. All course syllabi have been evaluated with special attention on outcomes assessment. Computer workstations were upgraded to provide a more state of the art work environment. The program integrates theory and practice to help students understand what they are doing as they develop skills. The department is equipped with the requisite audiovisual equipment appropriate for trade and technical instruction. Course work is structured so that students can have a great experience while learning this amazing field of industry.

11. Instructor Evaluation:

Faculty are evaluated according to school policy by students and faculty. Faculty are required to submit an annual report which states improvements made in their respective programs and list self improvements as well as community involvement. Additional evaluations are made at special classes and workshops to ensure quality of both teaching and course content. The division chair conducts an annual personal evaluation of the faculty member including an appraisal of teaching load.

12. Students:

Students enrolling in this program are as diverse as the reasons for which they enroll. Almost all trade and technical programs require course work in CAD. The department has both traditional and non-traditional students enrolled in its program. In spite of recent difficulty in finding localized employment, many of the department graduates are successful in finding and maintaining employment.

Students have been placed with these companies:

Morgantown
UP&L
Intermountain Electronics

The program has a high number of students who accept employment prior to meeting graduation requirements, thus contributing to low graduation rates.

13. Department Data:

Faculty	87-88	88-89	89-90	90-91	91-92
Headcount	1	.67	1.33	1.33	1.33
FTE	6.73	6.66	15.1	14.8	19.6
SCH	303	300	680	668	884
SCH/FTE	45.02	45.05	45.03	45.14	45.10

Program Costs

	87-88	88-89	89-90	90-91	91-92
E&G	36,716	33,689	44,536	48,321	60,583

Instructional Costs

	87-88	88-89	89-90	90-91	91-92
E&G Cost per SCH	121.17	112.30	65.49	72.34	68.53
Cost per FTE	5456	5058	2949	3265	3091
Program Maj	4	6	7	7	13
Program Graduates	0	0	0	1	3

Budget

	87-88	88-89	89-90	90-91	91-92
Salaries	22,962	22,962	29,994	32,141	32,602
Benefits	6,883	7,553	10,357	11,782	12,681
Hourly Wage	0	0	0	986	1,114
Travel	103	503	570	481	191
Current Exp.	2,806	2,671	2,777	2,931	2,682
Equipment	3,962	0	0	0	11,313
Total	36,716	33,689	44,536	48,321	60,583

14. Program Support:

Library: The Library reports the following support for the drafting department:

In regards to library support for the drafting program (T 351-377) in the Library of Congress Classification, the library had approximately 20 circulating books on the shelf at the end of the last fiscal year. The Reference Collection was weeded in April and at this time we have no reference books on the shelf. With the newly created Commons Area the students will benefit from the design tools available to them. i.e. 3-D printer, computers with different drafting software.

At the present time there are no journals dealing with drafting/engineering. Magazine articles would have to be searched on line.

15. Physical Facilities and Equipment:

The program is fortunate to now be housed in a facility specifically designed for drafting. Access to a projection monitor has greatly enhanced CAD demonstrations. The newly updated broadcasting system has increased the ability to bring our courses to other institutions within the State.

Equipment/space status

Have: 16 computer stations
LaserJet Printer
Plotter

16. Professional Development Funds:

Professional development funds are adequate. Resources for faculty development opportunities are available through the Academic Provost office by application. Division funding for travel to conventions and workshops is also available.

17. Committee Response:

Strengths:

- New facility
- Number of computer stations
- Autocad SolidWorks, Inventor, AchiCAD, and Revit
- Improving enrollment
- Provides students with marketable skills
- Met C&I deadlines for syllabus review

18. Outside Evaluator Response:

College of Eastern Utah Drafting Program Evaluation

Rex Thornock (Evaluator)
Drafting Instructor
Ogden-Weber Applied Technology College

FACILITIES

The training facility is as good as any I've seen. The room is set up to create a productive and efficient working environment and creates a positive atmosphere for learning. It implements a focus on the teacher which enables him to teach the pertinent subject matter to the students effectively. Having the students facing him at all times is important for an effective learning environment. The two-room situation is a great set up for this class. Manual drafting and computer drafting take two completely different methods to teach and this set up is a perfect way to do it. It's also so close that Mr. Perez can literally keep an eye on both classes at the same time if there were ever a need.

The computers being used are up-to-date utilizing current software. The computer set-up was most impressive making the most use out of the fewest possible. This is impressive thinking especially in critical times of which we are facing. Finding a hardware and software which will allow one computer to be turned into six is financial genius during fiscally tough times. The computer set-up was very impressive.

I saw also, a 3D Printer of which Mr. Perez is using to aid in his teaching strategies. 3D Printers are turning into almost a teaching necessity nowadays. Students struggle tremendously with visualization, especially in the beginning. Being able to actually see the parts they are creating is becoming a teaching requirement as of late. These 3D printers are a vital tool in the teaching world and Mr. Perez is making full use of this technology.

SOFTWARE

Industry standards for the proper drafting software have been identified by the companies who sit on all our Employer Advisory Teams. The industry in this area, I've been told, is quite limited, but the few that are involved with the college guide them on their expectations of what the training and software should be. The main software package being used in this areas industry and that is being taught at this College is AutoCAD. Other software packages being taught which are not quite as prevalent are:

- Archicad
- Inventor
- SolidWorks
- Revit

- SolidEdge
- SketchUP

From all indications I received and observed, Mr. Perez is teaching the appropriate software packages that will make the students within the drafting program successful employees (of course we all understand that placing students into a drafting position is highly contingent upon the attitude of the completed student) in this area of Utah. Also, Mr. Perez has an almost complete knowledge of AutoCAD and its applications and has a good knowledge of the rest of the software packages being taught within the program. I understand that it is completely unreasonable to expect a complete working knowledge of all these software packages, but I know that Mr. Perez desires to achieve that level of knowledge as all of us drafting instructors do. I know that he is making a grand effort to stay on top of the ever-changing nature of all the software which in itself is an absolute nightmare. In a perfect teaching situation, there would be one teacher per software package. This is the most effective way to have expertise in all software packages. I've seen this in a few schools but it is very expensive to make that happen. Still, if it is at all possible, it is the best teaching situation for the students.

INSTRUCTION

At the time of my observation, Mr. Perez had a few students attending the class for instruction. The initial thing I noticed was when there was a question from one of them he dropped what he was doing with me and went to their aid – very impressive. Mr. Perez understands what's truly important. Even with an important event going on like this evaluation, he understood that the students come first. I noticed that the students were very comfortable with him; they were not intimidated by him. They were getting their questions answered, making each other laugh; generally having a good time during their training. I could see that the students trusted Mr. Perez and the knowledge base that he had.

Again, the room was set-up for positive instruction. If lecturing had to be done, he had their full attention. The way the room is set up allows students to observe both demonstrative and video presentations. This creates a positive learning environment enabling Mr. Perez to get through to all students no matter what level they are at in their training.

Mr. Perez's organization skills are top notch. The room is uncluttered and clean which creates a positive atmosphere. The curriculum is orderly and understandable helping the students know exactly what has to happen and what Mr. Perez expects of them.

Mr. Perez's has a very creative teaching approach. He seems to always be looking for better ways to wake-up and motivate his students into being successful. Based on his personal hobbies, he is a very motivated person and he tries to instill that attribute into his students. One has to go down many different avenues to accommodate all the different personalities that students bring into a classroom and it seems that he is doing that very thing.

SUGGESTIONS

I noticed that the tables that the computers are sitting on are very old. It could be possible to update the tables so the room looks more modern. I think that there could also be a job listing board to aid the students looking for drafting positions.