DDGT 121 - Digital Design Graphics Technology 2 Course Outline

Approval Date: 04/08/2010
Effective Date: 01/16/2018

SECTION A

Unique ID Number	CCC000213367
Discipline(s)	Drafting
Division	Career Education and Workforce Development
Subject Area	Digital Design Graphics Technology
Subject Code	DDGT
Course Number	121
Course Title	Digital Design Graphics Technology 2
TOP Code/SAM Code	0953.00 - Drafting and Design Technology/Technician, General* / C - Occupational
Rationale for adding this course to the curriculum	Course needs to be updated.
Units	7
Cross List	*N/A*
Typical Course Weeks	18

Total Instructional Hours

	Contact Hours
Lecture	54.00
Lab	216.00
Activity	0.00
Work Experience	0.00
Outside of Class Hours	108.00

Total Contact Hours	270
Total Student Hours	378
Open Entry/Open Exit	No
Maximum Enrollment	15
Grading Option	Letter Grade Only

Distance Education Mode of Instruction

SECTION B

General Education Information:

SECTION C

Course Description

Repeatability May be repeated 0 times

Catalog Description The second of a four course series in the Digital Design Graphics Technology A.S. Degree program. Advanced study in computer-aided drafting (CAD) three-dimensional parametric solid modeling, Boolean operations, CAD rendered images and drawings, advanced reverse engineering of parts and the engineering document revision process. Manufacturing materials and processes. Development of graphics and graphical manipulation for web and print. Development and posting of internet web pages for communication of engineering documents on department website. Students will create their own logo / brand.

Schedule Description

SECTION D

Condition on Enrollment

1a. Prerequisite(s)

- DDGT 120

1b. Corequisite(s): *None*

1c. Recommended

- TECH 107

1d. Limitation on Enrollment: *None*

SECTION E

Course Outline Information

1. Student Learning Outcomes:

A. Obtain Autodesk Certificate of Training
B. Ability to implement technical skills in the creation and modification of digital graphics utilizing Adobe Photoshop software.
C. Ability to implement technical skills in the creation and maintenance of a student portfolio website utilizing the Adobe Dreamweaver software.

2. Course Objectives: Upon completion of this course, the student will be able to:

A. Effectively use CAD software in a two-dimensional and three-dimensional environment
B. Utilize parametric three-dimensional solid modeling software
C. Create and modify complex-shaped three-dimensional solid CAD models
D. Perform Boolean operations on solid models
E. Produce parametrically constrained assemblies
F. Render three-dimensional CAD models
G. Effectively apply manufacturing tolerances to detail drawings
H. Effectively apply various fit classifications to mating parts
I. Successfully add revision data to working drawings
J. Create working drawings from reverse engineering complex parts
K. Create assembly working drawings

L. Effectively use image editing software for the creation of professional level branding materials
M. Understand various image file types and how to use them
N. Understand the difference between raster and vector file types and how to use them
O. Create professional level graphics utilizing CAD software with Adobe software programs
P. Create and edit graphics for professional level printing
Q. Create and edit graphics to utilize on the internet
R. Communicate and share engineering documents over internet websites
S. Create a static website utilizing HTML, CSS, and Library Items
T. Create, post, and maintain a professional level portfolio website over the internet
U.

3. Course Content

A. Fasteners
    a. ANSI and ISO Standards (English vs Metric)
    b. Terminology
    c. Threads
    d. Thread Series
    e. Classes of Fits
    f. Applications
    g. Symbology
    h. Callouts
    i. Working Drawing Representations
    j. Fastener Head Styles
    k. Bolt Forms
    l. Shoulders
    m. Point Styles
B. Fastener Types
    a. Bolts
    b. Studs
    c. Screws (Cap, Machine, Set, Tapping, Self-Tapping)
    d. Nuts
    e. Locknuts
    f. Inserts
    g. Retaining Rings
    h. Washers
    i. Pins
    j. Keys, Spines, Serrations
    k. Rivets
    l. Springs
    m. Sealing
    n. Welded Fasteners
C. Adhesives
    a. Advantages and Limitations
    b. Joint Design
D. Manufacturing Materials
    a. Ferrous Metals
    b. Types of Cast Iron
    c. Carbon Steels and Steel Classifications
    d. Steel Chemical Composition
    e. Steel Products and Shapes

f. Nonferrous Metals
g. Precious Metals
h. Types of Plastics
i. Advantages and Limitations of Plastics
j. Types of Rubber
k. Rubber Materials and Characteristics
l. Assembly Methods of Rubber
m. Rubber Design Considerations

E. Forming Process
a. Types of Metal Castings
b. Casting Techniques
c. Design Considerations for Castings
d. Working Drawing Casting Representations
e. Forgings
f. Dies
g. Design Considerations for Forgings
h. Drafting Terminology
i. Powder Metallurgy
j. Plastic Molded Parts
k. Design Considerations for Plastic Molded Parts
l. Assembly Methods

F. Inventor Fundamentals
a. Introduction to Inventor
b. User Interface
c. Base Features
d. Sketching Tools
e. Advanced Sketch Editing Tools
f. Secondary Features
g. Creating Pick and Place Features
h. Work Features
i. Equations
j. Additional Features
k. Model and Display Manipulation
l. Fixing Problems
m. Sweep Features
n. Loft Features
o. Duplication Tools
p. Feature Relationships
q. Assembly Environment
r. Joint Connections
s. Manipulating Assembly Display
t. Model Information
u. Presentation Files
v. Assembly Tools
w. Assembly Parts and Features
x. Assembly Bill of Materials
y. Working With Projects
z. Drawing Basics
aa. Detailing Drawings
bb. Drawing Annotations

G. Revision Data

a. Description and Theory
b. Revision Tables and Symbology
c. Application

H. Reverse Engineering of Advanced Parts
I. Digital Graphics (Photoshop)
   a. Description and Terminology
   b. Raster and Vector File Types (Advantages, Limitations, and Uses)
   c. Non-Destructive Editing
   d. Resolution
   e. Color Modes (RGB, Grayscale, CMYK)
   f. Layer Management
   g. Adjustment Layers
   h. Masks
   i. Blending Modes
   j. Smart Objects and Filters
   k. Text and Vector Shapes
   l. Paths
   m. Actions
   n. Effectively use image editing software for the creation of professional level branding materials
   o. Create, Modify, and Output Digital Graphics for the Internet
   p. Create, Modify, and Output Digital Graphics for Professional Level Printing
   q. Create Vector Graphics in CAD software for use in Photoshop and Illustrator
J. Web-Design
   a. Theory
   b. Static Websites vs. Dynamic Websites
   c. Templates
   d. Hypertext Markup Language (HTML)
   e. Cascading Style Sheets (CSS) and Styles
   f. Library Items (Header, Navigation, Footer)
   g. Tables
   h. Creation (and Posting on Department Website) of a Portfolio Website
   i. Communicate and Share Engineering Documents on a Portfolio Website
   j. Uploading, Downloading, and Maintaining a Website
K. Branding
   a. Creation of a Logo
   b. Creation of a Business Card
   c. Creation of a Professional Level Resume
   d. Maintaining a Live Professional Level Website
   e.

4. Methods of Instruction:

Activity: Class assignments.
Critique: Students will create their own logo for branding across their business card, resume, working drawing titleblocks, website, and video animations. Students will critique each others logos over several reviews.
Lab: Class assignments.
Lecture: Instructor lectures on assigned readings following industry standards and on Autodesk approved courseware.
Observation and Demonstration: Instructor provides computer demonstrations of best practices utilizing the class software for given assignments.

Projects: Class assignments.
Other: Class lectures and demonstrations are recorded and posted online as a student resource.

5. Methods of Evaluation: Describe the general types of evaluations for this course and provide at least two, specific examples.

Typical classroom assessment techniques

Quizzes -- Written exams and quizzes will be given to test student knowledge on software and technical skills. Exams and quizzes will contain short answer, multiple choice, and true and false.
Oral Presentation -- Students may give presentations on the reading assignments to the class.
Class Participation -- Students are required to submit reading participation assignments answering questions based on the reading prior to the lecture reviewing the material.
Class Work -- Students may have lab time available during class to work on their homework.
Home Work -- Homework can be found on the assignment list handed out on the first day of class or on the department website. Homework assignments will be submitted one of the following ways: digitally, printed, or require a visual checkoff. Homework assignments will demonstrate the student's ability to successfully utilize the software and demonstrate the student's skill set.
Final Exam -- Final Exam will be cumulative.

Letter Grade Only

6. Assignments: State the general types of assignments for this course under the following categories and provide at least two specific examples for each section.

A. Reading Assignments
There will be multiple reading assignments out of the class textbook. Topics may include: fastening devices and methods, materials, and the forming process of metal castings.

Usage of Autodesk approved courseware is required under the terms of the Autodesk Training Center agreement. Reading assignments are contained in each individual section of the Autodesk approved courseware licensed from Ascent.

B. Writing Assignments
Students will be given multiple reading participation assignments for assigned chapters out of the class textbook or supplemental reading. Questions types will vary but the answers will be available in the reading. Students are to submit their written assignments at the beginning of the class the day that chapter is reviewed.

C. Other Assignments
Students will create a series of drawing files for digital submission or for hard copy printed submission.

Critical thinking to solve drafting problems in CAD.

Students will create a working drawing based of an existing part in a process known as "reverse engineering."

Manipulation of digital graphics and creation of original digital artwork in preparation to showcase student work on their own portfolio websites.

Creation and posting of student portfolio website showcasing student branding and work. Emphasis on consistency and professionalism.

7. Required Materials

A. EXAMPLES of typical college-level textbooks (for degree-applicable courses) or other print materials.

Book #1:

Author:	Bertoline, G.,R., Wiebe, E.,N., Hartman, N.,W., Ross, W.,A.
Title:	Technical Graphics Communication
Publisher:	McGraw-Hill
Date of Publication:	2009
Edition:	4th

Software #1:

Title:	AutoCAD
Publisher:	Autodesk
Edition:	Latest

Software #2:

Title:	Inventor
Publisher:	Autodesk
Edition:	Latest

Software #3:

Title:	Photoshop
Publisher:	Adobe
Edition:	CS6 or higher

Software #4:

Title:	Dreamweaver
Publisher:	Adobe
Edition:	CS6 or higher

B. Other required materials/supplies.

- A 3" binder or two 1.5" binders.
- USB Flash Drive
- Headphones