وازرة التعليم العالي والبحث العلمي جـــهاز

الإشـــراف والتقـــويم العلـمي

دائرة ضمان الجودة والاعتماد الأكاديمي

استمارة وصف البرنامج الاكاديمي للعام الدراسي ٢٠٢٤_٢٠٢٥ للكليات والمعاهد

الجامعة : جامعة شط العرب الاهلية

الكلية /المعهد : الكلية التقنية الهندسية

القسم العلمي : قسم هندسة تقنيات الأجهزة الطبية

تاريخ ملء الملف : 2025/8/4

التوقيع :

اسم رئيس القسم : د. هناء نبيل حسين

التاريخ : 2025/8/4

التوقيع :

اسم المعاون العلمي: أ.د. كامل حسين السوداني

التاريخ : 4/8/2025

الاستاذ الدكتور
كامل حسين السوداني
كيمياء تحليلية

الكلية التقنية الهندسية
اللجنة الامتحانية
هندسة تقنيات الاجهزة الطبية

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: التاريخ

/ /

التوقيع

مصادقة السيد العميد

أ.م.د. مازن عبدالاله علوان

عميد الكلية التقنية الهندسية

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Fundamentals of Electrical Engineering (DC)**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MIET1101**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level		UGI	**Semester of Delivery**		1
Administering Department		MIET	**College**	EETC	
Module Leader	Huda Farooq Jameel		**e-mail**	Huda_baban@mtu.edu.iq	
Module Leader's Acad. Title		Asst. Lecturer	**Module Leader's Qualification**		M.Sc
Module Tutor	Salah Hassan Abbas		e-mail	salah.shaw.84a@gmail.com	
Peer Reviewer Name		Dr. Aws Alazawi	**e-mail**	aws_basil@mtu.edu.iq	
Scientific Committee Approval Date		8/11/2023	**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 develop knowledge on standard units of electricity and understanding of DC circuit theorems. 2. To understand voltage, current and power of DC circuits. 3. To learn the basic concept of DC electrical circuits connections. 4. To explain the DC electrical circuits. 5. To understand basic laws of electricity. 6. To perform DC-network theorem. 7. To perform DC-circuit analysis methods. 8. To understand independent sources and dependent sources.
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, voltage, and current. 5. Define Ohm's law and define the relation between voltage, resistance, and current. 6. Identify the basic circuit elements and their applications. 7. Discuss the operations of power and energy in electric circuit. 8. Discuss the various properties of resistors connections. 9. Explain the two Kirchhoff's laws used in circuit analysis. 10. Identify the implementation of resistor circuit's connection. 11. Learn measurements of voltage ad current. 12. Practical Identification of resistance based on color code.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. DC circuits – Current and voltage definitions, and circuit elements, Combining resistive elements in series and parallel. Kirchhoff's laws and Ohm's law, Network reduction, Introduction to mesh and nodal analysis. [20 hrs] Conversion of delta – connected resistance into an equivalent Wye connection & Vic versa. [10 hrs] Fundamentals of the Power sources connected in parallel, Thevenin and Norton equivalent circuits, current and voltage division, Loop current method, Super position method ,maximum power transfer, Non- linear direct current circuit [20 hrs] Independent sources and dependent sources [10 hrs] source transformation [5 hrs] Revision problem classes [5 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 considering types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**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, 10	LO #1, 2, LO# 10 and 11
	Online Assignments	2	10% (10)	2, 12	LO # 3, 4, LO# 6, 7
	Projects	1	6% (6)	Continuous	LO# 1-12
	lab	10	10% (10)	Continuous	LO# 1-12
	Report	1	4% (4)	13	LO # 5, 8, 9, 12
Summative assessment	**Midterm Exam**	3 hr	10% (10)	7	LO # 1-7
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Symbols and abbreviations, Units, Electric circuits, and its elements.
Week 2	The direct–current network (Ohm's law, Kirchhoff's voltage and current laws & their use in network).
Week 3 **Week 4**	Series elements and Voltage Division Parallel elements and Current Division
Week 5	Power sources are connected in parallel,
Week 6 **Week 7**	Circuit analysis methods: 1- Node voltage method. 2- Loop current method.
Week 8	Mid-term exam
Week 9	Conversion of delta–connected resistance into an equivalent Wye connection & Vic versa
Weeks 10-13	Circuit analysis Theorems: 1. Superposition 2. Thevenin 3. Norton 4. Maximum power
Weeks 14-15	Independent sources and Dependent sources, source transformation and preparation for final exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to electrical elements, sources, and measuring devices related to electrical circuits.
Week 2	Resistance measurement based on AVO meter readings and color code identification.
Week 3	Verification of Ohm's Law
Weeks 4-5	Verification of KVL and KCL
Weeks 6-7	Verification of Thevenin's and Norton's theorems
Weeks 8-9	Verification of the superposition theorem
Week 10	Verification of the maximum power transfer theorem
Week 11	Verification of the Nodal Voltage Theorem
Week 12	Verification of the Mesh Theorem
Weeks 13-14	practical implementation of Independent sources and Dependent sources
Week 15	Preparation for Final exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	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	Electric Circuits Seventh Editionو Schaum's Outline Series	No
Websites	https://www.youtube.com/watch?v=SfKw8bHk7-o (for practical implementation of Independent sources and Dependent sources, **Weeks 13-14**)	

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.