

Curriculum for Associate Degree Program in Communications Engineering Specialization

The curriculum of associate degree in “Communications Engineering” specialization consists of (72 credit hours) as follows:

Serial No.	Requirements	Credit Hours
First	University Requirements	12
Second	Engineering Program Requirements	17
Third	Specialization Requirements	43
Total		72



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

The curriculum of associate degree
in
"Communications Engineering" Specialization

First: University requirements (12 credit hours) as follows:

Course No.	Course Title	Credit Hours	Weekly Contact Hours		Prerequisite
			Theoretical	Practical	
22001101	Arabic Language	3	3	-	
22002101	English Language	3	3	-	
21901100	Islamic Culture	3	3	-	
21702101	Computer Skills	3	1	4	
Total		12	10	4	

Second: Engineering Program requirements (17 credit hours) as follow:

Course No	Course Title	Credit Hours	Weekly Contact Hours		Prerequisite
			Theoretical	Practical	
20201111	Engineering Workshops	1	-	3	-
20204111	AutoCAD	2	-	6	-
20506111	Occupational Safety	2	2	-	-
21301111	General Mathematics	3	2	2	-
21302111	General Physics	3	2	2	-
21302112	General Physics Laboratory	1	-	3	-
21702111	Communication Skills and Technical Writing	3	2	2	22002101
20201121	Engineering Materials	2	2	-	-
Total		17	10	18	

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Third: Specialization Requirements (43 credit hours) as follows:

Course No.	Course Title	Credit Hours	Weekly Contact Hours		Prerequisite
			Theoretical	Practical	
20301113	Electrical Circuits	3	3	-	21302111*
20301114	Electrical Circuits Lab	1	-	3	20301113*
20404211	Microprocessors	3	3	-	20404121
20404212	Microprocessors Lab	1	-	3	20404211*
20403111	Electronics	3	3	-	20301113*
20403112	Electronics Lab	1	-	3	20403111*
20404121	Digital Fundamentals	2	2	-	20403111
20404122	Digital Fundamentals Lab	1	0	3	20404121*
20405111	Principles of Telecommunications	3	3	-	20301113
20405112	Principles of Telecommunications Lab	1	-	3	20405111*
20405241	Digital Communications	3	3	-	20405111
20405242	Digital Communications Lab	1	-	3	20405241*
20405251	Communications Technology and Computer Networks	3	3	-	20405111
20405252	Communications Technology and Computer Networks Lab	1	0	3	20405251*
20405223	Antennas and Wave Propagation	3	3	-	20405251
20405224	Antennas and Wave Propagation Lab	1	-	3	20405223*
20405261	Telecommunications Systems	3	3	-	20405251*
20405233	Microwave and Radar Systems	3	3	-	20404121
20405291	Training**	3	-	-	-
20405292	Project	3	-	-	-
Total		43	29	24	

* Co-requisite

** Equivalent to 280 training hours

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Study Plan for Associate Degree
in
Communications Engineering

First Year					
First Semester			Second Semester		
Course ID	Course Name	Credit Hours	Course ID	Course Name	Credit Hours
22002101	English Language	3	22001101	Arabic Language	3
21702101	Computer Skills	3	20204111	AutoCAD	2
20404121	Digital Fundamentals	2	20506111	Occupational Safety	2
21301111	General Mathematics	3	20201121	Engineering Materials	2
21302111	General Physics	3	20301113	Electrical Circuits	3
21302112	General Physics Lab.	1	20301114	Electrical circuits Lab.	1
21901100	Islamic Culture	3	20403111	Electronics	3
			20403112	Electronics Lab.	1
			20201111	Engineering Workshops	1
Total		18	Total		18

Second Year					
Third Semester			Fourth Semester		
Course ID	Course Name	Credit Hours	Course ID	Course Name	Credit Hours
20404211	Microprocessors	3	20405112	Principles of Telecommunications Lab.	1
20404212	Microprocessors Lab.	1	20405233	Microwave and Radar Systems	3
20405241	Digital Communications	3	20405291	Training	3
20405242	Digital Communications Lab.	1	20405292	Project	3
20404122	Digital fundamentals Lab.	1	20405251	Communications Technology and Computer Networks	3
20405111	Principles of Telecommunications	3	20405252	Communications Technology and Computer Networks Lab.	1
20405261	Telecommunications Systems	3	20405223	Antennas and Wave Propagation	3
21702111	Communication Skills and Technical Writing	3	20405224	Antennas and Wave Propagation Lab.	1
Total		18	Total		18

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Study Plan for Associate Degree in Communications engineering

Brief Course Description

University Requirements

Course Title	Course No	Credit Hours (Theoretical /Practical)
Arabic Language	22001101	3 (3-0)
<p>تتضمن هذه المادة مجموعة من المهارات اللغوية بمستوياتها وأنظمتها المختلفة: الصوتية، والصرفية، والنحوية، والبلاغية، والمعجمية، والتعبيرية، وتشتمل نماذج من النصوص المشرفة: قرآنية، وشعرية، وقصصية، من بينها نماذج من الأدب الأردني؛ يتوخى من قراءتها وتدوقها وتحليلها تحليلاً أدبياً؛ تنمية الذوق الجمالي لدى الطلاب الدارسين.</p>		
English Language	22002101	3 (3-0)
<p>English 1 is a general course. It covers the syllabuses of listening, speaking, reading, writing, pronunciation and grammar, which are provided in a communicative context. The course is designed for foreign learners of the English language, who have had more than one year of English language study. The extension part would be dealt with in the class situation following the individual differences.</p>		
Islamic Culture	21901100	3 (3-0)
<ol style="list-style-type: none"> 1. تعريف الثقافة الإسلامية وبيان معانيها وموضوعاتها والنظم المتعلقة بها - وظائفها وأهدافها. 2. مصادر ومقومات الثقافة الإسلامية والأركان والأسس التي تقوم عليها. 3. خصائص الثقافة الإسلامية. 4. الإسلام والعلم، والعلاقة بين العلم والإيمان 5. التحديات التي تواجه الثقافة الإسلامية. 6. رد الشبهات التي تثار حول الإسلام. 7. الأخلاق الإسلامية والأداب الشرعية في إطار الثقافة الإسلامية. 8. النظم الإسلامية. 		
Computer Skills	21702101	3 (1-4)
<p>An introduction to computing and the broad field of information technology is given. Topics covered include the basic structure of digital computer system, microcomputer, operating systems, application software, data communication and networks, and the internet. Hands-on learning emphasizes Windows xp, MS-office2000, and the internet.</p>		

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Engineering Program requirements

Engineering Workshops	20201111	1 (0-3)
Development of basic manual skills in Mechanical and Electrical works. Use of manual tools and measuring devices. Hand filing, welding, metal cutting and forming. Electrical wiring.		
AutoCAD	20204111	2 (0-6)
Introduction to AutoCAD, application of AutoCAD, commands, geometric entities. Geometric construction. Dimensioning, free –hand sketching, object representation, orthographic drawing and projections.		
Occupational safety	20506111	2 (2-0)
Role of technicians in economic development First aid accident prevention. Protective devices and equipment. Industrial safety standards. Nature of fire hazards. Sand fire regulations. Physiological effects of electrical shock on human body. First aid and treatment for the effects of electric shock. Rules of spare and chemicals storage and handing.		
Communication Skills and Technical Writing	21702111	3 (2-2)
The main goal of this course is to equip the students with the necessary communication skills in everyday life & work situations and improve their abilities in technical writing to meet market needs. For this course, the English language is the language of teaching & the means of communication for all classroom situations.		
Engineering Materials	20201121	2 (2-0)
Definition of engineering materials. Classification of materials and their properties. Metallic and non-metallic materials. Metals, alloys and composite materials. Conductors, insulators and semiconductors. Mechanical, Magnetic, Thermal and electrical characteristics of materials. Industrial applications of different types of materials.		
General Mathematics	21301111	3 (2-2)
Real numbers coordinate planes, lines, distance and circles. Functions: (operations and graphs on functions), limits, continuity, limits and continuity of trigonometric functions. Exponential and logarithmic functions. Differentiation (techniques of differentiation, chain rule, implicit differentiation). Application of differentiation (increase, decrease, concavity). Graphs of polynomials. Applications: Rolle's Theorem and Mean-Value Theorem, Integration (by substitution, definite integral, fundamental theorem of Calculus). Application of definite integral (area between two curves, volumes)		
General Physics	21302111	3 (2-2)
Physics and measurement, motion in one dimension, vectors, laws of motion, circular motion, energy and energy transfer, potential energy, linear momentum and collisions, electric fields, Gauss's law, electric potential, capacitance and dielectrics, current and resistance, direct current circuits, magnetic fields, sources of the magnetic field, and Faraday's law of electromagnetic induction.		
General Physics lab	21302112	1 (0-3)
In this course, the student performs thirteen experiments in mechanics and in electricity.		

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Specialization Requirements

Electrical Circuits	20301113	3 (3-0)
Voltage, Current, and Resistance, Ohm's Law, Energy and Power, Series-Parallel Circuits, Introduction to Alternating Current and Voltage, Capacitors, Inductors, RLC Circuits and Resonance. Electrical Measurements.		
Electrical Circuits Lab.	20301114	1 (1-3)
DC and AC circuits. Resonance. Measuring devices.		
Electronics	20403111	3 (3-0)
Semiconductor devices. Diodes: classification, characteristics and applications. Transistors: classification, characteristics and applications. Amplifiers. Oscillators. Logic gates and Integrated circuits: Basic functions, symbols and applications. Introduction to electronic measurements: Oscilloscope applications.		
Electronics Lab.	20403112	3 (0-3)
Use of oscilloscope in measurements. Investigation of characteristics of semiconductor devices. Construction and study of electronic circuits. Experiments in electronics have to cover the main electronic devices (diode, zener diode, diode applications, BJT, FET, op – amp, oscillator, SCR).		
Digital Fundamentals	20404121	2 (2-0)
Numerical systems, operations, and codes, logic gates, Boolean algebra and logic simplification, combinational logic and function of combinational logic, flip – flops, counters, shift registers. Fixed – function Integrated Circuits, and Programmable Logic Devices (PLDs).		
Digital Fundamentals Lab.	20404122	1 (0-3)
Experiments in digital fundamentals have to cover logic gates, combinational logic, flip – flops, counters, shift registers.		
Principles of Telecommunications	20405111	3 (3-0)
Telecommunications link configuration, Frequency spectrum, measuring units and signal parameters, Modulation principles and types (AM, FM, PCM, Delta Modulation), and digital modulation, Transmitters and receivers.		
Principles of Telecommunications Lab.	20405112	1 (0-3)
Amplifiers and Attenuators, Tuned circuits, filters, AM and FM modulation demodulation, demodulation, sampling, PCM, delta modulation.		

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Telecommunications Systems	20405261	3 (3-0)
Wireless Communication systems (HF,VHF and UHF) ,Satellite Communication systems , Fiber Optical Communication system ,Public Line Mobile Network (PLMN) ,Cellular Systems (GSM AMPS ,UMTS ,IMT2000).		
Digital Communications	20405241	3 (3-0)
Sampling Theorem, Analog to Digital conversion, Time Division Multiplexing (TDM), Pulse Code Modulation, Delta Modulation, Coding and Transmitting Codes, Digital Multiplexing, based on TDM, Digital Transmission, Digital Modulators and Modulators.		
Digital Communications Lab.	20405242	1 (0-3)
Analog to digital converting, pulse modulation, delta Modulation, coding and transmission codes, digital multiplexing Baseboard transmission, digital modulators and demodulators.		
Communications Technology and Computer Networks	20405251	3 (3-0)
Transfer Modes and Signaling, Protocols, Data Signaling, Modems, Switching Boards, Access to Networks, Digital Services, Internet.		
Communications Technology and Computer Networks Lab.	20405252	1 (0-3)
Experiments related to the theoretical course.		
Antennas and Wave Propagation	20405223	3 (3-0)
Electromagnetic waves characteristics, ground sky waves propagation, the effect of the Ionosphere layers, space and microwaves propagation, antennas fundamentals, polar diagram of antennas, types of antennas, Transmission Line.		
Antennas and Wave Propagation Lab.	20405224	1 (0-3)
Electromagnetic waves characteristics, ground sky waves Propagation, the effect of the Ionosphere layers, space and microwaves propagation, Antennas fundamentals, polar diagram of antennas, types of antennas		
Microprocessors	2040421	3 (3-0)
Introduction to Microprocessors, types of microprocessors 4, 8,16, 32, 64 Bit microprocessors, microprocessor architecture , 8085 microprocessor architecture, registers and their applications in microprocessors. Memory types and methods of interfacing them with 8085.serial and parallel interfacing using support chips (8255 MUART).the DMA		

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Microprocessors Lab.	20404212	1 (0-3)
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In this Lab, students will learn how to use 8085 microprocessor instructions and learn how to write programs contain, move instructions, add and subtraction instructions, rotate, jump and exchange instructions in addition to logic operations in simple and advanced level programs.

Microwave and Radar Systems	20405233	3 (3-0)
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Microwave communication development and links. Frequency modulation microwave technique, parameters affect to microwaves systems. System protection and equipment.

Digital microwave systems techniques, Microwave Amplifiers and Generators, wave guide components, Microwave Diodes, introduction to radar.

Training	20403291	3 (280 training hours)
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Equivalent to (280 hours) of field training targeted to emphasize the ability of students to apply the theories in the real world of the profession.

Project	20403292	3
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An integrated assembly/design practical work related to the major fields of study.

