



**University/Academy:** Arab Academy for Science and Technology & Maritime Transport  
**Faculty/Institute:** College of Computing and Information Technology  
**Program:** Computer Science

**Form No. (12)**  
**Course Specification**

**1- Course Data**

<b>Course Code:</b> CS343	<b>Course Title:</b> Game Programming	<b>Academic Year/Level:</b> Year 4 / Semester 8
<b>Specialization:</b> Computer Science	<b>No. of Instructional Units:</b> 2 hrs lecture 2 hrs lab	<b>Lecture:</b>

<b>2- Course Aim</b>	The aim of this course is to introduce students to the fundamental concepts of computer game programming. Students design and develop original games for PCs applying proven game design and software engineering principles. Introduce the principles of game design that make for a playable experience. Write applications using Allegro game library. The Allegro library provides C/C++ programmers low level routines commonly needed in game programming, such as input, graphics, midi, sound effects, and timing
----------------------	---

**3- Intended Learning Outcome:**

<b>a- Knowledge and Understanding</b>	<b>Students will be able to demonstrate knowledge of:</b> <b>K10.</b> Current developments in computing and information research. <b>K13.</b> Information systems, data and information management, enterprise architecture, IS project management, IT infrastructure, systems analysis and design, and IS strategies. <b>K17.</b> Show a critical understanding of the principles of artificial intelligence, image, and pattern recognition. <b>K19.</b> Select advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and artificial intelligence, and parallel and concurrent computing. <ul style="list-style-type: none"><li>• Describe the main concepts, definitions of game programming(k10)</li><li>• Review theories and concepts used in game design(K13)</li><li>• Identify an understanding of the contribution and impacts of game concepts in scientific, social, economic, environmental, political and cultural terms. (k10)</li><li>• The basic syntax and semantic analysis of different game languages(k17,K19)</li><li>• The basic data types for all game programming languages(k17,K19)</li><li>• The animation, decision and design concepts(k17,K19)</li></ul>
---------------------------------------	---

<b>b- Intellectual Skills</b>	<p><b><u>By the end of the course, the student acquires high skills and an ability to understand:</u></b></p> <p>I10. Define traditional and nontraditional information systems problems, set goals towards solving them, and. observe results</p> <p>I11. Perform comparisons between (methods, techniques...etc).</p> <p>I19. Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.</p> <ul style="list-style-type: none"> <li>• Manipulate and apply appropriate theories, principles and concepts relevant to game programming (I10)</li> <li>• Critically assess and evaluate the literature within the field of game programming (I11)</li> <li>• Deduce and interpret information from a variety of sources relevant to game design (I19)</li> </ul>
<b>c- Professional Skills</b>	<p><b><u>By the end of the course the student will have the ability to:</u></b></p> <p>P14. Perform information acquisition and management, using the scientific literature and Web sources.</p> <p>P15. Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.</p> <p>P19. Deploy effectively the tools used for the construction and documentation of software, with particular emphasis on understanding the whole process involved in using computers to solve practical problems.</p> <ul style="list-style-type: none"> <li>• Plan, programming and execute practical activities using techniques and procedures Appropriate to game Programming <b>(P14,P15,P19)</b></li> <li>• Execute a piece of independent research using <b>game</b>, computer media and techniques. (P14,P15,P19)</li> </ul>
<b>d- General Skills</b>	<p><b>Students will be able to:</b></p> <p>G1. Demonstrate the ability to make use of a range of learning resources andto manage one's own learning.</p> <p>G2. Demonstrate skills in group working, team management, timemanagement and organizational skills.</p> <p>G7. Show the use of general computing facilities.</p> <ul style="list-style-type: none"> <li>• Develop appropriate effective written and oral communication skills relevant to the specific course of game Programming</li> <li>• Demonstrate the ability to work effectively as part of a group</li> <li>• Solve problems relevant to game Programming using ideas and techniques some of which are at the forefront of the discipline.</li> <li>• Solve problems relevant to <b>games</b> using old and new languages some of which are at the forefront of the discipline;</li> </ul>

<b>4- Course Content</b>	<ul style="list-style-type: none"> <li>• Intro, History of games</li> <li>• The Game Development Process</li> <li>• Game AI Architecture</li> <li>• Movement: Basic Movement</li> <li>• Movement: Behaviors, Crowds</li> <li>• Movement: Basic Path Finding</li> <li>• Intelligence: Basic Decision-making</li> <li>• Learning: Learning to Predict</li> <li>• Networking</li> <li>• Game Programming</li> <li>• GPU Game Programming</li> <li>• Sound</li> <li>• Play-testing</li> </ul>
<b>5- Teaching and Learning Methods</b>	Lectures, Labs, Projects, Individual study & self-learning.
<b>6- Teaching and Learning Methods for Students with Special Needs</b>	<ul style="list-style-type: none"> <li>• Students with special needs are requested to contact the college representative for special needs ( currently Dr Hoda Mamdouh in room C504)</li> <li>• Consulting with lecturer during office hours.</li> <li>• Consulting with teaching assistant during office hours.</li> <li>• Private Sessions for redelivering the lecture contents.</li> <li>• For handicapped accessibility, please refer to program specification.</li> </ul>
<b>7- Student Assessment:</b>	
<b>a- Procedures used:</b>	Exams and Individual Projects
<b>b- Schedule:</b>	7 <sup>th</sup> week exam 30% Project 20% Lab 10% Final exam 40%
<b>c- Weighing of Assessment:</b>	<hr/> <b>Week 7 Grades – 30%</b> <b>Week 12 -Grades – 20%</b> Lab 10% <hr/> <b>Week 16 - Final Exam – 40%</b>
<b>8- List of References:</b>	
<b>a- Course Notes</b>	From the Moodle on <a href="http://www.aast.edu">www.aast.edu</a>
<b>b- Required Books (Textbooks)</b>	Jonathan Harbour, <i>Game Programming All in One</i> , 3 <sup>rd</sup> Edition, Thomson Course Technology,2007
<b>c- Recommended Books</b>	<ol style="list-style-type: none"> <li>1. <b>Steve Rabin, Introduction to Game Development, Charles River Media, 2005</b></li> <li>2. <b>Kenneth Finney, 3D Game Programming All in One, 2nd Edition, Thomson Course technology, 2006</b></li> </ol>

<b>d- Periodicals, Web Sites, ..., etc.</b>	

**Course Instructor:**

**Head of Department:**

**Sign**

**Sign**