



Columbus State Community College
Construction Science and Engineering Technology Department
Mechanical Engineering Technology

COURSE: Mech 1145 CAD I

Semester: Spring 2014
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CREDITS: 3 CLASS HOURS PER WEEK: 6 PREREQUISITES: ENGT 1101, ENGT 1115

DESCRIPTION OF COURSE: This course will cover non-parametric based CAD in 2D and 3D. Course presents fundamental and intermediate Computer Aided Design concepts to produce detailed mechanical drawings and models. Knowledge of orthographic detailed drawing practices, dimensioning practices, and drawing specifications from ENGT 1115 are required for this class.

STUDENT LEARNING OUTCOMES

The student successfully completing this course will:

1. Demonstrate an ability to efficiency utilize AutoCAD to produce accurate engineering drawings in 2D and 3D.
2. Apply CAD techniques to solve engineering problems.
3. Complete a set of drawings for manufacturing, to include: concept drawing, detailed orthographic drawings, assembly drawings, bill of materials, and technical instruction drawings.
4. Utilize 2D AutoCAD to create detailed Orthographic drawing, sectional views, auxiliary views, and isometric drawings to ANSI Y14.5M-1982 standard.
5. Utilize 3D AutoCAD to design parts in solids.
6. Complete a set of 2D engineering draws from 3D solid models to ANSI Y14.5M-1982 standard.
7. Work with multi user and multi sheet drawing set to include interrelated part.

GENERAL EDUCATION OUTCOMES

Columbus State Community College's general education outcomes are an integral part of the curriculum and central to the mission of the college. The faculty at Columbus State has determined that these outcomes include the following competencies:

- Critical Thinking
- Effective Communication

COURSE MATERIALS REQUIRED

TEXTBOOK, MANUALS, REFERENCES, AND OTHER READINGS

Shumaker, T.(2011). *AutoCAD and Its Applications Comprehensive*. (18th Ed.), Tinley Park, IL; Goodheart-WillCox Company,

GENERAL INSTRUCTIONAL METHODS

Lecture, demonstration, reading assignments, self tests in text, CAD lab exercises, lab consultation, and hands-on testing.

ASSESSMENT

Columbus State Community College is committed to assessment (measurement) of student achievement of academic outcomes. This process addresses the issues of what you need to learn in your program of study and if you are learning what you need to learn. The assessment program at Columbus State has four specific and interrelated purposes: (1) to improve student academic achievements; (2) to improve teaching strategies; (3) to document successes and identify opportunities for program improvement; (4) to provide evidence for institutional effectiveness. In class you are assessed and graded on your achievement of the outcomes for this course. You may also be required to participate in broader assessment activities.

STANDARDS AND METHODS FOR EVALUATION

Final grades will be determined by as follows:

Individual Lab assignments	50%
25% deducted for late work.	
Quizzes	15%
Projects/exams	25%
Attendance & class participation	10%

GRADING SCALE

A = 94 -100
B = 86 - 93
C = 75 - 85
D = 70 - 74
E = 0 – 69

SPECIAL COURSE REQUIREMENTS

Food and beverages are not permitted in the laboratory.

ATTENDANCE POLICY

Students are expect to be present at every class meeting.

STUDENT CODE OF CONDUCT

As an enrolled student at Columbus State Community College, you have agreed to abide by the Student Code of Conduct as outlined in the Student Handbook. You should familiarize yourself with the student code. The Columbus State Community College expects you to exhibit high standards of academic integrity, respect and responsibility. Any confirmed incidence of misconduct, including plagiarism and other forms of cheating, will be treated seriously and in accordance with College Policy and Procedure 7-10.

AMERICANS WITH DISABILITIES ACT (ADA) POLICY

It is Columbus State policy to provide reasonable accommodations to students with documented disabilities. If you would like to request such accommodations because of physical, mental or learning disability, please contact the Department of Disability Services, 101 Eibling Hall, 614.287.2570 (V/TTY). Delaware Campus

students may also contact an advisor in the Student Services Center, first floor Moeller Hall, 740.203.8000. Ask for Delaware Campus advising, or www.csc.edu/delaware, for assistance.

INCLEMENT WEATHER OR OTHER EMERGENCIES

In the event of severe weather or other emergencies that could force the college to close or to cancel classes, such information will be broadcast on radio stations and television stations. Students who reside in areas that fall under a Level III emergency should not attempt to drive to the college even if the college remains open.

Assignments due on a day the college is closed will be due the next scheduled class period. If an examination is scheduled for a day the campus is closed, the examination will be given on the next class day. If a laboratory is scheduled on the day the campus is closed, it will be made up at the next scheduled laboratory class. If necessary, laboratory make-up may be held on a Saturday. If a clinical is missed because of weather conditions: (*insert department policy*).

Students who miss a class because of weather-related problems with the class is held as scheduled are responsible for reading and other assignments as indicated in the syllabus. If a laboratory or examination is missed, contact me as soon as possible to determine how to make up the missed exam or lab. Remember! It is the student's responsibility to keep up with reading and other assignments when a scheduled class does not meet, whatever the reason.

In the event the college is forced to close during Final Examination Week, exams scheduled for the first missed date will be rescheduled for (date), in the same location at the same time scheduled. Exams scheduled for a second missed date will be rescheduled for _____. Thus, our final exam is scheduled for (date) at _____ o'clock. If the college is closed that day, the exam will be held on (date) at _____ o'clock. If our exam is the second day the college has been closed, the exam will be held on (date) at _____ o'clock.

FINANCIAL AID ATTENDANCE REPORTING

Columbus State is required by federal law to verify the enrollment of students who participate in Federal Title IV student aid programs and/or who receive educational benefits through the Department of Veterans Affairs. It is the responsibility of the College to identify students who do not commence attendance or who stop attendance in any course for which they are registered and paid. Non-attendance is reported quarterly by each instructor, and results in a student being administratively withdrawn from the class section. Please contact the Financial Aid Office for information regarding the impact of course withdrawals on financial aid eligibility.

(Sample A) UNITS OF INSTRUCTION

(Please provide a weekly course schedule indicating the units of instruction, learning objectives/goals, assigned readings, assignments, and assessment methods.)

WEEK	UNIT OF INSTRUCTION	LEARNING OBJECTIVES/GOALS	ASSESSMENT METHODS	ASSIGNMENTS	ASSIGNMENT DUE DATE
Week 1	Into	Screen elements. Mouse Functions. Drawing Space. Ribbons. Basic Drawing commands. Basic Zoom Commands. Basic Editing Commands. Basic Snap Commands.	Lab Assignments Quiz #1	Lab 1 Lab 2 Lab 3 Lab 4	Next Class Meeting
Week 2	Ortho Graphic Drawings	Advanced Zoom Commands Editing Commands. Ortho Graphic construction techniques. Layers.	Lab Assignments Quiz #1	Lab 5-No Dimensions Lab 6 – No Dimensions.	Next Class Meeting
Week 3	Ortho Graphic Drawings	Models and paper space. Basic Dimensioning commands. Borders and Title Blocks. Blocks.	Lab Assignments Quiz #1	Lab 1 dimensioned Lab 2 Dimensioned Lab 3 Dimensioned Lab 4 Dimensioned Lab 5 Dimensioned Lab 6 Dimensioned	Next Class Meeting
Week 4	Ortho Graphic Drawings	Dimensioning Styles. Dimension Scales. ANSI Y14.5M-1982 introduced.	Lab Assignments Quiz #1	Lab 7 Lab 8 Quiz #1	Next Class Meeting

		Annotative Dimensions. Advanced Layers functions.			
Week 5	Isometric	Advanced Drawing commands. ANSI Y14.5M-1982 . ISO Metric setting and technique. ISO metric Dimensioning	Lab Assignments	Lab 9 Lab 10 Lab 11 Lab 12	Next Class Meeting
Week 6	Solid Modeling	3D solid primitives. Basic 3d solid editing. World Coordinate System. Boolean operations.	Lab Assignments Quiz #2	Lab 13 Lab 14 Lab 15	Next Class Meeting
Week 7	Solid Modeling	3D solids creation and editing. Press Pull 3D coordinate manipulation. Creating orthographics from solids.	Lab Assignments	Lab 16 Lab 17	Beginning of Week 9
Week 8	Solid Modeling	Advanced 3D editing commands. 3D coordinate manipulation. Section views. Auxiliary views	Lab Assignments	Lab 18 Lab 19	Beginning of Week 9
Week 9	Solid Modeling	Advanced 3D Solids creation and editing techniques. Revolve, Lofts, extrude, etc..	Lab Assignments	Quiz #2 USB Drive	Beginning of Week 11
Week 10	Solid Modeling	User Coordinate System.	Lab Assignments	Continuation of USB Drive.	
Week 11	Solid Modeling	Extruding, Sweeps. Solid editing.	Lab Assignments	Design project, instructor choose.	Depends on nature of design project.

Week 12	Solid Modeling	Revolve, Lofts.	Lab Assignments		
Week 13	Solid Modeling	As needed for project.	Lab Assignments		Design Project Due Finals Week.
Week 14	Solid Modeling	As needed for project.	Lab Assignments	Possible Second Design project if needed.	Labs are due next Class Meeting Design Project Due Finals Week.
Week 15	Solid Modeling	Rendering.	Lab Assignments	Design Project Rendered	Design Project Due Finals Week.
Week 16	Finals Week	Design Projects due.		Groups present design project/projects.	

