



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

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

COURSE OUTLINE

Course Title	Computer Applications-3
Course Code	ARCH-333
Credit Hours	2(1+1)
Semester	Spring 2022
Prerequisites	Computer Applications-2
Tutor	As per Timetable
Student Advising	As per Timetable
Contact	-

Teacher Signature

Chairman Signature

Course introduction

Sketch up is an essential tool in today's market. one needs to see how are 2d plans elevations turn into 3d models and overcome mistakes done in 2d drawing after seeing the 3D model. The 3D model is the first step before implementing the product. it is useful for 3D printing purposes also. Architects need this basic tool to make the 3D model in a very short time laps.

In this Sketchup course we will focus on specialized workflows that allow perfecting your SketchUp model and generate professional looking plans, views, and elevations. From conceptual massing techniques that will help you bring your innovative and unique architectural concepts closer to reality, to creating unique, custom styles for models using Styles.

Further we will demonstrate how to link SketchUp with Layout to transform your 3D model and generate high-quality plans, sections, and elevations for use with planning and construction.

Learning Objective:

This course is intended for students with little or no 3D modeling experience. It lets you jump in and use SketchUp to model buildings as well as other 3-D objects like furniture and appliances, while targeting following objectives:

- Master the fundamentals of SketchUp.
- Navigate through models, understand downloaded models.
- Create real-life with drawing and modification tools.
- Complete models with dimensions and labels
- Master surface textures and materials to create appealing presentations.
- Creating and managing 2D drawings from 3D models using Layout

Outcome

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

- Apply basic 3-D modeling terminology, and basic concepts to create simple building models and useful everyday shapes, from 2-D plans, elevations and sections using SketchUp 3-D modeling software.
- Utilize tools and techniques unique to SketchUp 3-D modeling software to organize models, manage the modeling environment, and create repeatable components.
- Employ various methods of displaying, rendering and otherwise changing the appearance of 3-D models using tools integral to the SketchUp 3-D modeling software.

Learning Methodology:

This course will be presented by means of short lecture/discussionsessions and labprojects. Individualized instruction will beprovided while the student is working on assigned projects. Openlab time will be made available, and may be necessary tocomplete the given tasks.

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

Content	
Unit 1	<p><i>Interface</i></p> <ol style="list-style-type: none"> 1. Interface basics 2. Navigating in SketchUp 3. Walking around in SketchUp 4. Creating camera views 5. Shading faces and edges 6. Creating shadows and fog 7. Using scenes to create multiple views 8. Configuring toolbars
Unit 2	<p><i>Manipulating Objects</i></p> <ol style="list-style-type: none"> 1. Selecting and moving objects 2. Scaling and rotating objects 3. Manipulating faces and edges 4. Advanced selection tools
Unit 3-5	<p><i>Drawing</i></p> <ol style="list-style-type: none"> 1. Line tool fundamentals 2. Using the Line tool for 3D drawing 3. Eraser tools 4. Using the Rectangle tool 5. Creating rotated rectangles 6. Pushing and pulling faces into 3D 7. Using the Offset tool to create outlines 8. Drawing curved and freehand shapes 9. Creating circles and polygons 10. Softening and smoothing edges 11. Using the FollowMe tool 12. Creating 3D text 13. Creating Terrains and site modelling
Unit 6	<p><i>Measuring & Labelling</i></p> <ol style="list-style-type: none"> 1. Using the Tape Measure to create guidelines 2. Using the Protractor tool 3. Creating sections 4. Creating labels 5. Dimensioning
Unit 7	<p><i>Staying organized</i></p> <ol style="list-style-type: none"> 1. Create and Use Groups 2. Create and Use Components 3. Working with layers 4. Using the Outliner, Tags and Entity Info
Unit 8	<p><i>Working with materials</i></p> <ol style="list-style-type: none"> 1. Apply colors with Paint Bucket tool 2. Apply materials 3. Search online for materials 4. Create new material
Unit 9	Mid Term Exam

Unit 10	<p><i>Working with textures</i></p> <ol style="list-style-type: none"> 1. Mapping textures interactively 2. Mapping curved objects 3. Projecting maps on curved objects 4. Creating a floor plan using bitmap images 5. Drawing a structure from a floor plan
Unit 11	<p><i>Presentation</i></p> <ol style="list-style-type: none"> 1. Positioning texture 2. Use Camera Toolbar: FOV, Position Camera, Look Around, Walk 3. Use Shadow Tray 4. Use Fog Tray 5. Use Scenes 6. Advance Camera tools 7. Animation Settings
Unit 12	<p><i>Plugins and extensions</i></p> <ol style="list-style-type: none"> 1. Modify Objects – Using Plugins 2. Joint Push Pull 3. Cleanup 4. Make face 5. Fredo Scale 6. Round Corner 7. Path Copy 8. Shape Bender 9. Curviloft 10. 1001 bit tools
Unit 13	<p><i>Introduction to Layout & Linking to Sketchup</i></p> <ol style="list-style-type: none"> 1. Introduction to Layout 2. Manipulating objects in Layout (Select, Resize, Move) 3. Entering model space 4. Preset viewport perspectives 5. Viewport Render Settings (Raster, Hybrid, and Vector rendering modes) 6. The Sketchup-Layout link 7. Preparing your model for Layout (Groups & Components, Sketchup Layers)
Unit 14-15	<p><i>Importing Sketchup scenes in Layout</i></p> <ol style="list-style-type: none"> 1. Assigning scenes to viewports in Layout 2. 2Creating scenes in Layout (Focusing on visible objects, foreground depth, background depth, camera settings, and style) 3. Using Section cuts 4. Clipping planes 5. Working with Sketchup styles 6. Layers in Layout 7. Grid in Layout
Unit 16	<p><i>Detailing</i></p> <ol style="list-style-type: none"> 1. Adding a title block 2. Project Info Area (Line tool) 3. Project Info Text (Text tool) 4. Label Tool 5. Symbols/Annotations 6. Aligning objects

	<ol style="list-style-type: none"> 7. Creating Groups 8. Scrapbooks 9. Dimensions (Linear, Angular, Advanced)
Unit 17	<p><i>Modify and export</i></p> <ol style="list-style-type: none"> 1. Pages/Shared Layers 2. Auto-text tags 3. Exporting (PDF, Image, Presentation Mode) 4. Stacking Viewports 5. Pasting Linework into LayOut 6. Transparency Between Viewports 7. Patterns & Pattern Masks 8. Advanced techniques (Parallel Perspective Hatching, Textured Poché Fills, Section Cut Face Plugin, Auto-Scaling Hatching) <p>Project Work</p>
Unit 18	Final Exam
Recommended Books/References	<ul style="list-style-type: none"> • Aidan Chopra. Introduction Google Sketchup • Aidan Chopra. Google Sketchup for Dummies • Micheal Brightman. The Sketchup workflow for Architecture • Chris Grover. Google SketchUp: The Missing Manual • Alexander C. Schreyer. Architectural design with Sketchup • Laurent Brixius. Google Sketchup workshop • Matt Donley. Sketchup to Layout