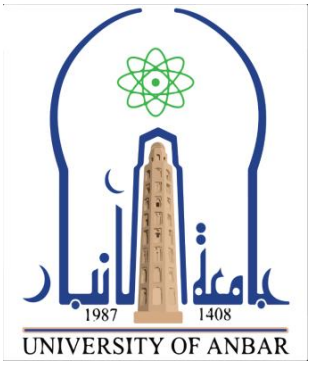

وزارة التعليم العالي والبحث العلمي

جامعة الانبار

كلية علوم الحاسوب وتكنولوجيا المعلومات

قسم انظمة شبكات الحاسوب

نظام بولونيا

Module Description Form

Ministry of Higher Education and Scientific Research
UNIVERSITY OF ANBAR
COLLEGE of COMPUTER SCIENCES AND INFORMATION TECHNOLOGY
DEPT. COMPUTER NETWORKS SYSTEMS

وزارة التعليم العالي والبحث العلمي
جامعة الأنبار
كلية علوم الحاسوب وتكنولوجيا المعلومات
قسم أنظمة شبكات الحاسوب

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Networks Fundamentals**			**Module Delivery**	
Module Type	Core			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	CNDC114				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	First Class		**Semester of Delivery**		
Administering Department	NSD		**College**	CSIT	
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			**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	A fundamental course in computer networks typically covers the basics of networking concepts and technologies. The course is designed to provide students with a foundational understanding of how computer networks operate, how data is transmitted between devices, and the protocols and technologies that facilitate communication.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The learning outcomes for a Networks Fundamentals module typically focus on ensuring that students acquire a comprehensive understanding of basic networking concepts and are able to apply that knowledge in practical scenarios. Here are some example learning outcomes for such a module
Indicative Contents المحتويات الإرشادية	introduction to networks basics of network protocols communications the OSI and TCP/IP networking models IP addressing and subnetting IP networks Network analysis techniques configuration of networking devices

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Hands-On Practice Simulations and Virtual Labs Case Studies Interactive Learning Resources Group Projects Problem-Solving Scenarios Visualization Techniques Progress Monitoring

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5,10	LO #1,2, 3 and 5
	Assignments	2	10% (10)	2,12	LO # 3, 4 and 5
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5,8 and l0
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3 hr	60% (60)	16	All
Total assessment					

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Networking: • Definition and importance of computer networks.
Week 2	Network Topologies: • Bus, star, ring, and mesh topologies. • Advantages and disadvantages of each topology.
Week 3	Networking Devices: Routers, switches, hubs, and bridges. Their functions and roles in a network.
Week 4	OSI Model: • Overview of the OSI (Open Systems Interconnection) model.

	• Explanation of each layer's functions (physical, data link, network, transport, session, presentation, application).
Week 5	TCP/IP Protocol Suite: • Explanation of the TCP/IP protocol stack. • Role of each layer in the TCP/IP model.
Week 6	IP Addressing: • IPv4 and IPv6 addressing. • Subnetting and CIDR notation.
Week 7	Routing and Switching: • Basic concepts of routing. • Introduction to routing algorithms. • Switching techniques and VLANs (Virtual LANs
Week 8	Network Security: • Basics of network security. • Firewalls, encryption, and secure communication protocols
Week 9	Wireless Networking: • Wi-Fi standards and protocols. • Security considerations in wireless networks.
Week 10	Introduction to the Internet: • How the Internet works. • Internet infrastructure and key components.
Week 11	Application Layer Protocols: • HTTP/HTTPS, FTP, DNS, SMTP. • Overview and functions of common application layer protocols
Week 12	Network Management: • Basics of network monitoring and management. • SNMP (Simple Network Management Protocol).
Week 13	Network Troubleshooting: • Common network issues and how to troubleshoot them. • Use of network diagnostic tools.
Week 14	Emerging Technologies: • Introduction to emerging technologies such as IoT (Internet of Things) and SDN (Software-Defined Networking).
Week 15	Ethical and Legal Considerations: • Ethical issues related to network usage.

	• Legal aspects of network communication and data transmission
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to laboratory equipment and safety procedures
Week 2	Identify and describe the functions of common networking devices.
Week 3	Basic Network Configurations
Week 4	TCP/IP Configuration and Troubleshooting
Week 5	Configure VLANs and practice switching.
Week 6	Set up and secure a wireless network
Week 7	Use network management tools to monitor and manage network resources.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Integrated Electronics Analog and Digital & System. Author – Jacob Millman. Christos C. Halkias	
Recommended Texts		
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.

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Mathematics**			**Module Delivery**	
Module Type	Basic			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	CCIT 060				
ECTS Credits	6				
SWL (hr/sem)	**150**				
Module Level			**Semester of Delivery**		
Administering Department	CND		**College**	CSIT	
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			**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	Core Mathematical Knowledge: The course aims to provide students with a solid foundation of core mathematical concepts and theories. This includes topics such as algebra, calculus, geometry, discrete mathematics, probability, and statistics. The aim is to ensure that students have a comprehensive understanding of fundamental mathematical principles.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Understand and Apply Mathematical Concepts: Demonstrate a thorough understanding of mathematical concepts, theories, and techniques relevant to the module. Apply these concepts to solve mathematical problems and analyze mathematical structures and relationships.
Indicative Contents المحتويات الإرشادية	Calculus Linear Algebra Discrete Mathematics Probability and Statistics Differential Equations

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Hands-on Practical Exercises Case Studies and Real-World Examples Collaborative Learning Continuous Assessment and Feedback

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	57	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.4
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)	5,10	LO #1,2, 3 and 5
	Assignments	2	10% (10)	2,12	LO # 3, 4 and 5
	Projects / Lab.				
	Report	1	10% (10)	13	LO # 5,8 and l0
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3 hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	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	Properties of Derivative , Some laws of derivatives
Week 5	Derivatives of the six trig functions
Week 6	Exponential Functions, Logarithm Functions
Week 7	Inverse Sine, Inverse cosine

Week 8	Inverse tangent, Alternate Notation
Week 9	The six hyperbolic trigonometric functions I
Week 10	The six hyperbolic trigonometric functions II
Week 11	The two forms of the chain rule
Week 12	Using the chain rule
Week 13	first derivative, second derivative, third derivative.
Week 14	logarithms
Week 15	the properties of logarithms
Week 16	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	George B. Thomas, Jr., Maurice D. Weir, Joel Hass, THOMAS' CALCULUS: EARLY TRANSCENDENTALS, Twelfth Edition, Pearson Education, Inc., 2010.	
Recommended Texts	Howard Anton, Irl Bivens, Stephen Davis, CALCULUS, 10th Edition, John Wiley & Sons, Inc., 2012.	
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.

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قسم أنظمة شبكات الحاسوب

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Logic 1**			**Module Delivery**	
Module Type	Core			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CNDC109**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	**First Class**		**Semester of Delivery**		
Administering Department	CND		**College**	CSIT	
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			**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 module aims to provide students with a solid understanding of digital logic principles and concepts. Students learn about Boolean algebra, logic gates, truth tables, and digital logic circuits.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Demonstrate a solid understanding of digital logic principles, including Boolean algebra, logic gates, truth tables, and the concept of binary representation.
Indicative Contents المحتويات الإرشادية	Introduction to Digital Logic Combinational Logic Design Arithmetic circuits Sequential Logic Design Circuit Testing and Verification

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Conceptual Understanding Problem-Solving Approach Hands-on Laboratory Experience Design Projects Simulation and Modeling Problem-Based Learning

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5,10	LO #1,2, 3 and 5
	Assignments	2	10% (10)	2,12	LO # 3, 4 and 5
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5,8 and l0
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction: Digital System
Week 2	Number Systems
Week 3	Octal and Hexadecimal Numbers
Week 4	Number base conversion
Week 5	Theories of Boolean Algebra
Week 6	Digital Logic gates
Week 7	Boolean Expression and Truth table
Week 8	Sum Of Product Simplification
Week 9	Product Of Sum Simplification
Week 10	Exclusive OR
Week 11	NAND gates
Week 12	NOR gates
Week 13	Two- and Three-Variables Karnaugh Maps.

Week 14	Four Variables Karnaugh Maps.
Week 15	Quine-McCluskey method
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Introduction to logic gates: AND, OR, NOT
Week 2	Constructing truth tables for basic logic operations
Week 3	Designing and building simple logic circuits using logic gates
Week 4	Verifying the functionality of logic circuits through experimentation
Week 5	Boolean algebra and simplification technique
Week 6	Applying Boolean algebra to simplify logic circuits
Week 7	Advanced logic gates: XOR, NAND, NOR

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Digital fundamentals, Thomas L. Floyd, 11th edition Digital Design, Morris Mano, 4th edition	
Recommended Texts	An Introduction to Logic Technology Fundamentals of logic design	
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

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Information Technology**			**Module Delivery**	
Module Type	Core			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	CNDC110				
ECTS Credits	6				
SWL (hr/sem)	**125**				
Module Level	1		**Semester of Delivery**		
Administering Department	CND		**College**	CSIT	
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			**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	Develop technical skills: The primary aim of an IT course is to equip students with the necessary technical skills and knowledge to work effectively in the field of information technology.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Understand fundamental concepts: Demonstrate a solid understanding of fundamental concepts in information technology, including computer systems, networks, databases, programming languages, and software development methodologies.
Indicative Contents المحتويات الإرشادية	Introduction to Information Technology: Overview of information technology concepts, principles, and applications. Historical development and evolution of IT. Ethical, legal, and societal considerations in IT.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Hands-on Practical Exercises Case Studies and Real-World Examples Collaborative Learning Continuous Assessment and Feedback

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5,10	LO #1,2, 3 and 5
	Assignments	2	10% (10)	2,12	LO # 3, 4 and 5
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5,8 and l0
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3 hr	60% (60)	16	AII
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction of Computers and Programming
Week 2	Computer history and generation
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	Secondary Storage
Week 8	Memory and storage organization
Week 9	Computer Software (Application software)
Week 10	Middleware
Week 11	Operating Systems
Week 12	Telecommunications systems
Week 13	Computer networks and applications
Week 14	Protocols in networking
Week 15	Layers of the OSI Model
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Networking fundamentals: setting up a local area network (LAN)
Week 2	Network configuration and troubleshooting exercises
Week 3	Introduction to web development: HTML and CSS basics
Week 4	Database management system exercises: advanced SQL queries
Week 5	Mobile app development: creating a simple mobile application
Week 6	IT support and helpdesk management scenarios
Week 7	Troubleshooting and problem-solving in IT environments

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Ralph M. Stair & George W. Reynolds, *Principles of Information Systems*, Ninth Edition, Cengage Learning, 2010. Behrouz A. Forouzan, *Data Communications and Networking*, Fifth Edition, McGraw-Hill, USA, 2013.	
Recommended Texts		
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
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	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.

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وزارة التعليم العالي والبحث العلمي
جامعة الأنبار
كلية علوم الحاسوب وتكنولوجيا المعلومات
قسم أنظمة شبكات الحاسوب

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**English**			**Module Delivery**	
Module Type	Support			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	UOA 010				
ECTS Credits	2				
SWL (hr/sem)	50				
Module Level	**First Class**		**Semester of Delivery**		
Administering Department	CND		**College**	CSIT	
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			**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	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 مخرجات التعلم للمادة الدراسية	Developing advanced reading comprehension skills and critical analysis of various texts. Enhancing writing skills across different genres and formats. Improving oral communication and presentation skills. Expanding language proficiency in English, including grammar, vocabulary, and pronunciation. Analyzing and interpreting literary works from diverse genres and periods. Conducting effective research and demonstrating information literacy. Cultivating critical thinking skills and forming well-supported opinions. Enhancing intercultural communication and understanding. Fostering creativity and imaginative expression through literature and writing. Cultivating a love for lifelong learning in the field of English.
Indicative Contents المحتويات الإرشادية	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 استراتيجيات التعلم والتعليم	
Strategies	Active Reading and Textual Analysis

	Collaborative Learning Writing Workshops and Feedback Technology Integration Creative Expression

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.4
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	LO #1,2, 3 and 5
	Assignments	2	10% (10)	2,12	LO # 3, 4 and 5
	Projects / Lab.	1			
	Report	1	10% (10)	13	LO # 5,8 and l0
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3 hr	60% (60)	16	All
Total assessment					

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Student life

	• Reading- ways of reading: reading method • Writing – punctuation, Linking ideas, rules
Week 2	Student life Part of speech- identifying nouns, verbs, adjective, adverbs, and prepositions.
Week 3	Daily routines: • Predicting content • Skimming
Week 4	Daily routines: Words that go together (Collocations, Rules)
Week 5	People and the environment • Scanning- using headings • Meaning from context • Writing (punctuation and rules)
Week 6	Architecture Making notes: notes from study (intensive) reading, labelling diagrams
Week 7	Architecture • Writing about a building – word and phrases • (language to describe buildings)
Week 8	Education • Universities – predicting content, linking ideas • Writing a letter or email
Week 9	Education Spelling rules for plural countable nouns
Week 10	Technology • Reading (invention) Writing (Describing things- writing adscription of advice
Week 11	Food, drink, and culture • Topic sentence: using a topic sentence to help understanding Writers opinion: identifying the writer's opinion
Week 12	• Writing (punctuation ((commas)), linking ideas ((in addition, and using pronouns: avoiding repetition. Prefixes and their meanings
Week 13	Cities of the world • Reading (looking at data: tables charts, and graphs. • Writing (Rules :comparatives and superlatives , linking ideas ; using relative pronouns which and where .
Week 14	Brain Power • Reading: using pronouns and synonyms to avoid repetition. • Writing (common mistakes; typical grammar error , summaries: summarizing the main points of a text
Week 15	Staying alive • Reading: Dangerous diseases of our time • Writing (number in texts ((words or figures? Writing numbers, learning : synonyms and antonyms).
Week 16	**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	Headway Plus Beginner	
Recommended Texts		
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.

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DEPT. COMPUTER NETWORKS SYSTEMS

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	C++I			**Module Delivery**	
Module Type	Core			☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	CNDC107				
ECTS Credits	8				
SWL (hr/sem)	200				
Module Level	1		**Semester of Delivery**		
Administering Department	CND		**College**	CSIT	
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			**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 course aims to introduce students to the fundamentals of programming using the C++ language. Students learn programming concepts such as variables, data types, control structures, functions, and objects.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Develop proficiency in the C++ programming language, including a strong understanding of its syntax, semantics, data types, control structures, functions, and object-oriented programming concepts.
Indicative Contents المحتويات الإرشادية	Introduction to C++ Programming Object-Oriented Programming (OOP) in C++ C++ Standard Library Memory Management in C++ Data Structures and Algorithms in C++ C++ Application Development

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

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	108	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	92	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5,10	LO #1,2, 3 and 5
	Assignments	2	10% (10)	2,12	LO # 3, 4 and 5
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5,8 and l0
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Overview to Programming Language
Week 2	Algorithms and Flow Charts
Week 3	C++ program structure
Week 4	Data Types and variables
Week 5	Input/ output statements
Week 6	Unary Minus Increment and /decrement Operators.
Week 7	Assignment , Relational ,Logical, Bitwise and Logical operations.
Week 8	Control structures
Week 9	Conditional statements: If and if-else
Week 10	Switch statements
Week 11	The Switch Selection Statement
Week 12	Looping statements
Week 13	Do/While Statement
Week 14	For Statement
Week 15	Break and Continue Control Statements Nested Loops
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Arrays and strings in C++
Week 2	Functions: defining, calling, and passing arguments
Week 3	Pointers and memory management in C++
Week 4	Dynamic memory allocation with new and delete operators
Week 5	Classes and objects in C++
Week 6	Operator overloading in C++
Week 7	Standard Template Library (STL) in C++

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	K. Venugopal and Raj Buyya, *Mastering C++*, McGraw Hill Education, 1997.	
Recommended Texts		
Websites	https://www.learncpp.com/ 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.

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Arabic			**Module Delivery**	
Module Type	Support			☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	UOA001				
ECTS Credits	2				
SWL (hr/sem)	75				
Module Level	First Class		**Semester of Delivery**		
Administering Department	NSD		**College**	CSIT	
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			**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 program aims to help students develop proficiency in reading, writing, speaking, and understanding Arabic. This includes expanding vocabulary, improving grammar skills, and enhancing oral communication abilities.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Demonstrate proficiency in reading, writing, speaking, and understanding Arabic at an appropriate level. Display a nuanced understanding of Arab culture, history, traditions, and societal norms. Apply knowledge of Arabic linguistics, including phonetics, morphology, syntax, and dialectal variations, to analyze and interpret Arabic texts. Read and comprehend various types of Arabic texts, including literary works, news articles, and academic writings. Produce coherent and well-structured written work in Arabic, demonstrating effective composition skills.
Indicative Contents المحتويات الإرشادية	Introduction to Arabic Language and Culture: Arabic alphabet and pronunciation Basic vocabulary and grammar Intercultural communication and cultural norms Arabic Reading and Writing: Building vocabulary and improving reading comprehension Sentence structure and basic composition Developing writing skills through practice and feedback Intermediate Arabic Language: Expanding vocabulary and enhancing grammar skills Oral communication and conversation practice Reading and analyzing texts of moderate complexity Arabic Literature: Introduction to classical and modern Arabic literature Reading and analyzing short stories, poems, and novels Exploring themes, styles, and literary techniques

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Immersion Communicative Approach Task-based Learning Authentic Materials Technology Integration

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
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	**Quizzes**	2	10% (10)	5,10	LO #1,2, 3 and 5
	Assignments	2	10% (10)	2,12	LO # 3, 4 and 5
	Projects / Lab.				
	Report	1	10% (10)	13	LO # 5,8 and l0
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3 hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Arabic Language and Culture
Week 2	Arabic Reading and Writing
Week 3	Intermediate Arabic Language
Week 4	Arabic Literature
Week 5	Advanced Arabic Language
Week 6	Arabic alphabet and pronunciation
Week 7	Vocabulary building
Week 8	Sentence structure and basic composition
Week 9	Expanding vocabulary and enhancing grammar skills
Week 10	Reading and analyzing short stories or poem
Week 11	Exploring themes, literary devices, and cultural contexts
Week 12	Reading and analyzing authentic texts of moderate complexity
Week 13	Arabic Translation and Interpretation
Week 14	Practice in translating written texts
Week 15	Review and Assessment
Week 16	**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		
Recommended Texts		
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.

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**C++ II**			**Module Delivery**	
Module Type	Core			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	CNDC108				
ECTS Credits	**9**				
SWL (hr/sem)	**150**				
Module Level	**1**		**Semester of Delivery**		
Administering Department	NSD		**College**	CSIT	
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			**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 course aims to provide students with a comprehensive understanding of the C++II programming language. Students learn the syntax, semantics, and features of C++II and gain proficiency in writing efficient and effective code.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Develop proficiency in the C++II programming language, including a strong understanding of its syntax, semantics, data types, control structures, functions, and object-oriented programming concepts. Develop the ability to analyze problems, design algorithms, and implement solutions using C++II programming techniques. Apply critical thinking and logical reasoning to solve programming challenges.
Indicative Contents المحتويات الإرشادية	Introduction to C++ Programming Object-Oriented Programming (OOP) in C++ C++ Standard Library Memory Management in C++ Data Structures and Algorithms in C++ C++ Application Development

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

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem)	63	**Structured SWL (h/w)**	4.2

الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	**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	10% (10)	5,10	LO #1,2, 3 and 5
	Assignments	2	10% (10)	2,12	LO # 3, 4 and 5
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5,8 and l0
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Function
Week 2	Passing Parameters. Passing by Value. Passing by Reference.
Week 3	Recursive function
Week 4	Pointers
Week 5	Array of One Dimension: Declaration of Arrays.
Week 6	Initializing Array Elements
Week 7	Accessing Array Elements.
Week 8	Read / Write / Process Array Elements.
Week 9	Array of Two Dimension: Declaration of 2D-Arrays.
Week 10	Read / Write / Process
Week 11	Array Elements.
Week 12	String manipulation

Week 13	Member Function of String stdlib Library.
Week 14	Structures
Week 15	Array of Structures.
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Review of C++ basics: data types, variables, operators, and control structures
Week 2	Introduction to object-oriented programming (OOP) concepts: classes and objects
Week 3	Implementation of simple classes and objects in C++
Week 4	Inheritance and polymorphism: extending classes and overriding methods
Week 5	Introduction to dynamic memory allocation: new and delete operators
Week 6	Implementation of inheritance and polymorphism in C++
Week 7	File handling: reading from and writing to files

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts		
Recommended Texts	K. Venugopal and Raj Buyya, *Mastering C++*, McGraw Hill Education, 1997.	
Websites	https://www.learncpp.com/ 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
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	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.

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Discrete Mathematics**			**Module Delivery**	
Module Type	Basic			☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☒ Seminar	
Module Code	CCIT061				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	1		**Semester of Delivery**		
Administering Department	NSD		**College**	CSIT	
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			**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 course aims to provide students with a solid understanding of the fundamental concepts and principles of discrete mathematics. This includes topics such as sets, logic, proof techniques, functions, relations, and combinatorics.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Demonstrate a solid understanding of fundamental concepts in discrete mathematics, including sets, logic, proof techniques, functions, relations, and combinatory. Apply discrete mathematical techniques and methods to solve problems in various contexts, including computer science, algorithms, and cryptography.
Indicative Contents المحتويات الإرشادية	Sets and Logic Proof Techniques Functions and Relations Combinatorics

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Active Learning Concrete Examples and Visualization Step-by-Step Approach Scaffolding Problem-Solving Strategies

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	47	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3.1
Unstructured SWL (h/sem)	87	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6

الحمل الدراسي غير المنتظم للطالب خلال الفصل			
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)	5,10	LO #1,2, 3 and 5
	Assignments	2	10% (10)	2,12	LO # 3, 4 and 5
	Projects / Lab.				
	Report	1	10% (10)	13	LO # 5,8 and l0
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3 hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to discrete mathematics
Week 2	Set theory: Set Operations
Week 3	Sequences and Summations
Week 4	Cardinality of Sets and Matrices
Week 5	Logic: Propositional Logic and its applications
Week 6	Mathematical Induction and Recursion
Week 7	Functions: Type of function (one-to-one & invertible function)
Week 8	Geometrical characterization of functions
Week 9	Relation: Computer representation of relations and Digraph
Week 10	Manipulation of relations, Properties of relations Composition of relations
Week 11	Graph theory: Graphs and Graph Models
Week 12	Graph Terminology and Special Types of Graphs
Week 13	Representing Graphs and Graph Isomorphism Connectivity

Week 14	Tree: Introduction to Trees, Applications of Trees
Week 15	Tree Traversal, Spanning Trees
Week 16	**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		
Recommended Texts		
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.

Ministry of Higher Education and Scientific Research
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DEPT. COMPUTER NETWORKS SYSTEMS

وزارة التعليم العالي والبحث العلمي
جامعة الأنبار
كلية علوم الحاسوب وتكنولوجيا المعلومات
قسم أنظمة شبكات الحاسوب

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Logic Circuits and Design			**Module Delivery**	
Module Type	Core			☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	CNDC111				
ECTS Credits	5				
SWL (hr/sem)	150				
Module Level	First Class		**Semester of Delivery**		
Administering Department	NSD		**College**	CSIT	
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			**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 module aims to develop students' skills in designing and implementing combinational logic circuits. Students learn how to analyze and design circuits using Boolean expressions, Karnaugh maps, and logic gates.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Apply knowledge of combinational logic to design and implement digital circuits using Boolean expressions, Karnaugh maps, and logic gates. Develop the ability to simplify logic expressions and optimize circuit designs
Indicative Contents المحتويات الإرشادية	Introduction to Digital Logic Combinational Logic Design Arithmetic circuits Sequential Logic Design Circuit Testing and Verification

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Conceptual Understanding Problem-Solving Approach Hands-on Laboratory Experience Design Projects Simulation and Modeling Problem-Based Learning

Student Workload (SWL) الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	**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	10% (10)	5,10	LO #1,2, 3 and 5
	Assignments	2	10% (10)	2,12	LO # 3, 4 and 5
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5,8 and l0
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Combinational Logic: Adder, Subtractor
Week 2	Comparators, Decoders and Encoders
Week 3	Multiplexers (Data Selectors). and DE multiplexers
Week 4	Sequential Logic
Week 5	Latches
Week 6	Flip-Flops: Operating Characteristics
Week 7	Flip-Flop: S-R and J-K Flip-Flops
Week 8	Flip-Flop: Trigger and Delay Flip-Flops
Week 9	Applied Logic
Week 10	Types of Shift Register Data IOS

Week 11	Bidirectional Shift Registers
Week 12	Shift Register Counters
Week 13	Shift Register Applications
Week 14	Ripple Counters
Week 15	Memory and Programmable logic
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Review of propositional logic: syntax, semantics, and truth tables
Week 2	Implementation of propositional logic in a programming language
Week 3	Practice with propositional logic proofs and truth table evaluations
Week 4	Introduction to predicate logic: quantifiers, predicates, and interpretations
Week 5	Practice with predicate logic proofs and interpretation
Week 6	Advanced topics in logic: formal proofs, deduction rules, and logical equivalences
Week 7	Proof strategies and techniques for solving logic problems

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Digital fundamentals, Thomas L. Floyd, 11th edition Digital Design, Morris Mano, 4th edition An Introduction to Logic Technology and Fundamentals of logic design	

Recommended Texts		
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.

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قسم أنظمة شبكات الحاسوب

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Networks and Data Communication**			**Module Delivery**	
Module Type	Core			☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	CNDC203				
ECTS Credits	6				
SWL (hr/sem)	125				
Module Level	1		**Semester of Delivery**		
Administering Department	NSD		**College**	CSIT	
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			**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 aims of this module are to provide students with a foundational understanding of computer networks and data communication. Through theoretical study and practical application, students will explore key concepts, protocols, and technologies essential for designing, implementing, and managing modern network infrastructures. The module aims to develop students' technical skills in configuring network devices, addressing security concerns, and optimizing network performance. Additionally, it aims to foster critical thinking and problem-solving abilities in analyzing network issues and anticipating future trends in the field. Overall, the module aims to prepare students for professional practice in network engineering, administration, or related areas by equipping them with the knowledge and skills necessary to navigate and succeed in diverse networking environments.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this module, students will understand core concepts and technologies in computer networks, this syllabus provides a comprehensive overview of the Networks and Data Communication course, outlining its objectives, grading structure, schedule, and learning outcomes. By actively participating and completing assignments, students will gain a strong foundation in networking fundamentals, protocols, technologies, and their practical application in various scenarios.
Indicative Contents المحتويات الإرشادية	This syllabus offers a roadmap for the Networks and Data Communication course, encompassing essential networking concepts like models, devices, and protocols. Students will delve into addressing, security, troubleshooting, and emerging technologies like wireless and cloud computing, ultimately aiming to build a solid understanding of network principles, communication, and optimization.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Active Learning Scaffolding Real-World Applications Technology Integration

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 أسبوعيا	3.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	77	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5,10	LO #1,2, 3 and 5
	Assignments	2	10% (10)	2,12	LO # 3, 4 and 5
	Projects / Lab.				
	Report	1	10% (10)	13	LO # 5,8 and l0
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3 hr	60% (60)	16	All
Total assessment					

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Networking Concepts
Week 2	Network Types and Topologies
Week 3	OSI and TCP/IP models 2 | Network Devices - Physical Layer |
Week 4	Network Interface Cards (NICs)
Week 5	Hubs, Switches, Routers
Week 6	Media and Transmission Characteristics
Week 7	Ethernet
Week 8	IP Addressing and Subnetting

Week 9	Routing Protocols (Static and Dynamic)
Week 10	Routing and Routing Protocols
Week 11	Wired and Wireless Communication
Week 12	Wireless and Mobile Networks
Week 13	Network Devices and Technologies
Week 14	Components of a Data Communication System
Week 15	LAN Design and Implementation
Week 16	**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		
Recommended Texts		

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.

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Human Rights and Democracy			**Module Delivery**	
Module Type	Support			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	UOA005				
ECTS Credits	2				
SWL (hr/sem)	**100**				
Module Level		**First Class**	**Semester of Delivery**		
Administering Department		NSD	**College**	CSIT	
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			**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	1. Understand the concepts of rights and democracy: The aim of this module is to provide students with a solid understanding of the principles, theories, and values underpinning rights and democracy, including their historical development and contemporary significance. 2. Examine the relationship between rights and democracy: This module aims to explore the interplay between rights and democracy, analyzing how democratic systems uphold and protect individual and collective rights, and how rights contribute to the functioning of democratic societies. 3. Critically assess the challenges to rights and democracy: The aim is to develop students' critical thinking skills in evaluating the challenges and threats faced by rights and democracy, such as authoritarianism, populism, inequality, discrimination, and violations of human rights. 4. Analyze the role of institutions and mechanisms in safeguarding rights and democracy: This module aims to examine the role of various institutions, such as legislative bodies, courts, civil society organizations, and international bodies, in protecting and promoting rights and democracy. 5. Explore the intersectionality of rights and democracy: The aim is to foster an understanding of the intersectionality between different rights and how they intersect with democratic processes, including social, economic, cultural, and political rights.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Demonstrate a comprehensive understanding of the concepts, theories, and principles of rights and democracy. 2. Analyze and evaluate the relationship between rights and democracy, and understand how they mutually reinforce each other. 3. Critically assess the challenges and threats to rights and democracy in contemporary society. 4. Examine the role of institutions and mechanisms in safeguarding and promoting rights and democracy. 5. Recognize the intersectionality of rights and understand how different rights intersect with democratic processes. 6. Analyze the role of media and information in the context of rights and democracy, including the opportunities and challenges presented by digital

	technologies.
Indicative Contents المحتويات الإرشادية	1. Introduction to Rights and Democracy: • Overview of the concepts of rights and democracy • Historical development and evolution of rights and democracy 2. Theoretical Foundations: • Theories of democracy and its various forms • Theories of human rights and their philosophical underpinnings 3. International Human Rights Framework: • Universal Declaration of Human Rights and international human rights treaties • Role of international organizations and institutions in promoting and protecting human rights 4. Democratic Institutions and Processes: • Separation of powers and the rule of law • Electoral systems and democratic governance • Civil society and its role in democratic processes 5. Rights and Democracy in Practice: • Rights-based approaches to development • Freedom of expression, assembly, and association • Equality and non-discrimination

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Lectures Case Studies Group Discussions

Student Workload (SWL) الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	84	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.4
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)	5,10	LO #1,2, 3 and 5
	Assignments	2	10% (10)	2,12	LO # 3, 4 and 5
	Projects / Lab.				
	Report	1	10% (10)	13	LO # 5,8 and l0
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3 hr	60% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Definition of rights
Week 2	types of human rights
Week 3	Fundamental and non-fundamental rights
Week 4	Civil rights
Week 5	political rights
Week 6	Economic, social and cultural rights
Week 7	The concept of democracy
Week 8	Advantages of democracy
Week 9	Types of democracy
Week 10	direct democracy
Week 11	Representative democracy

Week 12	semi-direct democracy
Week 13	indirect democracy
Week 14	Freedom, human dignity
Week 15	Equality and justice, political participation
Week 16	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		
Recommended Texts		
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.