

Course Name: RWC 1400 CAD
Computer-Aided Drafting and Design
Syllabus – 2020/2021



RESILIENCY AT WORK 2.0®

rw2.moodlecloud.com – Online Course Link

www.rw2.education

team@rw2.education

Instructor/Facilitator:

Phone:

Email:

Session Schedule (Day): Monday - Thursday, 9:00 AM - 12:45 PM

Session Schedule (Evening): Monday - Thursday, 5:30 PM – 9:15 PM

RW2 Catalog, Handbook, Syllabus: <https://www.clec-education.com/RW2-resources/>

Prerequisite: Students should be familiar with the Microsoft operating system and word processing, be able to access, search and download information from the Internet, and have the ability to use a keyboard and a mouse

Other Required Resources:

- Computer running Windows 7 or above with Internet connection, camera and audio capabilities.
- Two computer monitors are recommended to facilitate viewing and working with multiple resources, e.g. online text, assignments and the software program.
- AutoCAD Software, (Student not required to purchase.)
- USB Memory Flash Drive/Thumb Drive
- 64 GB or more (Student purchases.)
- Three-ring binder to organize notes, hand-outs, assignments, etc., paper, pencil, pen

Drop Period: The first week of the Program is the drop period. See refund policy in the catalog.

Withdraw Period: Any decision to discontinue the Program weeks two to seven. See refund policy in the catalog.

Course Description: This course involves learning CAD utilizing AutoCAD software. The focus is on 2-D drafting and drawing with some limited exposure to 3-D. Hands-on projects include geometric construction, various projections, sections, auxiliaries, dimensioning, sketching, and detail drawings that are practiced and applied utilizing CAD procedures.

Text Book: Richard, P. & Fitzgerald J. (2019). Introduction to AutoCAD 2020: A Modern Perspective. Upper Saddle River, New Jersey: Pearson Publication, Inc. publishing as Peachpit Press. ISBN-13: 978-0135576328.

Software: AutoCAD 2019, 2020 or 2021

Reference Books: Cheryl R. Shrock & Steve Heather. Advanced AutoCAD 2018. Industrial Press. 32 Haviland, South Norwalk, CT

Shawna Lockhart 2018. Tutorial Guide to AutoCAD 2018. SDC Publications. Mission, KS

Instructional Areas

1. Introduction to AutoCAD
2. Drawing Display
3. Drawing Commands
4. Drawing Aids and Drafting Settings
5. Object Properties
6. Basic Editing Techniques
7. Advanced Editing Techniques
8. Drawing and Editing Complex Objects
9. Pattern Fills and Hatching
10. Texts and Tables
11. Dimensioning
12. Model Space & Paper Space
13. Managing Paper Space Layouts
14. Plotting and Publishing
15. Blocks & Dynamic Blocks
16. Xrefs

Course Objectives

1. Use of graphic language to communicate design ideas.
2. Create technical drawings with CAD and demonstrate drafting skills.
3. Apply proper dimensioning practices according to the American National Standards Institute (ANSI) and demonstrate Geometric Dimensioning and Tolerancing (GD&T) as a design language for size, shape, and geometric characteristics of manufactured parts.
4. Demonstrate the techniques required to create orthographic projections, sectional and auxiliary views.
5. Utilize various design software applications and equipment for solving design problems.
6. Apply the procedures for constructing and managing a set of technical drawings for construction

Course Outline

Unit 1: INTRODUCTION TO AUTOCAD			
Upon completion of this unit, students are expected to:			
<ul style="list-style-type: none"> • Communicate to others using the CAD environment. • Describe the management and saving of files in technical graphics. • Manage paper space layouts and plotting within the CAD environment. 			
READING ASSIGNMENT	GRADED ACTIVITIES		
	Grading	Activity/Deliverable Title	
<ul style="list-style-type: none"> • Paul Richard Chapters 1-2 	Assignment	Unit 1 Assignment 1: Benefits of CAD in Technical Graphic Communication	
	Lab	Unit 1 Lab 1: Introduction to AutoCAD	
		Unit 1 Lab 2: Exploring Data Input Methods	
		Unit 1 Lab 3: Quickstart in AutoCAD	
		Unit 1 Lab 4: Creating and Plotting a Drawing	

Unit 2: CONTROLLING THE DRAWING DISPLAY AND BASIC DRAWING COMMANDS			
Upon completion of this unit, students are expected to:			
<ul style="list-style-type: none"> • Demonstrate basic CAD drafting skills. • Use display commands to control the display environment. • Create multiple viewports in model space. • Apply AutoCAD’s drawing commands. • Prepare a drawing setup for use. • Create technical drawings demonstrating proper use of AutoCAD line, circle, arc, point, and ellipse commands. • Compare various coordinate entry methods. 			
READING ASSIGNMENT	GRADED ACTIVITIES		
	Grading	Activity/Deliverable Title	
<ul style="list-style-type: none"> • Paul Richard Chapters 3-4 	Assignment	Unit 2 Assignment 1: AutoCAD Basics	
	Quiz	Unit 2 Quiz 1	
	Lab	Unit 2 Lab 1: AutoCAD Drawing Display	
		Unit 2 Lab 2: Establishing Units and Drawing Limits	
		Unit 2 Lab 3: Lines, Arcs, and Circles in AutoCAD	
		Unit 2 Lab 4: Creating Ellipses and Points, and Measuring in AutoCAD	

Unit 3: DRAWINGS AIDS AND DRAFTING SETTINGS AND MANAGING OBJECT PROPERTIES

Upon completion of this unit, students are expected to:

- Utilizing drawing aids
- Utilize grid, snap, and ortho mode settings in the creation of a technical drawing
- Assess the importance of object snaps
- Manage object properties
- Manage the value of layers and layer filters

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading	Activity/Deliverable Title	
Paul Richard Chapters 5-6	Assignment	Unit 3 Assignment 1: Chapter Projects	
	Quiz	Unit 3 Quiz 2	
	Lab	Unit 3 Lab 1: Drawing Tools	
		Unit 3 Lab 2: Drafting Settings	
		Unit 3 Lab 3: Managing Layers	
Unit 3 Lab 4: Managing Object Properties			

Unit 4: BASIC AND ADVANCED EDITING TECHNIQUES

Upon completion of this unit, students are expected to:

- Apply AutoCAD's editing commands.
- Select objects for editing in AutoCAD.
- Utilize erase, copy, move, rotate, stretch, and scale commands in a technical drawing.
- Assess the use of grips for object editing.
- Utilize offset, array, trim, extend, fillet, and chamfer commands in a technical drawing.
- Demonstrate the ability to join multiple objects in AutoCAD.

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading	Activity/Deliverable Title	
Paul Richard Chapters 7-8	Assignment	Unit 4 Assignment 1: Editing Tools	
	Quiz	Unit 4 Quiz 3	
	Lab	Unit 4 Lab 1: Selecting Objects for Editing	
		Unit 4 Lab 2: Basic Editing Tools	
		Unit 4 Lab 3: Using Grips to Edit	
Unit 4 Lab 4: Advanced Editing Tools			
	Project	Project 1	

Unit 5: DRAWING AND EDITING COMPLEX OBJECTS

Upon completion of this unit, students are expected to:

- Demonstrate the ability to draw and edit complex objects in AutoCAD.
- Utilize polylines, rectangle, polygon, and donut commands in AutoCAD.
- Apply editing commands to polylines.

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading	Activity/Deliverable Title	
<ul style="list-style-type: none"> • Paul Richard Chapter 9 	Assignment	Unit 5 Assignment 1: Complex Shapes	
	Quiz	Unit 5 Quiz 4	
	Lab	Unit 5 Lab 1: Drawing and Editing Polylines	
		Unit 5 Lab 2: Using Rectangles, Polygons, and Donuts	
		Unit 5 Lab 3: Drawing and Editing Multiple Polylines	

Unit 6: PATTERN FILLS AND HATCHING

Upon completion of this unit, students are expected to:

- Delineate various pictorial drawings. Utilize the hatch command to distinguish materials in a technical drawing.
- Create a technical drawing with a gradient fill pattern.
- Demonstrate effective use of hatch editing commands in AutoCAD.

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading	Activity/Deliverable Title	Grade Allocation (%)
<ul style="list-style-type: none"> • Paul Richard Chapter 10 	Assignment	Unit 6 Assignment 1: Hatch Patterns and Fills	1.5%
	Quiz	Unit 6 Quiz 5	1.67%
	Lab	Unit 6 Lab 1: Understanding Hatch Patterns	1%
		Unit 6 Lab 2: Hatching	1%
		Unit 6 Lab 3: Editing Hatch Patterns	1%

Unit 7& 8: ADDING TEXT AND TABLES

Upon completion of this unit, students are expected to:

- Assess the use of multilines in AutoCAD.
- Create text in a technical drawing.
- Employ settings to control text appearance.
- Create multiline and single line text in a technical drawing.
- Edit text in a technical drawing.
- Appraise the use of tables in a technical drawing.

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES			
	Grading	Activity/Deliverable Title		
<ul style="list-style-type: none"> • Paul Richard Chapters 11-12 	Assignment	Unit 7 Assignment 1: Text in AutoCAD		
	Quiz	Unit 7 Quiz 6		
	Lab	Unit 7 Lab 1: Appearance of Text Using Styles and Fonts		
		Unit 7 Lab 2: Create and Edit Text		
		Unit 7 Lab 3: Create and Edit Tables		
Project	Project 2			

Unit 9: DIMENSIONING DRAWINGS

Upon completion of this unit, students are expected to:

- Exemplify proper dimensioning practices.
- Identify the functions of the dimension toolbar in AutoCAD.
- Compare types of dimensions.
- Create dimensions in a technical drawing.
- Compare datum and chain dimensioning in a technical drawing.
- Utilize Geometric Dimension and Tolerancing (GD&T) symbols.
- Manage dimension styles in AutoCAD.
- Demonstrate effective use of dimension modification commands in AutoCAD.

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES			
	Grading	Activity/Deliverable Title		
<ul style="list-style-type: none"> • Paul Richard Chapter 13 	Assignment	Unit 8 Assignment 1: Dimensioning		
	Quiz	Unit 8 Quiz 7		
	Lab	Unit 8 Lab 1: Dimensioning Commands and the Dimension Toolbar		
		Unit 8 Lab 2: Creating and Modifying Dimension Styles		
		Unit 8 Lab 3: Utilizing GD&T Symbols in AutoCAD		

Unit 10 & 11: MANAGING PAPER SPACE LAYOUTS AND PLOTTING AND PUBLISHING

Upon completion of this unit, students are expected to:

- Manage paper space layouts and plotting within the AutoCAD environment.
- Apply a paper space layout to a technical drawing.
- Manage a space layout in AutoCAD.
- Assess the value of dimensioning in paper space.

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading	Activity/Deliverable Title	
<ul style="list-style-type: none"> • Paul Richard Chapters 14-15 	Assignment	Unit 9 Assignment 1: Completing Drawings	
	Quiz	Unit 9 Quiz 8	
	Lab	Unit 9 Lab 1: Setting the Page Size of a Layout	
		Unit 9 Lab 2: Controlling the Final Look of the Plotted Drawing	
		Unit 9 Lab 3: Configuring Various Plotting Devices	

Unit 12& 13: BLOCKS AND XREFS IN THE CAD ENVIRONMENT

Upon completion of this unit, students are expected to:

- Apply blocks and Xrefs in the CAD setting.
- Create blocks in AutoCAD.
- Insert blocks in AutoCAD.
- Assess the value of blocks in the CAD environment.
- Compare the attributes of blocks and Xrefs in AutoCAD.
- Transmit drawings with Xrefs.

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading	Activity/Deliverable Title	
<ul style="list-style-type: none"> • Paul Richard Chapters 16-18 • Familiarizing 3D Commands • Learning Certification 	Assignment	Unit 10 Assignment 1: Paper Space	
	Quiz	Unit 10 Quiz 9	
	Lab	Unit 10 Lab 1: Creating and Using Blocks in AutoCAD	
		Unit 10 Lab 2: Externally Referenced File Usage in AutoCAD	
		Unit 10 Lab 3: Xref Editing through Both In- Place and Drawing File Modification	

<i>Unit 14: COURSE REVIEW AND FINAL EXAM</i>			
READING ASSIGNMENT	GRADED ACTIVITIES		
	Grading	Activity/Deliverable Title	
No reading assignment	Exam	Final Exam & Submission of Project Work	

Evaluation and Grading

Evaluation Criteria

The graded assignments will be evaluated using the following weighted categories:

Category	Weight
Assignment	15%
Lab	30%
Project	20%
Quiz	15%
Exam	20%
TOTAL	100%

Grade Conversion

The final grades will be calculated from the percentages earned in the course, as follows:

Grade	Percentage	Credit
A	90–100%	4.0
B+	85–89%	3.5
B	80–84%	3.0
C+	75–79%	2.5
C	70–74%	2.0
D+	65–69%	1.5
D	60–64%	1.0
F	<60%	0.0

Attendance: Regular attendance and punctuality are essential life and workplace skills; therefore, students are expected to attend all sessions as scheduled whether technical or transferable/soft skills, in person and/or online. Instructors maintain daily records of attendance -- absences, tardiness, and leaving early. Students who miss excessive session time are subject to be removed from the Program.

Attendance is evaluated on a session-by-session basis. Session attendance, preparation, and participation are integral components to a student's progress and completion. Students are strongly encouraged to attend every session and to spend an appropriate amount of time outside of class to prepare. Failure to attend sessions may result in reduced comprehension, engagement, and progress, which may have an impact on a student's overall performance and progress toward completion.

Attendance Warning: In the instance that a student is absent from all sessions for one week (all days, consecutively) within a program, the instructor or Program administration will place the student on attendance warning. The student may also be subject to being administratively dropped or withdrawn. (See RW2 catalog for more information.)

Tutoring: Tutoring sessions are available to assist students in understanding the concepts. All students may take advantage of the tutoring; while those who are struggling to complete assignments, may be required to attend. The instructor and students decide on the tutoring sessions dates.

Incomplete: An incomplete grade, or “I” grade, is a temporary grade designed for students who, because of a documented illness, necessary absence (e.g. military) or other documented circumstance beyond their control, are unable to complete their program within the start and end date of a program.

The student must meet with an instructor to prepare an Incomplete Program Contract (IPC) and make arrangements to complete the course on or before the time agreed upon or, if granted, in the appropriate subsequent Program session. The IPC is also reviewed by the Program administration. If the student does not complete the program work by the established deadline or a maximum of one year and meet the letter grade stipulated, the instructor will change the “I” to an “F”. (See RW2 catalog for more information.)

Educational Integrity/Honest: Every student is expected to follow the Program’s regulations and guidelines relating to academic honesty. (See RW2 Handbook and Code of Conduct.)

Educational Dishonesty includes any or all of the following as applicable:

1. Plagiarism - the intentional use of the ideas or words of someone else as the student’s own work, e.g. assignment.
2. Cheating during examinations and assessments, whether by copying from another student or by using information in the form of unauthorized aids brought to the examination or assessment is prohibited.
3. Submitting the work for any assignment that was done by another student or other person is prohibited.
4. Submitting the same work in more than one program or session to fulfill the requirements in another program or session, without prior approval of both instructors is prohibited.
5. Using a false name or signing the name of another individual without proper authorization in connection with any course work and for attendance is prohibited.

Disciplinary measures will be taken for any student suspected of educational dishonesty. At no point in this program is it acceptable for a student to submit someone else’s work as their own or use the ideas of someone else as their own. It is also unacceptable for a student to share his/her own work with another student. Any incidence of cheating will result in a grade or score equivalent to an “F” for the work.

American with Disabilities Act: In compliance with the American with Disabilities Act, RW2 makes every attempt to provide equal access for persons with disabilities. If you need an accommodation due to a disability, please contact an RW2 staff member at 816-875-0111. (See RW2 catalog for more information.)

Code of Conduct: Students are expected to conduct themselves in a manner consistent with the purpose of the program. Conduct deemed unacceptable toward maintaining a proper education and training environment will subject the student to the Program’s disciplinary action. The Code of Conduct is outlined in the RW2 Handbook and Code of Conduct.

Sexual Harassment: Sexual harassment is prohibited by Federal and State law, as well as RW2’s policy. If you feel that you have been subjected to sexual harassment, please discuss this with the Program Administrator. (See RW2 Handbook and Code of Conduct.)

Grievance Procedure: When a student feels his/her rights or freedoms have been violated, he/she has the right to use the grievance procedure to seek recourse. The Resiliency at Work 2.0 grievance procedure is outlined in the catalog.

Program Closures Due to Inclement Weather: In the event of inclement weather, notices of closing, late starts, etc. will be communicated through email, text, RW2 online platform announcement, and/or through recorded messages on the Program phone line: 816-875-0111. Please note that in person and hybrid evening sessions may still be open even if day sessions are cancelled or vice versa.

Computer and Computer Technology Usage: Any computers owned by and used in the RW2 program must be strictly in support of and for acceptable education and training purposes. It is not acceptable to use any computer at any of the RW2 program sites for purposes, which violate any federal law or state law. It is not acceptable to use any computer at RW2 program sites in a manner that is harmful or harassing, including accessing sexual materials on the Internet. It is not acceptable to use any computers at RW2 program sites in a manner that disrupts network use and service. It is not acceptable to use any computers in the RW2 Program for commercial activities, such as, but not limited to, commercial solicitation of business.

It is the responsibility of the computer user to comply with these and other regulations. Reported violations of these policies may result in disciplinary action and the student may be subject to forfeiture of their computer use privileges.

Cell Phones: During program sessions, pagers and cell phones should be on silent mode and put away. Students should excuse themselves from the session to make or take necessary calls.

Smoking Policy: RW2 abides by the policies of the facilities where the programming is offered. The facilities where RW2 holds programs are “SMOKE- FREE” facilities. **If smoking is permitted at a program site**, students will be informed by an RW2 staff member about any designated areas.

The instructor and RW2 administration reserve the right to update the syllabus to meet programmatic and session objectives at any time.

