



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	<u>Theory of Machine and Vibrations</u>	Module Delivery	
Module Type	<u>C</u>	☐ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	<u>MPAC309</u>		
ECTS Credits	<u>6</u>		
SWL (hr/sem)	<u>150</u>		
Module Level	<u>3</u>		
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

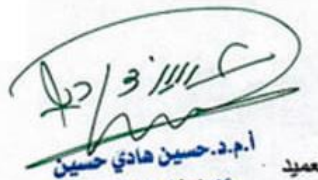
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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: م.م مصطفى عباس
التاريخ: 2025-08-31

1



أ.م.د. حسين هادي حسين
عميد كلية الهندسة



رئيس القسم
أ.م.د محمد حسن عبود
التاريخ: 2025-08-31

