



**I. COURSE DESCRIPTION:**

This course is intended to introduce to the student to the use of AutoCAD software in the preparation, editing and plotting of engineering drawings. The student will also be able to setup CAD drawings using standards for layers, text, and line weight. The student will become familiar with basic drawing and editing procedures, as well as file management and organization.

**II. LEARNING OUTCOMES:**

1. Prepare and interpret detailed dimensional drawings using computer assisted drafting software.
2. Demonstrate relevant mathematical, computer and technical problem solving skills as it relates to civil engineering/construction projects.

**III. REQUIRED RESOURCES/TEXTS/MATERIALS:**

*Discovering AutoCAD 2015*

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Pearson Education

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1 GB or larger USB storage device for drawing backup

**VI. TOPIC OUTLINE**

<b>Outcome</b>	<b>Topic and Content</b>	<b>Reading</b>	<b>Week</b>
1,2	<b>1. Introduction to AutoCAD, Essential Tools</b>  1.1. CAD uses and benefits 1.2. Understand fundamental CAD concepts 1.3. AutoCAD user interface 1.4. AutoCAD command and data input methods 1.5. Command entry methods 1.6. Drawing and erasing lines and other entities 1.7. Saving drawings 1.8. Drawing activities 1.9. Chapter 1 Quiz	LMS Chapter 1	1
1,2	<b>2. Drawing Aids and AutoCAD Objects</b>  2.1. Create a New Drawing 2.2. Drawing units 2.3. Grid and Snap, Object snap 2.4. Model and Layout Space 2.5. Drawing Circle and Rectangle objects 2.6. ERASE command 2.7. Accessing 'Help' 2.8. Printing and plotting 2.9. Chapter 2 Quiz	Chapter 2 Handout LMS	1,2
1,2	<b>3. Drawing Display, Layers and Linetypes</b>  3.1. Layers and linetypes 3.2. Assign colours and linetypes 3.3. LTSCALE 3.4. Editing commands Fillet and Chamfer 3.5. Zoom and Pan functions 3.6. Single line text 3.7. Move, Copy and Array commands 3.8. View resolution 3.9. Chapter 3 Quiz	Chapter 3 LMS Handout	2,3
1,2	<b>4. Templates, Copies and Arrays</b>  4.1. Limits 4.2. Create a template drawing 4.3. Polar tracking 4.4. MOVE, COPY AND ARRAY commands 4.5. Center marks 4.6. Changing Plot settings 4.7. Chapter 4 Quiz	Chapter 4 LMS Handout	3,4

1,2	<b>5. Arcs and Polar Arrays</b> 5.1. Use Polar Arrays 5.2. Create arcs using ARC command 5.3. Rotate command 5.4. Use polar tracking 5.5. Use the MIRROR command 5.6. Basic page setup 5.7. Chapter 5 Quiz	Chapter 5 LMS	4,5
1,2	<b>6. Object Snap (OSNAP)</b> 6.1. Object snap override 6.2. Running object snap 6.3. Object snap tracking 6.4. OFFSET command (Distance and Through) 6.5. Use the TRIM and EXTEND commands 6.6. STRETCH command 6.7. Understand plot layouts 6.8. Chapter 6 Quiz  <b>7. Mid-term Test</b> 7.1. Multiple Choice/True False Questions 7.2. Practical Drawing Exercise	Chapter 6 LMS  LMS	6  7
1,2	<b>8. Text</b> 8.1. Advanced single line text, character codes 8.2. Use title blocks in layout space 8.3. Create and use and edit MTEXT 8.4. Use the spellcheck function 8.5. Create a text style using style manager 8.6. Modify object properties and use SCALE 8.7. Create tables and fields 8.8. Chapter 7 Quiz	Chapter 7 LMS	8,9
1,2	<b>9. Dimensions and Hatch</b> 9.1. Create a dimension style 9.2. Apply linear and angular dimensions 9.3. Apply radial and diameter dimensions 9.4. Create a multi-leader style 9.5. Use the HATCH command 9.6. Understand 'scale' between Model and Layout space 9.7. Chapter 8 Quiz	Chapter 8 LMS	9,10
1,2	<b>10. Polylines</b> 10.1. Polygons and Donuts 10.2. Using the FILL command	Chapter 9 LMS	10,11

	<ul style="list-style-type: none"> <li>10.3. Drawing straight and arc polyline segments</li> <li>10.4. Edit polyline objects with PEDIT</li> <li>10.5. Draw splines and path arrays</li> <li>10.6. Draw points and change point display (PDMODE)</li> <li>10.7. Discuss constraint parameters</li> <li>10.8. Chapter 9 Quiz</li> </ul>		
1,2	<p><b>11. Blocks, Attributes and External References</b></p> <ul style="list-style-type: none"> <li>11.1. Distinguish between groups and blocks</li> <li>11.2. Create and insert blocks into a drawing</li> <li>11.3. Create and edit dynamic blocks</li> <li>11.4. Insert an external reference into a drawing</li> <li>11.5. Access content from the AutoCAD design center</li> <li>11.6. Define and extract attributes</li> <li>11.7. Chapter 10 Quiz</li> </ul>	Chapter 10 LMS	11,12
1,2	<p><b>12. Isometric Drawing and Editing Commands</b></p> <ul style="list-style-type: none"> <li>12.1. Use isometric snap</li> <li>12.2. Draw on the isometric planes</li> <li>12.3. Use the COPY and ELLIPSE and CHAMFER commands</li> <li>12.4. Use the VIEW command to save and restore views</li> <li>12.5. Align text with isometric planes</li> <li>12.6. Chapter 11 Quiz</li> </ul>	Chapter 11 LMS	12,13
1,2	<p><b>13. 3D Modeling</b></p> <ul style="list-style-type: none"> <li>13.1. Create a 3D wireframe model</li> <li>13.2. Understand and apply an user coordinate system</li> <li>13.3. Switch to and use the 3D basics workspace</li> <li>13.4. Create solid boxes and wedges</li> <li>13.5. Use Boolean operations to edit solids</li> <li>13.6. Perform basic rendering operations</li> <li>13.7. Use the 'Viewcube'</li> <li>13.8. Create layouts with multiple views</li> <li>13.9. Chapter 12 Quiz</li> </ul>	Chapter 12 LMS	13,14
1,2	<p><b>14. Modeling Techniques</b></p> <ul style="list-style-type: none"> <li>14.1. Draw polysolids</li> <li>14.2. Draw Cones, Pyramids and Toruses</li> <li>14.3. Slice and section solid objects</li> <li>14.4. Create mesh models</li> <li>14.5. Create solids from 2D objects</li> <li>14.6. Create a walk through a 3D landscape</li> <li>14.7. Create paper and PDF plots</li> <li>14.8. Chapter 13 Quiz</li> </ul>	Chapter 13 LMS	14,15

**15. Final Test**

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**15.1. Practical Drawing Exercise**