



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

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**Title: CAD Applications**

**Catalog Number: AEDD160**

**Credit Hours: 3**

**Total Contact Hours: 60 Lecture: 30 Lab**

**Instructor: Paul Richardson**

**Phone: 741-5565**

**email:prichardson@smccme.edu**

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**Course Syllabus**

**Course Description**

This course requires students to apply AutoCAD and related software to documentation in a variety of design fields. Drawings will include as many actual projects as possible. Speed, efficiency, development of CAD standards, control of variables, use of advanced drawing techniques, symbol libraries, plotting of drawings, and specialized CAD techniques will be covered.

**Course Objectives**

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

- Develop drawings meeting industry standards within several fields of drafting: architectural, electrical, mechanical, piping, civil, and structural.
- Develop greater skill applying graphics standards with AutoCAD.
- Create appropriate template files in different fields.
- Plot all drawings to appropriate scales.
- Use annotative objects in AutoCAD.
- Create dynamic blocks in AutoCAD
- Develop fundamental skills with parametric software.

**Topical Outline of Instruction**

1. Review of CAD best practices and standards.
2. Development of template files in several disciplines.
3. Development of efficiency in producing AutoCAD models.
4. Overview of symbols, drawing types and practices in several disciplines.
5. Working with existing problem drawings.
6. Managing Xrefs with annotative objects.
7. Creating dynamic blocks in AutoCAD.
8. Creating hybrid raster/vector drawings.
9. Creating 3D models in parametric architectural software.
10. Creating 3D models in parametric mechanical software.

**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 completed projects (80%) and a final exam (20%). Grades will be reduced for excessive absences. **See department policies below.**

**Text, Tools, and/or Supplies**

AutoCAD: Secrets Every User Should Know, Abbott (Required)

References (located on the R:\ drive)

TECHNICAL GRAPHICS STANDARDS\_rev8.pdf

TechnicalGraphicsOverview\_rev06.ppt

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**Department Policies**

1. Grading – grading policies may vary by instructor

Letter	GPA	Project	Percentage
A	4.00	9.3-10	93-100
A-	3.67	9-9.2	90-92
B+	3.33	8.7-8.9	87-89
B	3.00	8.3-8.6	83-86
B-	2.67	8-8.2	80-82
C+	2.33	7.7-7.9	77-79
C	2.00	7.3-7.6	73-76
C-	.67	7.0-7.2	70-72
D+	1.33	6.7-6.9	67-69
D	1.00	6.3-6.6	63-66
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 and "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://students.autodesk.com/>. 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 unexcused 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 classes will receive an AF.
  - b. **For classes that meet twice a week** – no more than a total of 5 unexcused 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**

#### **Per Page Costs**

Each semester students receive a \$20 printing credit. The balance resets at the end of the semester and any remaining credits are removed. The cost varies depending upon page size and whether printing is done in black and white or color.

- a. There is a \$0.10 per page fee for standard 8.5" by 11" black and white documents.
- b. The reverse sides of duplex (double-sided) documents are free.
- c. There is a \$.50 per page fee for standard 8.5" by 11" color documents.
- d. There is a \$.20 per page fee for 8.5" by 14" (legal) or 11" by 17" (tabloid) black and white documents.

- e. There is a \$1.00 per page fee for 8.5" by 14" (legal) or 11" by 17" (tabloid) color documents.

Duplex charges (printing on both sides of a page) work in the following fashion: One page is \$0.10, two pages are \$0.10, three pages are \$0.20, and four pages are \$0.20, etc. The flipsides are free, but another sheet of paper is \$0.10. Please be aware that a document with any color at all (when printed to a color printer) will by default be printed in color. You are responsible for setting the print job to print black and white if you do not need color. For directions, please go to the IT Help tab in My SMCC.

### **How does it work?**

The College's pay-for-print system monitors printing on all printers (including those in general access labs, library printers, the Academic Achievement Center, Noisy Lounge and technology labs). 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.

### **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.

### **Why is SMCC charging for printing?**

The pay-for-print system is an effort to control escalating printing costs. Charging for printing helps offset the increasing cost of supplies and encourages students to conserve resources. 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 email to [helpdesk@smccme.edu](mailto:helpdesk@smccme.edu).

Be sure to log OUT of the system when you've finished your printing, to prevent unauthorized access to your 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. To withdraw from a course, a student must complete and submit the appropriate course withdrawal form, available at the Enrollment Service Center (no phone calls, please). The designation "W" will appear on the transcript after a student has officially withdrawn. A course withdrawal is an uncompleted course and may adversely affect financial aid eligibility. Failure to attend or ceasing to attend class does not constitute withdrawal from the course. There is no refund associated with a withdrawal.

### **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.

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**Title: CAD Applications**  
**Credit Hours: 3**  
**Instructor: Dan Abbott****Catalog Number: AEDD160**  
**Total Contact Hours: 30 Lecture + 30 Lab**  
**Phone: 741-5564    email:dabbott@smccME.edu**

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**Tentative Lesson Plan**

- All assignments must be submitted. Grades for assignments passed in after the due date will be reduced by one letter grade per week.
- Assignments from units 1 and 2 that are not passed in by the date of the midterm exam will be given a grade of 0, *but must still be submitted to receive a grade.*
- Files required for these assignments will be in R:\AEDD-160. Individual instructors may have different files in folders identified by instructor's last name.

## 1. Background

- a. AutoCAD: Secrets Every User Should Know – Chapter 1  
"AutoCAD Productivity" worksheet
- b. AutoCAD: Secrets Every User Should Know - Chapter 4  
"Applying Graphics Standards" worksheet
- c. Creation of Template Files (Civil, Mechanical, Architectural)
- d. AutoCAD: Secrets Every User Should Know - Chapter 2  
"Managing Your System" worksheet
- e. AutoCAD: Secrets Every User Should Know - Chapter 6  
"Plotting" worksheet  
"Annotative Scaling.pdf"

## 2. Drawing Efficiency and Accuracy

You must use the appropriate template file to start each of these drawings. All drawings must be dimensioned using proper dimension styles and contain a layout with viewports at proper scales and a page setup that can be plotted properly. You must follow all graphics standards (text height, dimensioning, line weights, etc.).

There are questions associated with some of these drawings. Place the answers in the layout in paper space at the correct height for general text. Include the numerical value to four decimal places for each of answers, in addition to the letter that corresponds to the correct answer. To change the precision of angles, use the UNITS dialog box.

Do not leave excessive white space in layout.

- a. Basic foundation plan – include dimensions, proper layout, and question answers  
Use your architectural template to start this drawing.
  - b. Floor plan -- add a floor plan to the foundation plan assignment and project four elevation views using the raster-based section elevation and floor plan provided.
  - c. Basic civil plan -- include dimensions, proper layout, and question answers  
Use your civil template to start this drawing.
  - d. Structural gusset plate -- include dimensions, proper layout, and question answers  
Use your architectural template to start this drawing with modified dimension style.
  - e. GDT Drawing at MMC  
Use your mechanical template to start this drawing.
3. Midterm and Final Due Date for Units 1 and 2  
(*NO credit for work passed in after this date!*)
  4. Dynamic Blocks and Attributes  
  
Create at least 10 block definitions containing attributes and using at least six different dynamic parameters. A complex application of dynamic properties in fewer block definitions can be submitted with instructor's approval.
  5. Fixing existing problem-drawings – South Portland/Playground  
  
The South Portland drawing is somewhat involved. There are several videos showing how to approach the problem, but try this on your own before using them. Solving problems with existing drawings is a significant part of a CAD technician's job.
  6. Annotative Dimensions:
    - a. Metric Floor Plan
    - b. Metric Plot Plan
  7. Scanned Drawings – Hybrid Raster/Vector (incorporated into 2b. above)
  8. Parametric Software (to be assigned by instructor from this list)
    - a. AutoCAD parametric features
    - b. Architectural Project  
  
Although AutoCAD is still widely used, Revit is becoming the software of choice in architectural firms so this project will use Revit.
    - c. Mechanical Project  
  
You will be using either SolidWorks or Inventor for this project, not AutoCAD, for the same reasons we are introducing Revit.
  9. Final Exam