Mansoura University

Faculty of Computers and Information Sciences

Course Specifications of

Mobile Computing – IS333P

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

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	●	●			●	●	●		●		●				●	●				●	

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