

Bangladesh Sweden Polytechnic Institute

Kaptai, Rangamati Hill Tracts.

Teacher: Patha Sarathi Suman Dutta (Instructor)

Sub: CAD AND GRAPHICS DESIGN

Code: 6645

Practical

1st Week:

Lecture 1:

Auto CAD

1. *Drawing Lines, Arcs and Circles*

- 1.1. Install a general-purpose drawing and design software (Auto CAD) and dedicated PCB design & simulation software.
- 1.2. Setup the drawing area and paper size.
- 1.3. Identify different menus and dialog boxes of CAD packages.
- 1.4. Use the commands to draw lines, rectangles using polar and rectangular coordinates.
- 1.5. Create pline and spline using single and 3D POLY commands.
- 1.6. Draw circle, arc, donut, ellipse and simple construction lines.
- 1.7. Use the command for freehand sketches.

Lecture 2:

2. **Editing and modifying objects.**

- 2.1. Select and erase the objects using different technique.
- 2.2. Duplicate the objects using copy/grips, offset, mirror and array command.
- 2.3. Rearrange the objects using move and rotate commands.
- 2.4. Resize the objects using stretch, scale, extend, trim and length commands.
- 2.5. Break the objects.
- 2.6. Explore the objects.
- 2.7. Chamfer and fillet the objects.

2nd Week:

Lecture 3:

3. **Dimension layers and hatch pattern.**

- 3.1. Use commands to set up the dimension variables and scale.
- 3.2. Create and edit linear, angular, diameter, radius and ordinate dimensions.
- 3.3. Dimension multiple objects.
- 3.4. Create leads and annotations.

- 3.5. Create and name the layers.

Lecture 4:

- 3.6. Make current layer and control layer visibility.
- 3.7. Freeze, lock and unlock layers.
- 3.8. Set layer color & line type.
- 3.9. Create and edit line text, paragraph text.
- 3.10. Insert text from outside of CAD.

Job 1: Drawing lines arcs & Circle

3rd Week:

Lecture 5:

4. **Create a simple schematic diagram and PCB layout.**
 - 4.1. Run any professional PCB layout packages.
 - 4.2. Load the layout drawing (symbols, pads, lines, components, etc.) from the components library.
 - 4.3. Configure the system for units and co-ordinates.
 - 4.4. Edit the PCB layout and simulate the circuit using appropriate circuit simulation software
 - 4.5. Print Single layer PCB layout in a tracing paper by using a Printer/Plotter

Lecture 6:

Adobe Photoshop

5. **Work with Image, Image Color and Channels**
 - 5.1. Install Adobe Photoshop Software
 - 5.2. Change image size, resolution and canvas size.
 - 5.3. Practice with foreground and background color, opacity and feather.
 - 5.4. Change the color with the help of color piker.
 - 5.5. Practice with Hue, HSB, bitmap and gray color.
 - 5.6. Practice on creating Channel, RGB Channel, CMYK Channel and multi Channel
 - 5.7. Practice on Using various Palettes

4th Week:

Lecture 7:

6. **Work with Painting and Editing**
 - 6.1. Practice on using Painting, Painting tools, editing tools.
 - 6.2. Practice on using Paint Bucket tools and Brush tools.
 - 6.3. Use lasso selector tools including freelance and point base lasso selector tools.

Job2: Editing Object, Dimension layers & hatch pattern, PCB layout

Lecture 8:

- 6.4. Practice with magic wand tools and pen tools.
- 6.5. Practice with path builder and anchor point.
- 6.6. Practice with smudge, sharpen, lighten and dark tools.
- 6.7. Practice with rubber stamp, healing and patch tools.

5th Week:

Lecture 9:

- 7. **Work with layer, filter and color mapping and adjusting.**
 - 7.1. Practice on creating layers, arrange layers ,merge layers and link between layers.
 - 7.2. Practice on using filter, destructive filters, stylize filters, high pass filter and noise filter.
 - 7.3. Practice on using gradient tools, eyedropper tools.
 - 7.4. Practice on using color mapping and adjusting.
 - 7.5. Practice on using erase and pencil, custom shape tools.
 - 7.6. Practice on using bevel emboss, color range and layer linking.

Lecture 10:

Job 3:

- 8. **Work with projects**
 - 8.1. Design a Shopping Bag/Calendar/Gift Box/ Bill Board/Cover Page etc.
 - 8.2. Print an image with color separation.

6th Week:

Lecture 11:

Adobe Illustrator

- 9. **Work with objects, layers and path to draw and edit objects.**
 - 9.1. Install Adobe Illustrator Software.
 - 9.2. Practice on using rectangles, ellipses.
 - 9.3. Practice on using polygon tool, star tool and spiral tool
 - 9.4. Practice on using group selection tools.

Lecture 12:

- 9.5. Practice on creating layers, edit layers, lock & hide layers, merge layers, arrange layers, move or copy items between layers.
- 9.6. Draw paths (Open and Close Paths)
- 9.7. Apply anchor point tool, delete anchor point tool and convert direction point tool.
- 9.8. Edit path with smooth tool, erase tool, reshape tool, scissor tool and

knife tool.

7th Week:

Lecture 13:

10. Work with coloring and transformation of objects

- 10.1. Demonstrate the usage of brushes palette, fill and stroke.
- 10.2. Demonstrate the usage of eyedropper and paint bucket tool.
- 10.3. Practice on using color palette, color models and custom colors.
- 10.4. Practice with transformation tool .
- 10.5. Practice with transform palettes, align palettes and pathfinder palette.
- 10.6. Practice with divide/trim/merge/crop/outline tool.
- 10.7. Practice on using Hard and Soft command.

Lecture 14:

11. Work with text, typography, effects, chart & graph and filters

- 11.1. Practice with type tool, point text, area text and link text.
- 11.2. Type text on a path and move text along a path.
- 11.3. Practice on different commands of character palette and paragraph palette.

Job 4: Using Object, Layer & Path Draw & Edit Objects

8th Week:

Lecture 15:

- 11.4. Practice with Tab palette and MM design palette.
- 11.5. Practice with special effect on text/objects.
- 11.6. Practice and using charts and graphs
- 11.7. Practice on creating filter, distort filters and stylize filters

Lecture 16:

Job 5: Work with coloring & Transformation of Objects.

9th Week:

Lecture 17:

Job 6: Work with graph & filter.

Lecture 18:

Job 7:

12. Work with projects

- 12.1. Design Greeting Card/Calendar/Post Card etc.

- 12.2. Print the project

10th Week:

Lecture 19:

QuarkXpress

13. Work with basic elements of page makeup program, Palettes, Style Sheet and Master Page

- 13.1. Install Quark Xpress Software
- 13.2. Practice on using Page make up
- 13.3. Change measuring units.
- 13.4. Practice on tracking, kerning, leading, paragraph, justification and hyphenation.
- 13.5. Set up column, margin, registration marks and screens.

Lecture 20:

- 13.6. Demonstrate the operations of global control and local control.
- 13.7. Practice on tools, measurement palette.
- 13.8. Demonstrate the functions of palettes.
- 13.9. Practice on creating and editing Style sheet.
- 13.10. Practice on creating and editing Master Page
- 13.11. Apply master page with a document

11th Week:

Lecture 20:

14. Work with text and picture boxes

- 14.1. Practice on creating new text box, Insert, edit and import text in the text box.
- 14.2. Practice on Linking and Unlinking text boxes.
- 14.3. Align, rotate, setup colors and shades in the text.
- 14.4. Practice on creating picture box, changing the size, location and shape of picture box.
- 14.5. Import and add graphics in a picture box.
- 14.6. Apply colors and shades of picture box.

Lecture 21:

15. Work with layout features, character and paragraph

- 15.1. Practice on drawing arrow line, end caps line and frame.
- 15.2. Practice on creating new frame style.
- 15.3. Practice on using bullets and lists.
- 15.4. Practice on Applying character spacing, tracking and kerning.
- 15.5. Practice on using horizontal & vertical scaling, hyphenation and justification
- 15.6. Practice on using leading.

12th Week:

Lecture 22:

Project with Quark Express.

Review Class.

Reference Books:-

1. AutoCAD
 - Samuel A Mallick
 - Engr. Md. Shah Alam

2. Adobe Photoshop/Adobe Illustrator/Quark Xpress
 - a. Bappi Ashraf
 - b. Mahbubur Rahman
 - c. Shajahan Sajib
 - d. Azizur Rahamn
 - e. Reference Copy Adobe Corporation Publication

