Mansoura University

Faculty of Computers and Information Sciences

Course Specifications of

Mobile Computing – IS333P – 2017/2018

University: Mansoura University **Faculty**: Computer and Information Sciences

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Program on which the course is given: General

Department offering the course: Department of Computer Science

Academic year/ Level: Fourth Year

Date of specification approval:

A- Basic Information

Title : Computer Animation **Code :** IS333P

Credit Hours : 3 **Lecture :** 2 **Tutorial :** --- **Practical :** 2

B- Professional Information

1- Overall Aims of the Course

Upon completing this course, the student should understand the best practices and standards of Computer animation techniques like:

1- Animation basics
2- Vectors and mathematical operations
3- AI in games
4- Genres of Games
5- 2D games
6- 3D games
7- 3D modeling

8- Lowpoly and voxel based modeling
9- Materials and textures
10- Camera controlling
11- Color models
12- Shaders basics
13- Inforgraphics introduction
14- VR and AR introduction

2- Intended Learning Outcomes of the course (ILOs)

By completing this course successfully, the student will be able to:

a- Knowledge and Understanding

The student should acquire the knowledge and understanding of:

a1 - Essential facts, concepts, principles and theories relating to mobile computing and applications.

a14 - Provide a deeper understanding of cellular networks, ad hoc networks, and sensor networks.

a16 - Know the role of human factors in the design of mobile systems.

a17 - Apply tools and techniques for the design and development of mobile applications.

a21 - Understand the challenges inherent in the maintenance and evolution of mobile systems, and the techniques and best practices currently available for dealing with them.

b- Intellectual Skills

The student should be able to:

b1 - Analyze computing problems and provide solutions related to the design and construction of mobile computing systems.

b2 - Realize the concepts, principles, theories and practices behind mobile computing and information as an academic discipline.

b5 - Make ideas, proposals and designs using rational and reasoned arguments for presentation of mobile computing systems.

b6 - Evaluate the results of tests to investigate the functionality of mobile systems.

b17 - Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.

b19 - Create and/or justify designs to satisfy given requirements (synthesis, evaluation, application).

c- Professional and Practical Skills

The student should be able to:

c1 - Operate mobile computing equipment, recognizing its logical and physical properties, capabilities and limitations.

c4 - Apply computing information retrieval skills in computing community environment and industry.

c7 - Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context.

c10 - Evaluate systems in terms of their quality and possible trade-offs, evaluate appropriate hardware and mobile software solutions for given scenarios.

c14 - Operate mobile computing equipment efficiently, taking into account its logical and physical properties.

c16 - Effectively employ information-retrieval skills, (including the use of browsers, search engines, and on-line library catalogues), communicate effectively using a variety of communication methods, and communicate effectively with team members, managers and customers.

c17 - Make effective use of general IT facilities, plan and manage a project to complete within budget and schedule.

d- General and Transferable Skills

The student should be able to:

d5 - Exhibit appropriate numeracy skills in understanding and presenting cases involving a quantitative dimension.

D8- Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning.

3- Contents

week	topic
1	Basic Animation and Visualization Techniques–Part 1
2	GAME PROGRAMMING OVERVIEW + 2D Graphics
3	3D graphics + Visualization (part 2)(3D Modeling, Materials and Textures)
4	LINEAR ALGEBRA FOR GAMES + Physics
5	Cameras + Game Roles
6	Steering behaviors –part 1
7	Steering behaviors –part 2
8	Navigation algorithms and map representations
10	Game AI + Decision Making
11	Selected topics + game techniques (particles, shaders,…)
12	Selected topics + game techniques-2 (AR, VR introduction,…)

4- Assessment Schedule

Assessment Method	No.	Description	Week No.	Weight (%)
Assignment	1	Online quizes	3,4	10
Written Exams	2	Midterm Exam	7	5
Project	3	Project	11	15
Oral Exam	4	Oral questions	11	10
Written Exams	5	Final Exam	14	60
Total				100

5- List of references

5.1 Course Notes

- Lecture handouts delivered to students at the end of each lecture.

5.2 . Text Books

- "3D Animation Essentials", Andy Beane, 2012
- "Game Programming Algorithms and Techniques- A Platform-Agnostic Approach", Sanjay Madhav,2014

Readings:

- "ARTIFICIAL INTELLIGENCE FOR GAMES", Second Edition, IAN MILLINGTON and JOHN FUNGE, 2009
- "Game AI Pro 3- Collected Wisdom of Game AI Professionals", Edited by Steve Rabin, 2017
- "2D Unity" ,Jeff W. Murray, 2015
- "Practical Game Development with Unity® and Blender™", Alan Thorn, 2015
- "Building a Game with Unity and Blender", Lee Zhi Eng, 2015
- "Learn Unity for Android Game Development A Guide to Game Design, Development, and Marketing", Adam Sinicki, 2017

6- Facilities Required for Teaching and Learning

- Data show.

Course Content/ILO Matrix

Course Content	a1	a14	a16	a17	a19	a21	b1	b2	b5	b6	b17	b19	c1	c4	c7	c10	c14	c16	c17	d5	d8
Basic Animation and Visualization Techniques– Part 1	●		●		●	●		●								●					
GAME PROGRAMMING OVERVIEW + 2D Graphics	●	●	●	●	●		●	●							●	●				●	
3D graphics + Visualization (part 2)(3D Modeling, Materials and Textures)	●							●						●	●	●					●
LINEAR ALGEBRA FOR GAMES + Physics	●		●		●	●		●	●		●	●	●		●	●					
Cameras + Game Roles	●		●		●	●		●	●		●	●			●	●					
Steering behaviors –part 1	●	●				●	●	●		●					●	●				●	
Steering behaviors –part 2	●	●				●	●	●	●	●	●	●			●	●				●	
Navigation algorithms and map representations		●	●		●		●		●			●	●	●		●		●			
Game AI + Decision Making	●		●		●	●		●	●		●	●			●	●					
Selected topics + game techniques (particles, shaders,…)	●	●				●	●	●		●					●	●				●	
Selected topics + game techniques-2 (AR, VR introduction, …)			●	●		●		●		●			●	●	●		●		●		

Learning Method/ILO Matrix

Course Content	a1	a14	a16	a17	a19	a21	b1	b2	b5	b6	b17	b19	c1	c4	c7	c10	c14	c16	c17	d5	d8
Lectures	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Practical			●	●				●	●					●	●	●	●	●			●

Assessment Methods/ILO Matrix

Course Content	a1	a14	a16	a17	a19	a21	b1	b2	b5	b6	b17	b19	c1	c4	c7	c10	c14	c16	c17	d5	d8
Assignment			●	●				●	●					●	●	●	●	●			●
Written Exams		●		●	●		●		●	●	●	●	●								
Project		●		●		●	●	●	●					●	●	●	●	●			
Oral Exam				●			●				●					●	●	●	●	●	
Written Exams	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			

Course Coordinator: Waleed Mohamed
Head of Department: Prof.Samir Al-mougy
Date: 15-3-2018