

NIRMA UNIVERSITY

Institute:	Institute of Design
Name of Programme:	B.Des. in Communication Design, B.Des. in Industrial Design
Semester:	V
Course Code	IDPR 316E
Course Title	Introduction to 3D Modeling
Course Type	Institute Elective
Year of Introduction	2023

L	T	Practical component				C
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Course Learning Outcomes (CLO):

At the end of the course, the student will:

- 1) Be oriented to the importance of efficient rendering for performance and visual quality (BL1)
- 2) Animate objects, adding motion and enhancing the quality and visual appeal of their 3D models and animations (BL 3)
- 3) Create 3D objects, utilizing the unique features of digital 3D modeling software (BL 5)

Syllabus

Total Time Duration: 60 hrs.

Unit	Syllabus	Teaching hours
Unit-I	<p>Introduction to 3D Modeling</p> <ol style="list-style-type: none"> 1. Overview of popular 3D modeling software like SolidWorks, Rhino, Autodesk, Fusion 360, PTC, Creo Parametric, Catia, SketchUp and their features 2. Understanding the fundamentals of 3D modeling and its applications in design 3. Hands-on exercises to get familiar with the 3D workspace 4. Learning how to navigate and manipulate the 3D environment effectively 5. Creating and positioning 3D objects in the virtual space 	15 hours



Unit-II	Basic 3D Shapes and Geometry <ol style="list-style-type: none"> 1. Utilizing 3D transformation tools for scaling, rotating, and moving objects 2. Building simple objects and sculptures using basic geometric shapes 3. Exploring polygonal modeling techniques for more complex designs 4. Using modifiers and subdivision surfaces for smooth surfaces 5. Understanding materials and shaders for realistic surface appearances. 6. Applying textures to 3D models to enhance the visual appeal 	20 hours
Unit-III	Introduction to Lighting, Rendering and Animation basics <ol style="list-style-type: none"> 1. Learning how to set up lights in a 3D scene to achieve desired effects 2. Exploring rendering settings and output options for high-quality visuals 3. Introduction to 3D animation principles and key frames 4. Importing and exporting 3D models into popular graphic design and video editing software like Adobe Photoshop, Adobe Premier Pro etc. 5. Case studies and real-world examples of successful 3D design projects 6. Designing for Virtual and Augmented Reality (VR/AR) on global marker/Vuforia platform 	25 hours

Suggested Readings/ References:	<ol style="list-style-type: none"> 1. Digital Modeling, Author: William Vaughan, Publisher: New Riders; 1st edition, 2011 2. 3D Animation Essentials, Author: Andy Beane, Publisher: Sybex; (First edition), 2012 3. Designing with Creo Parametric 7.0, Author: Michael J. Rider, Publisher: SDC Publication, 2019 4. Real-Time Rendering, Author: Tomas Akenine-Möller, Publisher: A K Peters/CRC Press; (Fourth edition), 2018 5. 3D Modeling & Animation, Author: Magesh Chandramouli, Publisher: CRC Press; 1st edition, 2021 6. CAD/CAM: Computer-Aided Design and Manufacturing Author: M. Groover, E. Zimmers, Prentice Hall 2021
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W.e.f. Academic year_ 2023-24 and onwards
Key: L= Lecture, T= Tutorial, P= Practical, C= Credits

