

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Computer Programming I I		Module Delivery
Module Type	Basic learning activities		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MDER120		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	1	Semester of Delivery	
Administering Department	Biomedical Engineering	College	College of Engineering
Module Leader	Hisham Hadi	e-mail	Hisham.Hadi@alayen.edu.iq
Module Leader's Acad. Title	Assistant Lecturer	Module Leader's Qualification	Msc
Module Tutor	Hisham Hadi	e-mail	Hisham.Hadi@alayen.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	

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	The instructional objectives of this course are designed to provide students with a comprehensive understanding of fundamental concepts in computer systems, networking, cybersecurity, and e-commerce, while also introducing them to the growing role of artificial intelligence in modern technology. The course aims to develop students' ability to understand how computer networks operate, recognize common system issues, and apply basic troubleshooting techniques to resolve technical problems. In addition, it seeks to familiarize students with various AI applications and tools, particularly their integration into smartphones and digital platforms. Furthermore, the course emphasizes the development of analytical and critical thinking skills, enabling students to evaluate the performance and effectiveness of technological systems. It also aims to enhance students' awareness of the societal impact of artificial intelligence, including ethical considerations such as data privacy, bias, and responsible use of technology. Finally, the course encourages students to explore future trends in AI and digital technologies, fostering a mindset of continuous learning and adaptability in a rapidly evolving technological landscape.			
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<table border="1"> <tr> <td data-bbox="483 958 563 2049" rowspan="2">Knowledge</td><td data-bbox="563 958 1476 1666"> A1 A1.1 Recall fundamental concepts of computer systems, networking, cybersecurity, and artificial intelligence. A1.2 Interpret the structure and functioning of computer networks, e-commerce systems, and AI-based applications in modern devices such as smartphones. A1.3 Describe the principles of computer troubleshooting, cybersecurity mechanisms, AI tools, and their integration into real-world systems. A1.4 Solve problems related to basic networking issues, system errors, and the use of AI tools in practical scenarios. A1.5 Design simple models or workflows for e-commerce platforms or AI-based applications, considering efficiency and usability. A1.6 Analyze the impact of AI technologies on society, including their role in smartphones and modern applications. </td></tr> <tr> <td data-bbox="563 1666 1476 2049"> A4 A4.1 Recognize essential computer hardware, networking devices, and software tools, including AI applications used in modern systems. A4.2 Explain the behavior of computer systems and networks based on observed performance and troubleshooting results. A4.3 Measure system performance indicators such as network connectivity, response time, and basic system diagnostics using appropriate tools. </td></tr> </table>	Knowledge	A1 A1.1 Recall fundamental concepts of computer systems, networking, cybersecurity, and artificial intelligence. A1.2 Interpret the structure and functioning of computer networks, e-commerce systems, and AI-based applications in modern devices such as smartphones. A1.3 Describe the principles of computer troubleshooting, cybersecurity mechanisms, AI tools, and their integration into real-world systems. A1.4 Solve problems related to basic networking issues, system errors, and the use of AI tools in practical scenarios. A1.5 Design simple models or workflows for e-commerce platforms or AI-based applications, considering efficiency and usability. A1.6 Analyze the impact of AI technologies on society, including their role in smartphones and modern applications.	A4 A4.1 Recognize essential computer hardware, networking devices, and software tools, including AI applications used in modern systems. A4.2 Explain the behavior of computer systems and networks based on observed performance and troubleshooting results. A4.3 Measure system performance indicators such as network connectivity, response time, and basic system diagnostics using appropriate tools.
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			A4.4 Apply troubleshooting techniques to identify and resolve common computer and network problems.
			A4.5 Examine AI tools and applications to determine their functionality, effectiveness, and limitations.
	Skills	B1	B1.1 Communicate effectively individually B1.2 Communicate effectively in Groups
		B2	B2.1 Communicate effectively – graphically with a range of audiences using contemporary tools. B2.2 Communicate verbally and in writing with a range of audiences using contemporary tools.
	Ethics	C2	C2.1 Recognize professional and ethical responsibility. C2.2 Adhere and respect diversity.
Indicative Contents المحتويات الإرشادية	<u>Fundamentals of Computing and Networking</u> ➤ Basic computer components (hardware and software). ➤ Operating systems and application software. ➤ Introduction to computer networks (LAN, WAN, Internet). ➤ Network devices and communication models. ➤ Basics of cybersecurity, threats, and protection methods.		
	<u>E-Commerce and Digital Transactions</u> ➤ Concepts and models of e-commerce (B2B, B2C, C2C). ➤ Online business processes and digital marketplaces. ➤ Digital payment systems and transaction workflows. ➤ Security mechanisms in e-commerce (encryption, authentication). ➤ Risks and challenges in online transactions.		
	<u>Computer Troubleshooting and Problem Solving</u> ➤ Common hardware and software issues. ➤ Structured troubleshooting methodologies. ➤ Diagnostic tools and error identification. ➤ Preventive maintenance and best practices.		
	<u>Artificial Intelligence in Modern Digital Systems</u> ➤ Introduction to artificial intelligence and machine learning ➤ How AI operates in smartphones and smart devices ➤ AI in operating systems, voice assistants, and sensors ➤ Data collection and decision-making processes in AI systems		
	<u>AI Applications and Python-Based Tasks</u> ➤ Overview of AI applications in healthcare, business, and education ➤ Introduction to Python for AI ➤ Basic Python programming concepts ➤ Simple AI tasks (e.g., data classification, prediction examples)		



	➤ Use of basic AI libraries and tools <u>Social, Ethical, and Legal Impacts of AI</u> ➤ Ethical issues in AI (bias, privacy, transparency) ➤ Social impact of AI on employment and daily life ➤ Legal considerations and AI regulations ➤ Responsible and trustworthy AI development <u>Technical Communication Skills</u> ➤ Writing technical reports and documentation ➤ Presenting technical ideas clearly and logically ➤ Use of visual aids and digital tools for communication ➤ Teamwork and professional communication practices
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Lectures Lab Sessions Assignments Onsite Assignments Tutorials Assessments

Student Workload (SWL) الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	3.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	27	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	1.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		



Module Evaluation						
تقييم المادة الدراسية						
			Time/ Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Theory	Quizzes	2	10% (10)	4,9	A1A4
		Onsite assignments	1	10% (10)	1,,3,5,7,9,11	A1
		Homework	1	10% (10)	3,7,9	A4
		Report	1	10% (10)	6,10	A1 A4
	Lab		1	10% (10)	3,5,6,7	A4
Summative assessment	Midterm Exam		2	10% (10)	8,15	A1
	Final Exam		3hr	40% (40)	15	A1
Total assessment				100% (100 Marks)		

Delivery Plan (Weekly Syllabus)		
المنهاج الاسبوعي النظري		
	Material Covered	LOS
Week 1	Computer Security & Networking	A1-1 A1-2 B1-1 C1-2
Week 2		
Week 3		
Week 4	E-Commerce	A1-4 B1-2
Week 5		
Week 6	Computer Troubleshooting	A1-1, B1.1, C2-1 A1-2, B2.1, C2-3
Week 7		
Week 8	MID Exam 1	A1 A4
Week 9	Role of AI in Modern Smartphones	A1-6, A4-5
Week 10	AI Applications and Tools	A1-4, A1-3, A4-1, B2.2
Week 11	AI and Society	A1-1, B1.1, C2-1
Week 12	Ethical Challenges in AI	A1-2, B2.1, C2-3 A1-3, A4-2, C2-1
Week 13		



Week 14	Future of AI	A1-2, A4-5
Week 15	MID Exam 2	A1 A4
Week 16	Final Exam	A1 A4

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر		
	Material Covered	LOS
Week 1	Simple Python commands and scripts; demonstrating data transmission simulation	A4
Week 2	Basic data processing in Python (arrays, tables).	A4
Week 3		
Week 4	Writing Python scripts to automate system-check simulations.	A4
Week 5		
Week 6	Simple Python image-processing functions.	A4
Week 7		A4
Week 8	Intro to Python -ML toolbox (basic classification).	A4
Week 9		
Week 10	Data visualization in Python.	A4
Week 11		
Week 12	No lab (discussion + case studies).	A4
Week 13		
Week 14	Summary MATLAB practice (mini-project).	A4
Week 15	Exam	A4

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	https://www.freecodecamp.org Structure and Interpretation of Computer Programs/	Yes
Recommended Texts	https://academy.hsoub.com/	No
Websites	https://eng.alayen.edu.iq/colleges/e/42	



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 (فيد 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.



