الملحق 4: وصف المادة الدراسية

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Control Theory**			**Module Delivery**	
Module Type	**Core**			☒**Theory** ☐**Lecture** ☐**Lab** ☐**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	**COM 35106**				
ECTS Credits	**3**				
SWL (hr/sem)	**50**				
Module Level	UGIII		**Semester of Delivery**	1	
Administering Department	BSc - COMM		College	Al-Mansour University College	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	13-9-2025		**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- During the academic year, the student will learn about the types of systems, whether open or feedback-enabled. 2- Learn and understand the block diagram and its abbreviation. 3- Learn and understand the review of the time- response 4- Learn and understand the foundations of stability.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Familiarity with the mathematical relationships included in the subject. 2. Familiarity with the definition of systems of all types. 3. Familiarity with how to conduct practical experiments related to the subject. 4. Familiarity with the basic concepts of stability methods, their types, and their practical applications.
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** • Course introduction (2 hrs) • Working with Power point (4 hrs) • Theoretical lectures (20 hrs) • Examinations (4 hrs)
Description	Introduction to Control Systems: History and basic definition of open loop system and closed loop control system. Transfer function: Transfer function of electrical and mechanical system. Block diagram: Block diagram reduction, Signal flow graph and Mason rule. Time response: Typical test signals, poles, zeros, types of system (second order and first order) and steady state error. Stability: Routh-hwtriz criterion, root locus. Frequency response techniques: Bode plots, Nyquist diagram, phase margin and gain margin. PID controller

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	**In this course, students are guided by:** • Using different examples. • Using different styles of discussion that aim to connect the theoretical and practical sides. • Asking questions and giving exercises that require analysis and conclusions related to lectures. • Encourage students to participate in discussions and do the practical work. • Encourage students to work in groups.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**33**	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	**2**
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**17**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	**1.1**
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**50**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	**2**	**10% (5)**	**6 and 12**	**LO #1 to #3 and #4 to #6**
	Assignments	**2**	**10% (5)**	**2 and 13**	**LO #3 to #6**
	Projects / Lab.	**1**	**10% (10)**	**Continuous**	**All**

	Report	**1**	**10% (10)**	**13**	**LO #3, #4 and #6**
Summative assessment	**Midterm Exam**	**2hr**	**10% (10)**	**9**	**LO #1 - #5**
	Final Exam	**3hr**	**50% (50)**	**16**	**All**
Total assessment			**100% (100 Marks)**		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Control Systems: History and basic definition of open loop system and closed loop control
Week 2	Transfer function: Transfer function of electrical and mechanical system
Week 3	Transfer function: Transfer function of electrical and mechanical system
Week 4	Block diagram: Block diagram reduction,
Week 5	Signal flow graph and Mason rule.
Week 6	Time response: Typical test signals, poles, zeros,
Week 7	types of system (second order and first order) and steady state error.
Week 8	Stability: Routh-hwtriz criterion,
Week 9	root locus stability
Week 10	root locus stability
Week 11	Frequency response techniques: Bode plots,
Week 12	Frequency response techniques: Bode plots,
Week 13	Nyquist diagram, phase margin and gain margin.
Week 14	PID controller
Week 15	PID controller

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• Katsuhiko Ogata,2003, Modern Control Engineering fifth Edition, Prentice Hall. • Farid Golnaraghi & Benjamin C. Kuo, 2010, Automatic Control Systems, Tenth Edition, Wiley	Yes
Recommended Texts	• Norman S. Nise, 2010, Control Systems Engineering, sixth Edition,Wiley.	No
Websites	Microsoft Help, https://support.microsoft.com/en-us/products Learn Microsoft Office, https://www.goskills.com/Microsoft-Office	

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.