

**ATTACHMENT 5.**

**Kingdom of Saudi Arabia**  
**The National Commission for Academic Accreditation &**  
**Assessment**

**T6. Course Specifications**  
**(CS)**

## Course Specifications

Institution <a href="#">Umm Al Qura University</a>	Date 14-April-2016
College/Department <a href="#">College of Computers and Information Systems</a>	

### A. Course Identification and General Information

1. Course title and code: <a href="#">14012501-3 Computer Graphics</a>			
2. Credit hours 3			
3. Program(s) in which the course is offered. <a href="#">Computer Science</a> (If general elective available in many programs indicate this rather than list programs)			
4. Name of faculty member responsible for the course <a href="#">Curriculum Committee</a>			
5. Level/year at which this course is offered <a href="#">Level 6</a>			
6. Pre-requisites for this course (if any) <a href="#">404343-3 Linear Algebra</a> <a href="#">14011102-4 Object Oriented Programming</a>			
7. Co-requisites for this course (if any)			
8. Location if not on main campus			
9. Mode of Instruction (mark all that apply)			
a. traditional classroom	<input checked="" type="checkbox"/>	What percentage?	<input type="text" value="100"/>
b. blended (traditional and online)	<input type="checkbox"/>	What percentage?	<input type="text"/>
c. e-learning	<input type="checkbox"/>	What percentage?	<input type="text"/>
d. correspondence	<input type="checkbox"/>	What percentage?	<input type="text"/>
f. other	<input type="checkbox"/>	What percentage?	<input type="text"/>
Comments:			

## B Objectives

<p>1. What is the main purpose for this course? The main purpose of Computer Graphics course is to prepare students for activities involving the design, development, and testing of modeling, rendering, and animation solutions to a broad variety of problems found in entertainment, sciences, and engineering.</p>
<p>2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)</p> <p>In addition to conventional graphics programming we introduced software used in the industry such as Blender, MotionBuilder, etc.</p>

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

<p><b>Course Description:</b> The objective of this course is to provide a broad overview of the basic concepts of computer graphics. Topics include overview of graphics hardware, modeling and rendering techniques, curve and Spline, geometric transformations (translation, scaling, rotation, shearing, etc.), two dimensional and three dimensional viewing, illumination models, color models, and computer animation. The course also includes a computer graphics project to implement the graphics algorithms.</p>
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1. Topics to be Covered		
List of Topics	No. of Weeks	Contact hours
Mathematical Foundations of Computer Graphics	2	4
Graphics APIs and Programming	2	4
Computer Graphics Hardware	1	2
Modeling and Rendering	2	4
Curve and Spline	2	4
Transformations	2	4
Viewing	2	4
Illumination and Color Models	2	4

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	30	0	30			60
Credit	2	1				3

3. Additional private study/learning hours expected for students per week.	3
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#### 4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

On the table below are the five NQF Learning Domains, numbered in the left column.

**First**, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	<b>Knowledge</b>		
1.1	Understand the foundation of the implementation of computer graphics modeling and rendering systems	Teaching using boards, PowerPoint slides, Lab sessions, selected home works, and projects relevant to content of the acquired knowledge	A combination of quizzes, exams, assignments, projects, etc.
1.2	Understand the mathematical background of computer graphics	Teaching using boards, PowerPoint slides, Lab sessions, selected home works, and projects relevant to content of the acquired knowledge	A combination of quizzes, exams, assignments, projects, etc.
1.3	Understand the handling of colors	Teaching using boards, PowerPoint slides, Lab sessions, selected home works, and projects relevant	A combination of quizzes, exams, assignments, projects, etc.

		to content of the acquired knowledge	
1.4	Implementation of a graphics programming project	Teaching using Lab sessions, selected home works, and projects relevant to content of the acquired knowledge	Evaluation of team work in course projects,
<b>2.0</b>	<b>Cognitive Skills</b>		
2.1			
2.2			
<b>3.0</b>	<b>Interpersonal Skills &amp; Responsibility</b>		
3.1			
3.2			
<b>4.0</b>	<b>Communication, Information Technology, Numerical</b>		
4.1	Implementation of a graphics programming project	lectures, labs, Q &A, online resources	Quizzes, Assignments, Project, Midterm Exam, Final Exam
4.2			
<b>5.0</b>	<b>Psychomotor</b>		
5.1	Implementation of a graphics programming project	lectures, labs, Q &A, online resources	Quizzes, Assignments, Project, Midterm Exam, Final Exam
5.2			

5. Map course LOs with the program LOs. (Place course LO #s in the left column and program LO #s across the top.)

Course LOs #	Program Learning Outcomes (Use Program LO Code #s provided in the Program Specifications)										
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
1.1	P		I						I		
1.2	P									P	
1.3	P		I						I		
1.4	I		I	P					I	I	
4.1	P		I						I		
5.1	P		I						I		

6. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (e.g. essay, test, group project, examination,	Week Due	Proportion of Total
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	speech, oral presentation, etc.)		Assessment
1	Attendance & class participation	1-15	5%
2	Quiz 1	3	10%
3	Quiz 2	5	10%
4	Quiz 3	9	10%
5	Midterm	7	20%
6	Group Project	8	10%
7	Final exam	16	35%
8			

#### D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

Faculty member has at least 6 hours per week. In addition to that appointment by email is also available.

#### E Learning Resources

##### 1. List Required Textbooks

Fundamentals of Computer Graphics by Peter Shirley and Michael Ashikhmin (latest edition)  
Computer Graphics with OpenGL by Donald Hearn, M. Pauline Baker, and Warren (latest edition)

##### 2. List Essential References Materials (Journals, Reports, etc.)

3D Computer Graphics by Alan Watt (latest edition)

##### 3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

Computer Graphics: Principles and Practice by John F. Hughes, Andries van Dam, Morgan McGuire, David F. Sklar, James D. Foley, Steven K. Feiner, Kurt Akeley
4. List Electronic Materials, Web Sites, Facebook, Twitter, etc. <a href="http://linkedin.siggraph.org/">http://linkedin.siggraph.org/</a> <a href="https://twitter.com/siggraph">https://twitter.com/siggraph</a>
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.  OpenGL API Java 2D and 3D API Blender Software

#### F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Lecture room (max 30 students) Computer lab (max 15 students)
2. Computing resources (AV, data show, Smart Board, software, etc.)  C++ and Java Development Environments APIs and IDEs
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)  No

#### G Course Evaluation and Improvement Processes

<p>1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching</p> <p>Student Survey</p>
<p>2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department</p> <p>University Course and Instructor Survey</p>
<p>3 Processes for Improvement of Teaching</p> <p>Review of curriculum and course. Coordination of instructors to improve the teaching quality.</p>
<p>4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)</p> <p>Course file review</p>
<p>5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.</p> <p>There are curriculum committee and course committee to review the course effectiveness.</p>

Name of Instructor: [Murtaza Ali Khan](#)

Signature: [Murtaza Ali Khan](#) Date Report Completed: [14-April-2016](#)

Name of Course Instructor [Murtaza Ali Khan](#)



Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_