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DDSN 245.01: Civil Drafting

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The University Of Montana - Missoula
Missoula College
Department of Applied Computing and Electronics
Course Syllabus

DDSN 245 - Civil Drafting

Credits: 4

Prerequisites: DDSN 114 (CADX 110/CRT 182T)

Classroom Meetings: 4:10 pm to 6:00pm Tuesdays and Thursday

Room: HB04

Faculty Contact: Eric Iverson – eric.iverson@mso.umt.edu

Course Final: Wednesday, May 11, 2016 at 1:10 pm - 3:10 pm

Catalog Description:

Introduce students to computer aided design software for common survey and engineering design and drafting applications. Topics include collection of survey data; the coordinate geometry system; surfaces; subdivision and land planning; road design and corridor modeling; utilities; site grading and drainage; mapping; and 3D visualization.

Learner Outcomes:

Upon completion of this course, a student will be able to:

- Describe how land information is measured, collected, managed, and used to produce engineering drawings.
- Translate CAD information into alignments, profiles, and sections.
- Generate a topology of terrain.
- Create and manipulate surface and design profiles and plans.
- Create and manipulate assemblies (typical sections) and Corridor models (BIM).
- Create Analyze and Annotate Parcels (subdividing parcels of land).
- Create and manipulate pipe networks and design profiles and plans.

Required Materials:

AutoCAD Civil 3D 2016 Essentials: Eric Chappell; Sybex 2014; ISBN: 978-1-119-05959-2

USB Storage Media (Pen Drive) 4 GB or larger

Evaluation Procedures:

Grade Distribution:

Attendance	5%
Homework	20%
Quizzes	20%
Labs	25%
Final Project	15%
Final Exam	<u>15%</u>
	100%

<u>Letter</u>	<u>Average</u>
A	90+
B	80+
C	70+
D	60+
F	60-

Attendance:

Students are expected to attend each classroom meeting unless otherwise noted; excused absences will be permitted at the discretion of the instructor.

Homework:

Homework will be assigned for each chapter in the book and will consist of reading the chapter and completing a provided worksheet. Homework is evaluated on accuracy and timely submission. The due date will be assigned at the time the homework is assigned. Homework/reading is to be completed prior to class discussions on that chapter.

Quizzes:

There will be short quizzes given periodically during the semester and graded under the same criteria as homework. Quizzes will cover anything and everything that has been covered to that point in the semester. No makeup quizzes will be given.

Labs:

Labs will be assigned on quiz days and will cover the learning units that the quiz covers. Labs will be given a due day at the time the lab is assigned. Labs will consist of a seed file and a list of required tasks that will need to be completed prior to submitting the lab file (.dwg). Students are allowed to share ideas and assistance to each other on the labs but each student is required to submit their own unique design solution for the lab (no sharing work/files)

Final Project:

A final project will be assigned near the end of the semester. The final project will consist of a seed file and a list of required tasks that will need to be completed prior to submitting the final project file (.dwg). Students are allowed to share ideas and provide assistance to each other on the final project but each student is required to submit their own unique design solution for the final project (no sharing work/files). The final project will be due at the time of the final exam.

Final Exam:

A comprehensive written final exam is given at the end of the semester.

Extra Credit:

Homework, labs, quizzes and the final may have extra credit available. Extra credit is applied to the final score as long as it does not exceed the maximum score.

Due Dates:

Failure to meet due dates will result in a 2% reduction from the final score of the assignment for each day it is late. If you miss a quiz there will be no makeup allowed unless previous arrangements have been made. The final project *must* be turned in on the set date to receive full credit.

Course Outline:

Learning Unit 1:

LU-1.1 - Chapter 1 - Navigating the Civil 3D User Interface

Getting to know the Civil 3D user interface

Using the application menu

Using the ribbon

Using the Toolspace

Using the drawing area

Using the command line

Using Panorama

Using the Transparent Commands toolbar

Using the Inquiry Tool

LU1.2 - Chapter 2 - Leveraging a Dynamic Environment

Connecting objects and styles

Connecting labels and styles

Connecting objects to objects

Connecting objects to labels

The richness of the 3D model

Sharing data in a dynamic environment

LU1.3 - Chapter 3 - Establishing Existing Conditions Using Survey Data

What is survey data?

Creating a survey database

Importing survey data

Automating field to finish

Editing survey points

Editing survey figures

Creating additional points

LU1.4 - Chapter 4 - Modeling Existing Terrain Using Surfaces

Understanding surfaces

Creating a surface from survey data

Using breaklines to improve surface accuracy

Editing surfaces

Displaying and analyzing surfaces

Annotating surfaces

Learning Unit 2:

LU2.1 - Chapter 5 - Designing in 2D Using Alignments

Understanding alignments

Creating alignments from objects

Creating alignments using the Alignment Creation Tools

Editing alignments

Applying design criteria files and check sets

LU2.2 - Chapter 6 - Displaying and Annotating Alignments

Using alignment styles

Applying alignment labels and label sets

Creating station/offset labels

Creating segment labels

Using tag labels and tables

LU2.3 - Chapter 7 - Designing Vertically Using Profiles

Creating surface profiles

Displaying profiles in profile views

Creating design profiles

Editing profiles

Using check sets and design criteria files

LU2.4 - Chapter 8 - Displaying and Annotating Profiles

Applying profile styles

Applying profile view styles

Applying profile view bands

Applying profile labels

Creating and applying profile label sets

Creating profile view labels

Projecting objects to profile views

Learning Unit 3:

LU3.1 - Chapter 9 - Designing in 3D Using Corridors

Understanding corridors

Creating an assembly

Creating a corridor

Applying corridor targets

Creating corridor surfaces

LU3.2 - Chapter 10 - Creating Cross Sections of the Design

Using the Section Editor

Creating sample lines

Creating section views

Sampling more sources

LU3.3 - Chapter 11 - Displaying and Annotating Sections

Applying section styles

Applying section labels

Controlling section display with code set styles

Applying labels with code set styles

Applying section view styles

Applying section view bands

Applying group plot styles

Projecting objects to section views

Creating section view labels

Learning Unit 4:

LU4.1 - Chapter 12 - Designing and Analyzing Boundaries Using Parcels

Understanding parcels

Creating parcels from objects

Creating parcels by layout

Editing parcels

LU4.2 - Chapter 13 - Displaying and Annotating Parcels

Applying parcel styles

Applying parcel area labels

Creating parcel segment labels

Editing parcel segment labels

Creating parcel tables

LU4.3 - Chapter 14 - Designing Gravity Pipe Networks

Understanding gravity pipe networks

Creating gravity pipe networks

Editing gravity pipe networks

LU4.4 - Chapter 15 - Designing Pressure Pipe Networks

Understanding pressure pipe networks

Creating pressure pipe networks

Editing pressure pipe networks

LU4.5 - Chapter 16 - Displaying and Annotating Pipe Networks

Displaying pipe networks using styles

Labeling pipe networks in plan view

Labeling pipe networks in profile view

Creating pipe network labels

Learning Unit 5:

LU5.1 - Chapter 17 - Designing New Terrain

Understanding grading

Understanding feature lines

Creating feature lines

Editing feature lines

Understanding grading objects

Creating grading objects

Editing grading objects

LU5.2 - Chapter 18 - Analyzing, Displaying, and Annotating Surfaces

Combining design surfaces

Analyzing design surfaces

Calculating earthwork volumes

Labeling surfaces

Academic Integrity:

Using the Web to research materials and concepts is an integral part of learning in the twenty-first century. Studying with other students is a productive method of learning. A certain amount of collaborating on concepts with other students and using resources found on the Internet in an assignment is recommended. Copy and paste is not acceptable. It is expected that each student will input his/her assignment into the computer, and each student must be able to explain any assignment turned in. Collaboration on exams is strictly forbidden.

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and /or a disciplinary sanction by The University. All students need to be familiar with the Student Conduct Code. The Code is available for review online at: http://life.umn.edu/vpsa/student_conduct.php

Dropping and Adding Courses or Changing Sections, Grading or Credit Status

University Policy for dropping courses or requesting grading/credit status changes can be found in the catalog: <http://www.umn.edu/catalog/acad/acadpolicy/default.html> Students should become familiar with all academic policies found in the catalog.

Disability Accommodations:

Eligible students with disabilities will receive appropriate accommodations in this course when requested in a timely way. Please contact me if you will be requesting an accommodation. Please be prepared to provide a letter from your DSS Coordinator. For more information, visit the Disability Services website at http://www.umn.edu/dss_or_call/text 406.243.2243.