MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Signal and System**			**Module Delivery**	
Module Type	**Core**			☒**Theory** ☐ **Lecture** ☒**Lab** ☐ **Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	UOMU0207032				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level		UGII	**Semester of Delivery**		1
Administering Department			**College**		
Module Leader	Haider Jabber		**e-mail**	haider.jabber@uomus.edu.iq	
Module Leader's Acad. Title			**Module Leader's Qualification**		PhD.
Module Tutor	Haider Jabber		**e-mail**	haider.jabber@uomus.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date		30/09/2025	**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 Objectives أهداف المادة الدراسية	1. Define the basics of signals in real-life. 2. Determine the circuit response to a periodic signal using the Fourier Series. Model linear time-invariant systems using convolution. 3. Describe how composite signals are used to determine the response of linear systems) 4. To understand the power and energy of signals. 5. Demonstrate what happens in the frequency domain when a continuous signal is sampled. 6. Design an anti-alias filter for a sampled data system. 7. Utilize the z-Transform to describe a discrete-time signal. 8. Understanding the representation signals using (Time/Frequency) domains
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the main signal and recognize different types of signals and systems. 2. Have the ability to Understand Signals operations. 3. Understanding the convolution and correlation operations. 4. Have the ability to design Filters. 5. Have the ability to representation of the signals in time/frequency- domains.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. Signals and Systems. (6 hrs). 2. Fourier Series and Fourier Transform (6 hrs). 2. Filters (3 hrs). 3. Convolution and Correlation (6 hrs). 4. Noise (9 hrs). 6. Sampling (9 hrs). 7. Transmission lines (6 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 محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	78/15= 5.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	72/15= 4.8
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 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	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 1-5	Signals and Systems, spectrum, and filters; Singularity functions; periodic signals and Fourier series; nonperiodic signals and Fourier transform. convolution and impulses system response and filters; correlation and spectral density; Parseval's theorem for energy signals
Week 6-8	Noise: Band-limited white noise; thermal noise; noise figure.
Week 9	Mid-term Exam
Week 10-12	Sampling: sampling theory and practice, aliasing.
Week 13-15	Transmission lines: characteristic impedance, reflection coefficient and standing waves
Week 16	**Final exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introducing laboratory equipment and their operation.
Week 2-3	Low pass filter and high pass filter (passive)
Week 4&5	Signals operations using RLC circuits and responses
Week 6&7	band pass filter and band reject filter
Week 8-9	Filter design: First order and second order filter design
Week 10	Midterm exam
Week 11-12	Oscillator's operation, Hartley oscillator, voltage control oscillator
Week 13	Signal analysis using oscilloscope
Week 14	sampling of signals circuits
Week 15	Aliasing proofing
Week 16	Final exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	"Introduction to Communication Systems" By F. G. Strelmer	No
Recommended Texts	Sanjay Sharma: “Communication Systems (Analog and Digital) T. R. Ganesh Babu, and G. Srinivasan: “ Communication Theory and systems”, 2006	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.