MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Physics**			**Module Delivery**	
Module Type	Basic			☒**Theory** ☐ **Lecture** ☒**Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	CEN11005				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level		1	**Semester of Delivery**		1
Administering Department		Cybersecurity	**College**	Engineering	
Module Leader	Dr. omar kanaan noori albasri		**e-mail**	omar.k84@kus.edu.iq	
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		PhD.
Module Tutor	Asst. Lec. Marwa Abiead Khioon		**e-mail**	marwa.aubied@kus.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**		1.0

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	• To introduce the fundamental concepts and branches of physics, including physical quantities, units, vectors, and the nature of electric charge, fields, and forces. • To explain the structure of atoms, types of matter, and the behavior of electric charge, emphasizing Coulomb's law, electric dipoles, and electric potential energy. • To develop understanding of basic electrical principles, including Ohm's law, resistance, capacitance, inductance, and the behavior of AC circuits • .To introduce the physics of semiconductors, including atomic configuration, carrier concentration, doping, and the distinction between intrinsic and extrinsic materials. • To describe the formation and operation of PN junctions and semiconductor diodes under forward and reverse bias.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• **Explain** the fundamental concepts and branches of physics, including physical quantities, units, vectors, and the nature of electric charge, fields, and atomic structure. • **Apply** the principles of electric charge interactions, including charging by induction and friction, Coulomb's law, and electric field analysis using field lines and dipole concepts. • **Analyze** basic DC and AC circuits by applying Ohm's law and the concepts of resistance, capacitance, and inductance, including series and parallel connections. • **Calculate** inductive and capacitive reactances (XL and XC) and evaluate circuit behavior under different electrical conditions. • **Describe** the atomic structure, electronic configuration, and carrier behavior in intrinsic and extrinsic semiconductors, including the effects of doping. • **Explain** the formation, biasing, and characteristics of PN junctions and semiconductor diodes, including Zener behavior and VI characteristics. • **Design and test** diode-based and semiconductor circuits such as rectifiers, voltage regulators.
Indicative Contents المحتويات الإرشادية	• Introduction to Physics and Physical Quantities Branches of physics, fundamental quantities, units, and vectors. Measurement systems and dimensional analysis. [3 hrs] • Electric Charge and Structure of Matter Electric charge, structure of atoms, and types of matter. Conservation of charge, charging by induction and friction. [3 hrs] • Electric Forces and Fields Electric forces on uncharged objects, Coulomb's law, and the concept of the electric field. Electric field due to a point charge and representation using field lines. [4 hrs] • Electric Dipoles and Potential Energy Electric dipole concepts, forces and moments on dipoles, and electric potential energy in electrostatic systems. [3 hrs] • Current, Resistance, and Capacitance

	Ohm's law, electrical resistance, and capacitance. Capacitors in series and parallel connections. Introduction to RC circuits and their behavior. [5 hrs] • Inductance and AC Circuits Principles of inductance, inductive reactance (X_l), capacitive reactance (Xc), and basic AC circuit analysis. [5 hrs] • Physics of Semiconductors Atomic structure, electronic configuration, energy bands in solids, and types of materials (conductors, insulators, semiconductors). [4 hrs] • Carrier Concentration and Doping Intrinsic and extrinsic semiconductors, carrier generation and recombination, N-type and P-type semiconductors, and doping effects. [5 hrs] • PN Junction Theory Formation of depletion region, junction potential, and VI characteristics under forward and reverse bias conditions. [5 hrs] • Semiconductor Diodes Operating principles, actual diode characteristics, Zener region, and temperature effects. [7 hrs] • Diode Applications Load-line analysis, rectifier circuits (half-wave and full-wave). [8 hrs] • Laboratory Applications Practical experiments involving diode and transistor circuits, measurements, analysis, and verification of theoretical concepts. [8 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• **Lectures:** Present key concepts from basic physics to semiconductor theory using visuals, simulations, and real-world examples. • **Tutorials:** Reinforce understanding through problem-solving on electric fields, circuits, and semiconductor behavior. • **Laboratory Work:** Conduct hands-on experiments on electrical circuits, PN junctions, and diode characteristics. • **Active Learning:** Encourage participation through discussions, demonstrations, and short in-class activities. • **Independent Study:** Support self-learning using textbooks, online resources, and preparatory review before exams.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	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 #1-3 / LO #4-6
	Assignments	2	10% (10)	4, 12	LO # 1-3 / LO # 9-11
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	All
Summative assessment	Midterm Exam	1 hr	10% (10)	8	LO # 1-6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Branches of physics, Fundamental quantities ,Units, and vectors
Week 2	Electric charge, electric field, electric charge and structure of atoms, types of matter, charge is conserved, charging by induction and friction
Week 3	Electric forces on uncharged objects, Coulomb's law
Week 4	Electric field, electric field on a point charge, electric field lines
Week 5	Electric dipole, forces, moments and electric potential energy
Week 6	Ohm's Law, resistance and capacitance,
Week 7	capacitor in series and parallel, inductive CCT,
Week 8	inductive resistance XL, capacitive reactance XC
Week 9	Mid exam

Week 10	Semiconductors, Some Definitions ,The electronic configuration in atoms
Week 11	Carrier Concentration in Intrinsic Semiconductor ,Doping
Week 12	Intrinsic Semiconductors &Extrinsic Semiconductors, N - type Semiconductors , P - type Semiconductors
Week 13	PN Junction: Formation of Depletion layer, Junction Potential, Forward Biased PN junction, Reverse biased PN junction.
Week 14	Semiconductor Diodes: Diode Operating Conditions, Actual Diode Characteristics, Zener Region
Week 15	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1, 2	Ohm's Law and Non Ohmic materials
Week 3,4	Electrical resonance phenomenon
Week 5,6	Generating electricity using field magnetic
Week 7,8	Calculating the electrical forces and Distance between electrical charges
Week 9,10	P.N junction diode
Week 11,12	Experience Diode properties
Week 13,14	Using a silicon transistor as a circuit switch

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	**Neamen, D. A. (2012).** *Semiconductor Physics and Devices: Basic Principles*, 4th Edition, McGraw-Hill Education.	yes
Recommended Texts	**Boylestad, R. L., & Nashelsky, L. (2020).** *Electronic Devices and Circuit Theory*, 12th Edition, Pearson Education.	yes
Websites	• All About Circuits: https://www.allaboutcircuits.com • Electronics Tutorials: https://www.electronics-tutorials.ws	

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Biology**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CYE11006**				
ECTS Credits	**4**				
SWL (hr/sem)	100				
Module Level			**Semester of Delivery**		1
Administering Department	Cybersecurity		**College**	Engineering	
Module Leader			**e-mail**		
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**		Ph.D
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**		1

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	This module aims to : 1-To understand life, chemistry and water continued: biological molecules, 2-To recognize cells and membranes 3-To identify Energy, Enzymes and Biological reactions, cellular respiration, photosynthesis 4-To understand cell division: mitosis and miosis: Mendel, Genes and inheritance, genes, chromosomes and human genetics 5-To understand DNA structure, Replication and Organization. From DNA to protein Biotechnology and cell processes and transport (Passive and active)
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Explain fundamental biological concepts and relate them to cybersecurity and biometric systems. 2. Describe cellular structures and their relevance to biological data used in modern authentication technologies. 3. Interpret the structure and function of DNA and genetic information as they apply to identity verification and biometric uniqueness. 4. Analyze the role of proteins, enzymes, and biological molecules in biometric sensing and recognition technologies. 5. Explain major physiological systems (nervous, muscular, sensory) and their connection to biometric signal generation and data acquisition. 6. Compare different human biometric modalities (fingerprint, iris, retina, voice, gait, etc.) based on biological structure and variability. 7. Evaluate human biological diversity and population genetics and discuss their implications for fairness, accuracy, and bias in biometric systems. 8. Assess privacy, ethical, and security issues associated with the collection,

	storage, and processing of biological and biometric data. 9. Identify and describe biometric devices, sensors, and technologies based on underlying biological principles. 10. Integrate biological knowledge with cybersecurity concepts to analyze real-world biometric security case studies.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: A- <u>Introduction to Biology</u> Concepts:Life, Chemistry and water, Life, Chemistry and water continued: Biological Molecules, Cells and Membranes, Energy, Enzymes and Biological reactions continued, Cellular respiration, Photosynthesis, Cell division: Mitosis and Miosis: Mendel, Genes and inheritance [20 hrs] B- Genes and DNA Genes, chromosomes and Human Genetics, DNA structure, Replication and Organization, From DNA to protein Biotechnology, Cell processes I- Transport (Passive and active) [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Lectures: Interactive lectures will provide theoretical knowledge on optical mineralogy concepts, techniques, and applications. 2. Laboratory Sessions: Hands-on laboratory sessions will allow students to practice using polarized light microscopy and develop skills in mineral identification and interpretation. 3. Case Studies: Analysis of real-world examples and case studies will help students understand the practical applications of optical mineralogy. 4. Independent Research Projects: Students will be encouraged to undertake independent research projects using optical

	mineralogy techniques to gain practical experience and develop research skills. 5. Group Discussions: Group discussions and peer-to-peer learning will foster collaboration and deeper understanding of optical mineralogy concepts. 6. Assessments: Assessments, including quizzes, laboratory reports, and a final examination, will evaluate students' understanding of theoretical knowledge and their ability to apply optical mineralogy techniques

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
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	67	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	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)	4,10	LO #1- #3 and #4 - #9
	Assignments	2	20% (20)	Continuous	LO #5 and #12
	Projects / Lab.	----	----	-----	-----
	Report	1	10% (10)	13	All
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO #1 - #6
	Final Exam	3hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Biology in the Context of Cybersecurity
Week 2	Cells: Structure, Function, and Relevance to Biometric Systems
Week 3	DNA and Genetic Information: Basics for Biometric Identification
Week 4	Proteins and Enzymes: Biological Molecules in Security Applications
Week 5	Human Physiology Overview: Nervous and Muscular Systems
Week 6	Sensory Systems and Data Acquisition: Vision, Fingerprint, and Voice
Week 7	Skin and Fingerprints: Structure, Formation, and Uniqueness
Week 8	Iris and Retina: Eye Anatomy and Biometric Recognition
Week 9	Voice and Speech: Vocal Anatomy for Voice Authentication
Week 10	Behavioral Biometrics: Gait, Keystroke Dynamics, and Patterns
Week 11	Human Variation and Population Genetics: Implications for Security
Week 12	Biological Data Privacy and Ethics: Storing and Protecting Biometric Data
Week 13	Introduction to Biometric Devices and Sensors
Week 14	Case Studies in Biometric Security Systems
Week 15	Revision and Integration: From Biology to Cybersecurity Applications

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	Johnson, A. T. (2018). *Biology for engineers*. CRC Press.	no
Recommended Texts	Jain, A. K., Ross, A. A., Nandakumar, K., & Swearingen, T. (2024). Fingerprint recognition. In *Introduction to Biometrics* (pp. 75-117). Cham: Springer International Publishing.	no
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Digital Logic Design**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CYE11007**				
ECTS Credits	**6**				
SWL (hr/sem)	150				
Module Level			**Semester of Delivery**	1	
Administering Department	Cybersecurity		**College**	Engineering	
Module Leader	Dr. Samer kais jameel		**e-mail**	samer.kais@kus.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D	
Module Tutor	Lec. Ahmed Sabri		**e-mail**	eng.ahmed.sabri@kus.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**	1	

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	This module aims to introduce students to the fundamental principles and applications of digital electronics as a foundation for intelligent and robotic systems. It focuses on understanding logic circuits, number systems, and digital components used in computing, control, and embedded applications. Students will gain the ability to design, analyze, and implement digital systems that interface with sensors, actuators, and microcontrollers used in AI and robotics.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Differentiate between analog and digital systems and explain their roles in modern technologies such as AI and robotics. 2. Perform number conversions and binary arithmetic operations across different numeral systems (binary, octal, decimal, hexadecimal). 3. Identify and analyze the functions of basic logic gates and construct truth tables for simple digital circuits. 4. Apply Boolean algebra laws and theorems to simplify and optimize digital circuit designs. 5. Design and minimize combinational logic circuits using Karnaugh maps (K-Maps) and implement basic circuits such as adders, subtractors, multiplexers, and decoders. 6. Construct and evaluate sequential logic circuits using various flip-flops, counters, and shift registers to perform timing and memory functions. 7. Integrate combinational and sequential circuit concepts to design control systems for practical applications in robotics and automation.
Indicative Contents المحتويات الإرشادية	1. Introduction to Digital Electronics [4hrs] • Basic principles, design methods, and relevance to intelligent and robotic systems. 2. Analog vs. Digital Signals [4hrs] • Characteristics, distinctions, and applications in modern electronic systems.

	3. Number Systems and Binary Arithmetic [8hrs] • Binary, decimal, hexadecimal systems; conversions and arithmetic operations. 4. Logic Gates and Boolean Algebra [8hrs] • Logic functions, truth tables, Boolean expressions, and algebraic simplification. 5. Karnaugh Maps for Logic Optimization [4hrs] • Techniques for circuit minimization and simplification. 6. Combinational Logic Circuits [9hrs] • Adders, subtractors, encoders, decoders, multiplexers, and related components. 7. Sequential Logic Circuits [9hrs] • Flip-flops, registers, counters, timing circuits, and state-based design. 8. Circuit Implementation and Testing [7hrs] • Use of simulation tools and laboratory exercises for validation and troubleshooting. 9. Interfacing and Applications in Robotics [7hrs] • Integration with sensors, actuators, and microcontrollers for robotic control and AI-driven decision systems.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Lectures: Interactive lectures will provide theoretical knowledge on optical mineralogy concepts, techniques, and applications.

	2. Laboratory Sessions: Hands-on laboratory sessions will allow students to practice using polarized light microscopy and develop skills in mineral identification and interpretation. 3. Case Studies: Analysis of real-world examples and case studies will help students understand the practical applications of optical mineralogy. 4. Independent Research Projects: Students will be encouraged to undertake independent research projects using optical mineralogy techniques to gain practical experience and develop research skills. 5. Group Discussions: Group discussions and peer-to-peer learning will foster collaboration and deeper understanding of optical mineralogy concepts. 6. Assessments: Assessments, including quizzes, laboratory reports, and a final examination, will evaluate students' understanding of theoretical knowledge and their ability to apply optical mineralogy techniques

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
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية				
	Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**

Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1- #4 and #6-#9
	Assignments	2	10% (10)	Continuous	LO #5 and #10
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	All
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**Introduction to Digital and Analog Systems** • Difference between analog and digital signals. • Role of digital systems in AI and robotics.
Week 2	**Number Systems and Binary Arithmetic** • Binary, octal, decimal, and hexadecimal systems. • Number conversions and binary operations.
Week 3	**Logic Gates and Truth Tables** • Basic logic operations (AND, OR, NOT, NAND, NOR, XOR, XNOR). • Circuit representation and practical examples.
Week 4	**Boolean Algebra** • Laws and theorems of Boolean algebra. • Simplifying digital circuits using Boolean expressions.
Week 5	**Karnaugh Map (K-Map) Simplification** • Logic function minimization using K-Maps. • Designing optimized logic circuits.
Week 6	**Combinational Logic Circuits – Part 1** • Half and full adders, subtractors. •Basic combinational circuit design.
Week 7	**Mid-term Exam**
Week 8	**Combinational Logic Circuits – Part 2** • Multiplexers, demultiplexers, encoders, and decoders.
	Practical Applications of Combinational Logic • Designing control and decision circuits. • Real-world examples in robotics and AI.
Week 9	**Introduction to Sequential Logic Circuits** • Basic concepts of memory and timing. • Introduction to latches and flip-flops. •

Week 11	**Flip-Flop Types and Applications** • SR, JK, D, and T flip-flops. • Edge-triggering and clock behavior. •
Week 12	**Sequential Circuits Design** • Using flip-flops to design counters and registers. • Timing diagrams and sequence generation. •
Week 13	**Counters and Shift Registers** • Asynchronous and synchronous counters. • Shift register operation and applications. •
Week 14	**Sequential Circuits – Applications** • Implementing control logic using sequential circuits. • Case studies in robotics and automation. •
Week 15	**Review and Final Exam Preparation** • Comprehensive course review and practical revision. •

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	• Introduction to the Digital Laboratory Familiarization with lab equipment (breadboard, power supply, logic probes); safety instructions and introduction to digital signals.
Week 2	• Number Systems and Logic Levels Practice binary-to-decimal conversion and verify digital HIGH/LOW levels using simple LED circuits.
Week 3	• Logic Gates – Basic Operations

	Build and test basic logic gates (AND, OR, NOT, NAND, NOR) using ICs; verify truth tables.
Week 4	• Logic Gates – Combined Circuits Construct compound logic expressions; analyze and test outputs using logic probes or simulation.
Week 5	• Boolean Algebra and Simplification Apply Boolean simplification on given circuits and implement simplified versions using hardware or simulation software (e.g., Logisim).
Week 6	• Karnaugh Map Practice Simplify logic functions using K-map methods and compare complexity before and after reduction.
Week 7	• Midterm Lab Evaluation Assessment on experiments from Weeks 1–6 (circuit building, analysis, and documentation).
Week 8	• Combinational Logic Circuits – Adders/Subtractors Design and implement half adder and full adder/subtractor circuits; verify functionality.
Week 9	• Combinational Circuits – MUX and DEMUX Build multiplexer and demultiplexer circuits and explore their data-routing applications.
Week 10	• Encoders and Decoders Construct simple encoder and decoder circuits and test their operation using binary inputs.
Week 11	• Introduction to Sequential Logic Observe latch and flip-flop behavior using LEDs; understand SR, D, and JK flip-flops.
Week 12	• Flip-Flop Timing and Triggering Explore clock signals and triggering (edge vs. level); measure response using oscilloscopes or simulation.
Week 13	• Counters Design and test asynchronous and synchronous counters using flip-flops or IC counters.
Week 14	• Shift Registers Implement and test serial-in/serial-out and parallel-in/parallel-out shift registers.
Week 15	• Final Lab Assessment and Demonstration

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. Floyd, T.L., 2011. Digital fundamentals, 10/e. Pearson Education India.	yes
Recommended Texts	1. Shiva, S.G. ed., 2018. Introduction to logic design. CRC Press.FLOYD, Thomas L., and David BUCHLA. 2. Nixon, M.S., 2015. Digital Electronics: A Primer-Introductory Logic Circuit Design (Vol. 1). World Scientific Publishing Company.	yes
Websites	https://www.geeksforgeeks.org/digital-electronics-logic-design-tutorials/	

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

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	**Engineering Drawing**		**Module Delivery**
Module Type	**S**		☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**
Module Code	CEN11004		
ECTS Credits	5		
SWL (hr/sem)	**125**		
Module Level		**Semester of Delivery**	1
Administering Department	Cybersecurity	**College**	College of Engineering
Module Leader		**e-mail**	
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Msc.
Module Tutor		**e-mail**	
Peer Reviewer Name	/	**e-mail**	/
Scientific Committee Approval Date		**Version Number**	1

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The module aims to develop students' ability to communicate technical ideas through graphical representation. It covers the fundamentals of engineering drawing, use of instruments, geometric constructions, orthographic and isometric projections, sectional views, and dimensioning. Students will learn to interpret and create machine and assembly drawings following BIS/ISO standards and gain introductory skills in computer-aided drafting (CAD). The course enhances visualization, accuracy, and understanding of engineering components and systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Identify and correctly use engineering drawing tools to create accurate geometric constructions and basic shapes. 2. Apply fundamental drafting techniques to draw lines, circles, tangents, polygons, and divided segments with precision. 3. Use engineering scales and dimensioning standards to add measurements, annotations, and proportional enlargements/reductions. 4. Explain and apply the principles of orthographic projection to produce front, top, and side views of engineering objects. 5. Construct isometric and oblique 3D drawings using 30° and 45° projection angles to visualize objects in three dimensions. 6. Generate or infer missing views by deriving the third projection from two given orthographic projections. 7. Produce complete, accurate technical drawings that meet engineering standards and demonstrate the ability to communicate design ideas effectively.
Indicative Contents المحتويات الإرشادية	1. **Introduction to Engineering Drawing [8hrs]** • Importance and applications of engineering drawing • Drawing instruments, materials, and sheet layouts • BIS/ISO standards, lines, lettering, and dimensioning 2. **Geometric Constructions [7hrs]** • Basic geometrical figures • Tangents, polygons, and curves (ellipse, parabola, hyperbola) 3. **Orthographic Projection [10hrs]** • Principles of projection • Projection of points, lines, planes, and solids • Conversion of pictorial to orthographic views 4. **Sectioning of Solids and Development of Surfaces [8hrs]**

	• Types of sectional views • Development of lateral surfaces for solids 5. **Isometric and Perspective Projection [8hrs]** • Isometric scales, isometric views, and projections • Perspective projection of simple objects 6. **Dimensioning and Conventional Representations [4hrs]** • Dimensioning standards and techniques • Symbols for materials, threads, welds, and surface finish

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1- Conducting practical examinations. 2- Short tests. 3- Weekly exercises.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	77	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
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 and 10	LO #1- #5 and #5-#10
	Assignments	10	20% (20)	Continuous	All
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	0	0% (0)		
Summative assessment	**Midterm Exam**	1hr	10% (10)	7	LO #1 - #6
	Final Exam	3hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Learn about drawing tools and the concept of drawing
Week 2	Use tools to draw shapes
Week 3	Executing and drawing lines, tangents, circles and drawing polygons.
Week 4	Draw and divide straight lines and draw tangent lines and polygons.
Week 5	learns the dimensional mode in drawing and the knowledge of the scale and the way to reduce and zoom in
Week 6	Writing different types of dimensions
Week 7	Learn the concept of projection and recognize the three levels of projection
Week 8	learns to draw the three projections and how to get out the flip chart
Week 9	Exam
Week 10	Draw the 3D geometric perspective on two 30- and 45-angle lines
Week 11	Draw the 3D geometric perspective on two 30- and 45-angle lines
Week 12	Training in drawing a three-dimensional engineering perspective
Week 13	Training in drawing a three-dimensional engineering perspective
Week 14	The conclusion of the third projection from two known projections
Week 15	Evaluate the students

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Learn about drawing tools and the concept of drawing
Week 2	Use tools to draw shapes
Week 3	Executing and drawing lines, tangents, circles and drawing polygons.
Week 4	Draw and divide straight lines and draw tangent lines and polygons.
Week 5	learns the dimensional mode in drawing and the knowledge of the scale and the way to reduce and zoom in
Week 6	Writing different types of dimensions
Week 7	Learn the concept of projection and recognize the three levels of projection

Week 8	learns to draw the three projections and how to get out the flip chart
Week 9	Exam
Week 10	Draw the 3D geometric perspective on two 30- and 45-angle lines
Week 11	Draw the 3D geometric perspective on two 30- and 45-angle lines
Week 12	Training in drawing a three-dimensional engineering perspective
Week 13	Training in drawing a three-dimensional engineering perspective
Week 14	The conclusion of the third projection from two known projections
Week 15	Evaluate the students

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	- Reddy, V. K. (2008). *Textbook of engineering drawing: Part 1*. Bs publications. Shah, M. B., & Rana, B. C. (2009). *Engineering Drawing*. Pearson Education India. - practice problems for engineering drawing	Yes
Recommended Texts	- Technical drawing & Solidworks -Engineering Drawing -practice problems for engineering drawing	No
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE 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	**KUS11001**				
ECTS Credits	**5**				
SWL (hr/sem)	125				
Module Level		first	**Semester of Delivery**		1
Administering Department		Cybersecurity	**College**	Engineering	
Module Leader			**e-mail**		
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. To provide a solid foundation in the principles and methods of integral calculus. 2. To develop students' ability to compute indefinite and definite integrals of various functions. 3. To introduce advanced integration techniques and demonstrate their practical uses. 4. To enhance logical and analytical reasoning in mathematical problem solving. 5. To apply integration to real-life problems in geometry, physics, and related fields. 6. To encourage accuracy, clarity, and systematic approaches in mathematical computation. 7. To prepare students for further studies that require calculus-based analysis and modeling.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Apply substitution and completing-the-square methods to evaluate complex algebraic integrals. 2. Compute and interpret definite integrals to determine the area under curves and other geometric applications. 3. Analyze improper integrals and determine their convergence or divergence. 4. Integrate algebraic, trigonometric, exponential, and logarithmic functions using appropriate techniques. 5. Utilize integration by parts and partial fraction decomposition to simplify and solve advanced integrals. 6. Implement trigonometric substitution and other special methods to evaluate complex integrals involving radicals and trigonometric expressions. 7. Apply integration techniques to solve real-world problems such as finding volumes of revolution and physical applications in engineering and science.
Indicative Contents المحتويات الإرشادية	1. Fundamental Integration Techniques [10 hrs] • Introduction to integration, basic algebraic integrals, substitution methods, and completing the square. 2. Definite Integrals and Applications [8hrs] • Evaluation of definite integrals and computation of areas under curves.

	3. Improper Integrals and Convergence Tests [6hrs] • Integrals over infinite intervals and functions with discontinuities. 4. Integration by Parts [8hrs] • Concepts, examples, and advanced-level applications. 5. Integration of Special Functions [8hrs] • Exponential, logarithmic, and algebraic functions. 6. Trigonometric Integration Techniques [8hrs] • Simple and advanced trigonometric integrals, trigonometric substitution methods. 7. Partial Fraction Decomposition [6hrs] • Techniques for decomposing rational functions and integrating their components. 8. Applications of Integration [6hrs] • Volumes of revolution and additional problem-solving applications using integral calculus.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Lectures: Providing students with basic mathematical concepts and their practical applications. 2. Forming discussion groups during lectures to discuss mathematics topics and solve practical problems. 3. Giving students homework that requires self-explanations in different ways. 4. Solving problems relevant with mathematical subject.

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
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	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	Lec. #2,#4,#6,#8
	Assignments	2	20% (20)	3-12	Lec. #1,#2 #3,#5,#7,#9,#11
	Projects	0	0	0	/
	Reports	1	10% (10)	13	All
Summative assessment	**Midterm Exam**	1hr	10% (10)	7	Lec. #1-#6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Completing the Square & Substitution Methods
Week 2	Definite Integrals & Area Under Curves
Week 3	Improper Integrals & Convergence
Week 4	Indefinite Integrals of Algebraic Functions
Week 5	Integration by Parts – Advanced Problems
Week 6	Integration by Parts – Concepts and Examples
Week 7	Integration of Advanced Trigonometric Functions

Week 8	Integration of Exponential Functions
Week 9	Integration of Logarithmic Functions
Week 10	Integration of Simple Trigonometric Functions
Week 11	Introduction to Integration & Basic Algebraic Integrals
Week 12	Partial Fraction Decomposition
Week 13	Revision and Problem-Solving
Week 14	Trigonometric Substitution Techniques
Week 15	Volumes of Revolution & Applications

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. Thomas' calculus 11 ed. 2004	yes
Recommended Texts	1. Calculus 9th edition, Anton	yes
Websites	https://mediasace.utah.edu/media/t/0_2eoc2ksc	

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	**Fundamentals of Computer Science**		**Module Delivery**
Module Type	**B**		☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	KUS11002		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	1	**Semester of Delivery**	1
Administering Department	Department of Cybersecurity	**College**	College of Engineering
Module Leader	Ali Abdulwahhab Mohammed	**e-mail**	ali_abdulwahhab@kus.edu.iq
Module Leader's Acad. Title	Assist.Prof.Dr	**Module Leader's Qualification**	Ph.D
Module Tutor	Hamid Jassam Mohammed	**e-mail**	hamidj.mohammed@kus.edu.iq
Peer Reviewer Name	/	**e-mail**	/
Scientific Committee Approval Date		**Version Number**	1.0

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Introduce students to basic computer concepts including hardware, software, and data representation. 2. Provide understanding of the operating system and graphical user interface operations. 3. Develop basic word processing, spreadsheet, and presentation software skills. 4. Introduce the fundamentals of Internet, web browsing, and electronic communication. 5. Provide knowledge of cloud computing and modern digital collaboration tools. 6. Provide knowledge of programming using python language.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand computer hardware components and their functions. 2. Operate common operating systems and navigate through graphical user interfaces. 3. Create and edit documents using word processing software. 4. Design and manage spreadsheets using formulas and functions. 5. Develop and present professional presentations using presentation software. 6. Access and utilize the Internet effectively using web browsers and search engines. 7. Communicate through email and collaborate using cloud-based services. 8. Apply basic cybersecurity and digital ethics principles in computer usage. 9. Program basic codes and make GUIs.
Indicative Contents المحتويات الإرشادية	• **Introduction to Computer Concepts** Basic definitions, components of a computer, hardware and software overview.[4hrs] • **Computer Components** CPU, memory, storage devices, input/output units, and peripheral components.[6hrs] • **Operating Systems and GUI** Types of operating systems, basic commands, and file management operations.[6hrs] • **Word Processing Software** Creating, formatting, and editing documents using Microsoft Word.[6hrs] • **Spreadsheet Software** Data entry, formulas, charts, and functions using Microsoft Excel.[7hrs] • **Presentation Software** Slide design, themes, transitions, and multimedia using PowerPoint.[5hrs] • **Internet and Web Browsers** LAN/WAN basics, web browsing, search engines, and data access.[4hrs] • **Communication Tools** Email systems, online collaboration, and cloud-based communication. [3hrs] • **Cloud Computing and Services** Google Workspace, Office 365, and cloud storage usage. [3hrs] • **Introduction to Python Programming**

	Installing Python and PyCharm, basic syntax, and simple program execution. [6hrs] • **Python Programming Structures** Variables, conditions, loops, lists, and basic functions. [6hrs] • **Basic Cybersecurity Concepts** [2hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Lecture Discussion Practical Experience Clarification and Ask Questions reflect on what you have learned Research and reports

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	12	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
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 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Computer Concepts – Definition of computer, hardware, software, and data representation.
Week 2	Computer Components – CPU, memory, storage, input/output devices, and peripherals.
Week 3	Operating Systems and GUI – Types of operating systems, desktop environment, and file management.
Week 4	Word Processing Software – Creating, formatting, and editing documents using Microsoft Word.
Week 5	Spreadsheet Software – Data entry, formulas, charts, and data analysis using Microsoft Excel.
Week 6	Presentation Software – Slide design, themes, transitions, and multimedia using PowerPoint.
Week 7	Internet and Web Browsers – LAN/WAN basics, search engines, and safe browsing.
Week 8	Communication Tools – Email systems, online collaboration, and digital communication ethics.
Week 9	Cloud Computing and Services – Google Workspace, Office 365, and cloud storage applications.
Week 10	Introduction to Python Programming – Installing Python and PyCharm, understanding syntax and variables.
Week 11	Python Programming Basics – Data types, input/output, and simple calculations.
Week 12	Python Control Structures – Conditional statements and loops.
Week 13	Python Data Structures – Lists, strings, and basic operations.
Week 14	Basic Cybersecurity Concepts – Introduction to Cybersecurity, applications in daily life, and examples in Python.
Week 15	Review and Final Preparation – Revision of all topics before final exam.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	EXP 1: Exploring Computer Hardware and Operating Systems
Week 2	EXP 2: Troubleshooting and System Utilities
Week 3	EXP 3: Using Microsoft Word – Document Creation and Formatting
Week 4	EXP 4: Using Microsoft Excel – Data Entry, Formulas, and Charts
Week 5	EXP 5: Using Microsoft PowerPoint – Slide Design and Presentation
Week 6	EXP 6: Installing Python and Setting Up PyCharm Environment
Week 7	EXP 7: Python Basics – Variables, Data Types, and Input/Output
Week 8	EXP 8: Conditional Statements – if, else, and nested if
Week 9	EXP 9: Loops – for and while structures
Week 10	EXP 10: Lists and Strings – Basic Operations and Manipulation
Week 11	EXP 11: Functions – Definition, Parameters, and Return Values
Week 12	EXP 12: Simple Networking and Internet Use
Week 13	EXP 13: File Handling in Python – Read and Write Operations
Week 14	EXP 14: Mini Project – Creating a Simple Calculator or Grade Sheet using Python and Excel
Week 15	EXP 15: Final Practical Assessment – Review of Word, Excel, and Python Applications

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Brookshear, J. Glenn, Dennis Brylow, and S. Manasa. "Computer science: An overview." (2009).	Yes
Recommended Texts	Patterson, David A., and John L. Hennessy. Computer organization and design ARM edition: the hardware software interface. Morgan kaufmann, 2016. Petzold, Charles. Code: The hidden language of computer hardware and software. Microsoft Press, 2000.	No
Websites	Computer Science YouTube Channels: Channels like "Computerphile," Computer Science," and "MIT Open Courseware.	

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

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Human rights**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	KUS11003				
ECTS Credits	2				
SWL (hr/sem)	50				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Cyber security Engineering		**College**	Engineering	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	١. تعريف الطلاب بمفهوم حقوق الإنسان وطبيعتها. ٢. فهم التطور التاريخي لحقوق الإنسان عبر العصور. ٣. التمييز بين حقوق الإنسان والحقوق الأخرى. ٤. دراسة حقوق الإنسان في الديانات السماوية وتأثيرها على المجتمع. ٥. التعرف على الحقوق الإنسانية في المواثيق والمعاهدات الدولية. ٦. فهم دور التشريعات الوطنية في حماية حقوق الإنسان. ٧. دراسة أنواع حقوق الإنسان: الشخصية، الاجتماعية، الثقافية، والاقتصادية. ٨. التعرف على الضمانات الدولية والإقليمية والوطنية لحقوق الإنسان. ٩. فهم الجزاءات والعقوبات المترتبة على المساس بحقوق الإنسان.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	١ .تعريف حقوق الإنسان وتحديد خصائصها الأساسية. ٢ .شرح التطور التاريخي لحقوق الإنسان. ٣ .التمييز بين حقوق الإنسان والحقوق الأخرى في المجتمع. ٤ .توضيح موقف حقوق الإنسان في الديانات السماوية. ٥ .وصف الحقوق الإنسانية في المواثيق الدولية والمعاهدات. ٦ .تحليل التشريعات الوطنية لحماية الحقوق الإنسانية. ٧ .تصنيف حقوق الإنسان إلى شخصية، اجتماعية، ثقافية، واقتصادية. ٨ .التعرف على الضمانات الدولية والإقليمية والوطنية لحقوق الإنسان. ٩. تفسير الجزاءات القانونية عند انتهاك حقوق الإنسان.
Indicative Contents المحتويات الإرشادية	**1.**مدخل إلى حقوق الإنسان – التعريف والطبيعة (٣ ساعات) • مفهوم حقوق الإنسان • طبيعتها ومصادرها • تمييزها عن غيرها من الحقوق القانونية والاجتماعية **2.**التطور التاريخي لحقوق الإنسان (٣ ساعات) • الجذور التاريخية عبر الحضارات القديمة • التحولات الفكرية والسياسية الكبرى • نشوء المنظور الحديث لحقوق الإنسان **3.**حقوق الإنسان في الديانات السماوية والمواثيق الدولية (٤ ساعات) • نظرة الديانات السماوية لحقوق الإنسان

- القيم الأخلاقية والدينية للحفاظ على الكرامة الإنسانية
- الإعلان العالمي لحقوق الإنسان
- العهد الدولي للحقوق المدنية والسياسية والعهد الدولي للحقوق الاقتصادية والاجتماعية والثقافية

4.حقوق الإنسان في التشريعات الداخلية (٣ ساعات)

- مكانة حقوق الإنسان في الدساتير الوطنية
- القوانين المتعلقة بحماية الحقوق والحريات
- دور المؤسسات التشريعية والتنفيذية والقضائية

5.أنواع حقوق الإنسان (الشخصية، الاجتماعية، الثقافية، الاقتصادية) – (٨ ساعات)

- **الحقوق الشخصية :**الحق في الحياة، الحرية، الخصوصية، الأمن
- **الحقوق الاجتماعية :**الصحة، العمل، السكن، الضمان الاجتماعي
- **الحقوق الثقافية :**التعليم، اللغة، الهوية الثقافية
- **الحقوق الاقتصادية :**الملكية، التنمية، تكافؤ الفرص

6.الضمانات الدولية والإقليمية لحقوق الإنسان (٤ ساعات)

- دور الأمم المتحدة ومجلس حقوق الإنسان
- آليات الرقابة الدولية وحماية الحقوق
- الأنظمة الإقليمية (الجامعة العربية، الاتحاد الأوروبي، الاتحاد الأفريقي)

7.الضمانات الوطنية لحماية حقوق الإنسان (٣ ساعات)

- المؤسسات الوطنية (المحاكم، مفوضيات حقوق الإنسان)
- آليات الشكاوى والتحقيق
- الرقابة الإدارية والقضائية ودورها في حماية الحقوق

8.الانتهاكات والجزاءات المتعلقة بحقوق الإنسان (٢ ساعتان)

- أشكال انتهاكات حقوق الإنسان
- المسؤولية القانونية للأفراد والدول
- الجزاءات والإجراءات المتخذة ضد الانتهاكات

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	نعمد في هذا الجانب إلى ما يلي: ١- المحاضرة ٢- المناقشة ٣- الصف المقلوب ٤- دراسة الحالة

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

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5, 10	1-5 / 6-9
	Assignments	2	20% (20)	4, 12	LO # 3, 4, / 6 - 11
	Projects / tutorial.	0	0	/	/
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 1-6
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	تعريف وطبيعة حقوق الإنسان

Week 2	التطور التاريخي لحقوق الإنسان
Week 3	مميزات حقوق الإنسان عن غيرها من الحقوق
Week 4	حقوق الإنسان في الديانات السماوية
Week 5	حقوق الإنسان في المواثيق الدولية
Week 6	حقوق الإنسان في التشريعات الداخلية
Week 7	حقوق الإنسان الشخصية
Week 8	حقوق الإنسان الاجتماعية
Week 9	حقوق الإنسان الثقافية
Week 10	حقوق الانسان الاقتصادية
Week 11	ضمانات حقوق الإنسان الدولية
Week 12	ضمانات حقوق الإنسان الإقليمية
Week 13	ضمانات حقوق الإنسان الداخلية (الوطنية)
Week 14	الجزاءات المترتبة على المساس بحقوق الإنسان
Week 15	مراجعة عامة

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	كتاب/ حقوق الانسان (تطورها، مضامينها، حمايتها) د. رياض عزيز هادي.	Yes
Recommended Texts	كتاب/ حقوق الانسان د. حميد حنون.	No
Websites	https://www.noor-book.com/ https://www.un.org/ar/about-us/universal-declaration-of-human-rights https://ar.wikipedia.org/wiki/	

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors

	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Arabic Language I**			**Module Delivery**	
Module Type	**S**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Kus12010**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	**1**		**Semester of Delivery**		**1**
Administering Department	**Cybersecurity Engineering**		**College**	**Collage of Engineering**	
Module Leader	م.م. رشا مهدي عبدالله		**e-mail**	**Rasha.mahdi@kus.edu.iq**	
Module Leader's Acad. Title			**Module Leader's Qualification**		**Master**
Module Tutor			**e-mail**		
Peer Reviewer Name	**لا يوجد**		**e-mail**	**لا يوجد**	
Scientific Committee Approval Date			**Version Number**		**1.0**

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	ترتبط اللغة العربية وفروعها المتعددة مع الاختصاصات الأخرى بصلة جوهرية ، لان الفروع جميعها متعاونة لتحقيق الغرض الأصلي منها ، وهو تمكين المتعلم من استخدام اللغة استخداما صحيحا للأفهام والفهم	Semester	
Co-requisites module	لصلتها الأساسية في توجيه الطالب لكتابة التقارير والبحوث بلغة سليمة ومختصرة تؤدي الى انجاز بحوث هادفة ومكتملة المعنى	Semester	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	تقويم اللسان تهيئة الاذهان - اللفظ بشكل سليم تنمية مهارات صياغة الكتب والمخاطبات الرسمية - اعداد البحوث والتقارير بشكل سليم
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	مخرجات المعرفة العامة التي تتمثل (التعرف إلى مستويات نظام اللغة العربية - معرفة القواعد النحوية والصرفية - وصف المناهج النقدية والظواهر الأدبية - التعريف بأبرز المصنفات اللغوية والأدبية) بالإضافة الى المهارات الذهنية الإدراكية(- المهارات العملية أو المهنية - المهارات المنقولة/ العامة - مهارات الاتصال، وتقنية المعلومات -الاتجاهات والقيم والبعد الأخلاقي)
Indicative Contents المحتويات الإرشادية	تعد علاقة الإرشاد بالتربية علاقة تكامل، فلا يمكن التفكير بالتربية بدون الإرشاد وتعد المؤسسات التربوية المجال الحيوي الفعال للإرشاد، إذ أن هذه الاخيرة في أمس الحاجة إلى خدماته وذلك بسبب الفروقات الفردية ب زي الطلاب، اختلاف المناهج، ازدياد عدد الطلبة، ازدياد المشكلات الاجتماعية

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	أجهزة الصوت – شاشة العرض -اللاب توب -المنهج المقرر – أمثلة حية

Student Workload (SWL) الحمل الدراسى للطالب			
Structured SWL (h/sem) الحمل الدراسى المنتظم للطالب خلال الفصل		33 ساعة	
Unstructured SWL (h/sem) الحمل الدراسى غير المنتظم للطالب خلال الفصل		17 ساعة	

Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50 ساعة

Module Evaluationتقييم الماد الدراسي					
As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 , 10	فهم الطالب لعدد من المحاضرات وكيفية الربط بينهم
	Assignments	1	10% (10)	3	اكتساب الطالب مهارة البحث وإيجاد المعلومة الدقيقة
	Projects / Lab.	1	10% (10)	لا يوجد	لا يوجد
	Report	1	10% (10)	10	تهيئة الطالب لإعدا د مشاريع تخرج بصورة صحيحة وبشكل مفصل وتعليمة عل كيفية استخدام المصاد ر
Summative assessment	Midterm Exam	1hr	10% (10)	9	معرفة حصيلة فهم الطالب للماد ة

	Final Exam	2hr	60% (6)0	16	التقييم النهائي
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظر ي	
Week	Material Covered
Week 1	التعريف بمباد ئ اللغة العربية واهميتها وأقسامها وكيفية توظيفها في مجالات الحياة كافة
Week 2	التمييز بين همزة الوصل وهمزة القطع وكيفية ضبط النص املائيًا
Week 3	العدد والمعدود وأقسامه وتوظيفه عملياً
Week 4	علامات اليقيم وكيفية تنقيط النص للوصول إلى جمل مترابطة في سياقها
Week 5	الإيجاز في الإداء اللغوي وتكثيف المعنى
Week 6	محاضرة نحوية في الفاعل ونائبه
Week 7	الأغلاط اللغوية الشائعة وكيفية تصحيحها
Week 8	موازنة بين عصرين شعريين وأبرز شعرائه
Week 9	Midterm exam
Week 10	الأسس العلمية والمنهجية في كتابة التقارير بأنواعها وتوظيفها عمليًا
Week 11	كيفية تصحيح الكتب الرسمية وربط مضمون السياق النصي
Week 12	محاضرة في الأدب العربي وتسليط الضوء عل أقسامه وتفصيلاتها
Week 13	التوكيد وأنواعه واصول توظيفه نصيًا
Week 14	محاضرة نحوية في التقديم والتأخير
Week 15	دروس عملية في تطبيق القواعد النحوية والإملائية وتصحيح النصوص
Week 16	Second Midterm Exam

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Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبو يع للمخت ي	
Week	**Material Covered**
Week 1	المادة نظرية بحت
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	١. كتاب: النحو التطبيقي / د. عبده الراجحي ٢. اللغة العربية العامة لأقسام غير الاختصاص – عبد القادر حسن امين	نعم
Recommended Texts	١. النحو الوافي / د. عباس حسن ٢. الصرف التطبيقي/ د. عبده الراجحي ٣. رؤية في مناهج تدريس اللغة العربية – استاذ الدكتور ٤. سعد علي زاير + العربية الجامعية لغير المتخصصين – دكتور عبد الراجي	نعم
Websites	تم الاعتماد عل كتب من دون استخدام الانترنت	

Grading Scheme مخطط الدرجات				
Group	**Grade**	**التقدير**	**Marks (%)**	**Definition**
Success	**A - Excellent**	امتياز	**90 - 100**	**Outstanding Performance**

Group (50 -)001	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(	94(-45)	More work required but credit awarded
	F – Fail	راس ب	44(-0)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Computer Programming**			**Module Delivery**	
Module Type	**C**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CYE11015**				
ECTS Credits	**7**				
SWL (hr/sem)	**172**				
Module Level		UGI	**Semester of Delivery**		one
Administering Department		Cybersecurity	**College**	Engineering	
Module Leader	Dr. Samer Kais Jameel		**e-mail**	samer.kais@kus.edu.iq	
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		Ph.D.
Module Tutor			**e-mail**	E-mail	
Peer Reviewer Name			**e-mail**	E-mail	
Scientific Committee Approval Date			**Version Number**		1

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	• Gain a solid understanding of the basic principles, syntax, and structure of the C++ programming language. • Develop the ability to write and compile C++ programs, including understanding the use of variables, data types, and operators. • Learn how to use control structures, including if-else statements, loops (while, for, do-while), and switch statements, to control the flow of a program.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On successful completion of the module, students will be able to: • Explain the basic concepts and features of C++. • Describe the underlying memory model and explain the role of the execution stack and the heap. • Make effective use of the C++ Standard Template Library. • Make effective use of the control structures.
Indicative Contents المحتويات الإرشادية	Introduction to computer programming Introduction to C++ Programming C++ Standard Library Control flow in C++ Memory Management 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	60	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	112	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**172**		

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 #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	**Introduction to programming languages and C++** Structured Programming, Features of C++, Program Structure.
Week 2	**Algorithm and flowchart.** Definition of Algorithm, Definition of Flowchart, Examples.
Week 3	**C++ Data types** Data types, Variables, Constants, and keywords
Week 4	C++ User Input and Output
Week 5	**C++ Operators - part 1** Arithmetic operators, Bitwise operators
Week 6	**C++ Operators - part 2** logical operators, and Relational operators
Week 7	Mid-term Exam
Week 8	**C++ Strings** Ways to Define a String, Take String Input, String Concatenation, and Append.
Week 9	**C++ conditions- part 1** If /else statement, if...else if...else Statement.
Week 10	**C++ conditions- part 2** Switch statement
Week 11	**Loops- part 1** Use of Loops, For Loop, , Infinite Loop.

Week 12	**Loops- part 2** **While Loop, Do while loop**
Week 13	**Break and Continue statements**
Week 14	**C++ Array** **Array Declaration, Access the Elements of an Array, Array Initialization, Array with Empty Members, Change an Array Element, Loop through an Array.**
Week 15	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**Introduction to C++ environment**
Week 2	**C++ Libraries**
Week 3	**Data types, Variables, Constants, and keywords**
Week 4	**C++ User Input/output**
Week 5	**C++ Operators- part1**
Week 6	**C++ Operators- part2**
Week 7	**Mid-term Exam**
Week 8	**If condition**
Week 9	**Switch condition**
Week 10	**For loop**
Week 11	**While loop C++**
Week 12	**Do-while loop**
Week 13	**Break and Continue statements**
Week 14	**Arrays.**
Week 15	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	The C++ Programming Language (4th Edition) by Bjarne Stroustrup	No
Recommended Texts	1. Tour of C++, A (C++ In-Depth Series) 2nd Edition. Stroustrup, B. (2022). *A Tour of C++*. Addison-Wesley Professional. 2. C++ templates: the complete guide. Vandevoorde, D., & Josuttis, N. M. (2002). C++ templates: the complete guide. Addison-Wesley Professional.	
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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	**Cybersecurity Fundamentals**		**Module Delivery**
Module Type	**C**		☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	CYE11014		
ECTS Credits	**5**		
SWL (hr/sem)	**125**		
Module Level	1	**Semester of Delivery**	2
Administering Department	Cybersecurity Engineering Department	**College**	College of Engineering
Module Leader	Ali Abdulwahhab Mohammed	**e-mail**	ali_abdulwahhab@kus.edu.iq
Module Leader's Acad. Title	Assist. Professor	**Module Leader's Qualification**	PhD
Module Tutor	/	**e-mail**	/
Peer Reviewer Name	/	**e-mail**	/
Scientific Committee Approval Date		**Version Number**	1.0

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	• Introduce the fundamental concepts of cybersecurity, including security goals (CIA triad), assets, threats, vulnerabilities, risks, and basic countermeasures. • Define and explain common cyber threat actors, motivations, and attack categories, with emphasis on social engineering and phishing awareness. • Explain core security principles used to design and protect systems, such as least privilege, defense-in-depth, secure defaults, and reducing attack surface. • Introduce the basic concepts of authentication and authorization, including password security, multi-factor authentication, and access control models (e.g., RBAC/ABAC). • Explain foundational cryptography concepts at an introductory level, including hashing, encryption, digital signatures, and the purpose of secure communication (e.g., HTTPS/TLS conceptually). • Define and describe common malware types and infection vectors, and explain defensive endpoint security controls such as patching, antivirus, backups, and safe configuration practices. • Introduce basic network security concepts, including segmentation, firewall principles, secure remote access (VPN concept), and common network-based risks. • Develop basic practical skills in security awareness and defensive analysis, including identifying suspicious messages, interpreting simple logs, and applying security checklists in controlled scenarios. • Introduce cybersecurity governance fundamentals, including qualitative risk assessment, security policies and acceptable-use rules, incident reporting, and basic incident response procedures.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Explain fundamental cybersecurity concepts and terminology, including security goals (CIA triad), assets, threats, vulnerabilities, risks, and basic controls. • Identify **and classify** common cyber threat actors, motivations, and attack types, including social engineering and phishing techniques. • Apply core security principles (e.g., least privilege, defense-in-depth, secure defaults, and attack surface reduction) to propose basic protection measures for simple systems.

	• Differentiate and describe authentication and authorization mechanisms, including password security, multi-factor authentication, and introductory access control models (RBAC/ABAC). • Explain foundational cryptography concepts, including hashing, encryption, and digital signatures, and **describe** their use in securing data and communications (e.g., HTTPS/TLS conceptually). • Describe malware categories and common infection vectors, and **recommend** appropriate defensive endpoint security controls such as patching, backups, and safe configuration practices. • Explain basic network security concepts, including segmentation, firewall principles, and secure remote access (VPN concept), and **identify** common network-related risks. • Interpret simple security-related artifacts (e.g., basic logs, alert summaries, and security checklists) to recognize suspicious activity in controlled scenarios. • Conduct a basic qualitative risk assessment for a simple case study and **outline** essential security policies, user awareness practices, and incident reporting/response steps.
Indicative Contents المحتويات الإرشادية	1. Introduction to Cybersecurity. • Define asset, threat, vulnerability, risk, control. • Explain CIA triad and give examples. 2. Cyber Threat Landscape and Social Engineering Fundamentals. • Identify common attacker motivations and attack types. • Recognize phishing/social engineering patterns. 3. Core Security Principles and System Weaknesses. • Explain least privilege, defense-in-depth, attack surface, secure defaults. • Apply principles to a small system. 4. Authentication basics. • Distinguish authentication vs authorization. • Describe MFA and why it helps. • Explain password storage conceptually (hash + salt). 5. Access control. • Basics of OS permissions ideas. • Explain access control and least privilege in practice. • Describe RBAC vs ABAC using examples. 6. Cryptography concept.

	• Differentiate encryption vs hashing vs digital signatures. • symmetric vs asymmetric and usages. 7. Malware Fundamentals and Endpoint Protection. • Identify types of malware and common infection methods. • Suggest layered defenses for endpoints. 8. Midterm exam. 9. Network defense fundamentals. • Explain why segmentation matters. • Describe what a firewall does (allow/deny based on rules). • Explain VPN conceptually. 10. Security Monitoring, Logging, and Intrusion Detection Basics. • Explain logs, events, alerts. • Distinguish IDS vs firewall. • Describe “baseline” and anomaly at a simple level. 11. Software security literacy. • Explain why bugs become vulnerabilities. • Identify common software risk areas (input validation, auth, updates). • Understand “patch management” importance. 12. Operating system security basics. • Explain hardening and secure configuration. • Identify basic OS controls (accounts, permissions, updates, services). 13. Cloud & IoT security overview. • Explain shared responsibility model (high-level). • Identify typical IoT risks and basic mitigations. 14. Cyber Risk Management, Security Policies, and Awareness. • Perform a basic qualitative risk assessment. • Understand policies/standards purpose. 15. Incident response basics • Describe IR phases: prepare, detect, contain, eradicate, recover, lessons learned. • Know what to do when an incident is suspected.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in lecture discussions, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes and interactive tutorials.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
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 and 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2 and 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	1hr	10% (10)	7	LO #1 - #6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Cybersecurity.
Week 2	Cyber Threat Landscape and Social Engineering Fundamentals.
Week 3	Core Security Principles and System Weaknesses.
Week 4	Authentication basics.
Week 5	Access control.
Week 6	Cryptography concepts.
Week 7	Midterm Exam.
Week 8	Malware Fundamentals and Endpoint Protection.
Week 9	Network defense fundamentals.
Week 10	Security Monitoring, Logging, and Intrusion Detection Basics.
Week 11	Software security literacy.
Week 12	Operating system security basics.
Week 13	Cloud & IoT security overview.
Week 14	Cyber Risk Management, Security Policies, and Awareness.
Week 15	Course Integration and Review.
Week 16	**Incident response basics + course review.**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Computer Security Principles and Practice, by William Stallings and Lawrie Brown, 5th Ed., 2024	No
Reference Book	Cybersecurity Essentials" by Charles J. Brooks, Christopher Grow, and Philip Craig., 2018	No
Reference Book	Security Engineering: A Guide to Building Dependable Distributed Systems, 2020	No
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks %**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Electrical Circuits Analysis**			**Module Delivery**	
Module Type	**S**			☐ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CYE12012**				
ECTS Credits	**5.00**				
SWL (hr/sem)	**150**				
Module Level			**Semester of Delivery**	2	
Administering Department	Cybersecurity		**College**	Engineering	
Module Leader	Dr. Ammar Isam		**e-mail**	ammarisam@kus.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D	
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. This course deals with the basic concept of electrical circuits. 2. This is the basic subject for all electrical and electronic circuits. 3. To understand voltage, current and power from a given circuit. 4. To develop problem solving skills and understanding of circuit theory through the application of techniques. 5. To understand Kirchhoff's current and voltage Laws problems. 6. To perform mesh and Nodal analysis. 7. To perform Maximum Power Transfer and reciprocity theorems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Recognize how electricity works in electrical circuits. 2- List the various terms associated with electrical circuits. 3- Summarize what is meant by a basic electric circuit. 4- Describe electrical power, charge, and current. 5- Define Ohm's law. 6- Identify the basic circuit elements and their applications. 7- Explain the two Kirchhoff's laws used in circuit analysis. 8- Understanding Maximum Power Transfer and reciprocity theorems.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. **Part A – Basic Concepts: -** Introduction, Charge and Current, Voltage, Power and Energy, Circuit Elements [18 hrs.] **Part B - Basic Laws: -** Ohm's Law, Nodes, Branches, and Loops, Kirchhoff's Laws, Series Resistors and Voltage Division, Parallel Resistors and Current Division, Wye-Delta Transformations [15 hrs.] **Part C - Methods of Analysis: -** Nodal Analysis, Nodal Analysis with Voltage Sources, Mesh Analysis, Mesh Analysis with Current Sources [12 hrs.] **Part D - Circuit Theorems: -** Superposition, Source Transformation, Thevenin's Theorem, Norton's Theorem, Maximum Power Transfer [24 hrs.] Revision problem classes [6 hrs.]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1- **Behavior management** Behavior management strategies foster an atmosphere of mutual respect, reduce disruptive behavior and ensure students have an equal opportunity to fulfill their potential in the classroom. It's crucial to provide them with both a positive and productive learning environment. Examples include establishing a reward system with an interactive chart where students move up or down depending on their performance and behavior in class. 2- **Blended learning** With a blended learning teaching strategy, technology is incorporated with traditional learning. This allows students to work at their own pace, research their ideas and become more physically engaged during lessons. Examples include providing interactive tablets or whiteboards with engaging activities and posting classwork online for easier access. 3- **Cooperative learning** Group work is a cooperative learning strategy that allows students with various learning levels to work together. By encouraging them to express their own ideas and listen to others' ideas as a group, you help students develop communication and critical thinking skills. Examples include solving math puzzles together, performing skits as a team or working on group presentations. 4- **Formative assessment** A formative assessment is used periodically to monitor student learning incrementally. This can more effectively measure the process of learning as opposed to end-of-unit tests and can help you to improve your teaching methods throughout the year. Examples of this teaching strategy include self-evaluation exercises and summarizing a topic in multiple ways. 5- **Student-led teaching** The student-led teaching strategy lets students become the teacher. In a classroom with learners at different levels, you can better engage those learning faster by showing them how to teach and give feedback to their peers. They may team-teach or work in groups to teach a new topic. Examples include letting a student teach an entire lesson or having advanced writers lead a peer-editing session as well as provide constructive criticism.

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**63**	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	**8.2**
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**87**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	**5.1**
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**	1	10% (10)	5	LO #1, # 4
	Assignments	2	10% (10)	4 and 10	LO #2, #3 and #8, #9
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	11	LO #5, #8 and #9
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 1-6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Basic Concepts of Electrical Circuit
Week 2	Ohm's Law
Week 3	Series Resistors and Voltage Division
Week 4	Parallel Resistors and Current Division
Week 5	Short and Open Circuits Series-Parallel Networks
Week 6	Star-Delta Transformations
Week 7	**Mid-term Exam**
Week 8	Kirchhoff's Laws

Week 9	Methods of Analysis: Nodal Analysis
Week 10	Methods of Analysis: Mesh Analysis
Week 11	Circuit Theorems: Superposition, Source Transformation
Week 12	Circuit Theorems: Source Transformation
Week 13	Circuit Theorems: Thevenin's Theorem
Week 14	Circuit Theorems: Norton's Theorem, Derivations of Thevenin's and Norton's Theorems
Week 15	Circuit Theorems: Maximum Power Transfer Theorem
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to Lab. Equipment's and How to use Avometer
Week 2	Lab 2: How to measure DC Voltage, current, power and resistor
Week 3	Lab 3: Resistor Color Code
Week 4	Lab 4: Ohm's Law
Week 5	Lab 5: Series, parallel and series- parallel circuits
Week 6	Lab 6: Divider Rules
Week 7	Lab 7: Star-Delta Transformations
Week 8	**Mid-term Exam**
Week 9	Lab 8: Kirchhoff's Voltage and Current Laws
Week 10	Lab 9: Nodal Analysis
Week 11	Lab 10: Mesh Analysis
Week 12	Lab 11: Superposition theorems
Week 13	Lab 12: Thevenin's theorems
Week 14	Lab 13: Norton's theorems
Week 15	Lab 14: Maximum Power Transfer Theorem

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	❖ The raja, B. L. **A Textbook of Electrical Technology-Volume I (Basic Electrical Engineering)**. Vol. 1. S. Chand Publishing, 2005. ❖ C.K. Alexander and M.N.O Sadiku, **Fundamentals of Electric Circuits**, McGraw-Hill Education, Fifth Edition, 2013	No
Recommended Texts	❖ Allan H. Robbins and Wilhelm C. Miller, **Circuit analysis: Theory and practice**, Cengage Learning, Fifth Edition, 2013. ❖ Nilsson, James William, **Electric circuits**, Pearson Education India, 2008.	No
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**English Language I**			**Module Delivery**	
Module Type	**S**			☒**Theory** ☒**Lecture** ☐ **Lab** ☐**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	**KUS12011**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level		**UGI**	**Semester of Delivery**		**2**
Administering Department		Cybersecurity Engineering	**College**	College of Engineering	
Module Leader	Huda S. Munshid		**e-mail**	Huda.salih@kus.edu.iq	
Module Leader's Acad. Title		Assistant Lecturer	**Module Leader's Qualification**		Master
Module Tutor	Huda S. Munshid		**e-mail**	Huda.salih@kus.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	The prescribed textbook for first-year students in non-English departments and the Engineering English handout have been designed for beginner learners of English; and after studying it, students are expected to gain knowledge of the basic level and its language skills. In each unit of the book, the instructor directs students' attention to four main aspects: 1. English grammar. 2. Engineering vocabulary. 3. Development of the four language skills: reading, writing, listening, and speaking. 4. Familiarity with commonly used English expressions in the daily life of native speakers.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this course, students will be able to: 1. Understand simple English texts (from the beginner textbook and external passages) and identify the main idea and key information. 2. Use basic general vocabulary along with simple engineering terms in short and clear sentences. 3. Apply basic English grammar rules (such as simple tenses, pronouns, and connectors) in writing and speaking. 4. Write short paragraphs and simple reports related to general or basic engineering topics. 5. Communicate in simple and clear English in academic and basic engineering situations (e.g., describing a device or a simple problem). 6. Listen to and understand simple instructions and conversations related to study or basic engineering contexts
Indicative Contents المحتويات الإرشادية	These materials have been chosen for their importance to user interaction. They consolidate learning from the pre-requisites and lay the foundations for further study, particularly specialized English for all engineering fields. The English Language specification offers a common core of analytical methods, topics and skills that have proven value, set within a flexible program that allows colleges to shape learning and teaching in ways appropriate to their contexts, and constituencies. It has the additional benefit of being co-teachable with our associate professors even when they are not specialized in teaching English, thus widening options for faculty and students, ensuring that we are able to deliver a program of study that is coherent and manageable.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Assessment is based on hand-in assignments, written exam, Quizzes, Seminars, student participation in lectures.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem)	**33**	**Structured SWL (h/w)**	2
Unstructured SWL (h/sem)	**17**	**Unstructured SWL (h/w)**	1.1
Total SWL (h/sem)	**50**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10%	7,10	LO#1-3|
	Assignments	4	20%	3,6,14	LO # 2- 4
	Projects / Lab.	0	0	0	0
	Report	1	10%	12	0
Summative assessment	**Midterm Exam**	1 hr	10%	9	LO # 1- 4
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Part of speech Introduction – reading texts • understanding texts and quotes • identifying key information & keywords •
Week 2	Unit 1

	• Present tense • Engineering vocabularies, and everyday English expressions • Exercises and paragraphs about the engineering field
Week 3	Unit 2 • Present continuous • Paragraph: engineering identity • Engineering vocabularies and everyday English expressions Assignment 1
Week 4	• Unit 3 Grammar: • Present perfect • Verb To Be (am / is / are) • Grammar: There is / there are • Engineering vocabularies • Exercises and paragraphs about the engineering field
Week 5	• Unit 4&5 • Grammar: there is/there are • Past tense • Engineering vocabularies, and everyday English expressions • Exercises and paragraphs about the engineering field • Assignment2 Paragraph: engineering projects
Week 6	Quiz Revision of unit 4&5
Week 7	Unit 6: Grammar : past tense Paragraph : engineering resources Engineering vocabularies, and everyday English expressions
Week 8	Unit 7: Grammar: future tense Engineering vocabularies , specify and describing properties,

	Reading: passage on engineering resources
Week 9	MID EXAM
Week 10	Unit 8: • Grammar : future (going to) • Engineering vocabularies, and everyday English expressions • Exercises and paragraphs about the engineering field • Paragraph: engineering fields
Week 11	Unit 9: Paragraph: Engineering design Grammar: conditional sentences Assignment 3
Week 12	Quiz Revision
Week 13	Unit 10: Grammar :Passive voice Can/can't • Engineering vocabularies, and everyday English expression
Week 14	Review of Unit 8,9,10 Assignment 4
Week 15	Students' report presentations
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	• **Engineering English Handout** (A course handout prepared and compiled by Asst.Lect. Huda S. Munshid, including basic engineering concepts, general terminology, selected reading passages, and essential	Yes

	grammar rules) • **New Headway Plus** (Beginner Student's Book) by John and Lz Soars,	
Recommended Texts	• English for engineers and technologists • Cambridge Professional English in Use	No
Websites	https://www.ets.org/toefl.html https://www.bbc.co.uk/learningenglish/	

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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Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Mathematics II**			**Module Delivery**	
Module Type	**C**			☒**Theory** ☐**Lecture** ☐**Lab** ☒**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	**CYE12008**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level		**UGI**	**Semester of Delivery**		**2**
Administering Department		CIV	**College**	ENG	
Module Leader	Dr. Husam Jasim Mohammed		**e-mail**		
Module Leader's Acad. Title		Asisst. Prof.	**Module Leader's Qualification**		
Module Tutor			**e-mail**	husam@kus.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Mathematics I	**Semester**	1
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1- The student acquires knowledge and special skills to analyze and solve mathematical equations using the relevant theories, hypotheses and laws. 2- To give a rigorous analytic approach to the definitions and properties of different functions 3- To study a number of important techniques which apply to finding integrals for specialized classes of functions 4- Extends the students' knowledge to find how to add together infinitely many numbers or many powers of variables.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Identify the vector, length of vector, angle, intersection of plane and line and distance. 2. Identify the Derivative and Integral of Natural Logarithm Function, exponential function and General Exponential Function a^x with applications. 3. Discuss the Definitions, Derivatives and Integrals of Hyperbolic Functions and the inverse of Trigonometric functions with applications. 4. Define the integration by parts as a technique of integration with applications. 5. Simplify the Repeated Integrations by using Tabular Integration use identities to transform the integrals of powers of Sines and Cosines we have to find into integrals that are easier to work with. 6. Describe the Procedure for a Trigonometric Substitution with applications. 7. General Description of the Integration of Rational Functions by Partial Fractions. 8. Representing Sequences and explain the Monotonic Sequence Theorem 9. Describe the Convergence and Divergence of Sequences. 10. Define the Infinite Series and the nth-Term Test for a Divergent Series 11. Discuss the Power Series and Convergence with applications and explain the Taylor and Maclaurin Series 12. Describe the Polar Coordinates. 13. Identify the matrix, determine of matrix and Gramer rule.
Indicative Contents المحتويات الإرشادية	Transcendental Functions – Natural Logarithm Function , exponential function and General Exponential Function a^x [8 hrs] Transcendental Functions –, Hyperbolic Functions and inverse of Trigonometric Functions [10 hrs]

	Techniques of integration - integration by parts, Tabular Integration, integrals of powers of Sines and Cosines [10 hrs] Techniques of integration - Trigonometric Substitution, Integration of Rational Functions [8 hrs] Infinite Sequences and Series – Sequences, Monotonic Sequence Theorem, Convergence and Divergence of Sequences [10 hrs] Infinite Sequences and Series – Infinite Series, nth-Term Test for a Divergent Series, Power Series and Convergence and Taylor and Maclaurin Series [10 hrs]. Polar Coordinates [4 hrs].

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by solving different types of mathematical problems that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem)	**48**	**Structured SWL (h/w)**	
Unstructured SWL (h/sem)	**52**	**Unstructured SWL (h/w)**	
Total SWL (h/sem)	**100**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (5)	5 and 11	LO #1, #2 and #9, #10
	Assignments	3	18% (6)	2 and 12	LO #3, #4 and #6, #7
	Onsite assign.	1	6% (6)	13	LO #5, #8 and #11
	Report	1	6% (6)	13	LO #5, #8 and #11
Summative Assessment	**Midterm Exam**	2 hr	10% (10)	7	LO #1 - #7
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Vector algebra, vector desc. of line, length angles and projections, vector dot and cross products
Week 2	Vector desc. of planes, intersection of planes and lines, planes: shortest distances
Week 3	Vector valued functions, revision, vector geometry
Week 4	Directional derivatives and gradient
Week 5	Partial derivative
Week 6	Application of partial derivative
Week 7	Mid exam 1
Week 8	Introduction of Integration
Week 9	Rule of integration
Week 10	Rule of Integration for triangle function
Week 11	Engineering applications
Week 12	Matrix
Week 13	Determine of matrix

Week 14	Gramer rule
Week 15	Mid exam 2
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Thomas' Calculus: Early Transcendentals 15th edition | Published by Pearson (February 8th 2022) Copyright © 2023	No
Recommended Texts	Thomas' Calculus: Early Transcendentals 15th edition | Published by Pearson (February 8th 2022) - Copyright © 2023	No
Websites	https://rodrigopacios.github.io/mrpacios/download/Thomas_Calculus.pdf	

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	**Networks Fundamentals**		**Module Delivery**
Module Type	**C**		☐ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	CYE11009		
ECTS Credits	**5**		
SWL (hr/sem)	**125**		
Module Level	1	**Semester of Delivery**	2
Administering Department	Cybersecurity Engineering Department	**College**	College of Engineering
Module Leader	Dr. Mustafa Ayad	**e-mail**	Mustafa.alani@kus.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	PhD
Module Tutor	/	**e-mail**	/
Peer Reviewer Name	/	**e-mail**	/
Scientific Committee Approval Date		**Version Number**	1.0

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Introduce the fundamental concepts of computer networks and data communication. 2. Define and explain different types of computer networks and network architectures. 3. Explain the principles of networking standards, layered communication models, and the OSI and TCP/IP reference models. 4. Explain the characteristics and functions of transmission media used in data communication. 5. Define and describe the operation and roles of basic networking devices such as hubs, switches, routers, and repeaters. 6. Explain the basic concepts of switching and routing in computer networks. 7. Introduce the concept of network services and client–server communication models. 8. Develop basic practical skills in network simulation, IP addressing, and connectivity testing using appropriate tools. 9. Introduce the relationship between networking fundamentals and cybersecurity principles, including network vulnerabilities and attack surfaces.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the basic concepts of computer networks and data communication. 2. Recognize different types of networks and distinguish between common network architectures and models. 3. Demonstrate understanding of networking standards and layered communication models, including the OSI and TCP/IP models. 4. Identify transmission media and explain their characteristics and applications in data communication. 5. Recognize basic networking devices and understand the function of each device within a network. 6. Understand the basic principles of switching and routing in computer networks.

	7. Demonstrate understanding of network services and client–server communication concepts. 8. Perform basic network simulation tasks, including simple IP configuration and connectivity testing using appropriate tools. 9. Understand the relationship between networking fundamentals and cybersecurity concepts, including basic network vulnerabilities and security considerations.
Indicative Contents المحتويات الإرشادية	1. Introduction to Computer Networks: • What is a computer network? • Data communication fundamentals. • Components of a network. • Role of networks in cybersecurity. 2. Network Types and Scope: • LAN, MAN, and WAN. • Internet vs Intranet. • Real-world network examples. • Trust boundaries. 3. Network Architectures and Models: • Client–Server vs Peer-to-Peer. • Centralized vs Distributed systems. • Availability and fault tolerance. 4. Fundamentals of Data Communication: • Data, signals, and noise. • Bandwidth, throughput, and latency. • Performance bottlenecks. 5. Networking Standards and Models: • Why standards exist? • ISO, IEEE, and IETF. • Importance of interoperability. 6. OSI Reference Model: • Layered communication. • Role of each layer. • Encapsulation.

7. Midterm Exam.

8. TCP/IP Model and Internet Architecture:
- TCP/IP layers.
- OSI vs TCP/IP.
- Internet communication flow.

9. Transmission Media:
- Guided vs unguided media.
- Twisted pair, fiber, and wireless.
- Media vulnerabilities.

10. Networking Devices:
- Hub, switch, router, and repeaters.
- MAC vs IP.
- Device roles in security.

11. Network Topologies:
- Bus, star, ring, and mesh.
- Fault tolerance.
- Design considerations.

12. Switching and Routing Concepts:
- Frame vs packet.
- Forwarding logic.
- Path selection.

13. Network Services and Applications:
- File servers.
- Web servers.
- Mail servers.
- Service exposure.

14. Networking Foundations for Cybersecurity:
- CIA triad.
- Attack surfaces.
- OSI layer vulnerabilities.

15. Course Integration and Review:
- OSI + TCP/IP integration.

	• Concept synthesis. • Exam preparation.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Lecture. Discussion. Practical Experience. Clarification and Ask Questions. reflect on what you have learned. reports.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.13
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)	4 and 10	LO #1 to #9
	Assignments	1	5% (5)	3 and 12	LO #3 to #11
	Projects / Lab.	1	15% (15)	Continuous	All
	Report	1	10% (10)	13	All
Summative assessment	**Midterm Exam**	1hr	10% (10)	7	LO #1 - #6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Computer Networks.
Week 2	Network Types and Scope.
Week 3	Network Architectures and Models.
Week 4	Fundamentals of Data Communication.
Week 5	Networking Standards and Models.
Week 6	OSI Reference Model.
Week 7	Midterm Exam.
Week 8	TCP/IP Model and Internet Architecture.
Week 9	Transmission Media.
Week 10	Networking Devices.
Week 11	Network Topologies.
Week 12	Switching and Routing Concepts.
Week 13	Network Services and Applications.
Week 14	Networking Foundations for Cybersecurity.
Week 15	Course Integration and Review.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Identifying Network Components. (Guided Activity + Diagram Implementation)
Week 2	Lab 2: Network Classification Exercise. (Case Study Analysis)
Week 3	Lab 3: Architecture Comparison. (Structured Analytical Activity)
Week 4	Lab 4: Network Performance Observation. (Hands-on Laptop Implementation)
Week 5	Lab 5: OSI Layer Mapping Workshop. (Conceptual Activity + Diagram Implementation)
Week 6	Lab 6: TCP/IP vs OSI Comparison. (Structured Activity)
Week 7	Lab 7: Review / Practical Clarification.
Week 8	Lab 8: Packet Tracer Familiarization. (Hands-on Implementation)
Week 9	Lab 9: Basic LAN Implementation. (Hands-on Configuration)
Week 10	Lab 10: Switch Behavior Observation. (Simulation Mode Analysis)

Week 11	Lab 11: Basic Routing Implementation. (Hands-on Configuration)
Week 12	Lab 12: Topology & Fault Simulation. (Implementation + Analysis).
Week 13	Lab 13: Client–Server Simulation. (Hands-on Implementation)
Week 14	Lab 14: Network Attack Surface Awareness. (Conceptual + Simulation)
Week 15	**Integrated Practical Assessment (Hands-on Final Exercise)**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Computer Networking (2021).	No (Online)
Recommended Texts	Fundamentals of Computer Networking (FCN).	No (Online)
Websites	Cisco Academy Courses.	

Grading Scheme
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Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
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