02/2013SYLLABUS

DATE OF LAST REVIEW: March 9, 2026

CIP CODE: 15.1302

SEMESTER: Departmental Syllabus

COURSE TITLE: Advanced Computer Aided Drafting

COURSE NUMBER: ENGR-0206

CREDIT HOURS: 3

INSTRUCTOR: Departmental Syllabus

OFFICE LOCATION: Departmental Syllabus

OFFICE HOURS: Departmental Syllabus

TELEPHONE: 913-334-1100

EMAIL: KCKCC-issued email accounts are the official means for electronically communicating with our students.

PREREQUISITE(S):   Computer Aided Drafting, ENGR-0106

REQUIRED TEX: Please check with the KCKCC bookstore, http://www.kckccbookstore.com. for the required text for your particular class.

COURSE DESCRIPTION:
This course is designed to advance the students' knowledge of CAD concepts, processes and systems. Students receive instruction on advanced methods of producing engineering drawings with computers. Subjects include architectural and engineering CAD template drawing, three dimensional drawing, database interchange, drawing digitization, CAD slide shows, and script file drawing. Advanced methods of drawing creation, management and storage will be utilized. Advanced output methods will include multicolor hardcopy and multipen plotting.

METHOD OF INSTRUCTION:
A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing,

performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE:
I.   Introduction and review
        A.   Hardware
        B.   Software
        C.   Peripheral equipment and configurations
        D.   Workstations
        E.   Review of draw and modify commands
        F.   New commands
        G.   Methods of input
        H.   Types of 3d drawings

II.   Pictorial CAD drawing-Isometric
        A.   Isometric drawing setup
        B.   Function Keys, snap, ^ v
        C.   Planes of projection
        D.   Surface construction 2d to Iso
        E.   Set variables for dim, text angle, dim oblique
        F.   Construct ellipses, threads, pipe
        G.   Modify angles
        H.   Create fillets and chamfers

III.   Extrusion Drawings
        A.   Elevation
        B.   Thickness
        C.   Vpoints
        D.   3d Zooming including orbit
        E.   Layers and colors
        F.   Hide
        G.   Shade
        H.   Plot

IV.   3Dline and 3Dface Drawings
        A.   3dline
        B.   3drotate
        C.   3dface
        D.   3d methods of input
        E.   Invisible edges
        F.   Vports and Mviews
        G.   Dimensioning
        H.   Layer modification in active vports
        I.   Scale and alignment in 3d drawings
        J.   Manipulating layers for plotting
        K.   Ploting 3d drawings

V.   Surface Model Drawings
      A.   Methods of surface modeling
      B.   3dMesh & editing
      C.   Pedit-smoothing the mesh
      D.   Constructing a contour map using 3dmesh
      E.   Geometry Meshes- Revsurf, Rulesurf, Edgesurf, and Tabsurf
      F.   Surface quality of geo meshes
      G.   Approximated surfaces
      H.   Surface quality of approx. surfaces
      I.   Creating 3dsurface primitives
      J.   Plotting surface models

VI.   Solid Modeling and Drawings
      A.   Identifying solid models, surface models and 3dface drawings
      B.   Creating solid primitives
      C.   Adding parts together-union
      D.   Subtracting parts
      E.   Modigying surface properties
      F.   Setting display variables
      G.   Creating a materials library
      H.   Attaching materials to solid objects
      I.   Scaling, aligning and plotting solid models

VII.   Presentations-Script files, Shading and Rendering
      A.   Script files
      B.   Mslide
      C.   Vslide and *vslide
      D.   Rscript
      E.   Resume
      F.   Backspace
      G.   Ddvpoint
      H.   Hide, Shade and Wireframe slides

EXPECTED LEARNER OUTCOMES:
A. Upon completion of the course the student will be able to identify hardware, software, including new commands, and types of 3d drawings.
B. Upon completion of the course the student will be able to setup, design and develop an isometric drawing.
C. Upon completion of the course the student will be able to design and develop and plot an Extrusion 2-1/2 dimensional drawing.
D. Upon completion of the course the student will be able to create a 3dimensional drawing using wireframe construction and 3dface technology.
E. Upon completion of the course the student will be able to demonstrate the ability to create a drawing using surface modeling techniques.

F. Upon completion of the course the student will be able to construct, edit and render a drawing using solid modeling techniques.

G. Upon completion of the course the student will be able to identify and develop presentation drawings using script files, hide, shade and rendering commands.

COURSE COMPETENCIES:

Upon completion of the course the student will be able to identify hardware, software, including new commands, and types of 3d drawings.

1. Upon completion of the course the student will be able to identify and review CAD hardware, software and equipment.
2. Upon completion of the course the student will be able to identify and review boot and file saving procedures.
3. Upon completion of the course the student will be able to identify and review drawing setup and scales.
4. Upon completion of the course the student will be able to identify and review the methods of input absolute, relative and polar.
5. Upon completion of the course the student will be able to identify the types of 3D CAD drawings.
6. Upon completion of the course the student will be able to demonstrate proficiency using draw commands
7. Upon completion of the course the student will be able to demonstrate proficiency using modify and edit commands.

Upon completion of the course the student will be able to setup, design and develop an isometric drawing.

8. Upon completion of the course the student will be able to demonstrate the procedure to set up an isometric drawing.
9. Upon completion of the course the student will be able to identify and demonstrate drawing enhancements, Fkeys, snap.
10. Upon completion of the course the student will be able to identify and demonstrate the ability to draw in the three isometric planes of projection.
11. Upon completion of the course the student will be able to construct holes, pipes and threads in the horizontal, and vertical right hand planes.
12. Upon completion of the course the student will be able to identify and demonstrate isometric ellipse construction.
13. Upon completion of the course the student will be able to demonstrate methods of projecting depth.
14. Upon completion of the course the student will be able to demonstrate methods of drawing angles, fillets and chamfers.
15. Upon completion of the course the student will be able to identify and demonstrate isometric dimensioning.

Upon completion of the course the student will be able to design and develop and plot an Extrusion 2-1/2 dimensional drawing.

16. Upon completion of the course the student will be able to demonstrate drawing with elevations.

17. Upon completion of the course the student will be able to demonstrate drawing with thickness, Z.
18. Upon completion of the course the student will be able to identify and demonstrate the methods of changing Vpoints.
19. Upon completion of the course the student will be able to identify hidden line removal technology.
20. Upon completion of the course the student will be able to demonstrate shading of surfaces technology.
21. Upon completion of the course the student will be able to demonstrate mastery of zoom commands, including orbit.
22. Upon completion of the course the student will be able to demonstrate the ability to draw extrusion with layers and colors.
23. Upon completion of the course the student will be able to demonstrate color printer and plotter proficiency.

Upon completion of the course the student will be able to create a 3dimensional drawing using wireframe construction and 3dface technology.
24. Upon completion of the course the student will be able to identify the difference between wireframe and 3Dface drawings.
25. Upon completion of the course the student will be able to construct consecutive faces on difference planes.
26. Upon completion of the course the student will be able to demonstrate the ability to use 3D X,Y,Z methods of input.
27. Upon completion of the course the student will be able to demonstrate the ability to create invisible edges.
28. Upon completion of the course the student will be able to identify and demonstrate Vports and Mviews.
29. Upon completion of the course the student will be able to demonstrate proficiency scaling and aligning parts in multiple vports.
30. Upon completion of the course the student will be able to demonstrate the ability to freeze and thaw layers in active vports.
31. Upon completion of the course the student will be able to identify and demonstrate the UCS and PLAN commands.

Upon completion of the course the student will be able to demonstrate the ability to create a drawing using surface modeling techniques.

32. Upon completion of the course the student will be able to identify the methods of surface modeling, vertex meshes, geometry meshes and approximated surfaces.
33. Upon completion of the course the student will be able to demonstrate 3D meshes.
34. Upon completion of the course the student will be able to edit and change vertices of 3D meshes.
35. Upon completion of the course the student will be able to verify the method of smoothing surfaces of 3D meshes.
36. Upon completion of the course the student will be able to construct a contour map using 3D mesh.

37. Upon completion of the course the student will be able to identify and differentiate the 4 geometry meshes.
38. Upon completion of the course the student will be able to verify the method of smoothing geometry meshes.
39. Upon completion of the course the student will be able to construct a drawing using the 4 geometry defined meshes.
40. Upon completion of the course the student will be able to identify and demonstrate approximated surfaces quadratic, cubic and bezier.
41. Upon completion of the course the student will be able to verify the method of smoothing approximated surfaces, SURFU and SURFV variables.

Upon completion of the course the student will be able to construct, edit and render a drawing using solid modeling techniques.
42. Upon completion of the course the student will be able to identify the difference between surface, solid and region modeling.
43. Upon completion of the course the student will be able to demonstrate proficiency constructing solid primitives.
44. Upon completion of the course the student will be able to demonstrate proficiency unioning primitives together.
45. Upon completion of the course the student will be able to demonstrate proficiency subtracting primitives from each other.
46. Upon completion of the course the student will be able to identify methods of modifying surface properties of solid models.
47. Upon completion of the course the student will be able to apply display variables to solid models, isolines, and dispsilh.
48. Upon completion of the course the student will be able to construct a materials library.
49. Upon completion of the course the student will be able to render and plot solids with materials attached.

Upon completion of the course the student will be able to identify and develop presentation drawings using script files, hide, shade and rendering commands.
50. Upon completion of the course the student will be able to identify and demonstrate script files.
51. Upon completion of the course the student will be able to construct a slide show using Mslide, Vslide and Vpoint commands.
52. Upon completion of the course the student will be able to identify the difference between shaded and rendered slides.
53. Upon completion of the course the student will be able to demonstrate rendering commands for lights, views and scenes.
54. Upon completion of the course the student will be able to demonstrate the ability to assign materials to objects and to colors.
55. Upon completion of the course the student will be able to add backgrounds for rendered views.
56. Upon completion of the course the student will be able to create and save rendered views.

ASSESSMENT OF LEARNER OUTCOMES:

Assessment methods may include, but are not limited to, the following: Homework, Assignments, Quizzes, Class Participation, Chapter Tests, and Final Exam. The grading scale and the process for calculating the course grades are to be determined by the individual instructors. This information will be included in each instructor's syllabus.

SPECIAL NOTES:
This syllabus is subject to change at the discretion of the instructor. Material included is intended to provide an outline of the course and rules that the instructor will adhere to in evaluating the student's progress. However, this syllabus is not intended to be a legal contract. Questions regarding the syllabus are welcome any time.

Kansas City Kansas Community College is committed to an appreciation of diversity with respect for the differences among the diverse groups comprising our students, faculty, and staff that is free of bigotry and discrimination. Kansas City Kansas Community College is committed to providing a multicultural education and environment that reflects and respects diversity and that seeks to increase understanding.

Kansas City Kansas Community College offers equal educational opportunity to all students as well as serving as an equal opportunity employer for all personnel. Various laws, including Title IX of the Educational Amendments of 1972, require the college's policy on non-discrimination be administered without regard to race, color, age, sex, religion, national origin, physical handicap, or veteran status and that such policy be made known.

Kansas City Kansas Community College complies with the Americans with Disabilities Act.   If you need accommodations due to a documented disability, please contact the Director of the Academic Resource Center, in Rm. 3354 or call at: 288-7670.

All enrolled students at Kansas City Kansas Community College are subject to follow all rules, conditions, policies and procedures as described in both the Student Code of Conduct as well as the Student Handbook. All Students are expected to review both of these documents and to understand their responsibilities with regard to academic conduct and policies. The Student Code of Conduct and the Student Handbook can be found on the KCKCC website.

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