MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Microwave circuits and networks**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	Elective				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level	8th		**Semester of Delivery**	4th	
Administering Department	ICE		**College**	KHW	
Module Leader	Ahmed Kadhim		**e-mail**	akadhim@kecbu.uobaghdad.edu.iq	
Module Leader's Acad. Title	Lect.		**Module Leader's Qualification**	Msc.	
Module Tutor	Nil		**e-mail**	Nil	
Peer Reviewer Name	Nil		**e-mail**	Nil	
Scientific Committee Approval Date	/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Electrical circuit theory, Electronic systems, electromagnetic fields and propagation, antenna theory.	**Semester**	2nd,3rd , 4th ,5th
Co-requisites module	Nil	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The objectives of this book are to present the basic principles, characteristics, and applications of commonly used microwave devices and to explain the techniques for designing microwave circuits.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Understanding the advantages and disadvantages of microwave communication systems 2. Knowledge the basics of transmission line. 3. Analysis microwave circuits. 4. Analyze microwave systems. 5. Understand the microwave engineering applications in communications, physics and medicine fields. 6. knowledge about different microwave components.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. • Transmission line [18 Hrs]. • Microwave Network Analysis [15 Hrs]. • Microwave Resonators [12Hrs].

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: 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 محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem)	75	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5

الحمل الدراسي المنتظم للطالب خلال الفصل			
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	45	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**120**		

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	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	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	Transmission line Theory
Week 2	THE SMITH CHART
Week 3	THE SMITH CHART
Week 4	THE SMITH CHART, THE QUARTER-WAVE TRANSFORMER
Week 5	IMPEDANCE AND ADMITTANCE MATRICES & scattering matrices
Week 6	The transmission (ABCD) matrix and signal flow
Week 7	Matching with lumped elements and single stub tuning
Week 8	Quarter wave transformer
Week 9	Series and parallel resonance circuit and transmission line resonators
Week 10	Excitation of resonators
Week 11	Basic properties of dividers and couplers
Week 12	The T junction power divider

Week 13	Microwave filters - periodic structures and filter design
Week 14	Noise in microwave circuit
Week 15	Noise figure
Week 16	Preparatory week before the final Exam

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	Microwave Devices and Circuits by SAMUEL Y. LIAO	No
Recommended Texts	Microwave Engineering by David M. Pozar	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.