Basic AutoCAD
CAD-106 HYBR

Professor:
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Sections:
31177 Tues 10:30-1:00 PM D-115
HYBR (Out-of class)

COURSE DESCRIPTION

This course, with the included lab, exposes the student to the current means of generating graphic images with computers. Topics covered include CAD* overview, computer terminology, hardware descriptions and requirements, file manipulation and management, 2D and 3D geometric construction, symbol library creation, dimensioning, scaling, sectioning, plotting, detail, and assembly drawings. AutoCAD is an industry-standard AutoDesk application course where students attain operational knowledge of the software while learning the methods and purposes of computer-aided drafting for conveying design intent while illustrating constructability of detail, the materials, assemblies, methods, and dimensionality used in various industries through project-based learning.

Course Textbook

Textbook (Optional):
Leach. *AutoCAD 2019,* Paperback: SDC Publications, Inc., 2019.
ISBN 978-1630571849
Suggested Readings:
Ching, F.D.K. *Building Construction Illustrated*, 5th Ed., Hoboken: John Wiley & Sons, Inc., 2014.
ISBN 978-1118458341

Materials, Supplies & Resources

You might find the following useful:
- The book AutoCAD 2019 is suggested but not required as a useful resource for operations and commands;
- Online resources you'll find useful include the AutoDesk web community & of course YouTube;
- Small sketch pad (as one studying computer arts);
  - for working out graphic solutions
  - for practicing sketch techniques

Course Requirements

- Attendance is required for academic success.
- Leaving the lecture and returning is disruptive and allowed only in emergencies.
- Try not to fall behind during the demonstration.
- Late projects have a grade-cap of "B".
- Use your out-of-class time wisely.
- Upload you projects on time!
- Be ON TIME for the demonstration as once started, it will not be repeated!
- Help each other.
- You must "put the time in".
- You *will* be operational after this class 😊

The Hybrid Class

The class consists of three distinct portions:
1. The Tues. Demonstration   2. Out-of-class practice time   3. Hybrid project completion

You MUST be in the Tuesday demonstration period to be led through the Unit operations "click-by-click". Then, in order to become proficient, practice the operations covered on your own. Then, apply them as you complete the assigned projects (hybrid) and upload them for assessment on Blackboard.

Topical Outline

CAD & the Digital Environment

Unit 1 — **Intro to Industry Drawings**
Visualization & Sketch Techniques

Unit 2 — **File Management, Starting CAD**
Folders, Files & Software

Unit 3 — **Learning to Draw in CAD**
Basic Object Commands

Drafting & Editing

Unit 4 — **Line Conventions & Layers**
Creating & Modifying Objects

Unit 5 — **Drawing Tools & Snaps**
Lines, Hatches, Texts

Unit 6 — **Arranging the Drawing Sheet**
Viewport, Scale & Layers

Unit 7 — **Printing & Plots**
Digital Transmission

Advanced Drafting

Unit 8 — **Tracing, Datum & Polylines**
XRefs and Freehand

Unit 9 — **Blocks & Open-source**
Creating/Exploding Blocks

Units 10 — **Data Tables & Text**
Schedules, Lists, Text Notes

Exercises & Portfolio

Units 11 — **Construction Project**
Typical Architectural Drawings

Unit 12 — **Fabrication Project**
Mechanical/Manufacturing Dwg

Unit 13 — **MEP Schematic Layouts**
Mechanical/Electrical/Plumbing

Unit 14 — **Final Assessment**
Capstone Project

Grading: Primary Assessments

Projects: There will be an assignment for each unit topic for you to complete. You will be graded on:

Visualization:	How you view the object
Lines:	Use of line weights/layers
Products:	Final drawing

Grading: Secondary Assessments

Methods: Additional assessments that have weight on the final grade are:

Practice:	Time put in on practice
Uploads:	Timely upload of projects
Quality:	Overall completion, accuracy, and attention to details.

The Evolving Role of Computer Aided Drafting (CAD)

Industries have utilized CAD as a tool to represent and augment graphics in the design-to-construction industries for almost 30 years now. As CAD platforms continue to evolve, they become more powerful yet more intuitive while increasing functionality through 3D, parametrics, and BIM (building information modeling).

2D Drafting: The effective and commonly understood graphic for conveying design ideas remains the 2-dimensional sketch or drawing. From quick, field generated sketches to formally drafted drawings, much of the design world makes use of this type of object visualization.
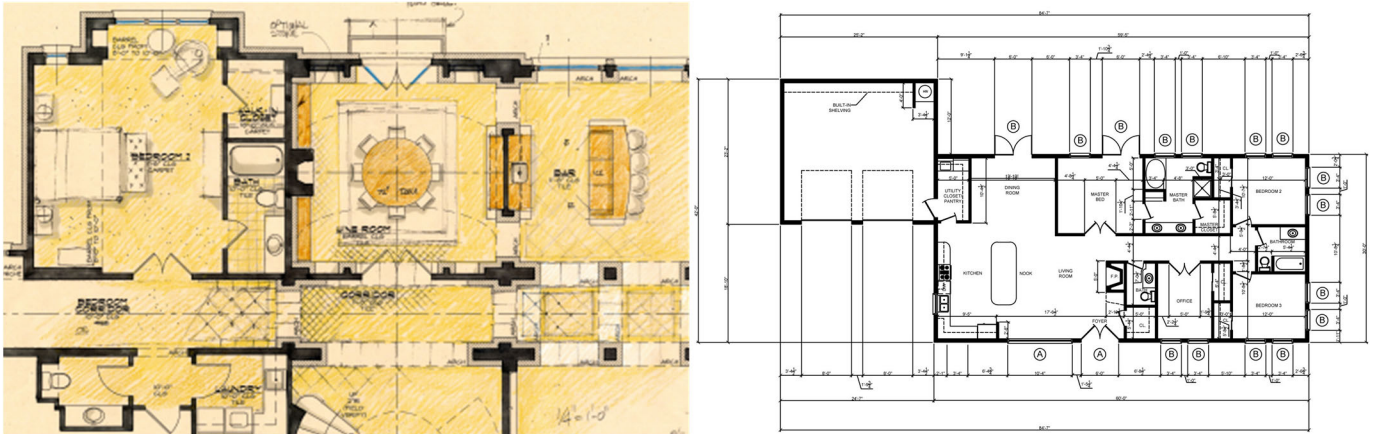
2D CAD: The construction industry (one of the largest industries in the World), still relies heavily on the 2D set of "blueprints" as the medium and key source of information used by architects, engineers, and constructors.
Essentially, a CAD generated plans are "drafted" using very similar methods to their manually-drawn counterparts and the resulting drawing is basically the same. There are intrinsic advantages and disadvantages to both methods but CAD has emerged as a reliable platform for speed, accuracy, and ease of changes.

CAD in this Course: In CAD-106, you will follow weekly demonstrations of unit-content, then complete exercises correlated to the demonstration. By the end of the course, you will be operable with the software, although lots of experience with industry knowledge will still be required.
Spatial visualization, drafting conventions, line weight use, page arrangement, and many other areas are covered in the course along with various types of industry drawings you may encounter in the workforce (e.g. architectural, civil, electrical, mechanical, etc.).

Course Objectives, Student Learning Outcomes (SLO's), Assessment & Mapping			
Course Objective	**SLO**	**Method of Assessment**	**Mapped to PO***
Become familiar with traditional and modern methods of graphical representation in constructing industries.	1. Understand the role of industry graphical communication documents to illustrate assembly and constructability in the CAD environment.	**Baseline assessment;** before instruction begins, students will complete an exam to measure their knowledge. The **Project-based assignments** assess the student's spatial visualization abilities.	**(PO)** Program Outcome #2, #3. **GenEd** n/a **LAS/GS** n/a
Understand the concept of file-finding and the hierarchy of folder-subfolder-file and file naming systems.	2. Effectively manage AutoCAD files in the digital environment.	**Weekly demonstrations** require students to download the unit data from Blackboard and properly file for class time use. The **Project-based assignments** assesses the student ability to properly file in XRefs, etc.	**(PO)** Program Outcome #2, #3. **GenEd** n/a **LAS/GS** n/a
Practice the various operations within the command ribbons weekly using project-based exercises.	3. Effectively use AutoCAD Draw, Edit, and Modify commands.	**Weekly demonstrations** allow students to follow the instructor's click-by-click execution of the unit exercises. The **Project-based assignments** require students to apply the operations and commands learned by completing a project.	**(PO)** Program Outcome #2, #3. **GenEd** n/a **LAS/GS** n/a
Practice drawing products using common industry conventions, annotate and dimension.	4. Demonstrate proficiency in the use of AutoCAD to create industry-typical products.	**Weekly demonstrations** guide students through the creation of various industry drawing types. The **Project-based assignments** provide projects for students to demonstrate their command.	**(PO)** Program Outcome #2, #3. **GenEd** n/a **LAS/GS** n/a
Produce a final set of drawings for a mock project given as a capstone for the course.	5. Master the ability to create a basic set of CAD drawings in a course capstone project: ▪ Solve/design a given problem; ▪ Draft the object views to proper convention; ▪ Annotate and dimension; ▪ Create sheets and a project-set, arranging viewports, scaling, and preparing for final PDF plots.	**Weekly demonstrations** build a methods and execution lexicon that students use each week. **Project-based assignments** provides students with practice projects for exploring and developing their techniques. **The course capstone project** measures the students ability to 1) solve a design problem, 2) mock-up a prototype to test the solution, 3) create an industry typical drawing set that could be used to fabricate their design.	**(PO)** Program Outcome #2, #3, #6. **GenEd** n/a **LAS/GS** n/a
* PO's (Program Outcomes) are found in the CT A.A.S. Program's Continuous Improvement Plan.			

Academic Resources

Log In & Net ID
https://www.trcc.commnet.edu/learning-resources/educational-technology/student-resources/5-steps-for-getting-started/

General Resources Web Page: eLearning, Blackboard, Online, Hybrid, Help Desk
https://www.trcc.commnet.edu/learning-resources/educational-technology/student-resources/

Academic Calendar
https://catalog.threerivers.edu/content.php?catoid=5&navoid=294

Student Resources

Advising & Counseling
https://www.trcc.commnet.edu/student-services/advising-and-counseling-center/

Sexual Misconduct
https://www.trcc.commnet.edu/student-services/sexual-misconduct-resources-and-education/

Student Handbook
https://www.trcc.commnet.edu/wp-content/uploads/2017/06/trccstudenthandbook.pdf

Policies

General Policies
https://catalog.threerivers.edu/content.php?catoid=5&navoid=240

Academic Integrity
https://catalog.threerivers.edu/content.php?catoid=5&navoid=240#Academic_Integrity_Policy

Faculty and Staff
https://www.threerivers.edu/directory/

Weather & Cancellations
1-860-215-9000 Press 1 for College Closing Announcement   -or-   https://www.threerivers.edu/ (for posted announcement)