MODULE DESCRIPTION FORM

Module Information					
Module Title	**Computer Technology**			**Module Delivery**	
Module Type	**C**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**AI1103**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Artificial Intelligence		**College**	Computer Science and Information Technology	
Module Leader	Karar Sadiq		**e-mail**	karar.sadeq@uowa.edu.iq	
Module Leader's Acad. Title	Assistant Lecturer		**Module Leader's Qualification**	M.Sc.	
Module Tutor	Karar Sadiq		**e-mail**	karar.sadeq@uowa.edu.iq	
Peer Reviewer Name	Ali Mahmoud Ali		**e-mail**	ali.mahmoud@uowa.edu.iq	
Scientific Committee Approval Date	01/11/2025		**Version Number**	1.0	

Relation with other Modules			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Department Head Approval **Dean of the College Approval**

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	- Provide a basic knowledge of computer hardware and software - Introduce the business areas to which computers may be applied. - Provide an introduction to business organization and information systems. - Develop the skills in network & communication, which play an important part in business computing and information processing
Module Learning Outcomes	-The student should understand the architecture of any IT systems. -The student should understand the parts of hardware. -The student should understand the system software. -The student should understand the architecture of networks, protocols and communications devices.
Indicative Contents	Data Conversion · D/A converters · A/D converters · Sample and Hold circuits Digital Component Operations · Multiplexing · Data storage · Integrated Circuits Digital Technology · Memory Technology · Circuit Board Technology · Nano-Technology

Learning and Teaching Strategies	
Strategies	- The student should use utilities in the lab to apply scientific experiment - The ability to execute the applications software.

Student Workload (SWL)			
Structured SWL (h/sem)	60	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	65	**Unstructured SWL (h/w)**	4.3
Total SWL (h/sem)	**125**		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	5	10% (10)	2,4,6,9,11	LO #1, LO #2, LO #3
	Assignments	5	10% (10)	3,5,7,10,12	LO #2, LO #4,
	Projects / Lab.	1	10% (10)	Continuous	All Learning Outcomes (LO #1 – LO #4)
	Report	1	10% (10)	13	LO #4
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1, LO #2, LO #3
	Final Exam	3hr	50% (50)	16	All Learning Outcomes (LO #1 – LO #4)
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Introduction of Computers and Programming
Week 2	Brief history of computer
Week 3	Generation of Computers & Computer hierarchy
Week 4	Basic Computer Components
Week 5	Computer function (fetch cycle, interrupt cycle, I/O function
Week 6	Semiconductor main memory (RAM, ROM, CACHE)
Week 7	Midterm Exam
Week 8	Computer Software (application software)
Week 9	External & Internal memory
Week 10	Telecommunications system & Network
Week 11	Topology of a network and layering
Week 12	data representation
Week 13	Multimedia
Week 14	Computer Security
Week 15	All Topics
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Basic Computer Components
Week 2	Computer function (fetch cycle, interrupt cycle, I/O function
Week 3	Computer function (fetch cycle, interrupt cycle, I/O function
Week 4	Semiconductor main memory (RAM, ROM, CACHE)
Week 5	Computer Software (application software)
Week 6	Computer Software (application software)
Week 7	External & Internal memory
Week 8	External & Internal memory
Week 9	Telecommunications system & Network
Week 10	Topology of a network
Week 11	Topology of a network
Week 12	Layering model
Week 13	Layering model
Week 14	Protocols
Week 15	addressing communications

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Computer Organization and Architecture Designing for Performance (8th Edition).	No
Recommended Texts	Computing Essentials Making IT work for you 2017 by Timothy J. O'Leary.	No
Websites	https://www.geeksforgeeks.org/computer-science/	

Grading Scheme				
Group	**Grade**	Mark	**Marks %**	**Definition**
Success Group (50 - 100)	**A -** Excellent	Excellent	90 - 100	Outstanding Performance
	B - Very Good	Very Good	80 - 89	Above average with some errors
	C - Good	Good	70 - 79	Sound work with notable errors
	D - Satisfactory	Fair / Average	60 - 69	Fair but with major shortcomings
	E - Sufficient	Pass / Acceptable	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	Fail (Pending)	(45-49)	More work required but credit awarded
	F – Fail	Fail	(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

Module Information					
Module Title	Democracy and human rights			**Module Delivery**	
Module Type	S			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UOWA005**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Artificial Intelligence		**College**	Computer Science and Information Technology	
Module Leader	Jassim Mohammed Alawi		**e-mail**	Jassim.mohamed.1412@gmail.com	
Module Leader's Acad. Title	Assist Professor		**Module Leader's Qualification**	Msc	
Module Tutor	Jassim Mohammed Alawi		**e-mail**	Jassim.mohamed.1412@gmail.com	
Peer Reviewer Name	Ali Mahmoud Ali		**e-mail**	ali.mahmoud@uowa.edu.iq	
Scientific Committee Approval Date	01/11/2025		**Version Number**	1.0	

Relation with other Modules			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Department Head Approval | **Dean of the College Approval**

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	A. To teach students the fundamentals of human rights and their laws. B. To familiarize students with rights and the most important issues and challenges they face. C. To define and understand concepts related to freedoms, including individual rights and personal liberties. D. To develop the ability to think critically about issues related to freedoms and individual rights.
Module Learning Outcomes	1. For students to understand the concept of rights, their laws, and their applications. 2. For students to know how to participate in disseminating and implementing rights through real-world action. 3. To be able to use rights as a means for peaceful coexistence among all members of society and all living beings. 4. To be able to share these rights with others. 5. To be able to analyze and define the concept of freedom and distinguish between different types of freedoms. 6. To engage with freedom issues at the national and international levels and influence public opinion.
Indicative Contents	1. Fundamental and Non-Fundamental Rights and Freedoms 2. Civil Rights and Freedoms 3. Political Rights 4. Human Rights and International Humanitarian Law

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Fundamental and Non-Fundamental Rights and Freedoms 2. Civil Rights and Freedoms 3. Political Rights 4. Human Rights and International Humanitarian Law

Student Workload (SWL)			
Structured SWL (h/sem)	33	**Structured SWL (h/w)**	2
Unstructured SWL (h/sem)	17	**Unstructured SWL (h/w)**	1
Total SWL (h/sem)	**50**		

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

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	The Concept and Characteristics of Democracy
Week 2	Direct Democracy
Week 3	Semi-Direct Democracy
Week 4	Indirect Democracy
Week 5	Pillars of Democracy
Week 6	Mechanisms of Democracy
Week 7	Definition of Human Rights
Week 8	Exam
Week 9	Fundamental and Non-Fundamental Rights
Week 10	Civil Rights
Week 11	Political Rights
Week 12	Economic, Social, and Cultural Rights
Week 13	Individual and Collective Rights and the New Category of Rights
Week 14	Human Rights and International Humanitarian Law
Week 15	Human Rights in Islam

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Diamond L. & M. F. Plattner, eds., (2009), Democracy. A Reader, Baltimore, Johns Hopkins University Press.	Yes
Recommended Texts	The concept of public freedoms and human rights, its historical, intellectual and philosophical framework, and its fundamental guarantees - 2010	No
Websites	https://www.ohchr.org/	

Grading Scheme				
Group	**Grade**	Mark	**Marks %**	**Definition**
Success Group (50 - 100)	**A -** Excellent	Excellent	90 - 100	Outstanding Performance
	B - Very Good	Very Good	80 - 89	Above average with some errors
	C - Good	Good	70 - 79	Sound work with notable errors
	D - Satisfactory	Fair / Average	60 - 69	Fair but with major shortcomings
	E - Sufficient	Pass / Acceptable	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	Fail (Pending)	(45-49)	More work required but credit awarded
	F – Fail	Fail	(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

Module Information					
Module Title	**English Language I**			**Module Delivery**	
Module Type	S			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UOWA105**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Artificial Intelligence		**College**	Computer Science and Information Technology	
Module Leader	Mahmood Jasim		**e-mail**	mahmood.jasim@uowa.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D	
Module Tutor	Mahmood Jasim		**e-mail**	mahmood.jasim@uowa.edu.iq	
Peer Reviewer Name	Ali Mahmoud Ali		**e-mail**	ali.mahmoud@uowa.edu.iq	
Scientific Committee Approval Date	01/11/2025		**Version Number**	1.0	

Relation with other Modules			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Department Head Approval **Dean of the College Approval**

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	Enhance Language Proficiency: The course aims to enhance students' language proficiency in English, including their reading, writing, speaking, and listening skills. It focuses on improving grammar, vocabulary, pronunciation, and overall communication abilities
Module Learning Outcomes	1. Developing advanced reading comprehension skills and critical analysis of various texts. 2. Enhancing writing skills across different genres and formats. 3. Improving oral communication and presentation skills. 4. Expanding language proficiency in English, including grammar, vocabulary, and pronunciation. 5. Analyzing and interpreting literary works from diverse genres and periods. 6. Conducting effective research and demonstrating information literacy. 7. Cultivating critical thinking skills and forming well-supported opinions. 8. Enhancing intercultural communication and understanding. 9. Fostering creativity and imaginative expression through literature and writing. 10. Cultivating a love for lifelong learning in the field of English.
Indicative Contents	Study of various literary genres, such as poetry, drama, and prose. Analysis of literary works from different periods and cultural contexts. Development of critical reading and interpretation skills. Exploration of language and linguistics, including grammar, syntax, and phonetics. Introduction to literary theories and their application in analyzing texts. Practice in academic writing, including essay composition and research skills. Development of oral communication and presentation skills. Examination of cultural and historical contexts that influence literature. Integration of technology and digital resources in language and literary studies. Opportunities for creative writing and expression.

Learning and Teaching Strategies	
Strategies	1. Reading and Text Analysis: Provide a variety of reading materials, including literary texts, articles, and authentic sources. Guide students in analyzing and interpreting texts, identifying main ideas, and extracting key information. Facilitate class discussions to promote comprehension and critical thinking. 2. Writing Workshops and Peer Feedback: Conduct writing workshops where students can refine their writing skills and receive feedback from peers and the instructor. Incorporate writing exercises that focus on specific writing techniques and genres. Provide guidance and support in the writing process, including brainstorming, drafting, revising, and editing. 3. Presentations and Public Speaking: Assign oral presentations on various topics to enhance students' public speaking skills. Provide guidelines and practice

	opportunities for effective delivery, organization, and visual aids. Offer constructive feedback to help students improve their presentation skills. 4. Grammar and Vocabulary Activities: Incorporate interactive grammar and vocabulary activities, such as exercises, games, and quizzes, to reinforce language skills. Provide explicit instruction on grammar rules and strategies for vocabulary acquisition. Encourage students to use new grammar and vocabulary in context.

Student Workload (SWL)			
Structured SWL (h/sem)	33	**Structured SWL (h/w)**	2
Unstructured SWL (h/sem)	17	**Unstructured SWL (h/w)**	1
Total SWL (h/sem)	**50**		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	5	10% (10)	2,3,5,9,11	LO #1, LO #4, LO #5
	Assignments	4	10% (10)	4,6,8,10	LO #2, LO #6, LO #7, LO #9
	Assig. in college.	Continuous	10% (10)	Continuous	Not Applicable (N/A)
	Report	1	10% (10)	13	LO #5, LO #6, LO #8
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1, LO #2, LO #4
	Final Exam	3hr	50% (50)	16	All Learning Outcomes (LO #1 – LO #10)
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Hello Grammar spot (is, are, am) Possessive Pronouns Everyday English (conversation) Word order Sounds
Week 2	Your world Nationalities Grammar spot (abbreviations, completing a question, Checking the correct sentence) Complete a conversation
Week 3	All about you Grammar spot (Negatives, abbreviations, and short answers) Writing Personal information (profile) Listening to a conversation Social expressions and jobs
Week 4	Family and friends Objective Pronouns Possession (Possessive pronouns, Possessive S, Has and have) Grammar spot (Checking the correct sentence) Pronunciation
Week 5	The way I live Vocabulary: sports, food, and drinks Grammar spot: (positive, negative, adjectives, and articles: a/an) Listening and speaking Matching countries with nationalities
Week 6	Every day Writing (times) Grammar spot (present simple and its adverbs) Pronunciation (s) Vocabulary and speaking Prepositions
Week 7	Mid-term Exam

Week 8	My favorites/Where I live Grammar spot: Question words, positive, negative, question, and word order. Conversation: using this/ that Vocabulary: completing adjectives, synonyms and antonyms, Everyday English (places and activities). Writing a letter, a postcard and a paragraph. Everyday English: directions
Week 9	Times past Grammar spot: passive voice, past simple, questions, past tense adverbs, and question words. Reading and speaking: past form Vocabulary: Using have, do, go, and time expressions Listening and speaking: sport, leisure, seasons, and months.
Week 10	We had a great time Grammar spot: past tense: regular and irregular forms Pronunciation of /t/, /d/ and /id/ Vocabulary: technical terms
Week 11	I can do that Grammar spot: can, adverbs (fast and well), Regular adverbs, and request and offer Pronunciation of can Vocabulary and speaking: adjectives, and everyday English
Week 12	Please and thank you Speaking: activities and places, Grammar spot: would like, some and any, always, and now and soon Reading and speaking: food names, and everyday English (signs all around) Vocabulary: Technical expressions
Week 13	Second Exam
Week 14	Here and now Vocabulary and listening: colors, opposite verbs, everyday English (sense terms) Grammar spot: present continuous
Week 15	It's time to go Writing: transport Grammar spot: going to and present continuous, and Question words Vocabulary revision, Everyday English (social expressions), and technical abbreviations. Pronunciation of two and three syllables

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	**Headway Plus Beginner, by John and Liz Soars,2010**	Yes
Recommended Texts	**English Grammar in Use (Elementary), Raymond Murphy, Cambridge University Press**	NO
Websites	https://www.bbc.co.uk/learningenglish	

Grading Scheme				
Group	**Grade**	Mark	**Marks %**	**Definition**
Success Group (50 - 100)	**A -** Excellent	Excellent	90 - 100	Outstanding Performance
	B - Very Good	Very Good	80 - 89	Above average with some errors
	C - Good	Good	70 - 79	Sound work with notable errors
	D - Satisfactory	Fair / Average	60 - 69	Fair but with major shortcomings
	E - Sufficient	Pass / Acceptable	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	Fail (Pending)	(45-49)	More work required but credit awarded
	F – Fail	Fail	(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

Module Information					
Module Title	**Introduction to Artificial Intelligence (AI)**			**Module Delivery**	
Module Type	**C**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**AI1101**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	**1**		**Semester of Delivery**	1	
Administering Department	Artificial Intelligence		**College**	Computer Science and Information Technology	
Module Leader	Ali Mahmoud Ali		**e-mail**	ali.mahmoud@uowa.edu.iq	
Module Leader's Acad. Title	assistant lecturer		**Module Leader's Qualification**	M.Sc.	
Module Tutor	Ali Mahmoud Ali		**e-mail**	ali.mahmoud@uowa.edu.iq	
Peer Reviewer Name	Dr. Mahmood Jasim		**e-mail**	mahmood.jasim@uowa.edu.iq	
Scientific Committee Approval Date	01/11/2025		**Version Number**	1.0	

Relation with other Modules			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Department Head Approval

Dean of the College Approval

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	The aim of this module is to provide an introduction to Artificial Intelligence (AI) and its various applications. Students will gain a comprehensive understanding of the fundamental concepts, techniques, and algorithms used in AI, as well as the ethical considerations associated with its use. The module will also explore the impact of AI on society, economy, and various industries.
Module Learning Outcomes	By the end of this module, students are expected to: 1. Understand the basic concepts and principles of Artificial Intelligence. 2. Gain knowledge of various AI techniques and algorithms. 3. Develop an understanding of the ethical implications of AI. 4. Analyze the impact of AI on different aspects of society and industry. 5. Apply AI techniques to solve real-world problems.
Indicative Contents	Introduction to Artificial Intelligence Definition, brief history, and scope of AI. Different types of AI systems. Problem Solving and Search Algorithms Problem formulation and representation. Uninformed search algorithms (e.g., breadth-first search, depth-first Machine Learning Ethical and Social Implications

Learning and Teaching Strategies	
Strategies	Conceptual Understanding: Hands-on Practice Code Review and Feedback Problem-Solving Exercises

Student Workload (SWL)			
Structured SWL (h/sem)	48	**Structured SWL (h/w)**	3
Unstructured SWL (h/sem)	102	**Unstructured SWL (h/w)**	6.8
Total SWL (h/sem)	**150**		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	6	10% (10)	2,3,4,6,8,11	LO #1, LO #2
	Assignments	5	10% (10)	3,5,7,8,9	LO #2, LO #3, LO #4
	Seminar.	1	10% (10)	12	All Learning Outcomes (LO #1 – LO #5)
	Report	1	10% (10)	13	LO #4, LO #5
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	All Learning Outcomes (LO #1 – LO #5)
	Final Exam	3hr	50% (50)	16	All Learning Outcomes (LO #1 – LO #5)
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Historical overview of AI, AI Introduction
Week 2	Programing and AI important
Week 3	AI Types
Week 4	Problem Solving: **Introduction to problem-solving techniques and algorithms**
Week 5	AI Applications Overview: **A survey of AI applications in various domains such as healthcare, finance, and gaming.**
Week 6	**search algorithms like depth-first search and breadth-first search.**
Week 7	Mid-term Exam
Week 8	Machine Learning Basics: **A brief introduction to the fundamentals of machine learning**
Week 9	**Supervised learning**
Week 10	**unsupervised learning**
Week 11	**Expert systems**
Week 12	**Knowledge base**
Week 13	**Rule based approaches**
Week 14	**AI Ethics Awareness: An introduction to ethical considerations in AI, including fairness, bias, and responsible AI development.**
Week 15	**Preparatory week before the final Exam**

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Book Title: "Artificial Intelligence: A Guide to Intelligent Systems" Author: Michael Negnevitsky	No
Recommended Texts	**Russell, S., & Norvig, P.** "*Artificial Intelligence: A Modern Approach*" (4th ed.). Pearson.	No
Websites	https://ai.stanford.edu/	

Grading Scheme				
Group	**Grade**	Mark	**Marks %**	**Definition**
Success Group (50 - 100)	**A -** Excellent	Excellent	90 - 100	Outstanding Performance
	B - Very Good	Very Good	80 - 89	Above average with some errors
	C - Good	Good	70 - 79	Sound work with notable errors
	D - Satisfactory	Fair / Average	60 - 69	Fair but with major shortcomings
	E - Sufficient	Pass / Acceptable	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	Fail (Pending)	(45-49)	More work required but credit awarded
	F – Fail	Fail	(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

Module Information					
Module Title	**Mathematics**			**Module Delivery**	
Module Type	**B**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CSIT1102**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Artificial Intelligence		**College**	Computer Science and Information Technology	
Module Leader	Elaf Ali Sfooq		**e-mail**	elaf.ali@uowa.edu.iq	
Module Leader's Acad. Title	Assist Lecturer		**Module Leader's Qualification**	M.Sc.	
Module Tutor	Elaf Ali Sfooq		**e-mail**	elaf.ali@uowa.edu.iq	
Peer Reviewer Name	Assist lecturer Ali Mahmoud		**e-mail**	ali.mahmou@uowa.edu.iq	
Scientific Committee Approval Date	01/11/2025		**Version Number**	1.0	

Relation with other Modules			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Department Head Approval **Dean of the College Approval**

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	The aim of this module is to provide students with a solid foundation in core mathematical concepts and theories essential for further study in mathematics, science, and engineering. The course covers fundamental topics including algebra, calculus, geometry, discrete mathematics, probability, and statistics, equipping students with the analytical skills and problem-solving abilities required to apply mathematical principles effectively in academic and professional contexts.
Module Learning Outcomes	By the end of this module, students will be able to: 1. Understand and correctly use basic mathematical terminology and notation. 2. Apply formal mathematical definitions, theorems, and proofs to solve problems accurately. 3. Demonstrate a foundational understanding of propositional and predicate logic. 4. Explain the fundamental concepts of elementary set theory. 5. Understand and analyze mathematical relations and functions. 6. Understand the basic principles of graph theory and their applications.
Indicative Contents	• Calculus (Differentiation, Integration, and Applications) • Linear Algebra (Matrices, Vectors, Systems of Linear Equations) • Discrete Mathematics (Logic, Sets, Relations, Functions, Combinatorics) • Probability and Statistics (Descriptive Statistics, Probability Theory, Distributions) • Differential Equations (First-Order and Higher-Order Equations, Applications)

Learning and Teaching Strategies	
Strategies	1. **Lectures** • Deliver core mathematical concepts, theories, and principles in a structured and systematic manner. • Provide examples and step-by-step explanations to illustrate key ideas. 2. **Tutorials and Problem-Solving Sessions** • Enable students to practice and apply mathematical techniques learned in lectures. • Focus on exercises in algebra, calculus, discrete mathematics, probability, and statistics to reinforce understanding. 3. **Independent Learning and Self-Study** • Students are encouraged to review lecture notes, textbooks, and online resources to consolidate learning. • Assignments and practice exercises promote self-directed learning. 4. **Formative Assessments and Feedback** • Quizzes, assignments, and in-class exercises provide regular feedback on student progress.

	• Continuous assessment helps identify areas for improvement and supports mastery of mathematical concepts. 5. **Revision and Exam Preparation** • Structured revision sessions and guided problem-solving prepare students for midterm and final exams. • Emphasizes analytical reasoning, proof construction, and application of mathematical methods.

Student Workload (SWL)			
Structured SWL (h/sem)	48	**Structured SWL (h/w)**	3
Unstructured SWL (h/sem)	102	**Unstructured SWL (h/w)**	6.8
Total SWL (h/sem)	**150**		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	5	15% (15)	2,3,5,10,11	LO #1, LO #3, LO #4
	Assignments	5	15% (15)	2,4,6,9,12	LO #2, LO #5, LO #6
	Projects / Lab.	-	-	-	Not Applicable (N/A)
	Report	1	10% (10)	13	LO #2, LO #6
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	(LO #1 – LO #4)
	Final Exam	3hr	50% (50)	16	All Learning Outcomes (LO #1 – LO #6)
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Functions: Function Definition, Domain and range of functions, Graphing of function
Week 2	Limits: Definition of limits, Theorems of limits, Type of limits
Week 3	The Definition and Interpretation of the Derivative
Week 4	Methods of proof and Mathematical induction
Week 5	Counting principles Permutations and combinations
Week 6	Pigeonhole principle Inclusion-exclusion principle
Week 7	Midterm
Week 8	Number Theory: ● Prime numbers and factorization ● Modular arithmetic ● GCD and LCM ● Applications in cryptography
Week 9	Probability and Statistics: ● Probability spaces ● Random variables and distributions ● Expectation and variance ● Applications in data analysis and algorithm analysis
Week 10	Linear Algebra for Computer Science: ● Vectors and matrices
Week 11	● Linear transformations
Week 12	● Eigenvalues and eigenvectors ● Applications in Machine Learning
Week 13	Special Topics: ● Cryptography
Week 14	● Computation theory and Complexity theory
Week 15	Recap for the final exam

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Calculus, Thomas ,1990,5th edition	Yes
Recommended Texts	Howard Anton, Irl Bivens, Stephen Davis, CALCULUS, 10th Edition, John Wiley & Sons, Inc., 2012.	No
Websites	https://ocw.mit.edu/ , https://tutorial.math.lamar.edu/	

Grading Scheme				
Group	**Grade**	Mark	**Marks %**	**Definition**
Success Group (50 - 100)	**A -** Excellent	Excellent	90 - 100	Outstanding Performance
	B - Very Good	Very Good	80 - 89	Above average with some errors
	C - Good	Good	70 - 79	Sound work with notable errors
	D - Satisfactory	Fair / Average	60 - 69	Fair but with major shortcomings
	E - Sufficient	Pass / Acceptable	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	Fail (Pending)	(45-49)	More work required but credit awarded
	F – Fail	Fail	(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

Module Information					
Module Title	**Programming Basics**			**Module Delivery**	
Module Type	**C**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**AI1102**				
ECTS Credits	**9**				
SWL (hr/sem)	**225**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Artificial Intelligence		**College**	Computer Science and Information Technology	
Module Leader	Abdulkareem Zwaen		**e-mail**	abdulkareem.zouine@uowa.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Abdulkareem Zwaen		**e-mail**	abdulkareem.zouine@uowa.edu.iq	
Peer Reviewer Name	Ali Mahmoud Ali		**e-mail**	ali.mahmoud@uowa.edu.iq	
Scientific Committee Approval Date	01/11/2025		**Version Number**	1.0	

Relation with other Modules			
Prerequisite module	None	**Semester**	-
Co-requisites module	None	**Semester**	-

Department Head Approval **Dean of the College Approval**

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	The objectives of this module are to: 1. Introduce students to fundamental programming concepts and problem-solving techniques using the C++ programming language. 2. Develop students' understanding of programming paradigms, with emphasis on the imperative approach and foundational functional concepts. 3. Enable students to understand and apply core C++ language features, including variables, data types, operators, control structures, and loops. 4. Build a foundational understanding of object-oriented programming concepts and their implementation in C++. 5. Strengthen students' ability to analyze computational problems and design efficient, structured C++ solutions. 6. Prepare students to develop, test, and debug basic C++ applications using standard libraries and best programming practices.
Module Learning Outcomes	By the end of this module, students will be able to: 1. Explain the fundamental concepts and terminology associated with programming languages, with emphasis on imperative and functional programming paradigms. 2. Apply core C++ programming constructs, including variables, data types, operators, control structures, and loops, to develop correct programs. 3. Use standard C++ libraries to perform input/output operations and basic mathematical computations. 4. Design and implement object-oriented programs using key OOP principles such as encapsulation and modularity. 5. Analyze and solve computational problems by applying structured and functional programming techniques. 6. Develop, test, and debug C++ programs using appropriate programming practices and logical reasoning.
Indicative Contents	• Introduction to algorithms and problem-solving techniques • Overview of programming languages and programming paradigms • Introduction to C++ programming environment and syntax • Variables, data types, and user input/output in C++ • Operators, expressions, and logical conditions • Control structures: if, switch, and decision making

	• Looping structures: while, do-while, and for loops • Strings, Boolean values, and mathematical operations in C++ • C++ standard libraries and basic program organization • Object-oriented programming concepts in C++ • Program testing, debugging, and code optimization • Development of simple C++ applications

Learning and Teaching Strategies	
Strategies	1. **Lectures** Core programming concepts, syntax, and paradigms are introduced through structured lectures, providing students with a solid theoretical foundation in C++ programming and problem-solving techniques. 2. **Guided Practical Sessions** Hands-on programming exercises are used to reinforce lecture material, allowing students to practice coding, experiment with language constructs, and gain confidence in writing C++ programs. 3. **Problem-Based Learning** Students are engaged in solving progressively complex programming problems that promote analytical thinking, algorithmic reasoning, and the application of imperative and functional programming concepts. 4. **Demonstrations and Code Walkthroughs** Live demonstrations and step-by-step code walkthroughs are employed to illustrate program logic, control flow, and debugging techniques. 5. **Independent Learning** Students are encouraged to explore additional programming examples, documentation, and online resources to strengthen self-learning skills and technical competence. 6. **Continuous Feedback and Assessment** Regular quizzes, assignments, and practical tasks provide formative feedback, enabling students to identify strengths and areas for improvement throughout the semester. 7. **Revision and Exam Preparation Sessions** Dedicated sessions are conducted to review key concepts, clarify common misconceptions, and prepare students for midterm and final examinations.

Student Workload (SWL)			
Structured SWL (h/sem)	90	**Structured SWL (h/w)**	6
Unstructured SWL (h/sem)	135	**Unstructured SWL (h/w)**	9
Total SWL (h/sem)	**225**		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	5	10% (10)	2,4,6,8,11	LO #1, LO #2, LO #10, LO #11
	Assignments	5	10% (10)	2,3,5,9,12	LO #3, LO #4, LO #6, LO #7
	Projects / Lab.	10	10% (10)	Continuous	All Learning Outcomes
	Report	1	10% (10)	13	LO #5, LO #8, LO #10
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 – LO #7
	Final Exam	3hr	50% (50)	16	All Learning Outcomes
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	**Algorithms**
Week 2	**Introduction to** programming **languages and C++**
Week 3	**Variables**
Week 4	**C++ Libraries**
Week 5	**C++ User Input**
Week 6	**C++ Operators**
Week 7	Mid-term Exam
Week 8	**C++ Strings & C++ Math**
Week 9	**C++ Booleans**
Week 10	**If condition**
Week 11	**Switch condition**
Week 12	**While loop**
Week 13	**Do-while loop**
Week 14	**For loop**
Week 15	**C++ Break and Continue**
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	**C++ Libraries**
Week 2	**C++ User Input**
Week 3	**C++ Operators**
Week 4	**If condition**
Week 5	**Switch condition**
Week 6	**While loop**
Week 7	**Do-while loop**
Week 8	**For loop**
Week 9	**C++ Break and Continue**

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	The C++ Programming Language (4th Edition) by Bjarne Stroustrup	No
Recommended Texts	**Stroustrup, B.** (2013). *The C++ Programming Language* (4th ed.). **Deitel, P., & Deitel, H.** (2020). *C++ How to Program* (10th ed.).	
Websites	https://www.learncpp.com https://www.w3schools.com/CPP/default.asp	

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