وزارة التعليم العالي والبحث العلمي - العراق

جامعة وارث الأنبياء
كلية الهندسة
قسم تقنيات التبريد والتكييف

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Theory of Machine and Vibrations**			**Module Delivery**	
Module Type	**C**			☐ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	MPAC309				
ECTS Credits	٦				
SWL (hr/sem)	١٥٠				
Module Level	3		**Semester of Delivery**	1	
Administering Department	Refrigeration and Air Conditioning Techniques.		**College**	Engineering	
Module Leader	**Mustafa Abbas**		**e-mail**	mustafa.abbas@uowa.edu.iq	
Module Leader's Acad. Title	**Asst.Lect**		**Module Leader's Qualification**	M.Sc.	
Module Tutor	None		**e-mail**	E-mail	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	31/08/2025		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	MPAC106	**Semester**	L1,S2
Co-requisites module	None	**Semester**	

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

Module Aims	To study the principles of electrical machines and electronic devices that are necessary for refrigeration and air conditioning engineer.
Module Learning Outcomes	Upon completion of the course, students should be able to: 1. Be able to analyze DC motor 2. Calculate the current and voltage of Motor then calculate the Torque 3. Compare between single phase and three phase motor
Indicative Contents	

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	Assessment is based on hand-in assignments, written exam, Case study, Quizzes, seminars, Practical testing and Online testing.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem)	88	**Structured SWL (h/w)**	6
Unstructured SWL (h/sem)	62	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	150		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	20% (20)	3,5,6,10	LO #1,2,…..10
	Assignments	2	10% (10)	7, 8	LO # 8
	Seminar	1	10% (10)	11	LO # 11
Summative assessment	**Midterm Exam**	2 hr	10% (10)	12	LO # 1-12
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري محتوى كل اسبوع يجب ان يغطي الوقت المحدد

	Material Covered
Week 1	D.C motors, construction, commutator, types of D.C motors
Week 2	Starting of D.C motor, starter connection, torque of D.C motors
Week 3	Single phase induction motor, split-phase, capacitor-start, shaded-pole type
Week 4	3-phase induction motor , construction , synch. Speed, slip .
Week 5	Starting of 3-phase induction motor, star-delta method, step down transformer
Week 6	Instruments and measurements, ammeters, voltmeter, ohmmeter, kw - h meters .

Week 7	Contactors, relays, timers .. Thermal overload, starter (contactor +timer)
Week 8	Fuse, circuit breakers, types, choice
Week 9	Diode, V-I characteristic, half –wave rectifier
Week 10	Full-wave rectifier, bridge and center-top transformer rectifier
Week 11	Transistor, construction, types
Week 12	Saturation, active, break-down region and cutoff regions
Week 13	Transistor as amplifier and Transistor as electronic switch.
Week 14	Diac – Traic , characteristics applications with SCR .
Week 15	Operational amplifier 741.

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Basic wiring diagram for electrical measurements
Week 2	Test of current, voltage and solid state relay
Week 3	Start-up compressor with solid state relay
Week 4	Start-up compressor with current relay
Week 5	Star delta starter
Week 6	Simulation of block for refrigerant , notice the effects
Week 7	Simulation of valve damage, notice the effects
Week 8	Dismantling of induction motor
Week 9	Diode characteristics
Week 10	Diode characteristics
Week 11	Half wave rectifier
Week 12	Full wave rectifier
Week 13	Full wave rectifier with filter
Week 14	Diode limiters
Week 15	Zener diode

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Recommended Texts	➢ Principle of Dc Motor and types	No

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.

استاذ المادة
التاريخ : ٢٠٢٥-٠٨-٣١

رئيس القسم
ا.م.د محمد حسن عبود
التاريخ: ٢٠٢٥-٠٨-٣١