

**Assessment Rubrics:**

- Quiz / Assignment/ Quiz/ Discussion / Seminar
- Midterm Exam
- Programming Assignments
- Final Exam

**Mapping of COs to Assessment Rubrics :**

	Internal Exam	Assignment	Quiz	Lab Assessment	End Semester Examinations
CO 1	✓		✓		✓
CO 2	✓		✓	✓	✓
CO 3	✓	✓		✓	✓
CO 4		✓		✓	✓

**14. ANIMATION USING BLENDER**

Discipline	COMPUTER SCIENCE				
Course Code	UK1MDCCSC104				
Course Title	ANIMATION USING BLENDER				
Type of Course	<b>MDC</b>				
Semester	I				
Academic Level	1				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	3	2 hours	-	2	4 hours
Pre-requisites	Nil				
Course Summary	This course provides a comprehensive journey through the Blender interface, mastering vital navigation skills. It explores fundamental modelling techniques enabling the creation of 3D objects and characters.				

**Detailed Syllabus:**

<b>Module</b>	<b>Unit</b>	<b>Content</b>	<b>Hrs (L+P)</b>
<b>I</b>	<b>Introduction to Blender</b>		<b>12</b>
	1	Introduction to Blender, Commercial Software vs Open-source Software	
	2	History of Blender, Downloading and Installing Blender	
	3	Blender UI: Splash screen, Top bar and Status bar, Default Editors	
	4	Understanding Areas and Editors: Resizing areas, Splitting and joining areas, Understanding the types of editors	
<b>II</b>	<b>Blender Objects</b>		<b>12</b>
	5	Interface Elements: Panels, Pie Menus; 3D Viewport, 3D Scene	
	6	Creating Object, Moving, Rotating, Scaling, Active Tools, Manipulators, Menus	
	7	Modifiers, Workbench, Light options, Rendering	
	8	Stages of a Project, Defining the Stages, Character-Creation plan	
	9	Character Design: Description, Designing Character, adding colour, Finalizing the design	
<b>III</b>	<b>Modelling in Blender</b>		<b>12</b>
	10	Modelling tools: Vertices, Edges, Faces, making selections, Mesh modelling tools, Modelling Add-ons, LoopTools	
	11	Character Modelling: Mesh topology, modelling methods: Box Modelling, Poly to poly, Sculpt and Retopology, Modifiers	
	12	Hot air balloon modelling, Cartoon Giraffe modelling, Kite Modelling	
<b>IV</b>	<b>Rigging</b>		<b>12</b>
	13	Unwrapping, Painting, Shading, Character Rigging, Skinning	
	14	Lighting the scene, Analysing the real footage	
	15	Creating and Testing lights	

<b>V</b>	<b>Flexi Module : Not included for End Semester Exams</b>		<b>12</b>
	16	Animating the character	
	17	Showing/Hiding objects in Render	
	18	Exporting the final Render	

## References

1. Oliver Villar, Learning Blender: A Hands-On Guide to Creating 3D Animated Characters, Third Edition, Addison-Wesley, 2021.
2. James Chronister, Blender Basics, Second Edition, 2006.
3. James Chronister, Blender Basics: A Classroom Tutorial Book, 5<sup>th</sup> Edition, cdscholls.org, 2017.

## LAB EXERCISES

Design following models

1. Chair
2. Table
3. Pizza in Blender
4. Coffee Mug
5. French Fries
6. Piggy Bank
7. Donut
8. Table lamp in Blender
9. Penguin
10. Toy

## Course Outcomes

No.	Upon completion of the course the graduate will be able to	Cognitive Level	PSO addressed
CO-1	Outline fundamental aspects of Blender	U	PSO-1
CO-2	Develop knowledge of Blender interface elements, such as panels, menus, and editor.	Ap	PSO-1, 3
CO-3	Use basic modelling techniques in Blender	Ap	PSO-1,2,3
CO-4	Develop models of various objects	Ap	PSO-1,2, 3

**R-Remember, U-Understand, Ap-Apply, An-Analyse, E-Evaluate, C-Create**

*Note: 1 or 2 COs/module*

**Name of the Course: ANIMATION USING BLENDER**

**Credits: 2:0:1 (Lecture: Tutorial: Practical)**

<b>CO No.</b>	<b>CO</b>	<b>PO/PSO</b>	<b>Cognitive Level</b>	<b>Knowledge Category</b>	<b>Lecture (L)/ Tutorial (T)</b>	<b>Practical (P)</b>
CO-1	Outline fundamental aspects of Blender	PO-3, 6, 7 PSO-1	U	F, C	L	-
CO-2	Develop knowledge of Blender interface elements, such as panels, menus, and editor.	PO-3, 6, 7 PSO-1,2,3	Ap	F, C, P	L	P
CO-3	Use basic modelling techniques in Blender	PO-1, 3, 6, 7 PSO- 1, 2, 3	Ap	F, C, P	L	P
CO-4	Develop models of various objects	PO-1, 3, 6, 7 PSO-1,2, 3	Ap	F, C, P	L	P

**F-Factual, C- Conceptual, P-Procedural, M-Metacognitive**

**Mapping of COs with PSOs and POs :**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO 1	-	-	1	-	-	2	2	-	2	-	-	-
CO 2	-	-	2	-	-	2	2	-	2	1	2	-
CO 3	1	1	3	-	1	2	2	-	2	1	2	-
CO 4	1	1	3	-	1	2	2	-	2	1	2	-

**Correlation Levels:**

Level	Correlation
-	Nil
1	Slightly / Low
2	Moderate / Medium
3	Substantial / High

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