curriculum for Technician Diploma Program

in

General Electro-mechanical Maintenance Specialization

The curriculum of Technician Diploma in "General Electro-mechanical Maintenance 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**

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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

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

Course Number	Course Title	C.H.	Weekly Contact Hours		Prerequisite
			Theoretical	Practical	
10312111	Fundamentals of Electricity and Electronics	3	3	0	10100121*
10312112	Fundamentals of Electricity and Electronics Laboratory	1	0	3	10312111*
10312121	Electronic Devices	3	2	3	10312111*
10312113	Electrical Measurements	3	2	3	
10312131	Fundamentals of Electrical Machines and Transformers	2	2	0	10312111
10312132	Fundamentals of Electrical Machines and Transformers Workshop	1	0	3	10312131*
10312141	Mechanical Drawing	2	0	6	10100131
10312251	Metal Cutting Technology	3	2	3	
10312211	Electrical Wiring and Illumination	3	1	6	10312111
10312261	Plumbing	3	1	6	
10312252	Metal Welding Technology	3	1	6	
10312262	Heating Systems	3	1	6	
10312271	Pneumatic and Hydraulic Systems Components	3	1	6	
10312253	Forming and Machining Technology	3	1	6	
10312281	Carpentry and Decoration	3	1	6	
10312291	Training	3	0		
Total		**42**	**18**		

Guiding Plan for General Electro-mechanical Maintenance 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	10100141	Engineering Workshop	1
10100111	Applied Mathematics	3	10312121	Electronic Devices	3
10100121	Applied Physics	3	10312113	Electrical Measurements	3
10100122	Applied Physics Laboratory	1	10312131	Fundamentals of Electrical Machines and Transformers	2
10100131	AutoCAD	1	10312141	Mechanical Drawing	2
10312111	Fundamentals of Electricity and Electronics	3	10312251	Metal Cutting Technology	3
10312112	Fundamentals of Electricity and Electronics Lab.	1			
Total		**18**	**Total**		**17**

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
10312132	Fundamentals of Electrical Machines and Transformers Workshop	1	10312252	Metal Welding Technology	3
10312211	Electrical Wiring and Illumination	3	10312262	Heating Systems	3
10312261	Plumbing	3	10312271	Pneumatic and Hydraulic Systems Components	3
10312281	Carpentry and Decoration	3	10312291	Training	3
10312253	Forming and Machining Technology	3			
Total		**16**	**Total**		**15**

Brief Course Description for
General Electro-mechanical Maintenance Specialization

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First: Generic Skills

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

يوضح المساق مفهوم المواطنة ومهارات الحياة وأهميتهما في اكتساب مهارات قيمه، والعمل على استخدام هذه المهارات في سعيهم للحصول على تعليم افضل ونتائج ايجابيه في العمل، حيث ان المساق يراعي بناء المعرفه في الموضوعات التي يتضمنها البرنامج كما ويبني المهارة عند الشباب لاستخدامها في تطبيق المعرفه كما ويبني الثقه في قدرات الشباب على استخدام هذه المعرفه والمهارة بالاضافه الى توفير الدعم الشخصي والبيئي لتغيير السلوك من خلال تعزيز قيم المواطنة الايجابية والثقافة المجتمعية البناءة 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 المنشأت 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 شؤؤونها 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 ودورة 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 ة، اصناف الحريق معدات المكافحة،

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

Third: Supportive Sciences

Applied Mathematics10100111(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: Rolls 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

Fundamentals of Electricity and Electronics 10312111 (3: 3-0)
Concepts and definitions, electrical circuit elements, voltage, current, resistance, capacitance and inductance, ohms law and dc circuit Calculations. Ac Circuits. Basic electronic devices and circuits. Introduction to electrical protection.

Fundamentals of Electricity and Electronics Lab. 10312112 (1: 0-3)
DC and AC circuits. Current and voltage measurements. Simple electronic circuits. Protection devices and circuits.

Electronic Devices 10312121 (3: 2:3)
Block diagrams, functional diagrams, and circuit diagrams of TV, Radio and domestic satellite receiver. Basic principles of operation. Troubleshooting, monitoring, finding faults and repairing.

Electrical Measurements 10312113 (3: 2-3)
Electrical quantities, classifications of electrical and electronic instruments, *DC* & *AC* measuring instruments, bridges, electronic and digital measuring instruments, oscilloscope, recording instruments, power, energy. Experiments have to cover: measurements errors, measurements in DC & AC circuits, load effects, using electronic and digital instruments, calibration and power measurements.

Fundamentals of Electrical Machines and Transformers 10312131 (2: 2-0)
Types of electrical machines, transformers, motors, generators special machines, construction, principles of operation, characteristics, applications, maintenance.

Fundamentals of Electrical Machines and Transformers Workshop 1312132 (1: 0-3)
Connection of various types of electrical machines, Wiring of electrical machines. Inspection and testing of electrical machines. Repair and maintenance.

Mechanical Drawing 10312141 (2: 0-6)
The course is designed to develop the technical sense for the student and enable him to create and analyze the different mechanical parts, pipes and ducts, mechanical and HVAC symbols . Assembly and detailed drawings for technical arrangements. Applications for CAD and Solid Works modeling.

Metal Cutting Technology 10312251 (3: 2-3)
Machinability. Surface Finishing. Cutting Forces. Power construction. Tool life, machine cutting speed, feed rate and depth of cut, cutting-tool material and geometry. Work piece, hardness or strength. Ductility, chemical composition, thermal properties, microstructure, manufacturing process of raw material, mechanics of metal cutting machining. Nontraditional machining operation. CNC Machining. Application of different kinds of cutting machines. Safety measures. Using measuring devices.

Electrical Wiring and Illumination 10312211 (3: 1-6)
Introduction to electromagnetic radiation and light, Light quantities. Electrical lamps and their applications. Interior Exterior Lighting, streets lighting, flood lighting, Illumination calculations. Electrical Installations , cables and wires ,Junction Boxes ,Switches and lighting circuits control ,Trunks and conduits outlets ,sockets ,Distribution boards ,Voltage drop calculations , Protection devices ,Fuses ,Circuit Breakers and Relays.
Electric wiring for building ,such as lighting wiring systems ,alarm systems ,motor control systems and inspecting ,maintaining rewinding electrical transformers and machines ,Applying Safety and security means in electrical works ,Electronic circuits building and printed circuits Repair and maintenance techniques.

Plumbing 10312261 (3: 1-6)

مصادر المياه وطرق تزويد المباني بالمياه وطرق التخزين وأنظمة التسخين المركزي وأنظمة التصريف الصحي والقطع الصحية والأدوات والإكسسوارات والمواسير والمخططات الصحية والموز الصحية ومصطلحاتها والأدوات والعدد المستخدمة، تنفيذ أعمال تمديدات مباني بواسطة المخططات الصحية، تركيب أنابيب مياه وصرف صحي.

Metal Welding Technology 10312252 (3: 1-6)

This course introduces the student to the different systems of welding to acquire the necessary skills to be a welding supervisor. It covers theory for gas and arc welding, welding rods, fluxes, equipment and processes used to weld common industrial alloys. It also familiarizes the student with the most important procedures for welding inspection.
Application of welding techniques. Including safety, shop practicing for different welding methods, inspections of welding defects.

Heating Systems 10312262 (3: 1-6)

Introduction to heating systems, Domestic and commercial load calculation, Central heating plants with emphasis on installation procedure, Types of heating systems,. Fuels used for heating systems, Elements of heating systems, Heating systems operation &applications .heating systems by hot air, steam, hot water, under floor Heating system, selection and application of heating equipment, furnaces, boilers, pumps, fans. Appropriate safety rules practices, Tools and Machinery associated with HVACR, Basic principles of installation, maintenance, repair and servicing a wide variety of HVACR systems, Preventive maintenance procedures for heating and cooling equipment and related components, Troubleshooting techniques and equipment repair and rebuilding of HVACR systems.

Pneumatic and Hydraulic Systems Components 10312271 (3: 1-6)

The course covers the specifications and application requirements of different components of the drive systems: execution final elements, control valves, timers, limit switches, reed switches and proximity sensors. The students are introduced to pneumatic and hydraulic system components. Basic pneumatic and hydraulic drives are investigated the major activities related to industrial pneumatic and hydraulic drives, such as actuator positioning, speed control, event driven controls, and realizing different sequential operations

Forming and Machining Technology 10312253 (3: 1-6)

This course Covers the basics of major of forming processes used in manufacturing. Topics include forming metal casting, extrusion, rolling, forging, sheet metal forming and wire and pipe drawing. Safety, measurements and gauges, operating different kinds of machine tools (Drilling, Turning, Milling, Grinding) safely and be able to trouble shoot machining problems as they arise.

Carpentry and Decoration 10312281 (3: 1-6)

العدد والأدوات المستخدمة في أعمال المنجور والماكينات الكهربائية المحمولة والثابتة وكيفية التعامل معها وخدمتها، أنواع الأخشاب، قراءة رسومات النجارة والديكور وتنفيذها، إنتاج نماذج من الأعمال الخشبية كقطع الأثاث وأعمال المنجور.

Training 10312291 (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.