



**COLLEGE OF INFORMATION TECHNOLOGY
DEPARTMENT OF MULTIMEDIA SCIENCE**

COURSE SYLLABUS/ SPECIFICATION

CODE & TITLE: ITMS 445 – **Modeling and Animating Characters in 3D**

WEIGHT: (2 - 2 - 3)

PREREQUISITE: ITMS 426

NQF Level Allocated: Level 8

NQF Notional Hours / Credits: 120 notional hours/ 12 NQF credit

DESCRIPTION: This course introduces students to the basic concepts and terminology of 3D characters modeling and animating as it is used in film, and games. Students will have a better understanding of the different disciplines that collectively make up 3D characters. It will also give students a foundation for 3D characters modeling and animating.

OBJECTIVES:

1. To critically understand the basic concepts and terminology of 3D characters as it is used in film, visual effects, games, and animation.
2. To acquire the foundation of 3D characters modeling and animating.
3. To gain the advanced different techniques of organic modeling, character setup, and texturing in 3D.
4. To acquire the advanced techniques of animation of 3D characters
5. To create advanced animated 3D characters film.

SEMESTER:

ACADEMIC YEAR:

INSTRUCTOR:

OFFICE TEL.:

EMAIL:

Intended Learning Outcomes (ILOs):

A. Knowledge and Understanding		NQF Descriptor/ Level
A1	<u>Concepts and Theories</u> : Demonstrate critical understanding of concepts, and specialized theories relating to 3D characters modeling and animating.	Knowledge: theoretical understanding [Level 8]
A2	<u>Contemporary Trends, Problems and Research</u> : NA	
A3	<u>Professional Responsibility</u> : NA	

B. Subject-Specific Skills		NQF Descriptor/ Level
B1	<u>Problem Solving</u> : Identify real life problems and solve them by designing efficient and effective 3D characters.	Knowledge: Practical Application [Level 8]
B2	<u>Modeling and Design</u> : Design the architecture of 3D characters by choosing appropriate components and models that satisfy user specifications.	Knowledge: Practical Application [Level 8]
B3	<u>Application of Methods and Tools</u> : Apply multimedia software and tools such as 3D, video editing, audio processing, and vector based software that assists in the creation of 3D characters.	Knowledge: Practical Application [Level 8]

C. Thinking Skills		NQF Descriptor/ Level
C1	<u>Analytic</u> : Critically analyze a 3D character in different viewports within 3D software and remodel part/some/all objects found within the 3D Scenes.	Generic Problem Solving & Analytical skills [Level 8]
C2	<u>Synthetic</u> : NA	
C3	<u>Creative</u> : Demonstrate creativity in designing and modeling 3D characters.	Knowledge: Practical Application [Level 8]

D. General and Transferable Skills (Other Skills Relevant to Employability and Personal		NQF Descriptor/ Level
D1	<u>Communication</u> : Show ability to communicate information in appropriate oral and written forms.	Communication, ICT and Numeracy Skills [Level 7]
D2	<u>Teamwork and Leadership</u> : NA	
D3	<u>Organizational and Developmental Skills</u> : Demonstrate ability to organize ideas and effectively allocate time in given assignment.	Competence: Autonomy, Responsibility and Context [Level 7]
D4	<u>Ethical and Social Responsibility</u> : NA	

Course Structure (Outline)						
Week	Hours		ILOs	Topics	Teaching Method	Assessment Method
	Lec.	Lab				
1	4	-	A1	Introduction and review of animation principles	Lecture	-
2	4	-	A1, D1	Intermediate Animation and Timing Techniques	Lecture	Oral Inquiry
3	2	2	A1, B1,B2, B3,C1,C3	Facial Animation Techniques	Lecture/ lab Demonstration	In-Lab Exercise
4	2	2	A1, B1,B2, B3,C1,C3	Fundamental Character Modeling Techniques	Lecture/ Lab Demonstration/ Supervised Work	In-Lab Exercise
5	2	2	A1,B1,B2,B3, C1,C3,D3	Musculature and Detail Modeling Techniques	Lecture/ Lab Demonstration/ Supervised Work	Assignment
6	-	4	A1, B1,B2, B3,C1,C3	Facial Modeling Techniques	Lab Demonstration/ Supervised Work	In-Lab Exercise

7	2	2	A1,B1, B2, B3, C1, C3, D3	Character Model Cleanup and Rigging Preparation	Lecture/ Lab Demonstration/ Supervised Work	Assignment
8	-	4	A1, B1, B2, B3, C1, C3	Character Skeleton Construction	Lab Demonstration/ Supervised Work	In-Lab Exercise
9	2	2	A1,B1, B2, B3, C1, C3	Character Skinning Techniques	Lecture/ Lab Demonstration/ Supervised Work	In-Lab Exercise
10	2	2	A1,B1,B2,C1	Facial Rigging Techniques	Lecture/ Lab Demonstration/ Supervised Work	Major Test
11	2	2	A1,B1,B2,B3, C1,C3,D3	Advanced Character Rigging and controls	Lecture/ Lab Demonstration/ Supervised Work	Assignment
12	2	2	A1,B3, D1	Character Rig Final Phase Testing Methods	Lecture/ Lab Demonstration/ Supervised Work	Oral Inquiry
13	2	2	A1,B1, B2, B3, C1, C3	Preparing to animate	Lecture/ Lab Demonstration/ Supervised Work	In-Lab Exercise
14	2	2	A1,B1, B2, B3, C1, C3	Enhancing character performance with dynamic effects	Lecture/ Lab Demonstration/ Supervised Work	In-Lab Exercise
15	2	2	B1,B2,B3,C1,C3, D1,D3	Students Presentations And Reports Of Research Projects	Lecture/ Presentation Of Projects By Students	Evaluation Of Project Presentations & Reports
16			A1, B1,B2, B3, C1,C3	All Topics		Final Exam

TEACHING MATERIALS:

- TEXTBOOK(S):** 1. Jahirul Amin (2015), Beginner's Guide to Character Creation in Maya, 3D Total Publishing, ISBN: 9781909414204
- HANDOUT(S):** Power point slides, <http://www.ahlia.edu.bh/moodle>.
- REFERENCE(S):** 1. Matahari Bkakti, Eko Mulyanto Yuniarno, Samuel Gandang Gunanto, "Facial Rigging for 3D Character", International Journal of Computer Graphics and Animation (IJCGA) Vol. 4, No. 3, July 2014

ASSESSMENTS

Type of Assessment	Description	ILOs ³	Weighting
Oral Inquiry	Students will be questioned orally to demonstrate their understanding and knowledge of the topics covered during class lectures and lab sessions.	A1, D1	Formative
Assignment	The assignment consists of essay, problem-solving and research based theoretical questions regarding topics in 3D characters. The purpose of the assignment is to assess students individually where they have to demonstrate their extensive and detailed knowledge and critical understanding of key concepts of 3D characters modeling and animating.	A1,B1,B2,B3, C1,C3,D3	10%
Major Test	The test will be an in-class 1-hour exam that will consists of short-answer, essay, and problem solving questions and cover the topics studied in the first 9 weeks.	A1,B1,B2,C1	25%
In-Lab Exercises	Each of the four practical exercises consists of a set of practical tasks to be implemented by students individually in lab as shown in the above weekly structure. Each of the exercises assesses the student's skills in the field of 3D characters. Students work will be observed and evaluated directly during the lab sessions.	B1,B2, B3,C1,C3	10%
Project Report And Presentation	Starting from weak 4, each student will be asked to develop a short animated 3D characters film.	B1,B2,B3,C1,C3,D1,D3	15%

Final Exam	The final exam is comprehensive and practical, and will be of two hours duration. It will consist of short-answer, essay and problem-solving questions to be done on computers.	A1, B1,B2, B3, C1,C3	40%
Overall			100%

13. Admissions	
Pre-requisites	ITMS 426
Minimum number of students	5
Maximum number of students	20