Computer-Aided Design

40007-70

This course will enable students to learn how products are developed through the use of state-of-the-art computer-aided design (CAD) technology. This course teaches students the basics of computer-aided design (CAD) using a computer-aided design software package. They will learn the basic tools needed to create two-dimensional drawings by using the software.

Learning Objectives
- Identify the benefits of using CAD software in place of hand drawing.
- Discuss axes, grids and coordinates.
- Draw basic shapes and text.
- Describe how different projections impact drawings.

Practical Experience
- Produce basic and advanced drawings and configurations on the computer.
- Create technical drawings of a floppy disk, a speaker, floor plan and different views of a boat.
- Scale a drawing.
- Create an orthographic projection and an isometric drawing.
- Design a house.

Curriculum activities or equipment may change as Lab-Volt continually strives to provide the most up-to-date technology-education program.
Computer-Aided Design

The curriculum is a complete learning unit containing work activities appropriate for students to cover a period of twelve lessons.

Student Accomplishments:
- explore the background of CAD.
- discuss how CAD is used today.
- gain an understanding of axes, grids and coordinates.
- practice creating precise drawings by using the tools provided in the CAD software.
- use the features the CAD software provides to copy, move and erase drawings.
- type text in the CAD software.
- draw a basic scene by using the tools of the CAD software.
- create a technical drawing.
- discover that technical drawings require precise starting points.
- demonstrate how to accurately measure the drawing they create.
- demonstrate how to draw to scale.
- add a title and a border to their drawing.
- design an item to be manufactured.
- draw a floor plan.
- demonstrate how to use layers.
- design a bird house.
- demonstrate how to draw the same object looking at it from three different views.
- draw the hull of a sailboat from three perspectives.
- draw a section view of a sailboat.
- examine the principal method for developing multi-view drawings.
- explore one type of pictorial drawing.
- draw an isometric and orthographic projection of an object.
- identify additional the CAD software tools that you will need to draw a house.
- begin designing a house.
- complete the design of their house.
- explore career opportunities in the field of Computer-Aided Design.

CLIENT WORKSTATION REQUIREMENTS

Operating System:
Windows XP or higher

Hardware Specifications:
- Personal computer
- Memory: 1 GB or higher
- Sound: 16 Bit, full duplex
- CDRW/DVD combo: 48x or higher
- Hard Drive Space: 30 GB with minimum of 10 GB free space
- Network Interface Card: 10 Mbps Card (recommended 100 Mbps)

Software Specifications:
- Internet Explorer 8 or higher, Flash 10, .Net 3.0 Framework

Equipment, Course-Specific Software & Supplies:
- Drafting kit: fixed-leg compass; sandpaper lead pointer (sharpeners); eraser and erasing shield; protractor; lead holder; dusting brush; two triangles; lead holder with clip; Lumograph leads; and architectural triangular scale
- CAD software: features pull-down menus, scroll bars and slider bars; variety of drawing tools; macro capability for repetitive tasks; associative dimensioning; part clipping; text editor; move, stretch, copy, mirror, rotate, scale, and object-measuring capabilities; and automatic fillets and chamfers
- Tracing paper, 11” x 17” plot paper and quadrille pad
- Headphones (2) with a two-way adapter
- Course plaque and mouse pad

Resources, Software & Courseware:
Tech-Design eSeries courses contain the complete multimedia curriculum and resources. Supplementing the curriculum are resources such as Key Terms and Words, Timelines, Career Exploration, Environmental Impacts, Internet Link to age- and content-appropriate web sites for student research and TD-Quest projects. Instructor-enabled features such as: narration, electronic annotations, closed captioning, application launches, electronic student journal and lesson delivery options are integrated into the system.

Tech Design is facilitated by the Mind-Sight eTraining System. Mind-Sight™ is a seamless integration of courseware delivery and classroom management. You can use the Mind-Sight eTraining System to manage student enrollment, schedule learning activities, customize courseware curriculum, and track performance objectives and assessments. Mind-Sight comes ready to “plug-and-play” on a fully-supported mini-server which has been pre-installed with the management and communication software.

Instructional Resources: Instructor’s Guide (answer keys and other information to assist with class preparation), Mind-Sight Installation and User’s Guide (instructions for navigating through the curriculum and using interactive features), Supplemental Comprehensive Assessment Booklet.

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