نموذج وصف البرنامج الأكاديمي





اسم الجامعة: جامعة كلكامش

الكلية/ المعهد: كلية الهندسة

القسم العلمي: هندسة الاتمتة والذكاء الاصطناعي

اسم البرنامج الأكاديمي او المهني: بكالوريوس

اسم الشهادة النهائية: بكالوريوس في هندسة الاتمتة والذكاء الاصطناعي

النظام الدراسي: بولونيا

تاريخ اعداد الوصف:

التوقيع :

اسم رئيس القسم:

التاريخ :

التوقيع :

اسم المعاون العلمي:

التاريخ :



دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي:

التاريخ

التوقيع

مصادقة السيد العميد

أ.م.د. [illegible]

1. رؤية البرنامج

تتمثل الرؤية المستقبلية لقسم هندسة الأتمتة والذكاء الاصطناعي في الوصول إلى مستويات عالية من الإبداع والريادة محليًا وإقليميًا، وتأهيل الطلاب لتلبية متطلبات سوق العمل، والتفوق في مجالات التعليم والبحث العلمي وخدمة المجتمع في ميادين الذكاء الاصطناعي. كما يسعى القسم إلى توفير بيئة تعليمية ملهمة وداعمة تواكب التطورات المستمرة في هذا التخصص الهندسي المهم. ويعمل هذا المجال على فهم وتصميم وتطوير البرامج والأنظمة الذكية، إلى جانب اكتساب الخبرة في تمثيل المعرفة واستنتاج الحقائق من خلال دمج تطبيقات الأنظمة الآلية. بالإضافة إلى ذلك، يقدم القسم برامج دراسية حديثة تخلق بيئة أكاديمية مشابهة للأقسام العلمية في الجامعات الدولية المرموقة.

2. رسالة البرنامج

١. إعداد مهندسين متميزين في مجالات هندسة الأتمتة والذكاء الاصطناعي بمستوى علمي عالٍ، وفقًا لمعايير الجودة والاعتماد الأكاديمي، ومؤهلين علميًا ومهنيًا للتنافس في سوق العمل.
٢. تأهيل مهندسين قادرين على خدمة المجتمع بفعالية والمساهمة في التطور التقني والتكنولوجي بما يحقق الاعتماد الدولي.
٣. تحفيز الطلاب على ربط الجوانب النظرية بالتطبيقية، لتلبية احتياجات ومتطلبات سوق العمل في القطاعين الحكومي والخاص، ودعم المؤسسات ذات الصلة.

3. اهداف البرنامج

١. تزويد الطلاب بمهارات التحليل المنطقي والتفكير العلمي في مجالات الأتمتة والذكاء الاصطناعي لتعزيز فرصهم التنافسية في سوق العمل.
٢. تطوير ودعم القدرات البحثية وتشجيعها في مجال الأتمتة والذكاء الاصطناعي.
٣. إعداد مهندسين يمتلكون كفاءات علمية ومهنية للعمل في المؤسسات الحكومية والقطاع الخاص، قادرين على تصميم وتنفيذ أنظمة التحكم باستخدام تطبيقات الذكاء الاصطناعي.
٤. تقديم برنامج دراسي متكامل ومتميز يواكب التطورات العلمية من خلال تحديث المناهج بشكل مستمر وفق معايير الجودة الأكاديمية الدولية.
٥. إعداد مهندسين قادرين على القيادة وتحمل المسؤوليات في مواقع العمل المختلفة.
٦. تعزيز مهارات التواصل والعمل الجماعي لدى الطلاب.
٧. تشجيع وتحفيز أعضاء الهيئة التدريسية والطلاب على البحث العلمي المتقدم لخدمة المجتمع.
٨. تطوير معرفة الطلاب ومتابعتهم لأحدث التقنيات والابتكارات التي تهدف إلى دمج التكنولوجيا الذكية في مختلف المجالات لتحسين الكفاءة وتقديم حلول فعالة للتحديات الحالية والمستقبلية

4. الاعتماد البرامجي
لا يوجد

5. المؤثرات الخارجية الأخرى
وزارة التعليم العالي والبحث العلمي

6. هيكلية البرنامج

هيكل البرنامج	عدد المقررات	وحدة دراسية	النسبة المئوية	ملاحظات *
متطلبات المؤسسة	8	16	%6.7	مقرر اساسي
متطلبات الكلية	10	55	%22.9	مقرر ساند
متطلبات القسم	32	169	%70.4	مقرر رئيسي واختياري
التدريب الصيفي	يوجد			
أخرى				

* ممكن ان تتضمن الملاحظات فيما اذا كان المقرر أساسي او اختياري .

7. وصف البرنامج

السنة / المستوى	رمز المقرر أو المساق	اسم المقرر أو المساق	الساعات المعتمدة	
			نظري	عملي
2025- 2026 المستوى الاول	GU131	الديمقراطية وحقوق الانسان	2	
	GU133	1اللغة الانكليزية	2	
	AIE11301	برمجة الحاسوب	2	2
	AIE11302	1التفاضل والتكامل	4	
	AIE11303	التصميم المنطقي	2	3
	AIE11304	الاحياء	3	
	AIE11305	الرسم الهندسي	2	3
2025- 2026 المستوى الأول الفصل الثاني	GU132	اللغة العربية	2	
	AIE12301	2التفاضل والتكامل	4	
	AIE12304	اساسيات الحاسوب	2	3
	AIE12303	تحليل الدوائر الكهربائية	2	3
	AIE12302	الفيزياء	3	
	AIE12305	مبادئ الذكاء الاصطناعي	2	2

8. مخرجات التعلم المتوقعة للبرنامج	
المعرفة	
أ1	القدرة على التمييز بين المشكلات الهندسية، وتحديدها، وتعريفها، وصياغتها، وحلها من خلال تطبيق مبادئ الهندسة والعلوم والرياضيات.
أ2	القدرة على إنتاج تصاميم هندسية تلبي الاحتياجات المطلوبة ضمن قيود معينة من خلال تطبيق التحليل والتركيب في عملية التصميم.
أ3	القدرة على إنشاء وتنفيذ قياسات واختبارات مناسبة مع ضمان الجودة، وتحليل النتائج وتفسيرها، واستخدام الحكمة الهندسية لاستخلاص الاستنتاجات.
أ4	القدرة على إدراك الحاجة المستمرة لنمو المعرفة المهنية، وكيفية إيجادها وتقييمها وتجميعها وتطبيقها بشكل صحيح.
المهارات	
ب1	القدرة على التواصل بمهارة شفهيًا مع مجموعة من الأشخاص، وكتابيًا مع مختلف المستويات الإدارية.
ب2	القدرة على العمل بكفاءة ضمن فرق، ووضع الأهداف، وتخطيط الأنشطة، والالتزام بالمواعيد النهائية، وإدارة المخاطر وعدم اليقين.
القيم	
ج1	القدرة على إدراك المسؤوليات الأخلاقية والمهنية في القضايا الهندسية، وإصدار أحكام حكيمة مع مراعاة العواقب المترتبة على الاعتبارات المالية والبيئية والمجتمعية العالمية.

9. استراتيجيات التعليم والتعلم

• تقديم محاضرات (وجهاً لوجه)، ودروس تعليمية، ودروس عملية مختبرية، وتمارين حل المشكلات، ومشاريع عمل. وقد أُضيفت مؤخرًا إمكانية إلقاء المحاضرات عبر الإنترنت بالصوت والصورة من خلال مودل وبرامج أخرى.

• تُدرّس المهارات والأدوات الرياضية والعلمية وتكنولوجيا المعلومات المناسبة في المحاضرات والمختبرات. يتطلب مشروع السنة النهائية عروضًا تقديمية كتابية وشفوية.

• تُقدّم الرياضيات ولغات البرمجة وأدوات محاكاة الأنظمة في المحاضرات، ويُقيّم استخدامها من خلال الامتحانات والواجبات. تُحدّد واجبات البرمجة، ويمكن للطلاب كتابة برامج لحل مشاريع أخرى. وتُستخدم التدريبات العملية المختبرية والمشاريع.

• تُقدّم المحاضرات، ولكن معظمها من خلال جلسات المختبر والواجبات. يتمّ اختبار إدارة الوقت واستخدام مصادر المعلومات، مثل المكتبة وأساليب تكنولوجيا المعلومات، من خلال المشاريع والواجبات.

10. طرائق التقييم

- **تُختبر معظم المعارف من خلال مزيج من الأنشطة الصفية والمختبرية، والواجبات والتقارير، واختبارات منتصف الفصل الدراسي، والامتحان النهائي الرسمي. طريقة التقييم الشاملة هي مزيج من درجة العمل الدراسي وامتحان الامتحان النهائي.**
- **في الجزء العملي من العمل الدراسي، والاختبارات المعملية، والواجبات، والتقارير، ومشروع التخرج.**
- **بشكل مباشر من خلال التقييم الخاص بالمادة، وبشكل غير مباشر من خلال مراقبة الأدوات واستخدامها الفعال لتحسين الأداء العام للطلاب.**

الهيئة التدريسية							
أعضاء هيئة التدريس							
الرتبة العلمية	**التخصص**		**المتطلبات/المهارات الخاصة (ان وجدت)**		**اعداد الهيئة التدريسية**		
	عام	**خاص**			**ملاك**	**محاضر**	
م.م حسن محمد خليل	هندسة الكهروميكانيك	الملاحة والتوجيه			√		
م.د. ضمياء حسام محمد	هندسة الكهرباء والالكترونيك	الذكاء الاصطناعي				√	
م.م جعفر علي جعفر	هندسة الاتصالات	هندسة نظم الاتصالات الضوئية				√	
م.م حنين جمهور صبار	هندسة معلومات	هندسة شبكات				√	
م.م حوراء احمد جاسم عريبي	هندسة المعلومات	هندسة المعلومات والاتصالات			√		
م.م عائد محمد امير	هندسة الاتصالات	هندسة الاتصالات اللاسلكية			√		
م.م احمد عماد سليم	هندسة الالكترونيك والاتصالات	تطبيقات الليزر			√		
م.م براق كريم شبلي	هندسة حاسبات وبرامجيات	برمجيات-أمن سي براني				√	
م.م حكمت معد عبدالمجيد	هندسة الاتصالات	الاتصالات الضوئية				√	

التطوير المهني
توجيه أعضاء هيئة التدريس الجدد
التطوير المهني لأعضاء هيئة التدريس
يعد التطوير المهني لأعضاء هيئة التدريس عاملًا مهماً لضمان جودة التعليم، مواكبة التطورات التكنولوجية، وتعزيز البحث العلمي. ادناه بعض الخطط لتطوير هيئة التدريس الجدد: تشجيع أعضاء هيئة التدريس على الحصول على الشهادات الدولية المعتمدة مثل (شهادة AI Engineer من شركة مايكروسوفت.

12. معيار القبول
● المعدل: لا يقل عن ٦١% (لخريجي الدراسة الاعدادية–علمي,تطبيقي,احيائي) ● أما بالنسبة إلى الدراسة المسائية فيكون القبول عن طريق التقديم المباشر: ● المعدل: لا يقل عن ٦٠% (لخريجي الدراسة الاعدادية–علمي,تطبيقي,احيائي) ● العمر: غير محدد

13. أهم مصادر المعلومات عن البرنامج
١. مواقع الجامعات الالكترونية المحلية والدولية ٢. ورش العمل المنظمة من قبل وزراه التعليم العالي ومعايير الجودة الخاصة بها ٣. دليل المجلس العراقي لاعتماد التعليم الهندسي 4. IEEE Computer Engineering Body of Knowledge

14. خطة تطوير البرنامج

1. اجراء المراجعة الدورية لمناهج القسم ومقارنتها بالبرامج الاكاديمية للكليات الرائدة عالميًا.
2. اجراء استطلاعات لسوق العمل المحلي والعالمي وتحليها لغرض تطوير المناهج فيما يصب في مجالات الأتمتة والذكاء الاصطناعي.
3. تقييم وضع المختبرات والأجهزة المستخدمة بشكل دوري .
4. التعاون مع المؤسسات والشركات للقطاع العام والخاص لتقديم حالات دراسية واقعية.
5. عقد شراكات استراتيجية مع الصناعة والشركات التقنية وسوق العمل لتوفير فرص تدريب للطلبة ، عمل مشاريع مشتركة، إقامة ورش عمل سنوياً.
6. اعتماد نظام تقييم مستمر مباشر وغير مباشر لقياس مخرجات التعلم وتحسينها.
7. الحث على المشاركة في المبادرات الحكومية لدعم التحول الرقمي.
8. تطبيق معايير الجودة في الإدارة، البرنامج الدراسي، المختبرات للحصول على الاعتماد الاكاديمي.

مخطط مهارات البرنامج																		
			مخرجات التعلم المطلوبة من البرنامج															
السنة / المستوى	رمز المقرر	اسم المقرر	اساسي أم اختياري	المعرفة					المهارات				القيم					
				أ1	أ2	أ3	أ4	ب1	ب2	ب3	ب4	ج1	ج2	ج3	ج4
2025-2026 المستوى الأول	GU131	الديمقراطية وحقوق الانسان	اساسي				•	•	•	•				•	
	AIE11301	برمجة الحاسوب	رئيسي	•		•							•	•	•
	GU133	اللغةالانكليزية 1	اساسي			•	•	•	•	•				•	
	AIE11302	التفاضل والتكامل 1	ساندة	•			•	•	•	•				•	
	AIE11304	الاحياء	ساندة	•	•					•		•	•		•
	AIE11303	التصميم المنطقي	ساندة	•	•	•				•		•	•		•
	AIE11305	الرسم الهندسي	رئيسي		•					•					
2025-2026 المستوى الأول الفصل الثاني	GU132	اللغة العربية1	اساسي							•					•
	AIE12301	التفاضل والتكامل 2	ساندة	•		•	•	•	•	•		•	•	•	•
	AIE12302	الفيزياء	ساندة	•		•	•	•	•	•		•	•	•	•
	AIE12303	تحليل الدوائر الكهربائية	ساندة	•			•	•	•	•		•	•	•	
	AIE12304	اساسيات الحاسوب	رئيسي	•	•	•				•		•	•		
	AIE12305	مبادئ الذكاء الاصطناعي	رئيسي	•				•	•						

يرجى وضع اشارة في المربعات المقابلة لمخرجات التعلم الفردية من البرنامج الخاضعة للتقييم

نماذج وصف المقررات
لقسم هندسة الاتمتة والذكاء الاصطناعي
٢٠٢٥-٢٠٢٦

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	***Computer programming***			**Module Delivery**	
Module Type				☒**Theory** ☐**Lecture** ☒**Lab** ☐**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	AIE11301				
ECTS Credits	٦				
SWL (hr/sem)	١٥٠				
Module Level		UGI	**Semester of Delivery**		1
Administering Department		Automation and Artificial Intelligence Engineering	**College**	College of engineering	
Module Leader	Asst.lect Haneen Gumhoor		**e-mail**	haneen.g.sabbar@gu.edu.iq	
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date		01/١٠/202٥	**Version Number**	1.0	

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 Objectives أهداف المادة الدراسية	The main objectives of this course are to introduce the student the basic programming techniques by learning the C++ programming language. Then, start with the skills of writing the program and designing and implementing algorithms to solve the problem. The course gives an introduction to programming in C++ and includes topics such as: • Overview of Computers and Programming. • Introduction to Problems and Algorithms. • Problem-Solving Methodology. • Flowcharts, Decomposition outline, and Pseudo-code. • C++ Programming Basics (data types, operators and expressions, keywords and identifiers, variables and assignment, basic input/output routines). • Operators and Operations (Arithmetic Operators, Relational Operators, Logical Operators, Operators Precedence in C++, Bitwise Operators, Assignment Operators, and Casting Operators) • Math Operations in C++. • Input and Output statements. • Iteration (Loop) Statements. • Control Structures (sequence, selection [if, if\else, switch], iteration [for, while, do/while]), break and continue statements. • Arrays One dimension (1D), two dimensions (2D). • Learn how to create simple functions with different types.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this course, the students will be able to do the following: 1. State the basic parts of any computer system and explain them. 2. Demonstrate the differences between various parts of the computer system (like RAMs and ROMs, Input / outputs, buses) and others. 3. Identify variables and constants and apply them in statements in the program. 4. Work with input output functions to inquire data from keyboard and display them on the monitor. 5. Deal with various mathematical and logical operations inside the program. 6. Construct flowcharts for solving different problems and presenting solutions. 7. Include many libraries in the programs that require extra functionalities. 8. be able to use conditional statements like (if, case,...) in the program and how to use them in various conditions. 9. Implement repetitive structures like (for) and how to utilize it inside the program. 10. Use the (while, do while) structures as an alternative for (for). 11. Write the syntax for identifying array and how to identify them in a program. 12. Understand the principle of indexing and how to manipulate indices throughout the program. 13. Write custom functions in the program and how to identify and use a new function by the user. 14. Provide learners with an understanding of how to read, write, and process array elements and functions in C++ and create new functions with return values and calls.

Indicative Contents المحتويات الإرشادية	1. Introduction to Programming: Basics of programming languages, program structure, variables, data types, operators, control structures (conditionals, loops), functions, and basic input/output. 2. Object-Oriented Programming (OOP): Concepts of objects, classes, inheritance, polymorphism, encapsulation, and abstraction. Implementation of OOP principles using a specific programming language. 3. Software Development Life Cycle (SDLC): Overview of the different phases of software development, including requirements gathering, analysis, design, implementation, testing, deployment, and maintenance. Introduction to methodologies such as waterfall, agile, and iterative development. 4. Algorithms and Data Structures: Introduction to fundamental algorithms and data structures, such as arrays, linked lists, stacks, queues, trees, graphs, sorting, searching, and complexity analysis. Design and implementation of algorithms and data structures. 5. Software Testing: Principles and techniques of software testing, including unit testing, integration testing, system testing, and acceptance testing. Test case design, test-driven development (TDD), and debugging strategies. 6. Version Control Systems: Introduction to version control concepts and tools such as Git. Working with repositories, branching, merging, and resolving conflicts. Collaborative development practices. 7. Software Design Principles: Principles and patterns for software design, including SOLID (Single Responsibility, Open-Closed, Liskov Substitution, Interface Segregation, Dependency Inversion), design patterns (e.g., Factory, Singleton, Observer), and architectural patterns (e.g., MVC, MVP, MVVM). 8. Software Documentation and Code Organization: Writing clear and effective code documentation. Best practices for code organization, naming conventions, and code modularity. 9. Debugging and Error Handling: Techniques for identifying and resolving software bugs. Strategies for error handling and exception management. 10. Software Development Tools: Introduction to integrated development environments (IDEs), code editors, and other tools used in the software development process.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	In this course, attendance is one of the mandatory tasks for students, since the key idea behind each topic the subject would be given during the lab. Also, assignments play an important role in keeping track of comprehending all the skills and problem-solving methods for topics. Exams are the true criterion for measuring the depth of students' understanding to the given material.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	
	Assignments	2	10% (10)	2 and 12	
	Report	1	10% (10)	13	
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	
	Final Exam	3hr	60% (50)	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Computers and their uses/ Hardware/Software, Programming languages/How to use/ run programs.
Week 2	Using computers in problem solving/ requirement specifications/ analysis.
Week 3	Design and representation of algorithms/ implementation / testing and verification/ program documentation.
Week 4	Input and output/ data types.
Week 5	Arithmetic and logical operators, precedence of operators.
Week 6	C++ program control and structured programming Selections, If statement, nested if statement, if-else if ladder else.
Week 7	Switch-case statements, nested switch-case statement.
Week 8	Mid-course Exam
Week 9	Counter controlled and sentinel-controlled repetition.
Week 10	The do-while and while loops.
Week 11	Skipping loop iterations break and continue and exit() function..

Week 12	Labels and goto statement, nested loops.
Week 13	Using the array data structure to represent lists and tables of values, One-dimensional array creation, initialization and processing.
Week 14	Two-dimensional array creation, initialization and processing.
Week 15	Functions in C++, New Function Creation, Return Values, and Call.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Create a C++ project
Week 2	Lab 2: Variables and Data Types
Week 3	Lab 3: Operators and Operations
Week 4	Lab 4: Input and Output statements
Week 5	Lab 5: Iteration (Loop) Statements
Week 6	Lab 6: Loop Control Statements and Decision-Making statements
Week 7	Lab 7: Create simple functions with different types

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Deitel, P and Deitel H, C++ How to Program, 8th Edition, Prentice Hall 2012.	No
Recommended Texts	1. Bradley, A, Programming for Engineers, Springer, 2011. 2. Bronson, G, C for Engineers and Scientists, West Publishing Company, 1993.	No
Website	https://www.w3schools.com/cpp/default.asp	

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

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.

Module Information
معلومات المادة الدراسية

Module Title	**Engineering Drawing and CAD**	**Module Delivery**	
Module Type		☒**Theory** ☐**Lecture** ☒**Lab** ☐**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	AIE11305		
ECTS Credits	٥		
SWL (hr/sem)	٦٠		

Module Level	UGI	**Semester of Delivery**	1
Administering Department	Automation and Artificial Intelligence Engineering	**College**	College of engineering
Module Leader		**e-mail**	
Module Leader's Acad. Title	Asst. lect Hikmat Maad	**Module Leader's Qualification**	
Module Tutor		**e-mail**	hikmat.maad@gu.edu.iq
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	01/١٠/202٥	**Version Number**	1.0

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 Objectives أهداف المادة الدراسية	The course should enable the student to: Generally, students are expected to gain understanding of the importance of engineering drawing as well as some drawing skills that help them in their discipline. Specifically, the course aims to give students the basic knowledge on the following topics: 1. Drawing importance from an engineering perspective. 2. Drawing tools and line types. 3. Using AutoCAD by: • Drawing basic drawing elements. • Modifying drafts using different specific tools. • Drafting in 2D and 3D. • Analyzing drafts to address isometric views.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Demonstrate an understanding of the principles and conventions of engineering drawing. 2. Apply appropriate techniques to create accurate and precise engineering drawings. 3. Interpret and analyze technical drawings, including dimensions and annotations. 4. Learn drawing skills by AutoCAD . 5. Learn to read construction plans by AutoCAD . 6. Increase the student's imagination by AutoCAD .

Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. <u>Introduction to Engineering Drawing</u> Importance of engineering drawing in the design and manufacturing process.
	Standards and conventions in engineering drawing. Types of technical drawings: orthographic projections, isometric projections, etc. 2. <u>Drawing Instruments and Techniques</u> Overview of drawing instruments and their uses Sketching techniques and line types Scaling, dimensioning, and labeling 3. <u>Orthographic Projections</u> Principles of orthographic projection Multi view drawings Sectional views and conventions 4. <u>Isometric Projections</u> Introduction to isometric projections Isometric drawing techniques and isometric scales Isometric views of objects and assemblies Extracting 2D Drawings form Isometric drawing. 5. Creating and Modifying Components by AutoCAD. 6. Modeling and Modifying Elements by AutoCAD.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	In this module, a combination of project-based learning, lectures, and group discussions will be utilized to create an engaging learning environment. Students will apply engineering drawing principles and techniques to real-world scenarios, participate in interactive lectures using visual aids and examples, collaborate in group discussions to analyze and problem-solve, engage in practical exercises and workshops to develop technical drawing skills with traditional tools and CAD software, and conduct independent study.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	12	10%	Continuous	
	Assignments	12	10%	Continuous	
	Projects / Lab.	3	10%	12,13,14 and 15	
	Report		10%		

Summative assessment	**Midterm Exam**	2hr	10% (10)	7	
	Final Exam	3hr	50% (50)	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Principle of engineering drawing
Week 2	Sketching techniques and line types & Scaling, dimensioning, and labeling
Week 3	Principles of orthographic projection
Week 4	Multiview drawings in orthographic projection
Week 5	Sectional views and conventions
Week 6	Introduction to isometric projections
Week 7	Isometric drawing techniques and isometric scales
Week 8	Isometric views of objects and assemblies Extracting 2D Drawings form Isometric drawing
Week 9	Mid exam
Week 10	Introduction - Theory lectures on history of AutoCAD program, what's new versions, how to install program. Explanation the main window for program, how to arrange it before start work.
Week 11	how to use file icon from the window(open,new,save ,save as,export,merge ,drawing properties .draw orders(line and construction line with types of lines (hidden and center lines)) and modify (erase,move,copy) Orthogonally ,snaps, grid, scale and explode .

Week 12	Draw Arcs,polyline,circles and rectangle Draw Ellipses ,trim and extend orders , rotate and mirror.
Week 13	term Exam + tutorial. And Application of previous orders. Layer order (how to change color,name,type and thickness of line by layer)
Week 14	Explanation of construction and architectural plans and types of lines(showing examples) and Application of previous orders.
Week 15	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	1-Manual of engineering drawing - Simmons C.H., Maguire D. E. 2-Autodesk AutoCAD 2021: Learn CAD With Ease (For Beginners) Hardcover – February 20, 2021 by Madhumita Kshirsagar.	no
Recommended Texts	1- AutoCAD 2020 For Beginners, By Cad folks. 2- Tutorial Guide to AutoCAD 2020, By Shawna Lockhart. 3- Engineering Drawing and Graphic Technology, Thomas Ewing French, Charles J. Vierck, Robert Jay Foster. 4- Graphic Science and Design, Thomas Ewing French, Charles J. Vierck, Robert 5- Jay Foster.	yes

Websites	https://www.udemy.com/course/autocad- introduction/

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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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Title	**Logic Design**	**Module Delivery**	
Module Type		☒**Theory** ☐ **Lecture** ☒**Lab** ☒ **Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	**AIE11303**		
ECTS Credits	**5**		
SWL (hr/sem)	**125**		
Module Level	UGI	**Semester of Delivery**	1
Administering Department	Automation and Artificial Intelligence Engineering	**College**	College of Engineering
Module Leader		**e-mail**	
Module Leader's Acad. Title	Asst.lect Aaid Mohammed	**Module Leader's Qualification**	
Module Tutor	-	**e-mail**	aaid.m.ameer@gu.edu.iq
Peer Reviewer Name		**e-mail**	E-mail
Scientific Committee Approval Date	01/١٠/202٥	**Version Number**	1.0

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 Objectives أهداف المادة الدراسية	1. Understanding of basic Number Systems: Students should gain a solid understanding of various number systems and Codes such as decimal, binary, octal, hexadecimal, Binary Coded Decimal (BCD).and Gray system. 2. Analysis of LOGIC Gates: Students should be able to analyze and solve LOGIC Gates using tables for each circuit such as and, or, and other gates. 3. Boolean algebra and Logic Simplification: Students should learn about various rules and theorem of Boolean algebra and DeMorgan's Theorems. They should be able to calculate the equivalent expression of logic circuits by using Karnaugh map and SOP. 4. Combinational Logic Analysis: Students should be familiar with basic combinational circuit, they should be able to apply the pulse waveform inputs to the Combinational Logic gates and calculate the observed outputs.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize various number system and codes. 2. Use the various way to convert from system to another ones and vice versa. 3. Understand and apply the arithmetic operation for some of the system like sum, subtract, division and multiplication. 4. Apply some of arithmetic operation in logical circuit. 5. Describe logical gates like (and, or, not, nor, nand and ex-or). 6. Define the operation of each gate. 7. Identify the Boolean algebra and DeMorgan's theorems. 8. Apply Boolean algebra and DeMorgan's theorems to simplify the expressions. 9. Apply Karnaugh map and SOP to simplify the expression. 10. Explain the basic combinational logic circuit. 11. Apply the rules and use only (nand and nor gates) in connected circuit. 12. Identify the pulse waveform and applying it in the combinational logic circuits.

Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1- Digital Systems and Binary Numbers • Digital Systems 1 • Binary Numbers • Number-Base Conversions • Octal and Hexadecimal Numbers • Complements of Numbers • Signed Binary Numbers • Binary Codes • Binary Storage and Registers • Binary Logic. 2- Boolean Algebra and Logic Gates • Basic Definitions • Axiomatic Definition of Boolean Algebra • Basic Theorems and Properties of Boolean Algebra • Canonical and Standard Forms • Other Logic Operations • Digital Logic Gates • Integrated Circuits 3- Gate-Level Minimization • Introduction • The Map Method • Four-Variable K-Map • Product-of-Sums Simplification • Don't-Care Conditions • NAND and NOR Implementation • Other Two-Level Implementations • Exclusive-OR Function • Hardware Description Language 4- Combinational Logic • Combinational Circuits • Analysis Procedure • Design Procedure • Binary Adder–Subtractor2.6 Decimal Adder • Binary Multiplier • Magnitude Comparator • Decoders • Encoders • Multiplexers • HDL Models of Combinational Circuits

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The primary approach for implementing this module will involve promoting active student engagement in exercises, as well as enhancing their ability to think critically. This goal will be accomplished through a combination of classroom sessions, interactive tutorials, and the incorporation of intriguing sampling-based experiments.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	6 and 12	
	Assignments	2	10% (10)	7 and 13	
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	
Summative	**Midterm Exam**	2hr	10% (10)	7	

assessment	**Final Exam**	3hr	50% (50)	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	• Digital Systems and Binary Numbers • Digital Systems 1 • Binary Numbers • Number-Base Conversions • Octal and Hexadecimal Numbers
Week 2	• Complements of Numbers • Signed Binary Numbers • Binary Codes
Week 3	• Binary Storage and Registers • Binary Logic.
Week 4	2 Boolean Algebra and Logic Gates • Basic Definitions • Axiomatic Definition of Boolean Algebra
Week 5	3 2.4 Basic Theorems and Properties of Boolean Algebra 4 2.6 Canonical and Standard Forms
Week 6	• Other Logic Operations • Digital Logic Gates • Integrated Circuits

Week 7	5 Mid Exam
Week 8	6 Gate-Level Minimization • Introduction • The Map Method • Four-Variable K-Map
Week 9	• Product-of-Sums Simplification • Don't-Care Conditions
Week 10	• NAND and NOR Implementation • Other Two-Level Implementations
Week 11	• Exclusive-OR Function • Hardware Description Language
Week 12	• Combinational Logic • Combinational Circuits • Analysis Procedure
Week 13	• Design Procedure • Binary Adder–Subtractor2.6 Decimal Adder • Binary Multiplier • Magnitude Comparator
Week 14	• Decoders • Encoders • Multiplexers • HDL Models of Combinational Circuits
Week 15	Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: logic gates
Week 2	Lab 2: logic gates
Week 3	Lab 3: Basic Combinational Logic Circuits
Week 4	Lab 4: Implementing Combinational Logic.
Week 5	Lab 5: Combinational Logic NOR Gates
Week 6	Lab 6: Combinational Logic Using NAND gates
Week 7	Exam
Week 8	Lab 7: adders
Week 9	Lab 8: Comparator
Week 10	Lab 9: Decoders
Week 11	Lab 10: Encoders
Week 12	Lab 11: Multiplexers
Week 13	Lab 12: Demultiplexers
Week 14	Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	M. Morris Mano, Michael D., Digital Design, 4th edition, Ciletti Prentice Hall	Yes

Recommended Texts	Thomas L. Floyd, Digital Fundamentals, 11th Edition, Pearson Prentice Hall	Yes
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Title	**Calculus I**	**Module Delivery**	
Module Type		☒**Theory** ☒**Lecture** ☐**Lab** ☒**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	**AIE11302**		
ECTS Credits	٦		
SWL (hr/sem)	٦٠		

Module Level	UGI	**Semester of Delivery**	1
Administering Department	Automation and Artificial Intelligence Engineering	**College**	College of engineering
Module Leader	Asst.Lect Ahmed Emad	**e-mail**	ahmed.e.saleem@gu.edu.iq
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/١٠/202٥	**Version Number**	1.0

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 Objectives أهداف المادة الدراسية	**1) Providing the students with sufficient background and basic principles of limits, integration, differentiation methods and its applications.** **2) Teaching the students, the scientific procedures of evaluating and graphing the different types of functions, limits, and slope.** **3) Acquiring the student, the sufficient skills to graph the curve the functions.**

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand and perform operations on matrices, including addition, subtraction, multiplication, and determination. 2. Apply Cramer's rule to solve systems of linear equations. 3. Calculate determinants and use them to determine properties of matrices. 4. Determine eigenvalues and eigenvectors of matrices. 5. Analyze and graph functions, including determining their domain and range. 6. Evaluate limits and determine continuity of functions. 7. Apply differentiation rules, including the chain rule and implicit differentiation, to find derivatives. 8. Apply integration rules and techniques, including integration by parts and partial fractions, to find antiderivatives. 9. Solve problems involving definite and indefinite integrals. 10. Understand and graph trigonometric functions, and apply their properties to solve problems. 11. Perform derivations and integrations involving trigonometric functions 12. Apply logarithmic and exponential functions in solving problems, and perform derivations and integrations involving these functions.
Indicative Contents المحتويات الإرشادية	• Matrices: Introduction to matrices and their operations. Determinants of matrices. Cramer's rule for solving systems of linear equations. Inverse matrices. • Systems of Linear Equations: • Eigenvalues and Eigenvectors: Understanding eigenvalues and eigenvectors of matrices. • Real Numbers and Functions: Understanding real numbers and intervals. Graphing functions and determining their domain and range. • limit and continuity Introducing the concept of limit and continuity. • Differentiation: Differentiation rules and examples. Chain rule and implicit differentiation. • Integration: Integration rules and techniques. Definite and indefinite integrals. • Trigonometric functions

	properties , Derivatives and integrals of Trigonometric functions • Logarithmic and Exponential Functions: Derivatives and integrals of logarithmic and exponential functions.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1- Giving theoretical lectures 2- Solve many problems 3- Using illustration methods such as drawing 4- Direct discussion by asking questions and opening dialogue and interaction with students. 5- Giving video lecture if need

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	20% (20)	Continuous	All
	Assignments	2	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #10, LO #11
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)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Matrices: introduction, operation
Week 2	Matrix determination
Week 3	Inverse Matrices
Week 4	Solving a system of linear equations by Cramer's rule
Week 5	Solving a system of linear equations by inverse method
Week 6	Eigen value and Eigen vector
Week 7	(Mid-term Exam)
Week 8	Real Numbers, Intervals, Functions:graphs , domain and range
Week 9	Limit and continuity
Week 10	Differentiation
Week 11	Chain rule, implicit Differentiation
Week 12	Rules of integration, Definite and indefinite integrals
Week 13	trigonometric functions: derivations, integrations
Week 14	natural logarithm , exponential e^x: properties, derivations, integrations
Week 15	a^x, log_a^u : properties, derivations, integrations
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Calculus By Thomas	Yes
Recommended Texts	CALCULUS EARLY TRANSCENDENTALS, By HOWARD ANTON, IRL BIVENS ,STEPHEN DAVIS	yes
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Democracy and human rights**			**Module Delivery**	
Module Type				☒**Theory**	
Module Code	GU131			☒**Lecture**	
ECTS Credits	**2**			☐ **Lab**	
SWL (hr/sem)	**50**			☐**Tutorial** ☐**Practical** ☐**Seminar**	
Module Level	UGII		**Semester of Delivery**		
Administering Department	Automation and Artificial Intelligence Engineering		**College**	Collage of engineering	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/١٠/202٥		**Version Number**	1.0	

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 Objectives أهداف المادة الدراسية	1. Familiarize students with human rights and duties towards the individual and society 2. Highlighting the importance of the individual knowing his rights to carry out his duties to the fullest 3. Encouraging the student to study human rights, which contributes to the development of his thinking skills about human rights and freedom, and informs him of its bright side. 4. Introducing the student to how to deal with international and regional treaties and their internal legislation and to derive knowledge related to those rights and how to reflect them and their real and civilized role in the lives of peoples
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 7. Study theories of human rights and democracy 8. Clarification of the historical stages of human rights and their development 9. Clarification of the most important rights and duties granted to the individual and guaranteed constitutionally, which contribute to changing his life for the better 10. Promoting the idea of social justice for all individuals without discrimination on the basis of religion, race or color 11. Emphasizing and raising the spirit of citizenship, promoting the idea of belonging to the land and the homeland, and adhering to laws and regulations 12. Enhancing the student's thinking skill and creating his confidence during the dialogue on human rights 13. Introducing him to the method and mechanism of real dealing between the international and domestic community with human rights Developing knowledge related to human rights and how they are reflected and their true civilized role in the lives of peoples

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Giving theoretical lectures in an interactive way between the professor and the student in a direct way Using the method of direct discussion, asking questions, opening dialogue, setting examples, and interacting with students Giving students space to manage part of the lecture time to improve and expand critical thinking skills at the same time as applying a human right to presenting and defending his opinion without exposure to the opinion of others Assign students to prepare reports and billboards on the subject of human rights

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**50**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	20% (20)	5 and 10	
	Assignments	2	10% (10)	2 and 12	
	Projects / Lab.				
	Report	1	10% (10)	13	
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	
	Final Exam	3hr	50% (50)	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	**Meaning of right in the Arabic language and The concept of human rights**
Week 2	**Definition of human rights and the Universal Declaration of Human Rights**
Week 3	**The wisdom of God Almighty granting human rights and the French Declaration of Human and Citizen Rights**
Week 4	**Human rights in the Mesopotamian civilization**
Week 5	**The Social System in Mesopotamia Civilization**

Week 6	**the Universal Declaration of Human Rights**
Week 7	**The phenomenon of administrative corruption and its repercussions and successful solutions to combat administrative corruption and protect society from it**
Week 8	**semester exam**
Week 9	**Fundamental rights and freedoms: the right to life and the right to dignity, liberty and personal safety**
Week 10	**The right to privacy, freedom of residence and movement, and the right to nationality**
Week 11	**Intellectual rights and freedoms: freedom of belief and religion, freedom of opinion and expression, the right to assembly and assembly, and the right not to assemble**
Week 12	**Freedom of the press, freedom of radio, television, cinema and theatre, freedom of education and the right to form associations and political parties**
Week 13	**Political rights: the right to equality and election**
Week 14	**Democracy concept and definition**
Week 15	**Types of democracy**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Human rights between text and application , Dr. Ali Shukri • الكتاب المقرر: مجموعة مؤلفين، حقوق الانسان والطفل والديمقراطية وزارة التعليم العالي،جامعة الموصل،مطبعة ابن الاثير،2009. • تحديث للمادة (الحكم الرشيد او الحكم الصالح)	Yes
Recommended Texts	Human rights , Dr. Maher Allawi	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**Biology**	**Module Delivery**	
Module Type		☒**Theory**	
Module Code	AIE11304	☒**Lecture**	
ECTS Credits	**5**	☐ **Lab**	
SWL (hr/sem)	**45**	☐**Tutorial**	
		☐**Practical**	
		☐**Seminar**	

Module Level	UGII	**Semester of Delivery**	
Administering Department	Automation and Artificial Intelligence Engineering	**College**	Collage of engineering
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/١٠/202٥	**Version Number**	1.0

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 Objectives أهداف المادة الدراسية	1- Understanding life, chemistry, and water (continued: biological molecules) 2- Learning about cells and membranes 3- Identifying energy, enzymes, and biological reactions; cellular respiration and photosynthesis 4- Understanding cell division: mitosis and meiosis; Mendel, genes and heredity, genes, chromosomes, and human genetics 5- Understanding DNA structure, replication, and regulation; from DNA to protein; biotechnology; and cellular processes and transport (passive and active)
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	This unit's main teaching strategy will focus on encouraging students to participate in exercises, while at the same time refining and expanding their thinking skills. This will be achieved through classroom instruction, interactive lessons, and the study of simple types of experiments that include some simulation activities that engage students.

Indicative Contents المحتويات الإرشادية	1- Life, chemistry, and water; biological molecules 2- Cells and membranes 3- Energy, enzymes, respiration, and photosynthesis 4-Cell division; inheritance and genetics 5-DNA structure and function; protein synthesis; biotechnology; cell transport

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy will be adopt in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their thinking skills. This will be achieve through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2

الفصل			
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**50**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	15%	5 and 10	
	Assignments	2	15%	2 and 12	
	Projects / Lab.				
	Report	1	10% (10)	13	
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	
	Final Exam	3hr	50% (50)	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Describe life, chemistry and water continued: biological molecules.
Week 2	Describe life, chemistry and water continued: biological molecules.
Week 3	Explain the basic concepts of cells and membranes.
Week 4	Demonstrate knowledge of Enzymes and Biological reactions, cellular respiration, photosynthesis.
Week 5	Demonstrate knowledge of Enzymes and Biological reactions, cellular respiration, photosynthesis.
Week 6	Demonstrate knowledge of Enzymes and Biological reactions, cellular respiration, photosynthesis.
Week 7	Demonstrate knowledge of Enzymes Biological reactions, cellular respirat photosynthesis.
Week 8	**semester exam**
Week 9	Demonstrate knowledge of Enzymes and Biological reactions, cellular respiration, photosynthesis.
Week 10	Identify cell division: mitosis and miosis: Mendel, Genes and inheritance, genes, chromosomes and human genetics
Week 11	Identify cell division: mitosis and miosis: Mendel, Genes and inheritance, genes, chromosomes and human genetics
Week 12	Identify cell division: mitosis and miosis: Mendel, Genes and inheritance, genes, chromosomes and human genetics
Week 13	Explain the DNA structure. Understand Replication and Organizat From DNA to protein Biotechnology cell processes and transport (Passive active)
Week 14	Explain the DNA structure. Understand Replication and Organization. From DNA to protein Biotechnology and cell processes and transport (Passive and active)

Week 15	Explain the DNA structure. Understand Replication and Organizat From DNA to protein Biotechnology cell processes and transport (Passive active)
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	**Peter J. Russell, Paul E. Hertz, Beverly McMillan , "Biology: The Dynamic Science", Cengage Learning Publisher, 2nd Edition 2011**	Yes
Recommended Texts		No
Websites		

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

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.

Module Information
معلومات المادة الدراسية

Module Title	**Computer Fundamentals**	**Module Delivery**	
Module Type		☒**Theory** ☐**Lecture** ☒**Lab** ☐**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	AIE12304		
ECTS Credits	5		
SWL (hr/sem)	١٥٠		
Module Level	UGI	**Semester of Delivery**	2
Administering Department	Automation and Artificial Intelligence Engineering	**College**	College of engineering
Module Leader	Asst.Lect Hasan Mohammed	**e-mail**	hasan.m.khalil@gu.edu.iq
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	01/2/2026	**Version Number**	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	- To understand the structure, function and characteristics of computer systems. - To understand the design of the various functional units and components of computers. - To Understand basic machine organization, including processors, Storage, memory, and input/output architecture. - Understand the basics of the operating system and their types, the concept and techniques. - Understand the computer networks fundamentals just like topology and components and basic testing command. - To explain the function of each element of a memory hierarchy. - To identify and compare different methods for computer I/O.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. On completion of the course, student will be able to: 2. Understand the structure, function and characteristics of computer systems. 3. Understand the concept, Purpose, and characteristic of CPUs. 4. Learn the concepts of motherboards and its types. 5. Identify the names, Purposes, and characteristics of ROM and RAM 6. Identify the names, purpose, and characteristics of storage device (floppy, hard disk, optical, Blu-ray, flash drive, SSD, USB flash, Secure Digital Cards) 7. Learn the concepts of input and output devices. 8. Understand the fundamentals of operating system 9. Learn the fundamentals laptops and portable device
Indicative Contents المحتويات الإرشادية	• Indicative content includes the following: • Introduction of Computer • Development of Computer • Computer Communication • Introduction to Hardware, Software and operating system • Categories of computers

	• Identify the names, Purpose, and characteristic of CPUs • CPU types and techniques • Select CPU • Intel and AMD CPU development • CPU connection and interface • Identify the names, Purpose, and characteristic of motherboards • Motherboard components and form factors • BIOS, CMOS • Select a motherboard • Upgrade and configure a motherboard • Upgrade and configure BIOS • Identify the names, Purposes, and characteristics of ROM and RAM • RAM Basics and Types of RAM • Cache Memory • Selecting Ram • Upgrade and Configure of memory devices • Identify the names, purpose, and characteristics of storage device (floppy, hard disk, optical, Blu-ray, flash drive, SSD, USB flash, Secure Digital Cards) • Internal cables of storage device • Upgrade and configure storage device. • Fundamentals of operating system • History of OS • Development of OS • Operating Systems part2: • Fundamentals of laptops and portable devices • Describe Laptops and other portable devices • Identify common uses of PDAs and Smartphone • Compare and contrast desktop and laptop components.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
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 reports involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	1٠%	5 and 10	
	Assignments	2	1٠%	2 and 12	
	Report	1	10%	13	
	Projects / Lab		10%		
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	
	Final Exam	3hr	50% (50)	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Fundamental Concepts of computer.
Week 2	Introduction to CPU
Week 3	BIOS and CMOS
Week 4	Introduction Motherboards and its types
Week 5	Memory Organization: Memory Hierarchy, Main memory, secondary memory
Week 6	Introduction to Storage Drives
Week 7	**Mid-term Exam**
Week 8	Introduction to Input and Output Device
Week 9	Types of connection cables
Week 10	Fundamental of operating system
Week 11	Types of OS
Week 12	Fundamentals of laptops and portable device
Week 13	Identify common uses of PDAs and Smartphone
Week 14	Troubleshooting and diagnostics of computer problems - Software troubleshooting
Week 15	Troubleshooting and diagnostics of computer problems - hardware troubleshooting
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. S. M. Freund, et al, Discovering Computers and Microsoft Office 2016: A Fundamental Combined Approach, Cengage Learning, 2017. 2. W. Stallings, Computer Organization and Architec Designing for Performance, 10th Ed., Pearson, 2016	Yes
Recommended Texts	1. F. Wempen, et al, Computing Fundamentals IC3 Ed, Wiley & Sons Ltd, 2014	yes
Websites	https://www.coursera.org/learn/ computer organization fundamentals	

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

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Electrical Circuits Analysis**			**Module Delivery**	
Module Type				☒**Theory** ☐ **Lecture** ☒**Lab** ☒ **Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	AIE12303				
ECTS Credits	**6**				
SWL (hr/sem)	١٢٥				
Module Level	UGI		**Semester of Delivery**	2	
Administering Department	Automation and Artificial Intelligence Engineering		**College**	College of Engineering	
Module Leader	Asst.Lect Jaafar Ali		**e-mail**	jaafar.ali@gu.edu.iq	
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	-		**e-mail**	-	
Peer Reviewer Name			**e-mail**	E-mail	
Scientific Committee Approval Date	01/2/2026		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Fundamentals of Electrical Circuits I	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Understand the concept of impedance and apply it to analyze AC circuits, including calculating voltage and current phasors, and determining impedance values for capacitors and inductors. 2. Apply network theorems such as Thevenin's theorem, Norton's theorem, and superposition theorem to simplify complex AC circuits and calculate unknown quantities. 3. Calculate and analyze power in AC circuits, including real power, reactive power, apparent power, and power factor. Apply power factor correction techniques and calculate power losses and efficiency. 4. Analyze and solve series and parallel resonance circuits, including determining resonant frequency, bandwidth, quality factor, and understanding the frequency response characteristics.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. AC Circuit Components: Students should learn about AC Generation and circuit components such as capacitors, inductors. They should understand their behavior in AC circuits, including the calculation of reactance, impedance, and power dissipation 2. AC Circuit Analysis: Students should develop a thorough understanding of alternating current (AC) circuits and their analysis. They should be able to apply concepts such as impedance, phasors, and complex numbers to analyze AC circuits, including calculating voltage and current phasors, power factor, and reactive power. 3. Circuit Analysis Techniques: Building upon the skills learned in Electric Circuit I, students should further develop their circuit analysis techniques. They should be able to analyze complex AC circuits using nodal analysis, mesh analysis, and various network theorems such as superposition, Thevenin, and Norton. 4. Power Analysis: Students should learn about power calculations in AC circuits, including real power, reactive power, and apparent power. They should understand power factor correction techniques and be able to calculate power losses and efficiency in AC circuits. 5. Resonance and Frequency Response: Students should understand the concept of resonance in AC circuits and be able to analyze series and parallel resonance circuits. They should be able to calculate resonant frequency, bandwidth, and quality factor, and understand the frequency response of different circuits. 6. Laboratory Skills: Depending on the course, students may have the opportunity to apply their theoretical knowledge through hands-on laboratory experiments. They should further develop skills in using measurement instruments, constructing and analyzing AC circuits, and verifying theoretical concepts through practical experiments.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. Introduction to AC Circuits: - Review of basic concepts: voltage, current, and resistance - Characteristics of AC voltage and current waveforms - RMS, peak, and average values of AC quantities - Phase relationship between voltage and current in AC circuits 2. Impedance and Phasor Analysis: - Definition and calculation of impedance - Representation of AC quantities using phasor diagrams

	- Complex numbers and their application in AC circuit analysis - Series and parallel impedance combinations in AC circuits 3. AC Circuit Analysis Techniques: - Application of Kirchhoff's laws (KCL and KVL) in AC circuits - Nodal analysis and mesh analysis in AC circuits 4. Power Analysis in AC Circuits: - Real power, reactive power, and apparent power in AC circuits - Power factor and power factor correction techniques - Calculation of power losses and efficiency in AC circuits 5. Resonance and Frequency Response: - Series and parallel resonance in AC circuits - Calculation of resonant frequency, bandwidth, and quality factor - Frequency response of AC circuits and its analysis 6. Review and Assessment: - Review of key concepts and techniques - Practice problems and exercises - Summative assessments (quizzes, tests, or exams)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The primary approach for implementing this module will involve promoting active student engagement in exercises, as well as enhancing their ability to think critically. This goal will be accomplished through a combination of classroom sessions, interactive tutorials, and the incorporation of intriguing sampling-based experiments.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	
	Assignments	2	10% (10)	8 and 11	
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	
	Final Exam	3hr	50% (50)	16	
		Total assessment	100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Fundamentals of DC circuits: circuit components, terms, Current, Voltage, resistance, conductance, and Ohm's law.
Week 2	Series Circuits: equivalent resistance, voltage sources in series, KVL, voltage divider rule, voltage regulation.
Week 3	Series Circuits: equivalent resistance, voltage sources in series, KVL, voltage divider rule, voltage regulation.
Week 4	Parallel Circuits: total conductance and resistance, power distribution, KCL,
Week 5	current divider rule, voltage sources in parallel.
Week 6	Analysis Methods and Y-D: cur and voltage sources convers branch current analysis, M Analysis Procedure.
Week 7	Mid-course Exam
Week 8	Analysis Methods and Y-D: nodal analysis (general approach), bridge networks, Y- Δ (T- π) and Δ -Y (π - T) conversions.
Week 9	Network Theorems: Nort theorem, maximum power tran theorem.

Week 10	Ac circuits fundamentals: sinusoidal signal generation, basic definitions, frequency, peak values, phase relations, rms value & average values.
Week 11	The basic elements and phasors: derivative, R, L, and C response to ac voltage and current, frequency response of R, L, and C,average power and power factor.
Week 12	The basic elements and phasors: complex numbers, rectangular and polar forms, conversion between forms,
Week 13	The basic elements and phasors: complex numbers, rectangular and polar forms, conversion between forms,
Week 14	Parallel resonance, parallel resonance Frequency
Week 15	Parallel resonant bandwidth, examples
Week 16	**final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Basic information and ohm's law
Week 2	Lab 2: Series and parallel circuits
Week 3	Lab 3: Voltage and Current divider
Week 4	Lab 4: Delta-Star connection
Week 5	Lab 5: Mesh and Nodal
Week 6	Lab 6: Superposition, Thevinen, and Norton theorems
Week 7	Lab 7: Maximum Power Transfer
Week 8	Lab 8: Capacitive and Inductive Reactance
Week 9	Lab 9: Resistor & Inductor in Series
Week 10	Lab 10: Resistor & Capacitor in Series
Week 11	Lab 11: Resistor, Inductor & Capacitor in parallel
Week 12	Lab 12: Series-parallel Resistor, Inductor & Capacitor circuits
Week 13	Lab 13: AC superposition

Week 14	Lab 14: Series Resonance circuits

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Introductory circuit Analysis; by Robert L. Boylestad	Yes
Recommended Texts	Sadiku, Matthew NO, and Charles K. Alexander. Fundamentals of electric circuits. New York: McGraw-Hill, 2009.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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

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.

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Title	**Physic**		**Module Delivery**
Module Type			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	AIE12302		
ECTS Credits	5		
SWL (hr/sem)	٤٥		
Module Level	UGI	**Semester of Delivery**	2
Administering Department	Automation and Artificial Intelligence Engineering	**College**	College of engineering
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	1/2/2026	**Version Number**	1

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	none	**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	The objective of this course is to: 1- enable the student to have a solid background in electronic physics 2- enable the student to have a solid background in the analysis of the characteristics and circuits of diode and zener diode. 3- the student will learn the specifications and applications of the diode and zener diode.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Will be able to tell theory of semiconductors: Explains an atom and basic terms related with an atom. 2- Recognizes conductor, semiconductor, and insulator and explains characteristics of these materials. 3- Recognizes p and n type materials and explains characteristics of these materials. 4- Will be able to recognize types of diode, explain basic terms related with diodes and tell the operating principle of diodes 5- Will be able to analyze different diode circuits. 6- Recognizes half-wave, full-wave and bridge rectifier circuits and explains the operation of these circuits. 7- Recognizes clipping and clamping circuits, explains the operation of these circuits and analyses these circuits. 8- Analyzes and measures parameters in basic diode circuits.
Indicative Contents المحتويات الإرشادية	1- Will be able to tell theory of semiconductors. - Explains an atom and basic terms related with an atom. - Recognizes conductor, semiconductor, and insulator and explains characteristics of these materials. - Recognizes p and n type materials and explains characteristics of these materials. 2- Will be able to recognize types of diode, explain basic terms related with diodes and tell the operating principle of diodes. - Recognizes types and the construction of diodes. - Explains ideal diode, equivalent circuit and dc characteristic of a diode. - Tells the operating principles of diodes and zener diodes.

	3- Will be able to analyze different diode circuits. - Recognizes half-wave, full-wave and bridge rectifier circuits and explains the operation of these circuits. - Recognizes clipping and clamping circuits, explains the operation of these circuits and analyses these circuits. - Analyzes and measures parameters in basic diode circuits.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted to increase the student interest to understand this module is by drawing sketches that can assist the imagination of the student about the certain subject as well as to make the students participate through fast questions and quizzes.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	١٥%	4,9,10	
	Assignments	2	1٥%	10,14	
	Reports:		1٠%		
Summative assessment	**Midterm Exam**	2 hr	10%	6	
	Final Exam	3hr	50% (50)	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction: Atomic structure & electronic state (orbit, energy and valence) of electron.
Week 2	semiconductors, conductors and isolators, effects of temperature on depletion layer and P-N junction.
Week 3	Characteristics of Diode: forward and reverse bias and its relations.
Week 4	the diode operation and its conditions.
Week 5	zener region in terms of voltage and power dissipations, DC & AC resistance.
Week 6	Mid-Term Exam
Week 7	Specifications of diode: diode capacitance, reverse recovery time
Week 8	diode measuring and testing
Week 9	Diode applications: load line analysis,
Week 10	series diode configuration
Week 11	parallel & series configurations
Week 12	half – wave rectifier and peak reverse voltage
Week 13	full wave rectifier and related circuits (biased, diode clippers and clampers)
Week 14	zener diode and its applications
Week 15	Review
Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1:
Week 2	Lab 2:
Week 3	Lab 3:

Week 4	Lab 4:
Week 5	Lab 5:
Week 6	Lab 6:
Week 7	Lab 7:

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Electronic Devices & Circuit Theory", By R. Boylestad, 11th ed.	yes
Recommended Texts	" Electronic Devices", By Floyd. 9th ed.	yes
Websites		

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

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Title	**Calculus II**		**Module Delivery**
Module Type			☒**Theory** ☐**Lecture** ☐**Lab** ☒**Tutorial** ☐**Practical** ☐**Seminar**
Module Code	AIE12301		
ECTS Credits	**6**		
SWL (hr/sem)	٦٠		
Module Level	UGI	**Semester of Delivery**	2
Administering Department	Automation and Artificial Intelligence Engineering	**College**	College of engineering
Module Leader	Asst.Lect Ahmed Emad	**e-mail**	ahmed.e.saleem@gu.edu.iq
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	01/2/2026	**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module		**Semester**	1
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The objective of this course is to develop an understanding of the basic ideas of mathematics encountered in engineering. Focus will be on the methods for understanding complex numbers and fundamentals of the derivative and integration of inverse trigonometric functions. Students will learn some special integration techniques (Integration by part, partial fraction, and substitution) that are useful for the understanding of different engineering subjects. Another objective is to teach the Engineering student about integration applications such as Area under curve and volume. Finally, the student will learn the concept of polar coordinates and its application.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On completion of the course, student will be able to: 1. Understand the fundamentals of complex numbers and their properties. 2. Understand the differentiation and integration of inverse trigonometric functions. 3. Understand the differentiation and integration of hyperbolic trigonometric functions. 4. Express the concepts of methods of integration and their different types which can be used in a wide variety of disciplines in engineering. 5. Identify integration applications such as Area under curve and area between two curves. 6. Apply different integration rules to determine the volume of solid using Disk and Washer methods. 7. Understand polar coordinates and their properties. 8. Apply the concept of polar coordinates to solve integration applications.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: • Fundamental Concepts of complex numbers. • Complex numbers properties- power and roots • Inverse Trigonometric function and their differentiation • Inverse Trigonometric function Integration • Hyperbolic Trigonometric functions and their differentiation • Hyperbolic Trigonometric functions integration • Methods of integration – Integration by Part • Methods of integration - Partial fraction method • Methods of integration – Integration using substation • Integration applications – Area under curve • Integration applications – Area between two curves • Integration applications – Volume of solid using Disk method • Integration applications – Volume of solid using Washer methods • Polar coordinates and its properties

	• Area under curve in Polar coordinates • Area between two curves in Polar coordinates • Length of curve in Polar coordinates.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
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 reports involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	15% (15)	5 and 10	
	Assignments	2	15% (15)	2 and 12	
	Report	1	10% (10)	13	
Summative	**Midterm Exam**	2hr	10% (10)	7	

assessment	**Final Exam**	3hr	50% (50)	16	
		Total assessment	100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Fundamental Concepts of complex numbers.
Week 2	Complex numbers properties- power and roots
Week 3	Introduction to Inverse Trigonometric function and their differentiation
Week 4	Inverse Trigonometric function Integration
Week 5	Introduction to Hyperbolic Trigonometric functions and their differentiation
Week 6	Hyperbolic Trigonometric functions integration
Week 7	**Mid-term Exam**
Week 8	Methods of integration – Integration by Part and integration using Partial fraction method
Week 9	Methods of integration – Integration using substation
Week 10	Integration applications – Area under curve and Area between two curves
Week 11	Integration applications – Area between two curves
Week 12	Integration applications – Volume of solid using Disk and Washer methods
Week 13	Introduction to polar coordinates and its properties
Week 14	Integral applications using polar coordinates – Area and length of curve
Week 15	**final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Thomas' Calculus, Single Variable, Joel Hass, Christopher Heil, Maurice Weir, Pearson, 2017.	Yes
Recommended Texts	Thomas' Calculus Early Transcendentals, George Thomas, Maurice D. Weir, Joel Hass, Pearson, 2014.	yes
Websites	https://www.coursera.org/learn/ calculus I	

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
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	F – Fail	راسب	(0-44)	Considerable amount of work required

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Title	Arabic Language	**Module Delivery**	
Module Type		☒ **Theory**	
Module Code	GU132	☐ **Lecture**	
ECTS Credits	**2**	☐ **Lab**	
SWL (hr/sem)	**50**	☐ **Tutorial**	
		☐ **Practical**	
		☐ **Seminar**	

Module Level	UGI	**Semester of Delivery**	2
Administering Department	Automation and Artificial Intelligence Engineering	**College**	
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	01/2/2026	**Version Number**	1.0

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- تعد اللغة العربية وسيلة للتواصل فهي تحمل رسالة بين المتكلمين ،ولكي تكون هذه الرسالة واضحة ومفهومة يجب ان يكون ترتيب مفرداتها حسب التركيب القواعدي لتلك اللغة . ومن هنا برزت وبشكل جلي ضرورة تدريس القواعد أو النحو في كل اللغات 2- تعرف الطالب على مهارات الكتابية والتعبير والوقوف على مواطن الخطأ لتصويب النطق الصحيح 3- إتقان مهارة الكتابة الصحيحة بمعرفة قواعد الإملاء ولاسيما مواضع الاخطاء الشائعة 4- الحفاظ على اللغة العربية كونها لغة القرآن الكريم 5- التعريف بالمبادئ الاساسية للغة العربية من خلال تنمية المهارات الكتابية والتعبير والمحادثة
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1-اكتساب الطالب معرفة المفاهيم الاساسية للغة العربية وتطبيقها من خلال الأمثلة - 2معرفة كتابة الكلام الصوتي بشكل مضبوط من حيث الاصوات الصحيحة أو المعتلة - 3دراسة الطالب موضوع العدد ومعرفة كيفية كتابة بالشكل الصحيح 4-يمكن الطالب ايجاد الحلول المناسبة الصحيحة للمشاكل الحقيقية المعقدة تنمية الحس الفكري من خلال أعطاء أمثلة للغة العربية وتطبيقها 5- تكليف الطلبة بكتابة البحوث والتقارير لاختبار مدى استيعابهم للقواعد الأساسية للغة العربية وتطبيقها في حياتهم اليومية
Indicative Contents المحتويات الإرشادية	1- ارشاد الطلبة إلى تكوين خزين معرفي من أنظمة اللغة وأحكامها وقواعدها الاساسية 2-ارشاد الطلبة إلى اكتساب مهارات اللغة الاساسية والتدرب عليها من خلال التطبيق العملي كتابة ونطقا 3-ارشاد الطلبة الى الاطلاع على النصوص من الشعر والنثر بمختلف العصور ومحاكاتها في كتابة النصوص التي تعبر عن حياتهم اليومية ومشاعرهم وعواطفهم الذاتية 4-ارشاد الطلبة إلى ما يؤدي الى تعزيز مهاراتهم والانتقال به الى مستوى التفكير العالي 5-ارشاد الطلبة من خلال تعبير عن افكارهم من خلال تكوين مجموعات والتنافس بينهم

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1-افضل طريقة في تعليم الطلبة النحو العربي لاهميته في تعلم هذه اللغة واهميته في الترجمة، هي اتباع مبدأ التعاون في التعلم . على ان يتعاون الطلاب في تهيأة مادة الدرس وتقديمها بعد تقسيمهم الى مجاميع تهتم كل مجموعة بجانب مادة الدرس . 2-القاء المحاضرات النظرية بشكل افتراضي مباشرة على السبورة 3-عمل بحوث وتوزيعها على مجاميع طلابية لمعرفة فهمهم للمادة او ادراكهم لها - 4ان الطريقة الاستقرائية باستنباط القاعدة من الامثلة تعد ناجحة في تدريس النحو - 5اهم طرائق التعلم والتعليم هي استراتيجية مهارات التفكير ضمن مجموعة 6- استراتيجية التفكير الناقد في التعلم ، ايضا من اهم طرائقه العصف الذهني

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	
	Assignments	2	10% (10)	2, 12	
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	
Summative assessment	Midterm Exam	2 hr	10% (10)	7	
	Final Exam	2hr	50% (50)	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	مقدمة عن علامات الترقيم والتعرف على أنواعها
Week 2	كتابة أنواع الهمزة (همزة القطعوالوصل ، همزة المتوسطة ، همزة المتطرفة)
Week 3	مكملات ضوابط الكتابة (التنوين ،والشدة ، المدة) والتعرف على أنواع الأخطاء اللغوية
Week 4	موضوع العدد وطريقة كتابته
Week 5	الخط العربي وأنواعه
Week 6	المشتقات (اسم الفاعل ، اسم المفعول ، اسما الزمان والمكان ، اسم الآلة)
Week 7	الفعل وأنواعه
Week 8	الفاعل والمفعول به

Week 9	أنواع المفاعيل
Week 10	المبتدأ والخبر
Week 11	المثنى والجمع وأنواعه
Week 12	الفرق بين التاء والهاء
Week 13	التذكير والتأنيث وأنواعها
Week 14	المعلقات
Week 15	مراجعة للطلاب قبل المتحان النهائي
Week 16	الاختبارات النهائية

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	الوجيز في اللغة العربية ، محي هلال سرحان ، شرح قطر الندى وبل الصدى،لابن هشام الانصاري ، الاجرومية ابي عبدالله محمد الصنهاجي الاملاء والترقيم في الكتابة العربية ،عبد العليم ابراهيم ، اللغة العربية لغير المختصين ،مصطفى جطل وصلاح كزارة	Yes
Recommended Texts	جامع الدروس العربية ، مصطفى الغيلاني ،معاني النحو ، فاضل السامرائي دراسة في قواعد الاملاء د.عبد الجواد الطيب ، موسوعة الشامل في الكتابة والاملاء ،موسى حسن الهديب	No
Websites	1. https://shamela.ws/ 2. https://waqfeya.net/	

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

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**Principle of Artificial Intelligence**	**Module Delivery**	
Module Type		☒**Theory**	
Module Code	AIE12301	☐**Lecture**	
ECTS Credits	**6**	☐**Lab**	
SWL (hr/sem)		☒**Tutorial**	
		☐**Practical**	
		☐**Seminar**	

Module Level	UGI	**Semester of Delivery**	2
Administering Department	Automation and Artificial Intelligence Engineering	**College**	College of engineering
Module Leader	Dr. Dhamyaa Husam	**e-mail**	Dhamyaa.husam@gu.edu.iq
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	01/2/2026	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module		**Semester**	1
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1- Introduction to Artificial Intelligence: Provide an overview of the field of artificial intelligence, its history, key concepts, and its role in various domains. 2- Problem Solving and Search: Explore different problem-solving techniques and search algorithms used in artificial intelligence. 3- Knowledge Representation and Reasoning: Study methods and languages used to represent and manipulate knowledge in artificial intelligence systems. 4- AI applications: Examining real-world applications of AI in various domains, such as healthcare, finance, autonomous vehicles, robotics, and recommendation systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Understand the fundamental concepts and principles of artificial intelligence and its various subfields. 2- Understand the AI problem-solving techniques. 3- Explore real-world applications of artificial intelligence in various domains and understand the challenges and opportunities associated with their implementation.
Indicative Contents المحتويات الإرشادية	Data-Information-Knowledge (DIK Hierarchy). Knowledge base building. Knowledge discovery. Knowledge acquisition. Knowledge engineering. Knowledge representation. Problem fundamentals and characteristics. Problem state space. Problem solving approach. Different problems in AI world. Shortest path problem. Travelling salesman problem. The 2 jug problem. Monkey and banana problem

*Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: 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 type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	
	Assignments	2	10% (10)	2 and 12	
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	
	Final Exam	٣hr	50% (50)	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	AI definition, history, concept, and applications
Week 2	AI goals and AI environment
Week 3	Alan Turing Test
Week 4	Data-Information-Knowledge (DIK Hierarchy)
Week 5	Knowledge base building
Week 6	Knowledge discovery, Knowledge acquisition
Week 7	Knowledge engineering. Knowledge representation
Week 8	Problem fundamentals and characteristics
Week 9	Problem state space
Week 10	Problem solving approach
Week 11	Problem solving approach
Week 12	Different problems in AI world
Week 13	Shortest path problem. Travelling salesman problem
Week 14	2 jug problem, Monkey and banana problem
Week 15	**Review**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**

Required Texts	1-Rich, E., & Knight, K. (1991). Artificial Intelligence. McGraw-Hill. 2-Luger, G. F., & Stubblefield, W. A. (2004). Artificial Intelligence: Structures and Strategies for Complex Problem Solving. Addison Wesley.	Yes
Recommended Texts	Russell, S. J., & Norvig, P. (2016). Artificial Intelligence: A Modern Approach.	No
Websites		

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