**PROGRAM CHANGES**

WEBER STATE UNIVERSITY

**Submission Date:** November 18, 2009

**College:** College of Applied Science and Technology

**Department**: Manufacturing and Mechanical Engineering Technology

**Program Title:** Design Graphics Engineering Technology

**PROGRAM DESCRIPTION:**

See attached program description sheets from the catalog

Check all that apply:

\_\_\_\_New course(s) required for major, minor, emphasis, or concentration.

\_\_\_\_Modified course(s) required for major, minor, emphasis, or concentration.

\_\_\_\_Credit hour change(s) required for major, minor, emphasis, or concentration.

\_\_\_\_Credit hour change(s) for a course which is required for the major, minor, emphasis, or concentration.

\_\_\_\_Attribute change(s) for any course.

\_\_\_\_Program name change.

\_\_\_\_Deletion of required course(s).

\_X Other changes (specify):

* Replacing DGET 3640 Cost Estimation and Control with existing course MFET 4610 Senior Project Planning and Estimating (3)
* Replacing MFET 3320 Machine Design (2) with existing course MET 3400 Machine Design (3)
* Adding the requirement for students to select one of the following courses to fulfill the Social Science and/or Diversity requirement for the BS degree:

 ANTH SS/DV 2010 Peoples and Cultures of the World (3)

 GEOG SS/DV 1300 Places and Peoples of the World (3)

 HIST SS/DV 1510 World History from 1500 C.E. to the Present (3)

* Recommending the following courses as technical electives for students seeking a BS degree:

CMT 3350 Applied Structures (4)

CMT 4350 Design of Construction Systems (2)

DGET 3460 Parametric Design Graphics (3)

MFET 3460 Engineering Design Using Solid Modeling (2)

MFET 3810 Statistical Process Control and Reliability (3)

 TBE 3250 Business Communication (3)

* Deleting the following course from the program:

 DGET 1890 Cooperative Work Experience

 DGET 2440 Descriptive Geometry

 DGET 2640 Architectural Estimating

 DGET 3640 Cost Estimating and Control

 DGET 3890 Cooperative Work Experience

* Proposed changes result in a net increase of 1 credit hour for the BS degree; total number of credit hours was 123, is now 124.
* Multiple housekeeping issues associated with the manner in which general education requirements for the program are listed

**Submit the original to the Faculty Senate Office, MC 1033,** and an **electronic copy to** kbrown4 @weber.edu

**JUSTIFICATION:**

To minimize the number of duplicate course offerings and to improve the alignment with the accreditation board (ABET) requirements and observations associated with the Design Graphics Engineering Technology program.

**DESIGN GRAPHICS ENGINEERING TECHNOLOGY**

Location: Engineering Technology Building, Room 214

Telephone Contact: 801-626-6305

Email: designgraphics@weber.edu

Advisors: Keith Allred, Jeremy Farner, Megumi Leatherbury, Glen West

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.

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

**»Grade Requirements:** A grade of "C" or better in all DGET, MFET, technical, technical electives, and support 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](http://documents.weber.edu/catalog/Current/pages/progstd.htm). There are no special admission or application requirements for this program.

**General Education**

Refer to [General Requirements](http://documents.weber.edu/catalog/Current/catgened.htm) for Associate of Applied Science requirements. [Computer and Information Literacy](http://documents.weber.edu/catalog/Current/pages/gened.htm#COMPUTER 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 and Design (3)
* DGET 2660 Structural Detailing (3)

**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 2150/2150L Metal Forming, Casting and Welding (4)
	+ MFET 2440/2440L 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 and 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 Interpersonal & Small Group Communication (3)\*
* MATH QL1080 Pre-Calculus (5)\*
or MATH QL1050 College Algebra (4)\*
  & MATH 1060 Trigonometry (3)\*
* PHYS PS/SI2010 College Physics I with lab (5)\*
* TBE TE1700 Intro to Microcomputer Applications (3)\*
* Creative Arts Elective (3)\*
* Social Science Elective (3)\*

\* *These courses will also fulfill general education requirements.*

**Suggested Course Sequence**

*The following suggested course sequence is provided to assist students in planning their schedules. Use this only as a guideline and be sure to consult with an advisor.*

|  |  |
| --- | --- |
| **Freshman Fall** | **Freshman Spring** |
| DGET 1060 | 3 | DGET 1160 | 3 |
| ENGL EN1010 | 3 | DGET 1360 | 5 |
| MFET 1210  | 3 | ENGL EN2010  | 3 |
| MATH QL1080  | 5 | TBE TE1700 | 3 |
|   |   | Creative Arts Elective | 3 |
| **Total Hours** | **14** | **Total Hours** | **17** |
|   |
| **Sophomore Fall** | **Sophomore Spring** |
| DGET 2350  | 4 | DGET 2650  | 3 |
| DGET 2460 | 3 | DGET 2660  | 3 |
| MFET 2410  | 3 | SS Elective  | 3 |
| MFET 2360  | 3 | PHYS PS/SI2010 ~~+ L~~  | 5 |
| COMM HU2110  | 3 | Lower Division Elective | 2 |
| **Total Hours** | **16** | **Total Hours** | **16** |

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***BACHELOR OF SCIENCE DEGREE (BS)***

**»Program Prerequisite:** [*AAS degree in Design Graphics Engineering Technology*](http://documents.weber.edu/catalog/Current/~dga.htm) 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, MFET, technical, technical electives, and support 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](http://documents.weber.edu/catalog/Current/catgened.htm).

**»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](http://documents.weber.edu/catalog/Current/pages/progstd.htm).  Refer to the Program Prerequisite above.  There are no additional special admission or application requirements for this program.

**General Education**

Refer to [General Requirements](http://documents.weber.edu/catalog/Current/catgened.htm) for Bachelor of Science degree requirements. TBE TE1700, Microcomputer Applications, will fill part of the Computer Literacy requirement and COMM HU2110 will fulfill both program and general education requirements.

**Social Science/Diversity Elective (3 credit hours minimum)**

*A minimum of 3 credit hours of Social Science/Diversity electives must be selected from the following list:*

* ANTH SS/DV 2010 Peoples and Cultures of the World (3)\*
* GEOG SS/DV 1300 Places and Peoples of the World (3)\*
* HIST SS/DV 1510 World History from 1500 C.E. to the Present (3)\*

\* *These courses will also fulfill 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*](http://documents.weber.edu/catalog/Current/~dga.htm)*.*

**Design Graphics Engineering Technology Courses Required (31 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 3890 or~~ DGET 4890 Cooperative Work Experience (~~1-~~3)

**Technical Electives (3 credit hours minimum)**

*A minimum of 3 credit hours of upper division technical electives chosen from the following list or approved by the program coordinator are required.*

* CMT 3350 Applied Structures (4)
* CMT 4350 Design of Construction Systems (2)
* DGET 3460 Parametric Design Graphics (3)
* MFET 3460 Engineering Design Using Solid Modeling (2)
* MFET 3810 Statistical Process Control and Reliability (3)
* TBE 3250 Business Communication (3)

**Support Courses Required (~~10~~ 14 credit hours)**

* MFET 2300 Statics & Strength of Materials (5)
* ~~MFET 3320 Machine Design (2)~~ MET 3400 Machine Design (3)
* MFET 3550 Supervision Principles (3)
* MFET 4610 Senior Project Planning and Estimating (3)
* American Instituitons (3)\*
* Humanities Elective (3)\*
* Life Science Elective (4)\*

\* *These courses will also fulfill general education requirements.*

**Suggested Course Sequence***The following suggested course sequence is provided to assist students in planning their schedules. Use this only as a guideline and be sure to consult with an advisor.*

|  |  |
| --- | --- |
| **Junior Fall** | **Junior Spring** |
| MFET 2300  | 5 | ~~MFET 3320~~ MET 3400 | ~~2~~ 3 |
| DGET 3100  | 3 | DGET 3300  | 3 |
| DGET 3400  | 3 | ~~DGET 3640~~ MFET 4610 | 3 |
| DGET 3470  | 3 | MFET 3550  | 3 |
| Soc Sci Diversity | 3 | American Institutions  | 3 |
| **Total Hours** | **17** | **Total Hours** | **~~14~~ 15** |
|   |
| **Senior Fall** | **Senior Spring** |
| DGET 4350  | 3 | DGET 4400  | 3 |
| ~~DGET 3890 or~~ DGET 4890  | 3 | DGET 4500  | 3 |
| DGET 4600  | 2 | DGET 4610  | 2 |
| Humanities Elective  | 3 | DGET 4470 | 3 |
| Life Science Elective  | 4 | Elective Hrs  | 3 |
| **Total Hours** | **15** | **Total Hours** | **14** |

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**DESIGN GRAPHICS ENGINEERING TECHNOLOGY COURSES - DGET**

**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) *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 working drawings. 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)~~**

~~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)**

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) *F, S***

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 build-up, 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) *S***

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. Prerequisite~~s~~: ~~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 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 QL1050 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. Prerequisite~~s~~: ~~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 views, use of color, composition, page layout, integration of text, and forms of output. Prerequisites: DGET 1160 and DGET 2350.

**DGET 3460. Parametric Design Graphics (3) *S***

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)~~ *~~S~~***

~~Project management and cost structure, including cost of engineering, CAD systems, marketing, production and inventory. Calculate breakeven 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) *F***

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.

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Did this program change receive unanimous approval within the Department? **YES**  If not, what are the major concerns raised by the opponents? **N/A**

Explain any effects this program change will have on program requirements or enrollments in other departments including the Bachelor of Integrated Studies Program. In the case of similar offerings or affected programs,you should include letters from the departments in question stating their support or opposition to the proposed program.

**This change will not affect any other program.**

Indicate the number of credit hoursfor course work within the proposed program. (Do not include credit hours for General Education, SI, Diversity, or other courses unless those courses fulfill requirements within the proposed program.)

**Proposed Program:**

**Number of credit hours = 103; 100 credit hours of required courses plus 3 hours of technical electives**

Indicate the number of credit hours for course work within the current program. (Do not include credit hours for General Education, SI, Diversity, or other courses unless those courses fulfill requirements within the current program.)

**Current Program:**

**Number of credit hours = 99; 99 credit hours of required courses plus 3 hours of technical electives**