# MODULE DESCRIPTION FORM

# نموذج وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | **Computer Graphics** | | | **Module Delivery** | |
| **Module Type** | **Core** | | | ☒**Theory**<br>☒**Lecture**<br>☒**Lab**<br>☐**Tutorial**<br>☐**Practical**<br>☐**Seminar** | |
| **Module Code** | **COM-222** | | | | |
| **ECTS Credits** | **4** | | | | |
| **SWL (hr/sem)** | **100** | | | | |
| **Module Level** | 2 | | **Semester of Delivery** | 4 | |
| **Administering Department** | Type Dept. Code | | **College** | Type College Code | |
| **Module Leader** | Juliet Kadum Dawood | | **e-mail** | julietkadum@uodiyala.edu.iq | |
| **Module Leader's Acad. Title** | Lecturer | | **Module Leader's Qualification** | M.sc. | |
| **Module Tutor** | | | **e-mail** | E-mail | |
| **Peer Reviewer Name** | Name | | **e-mail** | E-mail | |
| **Scientific Committee Approval Date** | 07/08/2024 | | **Version Number** | 1.0 | |

| Relation with other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
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| **Prerequisite module** | None | **Semester** | |
| **Co-requisites module** | None | **Semester** | |

| Module Aims, Learning Outcomes and Indicative Contents<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية | |
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| **Module Objectives**<br>أهداف المادة الدراسية | 1- The main objective of this module is to introduce to the students the concepts of computer graphics.<br>2- Defining the important steps in designing geometric shapes<br>3- Studying the methods of mathematical representation of geometric shapes and geometric transformations.<br>4-Preparing qualified graduates to work in the field of computerized applications by representing data in the form of computer graphics.<br>5- Introducing the student to the field of computer graphics and processing visual and engineering information using computer technologies.<br>6- focuses on the mathematical and computational foundations of image generation and processing. |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks.<br><br>1- Identify the basic elements of graphics and their applications.<br>2- understand of the structure of an interactive computer graphics system.<br>3- List the various terms associated with graphics mode .<br>4- studying all the various of algorithms associated with Drawing lines.<br>5- studying all the various of algorithms associated with Drawing circle.<br>6- Have a knowledge and understanding of geometrical transformations and 2D viewing.<br>7- Have a knowledge and understanding of techniques for representing 2D geometrical objects.<br>8- Have a knowledge and understanding of geometrical transformations and 3D viewing.<br>9- Have a knowledge and understanding of techniques for representing 3D geometrical objects.<br>10- Have a knowledge and understanding of interaction techniques.<br>11- Explain all( functions) related with drawing (pixel,line,circle..).<br>12- Be able to create interactive graphics applications.<br>13- Perform simple 2D graphics with lines, curves and can implement algorithms to rasterizing simple shapes, fill and clip polygons.<br>14- studying all the various of algorithms associated with clipping.<br>15- Explain the windowing and viewing.<br>16- Identify the applications of windowing and viewing. |
| **Indicative Contents**<br>المحتويات الإرشادية | This course introduces computer Graphics . This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major .<br>Home Works and Assignments Attendance is mandatory. Every class is important. All deadlines are hard. Under normal circumstances late work will not be accepted. Students are required to take all the tests. No make-up tests will be given under normal circumstances. Any form of cheating on exams/assignments/quizzes is subject to serious penalty Attendance 75% attendance is mandatory. Latecomers will be marked as absent. Evaluation Criteria Assignments/projects 20% Quizzes 10% Mid-Term 20% Final 50% |

| Learning and Teaching Strategies<br>استراتيجيات التعلم والتعليم | |
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| **Strategies** | The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some that are interesting to the students. |

| Student Workload (SWL)<br>الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 63 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 37 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 1.8 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | **100** | | |

| Module Evaluation<br>تقييم المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| | | **Time/Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5 and 10 | LO #1, #2 and #10, #11 |
| | **Assignments** | 2 | 10% (10) | 2 and 12 | LO #3, #4 and #6, #7 |
| | **Projects / Lab.** | 1 | 10% (10) | Continuous | All |
| | **Report** | 1 | 10% (10) | 13 | LO #5, #8 and #10 |
| **Summative assessment** | **Midterm Exam** | 2hr | 10% (10) | 7 | LO #1 - #7 |
| | **Final Exam** | 3hr | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
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| | **Material Covered** |

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| **Week 1** | Introduction - Computer graphics |
| **Week 2** | Basics of (Elementary Figures Plotting Points) |
| **Week 3** | Line Drawing Horizontal and Vertical Lines,DDA algorithm |
| **Week 4** | Arbitrary Lines, Bresenham's Line Algorithm |
| **Week 5** | Functions to draw line, some drawing related with line |
| **Week 6** | Circle Drawing(Functions to draw circle, some drawing related with circle) |
| **Week 7** | **Mid-term Exam** |
| **Week 8** | Bresenham's Circle Algorithm |
| **Week 9** | Introduction- Geometric Transformations(Translate,Rotate,Reflection,scaling) |
| **Week 10** | Two-Dimensional Transformations |
| **Week 11** | Clipping and Windowing |
| **Week 12** | Windowing and viewing |
| **Week 13** | Introduction -Three-Dimensional (3-D) |
| **Week 14** | (3-D) Three Dimensional Transformations(Translate,Rotate,Reflection,scaling) |
| **Week 15** | Projections, Parallel Orthographic Projection |
| **Week 16** | **Preparatory week before the final Exam** |

| **Delivery Plan (Weekly Lab. Syllabus)**<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | **Material Covered** |
| **Week 1** | Lab 1: Introduction to c++ |
| **Week 2** | Lab 2: application to algorithm (Line) |
| **Week 3** | Lab 3: application to algorithm (circle) |
| **Week 4** | Lab 4: application to algorithm (Two-Dimensional (2-D) ) |
| **Week 5** | Lab 5: application to algorithm (Three-Dimensional (3-D) ) |
| **Week 6** | Lab 6: application to algorithm (clipping and windowing and viewing) |
| **Week 7** | Lab 7: application to algorithm (Projections) |

| **Learning and Teaching Resources**<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | 1- "Principles of Interactive Computer Graphics", William M. Newman and Robert F. Sproull, McGraw-Hill International Book Company, 1984.<br>2- "Computer Graphics with Pascal", Marc Berger, the | Yes |

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|---|---|---|
| | Benjamin / Cummings Publishing Company, 1986.<br>3- "Computer Graphics",Zhigang Xiang and Roy A. Plastock, Schaum's outline Series, McGraw-Hill Company, 1992.<br>4- "Computer Graphics C Version", Donald Hearn and M. Pauline Baker, Prentice-Hall Company, 1997. | |
| **Recommended Texts** | 1-"FUNDAMENTALS OF COMPUTER GRAPHICS USING MATLAB LANGUAGE", Amaal Kadum Dawood&Juleet Kadim Daood&Jinan Redha Mutar,2022 | Yes |
| **Websites** | http://www.edm2.com/0507/introcpp1.html | |

**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 | راسب (قيد المعالجة) | (45-49) | More work required but credit awarded |
| | **F –** Fail | راسب | (0-44) | Considerable amount of work required |
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**Note:** Marks 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.