



Course Specification

(Bachelor)

Course Title: **3D Modeling and Animation**

Course Code: **HCI4808**

Program: **BSc in Human Computer Interaction**

Department: **Software Engineering**

College: **Computing**

Institution: **Umm Al Qura University**

Version: **1.0**

Last Revision Date: **22/04/2025**



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A. General information about the course:

1. Course Identification

1. Credit hours: (3)					
2. Course type					
A.	<input type="checkbox"/> University	<input type="checkbox"/> College	<input checked="" type="checkbox"/> Department	<input type="checkbox"/> Track	<input type="checkbox"/> Others
B.	<input type="checkbox"/> Required		<input checked="" type="checkbox"/> Elective		
3. Level/year at which this course is offered: (3rd year/ 6th level) or (4th year/8th level)					
4. Course General Description:					
<p>This course provides an in-depth introduction to 3D modelling and animation, equipping students with the technical and creative skills necessary to design and animate 3D assets. Students will explore the principles of 3D design, texturing, rigging, animation, and rendering, with a focus on creating assets for games, simulations, and other interactive media.</p> <p>Using industry-standard tools such as Autodesk Maya, Blender, and Unreal Engine, students will gain hands-on experience in creating 3D models and animations while aligning their work with Human-Computer Interaction (HCI) principles for usability and engagement.</p>					
5. Pre-requirements for this course (if any):					
None					
6. Co-requisites for this course (if any):					
None					
7. Course Main Objective(s):					
<ol style="list-style-type: none"> 1. Master the principles of 3D modeling, texturing, rigging, animation, and rendering to create high-quality 3D assets. 2. Develop hands-on expertise in tools like Autodesk Maya, Blender, and Unreal Engine for designing and animating 3D models. 3. Design 3D assets tailored for games, simulations, and other interactive applications, focusing on functionality and engagement. 4. Align 3D models and animations with HCI principles to enhance usability, accessibility, and player engagement in digital environments. 					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 		





No	Mode of Instruction	Contact Hours	Percentage
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	30
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		60

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Understand the fundamental principles of 3D modelling and animation, including topology, rigging, and keyframe animation.	K1	Lectures, discussions	Assignments, Exams
2.0	Skills			
2.1	Utilize industry-standard 3D modelling and animation tools (e.g., Autodesk Maya, Blender) to create assets.	S1	Lectures, discussions	Exams, project
2.2	Develop realistic and stylized animations using keyframe and procedural techniques.	S2	Lectures, discussions	Exams, project
2.3	Integrate 3D assets into game engines (e.g., Unreal Engine or Unity) for interactive experiences.	S3	Lectures, discussions	Exams, project
3.0	Values, autonomy, and responsibility			



C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to 3D Modelling and Animation And environment setup	4
2.	Modelling Fundamentals (Topology and edge flow)	4
3.	Subdivision modelling and sculpting	4
4.	Texturing and UV Mapping	4
5.	Basics of rigging: bones, joints, and skinning	4
6.	Lighting and Rendering	4
7.	Procedural Animation Techniques	4
8.	Integration with Game Engines	4
9.	Principles of environmental design for games and simulations	4
10.	Facial animation and lip-syncing	4
11.	Optimization Techniques for 3D Assets	4
12.	Keyframes and interpolation	4
13.	Autodesk Maya hands-on	4
14.	Blender and Unity for 3D assets	4
Total		60

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Assignments	3-14	10
2.	Project	3-14	30
3.	Midterm	7-8	20
4.	Final Exam	16-17	40

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	K. Murdock, 2022, Autodesk Maya 2023 Basics Guide, SDC Publications; 1st edition
Supportive References	
Electronic Materials	
Other Learning Materials	





2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Traditional Classroom
Technology equipment (projector, smart board, software)	Multimedia Projector
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct: Survey at the end of the course
Effectiveness of Students' assessment	Instructor and quality assurance committee	Indirect: Course Report
Quality of learning resources	Instructor and quality assurance committee	Direct: Survey at the end of the course
The extent to which CLOs have been achieved	Instructor and quality assurance committee	Indirect: Course Report
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	SOFTWARE ENGINEERING DEPARTMENT COUNCIL
REFERENCE NO.	THE 17TH MEETING FOR THE ACADEMIC YEAR 1446H
DATE	22/04/2025

