COURSE TITLE	**RIGGING**
COURSE CODE	**05MA0305**
COURSE CREDITS	**4**

Objective:

1 Understand the principles of character rigging and deformation.
2 Learn the tools and workflows in Maya for building animation-ready rigs.
3 Create functional biped and quadruped character rigs with controllers.
4 Apply skinning and weight painting techniques for realistic deformation.
5 Develop clean, production-friendly rigs for use in animation pipelines.

Course Outcomes: After completion of this course, student will be able to:

1 Students will create and organize joint structures for character rigs.
2 Students will build IK/FK-based rigs with custom controls.
3 Students will implement facial, hand, and foot control systems.
4 Students will apply effective skinning techniques for clean deformation.
5 Students will complete a polished character rig ready for production use.

Pre-requisite of course: Basic understanding of 3D modeling and Maya interface.

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
0	0	8	0	0	0	50	50

Contents : Unit	Topics	Contact Hours
Total Hours		

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Introduction to Character Rigging** Purpose, pipeline, and rig types. Joint Tool & Joint Hierarchy – Creating skeletons for bipeds. Joint Orientation & Naming Conventions – Clean rigging practice. Controllers Creation – NURBS controls for animators. Rigging Interface & Outliner Management	30

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Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
2	**IK and FK Systems** Setting up inverse and forward kinematics for limbs. IK/FK Switching – Setup for seamless animation blending. Stretchy Limbs – Using expressions and nodes for dynamic stretching. Spine Rigging – Ribbon spine setup and control hierarchy. Head and Neck Rigging – Joint setup and control connections.	30
3	**Hand and Finger Rigging** Custom attributes and driven keys. Foot Roll & Leg Rigging – Foot pivot setup with heel, toe, and ball lift. Facial Rig Basics – Joint-based and blend shape-based setups. Constraints & Set Driven Keys – Automating secondary controls. Skinning Preparation – Freezing, transformations, clean mesh checks.	30
4	**Skin Binding Techniques** Smooth Bind, Geodesic Voxel Bind. Weight Painting – Refining deformation across the mesh. Painting Weights for Elbows, Shoulders, Knees – Natural movement. Creating Animator-Friendly UI – Pick-walk, space switching, custom attributes. Final Project – Fully rigged biped character with clean controls and deformation.	30
Total Hours		**120**

Textbook :

1 Learning Autodesk Maya 2024: Rigging, Autodesk Official Press, Autodesk Official Press, 2024

References:

1 Rig it Right! Maya Animation Rigging Concepts, Rig it Right! Maya Animation Rigging Concepts, Tina O'Hailey, CRC Press, 2024

2 Stop Staring: Facial Modeling and Animation Done Right, Stop Staring: Facial Modeling and Animation Done Right, Jason Osipa, Wiley Publishing, 2010

3 The Art of Rigging (CG Toolkit Series), The Art of Rigging (CG Toolkit Series), Kiaran Ritchie, CG Toolkit, 2010

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
10.00	15.00	25.00	25.00	25.00	0.00

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Instructional Method:

1 PraticalWork, Demo

Supplementary Resources:

1 https://area.autodesk.com
2 https://www.riggingdojo.com
3 YouTube: Academic Phoenix Plus, Josh Sobel, Stylus Production

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