	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa Engineering College Biomedical Engineering Department	

MODULE DESCRIPTION FORM

Module Information					
Module Title	Electrical Circuits I			**Module Delivery**	
Module Type	Basic			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	BME -211				
ECTS Credits	6				
SWL (hr/sem)	175				
Module Level	1		**Semester of Delivery**	1	
Administering Department	BME		**College**	ENG	
Module Leader	Ali Abdul-Hussein Mohammed		**e-mail**	Email: ali.masaoodi@uowa.edu.iq	
Module Leader's Acad. Title	Assistant Lecturer		**Module Leader's Qualification**	M.S.c	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	1. Introduce fundamental electrical quantities and DC circuit concepts. 2. Develop understanding of voltage, current, resistance, power, and energy relationships. 3. Build ability to analyze resistive DC circuits using basic laws. 4. Train students to apply Kirchhoff's laws systematically. 5. Develop skills in circuit simplification and reduction methods. 6. Introduce major network theorems used in circuit analysis. 7. Strengthen analytical and problem-solving skills in engineering contexts. 8. Prepare students for advanced courses in AC circuits and electronics.
Module Learning Outcomes	1. Ability to analyze and solve DC resistive circuits using Ohm's law, Kirchhoff's laws, node/mesh methods, and network theorems. 2. Ability to evaluate circuit performance parameters (voltage, current, power) and interpret results for practical engineering applications.
Indicative Contents	• Basic electrical quantities and units • Ohm's law and power relations • Series and parallel resistive networks • Kirchhoff's current and voltage laws • Node voltage and mesh current analysis • Source transformation techniques • Network theorems: Superposition, Thevenin, Norton, Maximum Power Transfer • Bridge circuits and measurement basics • Introduction to DC instruments and practical measurements

Learning and Teaching Strategies

Strategies	• Structured lectures with worked examples • Guided problem-solving sessions • Tutorial exercises and quizzes • Laboratory experiments and measurements • Simulation-based circuit analysis • Continuous formative assessment through assignments • Concept-focused discussions and board derivations • Practice with real engineering-style problems

Student Workload (SWL)			
Structured SWL (h/sem)	108	**Structured SWL (h/w)**	3
Unstructured SWL (h/sem)	67	**Unstructured SWL (h/w)**	1
Total SWL (h/sem)	175		

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

Delivery Plan (Weekly Syllabus)	
	Material Covered

Week 1	Basic Electrical Quantities
Week 2	Ohm's Law
Week 3	Circuit Elements, Node and loop concepts
Week 4	Kirchhoff's Current Law (KCL) Kirchhoff's Voltage Law (KVL)
Week 5	Series circuits analysis. Parallel circuits analysis
Week 6	Mixed series-parallel circuits
Week 7	Voltage division rule Current division rule
Week 8	Mid Exam
Week 9	Mesh Current Method
Week 10	Node Voltage Method
Week 11	Thevenin Theorem
Week 12	Norton Theorem
Week 13	Superposition Theorem
Week 14	Maximum Power Transfer
Week 15	Bridge and Special Networks
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Fundamentals of Electric Circuits, C.K. Alexander and M.N.O Sadiku, McGraw-Hill Education	Yes
Recommended Texts		
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme			
Group	**Grade**	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	90 - 100	Outstanding Performance
	B - Very Good	80 - 89	Above average with some errors

	C - Good	70 - 79	Sound work with notable errors
	D - Satisfactory	60 - 69	Fair but with major shortcomings
	E - Sufficient	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	(45-49)	More work required but credit awarded
	F – Fail	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.			