



Architectural and Engineering Design Department (AEDD) South Portland, Maine 04106

Title: CAD Graphics

Catalog Number: AEDD105

Credit Hours: 3

Total Contact Hours: 60 (Lecture: 30, Lab: 30)

Instructor: Roger Aschbrenner

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Course Syllabus

Course Description

This course will involve the production of 2D technical drawings that meet industry standards using AutoCAD software. Emphasis will be placed on precision and accuracy, use of symbols, line types, line weights, orthographic projection, multi-view placement, text format, dimensions, section views, auxiliary views, isometric views, and plotting accuracy. A variety of design fields will be reviewed with an emphasis on ASME graphics standards.

Prerequisite(s): MATH-020

Course Objectives

After successfully completing the course, the student will be able to:

- apply proper line types and line weights in technical drawings
- identify and apply proper lettering style in technical drawings
- lay out drawings in both imperial and metric units
- plot drawings to standard scales in both imperial and metric units
- solve 2D geometric construction problems using AutoCAD
- create 2D orthographic drawings of a variety of complex shapes
- edit geometry using appropriate techniques and commands
- apply ASME Y14.56M standards for dimensioning parts
- create appropriate dimension styles in a variety of discipline
- generate accurate section drawings using a variety of section types
- project auxiliary views from primary views of objects
- create assembly drawings with proper section and cutting plane lines
- create isometric drawings using isometric snap grids

Topical Outline of Instruction

1. File management and overview of AutoCAD
2. Lineweights, linetypes, measurement, and lettering
3. Cartesian grid and geometric construction
4. Accurate creation and editing of basic geometry
5. Orthographic projection using offset, trim, and extend
6. Creating circular, elliptical, and polygonal orthographic views
7. Advanced editing and drawing commands in orthographic projection
8. Creating blocks for use as standard symbols
9. Creating proper dimension styles

10. Standard, baseline, continuous and ordinate dimensioning
11. Obtaining information from the drawing's database
12. Assembly drawings
13. Primary and secondary auxiliary views
14. Pictorial drawing with AutoCAD

Course Requirements

Students will be required to attend class regularly and complete all drawings, homework, reading assignments, quizzes and exams.

Student Evaluation and Grading

Final grade will be calculated from attendance (10%), completed drawings (60%), midterm (10%) and a comprehensive final exam (20%). Grades will be reduced for excessive absences. See department policies below.

- **Attendance** **10%**
- **Basic Assignments** **20%**
 - 0A TGSM and AutoCAD F1
 - 0B Study partner e-mail
 - 1 Line weights, line types, measurement and lettering
 - 2 Rod Support
 - 3 Geometric Construction sheet
 - 3A Gasket
 - 4 Coordinate entry
 - 4A Geometric shape commands CIRCLE, POLYGON, DONUT
 - 5 Add dimensions and plot 2 & 3A
 - 6 JIG – Dimensioned and Plotted
- **MIDTERM** **10%**
- **Advanced Assignments** **40%**
 - 7A Wrench dimensioned and plotted
 - 7B Support dimensioned and plotted
 - 8A Six Parts Sketched
 - 8B Six Parts – Cutoff holder
 - 8C Six Parts – Option 2
 - 9 Schematic with blocks
 - 10 Pulley in half section
 - 11 Caster wheel assembly in section
 - 12 Auxiliary view
- **FINAL** **20%**

Text, Tools, and/or Supplies

Students will be required and expected to use AutoCAD's on-line help tools. Students will be encouraged to visit the on-line Autodesk educational community to obtain free copies of the software as well as gain community support for the use of the software.

<http://www.autodesk.com/education/free-software/featured>

Department Policies

1. Grading – grading policies may vary by instructor		
A	4.00	9.3-10
A-	3.67	9-9.2
B+	3.33	8.7-8.9
B	3.00	8.3-8.6
B-	2.67	8-8.2
C+	2.33	7.7-7.9
C	2.00	7.3-7.6
C-	1.67	7.0-7.2
D+	1.33	6.7-6.9
D	1.00	6.3-6.6
F	0.00	>6.3 FAILURE
P	NONE	Equivalent to a "C" (2.0) or better
AF	0.00	Administrative Failure
I	None	Incomplete*
W	None	Official Withdrawal from course
NS	None	Failure to appear for any session of class

*Incomplete grades are given at the discretion of the Instructor. Incomplete grades may only be given after an incomplete contract between the instructor and student has been signed and submitted to Enrollment Services. Students may withdraw from a class up to the twelfth week into the semester to avoid a failing grade. Make note of the class withdrawal deadline date and time in the student handbook and academic calendar on the portal.

2. Work submitted that does not meet standards will be given an "N/A Resubmit". Instructions on how to correct your work will be provided through "Redlines" (comments by instructor). All "Redlines" must be addressed before resubmitting the assignment. NO PARTIAL credit will be given unless all Redlines have been corrected.
3. **Late work** will drop a letter grade per week late. Assignments turned in more than 4 weeks late will result in a failing grade for that assignment. Completion of all assignments is required.
4. Any student who submits work done by someone else will at the least, receive a failing grade for that assignment and must redo the assignment. Should the instructor see fit, the student involved will be reported to the Dean of Students in violation of the Student Code of Conduct which will result in the student receiving a failing grade for the class.
5. Any activity, conversation or behavior that is not considered appropriate for the classroom or professional environment will result in the request that the behavior cease. If it does not, the student(s) involved will be dismissed from class and referred to the dean of Students and may not return to class until they have met with the Dean of Students, Department Chair and Instructor.
6. Use of cell phones and other electronic devices during class, which are not for class purposes, is prohibited. Cell phones **do not** need to be turned off, but should be set to **vibrate** or **silenced** during class. Class time is for class activities only.
7. Personally owned computers are not required to be successful in this program, however they are highly recommended. All students have access to free Autodesk software downloads available at:

<http://www.autodesk.com/education/free-software/featured>

If you do not have access to your own computer to complete your homework, computer labs are available during open building hours 8:00 AM – 9:30 PM M-F.

At least 3-9 hours of homework time outside each 3 credit course is normal and to be expected.

8. Hours for faculty members are posted on the faculty member's door. You may also make appointments with faculty via e-mail.
9. Only SMCC E-mail addresses will be used by faculty to communicate to students. E-mails between student and faculty must meet the following criteria:
 - a. The subject line has the **class code** along with a reference to the e-mail subject.
 - b. E-mails must be signed with the student's full name as it appears on the class list.

See the full e-mail etiquette policy in **R:\General\Department Policies**.

10. **Attendance policy** – attendance is taken at the beginning of each class. If the student is late for a class it is the responsibility of the student to review their attendance and make sure that they have been marked Tardy rather than absent. There are no excused absences. Students are either present or absent.
 - a. **For classes that meet once a week** – no more than **3 absences** are allowed **total**, no more than **2 classes** may be missed **in a row**. A student who misses a class will receive a warning e-mail; if two weeks in a row are missed without communication, the student will receive an Administrative Fail (AF) for the class. A student who has a total of 3 absences will receive an AF.
 - b. **For classes that meet twice a week** – no more than a total of **5 absences** are allowed; no more than **3 classes** may be missed **in a row**. If a student fails to attend two classes in a row he/she will receive a warning e-mail. If no correspondence has been made and the student fails to show for the third class in a row, the student will receive an AF for the class. Students that have missed a total of 5 classes will receive an AF.
 - c. It is the responsibility of the student to make sure to get the course materials and assignments that were covered during his/her absence. Assignment due dates **WILL NOT BE ADJUSTED DUE TO AN ABSENCE**. See late work policy above.
11. All students are expected to take notes and maintain them for reference purposes throughout the class and future classes. Students must also be responsible for their own backup of course work. If work is lost it is NOT the AEDD responsibility to replace or find it.
12. All work must follow the Technical Graphics Standards Manual for the AEDD. A copy of the manual has been placed in R:\Standards Various Sources.

End-of-Course Evaluation

Students complete evaluations for each course attended at SMCC. Evaluations are submitted online and can be accessed through the student portal. Students can access the course evaluations beginning one week before the end of classes. The deadline for submission of evaluations occurs Monday at 5 PM following the last day of the class. You will receive an email to your student email account when course evaluations are available.

ADA Syllabus Statement

Southern Maine Community College is an equal opportunity/affirmative action institution and employer. For more information, please call 207-741-5798. If you have a disabling condition and wish to request accommodations in order to have reasonable access to the programs and services offered by SMCC, you must register with the Disability Services Coordinator, Sandra Lynham, who can be reached at 741-5923. Further information about

services for students with disabilities and the accommodation process is available upon request at this number. Course policies about online testing are modified to suit each individual's accommodations.

SMCC Pay-for-Print Policy

Each semester students receive a \$20 printing credit. The balance resets at the end of the semester and any remaining credits are removed. The College's pay-for-print system monitors printing on all printers (including those in general access labs, library printers, Tutoring Services, Campus Center Lounge and technology labs). Be sure to log OUT of the system when you've finished your printing, to prevent unauthorized access to your account. Students can check the number of pages they have printed by using the Printing Balance tool available on SMCC computers (located in the lower right corner of the screen, near the clock). Departments with work study students who need to print documents for the department should contact the Help Desk at 741-5696 to have a special account set up. To find ways to reduce your printing charges, please go to the IT Help tab on My SMCC. If you have questions about the pay-for-printing policy or your printing charges, please contact the Help Desk at 741-5696 or send an e-mail to helpdesk@smccme.edu.

Refunds

Print jobs are eligible for a refund in the event of mechanical or electronic error on the part of the printer, print server, or software used to submit the job. Jobs are not eligible for a refund in cases where the job was not set up correctly, was submitted multiple times, or the student is not satisfied with the result. To request a refund, please bring the offending print to the IT Department in the basement of the Ross Technology Center. Refunds will be granted in the form of a credit to the student's account.

Add-Drop Policy

Students who drop a course during the one-week "add/drop" period in the fall and spring semesters and the first three days of summer sessions receive a 100% refund of the tuition and associated fees for that course. Please note any course that meets for less than the traditional semester length, i.e., 15 weeks, has a pro-rated add/drop period. There is no refund for non-attendance.

Withdrawal Policy

A student may withdraw from a course only during the semester in which s/he is registered for that course. The withdrawal period is the second through twelfth week of the fall and spring semesters and the second through ninth week of twelve-week summer courses. This period is pro-rated for shorter-length courses (usually 75 percent of course meeting times; please check with the Registration Office). To withdraw from a course, a student must complete and submit the appropriate course withdrawal form, available at the Registration Office. This process must be completed either in person or by using SMCC e-mail accounts.

Plagiarism Statement

If an instructor suspects that a student has knowingly committed a violation defined in the Maine Community College System Policy on Student Grade Appeals and Academic Misconduct, the instructor has the authority to review the alleged misconduct and determine the grade that the student should receive for the assignment and the course. The instructor may assign a failing grade for the assignment or course and may require the student to complete additional work for the course. The instructor may consult with the department

chair and/or the College's chief academic officer prior to making such decisions. If a student seeks to challenge an instructor's determination, the student should submit a grade appeal. Grade appeal forms are available in the Advising Office on the South Portland Campus or in the administrative offices in the Learning Commons on the Midcoast Campus. An instructor may also refer the matter to the College's disciplinary officer for review under the procedures of the MCCS Student Code of Conduct.

AEDD105 Assignment Sheet

Basic Assignments

20%

Unit 1 Line weights, line types, measurement and lettering

Assignment: Handout 1, line types, text and metric conversion

Unit 2 Accuracy tools, POLAR tracking, OSNAP and OTRACK

Assignment: Handout 2, basic orthographic drawing

Unit 3 Geometric Construction

Assignment: Handout 3, geometric construction sheet
Handout 3a, Gasket

Unit 4 Cartesian Grid and Basic Geometry

Assignment: Handout 4, saved and plotted
Handout 4a, saved and plotted

Unit 5 Dimension styles, dimensions and Plotting

Assignment: Set up plot sheets and add dimensions to drawings 2 and 3A

Unit 6 Orthographic projection

Assignment: Handout 6 with dimensions and plotted

MIDTERM EXAM

10%

Advanced Assignments

40%

Unit 7 Orthographic Projection – circular, elliptical, polygonal

Assignment: Handout 7A and 7B with dimensions and plotted

Unit 8 Advanced Editing and Drawing

Assignment: Handout 8 (Draw 2 – 6 of the objects shown) with dimensions and plotted

Unit 9 Symbols and blocks

Assignment: Handout 9

Unit 10 Sections

Assignment: Handout 10, half section

Unit 11 Assembly Drawings

Assignment: Handout 11, Caster Assembly

Unit 12 Primary and Secondary Auxiliary Views

Assignment: Handout 12, Secondary Auxiliary View

FINAL EXAM

20%