

Faculty of Computers and Information Technology

Game Programming

Information :

Course Code : DM436

Level : Undergraduate

Course Hours : 3.00- Hours

Department : Digital Media Technology

Area Of Study :

- "Understand knowledge that enhances skills in game programming.
- "Use and adopt fundamental and advanced mathematics in computing and information
- "Comprehend deeply the basic concepts to develop a software system to be ready for further and continuous learning.
- "Develop and evaluate a computer based system process and components.
- "Compare, evaluate and select a design from a set of alternatives.

Description :

This course focuses on the subject of game programming using a cross-platform game library called Allegro. This library is extremely powerful and versatile. The course is divided into 3 main parts. The first part introduces how to get started writing cross-platform games with Allegro. The second part provides the main functions in the Allegro game library, including functions for loading images, manipulating sprites, double-buffering, and other core features of any game. The third part introduces the different techniques to create scrolling games including vertical and horizontal scrolling

Course outcomes :

a. Knowledge and Understanding: :

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| 1 - | Define principles of game design that make for a playable experience |
| 2 - | Describe the fundamental algorithms, data structures, and optimization for successful game development |
| 3 - | Discuss the basic concept of video game, and develop a design document |
| 4 - | Explain the principles and techniques of identify a complete 2D game, including the game play, character design and animation, multiple levels, the user interface, and game audio |

b. Intellectual Skills: :

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| 1 - | Illustrate transformations to shapes |
| 2 - | Propose a set of alternative solutions to analyze the problem and decompose it to a set of tasks |
| 3 - | Analyze complex computation problems with less computational approaches |
| 4 - | Classify techniques and algorithms to detect relationships between designed shapes from their primitives and the sprite. |

c. Professional and Practical Skills: :

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| 1 - | Design and implement game based applications in 2D. |
| 2 - | Apply effective information to develop game applications |
| 3 - | Deploy effective supporting tools for mastering the Audible realm for the game programming and perform Game analysis |

d.General and Transferable Skills: :

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| 1 - | Work in a team to develop the requirement documentation |
| 2 - | Apply communication skills in presentations and report writing using various methods and tools. |

ABET Course outcomes :

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|-----|---|
| 1 - | Demonstrate adequate understanding of the knowledge that enhances skills in game programming |
| 2 - | Identify and use fundamental and advanced mathematics in computing and information |
| 3 - | Demonstrate adequate understanding of the basic concepts to develop a software system to be ready for further and continuous learning |
| 4 - | Develop a computer-based system process and components |
| 5 - | Compare, evaluate and select a design from a set of alternatives |

Course Topic And Contents :

| Topic | No. of hours | Lecture | Tutorial / Practical |
|---|--------------|---------|----------------------|
| Introduction to the Class, Role of the Game programming | 4 | 2 | 2 |
| Getting Started with the Game libraries | 4 | 2 | 2 |
| I/O and Arithmetic | 4 | 2 | 2 |
| Writing an Allegro Game | 4 | 2 | 2 |
| Getting Input from the Player | 4 | 2 | 2 |
| Mastering the Audible Realm | 4 | 2 | 2 |
| Basic Bitmap Handling and Blitting | 4 | 2 | 2 |
| Sprite Programming | 4 | 2 | 2 |
| Mid Term Exam | 2 | | |
| Sprite Programming-II | 4 | 2 | 2 |
| Advanced Sprite Programming | 4 | 2 | 2 |
| Programming the Perfect Game Loop | 4 | 2 | 2 |
| Project presentation | 4 | 2 | 2 |
| Final Exam | 2 | | |

Teaching And Learning Methodologies :

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| Interactive Lectures including Discussions |
| Practical Lab Sessions |
| Self-Study (Project / Reading Materials / Online Material / Presentations) |
| Case Studies |

Course Assessment :

| Methods of assessment | Relative weight % | Week No | Assess What |
|-----------------------|-------------------|---------|-------------|
| Assignments | 5.00 | 4 | |
| Final Exam | 40.00 | 14 | |
| Midterm Exam (s) | 20.00 | 8 | |

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|-------------------------|-------|----|--|
| Others (Participations) | 5.00 | | |
| Practical Exam | 5.00 | 13 | |
| Presentations | 5.00 | 12 | |
| Quizzes | 10.00 | 5 | |
| Team Work Projects | 10.00 | 12 | |

Course Notes :

An Electronic form of the Course Notes and all the slides of the Lectures is available on the Students Learning Management System (Moodle)

Web Sites :

www.ekb.eg