



**DEPARTMENT OF ARCHITECTURE  
UNIVERSITY OF THE PUNJAB, LAHORE.**

**BACHELORS OF ARCHITECTURE (B. ARCH)  
5 YEARS PROGRAM**

**COURSE OUTLINE**

Course Title	<b>Computer Applications-2</b>
Course Code	<b>ARCH-332</b>
Credit Hours	<b>2(0+2)</b>
Semester	<b>Fall 2022</b>
Prerequisites	<b>Computer Applications-1</b>
Tutor	<b>As per Timetable</b>
Student Advising	<b>As per Timetable</b>
Contact	-

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**Teacher Signature**

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**Chairman Signature**

## **Course introduction**

Course is divided into 2 parts namely AutoCAD and Photoshop.

First part introduces Autodesk's AutoCAD software as a design and drafting tool. Introduces basic 2D CAD commands, command interface, workspace, viewports and printing concepts. Covers creation, retrieval and modification of 2D drawing files that meet industry standards with an emphasis on mechanical design for the manufacturing industry.

Second Part of the course allows you to go at your own pace, and pick up the skills you need to use photoshop. Whether you want to make a presentation board, or want to add color to an elevation or plan, or want a post-production of your 3d render or want to create a full feature graphic, you need to have the basics under your belt.

This course is completely focused on teaching you the knowledge, so that you can quickly and efficiently create great visuals without spending hours trying to learn how to use photoshop.

## **Learning Objective:**

- Applying the fundamentals of CAD to design problems
- 2D drafting and 3D computer modeling
- Computer rendering of buildings in perspective and as analytical drawings
- Use tools/palettes effectively and understand the terminology
- Select images using a variety of ways and Crop and Transform them
- Resize images, change resolution, retouch and repair photos
- Understand and work with Layers, Masks and Channels
- Optimize graphics for printing and use with the web

## **Outcome**

By the end of semester, the students should be able to:

- Apply knowledge of drafting and model generation using AutoCAD and Photoshop
- Model a variety of iterations of a design and evaluate through different graphical and photographic projects
- Communicate a building design graphically and explain its benefits with graphical techniques
- Explore the concept of experiencing architectural design through the coordination and integration of circulation, structure and space.
- Use different digital tools to produce detail apparel sketches and technical drawings.
- Make images and animations that allow clear visualization of internal spaces and exterior views of architectural projects.
- Create a basic 2D drawing, and to understand the tools and techniques available to increase his/her productivity and customize his/her AutoCAD workspace.

- Create and maintain a parametric building model to use for renderings, working drawings, massing studies and coordination of disciplines.
- Recognise and understand fundamental aspects of Photoshop
- Create your first document
- Navigate images
- Understand the concepts of file formats, file size, colour modes and image resizing
- Make effective selections in an image
- Work with layers
- Resize images using a variety of techniques
- Select, use and work with colour
- Create and format text layers
- Draw and format standard and custom shapes
- Understand the process of saving
- Retouch and repair artefacts in images
- Print and understand printing techniques
- Use the Help menu and access online help resources.
- Understand, modify and create libraries
- Apply layer effects to an image
- Work with smart objects
- Transform images, include flipping, rotating and skewing
- Correct the tone and color of photos using adjustments layers
- Use masks, filters and blending modes
- Use the 3d tools and settings in photoshop
- Work with camera raw

### **Learning Methodology:**

- Provide lectures using AutoCAD and Photoshop software, demonstrating commands via user interface and typed commands. Use examples and projects seen in the CAD and drafting industry.
- Demonstrate AutoCAD and Photoshop commands and workflow through lecture and videos.
- Show industry standard procedures to solve various drafting, graphics and CAD related industry problems.

## **Grade Evaluation Criteria**

Following, is the criteria for the distribution of marks to evaluate final grade in a semester.

### **Marks Evaluation**

### **Marks in percentage**

Sessional (Assignments, Quizzes, Presentations)

30

Mid Term

30

Final examination

40

**Total**

**100**

Grading System								
Percentage	Letter Grade	Grade Point	Percentage	Letter Grade	Grade Point	Percentage	Letter Grade	Grade Point
85-100	A	4.00	65-69	B-	2.70	50-54	D	1.00
80-84	A-	3.70	61-64	C+	2.30	Below 50	F	0.00
75-79	B+	3.30	58-60	C	2.00	Withdraw	W	0.00
70-74	B	3.00	55-57	C-	1.70	Incomplete	I	0.00

<b>Content</b>		
<b>Unit 1</b>	<p style="text-align: center;"><b><i>Introduction</i></b></p> <ol style="list-style-type: none"> <li>1. Interface (HOME/INSERT/ANNOTATE/VIEW/ETC)</li> <li>2. Command Line</li> <li>3. Status Toggles (SNAP/GRID/POLAR/OSNAP/ETC)</li> <li>4. Drawing Controls</li> <li>5. Units</li> <li>6. Workspace</li> </ol>	
<b>Unit 2</b>	<p style="text-align: center;"><b><i>Drawing</i></b></p> <ol style="list-style-type: none"> <li>1. Line</li> <li>2. Polyline</li> <li>3. Circle</li> <li>4. Arc</li> <li>5. Rectangle</li> <li>6. Ellipse</li> </ol>	<ol style="list-style-type: none"> <li>7. Spline</li> <li>8. Polygon</li> <li>9. Revision Cloud</li> <li>10. Construction Line</li> <li>11. Hatching</li> <li>12. Gradient</li> </ol>
<b>Unit 3</b>	<p style="text-align: center;"><b><i>Modify</i></b></p> <ol style="list-style-type: none"> <li>1. Move</li> <li>2. Copy</li> <li>3. Rotate</li> <li>4. Mirror</li> <li>5. Fillet</li> <li>6. Trim</li> <li>7. Extend</li> <li>8. Erase</li> <li>9. Offset</li> </ol>	<ol style="list-style-type: none"> <li>10. Explode</li> <li>11. Array</li> <li>12. Bring to Front/Send to Back</li> <li>13. Stretch</li> <li>14. Break</li> <li>15. Polyline Edit</li> <li>16. Spline Edit</li> <li>17. Hatch Edit</li> <li>18. Scale</li> </ol>
<b>Unit 4</b>	<p style="text-align: center;"><b><i>Inquiry and working with layers</i></b></p> <ol style="list-style-type: none"> <li>1. Using Measure</li> <li>2. Divide</li> <li>3. Creating Layers</li> <li>4. Managing Layers</li> <li>5. Isolate/Un Isolate</li> <li>6. Changing Layers</li> <li>7. Line Type</li> <li>8. Line Weights</li> </ol>	
<b>Unit 5</b>	<p style="text-align: center;"><b><i>Annotation</i></b></p> <ol style="list-style-type: none"> <li>1. Dimensions</li> <li>2. Text</li> <li>3. Dimension Style</li> <li>4. Text style</li> <li>5. Leaders</li> </ol>	
<b>Unit 6</b>	<p style="text-align: center;"><b><i>Properties</i></b></p> <ol style="list-style-type: none"> <li>1. Colors</li> <li>2. Line Weights</li> <li>3. Line types</li> <li>4. Line type scaling</li> </ol>	

<b>Unit 7</b>	<p><b><i>Block</i></b></p> <ol style="list-style-type: none"> <li>1. Mapping Create</li> <li>2. Insert</li> <li>3. Edit</li> <li>4. Explode</li> </ol> <p style="text-align: right;">Export</p>
<b>Unit 8</b>	<p><b><i>Plot/ Print</i></b></p> <ol style="list-style-type: none"> <li>1. Model Space</li> <li>2. Layouts/Workspaces</li> <li>3. Viewports</li> <li>4. Layout Scaling</li> <li>5. Paper Setup</li> <li>6. Plot Scale</li> <li>5. Plot Options</li> </ol>
<b>Unit 9</b>	<b>Mid Exam</b>
<b>Unit 10</b>	<p><b><i>Navigating Photoshop</i></b></p> <ol style="list-style-type: none"> <li>1. Workspace, Tools, and Panels</li> <li>2. Opening an existing document in Mini Bridge</li> <li>3. Discovering the Tools panel</li> <li>4. Accessing tools and their options</li> <li>5. Using panels</li> <li>6. Customizing your panels</li> <li>7. Hidden tools</li> <li>8. Navigating the image area</li> <li>7. Using the Zoom features Maximizing productivity with screen modes</li> </ol>
<b>Unit 11</b>	<p><b><i>Selection techniques/ process</i></b></p> <ol style="list-style-type: none"> <li>1. Selection techniques</li> <li>2. Modifying selections</li> <li>3. Rectangular marquee</li> <li>4. Elliptical marquee</li> <li>5. Single row and single column marquees</li> <li>6. Lasso tool</li> <li>7. Polygonal lasso tool</li> <li>8. Magnetic lasso</li> <li>9. Magic wand</li> <li>10. Quick selection tool and refine edge</li> <li>9.</li> </ol>
<b>Unit 12</b>	<p><b><i>Working with layers</i></b></p> <ol style="list-style-type: none"> <li>1. Creating new layers</li> <li>2. Filling layer contents</li> <li>3. Using type layers</li> <li>4. Modifying layers</li> <li>5. Layer arrangement</li> <li>6. Layer duplication</li> </ol> <p>Layer linking and merging</p>

<b>Unit 13</b>	<p><i>Adjusting images</i></p> <ol style="list-style-type: none"> <li>1. Adding Image Modes</li> <li>2. Hue and Saturation Adjustments</li> <li>3. Curve and Level Adjustments</li> <li>7. Using Filters like Camera Raw and Blur etc</li> </ol>
<b>Unit 14</b>	<p><i>Modify and export</i></p> <ol style="list-style-type: none"> <li>1. Pages Repairing Image Defects</li> <li>2. Removing Image Areas</li> <li>3. Using Brushes</li> <li>4. Sky Replacement using color range</li> </ol>
<b>Unit 15-16</b>	<p><i>Transformation</i></p> <ol style="list-style-type: none"> <li>1. Scaling</li> <li>2. Flipping</li> <li>3. Distorting and perspective</li> <li>4. People shadows in presentation</li> <li>5. Smart objects</li> <li>4. Gradient tools</li> </ol>
<b>Unit 17</b>	<p><i>Floor Plan, Elevation and Section presentation</i></p> <ol style="list-style-type: none"> <li>1. AUTOCAD export to Photoshop</li> <li>2. Rendered image post-production</li> <li>3. Placement of elements and people</li> <li>4. Patterns fill</li> <li>5. Layer style</li> <li>6. Blending options</li> <li>7. Organize your Architectural Presentation Board</li> <li>6. Compose your Presentation Board</li> </ol>
<b>Unit 18</b>	<b>FinalExam</b>
<b>Recommended Books/References</b>	<ul style="list-style-type: none"> <li>• Omusa, George. Advanced Techniques in AutoCAD.</li> <li>• D. H. Sanders. Computers Today.</li> <li>• Omusa, George. Mastering AutoCAD.</li> <li>• Laker Daniel. Inside AutoCAD.</li> <li>• R. A. Rejnolds. Computing for Architects.</li> <li>• Pipes Alan. Computer-Aided Architectural Design Features.</li> <li>• Mitchell, William. J. Computer-Aided Architectural Design</li> <li>• Horst Sondermann. Photoshop in Architectural Graphics</li> <li>• Petere Buaer. Adobe Photoshop CC For Dummies</li> <li>• Scott Kelby. How do I do that in Photoshop</li> <li>• Lisa DaNae Dayley, Photoshop CC Bible</li> <li>• Scott Onstott. Enhancing Architectural Drawings and Models with Photoshop</li> </ul>