

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

Academic Program Specification Form For The Academic

University: Middle Technical
College : Kut institution
Department : Electric
Date Of Form Completion :

Dean's Name

Date : / /

Signature

*Dean's Assistant For
Scientific Affairs*

Date : / /

Signature

Head of Department

Date : / /

Signature

Quality Assurance And University Performance Manager

Date : / /

Signature

TEMPLATE FOR PROGRAMME SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

PROGRAMME SPECIFICATION

This Programme Specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the programme.

1. Teaching Institution	Technical Institution-Kut
2. University Department/Centre	Electric
3. Programme Title	Electric power branch
4. Title of Final Award	Technical Diploma
5. Modes of Attendance offered	Annual
6. Accreditation	ABET
7. Other external influences	There is a close relationship to the labor market that receives our graduates
8. Date of production/revision of this specification	04/10/2016
9. Aims of the Programme	
The department aims to prepare and graduate students in electric power technology field who has knowledge of the maintenance and repair of electrical machinery and electrical networks.	
The department also aims to prepare and graduate students who can carry out the operation and maintenance of electrical units, Power plants, transmission and distribution of electric energy.	
The graduates can perform: 1- The operation and maintenance of the electrical units of power plants. 2. The operation and maintenance for the transfer and distribution of electric energy electrical appliances. 3. The maintenance of the control system of electric power. 4. laying and maintenance the ground and air cables.	

10. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Knowledge and Understanding

- A1. Provides knowledge of maintenance and repair of electric motors and electric control devices
- A2. The students are capable to maintain and repair of electric control boards
- A3. The students are capable to maintain and repair of electric machines.
- A4. The students are capable to lay and maintain the ground and air cables.
- A5. The students are capable to use equipment, tools and various components used in the workshops
- A6. The students acquire the skill and expertise in the field of various electrical maintenance work
- A7 The students gain self-confidence to practice works in the electrical field
- A8 the students can distinguish and recognize the various electrical and electronic components and how they are used in the construction of various departments

B. Subject-specific skills

- B1 Perform experiments to verify the theoretical side
- B2 Acquire the skill of designing and implementing various electrical circuits
- B3 Acquire the skill to use the various electrical measurement devices
- B4 Acquire the skill to use for resolving the problems of electrical circuits theories
- B5 Acquire the skill of the use of electronic components in electronic circuits
- B6 Acquire the skill of electronic circuit analysis and applications
- B4 Acquire the skill of distinguish and recognize the various electrical and electronic components and how they are used in the construction of various departments
- B5 Acquire the knowledge of maintenance and repair of electric motors and electric control devices

Teaching and Learning Methods

Labs + workshops + scientific visits

Lectures + laboratory experiments + use and touching instrumentation + scientific films

Assessment methods

Theoretical + Ppractical + Oral + Written + debate

C. Thinking Skills

- C1. Homework (student exercises)
- C2. Theoretical lectures
- C3. Practical skills within the labs
- C4. Discussing in class

Teaching and Learning Methods

Lectures + practical + scientific films + Debates

Assessment methods

Theoretical (Written) + Ppractical + Oral + debate

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

- D1. Working in the field of maintenance and repair of engines and electrical equipment
- D2. Working in the field of maintenance and repair of electrical control devices
- D3. Practicability visits
- D4. Acquire the knowledge of maintenance and repair of electronic devices

Teaching and Learning Methods

Lectures + labs + summer training + scientific visits + debates

Assessment Methods

Theoretical & Practical

11. Programme Structure

11. Programme Structure				12. Awards and Credits
Level/Year	Course or Module Code	Course or Module Title	Credit rating	
First year		Measurements and circuits	8	Diploma Degree Requires (x) credits
		Electrical assembly	8	
		Electronics1	8	
		Laboratories	12	
		Mathematics	4	
		Computer applications	6	
		Electrical engineering drawing	6	
		Human Rights and Democracy	4	

		Digital electronics	4	
		Occupational Safety	4	
Second year		Electrical machinery	10	
		Electrical networks	8	
		Power Electronics	10	
		Workshop maintenance	8	
		Electrical Installation	4	
		Computer applications	6	
		Electrical drawing	6	
		Programmed Logic Control (PLC)	6	
		The project	4	

13. Personal Development Planning

Get a technical diploma in electrical technology, electric power branch

14. Admission criteria .

1. Graduates of secondary schools (scientific branch) & vocational secondary schools (electricity and computers)
2. Acceptance rate of at least 60%

15. Key sources of information about the programme

1. Follow-up to the latest versions of websites and public libraries
2. Access to the latest equipment and techniques in the field of work.

Curriculum Skills Map

please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed

				Programme Learning Outcomes															
Year / Level	Course Code	Course Title	Core (C) Title or Option (O)	Knowledge and understanding				Subject-specific skills				Thinking Skills				General and Transferable Skills (or) Other skills relevant to employability and personal development			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
The first year		Measurements and circuits	compulsory																
		Electrical assembly	compulsory																
		Electronics I	compulsory																
		Laboratories	compulsory																
		Mathematics	compulsory																
		Computer applications	compulsory																
		Electrical engineering drawing	compulsory																
		Human Rights and Democracy	compulsory																
		Digital electronics	compulsory																
	Occupational Safety	compulsory																	
The second year		Electrical machinery	compulsory																
		Electrical networks	compulsory																
		Power Electronics	compulsory																
		Workshop maintenance	compulsory																
		Electrical Installation	compulsory																
		Computer applications	compulsory																
		Electrical drawing	compulsory																
		Programmed Logic Control (PLC) The project	compulsory																

Electrical Measurement & circuits

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

A student will be produced to electrical circuits and electrical measurements

1. Teaching Institution	Technical Institution-Kut
2. University Department/Centre	Electric/ first year
3. Course title/code	Electrical Measurement & circuits
4. Programme(s) to which it contributes	Technical Diploma
5. Modes of Attendance offered	Compulsory, Seminar scheduled hours (4 hours)
6. Semester/Year	First year/ 2016-2017
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	12/11/2016
9. Aims of the Course	
	A student will be produced to electrical circuits and electrical measurements
	The student is prepared to study the different circuits in the alternating current circuits and constant current, and to learn about the different theories of these circuits
	The students will be introduced to the different measurement devices.
	The students will achieve the theoretical experiments on DC and AC circuits, and also train to use of electrical appliances for various laboratory measurements

10. Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

- A1. Introduce students to electrical circuits
- A2. Introduce students to the maintenance of electrical control panels
- A3. Introduce students to the operation and maintenance of electrical motors
- A4. Introduce students to ways of maintenance and repair of electrical equipment
- A5. Introduce students to the ways various electrical measurements
- A6 .Introduce students to study different AC and DC circuits
- A7- Introduce students to the various theories to the study of these circuits
- O8- Introduce students to the measurement devices
- O9- train students in order to use of electrical appliances for various laboratory measurements

B. Subject-specific skills

- B1 Perform experiments to verify the theoretical side
- B2 Acquire the skill of designing and implementing various electrical circuits
- B3 Acquire the skill to use the various electrical measurement devices
- B4 Acquire the skill to use for resolving the problems of electrical circuits theories

Teaching and Learning Methods

Labs + workshops + scientific visits

Lectures + laboratory experiments + use and touching instrumentation + scientific films

Assessment methods

Theoretical + Ppractical + Oral + Written + debate

C. Thinking Skills

- C1. Homework (student exercises)
- C2. Theoretical lectures
- C3. Practical skills within the labs
- C4. Discussing in class

Teaching and Learning Methods

Lectures + practical + scientific films + Debates

Assessment methods

Theoretical (Written) + Ppractical + Oral + debate

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

D1. Practical skills in the laboratory, workshops and laboratories

D2. Scientific films

D3. Scientific visits

D4. Mathematical skills and the ability to use scientific theories in electrical measurements and calculations

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	Lectures + labs	System units used in electricity	Lectures + labs	Theoretical + Ppractical + Oral
2	4	Lectures + labs	The constant current circuits include: 1. Connect resistors respectively with examples 2. connecting resistors in parallel with examples 3-linking Mixed resistors with examples 2. interstellar connectivity and triangular (Y / Δ) for the resistors and the conversion of all of them to the other with examples	Lectures + labs	Theoretical + Ppractical + Oral
3	4	Lectures + labs	Applications on circuit	Lectures + labs	Theoretical + Ppractical + Oral
4	4	Lectures + labs	A. Kirchhoff's laws B. Maxwell with a solution examples	Lectures + labs	Theoretical + Ppractical + Oral
5	4	Lectures + labs	1. Thevenn theory 2. Norton theory	Lectures + labs	Theoretical + Ppractical + Oral
6	4	Lectures + labs	Applications on Thevenn and Norton's theory	Lectures + labs	Theoretical + Ppractical + Oral
7	4	Lectures + labs	Superposition theory	Lectures + labs	Theoretical + Ppractical + Oral
8	4	Lectures + labs	Quantities of alternating current AC	Lectures + labs	Theoretical + Ppractical + Oral
9	4	Lectures + labs	Quantities of alternating current vectors	Lectures + labs	Theoretical + Ppractical + Oral
10	4	Lectures + labs	Study the effect of the alternating current circuit with R, C L solution examples	Lectures + labs	Theoretical + Ppractical + Oral
11	4	Lectures + labs	The effect of AC on the circuit containing resistance and inductance with practical examples	Lectures + labs	Theoretical + Ppractical + Oral
12	4	Lectures + labs	The effect of AC on the circuit containing resistance and inductance in parallel with practical examples	Lectures + labs	Theoretical + Ppractical + Oral
13	4	Lectures + labs	The use of descriptions 1-7 (J-Operator)	Lectures + labs	Theoretical + Ppractical + Oral
14	4	Lectures + labs	Resonance with solving examples	Lectures + labs	Theoretical + Ppractical + Oral

15	4	Lectures + labs	Parallel resonant circuit with solution examples	Lectures + labs	Theoretical + Ppractical + Oral
16	4	Lectures + labs	Application of theories such as Norton, Thvenn on AC circuits with a solution examples	Lectures + labs	Theoretical + Ppractical + Oral
17	4	Lectures + labs	The power in AC circuits	Lectures + labs	Theoretical + Ppractical + Oral
18	4	Lectures + labs	Apparent power (defined) - How to draw factor triangle	Lectures + labs	Theoretical + Ppractical + Oral
19	4	Lectures + labs	Theory of transfer the greatest possible power in circles AC with examples	Lectures + labs	Theoretical + Ppractical + Oral
20	4	Lectures + labs	Practical ways of measuring resistors with high, medium and small values	Lectures + labs	Theoretical + Ppractical + Oral
21	4	Lectures + labs	AC circles three phases - with a solution examples	Lectures + labs	Theoretical + Ppractical + Oral
22	4	Lectures + labs	Solving practical examples on AC with three phases	Lectures + labs	Theoretical + Ppractical + Oral
23	4	Lectures + labs	Power measurement using Ammeter	Lectures + labs	Theoretical + Ppractical + Oral
24	4	Lectures + labs	Magnetism - magnetic circuit -	Lectures + labs	Theoretical + Ppractical + Oral
25	4	Lectures + labs	Solving practical examples of magnetism	Lectures + labs	Theoretical + Ppractical + Oral
26	4	Lectures + labs	Self-inductance (electromagnetic induction)	Lectures + labs	Theoretical + Ppractical + Oral
27	4	Lectures + labs	Curves of growth and decay of the power of the circuits - a solution examples	Lectures + labs	Theoretical + Ppractical + Oral
28	4	Lectures + labs	Measurement devices include - types of measurement devices	Lectures + labs	Theoretical + Ppractical + Oral
29	4	Lectures + labs	Metering device with the Iron Heart -	Lectures + labs	Theoretical + Ppractical + Oral
30	4	Lectures + labs	Wattmeter devices -	Lectures + labs	Theoretical + Ppractical + Oral

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	مشروع كتاب الدوائر الكهربائية Electrical technology (Edward Hughes)
Special requirements (include for example workshops, periodicals, IT software, websites)	Basic circuits (A.M.F. Brooks) Introduction to electric circuits (M. Romanwitz)
Community-based facilities (include for example, guest Lectures , internship , field studies)	Basic electrical engineering (Fitzgrald & Rlginborthan)
13. Admissions	
Pre-requisites	One class
Minimum number of students	30
Maximum number of students	50

Electrical installation

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

A student will be produced to the various electrical systems INSTALLATION.

1. Teaching Institution	Technical Institution-Kut
2. University Department/Centre	Electric
3. Course title/code	Electrical installation
4. Programme(s) to which it contributes	Technical Diploma
5. Modes of Attendance offered	Compulsory, Seminar scheduled hours (4 hours)
6. Semester/Year	First year/ 2016-2017
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	12/11/2016
9. Aims of the Course	
	A student will be produced to the various electrical systems INSTALLATION.
	The student will be able to identify the materials and electrical wiring systems used in factories, homes, and the establishment and installation of electrical machinery and methods of control and protection of the different loads incorporation.
	The student will be able to see the process of electrical Baltosissat (lighting) as well as how to establish and installation of electrical machinery.
	The students will achieve the theoretical experiments on DC and AC circuits, and also train to use of electrical appliances for various laboratory measurements

10. Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

- A1. Introduce students to the various systems ELECTRICAL INSTALLATION
- A2. Introduce students to electrical material
- A3. Introduce students to the wiring used in laboratories and houses systems
- A4. Introduce students to ways of maintenance and repair of electrical equipment
- A5. Introduce students to the methods of the establishment and installation of electrical machinery
- A6 .Introduce students the methods of control and protection of the different loads incorporation
- A7- Introduce students to the various theories to the study of these circuits
- A8- Introduce students to the measurement devices
- A9- train students in order to use of electrical appliances for various laboratory measurements
- A10- training students practical electric Baltosissat (lighting) as well as how to establish and installation of electrical machinery.

B. Subject-specific skills

- B1 Perform experiments to verify the theoretical side
- B2 Acquire the skill of designing and implementing various electrical circuits
- B3 Acquire the skill to use the various electrical measurement devices
- B4 Acquire the skill to use for resolving the problems of electrical circuits theories
- B 5 - acquire skill in various ELECTRICAL INSTALLATION
- B 6 - acquire the skill of wiring used in factories and homes
- B7 acquire the skill of the establishment and installation of electrical machinery
- B8 acquire the skill of the design and implementation of methods of control and protection of the different loads incorporation

Teaching and Learning Methods

Labs + workshops + scientific visits

Lectures + laboratory experiments + use and touching instrumentation + scientific films

Assessment methods

Theoretical + Ppractical + Oral + Written + debate

C. Thinking Skills

- C1. Homework (student exercises)
- C2. Theoretical lectures
- C3. Practical skills within the labs
- C4. Discussing in class

Teaching and Learning Methods

Lectures + practical + scientific films + Debates

Assessment methods

Theoretical (Written) + Ppractical + Oral + debate

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

D1. Practical skills in the laboratory, workshops and laboratories

D2. Scientific films

D3. Scientific visits

D4. Mathematical skills and the ability to use scientific theories in electrical measurements and calculations

D5 skills designing and implementing ways to control and protection of the different loads incorporation

D6 skills in different ELECTRICAL INSTALLATION

D7 skills wiring used in factories and homes

D8 establishment and installation of electrical machinery skills

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	Lectures + labs	Classification of materials to: • electrical conducting materials • Semiconductor • isolators Insulators	Lectures + labs	Theoretical + Ppractical + Oral
2	4	Lectures + labs	Electricity principles - Voltage, current intensity,	Lectures + labs	Theoretical + Ppractical + Oral
3	4	Lectures + labs	Electrical conducting materials. - Copper and Aluminum	Lectures + labs	Theoretical + Ppractical + Oral
4	4	Lectures + labs	Insulation Materials - Examples of insulating materials - air, oil	Lectures + labs	Theoretical + Ppractical + Oral
5	4	Lectures + labs	Magnetic properties of materials - Examples Solved	Lectures + labs	Theoretical + Ppractical + Oral
6	4	Lectures + labs	Magnetic circuits - The application of Kirchhoff's laws Examples unresolved on magnetism	Lectures + labs	Theoretical + Ppractical + Oral
7	4	Lectures + labs	Mechanical properties of electrical materials - Tensile, stress, elongation, flexibility, and other - Solved examples	Lectures + labs	Theoretical + Ppractical + Oral
8	4	Lectures + labs	The stages of the electric power - Power generation (brief summary of the types of power plants) - Power transmission (the systems used, the advantages and disadvantages) - Substations and lowering the crane and stings - Distribution of electric power (systems used) of various kinds	Lectures + labs	Theoretical + Ppractical + Oral
9	4	Lectures + labs	Raw principles on how the consumer from secondary processing plant and materials to the consumer and that type - Distribution panels for domestic and industrial (installation and link) - How to feed electricity to a large building with an example so - Electrical transformers used Capacity (KVA) and sites used in the electrical grid - Schemes and examples Solved	Lectures + labs	Theoretical + Ppractical + Oral
10	4	Lectures + labs	Types of switches used in electrical installations, their importance	Lectures + labs	Theoretical + Ppractical + Oral
11	4	Lectures + labs	Protection devices used in the ELECTRICAL INSTALLATION (fuses) - Definition (smelter, rated current, a stream smelting, fusion laboratories, the current and projected stream cutting, melting time, the time of the electric arc time total operating time)	Lectures + labs	Theoretical + Ppractical + Oral

			<ul style="list-style-type: none"> - Types of fuses with the advantages and disadvantages of each, how to choose Alvasam - Coordination between Alfoasam in the same electrical circui 		
12	4	Lectures + labs	<p>Breakers session Circuit Breakers</p> <p>With the composition and the principle of his work (Magnetic Circuit Breakers) - magnetic circuit breakers</p> <p>With the principle of his work (Magnetic and Thermal Circuit Breakers) thermal circuit breakers and magnetic -</p> <p>-qguata Small session (Miniature Circuit Breaker) MCB installation and wiring</p> <p>- Boycotted the session with a ground leakage (Earth leakage circuit breaker) ELCB installation and theory work</p> <p>- How to distribute the loads inside the building through a distribution board used and account cutter Capacity</p>	Lectures + labs	Theoretical + Ppractical + Oral
13	4	Lectures + labs	<p>Electrical wiring systems Electrical Wiring Systems</p> <ul style="list-style-type: none"> - Non-conductor system isolated B.B, rubber packing strong T.R.S system - Insulated conductors PayPal system (P.V.C), insulated conductors PayPal system (P.C.P), wiring system within the plastics and preparing the necessary pipes Therefore, wires and cables in the work numbering, taking into account the wire colors at Launch 	Lectures + labs	Theoretical + Ppractical + Oral
14	4	Lectures + labs	<p>Household electric INSTALLATION</p> <p>Types of household electrical - INSTALLATION advantages and disadvantages of each, safety conditions, cost, durability and required general appearance and shape of the founding</p> <p>Tools used in household - INSTALLATION</p> <ul style="list-style-type: none"> - The establishment of laboratories and workshops and calculate cost 	Lectures + labs	Theoretical + Ppractical + Oral
15	4	Lectures + labs	<p>Grounding Grounding</p> <p>Grounding Grounding Components - Components (soil and ground Earth resistance Earth resistance and resistance quality of the land of Earth Resistivity, grounding electrodes Grounding Electrode, connectivity and networking equipment (Bonding</p> <p>Different ways to reduce the grounding - resistance Reduce Resistance Grounding Devices and equipment which must be - Toarbha Devices must be grounding</p> <p>The importance of a good grounding The - Importance of Grounding</p> <ul style="list-style-type: none"> - The difference between the system grounded and non-grounded, measurement methods Grounding Measurering 	Lectures + labs	Theoretical + Ppractical + Oral
16	4	Lectures + labs	<p>Lightning Lightning Rod</p> <p>Thunderbolt, the importance of a lightning - rod, lightning rod components</p>	Lectures + labs	Theoretical + Ppractical + Oral

			- What's important when lightning rod equipment and structures that must be protected from lightning design		
17	4	Lectures + labs	Electric shock Definition, causes and the relationship of - the amount of voltage and current shock and the path of the power and intensity of the current through the body, the current passage of time, the causes of electric shock General rules for the safety of shock and - procedures for post-traumatic stress Factors upon which the effect of electric - current in the body - Preventive measures that can be taken to protect against electrical hazards	Lectures + labs	Theoretical + Ppractical + Oral
18	4	Lectures + labs	Protection from leakage complacent - Circuit breaker against ground leakage Earth leakage current circuit breaker - Voltage categorically against ground leakage Earth leakage voltage circuit breaker - Places the installation of protection against leakage breakers Radhi (EICB) :, determine cutter capacity by pregnancy	Lectures + labs	Theoretical + Ppractical + Oral
19	4	Lectures + labs	Electrical power measuring device single-phase and triple eccentric Single and three phase kwh meter)) - Work and linkage theory (wiring) and installation and how to read, the installation of the meter - The means of adjusting the counter when errors (speed - crawl - a light load) - Intelligent counter - its components and the method of linking and read it	Lectures + labs	Theoretical + Ppractical + Oral
20	4	Lectures + labs	Inspection and testing of electrical INSTALLATION domestic and industrial executed Examination of the investigation for the - Arctic, insulation resistance test, test continuity ringed circle How to find a fault in the feeder cables for - (electric Tosissat (cutting - seek - fuels - Locate ground holidays in connectors with loop Mori	Lectures + labs	Theoretical + Ppractical + Oral
21	4	Lectures + labs	AC circles Matthelath phases - define how to generate AC single phase - two phases - three phases - with the draw each wiring circuit thanks starburst and triangular in circles AC three phase and special relations to calculate current and voltage line and phase omnipotence and the ability of the line - phase capability - features each linking when used in loads balanced and unbalanced with a solution examples	Lectures + labs	Theoretical + Ppractical + Oral
22	4	Lectures + labs	Solving practical examples on AC with three phases and Baltusilat triangular and starburst with loads balanced and unbalanced Methods of measurement capability for loads with three phases - Allowatmitr device linked to how the department to measure the effective - the ability and calculation ability is effective with the virtual and the ability to	Lectures + labs	Theoretical + Ppractical + Oral

			solve Example		
23	4	Lectures + labs	Power measurement using Atmitr and effort - how to find the total power in this way in the case of stellar plug and triangulation - using Atmitran - use three watts Mitrat	Lectures + labs	Theoretical + Ppractical + Oral
24	4	Lectures + labs	Magnetism - magnetic circuit - Introduction to magnetic north and south pole - types of magnetic materials - the basic qualities of the materials, magnetic and defined and includes a magnetic field - magnetic flux - the driving force of magnetism - the density of magnetic flux and the factors that affect the magnetic flux - permeability and Toterha- magnetic circuits and the application of Kirchhoff's laws on her	Lectures + labs	Theoretical + Ppractical + Oral
25	4	Lectures + labs	Solving practical examples of magnetism	Lectures + labs	Theoretical + Ppractical + Oral
26	4	Lectures + labs	Self-inductance of the file (electromagnetic induction) - definition - special relations to find a self-inductance of the file - the mutual inductance between the two files - and relationships to create mutual inductance and quality by linking the two files includes: Linking succession of synergistic and Taaksi	Lectures + labs	Theoretical + Ppractical + Oral
27	4	Lectures + labs	Curves of growth and decay of the power of the circle Hittite - Explain this circuit and its impact in the DC - public relations for the growth and decay of power in the file - the current fee fixed time and expense - to solve examples Charge and discharge capacitors and includes the use of the widening circles in the DC public relations for loading and unloading intensive and drawing power - time constant effect with his account - a solution examples	Lectures + labs	Theoretical + Ppractical + Oral
28	4	Lectures + labs	- Thermal supervisor against overcurrent (installation - working theory - Adjust codified power - uses) - Overcurrent protection reverse chronological Inverse - Time Over regime current Relaying - Example solution	Lectures + labs	Theoretical + Ppractical + Oral
29	4	Lectures + labs	TIMER - Types (mechanic - Ketrona- programmed) - Theory - timekeeping - follow-ups of low-voltage - Types of temporary supervisor in terms of function - types of temporary supervisor in terms of structure - Applications in circles ELECTRICAL INSTALLATION Inspection and testing of electrical Tosissat Testing and inspection of Installation	Lectures + labs	Theoretical + Ppractical + Oral
30	4	Lectures + labs	Test Devices Ground Tester Test types - Polar test, test the quality of the ground system, wire insulator resistance test, test the continuity of the background circuit	Lectures + labs	Theoretical + Ppractical + Oral

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	ملزمة التأسيسات الكهربائية
Special requirements (include for example workshops, periodicals, IT software, websites)	مشروع كتاب التأسيسات الكهربائية
Community-based facilities (include for example, guest Lectures , internship , field studies)	Electrical installation technology (by Thompson) Electrical installation technology (by Michael Neidle) Practice on low voltage switch gears (by Siemens Publication)

13. Admissions	
Pre-requisites	One class
Minimum number of students	30
Maximum number of students	50

Electronics1

COURSE SPECIFICATION

A student will be produced to various electronic components

1. Teaching Institution	Technical Institution-Kut
2. University Department/Centre	Electric
3. Course title/code	Electronics1
4. Programme(s) to which it contributes	Technical Diploma
5. Modes of Attendance offered	Compulsory, Seminar scheduled hours (4 hours)
6. Semester/Year	First year/ 2016-2017
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	12/11/2016
9. Aims of the Course	
	A student will be produced to various electronic components
	The student is prepared to study : the electronic components manufacturer of semiconductor different kinds - installed - characteristics - their use in electronic circuits - applications - their own electronic circuit components of the electronic and optical applications analysis.
	The students will be introduced to the different measurement devices.
	The student will be able to: <ul style="list-style-type: none"> 1. use basic electronic devices in the lab 2 . connect electronic items in simple electronic circuits 3. Know specifications and special characteristics of electronic machining 4. Identify and apply circuits for some of the components and implementation

10. Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

- A1. Introduce students to electronic circuits
- A2. Introduce students to various electronic components
- A3. Introduce students to the electronic components manufacturer of semiconductor different kinds
- A4. Introduce students to the use of electronic components in electronic circuits
- A5. Introduce students to the electronic circuit analysis and applications
- A6. Introduce students to the basic electronic devices in the lab
- A7- Introduce students to connect electronic items in simple electronic circuits
- A8- Introduce students to the measurement devices
- A9- train students in order to use of electrical appliances for various laboratory measurements
- A10- introduce students to the specifications and special characteristics of electronic machining
- A11- introduce students to the practical circuits to some of the components and implementation

B. Subject-specific skills

- B1 Perform experiments to verify the theoretical side
- B2 Acquire the skill of designing and implementing various electrical circuits
- B3 Acquire the skill to use the various electrical measurement devices
- B4 Acquire the skill to use for resolving the problems of electrical circuits theories
- B5 Acquire the skill of the use of electronic components in electronic circuits
- B6 Acquire the skill of electronic circuit analysis and applications
- B4 Acquire the skill of connecting electronic items in simple electronic circuits
- B5 Acquire the skill of applied design circles for some of the components and implementation

Teaching and Learning Methods

Labs + workshops + scientific visits

Lectures + laboratory experiments + use and touching instrumentation + scientific films

Assessment methods

Theoretical + Ppractical + Oral + Written + debate

C. Thinking Skills

- C1. Homework (student exercises)
- C2. Theoretical lectures
- C3. Practical skills within the labs
- C4. Discussing in class

Teaching and Learning Methods

Lectures + practical + scientific films + Debates

Assessment methods

Theoretical (Written) + Ppractical + Oral + debates

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

D1. Practical skills in the laboratory, workshops and laboratories

D2. Scientific films

D3. Scientific visits

D4. Mathematical skills and the ability to use scientific theories in electrical measurements and calculations

D5- use of electronic components in electronic circuits skills

D6- skills in circuit analysis and applications

D7 skills linked to electronic items in simple electronic circuits applied

D8- design circles for some of the components and implementation skills

D9 skills of a process that achieved the theoretical side tests

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	Lectures + labs	Semiconductor theory - the atomic structure - energy levels - crystals - Plug in crystals - the gap stream - how to move the gaps	Lectures + labs	Theoretical + Ppractical + Oral
2	4	Lectures + labs	Vaccination - develop a positive type (P) negative crystal of the type (N) electrons stream and stream gaps - the total resistance	Lectures + labs	Theoretical + Ppractical + Oral
3	4	Lectures + labs	Binaries Semiconductor - Link (PN) composition of the evacuation zone - Voltage barrier - Tel energy - thermal effects - bilateral biased - aligned front - reverse bias - curves properties in both directions, the front and reverse - obsolescent transit - stream stream of minority carriers - stream surface leakage - effort refraction - breakdown voltage (PIV) greatest stream in front of me - the greatest effort Reverse - (PIVmax) - the equivalent of a binary circuit	Lectures + labs	Theoretical + Ppractical + Oral
4	4	Lectures + labs	Binaries Semiconductor - Link (PN) composition of the evacuation zone - Voltage barrier - Tel energy - thermal effects - bilateral biased - aligned front - reverse bias - curves properties in both directions, the front and reverse - obsolescent transit - stream stream of minority carriers - stream surface leakage - effort refraction - breakdown voltage (PIV) greatest stream in front of me - the greatest effort Reverse - (PIVmax) - the equivalent of a binary circuit	Lectures + labs	Theoretical + Ppractical + Oral
5	4	Lectures + labs	Bilateral unifier of the stream - a standard half-wave - continuous stream and the calculated value - the effective value of the output frequency	Lectures + labs	Theoretical + Ppractical + Oral
6	4	Lectures + labs	The unification of the full wave - by using a converted forking centrist - Unified Alguenatri - account ongoing and effective current values - the extraction output frequency - a comparison between a standard half-wave and full-wave uniform - a comparison of the full wave Mouhdad	Lectures + labs	Theoretical + Ppractical + Oral
7	4	Lectures + labs	Filters - filtration using widening - candidate (LC) candidate (RC) - constant output voltage spikes	Lectures + labs	Theoretical + Ppractical + Oral
8	4	Lectures + labs	Ripple multiplier factor circles effort pruning - pruning positive - negative pruning - pruning compound	Lectures + labs	Theoretical + Ppractical + Oral
9	4	Lectures + labs	Atnaia Zeinr - mounted - Rmsen - properties - refraction Alanhiara refraction Zeinr - refraction effort - with carrying capacity - the reluctance Zeinr - the effects of temperature - rounded Zeinr continuous voltage regulation	Lectures + labs	Theoretical + Ppractical + Oral

10	4	Lectures + labs	Atnaia Zeinr - mounted - Rmsen - properties - refraction Alanhiara refraction Zeinr - refraction effort - with carrying capacity - the reluctance Zeinr - the effects of temperature - rounded Zeinr continuous voltage regulation	Lectures + labs	Theoretical + Ppractical + Oral
11	4	Lectures + labs	Bipolar transistor - mounted - regions - his character - Althiaz efforts - (α dc) - (β dc) the relationship between the (α dc) - (β dc) types of bias - linking formats rounding the transistor and circuit	Lectures + labs	Theoretical + Ppractical + Oral
12	4	Lectures + labs	Bipolar transistor - mounted - regions - his character - Althiaz efforts - (α dc) - (β dc) the relationship between the (α dc) - (β dc) types of bias - linking formats rounding the transistor and circuit	Lectures + labs	Theoretical + Ppractical + Oral
13	4	Lectures + labs	Curves properties of the transistor - the definition of working areas (ICBO) and (ICEO) - curved earning power - the relationship between (IC) and (ICEO)	Lectures + labs	Theoretical + Ppractical + Oral
14	4	Lectures + labs	Aligned transistor circuits - Base bias - bias motive	Lectures + labs	Theoretical + Ppractical + Oral
15	4	Lectures + labs	Parallel resonant circuit - defined - account Bias mosque - Self-Aligned - siding background nutrition - the bias voltage divider - Practical examples	Lectures + labs	Theoretical + Ppractical + Oral
16	4	Lectures + labs	Bias mosque - Self-Aligned - siding background nutrition - the bias voltage divider - Practical examples	Lectures + labs	Theoretical + Ppractical + Oral
17	4	Lectures + labs	Circuit the equivalent continuous Transistors - DC load line	Lectures + labs	Theoretical + Ppractical + Oral
18	4	Lectures + labs	Work - points dormancy points (Q-Point) Practical examples	Lectures + labs	Theoretical + Ppractical + Oral
19	4	Lectures + labs	Transistors in Enlarge small signals - the equivalent circuit alternating - the perfect rounding - constants hybrids - the equivalent circuit using coefficients (h) - Earn effort - earning power - the ability to earn - Mquaomta input and output - small signal amplifiers - Qaeda market - motive market	Lectures + labs	Theoretical + Ppractical + Oral
20	4	Lectures + labs	Transistors in Enlarge small signals - the equivalent circuit alternating - the perfect rounding - constants hybrids - the equivalent circuit using coefficients (h) - Earn effort - earning power - the ability to earn - Mquaomta input and output - small signal amplifiers - Qaeda market - motive market	Lectures + labs	Theoretical + Ppractical + Oral
21	4	Lectures + labs	Transistors in Enlarge small signals - the equivalent circuit alternating - the perfect rounding - constants hybrids - the equivalent circuit using coefficients (h) - Earn effort - earning power - the ability to earn - Mquaomta input and output - small signal amplifiers - Qaeda market - motive marketwith a solution examples	Lectures + labs	Theoretical + Ppractical + Oral

22	4	Lectures + labs	he use of a transistor in the voltage regulation - an orderly succession - structured parallel source of an ongoing effort Department	Lectures + labs	Theoretical + Ppractical + Oral
23	4	Lectures + labs	Transistor junctional field effect (JEFT) - mounted - his character - Theory - curves properties - curved conductivity of reciprocity - the definition of a narrow effort (VP), (IDSS), (VGSOff) - curves properties (MOSFET) - (D-MOSFET) - (E-MOSFET)	Lectures + labs	Theoretical + Ppractical + Oral
24	4	Lectures + labs	Transistor junctional field effect (JEFT) - mounted - his character - Theory - curves properties - curved conductivity of reciprocity - the definition of a narrow effort (VP), (IDSS), (VGSOff) - curves properties (MOSFET) - (D-MOSFET) - (E-MOSFET)	Lectures + labs	Theoretical + Ppractical + Oral
25	4	Lectures + labs	Aligned circles (FET) - bias constant current source - working point of self-aligned - the equivalent of the circuit (FET) use (FET) to enlarge the small signal	Lectures + labs	Theoretical + Ppractical + Oral
26	4	Lectures + labs	Aligned circles (FET) - bias constant current source - working point of self-aligned - the equivalent of the circuit (FET) use (FET) to enlarge the small signal	Lectures + labs	Theoretical + Ppractical + Oral
27	4	Lectures + labs	A comparison of the types (FET) (FET, MOSFET) and the (BJT)	Lectures + labs	Theoretical + Ppractical + Oral
28	4	Lectures + labs	Based on light-resistant (LDR) - light emitting diode - photodiode panel of seven installed applications and pieces	Lectures + labs	Theoretical + Ppractical + Oral
29	4	Lectures + labs	Optical transistor - installed - work - applications - process	Lectures + labs	Theoretical + Ppractical + Oral
30	4	Lectures + labs	Optical transistor - installed - work - applications – process	Lectures + labs	Theoretical + Ppractical + Oral

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	مبادئ الالكترونيات 1984-تاليف مالفينو, ترجمة بدر محمد علي الوتار
Special requirements (include for example workshops, periodicals, IT software, websites)	الالكترونيك الصناعي 1985-تاليف ضياء مهدي فارس واخرون
Community-based facilities (include for example, guest Lectures , internship , field studies)	An introduction to semiconductors (K.I. Gross & J.Y. Rwood) الكترونيات القدرة 1991- تاليف ضياء مهدي فارس, ابراهيم طه

13. Admissions	
Pre-requisites	One class
Minimum number of students	30
Maximum number of students	50

Laboratories

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

Students need to acquire skills in the use of hand tools, measuring tools and operation of appliances, machinery and used in each workshop.

1. Teaching Institution	Technical Institution-Kut
2. University Department/Centre	Electric
3. Course title/code	Laboratories
4. Programme(s) to which it contributes	Technical Diploma
5. Modes of Attendance offered	Compulsory, Seminar scheduled hours (6 hours)
6. Semester/Year	First year/ 2016-2017
7. Number of hours tuition (total)	180
8. Date of production/revision of this specification	12/11/2016
9. Aims of the Course	<ul style="list-style-type: none"> * Students need to acquire skills in the use of hand tools, measuring tools and operation of appliances, machinery and used in each workshop. * Students need to acquire skills in the use of hand tools, measuring tools and the ability to work and run the machines optimal way * Focus on training students on the refrigerator works properly and how to use the tools of measurement and rasps and cutting Banchar hole and Algulwzh * Training is focus in the welding workshop on a different number, tools and equipment inside the workshop is the ideal way * Focus on training students on how to plan for the sheet metal and how cutting, assembly, welding and assembly process and the process of welding, sheet and cutting the use of planning manual and mechanical tools and bending tools and manual and mechanical welding tools * The focus is on training students on various turning machines and training necessary measure to

implement a variety of exercises and how the external and internal teeth and how to choose the pens cutting tools

* The training focused on the use of tools and tools used and measurement tools and learn about the different Woodworking Machinery and safety procedures and maintenance of machines

* The student will be able to:

- 1- equipment, tools and various components used in the workshops used
2. acquire the skill and expertise in the field of various electrical maintenance work
3. gaining self-confidence to practice works of art in the electrical trace faults and learn how to repair
4. distinguish and recognize the various electrical and electronic components and how they are used in the construction of various departments

10. Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

- A1. Introduce students to the manual skills in the use of hand tools and measuring devices and machines
- A2. introduce students to the refrigerator works properly and how to use the tools of measurement and rasps and cutting
- A3. introduce students and trained in welding on a different number, tools and equipment
- A4. introduce students and trained in various turnings machines
- A5. introduce students to use the number of tools and tools and measuring instruments used and identify the different Woodworking Machinery
- A6 . introduce students to the electrical works of art tracking malfunctions and learn how to repair
- A7 introduce students to the various electrical and electronic components and how they are used in the construction of various circles.
- O8- Introduce students to the measurement devices
- O9- train students in order to use of electrical appliances for various laboratory measurements

B. Subject-specific skills

- B1 Conduct their own experiments in the use of hand tools and measuring devices and machines run
- B-2 - to acquire the skill of the refrigerator to use tools properly
- B 3 - acquire the skill of welding on a different number, tools and equipment for
- B4- acquire the skill to use the various turning machines
- B5- acquire the skill of using a number carpentry
- B6- acquire the skill of various electrical maintenance work
- B7- acquire trace faults and how to repair skill

Teaching and Learning Methods

Labs + workshops + scientific visits

Lectures + laboratory experiments + use and touching instrumentation + scientific films

Assessment methods

Theoretical + Ppractical + Oral + Written + debate

C. Thinking Skills

- C1. Homework (student exercises)
- C2. Theoretical lectures
- C3. Practical skills within the labs
- C4. Discussing in class

Teaching and Learning Methods

Lectures + practical + scientific films + Debates

Assessment methods

Theoretical (Written) + Ppractical + Oral + debate

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

D1. Practical skills in the laboratory, workshops and laboratories

D2. Scientific films

D3. Scientific visits

D4 The use of various electrical components Skills

D5- skills in the use of welding machines and turnings, plumbing, carpentry and refrigerator optimally

D 6 - skills trace faults and repair

D7- various electrical maintenance work skills

D8- skills of a process that achieved the theoretical side tests

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	6	Lectures + labs	Measuring instruments: (ruler - measuring tape - Vernier - and micrometer and how to use and maintain them	Lectures + labs	Theoretical + Ppractical + Oral
2	6	Lectures + labs	Cutting Chainsaw: chainsaw and hand weapon Saw	Lectures + labs	Theoretical + Ppractical + Oral
3	6	Lectures + labs	Types of drills Exercises	Lectures + labs	Theoretical + Ppractical + Oral
4	6	Lectures + labs	Practical welding workshop	Lectures + labs	Theoretical + Ppractical + Oral
5	6	Lectures + labs	Practical welding workshop	Lectures + labs	Theoretical + Ppractical + Oral
6	6	Lectures + labs	Practical welding workshop	Lectures + labs	Theoretical + Ppractical + Oral
7	6	Lectures + labs	Practical plumbing workshop	Lectures + labs	Theoretical + Ppractical + Oral
8	6	Lectures + labs	Practical plumbing workshop	Lectures + labs	Theoretical + Ppractical + Oral
9	6	Lectures + labs	Practical plumbing workshop	Lectures + labs	Theoretical + Ppractical + Oral
10	6	Lectures + labs	Practical turnings workshop	Lectures + labs	Theoretical + Ppractical + Oral
11	6	Lectures + labs	Practical turnings workshop	Lectures + labs	Theoretical + Ppractical + Oral
12	6	Lectures + labs	Practical turnings workshop	Lectures + labs	Theoretical + Ppractical + Oral
13	6	Lectures + labs	Practical carpentry workshop	Lectures + labs	Theoretical + Ppractical + Oral
14	6	Lectures + labs	Practical carpentry workshop	Lectures + labs	Theoretical + Ppractical + Oral
15	6	Lectures + labs	Practical carpentry workshop	Lectures + labs	Theoretical + Ppractical + Oral
16	6	Lectures + labs	Fundamental principles of industrial security	Lectures + labs	Theoretical + Ppractical + Oral

17	6	Lectures + labs	Training on the electrical welding process	Lectures + labs	Theoretical + Ppractical + Oral
18	6	Lectures + labs	Resistors types	Lectures + labs	Theoretical + Ppractical + Oral
19	6	Lectures + labs	Coils types	Lectures + labs	Theoretical + Ppractical + Oral
20	6	Lectures + labs	Printed boards and regular used in the construction of electronic circuits	Lectures + labs	Theoretical + Ppractical + Oral
21	6	Lectures + labs	Training on work coils using different types of ways of winding	Lectures + labs	Theoretical + Ppractical + Oral
22	6	Lectures + labs	Study parts of water pump air conditioner	Lectures + labs	Theoretical + Ppractical + Oral
23	6	Lectures + labs	Training on the drawing engine water pump You air chilled and Rewinding + files and conducting types of tests, continuity test	Lectures + labs	Theoretical + Ppractical + Oral
24	6	Lectures + labs	Testing Ground leakage testing of minors in the files, test Polar examination, start the engine and treatment of electrical and mechanical faults	Lectures + labs	Theoretical + Ppractical + Oral
25	6	Lectures + labs	Study the work of electric irons and parts thereof theory, training to dismantle and assemble the parts irons and identify the types of faults and how to address them	Lectures + labs	Theoretical + Ppractical + Oral
26	6	Lectures + labs	Study propeller parts for desktop and and re-assembled and identify the mechanical and electrical faults and how to address them	Lectures + labs	Theoretical + Ppractical + Oral
27	6	Lectures + labs	Study ceiling fan parts and training Tvkiqea and re-assembled and identify the mechanical and electrical faults and how to address them	Lectures + labs	Theoretical + Ppractical + Oral
28	6	Lectures + labs	Study the types of transformers and get to know their parts, simplified design Wolf transferred decreases with taking out one and installed and tested, as well as streamlined design Wolf transferred decreases with taking out a socket medial and installed and tested	Lectures + labs	Theoretical + Ppractical + Oral
29	6	Lectures + labs	Drawing circuit files start racing, movement, and how to link centrifuge key and widening, if any, winding movement files and start racing and installed in the sewer, linking files, examine and start the engine	Lectures + labs	Theoretical + Ppractical + Oral
30	6	Lectures + labs	Disassemble and assemble and study the parts truck batteries and handle faults expected Training oxy-acetylene welding gas and liquid	Lectures + labs	Theoretical + Ppractical + Oral

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Textbooks
Special requirements (include for example workshops, periodicals, IT software, websites)	Scientific books from libraries
Community-based facilities (include for example, guest Lectures , internship , field studies)	Various online sources
13. Admissions	
Pre-requisites	One class
Minimum number of students	30
Maximum number of students	50

Mathematics

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The student will be able to understand the laws mathematical equations, and apply the laws in the field of electrical circuits

1. Teaching Institution	Technical Institution-Kut
2. University Department/Centre	Electric
3. Course title/code	Mathematics
4. Programme(s) to which it contributes	Technical Diploma
5. Modes of Attendance offered	Seminar scheduled hours (2 hours)
6. Semester/Year	First year/ 2016-2017
7. Number of hours tuition (total)	60
8. Date of production/revision of this specification	12/11/2016
9. Aims of the Course	
The student will be able to:	
1. understand the laws mathematical equations Statistics	
2. Apply the laws in the field of electrical circuits	

10. Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

- A1. Introduce the students to the laws of mathematical equations
- A2. introduce students on how to apply the laws in the field of electrical circuits
- A3. introduce students to the vectors quantities
- A4. introduce students to matrixes and their types and how to use them to solve electrical issues
- A5. introduce students to the trigonometric functions and their types
- A6 . introduce students to the principles of differentiation and integration

B. Subject-specific skills

- B1 Acquire the skill to use arrays in finding and calculation values of unknowns in electrical circuits
- B-2 - to acquire the skill of using the laws of different mathematical equations
- B 3 - acquire the skill of law enforcement in solving electrical issues
- B4- acquire the skill to determine if different quantities were destined

Teaching and Learning Methods

Labs + workshops + scientific visits
Lectures + laboratory experiments + use and touching instrumentation + scientific films

Assessment methods

Theoretical + Ppractical + Oral + Written + debate

C. Thinking Skills

- C1. Homework (student exercises)
- C2. Theoretical lectures
- C3. Practical skills within the labs
- C4. Discussing in class

Teaching and Learning Methods

Lectures + practical + scientific films + Debates

Assessment methods

Theoretical (Written) + Ppractical + Oral + debate

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

D1- use various laws mathematical equations skills

D2- law enforcement skills in solving electrical issues

D3- identify the different quantities skills whether they were heading

D4- use matrixes in finding and calculation values of unknowns in electrical circuits skills

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2	Lectures	Matrices / determinants / and their properties	Lectures	Theoretical + quiz + Oral
2	2	Lectures	Solving linear equations - the way Kramer - applications on the determinants - compensation method is used to find the value of the currents in the multi-source circuit	Lectures	Theoretical + quiz + Oral
3	2	Lectures	Vector / Vector analysis / flying and standard / Jabr Vector / calculations vector quantities in space Turi representation and directional quantities alternating, phase angle - finding outcome of flying quantities	Lectures	Theoretical + quiz + Oral
4	2	Lectures	Unit orthogonal vectors / vector / record beatings and directional / applications on Vector / magnetic flux / Maxwell / beating numerical measure of vectors using angle / numerical multiplication of vectors using the coordinates	Lectures	Theoretical + quiz + Oral
5	2	Lectures	Function / trigonometric functions and trigonometric relationships / logarithmic functions Calculate the value of the DC circuit half bridge / calculate the effective value of the voltage / line load for the transistor	Lectures	Theoretical + quiz + Oral
6	2	Lectures	The exponential function / function blocks Overload / application fee exponential electric circuit of the first class, to represent the Department of candidate R-C function Aceh	Lectures	Theoretical + quiz + Oral
7	2	Lectures	limits / extremely arrest and trigonometric functions / applications on the ends	Lectures	Theoretical + quiz + Oral
8	2	Lectures	Differential / derivative / derivative algebraic functions / chain rule - building Differential / calculate the velocity and acceleration of the circle - the speed of light	Lectures	Theoretical + quiz + Oral
9	2	Lectures	With higher echelons implicit function / standard function derivative / representation system Vixiaoah the function implied	Lectures	Theoretical + quiz + Oral
10	2	Lectures	Derived trigonometric functions / logarithmic derivative / calculate the effective value of the stream function in the R-L-C circuit / gain voltages Balbal	Lectures	Theoretical + quiz + Oral
11	2	Lectures	Derivative exponential / derivative hyperbolic functions / time constant Account	Lectures	Theoretical + quiz + Oral
12	2	Lectures	Application of derivative / equivalent tangent and column / speed and acceleration / change Change voltages and power in terms of the rate of time accounts	Lectures	Theoretical + quiz + Oral
13	2	Lectures	Increasing and decreasing / Great endings and micro / Points coup / Drawing Functions Drawing respond to the circle of second-	Lectures	Theoretical + quiz + Oral

			class R-L-C		
14	2	Lectures	Vixiaoah applications and engineering General	Lectures	Theoretical + quiz + Oral
15	2	Lectures	Integration / indefinite integral / Integration arrest and logarithmic functions. Calculate the value of a widening shipment	Lectures	Theoretical + quiz + Oral
16	2	Lectures	Integration of exponential and trigonometric	Lectures	Theoretical + quiz + Oral
17	2	Lectures	Specific integration / specific integration applications / area under oriented / space between two curves / electric power accounts	Lectures	Theoretical + quiz + Oral
18	2	Lectures	Sizes rotational / curved arc length	Lectures	Theoretical + quiz + Oral
19	2	Lectures	Vixiaoah and engineering applications (job - Momentum - Momentum - moment of inertia)	Lectures	Theoretical + quiz + Oral
20	2	Lectures	General methods of integration include compensation and retail use partial fractions and exponential and logarithmic Building Almkamil circuit using resistance and inductance / representation of circuit equations integrative / amplifier circuit using integrated circuit	Lectures	Theoretical + quiz + Oral
21	2	Lectures	Numerical Methods in integration / trapezoidal base / base Samsun Find the distance from the accelerating speed - = find the value of the effective power of the rectifier Kdarapractical examples	Lectures	Theoretical + quiz + Oral
22	2	Lectures	Discrete solution of differential equations and linear and heterogeneous with different applications within the field of competence / circles pruning positive and negative and compound	Lectures	Theoretical + quiz + Oral
23	2	Lectures	Complex numbers / addition, subtraction, multiplication and division / geometric representation of the number of composite / relationship electrical units preparing compound	Lectures	Theoretical + quiz + Oral
24	2	Lectures	Polar formula / converting capacity to arrest and vice versa polarity / tag coefficient (j) e / formula exponential departments in the conversion / de Muniz theory and its uses in solving complex electrical circuits / power transmission accounts using the font constants lines	Lectures	Theoretical + quiz + Oral
25	2	Lectures	Powers and roots / representation roots drawing / find the roots of electrical circuits to determine the preprocessing / stellar acting and triangular	Lectures	Theoretical + quiz + Oral
26	2	Lectures	Statistical operations / distributions repeatability / histogram / curved Recurring / Probability and long / arithmetic mean and the geometric - Sample	Lectures	Theoretical + quiz + Oral
27	2	Lectures	Mean / standard range / contrast and dispersion and relative / relationship	Lectures	Theoretical + quiz + Oral

			between the center and moderation and vein / coefficient of variation - standard variable deviation		
28	2	Lectures	Matrices / determinants / and their properties Solving linear equations - the way Kramer - applications on the determinants - compensation method is used to find the value of the currents in the multi-source circuit	Lectures	Theoretical + quiz + Oral
29	2	Lectures	Vector / Vector analysis / flying and standard / Jabr Vector / calculations vector quantities in space	Lectures	Theoretical + quiz + Oral
30	2	Lectures	Vector / Vector analysis / flying and standard / Jabr Vector / calculations vector quantities in space	Lectures	Theoretical + quiz + Oral

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	الرياضيات التطبيقية للسيد يعقوب صياغة من سلسلة شوم (حل الدوائر الكهربائية)
Special requirements (include for example workshops, periodicals, IT software, websites)	Calculus (Thomas) Laplace Transformation
Community-based facilities (include for example, guest Lectures , internship , field studies)	طرق حل المعادلات التفاضلية (للمؤلف خالد احمد السامرائي)
13. Admissions	
Pre-requisites	One class
Minimum number of students	30
Maximum number of students	50

Computer applications

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

Teaching students to enter the drawing AUTOCAD program and to identify the interface drawing and painting orders and modification

1. Teaching Institution	Technical Institution-Kut
2. University Department/Centre	Electric
3. Course title/code	Computer applications
4. Programme(s) to which it contributes	Technical Diploma
5. Modes of Attendance offered	Seminar scheduled hours (3 hours)
6. Semester/Year	First year/ 2015-2016
7. Number of hours tuition (total)	90
8. Date of production/revision of this specification	12/11/2016
9. Aims of the Course	
	The aim of the article: teach students the basics of computer, operating system, the most important commands
	Teaching students to enter the drawing AUTOCAD program and to identify the interface drawing and painting orders and modification
	Access to three-dimensional drawing 3D
	Students taught the concept of viruses and methods of control

10. Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

- A1. introduce students to the basics of computer, operating system, the most important commands
- A2. introduce students to enter the drawing AUTOCAD program and to identify the interface
- A3. drawing and painting orders and modification
- A4. Introduce students to the three-dimensional drawing 3D
- A5. Introduce students to the viruses and methods of control

B. Subject-specific skills

- B1 to acquire the skill of the use of computers and various programs
- B2 acquire the skill of a three-dimensional drawing
- B3 acquire some skills in AutoCAD program
- B4 acquire the skill to know the types of viruses and methods of control

Teaching and Learning Methods

Labs + workshops + scientific visits

Lectures + laboratory experiments + use and touching instrumentation + scientific films

Assessment methods

Theoretical + Ppractical + Oral + Written + debate

C. Thinking Skills

- C1. Homework (student exercises)
- C2. Theoretical lectures
- C3. Practical skills within the labs
- C4. Discussing in class

Teaching and Learning Methods

Lectures + practical + scientific films + Debates

Assessment methods

Theoretical (Written) + Ppractical + Oral + debate

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

D1. Practical skills in the laboratory, workshops and laboratories

D2. Scientific films

D3- use computer skills

D4- skills in the fight against viruses

D5- use drawing program AutoCAD skills

D 6 - the skills of three-dimensional graphic design

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	Lectures + labs	Introduction to computer and their systems and benefits	Lectures + labs	Theoretical + Ppractical + Oral
2	4	Lectures + labs	Introduction to computer and their systems and benefits	Lectures + labs	Theoretical + Ppractical + Oral
3	4	Lectures + labs	Windows	Lectures + labs	Theoretical + Ppractical + Oral
4	4	Lectures + labs	Windows	Lectures + labs	Theoretical + Ppractical + Oral
5	4	Lectures + labs	My COMPUTER , MY DOCUMENTS , RECYCLE BIN	Lectures + labs	Theoretical + Ppractical + Oral
6	4	Lectures + labs	My COMPUTER , MY DOCUMENTS , RECYCLE BIN	Lectures + labs	Theoretical + Ppractical + Oral
7	4	Lectures + labs	DESKTOP BACKGROUND , WINDOWS COLOR , SCREEN SAVER	Lectures + labs	Theoretical + Ppractical + Oral
8	4	Lectures + labs	DESKTOP BACKGROUND , WINDOWS COLOR , SCREEN SAVER	Lectures + labs	Theoretical + Ppractical + Oral
9	4	Lectures + labs	CONTROL PANAL PROGRAM AND FEATURES , ACCESSORIES CALCULATOR , WORDPAD,WINDOSWS MEDIA PLAYER	Lectures + labs	Theoretical + Ppractical + Oral
10	4	Lectures + labs	CONTROL PANAL PROGRAM AND FEATURES , ACCESSORIES CALCULATOR , WORDPAD,WINDOSWS MEDIA PLAYER	Lectures + labs	Theoretical + Ppractical + Oral
11	4	Lectures + labs	AUTOCAD DRAWING LIMITS , UNITS	Lectures + labs	Theoretical + Ppractical + Oral
12	4	Lectures + labs	OSNAP ,ORTTHO , LWT , OTRACK , POLAR , SNAP , GRID , DISTANCE , AREA	Lectures + labs	Theoretical + Ppractical + Oral
13	4	Lectures + labs	VIEW :ZOOM PAN , REGEN	Lectures + labs	Theoretical + Ppractical + Oral
14	4	Lectures + labs	DRAW : LINE , MULTILINE , CONSTRUCTION LINE , POLYLINE , POLYGON , RECTANGLE , ARC , CIRCLE, DONUT, REV CLOUD , SPLINE , ELLIPS , MACKE BLOCK , INSERT BLOCK , MBLOCK , WBLOCK, HATCH , REGION	Lectures + labs	Theoretical + Ppractical + Oral

15	4	Lectures + labs	DRAW : LINE , MULTILINE , CONSTRUCTION LINE , POLYLINE , POLYGON , RECTANGLE , ARC , CIRCLE , DONUT , REV CLOUD , SPLINE , ELLIPS , MAKE BLOCK , INSERT BLOCK , MBLOCK , WBLOCK , HATCH , REGION	Lectures + labs	Theoretical + Ppractical + Oral
16	4	Lectures + labs	DRAW : LINE , MULTILINE , CONSTRUCTION LINE , POLYLINE , POLYGON , RECTANGLE , ARC , CIRCLE , DONUT , REV CLOUD , SPLINE , ELLIPS , MAKE BLOCK , INSERT BLOCK , MBLOCK , WBLOCK , HATCH , REGION	Lectures + labs	Theoretical + Ppractical + Oral
17	4	Lectures + labs	MODIFY : ERASE , COPY , MIRROR , OFFSET , ARRAY , MOVE , ROTATE , SCALE , CHAMFER , FILLET , STRETCH , TRIM , EXTEND , BREAK , EXPLODE	Lectures + labs	Theoretical + Ppractical + Oral
18	4	Lectures + labs	MODIFY : ERASE , COPY , MIRROR , OFFSET , ARRAY , MOVE , ROTATE , SCALE , CHAMFER , FILLET , STRETCH , TRIM , EXTEND , BREAK , EXPLODE	Lectures + labs	Theoretical + Ppractical + Oral
19	4	Lectures + labs	TEXT MULTILINE TEXT , SINGLE LINE TEXT , STYLE DESIGN CENTER	Lectures + labs	Theoretical + Ppractical + Oral
20	4	Lectures + labs	TEXT MULTILINE TEXT , SINGLE LINE TEXT , STYLE DESIGN CENTER	Lectures + labs	Theoretical + Ppractical + Oral
21	4	Lectures + labs	MEASURE , DIVIDE , LINETYPE , LINE WEIGHT , COLOR , PROPERTIES , MATCH PROPERTIES , GRIPS	Lectures + labs	Theoretical + Ppractical + Oral
22	4	Lectures + labs	MEASURE , DIVIDE , LINETYPE , LINE WEIGHT , COLOR , PROPERTIES , MATCH PROPERTIES , GRIPS	Lectures + labs	Theoretical + Ppractical + Oral
23	4	Lectures + labs	DIMENSION	Lectures + labs	Theoretical + Ppractical + Oral
24	4	Lectures + labs	ELEV , THICKNESS	Lectures + labs	Theoretical + Ppractical + Oral
25	4	Lectures + labs	3D VIEW	Lectures + labs	Theoretical + Ppractical + Oral
26	4	Lectures + labs	3D VIEW	Lectures + labs	Theoretical + Ppractical + Oral
27	4	Lectures + labs	3D VIEW	Lectures + labs	Theoretical + Ppractical + Oral
28	4	Lectures + labs	3D SURFACE and 3D SOLIDS	Lectures + labs	Theoretical + Ppractical + Oral
29	4	Lectures + labs	The concept of Computer Virus	Lectures + labs	Theoretical + Ppractical + Oral

30	4	Lectures + labs	The concept of Computer Virus	Lectures + labs	Theoretical + Ppractical + Oral

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Textbooks
Special requirements (include for example workshops, periodicals, IT software, websites)	Scientific books from libraries
Community-based facilities (include for example, guest Lectures , internship , field studies)	Various online sources
13. Admissions	
Pre-requisites	One class
Minimum number of students	30
Maximum number of students	50

Electrical engineering drawing

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

Introduce students to the importance of computers in the design and circuit design

1. Teaching Institution	Technical Institution-Kut
2. University Department/Centre	Electric
3. Course title/code	Electrical engineering drawing
4. Programme(s) to which it contributes	Technical Diploma
5. Modes of Attendance offered	Seminar scheduled hours (3 hours)
6. Semester/Year	First year
7. Number of hours tuition (total)	90
8. Date of production/revision of this specification	12/11/2016
9. Aims of the Course	
It aims to graduate cadres capable of circuit design using computer Introduce students to the importance of computers in the design and circuit design The student knows how to use a computer in the ELECTRICAL INSTALLATION	
It aims to graduate students capable of circuit design using computer Introduce students to the importance of computers in the design and circuit design The student knows how to use a computer in the ELECTRICAL INSTALLATION	

10. Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

- A1. Introduce students to the circuit design using computer
- A2. Introduce students on how to use the computer at ELECTRICAL INSTALLATION
- A3. Introduce students to draw a circuits and run the control circuit for electric motors
- A4. Introduce students to ways of maintenance and repair of electrical equipment
- A5. Introduce students to design circuits for small building or a residential house by computer
- A6. Introduce students to how to draw models of cable trays
- A7- Introduce students to the various theories to the study of these circuits

B. Subject-specific skills

B 1 - Acquire the skill circuit design using computer

B-2 - to acquire the skill of computer use in the ELECTRICAL INSTALLATION

B 3 - acquire the skill of drawing a circle and run the control circuit for electric motors

B 4 to acquire the skill of the work of the founding of an electric small building or a residential house by computer

B5- acquire the skill to draw models of cable trays

Teaching and Learning Methods

Labs + workshops + scientific visits

Lectures + laboratory experiments + use and touching instrumentation + scientific films

Assessment methods

Theoretical + Ppractical + Oral + Written + debate

C. Thinking Skills

C1. Homework (student exercises)

C2. Theoretical lectures

C3. Practical skills within the labs

C4. Discussing in class

Teaching and Learning Methods

Lectures + practical + scientific films + Debates

Assessment methods

Theoretical (Written) + Ppractical + Oral + debate

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

D1. Practical skills in the laboratory, workshops and laboratories

D2. Scientific films

D3- circuit design skills using computer

D4- use computer skills in ELECTRICAL INSTALLATION

D5- ways to run a circuits and circuits control of electric motors skills

D 6 - skills work electrician establish a small building or a residential house by computer

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3	Lectures + labs	The importance of engineering drawing.	Lectures + labs	Theoretical + Ppractical + Oral
2	3	Lectures + labs	Methods of drawing a straight lines and Cartesian coordinates	Lectures + labs	Theoretical + Ppractical + Oral
3	3	Lectures + labs	(Zoom, drawing Limits, Units, Options)	Lectures + labs	Theoretical + Ppractical + Oral
4	3	Lectures + labs	SNAP, GRID, ORTHO, POLAR, OSNAP, OTRACK, DUCS, DYN, LWT))	Lectures + labs	Theoretical + Ppractical + Oral
5	3	Lectures + labs	(Rectangle, Circle, Polygon, Arc, Ellipse, Donut, Wipeout, Revision Cloud)	Lectures + labs	Theoretical + Ppractical + Oral
6	3	Lectures + labs	(Rectangle, Circle, Polygon, Arc, Ellipse, Donut, Wipeout, Revision Cloud)	Lectures + labs	Theoretical + Ppractical + Oral
7	3	Lectures + labs	(Erase, Copy, Move, Mirror, Offset, Scale, Stretch, Rotate)	Lectures + labs	Theoretical + Ppractical + Oral
8	3	Lectures + labs	Linear, Aligned, Arc Length, Radius, Diameter, Angular, Baseline, Continue, , Dimension Style...	Lectures + labs	Theoretical + Ppractical + Oral
9	3	Lectures + labs	(Properties)	Lectures + labs	Theoretical + Ppractical + Oral
10	3	Lectures + labs	(Polyline, Point, Spline, Helix, Table)	Lectures + labs	Theoretical + Ppractical + Oral
11	3	Lectures + labs	(Array, Trim, Extend, Break, Fillet, Chamfer, Explode, Align)	Lectures + labs	Theoretical + Ppractical + Oral
12	3	Lectures + labs	Single Line & Multiline Text . ,	Lectures + labs	Theoretical + Ppractical + Oral
13	3	Lectures + labs	Calculate (Area and Volume and Distance)	Lectures + labs	Theoretical + Ppractical + Oral
14	3	Lectures + labs	Hatch, Gradient	Lectures + labs	Theoretical + Ppractical + Oral
15	3	Lectures + labs	Layers	Lectures + labs	Theoretical + Ppractical + Oral
16	3	Lectures + labs	Layers	Lectures + labs	Theoretical + Ppractical + Oral

17	3	Lectures + labs	Blocks	Lectures + labs	Theoretical + Ppractical + Oral
18	3	Lectures + labs	Blocks	Lectures + labs	Theoretical + Ppractical + Oral
19	3	Lectures + labs	(Region, Boundary, Join)	Lectures + labs	Theoretical + Ppractical + Oral
20	3	Lectures + labs	(Box, Wedge, Cone, Sphere, Cylinder, Tours, Pyramid)	Lectures + labs	Theoretical + Ppractical + Oral
21	3	Lectures + labs	(Extrude, Press/pull, Polysolid, Union, Subtract, Intersect, Revolve, Sweep, Loft)	Lectures + labs	Theoretical + Ppractical + Oral
22	3	Lectures + labs	(Shell, Separate, Slice, Thicken)	Lectures + labs	Theoretical + Ppractical + Oral
23	3	Lectures + labs	Plane drawing	Lectures + labs	Theoretical + Ppractical + Oral
24	3	Lectures + labs	Printing	Lectures + labs	Theoretical + Ppractical + Oral
25	3	Lectures + labs	Electrical circuit drawing	Lectures + labs	Theoretical + Ppractical + Oral
26	3	Lectures + labs	Electrical and electronic circuit drawing	Lectures + labs	Theoretical + Ppractical + Oral
27	3	Lectures + labs	Electrical and electronic circuit drawing	Lectures + labs	Theoretical + Ppractical + Oral
28	3	Lectures + labs	Drawing of electrical control machine	Lectures + labs	Theoretical + Ppractical + Oral
29	3	Lectures + labs	An example for drawing the installation of small building	Lectures + labs	Theoretical + Ppractical + Oral
30	3	Lectures + labs	Cable Trays	Lectures + labs	Theoretical + Ppractical + Oral

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	اساسيات الرسم الهندسي تأليف عبد الحميد جمعة مشروع كتاب الرسم الكهربائي تأليف هاني عزيز
Special requirements (include for example workshops, periodicals, IT software, websites)	Engineering drawing & graphic technology (by Frennd) Engineering drawing technology (by A.W. Wander William)
Community-based facilities (include for example, guest Lectures , internship , field studies)	اوديل للتوصيلات الكهربائية (في الإضاءة والقوة) Engineering drawing technology (by MC Graw)
13. Admissions	
Pre-requisites	One class
Minimum number of students	30
Maximum number of students	50

Digital electronics

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

Introduce students to the electronic components and digital gates and to identify the logical numbering system 0 and 1

1. Teaching Institution	Technical Institution-Kut
2. University Department/Centre	Electric
3. Course title/code	Digital electronics
4. Programme(s) to which it contributes	Technical Diploma
5. Modes of Attendance offered	Seminar scheduled hours (4 hours)
6. Semester/Year	First year/ 2016-2017
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	12/11/2016
9. Aims of the Course	<p>The overall objective: introduce students to the electronic components and digital gates and to identify the logical numbering system 0 and 1</p> <p>Specific objective: The student will be able to familiarity: the electronic components of different kinds of digital - installed - properties - uses in logic circuits - applications - digital electronic circuit analysis. The student will be able to:</p> <ol style="list-style-type: none">1. using basic electronic devices in the lab2. connects digital electronic items (gates) in simple electronic circuits3. Know specifications and special characteristics Gate4. Identifying Applied circles for some of the components and implementation

10. Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

- A1. Introduce students to different logical electronic components
- A2. Introduce students to the various binary, eight, sixteenth and decimal numbering systems
- A3. Introduce students to use logic gates in electronic circuits
- A4. Introduce students to the logic circuits and applications analysis
- A5. Introduce students to the basic digital electronic devices in the lab
- A6 .Introduce students to connect electronic items in digital electronic circuits
- A7- Introduce students students to the specifications and special characteristics of electronic machining logical

B. Subject-specific skills

- B-1 - a process that experiments verify the theoretical side
- B-2 - to acquire the skill of using digital electronic components in electronic circuits
- B 3 - acquire the skill of the digital electronic circuit analysis and applications
- B4- acquire the skill of connecting electronic items in simple logical circuit
- B5- acquire the skill of applied design circles for some of the components and implementation

Teaching and Learning Methods

Labs + workshops + scientific visits

Lectures + laboratory experiments + use and touching instrumentation + scientific films

Assessment methods

Theoretical + Ppractical + Oral + Written + debate

C. Thinking Skills

- C1. Homework (student exercises)
- C2. Theoretical lectures
- C3. Practical skills within the labs
- C4. Discussing in class

Teaching and Learning Methods

Lectures + practical + scientific films + Debates

Assessment methods

Theoretical (Written) + Ppractical + Oral + debate

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

D1. Practical skills in the laboratory, workshops and laboratories

D2. Scientific films

D3. Scientific visits

D4- use of electronic components in electronic circuits skills

D5- skills in circuit analysis and applications

D 6 - skills linked to electronic items in simple electronic circuits

Applied

D7- design circles for some of the components and implementation skills

D8- skills of a process that achieved the theoretical side tests

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	Lectures + labs	1 Number Systems 1.1 Analogue Versus Digital 1.2 Introduction to Number Systems 1.3 Decimal Number System 1.4 Binary Number System 1.4.1 Advantages 1.5 Octal Number System 1.6 Hexadecimal Number System 1.7 Number Systems – Some Common Terms 1.7.1 Binary Number System 1.7.2 Decimal Number System 1.7.3 Octal Number System 1.7.4 Hexadecimal	Lectures + labs	Theoretical + Ppractical + Oral
2	4	Lectures + labs	2 Binary Codes Binary Coded Decimal 2.1.1 BCD-to-Binary Conversion 2.1.2 Binary-to-BCD Conversion 2.1.3 Higher-Density BCD Encoding 2.1.4 Packed and Unpacked BCD Numbers 2.2 Excess-3 Code 2.3 Gray Code 2.3.1 Binary–Gray Code Conversion 2.3.2 Gray Code–Binary Conversion 2.3.3 Gray Code	Lectures + labs	Theoretical + Ppractical + Oral
3	4	Lectures + labs	3 Digital Arithmetic 3.1 Basic Rules of Binary Addition and Subtraction 3.2 Addition of Larger-Bit Binary Numbers 3.2.1 Addition Using the 2’s Complement Method 3.3 Subtraction of Larger-Bit Binary Numbers 3.3.1 Subtraction Using 2’s Complement Arithmetic 3.4 BCD Addition and Subtraction in Excess-3 Code 3.4.1 Addition 3.4.2 Subtraction 3.5 Binary Multiplication 3.5.1 Repeated Left-Shift and Add Algorithm 3.5.2 Repeated Add and Right-Shift Algorithm 3.6 Binary Division 3.6.1 Repeated Right-Shift and Subtract Algorithm	Lectures + labs	Theoretical + Ppractical + Oral
4	4	Lectures + labs		Lectures + labs	Theoretical + Ppractical + Oral

			<p>4 Logic Gates and Related Devices</p> <p>4.1 Positive and Negative Logic</p> <p>4.2 Truth Table</p> <p>4.3 Logic Gates</p> <p>4.3.1 OR Gate</p> <p>4.3.2 AND Gate</p> <p>4.3.3 NOT Gate</p> <p>4.3.4 EXCLUSIVE-OR Gate</p> <p>4.3.5 NAND Gate</p> <p>4.3.6 NOR Gate</p> <p>4.3.7 EXCLUSIVE-NOR Gate</p> <p>4.3.8 INHIBIT Gate</p> <p>4.4 Universal Gates</p>		
5	4	Lectures + labs	<p>5-Logic Families</p> <p>Logic Families – Significance and Types</p> <p>5.1.1 Significance</p> <p>5.1.2 Types of Logic Family</p> <p>5.2 Characteristic Parameters 1</p> <p>5.3 Transistor Transistor Logic (TTL)</p>	Lectures + labs	Theoretical + Ppractical + Oral
6	4	Lectures + labs	<p>6-Boolean Algebra and Simplification Techniques</p> <p>6.1 Introduction to Boolean Algebra 189</p> <p>6.1.1 Variables, Literals and Terms in Boolean Expressions</p> <p>6.1.2 Equivalent and Complement of Boolean Expressions</p> <p>6.1.3 Dual of a Boolean Expression</p> <p>6.2 Postulates of Boolean Algebra</p> <p>6.3 Theorems of Boolean Algebra</p>	Lectures + labs	Theoretical + Ppractical + Oral
7	4	Lectures + labs	<p>7-Arithmetic Circuits</p> <p>7.1 Combinational Circuits</p> <p>7.2 Implementing Combinational Logic</p> <p>7.3 Arithmetic Circuits – Basic Building Blocks</p> <p>7.3.1 Half-Adder</p> <p>7.3.2 Full Adder</p> <p>7.3.3 Half-Subtractor</p> <p>7.3.4 Full Subtractor</p> <p>7.3.5 Controlled Inverter</p> <p>7.4 Adder–Subtractor 2</p>	Lectures + labs	Theoretical + Ppractical + Oral
8	4	Lectures + labs	<p>8-Multiplexers and Demultiplexers</p> <p>8.1 Multiplexer</p> <p>8.1.1 Inside the Multiplexer</p> <p>8.1.2 Implementing Boolean Functions with Multiplexers</p> <p>8.1.3 Multiplexers for Parallel-to-Serial Data Conversion</p> <p>8.1.4 Cascading Multiplexer Circuits 280</p> <p>8.2 Encoders</p> <p>8.2.1 Priority Encoder</p> <p>8.3 Demultiplexers and Decoders</p> <p>8.3.1 Implementing Boolean Functions with Decoders</p> <p>8.3.2 Cascading Decoder Circuits</p>	Lectures + labs	Theoretical + Ppractical + Oral

9	4	Lectures + labs	9-Programmable Logic Devices Fixed Logic Versus Programmable Logic 9.1.1 Advantages and Disadvantages 9.2 Programmable Logic Devices – An Overview	Lectures + labs	Theoretical + Ppractical + Oral
10	4	Lectures + labs	10-Flip-Flops and Related Devices 10.1 Multivibrator 10.1.1 Bistable Multivibrator 10.1.2 Schmitt Trigger 10.1.3 Monostable Multivibrator 10.1.4 Astable Multivibrator 10.2 Integrated Circuit (IC) Multivibrators 10.2.1 Digital IC-Based Monostable Multivibrator 10.2.2 IC Timer-Based Multivibrators 10.3 R-S Flip-Flop 10.3.1 R-S Flip-Flop with Active LOW Inputs 10.3.2 R-S Flip-Flop with Active HIGH Inputs 10.3.3 Clocked R-S Flip-Flop	Lectures + labs	Theoretical + Ppractical + Oral
11	4	Lectures + labs	10.7.1 J-K Flip-Flop as D Flip-Flop 10.7.2 D Latch 10.8 Synchronous and Asynchronous Inputs 10.9 Flip-Flop Timing Parameters	Lectures + labs	Theoretical + Ppractical + Oral
12	4	Lectures + labs	12-Counters and Registers 11.1 Ripple (Asynchronous) Counter 11.1.1 Propagation Delay in Ripple Counters 11.2 Synchronous Counter 11.3 Modulus of a Counter 11.4 Binary Ripple Counter – Operational Basics 11.4.1 Binary Ripple Counters with a Modulus of Less than 2N 11.4.2 Ripple Counters in IC Form	Lectures + labs	Theoretical + Ppractical + Oral
13	4	Lectures + labs	13-Counters and Registers Synchronous (or Parallel) Counters 11.6 UP/DOWN Counters 11.7 Decade and BCD Counters 11.8 Presetable Counters	Lectures + labs	Theoretical + Ppractical + Oral
14	4	Lectures + labs	14-Data Conversion Circuits – D/A and A/D Converters 12.1 Digital-to-Analogue Converters 12.1.1 Simple Resistive Divider Network for D/A Conversion 12.1.2 Binary Ladder Network for D/A Conversion 12.2 D/A Converter Specifications 12.2.1 Resolution 12.2.2 Accuracy 12.2.3 Conversion Speed or Settling Time 12.2.4 Dynamic Range	Lectures + labs	Theoretical + Ppractical + Oral
15	4	Lectures + labs	15-Data Conversion Circuits – D/A and A/D Converters Types of D/A Converter 12.3.1 Multiplying D/A Converters 12.3.2 Bipolar-Output D/A Converters 12.3.3 Companding D/A Converters Types of A/D Converter	Lectures + labs	Theoretical + Ppractical + Oral

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Textbooks
Special requirements (include for example workshops, periodicals, IT software, websites)	Scientific books from libraries
Community-based facilities (include for example, guest Lectures , internship , field studies)	Various online sources

13. Admissions	
Pre-requisites	One class
Minimum number of students	30
Maximum number of students	50

Safety precautions

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Technical Institution-Kut
2. University Department/Centre	Electric
3. Course title/code	Safety precautions
4. Programme(s) to which it contributes	Technical Diploma
5. Modes of Attendance offered	Seminar scheduled hours (4 hours)
6. Semester/Year	First year/ 2016-2017
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	12/11/2016
9. Aims of the Course	Public and private goal: to provide a clear and comprehensive occupational safety and methods of image protection to prevent incidents occurring during the work and minimize

10. Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

- A1. Introduce students to the causes of injury electricity
- A2. Introduce students to the types of electrical injuries
- A3. Introduce students on how to rescue the injured electricity (to rid the patient)
- A4. Introduce students to the artificial respiration process and treatment of burns
- A5. Introduce students to the necessary guidance on occupational health and safety
- A6 .Introduce students to the buildings that must be provided with fire alarm system
- A7- Introduce students to the personal protective clothing

B. Subject-specific skills

- B-1 - a practical experiments First Aid
- B-2 - to acquire the skill of the injured relief electricity (infected rid)
- B 3 - acquire the skill of an artificial respiration process and treatment of burns
- B4- acquire a knowledge of types of alarms when danger skill
- B5- acquire the skill to give guidance on occupational health and safety

Teaching and Learning Methods

Labs + workshops + scientific visits

Lectures + laboratory experiments + use and touching instrumentation + scientific films

Assessment methods

Theoretical + Ppractical + Oral + Written + debate

C. Thinking Skills

- C1. Homework (student exercises)
- C2. Theoretical lectures
- C3. Practical skills within the labs
- C4. Discussing in class

Teaching and Learning Methods

Lectures + practical + scientific films + Debates

Assessment methods

Theoretical (Written) + Ppractical + Oral + debate

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

D1- scientific films

D2- scientific visits

D3- infected relief electricity Skills (ridding the patient)

D4- artificial respiration and treatment of burns practical skills

D5- give guidance on occupational health and safety skills

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	Lectures + labs	Infection causes electrocution	Lectures + labs	Theoretical + Ppractical + Oral
2	4	Lectures + labs	Kinds of electrical injuries	Lectures + labs	Theoretical + Ppractical + Oral
3	4	Lectures + labs	Infected relief electricity - ridding the patient	Lectures + labs	Theoretical + Ppractical + Oral
4	4	Lectures + labs	Artificial respiration process - treatment of burns	Lectures + labs	Theoretical + Ppractical + Oral
5	4	Lectures + labs	Monthly exam	Lectures + labs	Theoretical + Ppractical + Oral
6	4	Lectures + labs	The effects of the passage of electric current to the ground	Lectures + labs	Theoretical + Ppractical + Oral
7	4	Lectures + labs	Fire Alarm Systems - Console	Lectures + labs	Theoretical + Ppractical + Oral
8	4	Lectures + labs	Fire detectors - Heat detectors - smoke detectors	Lectures + labs	Theoretical + Ppractical + Oral
9	4	Lectures + labs	Buildings that must be provided with fire alarm system	Lectures + labs	Theoretical + Ppractical + Oral
10	4	Lectures + labs	Monthly exam	Lectures + labs	Theoretical + Ppractical + Oral
11	4	Lectures + labs	Alarm modes Almsmhah and bells and trumpets	Lectures + labs	Theoretical + Ppractical + Oral

12	4	Lectures + labs	Guidance on occupational health and safety	Lectures + labs	Theoretical + Ppractical + Oral
13	4	Lectures + labs	Reduce unsafe behaviors and practices	Lectures + labs	Theoretical + Ppractical + Oral
14	4	Lectures + labs	Personal protective - protective equipment sight - and hearing protection	Lectures + labs	Theoretical + Ppractical + Oral
15	4	Lectures + labs	Personal protective clothing	Lectures + labs	Theoretical + Ppractical + Oral

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	كراسات مكتب العمل الدولي والمركز القومي للاستشارات والتطور الاداري - بغداد
Special requirements (include for example workshops, periodicals, IT software, websites)	موسوعة الامن الوطني / جامعة الدول العربية
Community-based facilities (include for example, guest Lectures , internship , field studies)	مجموعة كتب عن الصيانة/ المركز القومي للاستشارات والتطور الاداري/ بغداد
13. Admissions	
Pre-requisites	One class
Minimum number of students	30
Maximum number of students	50