CAD 102  Adv. Computer Aided Drafting

CREDIT HOURS:  4.00  
CONTACT HOURS:  60.00

COURSE DESCRIPTION:
Prereq: CAD 101
An advanced computer aided drafting course that focuses on developing those competencies necessary to produce exacting and precise detail 3-D engineering drawings. The course includes three-dimensional data base manipulation and is enhanced with menu creation and advanced editing. Auto CAD software will be used in this class.

EXPECTED COMPETENCIES
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Course Syllabus

CREATE
- Create wireframe and/or solid models
- Create non-analytic surfaces using appropriate modeling.
- Create analytic surfaces using appropriate modeling with planes and analytic curves (e.g., conic, cylinder, revolution, ruled)
- Create offset surfaces
- Find intersection of two surfaces
- Create joined surfaces
- Create a fillet or blend between two surfaces.
- Create feature based geometry (e.g., holes, slots, rounds)
- Create cut sections
- Construct and label exploded assembly drawings
- Perform Boolean operations (e.g., union, subtraction, intersection).
- Create wire frame/solid models
- Create objects using primitive.
- Create 2-D geometry from 3-D models.
- Revolve a profile to create a 3-D object.
- Create 3-D wireframe models from 2-D geometry.
- Create isometric and auxiliary views of objects.

EDIT
- Trim surface
- Manipulate surface normals
- Extend surface
- Edit control points (e.g., surfaces, Bezier)
- Modify geometry via Boolean operations
- Edit primitives (e.g., moving, copying, resizing)

MANIPULATE
- Perform axis view clipping
- Extract wireframe data from surface/solid geometry
- Shade/render object (e.g., reflectivity, opacity)

ANALYZE
- Extract geometric data
- Extract attribute data
- Identify gaps in non-intersecting surfaces
- Obtain surface properties (e.g., area, perimeters, bounded volume)

CAD PRODUCTIVITY AND WORK HABITS
- Manipulate associated non-graphical data
- Use template and library files to establish drawing standard presets
- Develop geometry using parametric programs.
- Construct geometric figures (e.g., lines, splines, circles and arcs)
- Create text using appropriate style and size to annotate drawings
- Use and control accuracy enhancement tools (e.g., entity positioning methods such as snap and XYZ.
- Identify, create, store and use appropriate symbols/libraries.
- Create orthographic view of objects and intersecting solids.

EDIT
- Utilize geometry editing commands (e.g., trimming, extending, scaling)
Wayne County Community College District
Course Syllabus

• Utilize non-geometric editing commands (e.g., text, drawing format)
  MANIPULATE
  • Control coordinates and display scale
  • Control entity properties (e.g., color, line type)
  • Use viewing commands (e.g., dynamic rotation, zooming, panning)
  • Use display commands (e.g., hidden line removal, shading)
  • Use standard parts and/ or symbol libraries
  • Plot drawings on media using correct layout and scale
  • Use layering techniques
  • Use grouping techniques
  • Minimize file size
  ANALYZE
  • Use query commands to interrogate database (e.g., entity characteristics distance, area, status)
  DIMENSIONING
  • Use associate dimensioning correctly.

ASSESSMENT METHODS
Student performance may be assessed by examination, quizzes, case studies, oral reports, group discussion, written reports or presentations. The instructor reserves the option to employ one or more of these assessment methods during the course.

GRADING SCALE

90%-100%  = A
80%-89.9%  = B
70%-79.9%  = C
60%-69.9%  = D
<60%       = E