



Republic of Iraq - Ministry of Higher Education and Scientific Research
 Southern Technical University
 Bachelor's degree in Electromechanical Systems Techniques Engineering (first cycle)
 Four years (Eight semesters) - 240 ECTS credits - 1 ECTS = 25 hr
 Program Curriculum (2023 - 2024)

جمهورية العراق - وزارة التعليم العالي والبحث العلمي
 الجامعة التقنية الجنوبية
 بكالوريوس في هندسة تقنيات النظم الكهروميكانيكية (الدورة الأولى)
 أربع سنوات (ثمانية فصول دراسية) - 240 وحدة اوروبية - كل وحدة اوروبية = 25 ساعة
 المنهاج الدراسي للعام 2023-2024



Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSW L hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
One	1	STUTTC11	Fundamentals of Electrical Engine	أسس الهندسة الكهربائية	English	4	1	3			1	4	139	86	225	9.00	C		
	2	STUTTC11	Engineering Materials	المواد الهندسية	English	3	1	3				4	109	116	225	9.00	C		
	3	STUTTC11	Mathematics	رياضيات	English	3	2			1		4	94	81	175	7.00	S		
	4	STU103	Computer fundamentals /1	اساسيات الحاسوب 1	Arabic	1		2				4	49	26	75	3.00	B		
	5	STU102	Human Rights and Democracy	حقوق الانسان والديمقراطية	Arabic	2						3	33	17	50	2.00	B		
	Total						13	4	8	0	2	0	19	424	326	750	30.00		
UGI	1	STUTTC12	Electronic Physics	الفيزياء الالكترونية	English	3	1	3				4	109	116	225	9.00	C		
	2	STUTTC12	Engineering Mechanics	الميكانيك الهندسي	English	3	3					4	94	81	175	7.00	C		
	3	STUTTC12	Engineering and electrical Drawing	الرسم الهندسي والكهربائي	English	1	1			5		5	110	40	150	6.00	C		
	4	STU101	English language/1	اللغة الانكليزية/1	English	2						4	34	16	50	2.00	S		
	5	STUTTC12	Workshops	المعامل	English					6		4	94	56	150	6.00	B		
	Total						9	5	3	11	0	0	21	441	309	750	30.00		
Three	1	STUTTC23	Electrical Machines	المكانن الكهربائية	English	3	1	3				4	109	66	175	7.00	C		
	2	STUTTC23	Thermodynamic and fluid	ديناميك الحرارة والموائع	English	3	1	3				4	109	66	175	7.00	C		
	3	STUTTC23	Electrical and Electronic Circuits	الدوائر الكهربائية والالكترونية	English	3	1	3		1		4	124	51	175	7.00	C		
	4	STUTTC23	Advance Mathematics	رياضيات متقدمة	English	3	1			1		4	79	46	125	5.00	S		
	5	STUTTC23	English Language/2	اللغة الانكليزية / 2	English	2						4	34	16	50	2.00	S		
	6	STUTTC23	The crimes of the defunct Baath p	جرائم حزب البعث البائد	Arabic	2						3	33	17	50	2.00	B		
Total						16	4	9	0	2	0	23	488	262	750	30.00			
UGII	1	STUTTC24	Electrical devices and measureme	أجهزة وقياسات كهربائية	English	3	1	3				4	109	91	200	8.00	C		
	2	STUTTC24	Electronics	الالكترونيك	English	3	1	3				4	109	66	175	7.00	C		
	3	STUTTC24	Strength of Materials	مقاومة المواد	English	3	1	3				4	109	66	175	7.00	C		
	4	STUTTC24	Programming	البرمجة	English	2		3				4	79	46	125	5.00	B		
	5	STUTTC24	Fundamentals of computer/2	اساسيات الحاسوب 2	English	1		2				4	49	26	75	3.00	B		
	Total						12	3	14	0	0	0	20	455	295	750	30.00		
Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSW L hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
1	STUTTC35	Electric Power Systems	نظم القدرة الكهربائية	English	3	1	3					4	109	66	175	7.00	C		
2	STUTTC35	Heat transfer and Hydraulic system	انتقال الحرارة والانتظمة الهيدروليكية	English	3	1	3					4	109	66	175	7.00	C		

Five	3	STUTTC35: Communications	الاتصالات	English	3	1	3					4	109	66	175	7.00	C		
	4	STUTTC35: Theory of Machines	نظرية المكنان	English	3	1	3					4	109	66	175	7.00	C		
	5	STUTTC35: English Language/3	اللغة الانكليزية /3	English	2							4	34	16	50	2.00	S		
	Total					14	4	12	0	0	0	20	470	280	750	30.00			
UGIII	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)					Exam hr/sem	SSWL hr/sem	USSW hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code	
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)								Semn (hr/w)
	Six	1	STUTTC36: Synchronous and special Machine	المكنان التزامنية والخاصة		3	1	3			1		4	124	51	175	7.00	C	
		2	STUTTC36: Control and Vibration Theory	نظرية السيطرة والاهتزازات		3	1	3					4	109	41	150	6.00	C	
		3	STUTTC36: Industrial Engineering	هندسة صناعية		3	2						3	78	72	150	6.00	C	
		4	STUTTC36: Electromechanical designs	تصاميم كهروميكانيكية		3	2						3	78	72	150	6.00	C	
		5	STUTTC36: Engineering and Numerical Analysis	تحليلات هندسية وعددية		3				1			3	63	62	125	5.00	C	
Total					15	6	6	0	2	0	17	452	298	750	30.00				
Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)					Exam hr/sem	SSWL hr/sem	USSW hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code	
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)								Semn (hr/w)
	Seven	1	STUTTC47: Power Electronics and Drive	الالكترونيات القدرة والقيادة		3	1	3					4	109	66	175	7.00	C	
		2	STUTTC47: Electromechanical Devices	اجهزة كهروميكانيكية		3	1	3					4	109	66	175	7.00	C	
		3	STUTTC47: Automation and Control	السيطرة والاتمة		3	1						4	64	111	175	7.00	C	
		4	STUTTC47: Computer Aided Design and Manu	التصميم والتصنيع المعان بالحاسوب		3	1	3					4	109	66	175	7.00	C	
5		STUTTC47: English Language/4	اللغة الانكليزية /4		2							4	34	16	50	2.00	S		
Total					14	4	9	0	0	0	20	425	325	750	30.0				
UGIV	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)					Exam hr/sem	SSWL hr/sem	USSW hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code	
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)								Semn (hr/w)
	Eight	1	STUTTC48: Signals and systems	اشارات ونظم		3	2	3					4	124	76	200	8.00	C	
		2	STUTTC48: Microprocessors and Microcontrol	المعالجات والمسيطرات الدقيقة		3	2	3					4	124	76	200	8.00	C	
		3	STUTTC48: Air Condition And Cooling systems	منظومات التكييف والتبريد		3	2	3					4	124	76	200	8.00	C	
		4	STUTTC48: Engineering project	مشروع هندسي		2			4				3	93	57	150	6.00	C	
Total					11	6	9	4	0	0	15	465	285	750	30.0				
Total					104	36	70	15	6	0	155	3620	2380	6000	240.0		Must be 240 ECTS		
Note: The student should complete 4 weeks of Summer Internships to fulfill the requirements of the Bachelor's degree																			
Structured SWL (hr/w) type	CL	Class Lecture	Module type	B	Basic learning activities	SWL:	Student Workload												
	Lab	Laboratory		C	Core learning activity	SSWL:	Structured SWL												
	Pr	Practical Training		S	Support or related learning activity	USSWL:	Unstructured SWL												
	Tut	Tutorial		E	Elective learning activity														
	Lect Sem	Online lecture Seminar																	
Note: Columns O, Q and R are programmed, protected and should not be edited																			

Southern Technical University الجامعة التقنية الجنوبية



*First Cycle – Bachelor’s Degree (B.Sc.) -
Electromechanical Systems Techniques Engineering*
بكالوريوس - هندسة تقنيات النظم الكهروميكانيكية



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1. **Mission & Vision Statement**

Vision Statement

The primary vision of the EMET program is to provide graduates with the knowledge and skills necessary to apply current methods and technology to the development, design, operation, and management of electro-mechanical systems, particularly in those industries where automated systems are prevalent. Electromechanical Engineering Techniques Dept. seeks to be engineered edifice of excellence in the field of electromechanical engineering between the established universities worldwide.

Mission Statement

This programme specification provides and prepares a number of specialists in the field of electromechanical engineering at the level of cognitive distinct and processions to the rapid development of new developments in this field and a commitment to professional ethics in the field of work and society.

2. **Program Specification**

Programme code:	BSc-ESTE	ECTS	240
Duration:	4 levels, 8 Semesters	Method of Attendance:	Full Time

The EMET program provides the basic undergraduate education required for a career as an electro-mechanical engineering technologist. The program emphasizes a breadth of knowledge in all engineering technology fields related to typical, highly-automated manufacturing, production, or assembly plant processes. The degree provides basic coverage in all major areas of technology involved in the operation and control of manufacturing and production processes.

Level 1 offers students the fundamentals courses required. Programme-specific core topics are covered at Levels 2, 3 and 4

3. **Program Objectives**

1. To prepare engineers efficiently specialists in the field of electromechanical engineering and able to develop their skills in the fields of engineering knowledge and proficient use of applications in the field of electromechanical specialized in the design and use of services related to their specialty .
2. Working on the creation of engineers on a jointly organized work, and enhancing communication with local and international engineering and scientific institutions and universities, in the responsibility of professional and ethical.
3. To develop the spirit of leadership among students and prepare them for their roles post-graduation.
4. To provide Governmental state institutions and private sector with specialists, experts and consultants, scientists, besides supporting scientific research centers and engineering projects with distinguished scientific cadres.
5. Work to develop and improve the efficiency and performance of scientific and administrative faculty staff and enable them to use the latest scientific methods, as well as the optimal use of the department facilities and possibilities to keep abreast of scientific developments and qualitative cooperation with international universities and guide it to serve the community and state institutions.

4. Student Learning Outcomes

Graduates of the Electro-Mechanical Engineering Technology program can show:

Outcome 1

An ability to apply knowledge, techniques, skills, and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems in the field of electromechanical engineering applications.

Outcome 2

An ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline.

Outcome 3

An ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature.

Outcome 4

An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes.

Outcome 5

An ability to function effectively as a member or leader on a technical team.

Outcome 6

The ability to design, auditing and supervising the implementation of systems related to electromechanical engineering.

Outcome 7

Ability to derive and perform the approach issues to engineering problems in a scientific manner and determine the appropriate style to address the engineering problems emerging.

5. Academic Staff

Baqer Turki | Ph.D. in Electrical power Engineering | Professor

Email: dr.baqer_turki@stu.edu.iq

Mobile no.: 07806084788

Warid Sayel Warid | Ph.D. in Electrical power Engineering | Assistant Professor

Email: 07819626729

Mobile no.: warid.sayel@stu.edu.iq

Shawqi Glalaf | Ph.D. in Physics | Professor

Email: shawki.muhammad@stu.edu.iq

Mobile no.: 07803174943

Karim khazaL egab | Ph.D. in Mechanical Engineering | Assistant Prof.

Email: k.egab@stu.edu.iq

Mobile no.: 07819550858

Abdullah Algizi | Ph.D. in Electrical power Engineering | Lecturer

Email: abdullah.algizi@stu.edu.iq

Mobile no.: 07803114113

Haider Hasan | Ph.D. in Mechanical Engineering | Lecturer

Email: hayder.mohammad@stu.edu.iq

Mobile no.: 07813539967

Mohanad Hashim Mousa | Ph.D. in Mechanical Engineering | Lecturer

Email: mohanad.mousa@stu.edu.iq

Mobile no.: 07806669913

Yaseen Ali Sahood | M.Sc in Electrical Engineering | Assistant Lecturer

Email: yaseen.sahood@stu.edu.iq

Mobile no.: 07808955494

Ali Hasan | M.Sc Computer science/information system | Assistant lecture

Email: ali.alsaadawi@stu.edu.iq

Mobile no.: 07811141350

6. Credits, Grading and GPA

Credits

Southern technical university is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structured and unstructured workload.

Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

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:				
Number 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.				

Calculation of the Cumulative Grade Point Average (CGPA)

1. The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.

CGPA of a 4-year B.Sc. degree:

$$CGPA = [(1st^{th} \text{ module score} \times ECTS) + (2nd^{th} \text{ module score} \times ECTS) + \dots] / 240$$

7. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
STUTTC111	Fundamentals of Electrical Engineering	139	86	9	C	
STUTTC112	Engineering Materials	109	116	9	C	
STUTTC113	Mathematics	94	81	7	S	
STU103	Computer fundamentals /1	49	26	3	B	
STU102	Human Rights and Democracy	33	17	2	B	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
STUTTC121	Electronic Physics	109	116	9.00	C	
STUTTC122	Engineering Mechanics	94	81	7.00	C	
STUTTC123	Engineering and electrical Drawing	110	40	6.00	C	
STU101	English language/1	34	16	2.00	S	
STUTTC125	Workshops	94	56	6.00	B	

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
STUTTC231	Electrical Machines	109	66	7.00	C	
STUTTC232	Thermodynamic and fluid	109	66	7.00	C	
STUTTC233	Electrical and Electronic Circuits	124	51	7.00	C	
STUTTC234	Advance Mathematics	79	46	5.00	S	
STUTTC235	English Language/2	34	16	2.00	S	
STUTTC236	جرائم حزب البعث البائد	33	17	2.00	B	

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
STUTTC241	Electrical devices and measurements	109	91	8.00	C	
STUTTC242	Electronics	109	66	7.00	C	
STUTTC243	Strength of Materials	109	66	7.00	C	
STUTTC244	Programming	79	46	5.00	B	
STUTTC245	Fundamentals of computer/2	49	26	3.00	B	

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
STUTTC351	Electric Power Systems	109	66	7.00	C	
STUTTC352	Heat transfer and Hydraulic systems	109	66	7.00	C	
STUTTC353	Communications	109	66	7.00	C	
STUTTC354	Theory of Machines	109	66	7.00	C	
STUTTC355	English Language/3	34	16	2.00	S	

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
STUTTC361	Synchronous and special Machines	124	51	7.00	C	
STUTTC362	Control and Vibration Theory	109	41	6.00	C	
STUTTC363	Industrial Engineering	78	72	6.00	C	
STUTTC364	Electromechanical designs	78	72	6.00	C	
STUTTC365	Engineering and Numerical Analysis	63	62	5.00	C	

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
STUTTC471	Power Electronics and Drive	109	66	7.00	C	
STUTTC472	Electromechanical Devices	109	66	7.00	C	
STUTTC473	Automation and Control	64	111	7.00	C	
STUTTC474	Computer Aided Design and Manufacturing	109	66	7.00	C	
STUTTC475	English Language/4	34	16	2.00	S	

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
STUTTC481	Signals and systems	124	76	8.00	C	
STUTTC482	Microprocessors and Microcontrollers	124	76	8.00	C	
STUTTC483	Air Condition And Cooling systems منظومات التكييف والتبريد	124	76	8.00	C	
STUTTC484	Engineering project	93	57	6.00	C	

8. Contact

Warid Sayel Warid | Ph.D. in Electrical power engineering | Assistant Prof.

Email: warid.sayel@stu.edu.iq

Mobile no.: 07819626729

Program Coordinator:

Yaseen Ali Sahoo | M. Sc in Electrical Engineering | Assistant lecture.

Email: yassen.sahood@stu.edu.iq

Mobile no.: 07808955494

Southern Technical University
الجامعة التقنية الجنوبية



*First Cycle – Bachelor's Degree (B.Sc.) -
Electromechanical Systems Techniques Engineering*
بكالوريوس - هندسة تقنيات النظم الكهروميكانيكية



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1. Overview
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1. Overview

This catalogue is about the courses (modules) given by the program of Electrical Engineering to gain the Bachelor of Science degree. The program delivers (xx) Modules with (6000) total student workload hours and 240 total ECTS. The module delivery is based on the Bologna Process.

نظره عامه

يتناول هذا الدليل المواد الدراسية التي يقدمها برنامج هندسة تقنيات النظم الكهروميكانيكية للحصول على درجة بكالوريوس العلوم. يقدم البرنامج (٣٩) مادة دراسية، مع (٦٠٠٠) إجمالي ساعات حمل الطالب و ٢٤٠ إجمالي وحدات أوروبية. يعتمد تقديم المواد الدراسية على عملية بولونيا.

2. Undergraduate Courses 2023-2024

Module 1

Code	Course/Module Title	ECTS	Semester
STUTTC111	Fundamentals of Electrical Engineering	9	1
Class (hr/w)	Lect/Lab/Tutor	SSWL (hr/sem)	USWL (hr/w)
4	5	139	86
Description			
<p>This course provides the main features of the Fundamentals of Electrical Engineering for the students of 1st level, first-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none"> 1. Learn the fundamentals and principles of electrical engineering. 2. Understand electric circuit elements. 3. Analysis of electric circuits. 4. Apply Electrical circuits theorems. 5. Calculate of currents, voltages and electrical power for DC and AC circuits 6. Analysis of resonance in AC circuits (Series and parallel resonance). 7. Analysis of Electromagnetic circuits. 			

Module 2

Code	Course/Module Title	ECTS	Semester
STUTTC112	Engineering Materials	9	1
Class (hr/w)	Lect/Lab	SSWL (hr/sem)	USWL (hr/w)
3	4	109	116
Description			
<p>This course provides the main features of the engineering materials for the students of 1st level, first-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. It provides a knowledge of material science.2. Illustration and discussion the principles of material structure-selection and description.3. To select a material for a given use based on considerations of cost and performance.4. To be able to create a new material that will have some desirable properties.5. To understand the limits of materials and the change of their properties with use.			

Module 3

Code	Course/Module Title	ECTS	Semester
STUTTC113	Mathematics	7	1
Class (hr/w)	Lect/Tutor	SSWL (hr/sem)	USWL (hr/w)
3	3	94	81
Description			
<p>This course provides the main features of the mathematics for the students of 1st level, first-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. To develop problem solving skills and understanding of mathematics through the application of techniques.2. To understand fundamental functions, differentiation, integration.3. This course deals with the basic concepts of differentiation of the functions.4. This is the basic subject for all simple function, polynomials, and power, rational functions.5. To understand problems like derivatives applications, change rate, draw functions, derivatives of trigonometric functions, natural logarithm and exponential functions, log function and other types of functions.6. To develop knowledge and techniques to integrate various types of function and integration application, finding area, volumes, methods of integration.			

Module 4

Code	Course/Module Title	ECTS	Semester
STU103	Computer fundamentals /1	3	1
Class (hr/w)	Lab	SSWL (hr/sem)	USWL (hr/w)
1	2	49	26
Description			
<p>This course provides the main features of the Fundamentals of computer/1 for the students of 1st level, first-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. To develop problem-solving skills and an understanding of the computer through the application of techniques2- To understand the work of the electronic computer and the possibility of dealing with it3. Developing an understanding of the fundamental concepts of computer science, including programming, algorithms, data structures, computer architecture, operating systems, and networks.4. Developing practical skills in software development, including programming, debugging, testing, and documentation.5. Developing problem-solving skills, including the ability to analyze problems, design solutions, and implement them using appropriate programming languages and tools.6. Developing an understanding of the ethical and social issues related to computing, including privacy, security, intellectual property, and the digital divide.7. Developing an understanding of the role of computer science in society, including its impact on industry, government, healthcare, and education.8. Developing an appreciation for the diversity of applications of computer science, including artificial intelligence, machine learning, robotics, and data science.			

Module 5

Code	Course/Module Title	ECTS	Semester
STU102	Human Rights and Democracy	2	1
Class (hr/w)		SSWL (hr/sem)	USWL (hr/w)
2		33	17
Description			
<p>This course provides the main features of the human rights for the students of 1st level, first-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1- Knowledge of human rights.2- Learn about the natural and protected human rights that governments and the international community provide for people.3- The aim of this study unit is to introduce students to what a right is, what their natural rights are, and what their political rights are.			

Module6

Code	Course/Module Title	ECTS	Semester
STUTTC121	Electronic Physics	9	2
Class (hr/w)	Lect/Lab	SSWL (hr/sem)	USWL (hr/w)
3	4	109	116
Description			
<p>This course provides the main features of the electronic physics for the students of 1st level, second-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. To understand the fundamentals of structure of the atom, orbitals in the atom, energy levels connectivity, semiconductors.2. To have knowledge about the physics of semiconductor materials.3. To understand the characteristics and theories in semiconductor materials in terms of crystal structures, charge carriers and energy bands.4. To describe crystalline structures of semiconductors. describe band structures of semiconductors.5. To explain the properties of n-type and p-type semiconductors.			

Module 7

Code	Course/Module Title	ECTS	Semester
STUTTC122	Engineering Mechanics	7	2
Class (hr/w)	Lect	SSWL (hr/sem)	USWL (hr/w)
3	3	94	81
Description			
<p>This course provides the main features of the engineering mechanics for the students of 1st level, second-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. To develop problem solving skills and understanding of mechanics theory through the application of techniques.2. To understand force, resultant and vectors from a mechanical devices.3. This course deals with the basic concept of statics and dynamics mechanics.4. This is the basic subject for all mechanics parts.5. To understand force moment, equilibrium, centroid and moment of inertia problems.6. To know about friction problems perform mechanics dynamics analysis.			

Module 8

Code	Course/Module Title	ECTS	Semester
STUTTC123	Engineering and electrical Drawing	6	2
Class (hr/w)	Lect/prac	SSWL (hr/sem)	USWL (hr/w)
1	6	110	40
Description			
<p>This course provides the main features of the engineering and electrical drawing for the students of 1st level, second-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. To understand manual drafting and dimensioning of views2. To perform lines drawing, simple sketches and modify dimensions.3. This course deals with the basic concept of electrical drawing.4. To understand sections and isometrics.5. Explains the principles of orthographic views6. To understand multi view projection.7. To understand sectional view drawing			

Module 9

Code	Course/Module Title	ECTS	Semester
STU101	English language/1	2	2
Class (hr/w)		SSWL (hr/sem)	USWL (hr/w)
2		34	16
Description			
<p>This course provides the main features of the Fundamentals of English language/1 for the students of 1st level, second-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. Develop students skills in understanding the basic grammars of English.2. Develop students' speaking skills in English.3. Develop students' listening skills in English.4. Develop students' reading skills in English.5. Develop students' reading skills in English.			

Module 10

Code	Course/Module Title	ECTS	Semester
STUTTC125	Workshops	6	2
	prac	SSWL (hr/sem)	USWL (hr/w)
	6	94	56
Description			
<p>This course provides the main features of the workshops for the students of 1st level, second-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none"> 1. Enable the student to know and understand the theoretical and practical principles of the plumbing workshop. 2. Enable the student to know and understand the theoretical and practical principles of the electrical workshop. 3. Enable the student to know and understand the theoretical and practical principles of the blacksmithing workshop. 4. Enable the student to know and understand the theoretical and practical principles of the turning workshop. 5. Enable the student to know and understand the theoretical and practical principles of the automobile workshop. 6. Design of various models and Manufacture of some simple products. 			

Module 11

Code	Course/Module Title	ECTS	Semester
STUTTC231	Electrical Machines	7	3
Class (hr/w)	Lect/Lab	SSWL (hr/sem)	USWL (hr/w)
3	4	109	66
Description			
<p>This course provides the main features of the Electrical Machines for the students of 2nd level, third-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. It provides a knowledge of electrical machines.2. Illustration and discussion the principles of DC and AC machines, Description of the machine, as well as its operation in electrical machines.3. The ability to analyses existing electrical machines and contribute to new designs.			

Module 12

Code	Course/Module Title	ECTS	Semester
STUTTC232	Thermodynamic and fluid	7	3
Class (hr/w)	Lect/Lab	SSWL (hr/sem)	USWL (hr/w)
3	4	109	66
Description			

This course provides the main features of the Thermodynamic and fluid for the students of 2nd level, third-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are

1. It provides a knowledge of Thermodynamics and Fluid Mechanics.
2. Illustration and discussion the principles of heat, work, internal energy, 1st and 2nd law of thermodynamics as well as applications.
3. The ability to analyses existing fluid systems and contribute to new designs.

Module 13

Code	Course/Module Title	ECTS	Semester
STUTTC233	Electrical and Electronic Circuits	7	3
Class (hr/w)	Lect/Lab/ Tutor	SSWL (hr/sem)	USWL (hr/w)
3	5	124	51
Description			
<p>This course provides the main features of the fundamentals of electrical and electronic circuits for the students of 2nd level, third-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none"> 1. An understanding of Dimensional Analysis of Electrical and electronic circuits. 2. At the end of the year the student should be able demonstrate knowledge and understanding of the concepts, theory, and application of electrical and electronic circuits. 3. The ability to the analysis of electrical and electronic circuits. 4. Selection and application of appropriate analysis techniques. 5. knowledge of engineering methodologies 			

Module 14

Code	Course/Module Title	ECTS	Semester
STUTTC234	Advance Mathematics	5	3
Class (hr/w)	Lect/ Tutor	SSWL (hr/sem)	USWL (hr/w)
3	2	79	46
Description			
<p>This course provides the main features of the advance mathematics for the students of 2nd level, third-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none"> 1. to graduates a qualified engineer's who they have theoretical experience in advanced mathematics in electromechanical field. 2. To provide theoretical knowledge and principles of advanced mathematics and the ability to analysis and solve the mathematical problems. 3. Illustration and discussion the main theoretical principles of functions of two and more variables, different types of differential equations and their solutions, Laplace transforms, power series, Taylor and Fourier series, vectors , techniques of derivative, integration and differential equation with their applications in electromechanical field. 			

Module 15

Code	Course/Module Title	ECTS	Semester
STUTTC235	English Language/2	2	3
Class (hr/w)	Lect/ Tutor	SSWL (hr/sem)	USWL (hr/w)
2		34	16
Description			

This course provides the main features of the English language/2 for the students of 2nd level, third-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are

1. Develop students skills in understanding the grammars of English.
2. Develop students' speaking skills in English.
3. Develop students' listening skills in English.
4. Develop students' reading skills in English.
5. Develop students' reading skills in English.

Module 16

Code	Course/Module Title	ECTS	Semester
STUTTC236	جرائم حزب البعث البائد	2	2
Class (hr/w)		SSWL (hr/sem)	USWL (hr/w)
2		٣٣	١٧
Description			
<p>في هذا المقرر الدراسي سيتعرف الطالب على جرائم حزب البعث البائد. أن الاهداف هي:</p> <ol style="list-style-type: none"> ١- المعرفة بجرائم نظام البعث وفق قانون المحكمة الجنائية العراقية العليا عام ٢٠٠٥ م ٢- المعرفة بالجرائم النفسية والاجتماعية وأثارها، وأبرز انتهاكات النظام البعثي في العراق ٣- المعرفة بالجرائم البيئية لنظام البعث في العراق ٤- المعرفة بجرائم المقابر الجماعية 			

Module17

Code	Course/Module Title	ECTS	Semester
STUTTC241	Electrical devices and measurements	8	4
Class (hr/w)	Lect/Lab	SSWL (hr/sem)	USWL (hr/w)
3	4	109	91
Description			
<p>This course provides the main features of the Fundamentals of Electrical devices and measurement for the students of 2nd level, fourth-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none"> 1. Illustration and discussion the theory of measurement including static characteristics of instruments, various standards, error analysis, classifications and statistical analysis. 2. Illustrate the principles design theory of various dc and ac analogue voltmeters, Ammeters Watt meters, and single phase energy meter. 3. Discuss and analyze various dc and ac bridges used for the measurement of resistances, impedances and associated parameters like inductance, capacitance and frequency. 4. Explain the various active and passive transducers; also it includes a detail discussion of the theory and application of some transducers for example, strain gauges, LVDT, thermister, piezoelectric, etc. 5. Illustration and discussion of CRT and the various parts of CRO. And the theory of operation of the instrument. 6. Giving knowledge and unfolds the details of various signal analyzers such as distortion, waveform and spectrum analyzers. 7. Illustrate the certain advantages of electronic meters as compared to analogue. 			

Module 18

Code	Course/Module Title	ECTS	Semester
STUTTC242	Electronics	7	4
Class (hr/w)	Lect/Lab	SSWL (hr/sem)	USWL (hr/w)
3	4	109	66
Description			
<p>This course provides the main features of the electronics for the students of 2st level, fourth-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. To provide a knowledge of electronic circuits.2. Illustration and discussion the principles of electronics.3. The ability to analyze and solve problems.4. Knowledge of the methods associated with electronics according to modern techniques methods.			

Module 19

Code	Course/Module Title	ECTS	Semester
STUTTC243	Strength of Materials	7	4
Class (hr/w)	Lect/Lab	SSWL (hr/sem)	USWL (hr/w)
3	4	109	66
Description			
<p>This course provides the main features of the strength of materials for the students of 2nd level, fourth-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none"> 1. The mathematical background for the different topics of strength of materials introduced in this course 2. To understand stress concept and types of stresses 3. Illustrate the internal forces in beams, how to draw shear force and bending moment diagrams Electrical circuits theorems. 4. To understand stress strain relationship and solving problems 5. To understand beam analysis, stresses in beams, beam theory and shear stresses 6. To understand torsion in shafts, determination of shear stresses and twisting angle due to torsion. 			

Module 20

Code	Course/Module Title	ECTS	Semester
STUTTC244	Programming	5	4
Class (hr/w)	Lab	SSWL (hr/sem)	USWL (hr/w)
2	3	79	46
Description			
<p>This course provides the main features of the programming for the students of 2nd level, fourth-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. Understanding and knowing how programming languages work2. Dealing with problems and analyzing them logically.3. Problem-solving using programming.4. Choose the best way to perform the tasks programmatically.5. Implementation and translation of ideas appropriately to meet my needs and the needs of others from the program.			

Module 21

Code	Course/Module Title	ECTS	Semester
STUTTC245	Fundamentals of computer/2	3	4
Class (hr/w)	Lab	SSWL (hr/sem)	USWL (hr/w)
1	2	49	26
Description			
<p>This course provides the main features of the Fundamentals of computer/2 for the students of 2nd level, fourth-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none"> 1- Introducing the student to the most basic rules in dealing with networks 2- The student's knowledge of the development that has accompanied networks since their inception to the present time. 3- The student acquires practical skills through the use of Excel 2010. 4- Defining the network components and their work for a student. 5- Enabling the student to use application software to provide services to the user in performing many tasks on the computer. 			

Module 22

Code	Course/Module Title	ECTS	Semester
STUTTC351	Electric Power Systems	7	5
Class (hr/w)	Lect/Lab	SSWL (hr/sem)	USWL (hr/w)
3	4	109	66
Description			
<p>This course provides the main features of the electric power system for the students of 3rd level, fifth-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. It provides a knowledge of electrical power system.2. Illustration and discussion the principles of power station and types , transmission line .3. To study the types of electrical generation stations, types of transmission lines and insulators used in the transmission of electrical power .4. Knowledge of the functions of the parts of the generating station5. Load curve analysis and capacity generation stations6. To analyze transmission lines and calculate the diameters and number of conductors in the transmission line.			

Module 23

Code	Course/Module Title	ECTS	Semester
STUTTC352	Heat transfer and Hydraulic systems	7	5
Class (hr/w)	Lect/Lab	SSWL (hr/sem)	USWL (hr/w)
3	4	109	66
Description			
<p>This course provides the main features of the heat transfer and hydraulic systems for the students of 3rd level, fifth-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1- To define the heat transfer modes concepts.2- To define the theoretical basics of the conduction heat transfer Coincided with a laboratory experiment.3- To define the theoretical basics of the forced and free convective heat transfer Coincided with a laboratory experiment.4- To define the theoretical basics of the radiation heat transfer.5- To define the theoretical basics of the heat exchangers Coincided with a laboratory.6- To define the theoretical basics of the mixed modes of heat transfer.			

Module 24

Code	Course/Module Title	ECTS	Semester
STUTTC353	Communications	7	5
Class (hr/w)	Lect/Lab	SSWL (hr/sem)	USWL (hr/w)
3	4	109	66
Description			
<p>This course provides the main features of the communication for the students of 3rd level, fifth-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. It provides a knowledge of communications.2. Illustration and discussion the principles of communications system, description of type of signals , filters and modulation(AM,FM and PM) as well as transportation lines with basic equations and analysis.3. To understand the components of signals, their types, and the operations that are performed on them.4. To understand the analysis of communication systems and how to obtain the best designs.			

Module 25

Code	Course/Module Title	ECTS	Semester
STUTTC354	Theory of Machines	7	5
Class (hr/w)	Lect/Lab	SSWL (hr/sem)	USWL (hr/w)
3	4	109	66
Description			
<p>This course provides the main features of the theory of machines for the students of 3rd level, fifth-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. It provides a knowledge of theory of machines.2. Illustration and discussion the principles of machines, description of the machine, as well as its operation in theory of machines.3. To analyses existing theory of machines and contribute to new designs.			

Module 26

Code	Course/Module Title	ECTS	Semester
STUTTC355	English Language/3	2	5
Class (hr/w)		SSWL (hr/sem)	USWL (hr/w)
2		34	16
Description			
<p>This course provides the main features of the Fundamentals of English language/3 for the students of 3rd level, fifth-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. Develop students skills in understanding the grammars of English.2. Develop students' speaking skills in English.3. Develop students' listening skills in English.4. Develop students' reading skills in English.5. Develop students' reading skills in English.			

Module27

Code	Course/Module Title	ECTS	Semester
STUTTC361	Synchronous and special Machines	7	6
Class (hr/w)	Lect/Lab/Tutor	SSWL (hr/sem)	USWL (hr/w)
3	5	124	51
Description			
<p>This course provides the main features of the synchronous and special machines for the students of 3rd level, sixth-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. To provide a knowledge of synchronous & special machines .2. Illustration and discussion the principles of synchronous & special machines, description of the machine, as well as its operation in synchronous & special machines.3. To analyses existing of synchronous & special machines and contribute to new designs.			

Module 28

Code	Course/Module Title	ECTS	Semester
STUTTC362	Control and Vibration Theory	6	6
Class (hr/w)	Lect/Lab	SSWL (hr/sem)	USWL (hr/w)
3	4	109	41
Description			
<p>This course provides the main features of the control and vibration theory for the students of 3rd level, sixth-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. It provides a knowledge of control and vibration theory.2. Illustration and discussion the principles of control and vibration theory .3. The student should be able demonstrate knowledge and understanding of the concepts, theory and application of control and vibration theory.			

Module 29

Code	Course/Module Title	ECTS	Semester
STUTTC363	Industrial Engineering	6	6
Class (hr/w)	Lect	SSWL (hr/sem)	USWL (hr/w)
3	2	78	72
Description			
<p>This course provides the main features of the industrial engineering for the students of third level, sixth-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. It provides a knowledge of Industrial engineering.2. Illustration and discussion the principles of the scope of Industrial Engineering and the Management Process.3. To understand of the fundamentals of production and the productivity.			

Module 30

Code	Course/Module Title	ECTS	Semester
STUTTC364	Electromechanical designs	6	6
Class (hr/w)	Lect	SSWL (hr/sem)	USWL (hr/w)
3	2	78	72
Description			
<p>This course provides the main features of the electromechanical designs for the students of 3rd level, sixth-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none"> 1- Cover the basics of machine design, including the design process, engineering mechanics and materials, failure prevention under static and variable loading, and Characteristics of the principal types of mechanical elements. 2- Offer a practical approach to the subject through a wide range of real-world applications and examples. 3- Identify appropriate analytical models to describe and predict the behavior of standard machine components; 4- Apply stress analysis theory, fatigue theory and appropriate criteria of failure to the design of simple machine elements; 5- Select appropriate mechanical components from manufacturers' catalogues; 6- Apply codes and standards to machine component design; 7- Understand safety and reliability concepts in the design of machine elements. 8- Communicate the results of a design assignment by means of drawings and a design report. 			

Module 31

Code	Course/Module Title	ECTS	Semester
STUTTC365	Engineering and Numerical Analysis	5	6
Class (hr/w)	Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	62
Description			
<p>This course provides the main features of the engineering and numerical analysis for the students of 3rd level, sixth-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. It provides a knowledge of engineering and numerical analysis.2. Illustration and discussion the principles of engineering and numerical analysis.3. To provide you with an understanding of the fundamentals of engineering and numerical analysis.			

Module 32

Code	Course/Module Title	ECTS	Semester
STUTTC471	Power Electronics and Drive	7	7
Class (hr/w)	Lect/Lab	SSWL (hr/sem)	USWL (hr/w)
3	4	109	66
Description			
<p>This course provides the main features of the power electronics and drive for the students of 4th level, seventh-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. To acquire in-depth knowledge of power electronic circuits for real-time applications.2. To solve problems in power electronics.3. To analyze power electronics using existing modern tools for enhancement of knowledge.			

Module 33

Code	Course/Module Title	ECTS	Semester
STUTTC472	Electromechanical Devices	7	7
Class (hr/w)	Lect/Lab	SSWL (hr/sem)	USWL (hr/w)
3	4	109	66
Description			
<p>This course provides the main features of the electromechanical devices for the students of 4th level, seventh-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. To provide a knowledge of electromechanical devices.2. Illustration and discussion the principles of electromechanical devices.3. The student should be able demonstrate knowledge and understanding of the concepts, theory and application of electromechanical devices.			

Module 34

Code	Course/Module Title	ECTS	Semester
STUTTC473	Automation and Control	7	7
Class (hr/w)	Lect	SSWL (hr/sem)	USWL (hr/w)
3	1	64	111
Description			
<p>This course provides the main features of the automation and control for the students of 4th level, seventh-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. It provides a knowledge of automation and control.2. Illustration and discussion the principles of automation and control.3. The student should be able demonstrate knowledge and understanding of the concepts, theory and application of automation and control.			

Module 35

Code	Course/Module Title	ECTS	Semester
STUTTC483	Computer Aided Design and Manufacturing	7	7
Class (hr/w)	Lect/Lab	SSWL (hr/sem)	USWL (hr/w)
3	4	109	66
Description			
<p>This course provides the main features of the computer aided design and manufacturing for the students of 4th level, eighth-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. It provides a knowledge of computer aided design and manufacturing (CAM CAD).2. Learn to draw in 2D, 3D.3. Drawing some manufacturing drawings by AutoCAD.			

Module 36

Code	Course/Module Title	ECTS	Semester
STUTTC475	English Language/4	2	7
Class (hr/w)		SSWL (hr/sem)	USWL (hr/w)
2		34	16
Description			
<p>This course provides the main features of the English language/4 for the students of 4th level, eighth-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. Develop students' speaking skills in English.2. Develop students' listening skills in English.3. Develop students' reading skills in English.4. Develop students' reading skills in English.			

Module37

Code	Course/Module Title	ECTS	Semester
STUTTC481	Signals and systems	8	8
Class (hr/w)	Lect/Lab	SSWL (hr/sem)	USWL (hr/w)
3	5	124	76
Description			
<p>This course provides the main features of the signals and systems for the students of 4th level, eighth-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. It provides a knowledge of signals and systems.2. Illustration and discussion the principles of signals and systems.3. Knowledge of the methods associated with signals and systems.			

Module 38

Code	Course/Module Title	ECTS	Semester
STUTTC482	Microprocessors and Microcontrollers	8	8
Class (hr/w)	Lect/Lab	SSWL (hr/sem)	USWL (hr/w)
3	5	124	76
Description			
<p>This course provides the main features of the microprocessors and microcontrollers for the students of 4th level, eighth-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. To provide a knowledge of microprocessors and microcontrollers.2. Illustration and discussion the principles of microprocessors and microcontrollers in digital systems, Description of the digital control concepts using microprocessors and micro controllers and it's applications.3. Explanation the architecture of 8086 microprocessor and 8051 microcontroller and the internal hardware of them, as well as the assembly programing languages of each microchip. The method of learning is based on an applied approach.			

Module 39

Code	Course/Module Title	ECTS	Semester
STUTTC474	Air Condition And Cooling systems	8	8
Class (hr/w)	Lect/Lab	SSWL (hr/sem)	USWL (hr/w)
3	5	124	76
Description			
<p>This course provides the main features of the air condition and cooling systems for the students of 4th level, seventh-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study. The aims which can be achieved during teaching this course program are</p> <ol style="list-style-type: none">1. Understand basics of air-condition and refrigeration systems and their operations.2. Have ability to compute the thermal loads, thermal comfort and design conditions and ducts system design.3. Control device and automatic control of the air- conditioning and refrigeration systems and their applications and have ability and knowledge to select air-conditioning and refrigeration equipment's.			

Module 40

Code	Course/Module Title	ECTS	Semester
STUTTC484	Engineering project	6	8
Class (hr/w)	prac	SSWL (hr/sem)	USWL (hr/w)
2	4	93	57
Description			
This course provides the main features of the engineering project for the students of 4th level, seventh-semester, in electromechanical systems techniques engineering department. Learning outcomes which gained by this program will help a student to achieve and demonstrate the learning opportunities that are provided during the course study.			

Contact

Program Manager:

Warid Sayel Warid | Ph.D. in Electrical power engineering | Assistant Prof.

Email: warid.sayel@stu.edu.iq

Mobile no.: 07819626729

Program Coordinator:

Yaseen Ali Sahood | M. Sc in Electrical Engineering | Assistant lecture.

Email: yassen.sahood@stu.edu.iq

Mobile no.: 07808955494
