
curriculum for Technician Diploma Program

in

Autotronics Specialization

The curriculum of Technician Diploma in “Autotronics Specialization” consists of (66) credit hours as follows:

No.	Field of Requirements	Credit Hours
1	Generic Skills	6
2	Employability Skills	9
3	Supportive Sciences	9
4	Specialization Skills	42
Total		66

Curriculum for Technician Diploma Program in Autotronics Specialization

First: Generic Skills Requirements (6) credit hours as follows:

Course Number	Course Title	C.H.	Weekly Contact Hours		Prerequisite
			Theoretical	Practical	
10000111	Positive Citizenship and Life Skills	3	3	0	-
10000112	Skills in English Language	3	3	0	-
Total		6	6	0	

Second: Employability Skills Requirements (9) credit hours as follows:

Course Number	Course Title	C.H.	Weekly Contact Hours		Prerequisite
			Theoretical	Practical	
10000121	Communication Skills in English Language	3	3	0	10000112
10000122	Small Productive Enterprises Management	3	3	0	-
10000123	Supervision and Industrial Organization	3	3	0	-
Total		9	9	0	

Third: Supportive Sciences Requirements (9) credit hours as follows:

Course Number	Course Title	C.H.	Weekly Contact Hours		Prerequisite
			Theoretical	Practical	
10100111	Applied Mathematics	3	3	0	-
10100121	Applied Physics	3	3	0	-
10100122	Applied Physics Laboratory	1	0	3	10100121*
10100131	AutoCAD	1	0	3	
10100141	Engineering Workshop	1	0	3	
Total		9	6	9	

*Co-requisite

**Curriculum for Technician Diploma Certificate Program
in
Autotronics Specialization**

Fourth: Specialization Skills Requirements (42) credit hours as follows:

Course Number	Course Title	C.H.	Weekly Contact Hours		Prerequisite
			Theoretical	Practical	
10301101	Principles of Electrical Circuits	3	3	0	
10301102	Principles of Electrical Circuits Lab	1	0	3	
10401101	Electronic Circuits and Devices	3	3	0	
10401102	Electronic Circuits and Devices Lab	1	0	3	
10404101	Digital Fundamentals	3	3	0	
10404102	Digital Fundamentals Laboratory	1	0	3	
10210211	Automobile Sensing Devices and Instrumentation	2	2	0	
10210212	Automobile Sensing Devices and Instrumentation Laboratory	1	0	3	
10200111	Thermal Engineering	3	3	0	
10200112	Thermal Engineering Laboratory	1	0	3	
10207111	Internal Combustion Engines	3	3	0	
10207112	Internal Combustion Engines Laboratory	1	0	3	
10207121	Automobile Engineering	3	3	0	
10207122	Automobile Engineering Workshop	1	0	3	
10210221	Automobile Electricity and Electronics	2	2	0	
10210222	Automobile Electricity Laboratory	2	0	6	
10210223	Automobile Electronics Laboratory	2	0	6	
10210234	Automobile Electronic Systems Diagnosis and Maintenance	2	2	0	
10210235	Automobile Electronic Systems Diagnosis and Maintenance Workshop	2	0	6	
10210236	Automobile Electricity and Electronics Workshop	2	0	6	
10210291	Training	3	0		
Total		42	24		

Guiding Plan for Autotronics Specialization/ Technical Diploma Program

First Semester			Second Semester		
Course No.	Course Title	C.H.	Course No.	Course Title	C.H.
10000111	Positive Citizenship and Life Skills	3	10000121	Communication Skills in English Language	3
10000112	Skills in English Language	3	10100131	AutoCAD	1
10100111	Applied Mathematics	3	10404101	Digital Fundamentals	3
10100121	Applied Physics	3	10404102	Digital Fundamentals lab	1
10100122	Applied Physics Laboratory	1	10401101	Electronic Circuits and Devices	3
10100141	Engineering Workshop	1	10401102	Electronic Circuits and Devices Lab.	1
10301101	Principles of Electrical Circuits	3	10207111	Internal Combustion Engines	3
10301102	Principles Electrical Circuits Lab	1	10207112	Internal Combustion Engines Lab.	1
Total		18	Total		16

Third Semester			Fourth Semester		
Course No.	Course Title	C.H.	Course No.	Course Title	C.H.
10000123	Supervision and Industrial Organization	3	10000122	Small Productive Enterprises Management	3
10207122	Automobile Engineering Workshop	1	10210234	Automobile Electronic Systems Diagnosis and Maintenance	2
10207121	Automobile Engineering	3	10210235	Automobile Electronic Systems Diagnosis and Maintenance Workshop	2
10210221	Automobile Electricity and Electronics	2	10210236	Automobile Electricity and Electronics Workshops	2
10210222	Automobile Electricity Laboratory	2	10210211	Automobile Sensing Devices and Instrumentation	2
10200111	Thermal Engineering	3	10210212	Automobile Sensing Devices and Instrumentation Lab.	1
10200112	Thermal Engineering Laboratory	1	10210291	Training	3
10210223	Automobile Electronics Laboratory	2			
Total		17	Total		15

Brief Course Description for Autotronics Specialization

First: Generic Skills

المواطنة الإيجابية ومهارات الحياة 10000111 (3:0-3):

يوضح المساق مفهوم المواطنة ومهارات الحياة وأهميتهما في اكتساب مهارات قيمة، والعمل على استخدام هذه المهارات في سعيهم للحصول على تعليم أفضل ونتائج ايجابية في العمل، حيث ان المساق يراعي بناء المعرفة في الموضوعات التي يتضمنها البرنامج كما ويبني المهارة عند الشباب لاستخدامها في تطبيق المعرفة كما ويبني الثقة في قدرات الشباب على استخدام هذه المعرفة والمهارة بالاضافة الى توفير الدعم الشخصي والبيئي لتغيير السلوك من خلال تعزيز قيم المواطنة الايجابية والثقافة المجتمعية البناء والعمل المجتمعي التطوعي.

Skills in English Language 10000112 (3:3-0)

This is a General English Language course which aims at developing the four English Language receptive and productive Skills; Listening, Reading, Writing and Speaking, as well as providing practice for the basics of grammar and vocabulary for effective and meaningful communication inside and outside the classroom.

Second: Employability Skills

Communication Skills in English Language 10000121 (3:3-0)

This is a communication skills course which aims at improving learners' oral and written communication skills by providing learners with the language needed to naturally and confidently communicate in an English speaking workplace environment and real life situations.

إدارة المنشآت الإنتاجية الصغيرة 10000122 (3:3-0)

يوضح المساق مفهوم المنشآت الإنتاجية الصغيرة وأهميتها في الإقتصاد الوطني والقضاء على البطالة، وكيفية إدارتها و مواجهة التحديات التي تعترضها، وتقييم فرص نجاحها من خلال دراسة الجدوى، وآلية إدارة المشتريات والمخزون، وكيفية تمويلها وإدارة شؤونها المالية، وتقديم خدمة العملاء وكذلك الالتزام بأخلاقيات العمل، وكيفية عمل تسويق لها، والطبيعة القانونية لها وخطة العمل اللازمة للبدء بها مع التركيز على التجربة الأردنية في هذا المجال.

الإشراف والتنظيم الصناعي 10000123 (3:3-0)

المنشآت الصناعية انواعها ومواصفاتها واشكالها ، اشكال التنظيم الاداري وميزاتها، دور الفني في تطوير الصناعة ودوره في التسلسل الهرمي في المؤسسة الصناعية و ادارة ظروف العمل في المنشآت الصناعية . التعرف على المخاطر وطرق السيطرة عليها . التعرف على أجهزة ومعدات الحماية حسب المواصفات المعتمدة ، اصناف الحريق معدات مكافحة،

الكهرباء مخاطرها تأثيراتها على الانسان الحماية من الكهرباء والمعالجة من الصدمة الكهربائية، التعامل مع المواد الكيماوية
آثارها مخاطرها وشروط التخزين،القوانين المحلية والضمان الاجتماعي.

Third: Supportive Sciences

Applied Mathematics 10100111 (3: 3-0)

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)

Applied Physics 10100121 (3: 3-0)

Applied Physics course designed to explain the basic concepts of physics in two fields:
1- Concepts and applications of mechanical physics including: Vectors, motion in one dimension, Laws of Motion (Newton's laws), work and energy and the linear momentum.
2- Concepts of electricity including: electrical force, electrical field, electrical potential difference, capacitance, current and resistance.

Applied Physics Laboratory 10100122 (1:0-3)

Applied Physics Lab course is to accompany the General Physics course.
Laboratory experiments will be in Mechanics and Electricity to reinforce the theoretical portion in the General Physics course.

AutoCAD 10100131 (1:0-3)

Introduction to AutoCAD, application of AutoCAD, commands, geometric entities. geometric construction. dimensioning, free-hand sketching, object representation, orthographic drawing and projections

Engineering Workshop 10100141 (1:0-3)

Apply basic manual skills in engineering workshops: mechanical, electrical and carpentry.

Fourth: Specialization Skills

Principles of electrical circuits 10301101 (3:3-0)

Circuits and circuit elements. DC and AC current. Circuit variables: Voltage, Current, Energy, Power factor, Power, Active power, Reactive power, Apparent power. Connection of circuit elements: series, parallel and compound connections. Energy sources. Basic calculations: Equivalent resistance, impedance, current, voltage, power and energy calculations. KVL, KCL, Superposition principle. Resonance. Measurements of circuit variables.

Principles of electrical circuits Lab. 10301102 (1:0-3)

DC and AC circuit construction and measurements. Resonance. Measuring devices

<p>Electronic circuit and devises 10401101 (3:3-0) Semiconductor devices. Diodes: classification, characteristics and applications. Transistors: Classification, characteristics and applications. Amplifiers. Oscillators. Logic gates and Integrated circuits: Basic function s, symbols and applications. Introduction to electronic measurements: Oscilloscope applications.</p>
<p>Electronic circuit and devises Lab 10401101 (1:0-3) 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)</p>
<p>Digital fundamentals 10404101 (3:3-0) 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).</p>
<p>Digital fundamentals Lab 10404102 (0:0-3) Experiments in digital fundamentals have to cover logic gates, combinational logic, flip – flops, counters, shift registers.</p>
<p>Automobile Sensing Devices and Instrumentation 10210211 (2: 2-0) Automobile instrumentation. Automobile sensors and transducers. Data acquisition. Signal conditioning. Interface. Control loops. Examples.</p>
<p>Automobile Sensing Devices and Instrumentation Lab. 10210212 (1:0-3) Testing and troubleshooting automobile sensors and transducers. Practical experiments related to automobile instrumentation and control.</p>
<p>Thermal Engineering 10200111 (3: 3-0) Concepts and definitions, Properties of a pure substance, Work and heat, the first law of thermodynamics, the second law of thermodynamics, Principles of heat transfer Steady state conduction, Radiation, Heat exchangers</p>
<p>Thermal Engineering Lab. 10200112 (1: 0-3) Pressure – Temperature relation in the saturation region; Compressor cycles and analyses; Heat pump performance; Conduction heat transfer; Radiation heat transfer; and Heat exchanger performance</p>
<p>Internal Combustion Engines 10207111 (3: 3-0) Definition and introduction to the (ICE) fundamentals of engine, operation engine types and classification, engine construction, engine measurements and performance, engine system (lubrication, cooling, fuel) Including both carburetor and electronic fuel injection system .</p>
<p>Internal Combustion Engines Lab. 10207112 (1: 0-3) Performance tests for spark and compression engines, air and fuel consumption, air fuel ratio bake and indicated horse power. Specific fuel consumption, volumetric efficiency energy balance, variable compression ratio rest engine emission, diagnostic, adjustment of engine.</p>

Automobile Engineering 10207121 (3: 3-0)

Introduction of fundamentals of engine construction and operation, engine systems, automotive transmission (manual and automatic), suspension system, wheel alignment, automotive brake system, steering system, automotive electric and electronic systems.

Automobile Engineering Workshops 10207122 (1: 0-3)

Personal safety, automotive workshop safety area Universal hand tools and equipments, special tools used in automotive workshop, car's units disassembly / assembly and adjustments.

Automobile Electricity and Electronics 10210221 (2: 2-0)

Introduction, battery, starting system, charging system, ignition system, electronic fuel injection system, lights, safety and signaling, driver information and control devises, wiring harnesses, instrument panel, (CANbus) technology for automotive application.

Automobile Electricity Lab. 10210222 (2: 0-6)

Battery testing, Starting system, Diagnostics and maintenance, Ignition systems, Diagnostics and maintenance Lights, Safety and Signaling, Automotive, generators automatic control system.

Automobile Electronics Lab. 10210223 (2: 0-6)

Testing and inspection of sensors, actuators, relays. Electronic systems in modern cars: Ignition, fuel

Automobile Electronic systems Diagnosis and Maintenance 10210234 (2: 2-0)

Introduction to automotive diagnostics, maintenance and repair, theoretical background about automotive diagnostics, maintenance and repair, types of automotive diagnostics, maintenance and repair, types of automotive maintenance Inspection and service of car components: engine, engine systems, Fuel system for Electronic Fuel Injection system, Air induction system for (EFI), Engine sensors for (EFI), Electronic control model for (EFI), Fault diagnosis for (EFI), Electronic ignition system, , Turbo charging system, Emission control system transmission, brake system, suspension system, steering

Automobile Electronic systems Diagnosis and Maintenance Workshop 10210235 (2: 0-6)

Fuel system for Electronic Fuel Injection system (EFI), Air induction system for (EFI), Engine sensors for (EFI), Electronic control model for (EFI), Fault diagnosis for (EFI), Electronic ignition system, Variable intake manifold geometry, Turbo charging system, Emission control system

Automobile Electricity and Electronics Workshops 10210236 (2: 0-6)

Safety rules and standards in Autotronics workshops. Use of SCAN tools for testing and inspection of modern cars.

Training 10210291 (3)

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.