	Ministry of Higher Education and Scientific Research - Iraq Al-Nahrain University College of Science Computer Science	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	COMPUTER GRAPHICS			**Module Delivery**	
Module Type	CORE			☒**Theory** ☒**Lecture** ☒**Lab** ☒**Tutorial** ☐**Practical** ☒**Seminar**	
Module Code	COMP2212				
ECTS Credits	5				
SWL (hr/sem)	**64**				
Module Level	2		**Semester of Delivery**	2	
Administering Department	Computer science		**College**	Science	
Module Leader	Khamael Al-Dulaimi		**e-mail**	khamail.abbass@nahrainuniv.edu.iq	
Module Leader's Acad. Title	Assi. Prof		**Module Leader's Qualification**	Dr.	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Review Committee Approval			**Version Number**	1.0	
Laboratory Techers	أ.م.د.خمائل عباس + م. زينب حيدر+م.م ابتهال عباس				

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	

Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. This unit delivers an understanding the concepts of computer graphics which is the creation of pictures with the help of a computer. The end product of the computer graphics is a picture it may be a business graph, drawing, and engineering. 2. We focus on specific areas of study include the definition of computer graphics; applications of computer graphics; scan conversion a line; scan conversion circle; scan converting Ellipse; Filled Area Primitives; 2D Transformations; and Clipping Techniques 3. Examples and exercises demonstrate the use JAVA and functionality.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Develop and demonstrate a basic knowledge and understanding of computer graphics 2. Understand and apply various methods of generating, storing, transmitting and manipulating digital images. 3. Apply some open applications that related to the market
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	1. Teamwork: Dividing the class into groups to complete a task is a teaching strategy that does wonders. 2. Inquiry-Based Teaching: Encouraging learners to ask a lot of questions is an effective teaching strategy that does not only motivate students to think more practically but also helps them to become independent learners. 3. Implementing Technology in the Classroom: The productive use of technological tools as active learning strategies in educational institutions may develop a vibrant learning community, help educators prepare and improve their lesson plans.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.26
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.06
Total SWL (h/sem)	125		

الحمل الدراسي الكلي للطالب خلال الفصل	

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10%	5, 10	
	Assignments	2	5%	2, 11	
	Projects / Lab.	2	15%		
	Report	2	5%	14	
Summative assessment	Midterm Exam	2 hr	10%	7	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	What is computer Graphics?, Area of Computer Graphics, Design and Drawing, Packages applications, Simulation,
Week 2	Application of Computer Graphics, How are pictures actually stored and displayed, Difficulties for displaying pictures.
Week 3	Point Plotting Techniques, Qualities of good line drawing algorithms
Week 4	Bresenham's Algorithm Digital Differential Analyzer (DDA)
Week 5	Generation of Circle, Draw a circle using Polynomial Method, and Bresenham's Algorithm
Week 6	What is transformation?, Matrix representation of points, Basic transformation, Rotation, reflection, scaling and Translation.
Week 7	Mid Exam
Week 8	Define Clipping and Windowing, Line Clipping Algorithms, the midpoint subdivision Method, Other Clipping Methods, and Viewing Transformations .
Week 9	What is 2D animation, Animation visual changes, Application Areas of Animation, and Animation functions.
Week 10	Graphical Input Techniques, Positioning Techniques, Positional Constraints, Rubber band Techniques
Week 11	Need for 3-Dimensional Imaging, Techniques for 3-Dimesional displaying, Parallel

	Projections, Perspective projection, Intensity cues, three Dimensional transformation, Translations, Scaling, Rotation, Viewing Transformation.
Week 12	hidden surface removal, The Depth - Buffer Algorithm, , Scan Line coherence algorithm,
Week 13	Span - Coherence algorithm, Area-Coherence Algorithms
Week 14	Warnock's Algorithm, and Priority Algorithms
Week 15	Mid Exam-2
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Preparing Java for Graphics
Week 2	Lab 2: Point Plotting Techniques, Qualities of good line drawing algorithms,
Week 3	Lab 3: Draw Lines
Week 4	Lab 4: Draw circles
Week 5	Lab 5: Transformation
Week 6	Lab 6: Clipping
Week 7	Lab 7: Mid Exam
Week 8	Lab 8: Animation
Week 9	Lab 9: Project
Week 10	Lab 10: Positioning Techniques, Positional Constraint
Week 11	Lab 11: Techniques for 3-Dimesional displaying, Parallel Projections, Perspective projection, Intensity cues
Week 12	Lab 12: implementation of Scan Line coherence algorithm
Week 13	Project as group
Week14	Mid 2 exam
Week 15	Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Computer Graphics for Java Programmers by Leen Ammeraal, Kang Zhang Springer International Publishing AG 2017 Interactive computer graphics: a top-down approach using OpenGL by Angel, Edward 2008, 5th Int. ed.	
Recommended Texts		
Websites	Tutorial https://www.javatpoint.com/computer-graphics-tutorial	

APPENDIX:

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note:

NB Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.



ملاحظة: هذا النموذج تم وضعه وتقديمه من قبل مديرية ضمان الجودة في وزارة التعليم العالي والبحث العلمي