Republic of Iraq
Ministry of Higher Education & Scientific Research
Supervision and Scientific Evaluation Directorate
Quality Assurance and Academic Accreditation
International Accreditation Dept.

Academic Program Specification Form
For the Academic Year 2020-2021

University of Technology
College: **Control and Systems Engineering**
Number Of Departments In The College: **Three**
Date Of Form Completion: **5-6-2021**

Dean ' s Name:	Dean ' s Assistant for Scientific Affairs:	The College Quality Assurance and University Performance Manager:
Prof. Dr.	**Prof. Dr.**	**Assist. Prof.**
Shibly Ahmed Hameed	**Mohammed Yousif Hassan**	**Shaymaa Mahmood Mahdi**
Date: 5 / 6 / 2021	Date: 5 / 6 / 2021	Date: 5 / 6 / 2021
Signature:	Signature:	Signature:

TEMPLATE FOR PROGRAMME SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

PROGRAMME SPECIFICATION

This academic program description provides a requisite summary of the most important characteristics of the program and the learning outcomes expected of the student to achieve, proving whether he has made maximum use of the available opportunities. It is accompanied by a description of each course within the program.

1. Teaching Institution	Ministry of Higher Education & Scientific Research
2. University Department/Centre	University of Technology/ Control and Systems Engineering Department
3. Program Title	Control Engineering Branch
4. Title of Final Award	Bachelor of Science in Control Engineering
5. Modes of Attendance offered	The first stage, the second stage, the third and the fourth: the semester system (courses)
6. Accreditation	ABET
7. Other external influences	
8. Date of production/revision of this specification	5-6-2021
9. Aims of the Program	
The program aims to graduate engineering cadres specialized in the field of automatic control and automation engineering.	
The Control Engineering Branch aims to provide students of the initial study with topics related to all areas of control engineering and according to international standards.	
Graduating engineers in the field of Control Engineering for the purpose of engaging them in work and developing the Iraqi industry. The research interest of this branch is related to all fields related to the science of control engineering, including but not limited to the fields related to robotics, artificial intelligence, computer control engineering, adaptive control, neural networks, fuzzy logic and genetic algorithm. And the doctorate or in the form of research activities carried out by the staff to cover the needs of the university and industry.	

10. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Knowledge and Understanding

A1: Introduce the student to theories of control engineering

A2: Enable the student to know and understand the practical applications of Control Engineering theories

A3: Enable the student to choose the optimal solutions to problems in the field of Control Engineering

B. Subject-specific skills

B1: Design

B2: Implementation

B3: Analysis

Teaching and Learning Methods

Giving lectures, dialogue, discussion, scientific visits, workshops, seminars

Assessment methods

Written exams, discussions, homework

C. Thinking Skills

C1: Problem solving

C2: Design

C3: Data collection and analysis

C4: Work collectively to solve problems and take the appropriate decision

Teaching and Learning Methods

1. Mathematical problems, engineering design homework, forming work teams to carry out a specific task

Assessment methods

Written exams, discussion, homework, seminars

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1: The ability to work in groups to accomplish a specific task.

D2: The ability to communicate scientifically with the latest developments in the field of Control Engineering.

D 3: Using modern means, techniques and equipment.

D 4: The possibility of self-development and keeping abreast of the latest developments.

Teaching and Learning Methods
Seminars, workshops, scientific visits, completion of work within a work team.
Assessment Methods
Discussion, presentation of a specific problem, seminars

11. Program Structure					12. Awards and Credits
Level/Year	Course or Module Code	Course or Module Title	Credit hours		
			Theo.	Prac.	
First	ENGL102	English Language 1	2	-	
	WRKS101	Workshops 1	-	6	
	COMP104	Computer Science	1	2	
	MATH111	Mathematics 1	3	-	
	EENG112	Fundamentals of Electrical Engineering 1	2	2	
	ELPH113	Electronic Physics 1	3	-	
	ENDR114	Engineering Drawing,1	-	3	
	ENGL106	English Language 2	2	-	
	WRKS105	Workshops 2	-	6	
	CFPR115	Computer Fundamentals and Programming	1	2	
	MATH116	Mathematics 2	3	-	
	EENG117	Fundamentals of Electrical Engineering 2	2	2	
	ELPH118	Electronic Physics 2	3	-	
	ENDR119	Engineering Drawing 2	-	3	
Second	HRDE1215	Human Rights	2	-	
	PSTC1216	Probability and Statistics	2	-	
	ELMA1217	DC Electrical Machines	2	-	
	MEIN1218	Measurements and Instrumentation 1	2	2*	
	MECH1219	Mechanics	2	-	
	DITQ1220	Digital Techniques 1	2	-	
	EMAT1221	Engineering Mathematics 1	2	-	
	ELEC1222	Electronics 1	2	-	
	COTH1223	Control Theory 1	2	2**	
	MOSI1224	Modeling and Simulation	2	-	
	ELMA1225	AC Electrical Machines	2	-	
	MEIN1226	Measurements and Instrumentation 2	2	2*	
	DYNA1227	Dynamic	2	-	
	DITQ1228	Digital Techniques 2	2	-	
	EMAT1229	Engineering Mathematics 2	2	-	
	PROG1230	Programming with MATLAB	2		

	ELEC1231	Electronics 2	2	-
	COTH1232	Control Theory 2	2	2**
Note: The 2* hours are assigned to the Measurements and Instrumentation Lab and Digital Techniques Lab which are taken alternatively.				
Note: The 2** hours are assigned to the Control Theory Lab and Electronics Lab which are taken alternatively.				
Third	CSE3301	Engineering Analysis I	2	
	CSE3302	Numerical Analysis using MATLAB I	2	
	CSE3303	Microprocessor Techniques I	2	
	CSE3304	Microprocessor Techniques II	2	
	CSE3305	Electronic Circuits Design I	2	
	CSE3306	Electronic Circuits Design II	2	
	CSE3307	Fundamentals of Communication I	2	
	CSE3308	Digital Signal Processing II	2	
	CSE-M3306	Programming Logic Controller I	2	
	CSE-M3307	Programming Logic Controller II	2	
	CSE-C3301	Linear Algebra II	2	
	CSE-C3302	Control Theory III I	2	
	CSE-C3303	Control Theory IV II	2	
	CSE-C3304	System Identification II	2	
	CSE-C4305	Control System Design I	2	
	CSE-C3306	Power Electronics I	2	
	CSE-C3307	Power Mechanics and Renewable Energy I	2	
	CSE-C3308	Fluid Power II	2	
	CSE-C3309	Laboratories I		2
	CSE-C3310	Laboratories II		2
Fourth	CSE4301	Industrial Engineering I	2	
	CSE4302	Nanotechnology II	2	
	CSE-M4302	Automation and CNC Machine II	2	
	CSE-M4303	Computer Interfacing I	2	
	CSE-M4304	Microcontrollers II	2	
	CSE-M4310	Robotics I	2	
	CSE-C4301	Digital control I	2	
	CSE-C4302	Digital control II	2	
	CSE-C4303	Modern Control I	2	
	CSE-C4304	Modern Control II	2	
	CSE-C4305	Optimization Techniques II	2	
	CSE-C4306	Intelligent Control Systems I	2	
	CSE-C4307	Nonlinear Systems II	2	
	CSE-C4308	Control System Design II	2	
	CSE-C4309	Process Systems I	3	
	CSE-C4310	Adaptive Control I	2	
	CSE-C4311	Laboratories I		1
	CSE-C4312	Laboratories II		1
	CSE-C4313	Project		4

13. Personal Development Planning
This is done through the periodic review of the curricula and the latest scientific developments in the field of specialization of the branch.
14. Admission criteria.
1. The criteria are included in the central admission plan for each year. 2. Acceptance of the first to the institutes.
15. Key sources of information about the program
Curriculum books, teaching lectures collected from multiple sources, laboratories.

Curriculum Skills Map																															
please tick in the relevant boxes where individual Program Learning Outcomes are being assessed																															
Year / Level	Course Code	Course Title	Core (C) Title or Option (O)	Program Learning Outcomes																											
				Knowledge and understanding							Subject-specific skills					Thinking Skills						General and Transferable Skills (or) Other skills relevant to employability and personal development								
				A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	D1	D2	D3	D4	D5	D6	D7	D8		
First	ENGL102	English Language 1	C			X										X		X													
	WRKS101	Workshops 1	C									X																			
	COMP104	Computer Science	C			X										X		X													
	MATH111	Mathematics 1	C	X									X					X					X								
	EENG112	Fundamentals of Electrical Engineering 1	C		X						X						X							X							
	ELPH113	Electronic Physics 1	C		X								X				X						X								
	ENDR114	Engineering Drawing 1	C								X						X					X									
	ENGL106	English Language 2	C		X																										
	WRKS105	Workshops 2	C									X																			
	CFPR115	Computer Fundamentals and Programming	C			X										X		X													
	MATH116	Mathematics 2	C	X									X					X					X								
	EENG117	Fundamentals of Electrical Engineering 2	C		X						X						X							X							
	ELPH118	Electronic Physics 2	C		X								X				X						X								
	ENDR119	Engineering Drawing 2	C								X						X					X									
Second	HRDE1215	Human Rights	C																												
	PSTC1216	Probability and Statistics	C																												
	ELMA1217	DC Electrical Machines	C		X								X												X						
	MEIN1218	Measurements and	C		X								X					X						X							

		Instrumentation 1																										
	MECH1219	Mechanics	C		X						X		X			X	X						X		X				
	DITQ1220	Digital Techniques 1	C		X						X						X								X				
	EMAT1221	Engineering Mathematics 1	C			X							X			X										X				
	ELEC1222	Electronics 1	C		X						X	X					X								X				
	COTH1223	Control Theory 1	C	X	X								X				X						X						
	MOSI1224	Modeling and Simulation	C		X						X		X			X	X						X		X				
	ELMA1225	AC Electrical Machines	C		X								X					X						X					
	MEIN1226	Measurements and Instrumentation 2	C		X						X		X			X	X						X		X				
	DYNA1227	Dynamic	C		X						X						X								X				
	DITQ1228	Digital Techniques 2	C		X						X						X								X				
	EMAT1229	Engineering Mathematics 2	C			X							X			X									X				
	PROG1230	Programming with MATLAB	C		X						X		X			X	X						X		X				
	ELEC1231	Electronics 2	C		X						X	X					X								X				
	COTH1232	Control Theory 2	C	X	X								X				X						X						
Third	CSE3301	Engineering Analysis I	C		x	x							x			x									X				
	CSE3302	Numerical Analysis using MATLAB I	C		x	x							x			x									x				
	CSE3303	Microprocessor Techniques I	C		x						x	x					x	x						x					
	CSE3304	Microprocessor Techniques II	C		x						x	x					x	x						x					
	CSE3305	Electronic Circuits Design I	C		x							x	x				x	x						x	x				
	CSE3306	Electronic Circuits Design II	C		x							x	x				x	x						x	x				
	CSE3307	Fundamentals of Communication I	C		x								x				x	x							x				
	CSE3308	Digital Signal Processing II	C		x								x				x	x					x		x				
	CSE-M3306	Programming Logic Controller I	C		x						x	x				x	x	x					x	x	x				
	CSE-M3307	Programming Logic Controller II	C	x	x						x	x				x	x	x					x	x	x				
	CSE-C3301	Linear Algebra II	C	x	x								x				x	x					x		x				
	CSE-C3302	Control Theory III I	C		x						x		x				x						x		x				
	CSE-C3303	Control Theory IV II	C	x	x						x		x				x						x		x				
	CSE-C3304	System Identification II	C		x								x					x					x		x				
	CSE-C4305	Control System Design I	C		x	x					x		x			x	x		x			x	x		x				
	CSE-C3306	Power Electronics I	C		x	x					x	x					x							x					
	CSE-C3307	Power Mechanics and	C	x	x	x					x	x				x	x							x					

		Renewable Energy I																										
	CSE-C3308	Fluid Power II	C	x	x								x												x			
	CSE-C3309	Laboratories I	C		x	x						x						x						x				
	CSE-C3310	Laboratories II	C		x	x						x						x						x				
Fourth	CSE4301	Industrial Engineering I	C		x							x					x											
	CSE4302	Nanotechnology II	C			x							x				x							x				
	CSE-M4302	Automation and CNC Machine II	C	x	x	x							x				x	x						x				
	CSE-M4303	Computer Interfacing I	C		x		x					x	x					x	x					x				
	CSE-M4304	Microcontrollers II	C		x							x	x					x	x					x				
	CSE-M4310	Robotics I	C	x	x	x							x				x	x						x				
	CSE-C4301	Digital control I	C	x	x	x						x	x				x	x	x					x	x			
	CSE-C4302	Digital control II	C	x	x	x						x	x				x	x	x					x	x			
	CSE-C4303	Modern Control I	C	x	x	x							x				x	x	x		x		x	x	x			
	CSE-C4304	Modern Control II	C	x	x	x							x				x	x	x		x		x	x	x			
	CSE-C4305	Optimization Techniques II	C	x	x	x							x				x	x	x		x		x	x	x			
	CSE-C4306	Intelligent Control Systems I	C			x							x					x	x		x		x	x				
	CSE-C4307	Nonlinear Systems II	C	x	x	x					x		x				x	x	x		x		x	x	x			
	CSE-C4308	Control System Design II	C	x			x					x	x	x			x	x	x		x		x	x				
	CSE-C4309	Process Systems I	C	x								x					x							x	x			
	CSE-C4310	Adaptive Control I	C			x					x		x					x	x		x		x	x	x			
	CSE-C4311	Laboratories I	C		x		x				x	x						x						x	x			
	CSE-C4312	Laboratories II	C		x		x				x	x						x						x	x			
	CSE-C4313	Project	C	x	x	x	x					x	x	x			x	x	x		x		x	x				