Program Specification

A- Basic Information

Program Title				
Electrical Engineering and Computer Engineering BSc.				
Program Type	Single		**Category**	Undergraduate
Dept. Offering the Program	Electrical Engineering and Computers Engineering Department		**System**	Credit Hours
Units Required for Graduation	**205 units**		**Awarded Degree**	BSc. In Elec. Engineering &Comp. Engineering
Program Stages	**Preparatory Year (Level 0)**	**44 Units**	**Levels No.**	5 Levels
	Diploma (Level 1-2)	**82.5 Units**	**Semesters No.**	15 Semesters
	Bachelor (Level 2-3)	**78.5 Units**	**Academic Year**	**2019/2020**
Program Coordinator	**Dr. Omar Makarm Kamel**			
External Evaluator (s)	**Prof. Dr. Usam Sayd Mohamed** **Prof. Dr. Abo Hashema Mostafa**			
The most recent approval Date of program specification		**Dept. council**	**No. (2) 1/9/2019**	
		Academic council	**No. (11) 23/10/2019**	

B- Professional Information

1- Program Vision and Mission

The program's vision and mission are both originate from the vision and mission of El-Minia higher institute of engineering and technology.

The Vision	The Mission
The Electrical and Computers Engineering (EECE) program is looking forward to be distinguished locally and regionally by providing engineering program and scientific services aimed at developing and serving the community in accordance with international standards of total quality	The Electrical and Computers Engineering program (EECE) aims to graduate qualified with technical and practical skills which enable them to solve problems of electrical, electronics, communications, and computer Engineering and be able to appreciate, communicate, and integrate contributions from multiple engineering disciplines to address electrical and computer Engineering problems and to continue their studies in graduate programs.

Program aims
Upon successful completion of program, the graduate should be able to:
1. Apply knowledge of mathematics, basic sciences and engineering concepts and IT tools to the modeling of electrical and computer systems.
2. Analyze, design and evaluate a system, component and/or a process related to the electrical and computer systems to meet the required needs within realistic constraints.
3. Design and conduct experiments as well as analyze and interpret the resulting outcomes.
4. Identify, formulate and solve fundamental engineering problems using neat systematic analytical approaches or creative approaches specially when dealing with new technologies.
5. Use the techniques, skills, and appropriate engineering tools, necessary for engineering practice and project management considering tasks, time and resources. Design, launch and run new small business as well.
6. Work effectively within multi-disciplinary teams.
7. Communicate effectively orally and in written form and Engage in self- and life- long learning and able to refer to relevant literatures.
8. Consider the impacts of engineering solutions on society and environment, taking in consideration quality assurance, health and safety requirement to manage risks.
9. Describe current and contemporary technologies of electronic circuits and systems starting from design, design automation to integrated circuit fabrication.
10. Express professional and ethical responsibilities, and contextual understanding, taking in consideration humanitarian interests and moral issues.
11. Engage in self- and life- long learning and able to refer to relevant literatures.
12. Manipulate with the electronic circuits, all the way from the discrete components level, circuit analysis, design, evaluation, and troubleshooting using proper tools.
13. Use current advanced techniques, skills, and tools necessary for computing practices to specify, design, and implement computer-based systems...
14. Implementing phases of the computer system development life cycle, procurement and installation of hardware, software design, data manipulation and system operations.
14. Select and use proper analytical tools, or develop systems to generate, transmit, control and use electrical power energy.

2- Program Academic Standards (ARS)

The program has a special and distinguished nature, as it gathers many specialties in one highly featured program. The National Academic Reference Standards, NARS for engineering in general as well as electrical, electronics, communications and computer Engineering in specific are studied in order to extract the adopted Academic Reference Standard (ARS) for the program. These ARS were approved by the department council No. (1) in 21 / 10 / 2018 and the institute academic council No. (1) in 27 / 10 / 2018

3- EECE Graduate Attributes

Upon successful completion of program, the graduate should be able to:

A1. Apply knowledge of mathematics, science and engineering concepts to the solution of engineering problem.
A2. Design a system; component and process to meet the required needs within realistic constraints.
A3. Design and conduct experiments as well as analyzes and interpret data
A4. Identify, formulate and solve fundamental engineering problems.
A5. Use the techniques, skills, and appropriate engineering tools, necessary for engineering practice and project management.
A6. Work effectively within multi-disciplinary teams.
A7. Communicate effectively.
A8. Consider the impacts of engineering solutions on society and environment.
A9. Demonstrate knowledge of contemporary engineering issues.
A10. Display professional and ethical responsibilities; and contextual understanding
A11. Engage in self- and life- long learning.
A12. Manipulate with the electronic circuits, all the way from the discrete components level, circuits analysis and design, to the troubleshooting with emphasis on electronic power devices.
A13. Apply control theory and measurement principals for industrial variables, signal conversion, conditioning and processing.
A14. Design, operate and maintain digital and analog communication, mobile communication systems coding, and decoding systems
A15. Design and supervise the construction of systems to generate, transmit, control and use electrical power energy.

4- Program Aims in Relation to ARS Graduate Attributes

	ARS Graduate Attributes	Program Aims
Engineering	***Upon successful completion of program, the graduate should be able to:***	***Upon successful completion of program, the graduate should be able to:***
	A1. Apply knowledge of mathematics, science and engineering concepts to the solution of engineering problem.	1. Apply knowledge of mathematics, basic sciences and engineering concepts and IT tools to the modeling of electrical and computer systems.
	A2. Design a system; component and process to meet the required needs within realistic constraints.	2. Analyze, design and evaluate a system, component and/or a process related to the electrical and computer systems to meet the required needs within realistic constraints.
	A3. Design and conduct experiments as well as analyzes and interpret data	3. Design and conduct experiments as well as analyze and interpret the resulting outcomes.
	A4. Identify, formulate and solve fundamental engineering problems.	4. Identify, formulate and solve fundamental engineering problems using neat systematic analytical approaches or creative approaches specially when dealing with new technologies.
	A5. Use the techniques, skills, and appropriate engineering tools, necessary for engineering practice and project management.	5. Use the techniques, skills, and appropriate engineering tools, necessary for engineering practice and project management considering tasks, time and resources. Design, launch and run new small business as well.
	A6. Work effectively within multi-disciplinary teams.	6. Work effectively within multi-disciplinary teams.
	A7. Communicate effectively.	7. Communicate effectively orally and in written form
	A8. Consider the impacts of engineering solutions on society and environment.	8. Consider the impacts of engineering solutions on society and environment, taking in consideration quality assurance, health and safety requirement to manage risks.
	A9. Demonstrate knowledge of contemporary engineering issues.	9. Describe current and contemporary technologies of electronic circuits and systems starting from design, design automation to integrated circuit fabrication.
	A10. Display professional and ethical responsibilities; and contextual understanding	10. Express professional and ethical responsibilities, and contextual understanding, taking in

		consideration humanitarian interests and moral issues.
	A11. Engage in self- and life- long learning.	11. Engage in self- and life- long learning and able to refer to relevant literatures.
Elec. & Comp.	A12. Manipulate with the electronic circuits, all the way from the discrete components level, circuits analysis and design, to the troubleshooting with emphasis on electronic power devices.	12. Manipulate with the electronic circuits, all the way from the discrete components level, circuit analysis, design, evaluation, and troubleshooting using proper tools.
	A13. Apply control theory and measurement principals for industrial variables, signal conversion, conditioning and processing.	13. Apply control theory and measurement principles for industrial variables, signal conversion, conditioning and processing.
	A14. Design, operate and maintain digital and analog communication, mobile communication systems coding, and decoding systems	14. Implementing phases of the computer system development life cycle, procurement and installation of hardware, software design, data manipulation and system operations.
	A15. Design and supervise the construction of systems to generate, transmit, control and use electrical energy.	14. Select and use proper analytical tools, or develop systems to generate, transmit, control and use electrical power energy.

5- rogram Intended Learning Outcomes (ILOs)

Knowledge and Understanding
A1. Identify the concepts and theories of mathematics and sciences, appropriate to the EECE discipline.
A2. Recognize basic concepts of computer programming and techniques applied in computer communication networks related to ICT applications
A3. Describe the characteristics and atomic structure relevant to electrical engineering materials and electronic materials
A4. Explain principles of design including elements design, process and/or a system related to EECE disciplines.
A5. Identify suitable methodologies of solving engineering problems.
A6. Identify the standards, quality assurance systems, codes of practices, health and safety regulations, and environmental preservation precautions
A7. Recognize concepts of business management and computer tools relevant to management of EECE projects
A8. Be aware of current production technologies of electronic products and current technologies of Electrical and computer systems
A.9 Recognize topics related to humanitarian interests and moral issues.
A.10 Be aware of Terms of technical language and rules of writing reports in the EECE discipline
A.11 Recognize Engineering professional ethics and side effects of engineering solutions on society and environment
A.12 Identify the contemporary technologies of electronic components and technologies of Electrical and computer engineering system engineering
A.13 Identify the elementary science underlying electrical and computer engineering systems and information technology.
A.14 Identify principles of analyzing and designing of electrical and computer engineering systems, while considering the constraints of applying inappropriate technology and the needs of commercial risk evaluation
A.15 Identify Principles of analyzing and designing of Electric and electronic circuits and components with performance evaluation related to electrical and computer engineering.
A.16 Identify Principles of analyzing and designing of control systems with performance evaluation related to to electrical and computer engineering.
A.17 Acquire an understanding of basics of communication systems and related theories and applications
A.18 Acquire an understanding of the concepts, theories and principles of microwave engineering and its applications in communication systems
A.19 Describe concepts and theories of antenna design and utilization, as well as, various wave propagation mechanisms and applications
A.20 Acquire an understanding of engineering principles in the fields of logic design, machine and assembly languages, computer organization and architectures, memory hierarchy, advanced computer architectures, embedded systems, computer interface ,signal processing, operating systems, real-time systems and reliability analysis.
A.21 Identify modern trends in information technology and its fundamental role in business enterprises.
A.22 Identify fundamentals, theorems and techniques of computer networking, computer architectures and data security.
A.23 Recognize of technologies of data, image and graphics representation and organization on

computer storage media.
A.24 Be aware of appropriate tools to measure systems performances in the field of Electrical and computer engineering

Intellectual Skills

B1. Choose the proper mathematical model and /or the computer simulation tool for modeling and analyzing Electrical Engineering and computer engineering (EECE) problems.
B2. Select the proper analytical solution for EECE problems based on analytical thinking.
B3. Adopt creative thinking and innovative solutions to EECE problems, as well as, in component and processes.
B4. Evaluate, organize and utilize information and knowledge from different sources to construct a proper design or solution.
B5. Evaluate the performance of a component, system, or process based on its targeted characteristics.
B6. Troubleshooting and diagnosing the fallacies in a system, component or a process.
B7. Solve EECE problems within assumed given limited and contradicting conditions.
B8. Select appropriate information and communication technology tools to a variety of engineering problems.
B9. Evaluate various alternatives of EECE decisions to optimize costs, benefits, safety, quality, reliability, and environmental impact.
B10. Consider the applicability, economy, societal, environmental dimensions and risk management in design.
B11. Analyze the resultant outcomes of simulated models in studying EECE systems and justifies their limiting factors.
B12. Apply methodologies and disciplinary treatment when addressing newly and advancing technology.
B13. Develop innovative solutions for the practical EECE industrial problems.
B14. Organize the included topics of a technical report on a specific EECE project or assignment, writes and formats its contents clearly.
B15. Analyze the performance of digital and analog communication, communication networks, coding, and decoding systems.
B16. Analyze the performance of Electrical and electronic circuits.
B17. Select the appropriate mathematical tools, computing methods, design techniques for modeling and analyzing Electrical and computer systems.
B18. Evaluate various computer-based solutions to business system problems. Cost-benefit analysis should be performed especially in sensitive domains where direct and indirect costs are involved .emerging EECE technologies.
B.19 Adopt creative and innovative thinking based on computer controlled system in solving problems, and designing products.
B20. Analyze almost all types of electronic systems using the standard tools.

Practical and Professional Skills
C1. Use various areas of knowledge such as; mathematics, basic sciences, information technology, business, and engineering practices, to solve EECE problems
C2. Improve design, products and/or services via professionally merging various engineering knowledge, experience, and feedbacks
C3. Devise specialized engineering designs and/or re-designs a process, component or system.
C4. Apply the values of beautiful finishing and neat appearance of the designed Electrical and computer products
C5. Design engineering experiments using proper computational platforms, measuring instruments, workshop bench tests and lab equipment, as well as, collect, analyze and interpret resultant observed outcomes
C6. Create the required computer programs pertaining to the EECE discipline via utilizing various analytical tools, simulation techniques, measuring equipment, and proper software packages
C7. Use numerical modeling methods and/or appropriate computational techniques to solve EECE problems
C8. Deals with risk management at work and applying safety regulations
C9. Apply tools dedicated for project management and other organizational activities as well
C10. Apply standards, quality assurance manuals, and codes for proper engineering practices
C11. Cooperate with engineering community and industry via exchange knowledge and skills
C12. Compile proper technical reports and present them orally or in written forms.
C13. Use appropriate mathematical methods or specialized computer software, computational tools and design packages in solving Electrical and computer engineering problems.
C14. Utilize appropriate computer programming for the design and diagnostics of digital and analog communication systems.
C15. Use relevant laboratory equipment and analyze the results correctly.
C16. Use and repair almost all types of electrical and computer systems using the standard tools.
C17. Employ the appropriate specifications for required devices.
C18. Utilize appropriate devices and tools to measure the electric and computer systems performance and parameters.
C19. Write computer programs on professional levels achieving acceptable quality measures in software development.
C20. Organize tasks into structured form to be able to support activities.

General and Transferable Skills
D1. Lead and work in a multidisciplinary team.
D2. Work with limited or contradictory information.
D3. Communicate effectively using written, oral, graphical, and presentational skills.
D4. Clarify efficient IT capabilities
D5. Manage and motivate people.
D6. Maintain management of self/Time, flexibility to adapt to change, working under contradictory conditions and engage in long-life-self learning.
D7. Apply management of data and knowledge
D8. Search for information and engage in lifelong self-learning discipline.
D9. Acquire entrepreneurial skills.
D10. Refer effectively to relevant literature.

6- Contribution of NARS to Program ILOs

National Academic Reference Standards (NARS)		Program Intended Learning Outcomes (ILOs)
Knowledge and Understanding	***Upon successful completion of program, the graduate should have a knowledge and understanding of:***	***Upon successful completion of Elec. & Comp. program, the graduate should be able to:***
	A1. Concepts and theories of mathematics and sciences, appropriate to the discipline.	A1. Identify the concepts and theories of mathematics and sciences, appropriate to the EECE discipline.
	A2. Basics of information and communication technology (ICT)	A2. Recognize basic concepts of computer programming and techniques applied in computer communication networks related to ICT applications
	A3. Characteristics of engineering materials related to the discipline.	A3. Describe the characteristics and atomic structure relevant to electrical engineering materials and electronic materials
	A4. Principles of design including elements design, process and/or a system related to specific disciplines.	A4. Explain principles of design including elements design, process and/or a system related to EECE disciplines.
	A5. Methodologies of solving engineering problems, data collection and interpretation	A5. Identify suitable methodologies of solving engineering problems.
	A6. Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.	A6. Identify the standards, quality assurance systems, codes of practices, health and safety regulations, and environmental preservation precautions
	A7. Business and management principles relevant to engineering.	A7. Recognize concepts of business management and computer tools relevant to management of EECE projects
	A8. Current engineering technologies as related to disciplines.	A8. Be aware of current production technologies of electronic products and current technologies of Electrical and computer systems
	A9. Topics related to humanitarian interests and moral issues.	A.9 Recognize topics related to humanitarian interests and moral issues.
	A10. Technical language and report writing	A.10 Be aware of Terms of technical language and rules of writing reports in the EECE discipline
	A11. Professional ethics and impacts of engineering solutions on society and environment	A.11Recognize Engineering professional ethics and side effects of engineering solutions on society and environment
	A12. Contemporary engineering topics	A.12 Identify the contemporary technologies of electronic components

		and technologies of Electrical and computer engineering system engineering
Intellectual Skills	***Upon successful completion of program, the graduate should have the ability to:***	***Upon successful completion of Elec. & Comp. program, the graduate should be able to:***
	B1. Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	B1. Choose the proper mathematical model and /or the computer simulation tool for modeling and analyzing Electrical Engineering and computer engineering (EECE) problems.
	B2. Select appropriate solutions for engineering problems based on analytical thinking.	B2. Select the proper analytical solution for EECE problems based on analytical thinking.
	B3. Think in a creative and innovative way in problem solving and design.	B3. Adopt creative thinking and innovative solutions to EECE problems, as well as, in component and processes.
	B4. Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.	B4. Evaluate, organize and utilize information and knowledge from different sources to construct a proper design or solution.
	B5. Assess and evaluate the characteristics and performance of components, systems and processes.	B5. Evaluate the performance of a component, system, or process based on its targeted characteristics.
	B6. Investigate the failure of components, systems, and processes.	B6. Troubleshooting and diagnosing the fallacies in a system, component or a process.
	B7. Solve engineering problems, often on the basis of limited and possibly contradicting information.	B7. Solve EECE problems within assumed given limited and contradicting conditions.
	B8. Select and appraise appropriate ICT tools to a variety of engineering problems.	B8. Select appropriate information and communication technology tools to a variety of engineering problems.
	B9. Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.	B9. Evaluate various alternatives of EECE decisions to optimize costs, benefits, safety, quality, reliability, and environmental impact.
	B10. Incorporate economic, societal, environmental dimensions and risk management in design.	B10. Consider the applicability, economy, societal, environmental dimensions and risk management in design.
	B.11. Analyze results of numerical models and assess their limitations.	B11. Analyze the resultant outcomes of simulated models in studying EECE systems and justifies their limiting factors.
	B.12. Create systematic and methodic approaches when	B12. Apply methodologies and disciplinary treatment when addressing newly and

	dealing with new and advancing technology.	advancing technology.
Practical & Professional Skills	***Upon successful completion of program, the graduate should have the ability to:***	***Upon successful completion of Elec. & Comp. program, the graduate should be able to:***
	C1.Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	C1. Use various areas of knowledge such as; mathematics, basic sciences, information technology, business, and engineering practices, to solve ECE problems
	C2.Professionally merges the engineering knowledge, understanding, and feedback to improve design, products and/or services.	C2. Improve design, products and/or services via professionally merging various engineering knowledge, experience, and feedbacks
	C3.Create and/or re-design a process, component or system, and carry out specialized engineering designs.	C3.Devise specialized engineering designs and/or re-designs a process, component or system.
	C4.Practice the neatness and aesthetics in design and approach.	C4. Apply the values of beautiful finishing and neat appearance of the designed Electrical and computer products
	C5.Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.	C5. Design engineering experiments using proper computational platforms, measuring instruments, workshop bench tests and lab equipment, as well as, collect, analyze and interpret resultant observed outcomes
	C6.Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to communications engineering and develop required computer programs.	C6. Create the required computer programs pertaining to the EECE discipline via utilizing various analytical tools, simulation techniques, measuring equipment, and proper software packages
	C7.Apply numerical modeling methods to engineering problems.	C7. Use numerical modeling methods and/or appropriate computational techniques to solve EECE problems
	C8. Apply safe systems at work and observe the appropriate steps to manage risks.	C8. Deals with risk management at work and applying safety regulations
	C9.Demonstrate basic organizational and project management skills.	C9. Apply tools dedicated for project management and other organizational activities as well
	C10. Apply quality assurance procedures and follow codes and standards.	C10. Apply standards, quality assurance manuals, and codes for proper engineering practices

	C11. Exchange knowledge and skills with engineering community and industry.	C11. Cooperate with engineering community and industry via exchange knowledge and skills
	C12.Prepare and present technical reports.	C12. Compile proper technical reports and present them orally or in written forms.
General and Transferable Skills	***Upon successful completion of program, the graduate should have the ability to:***	***Upon successful completion of Elec. & Comp. program, the graduate should be able to:***
	D1. Collaborate effectively within a multidisciplinary team.	D1. Lead and work in a multidisciplinary team.
	D2. Work in stressful environment and within constraints.	D2. Work with limited or contradictory information.
	D3. Communicate effectively.	D3. Communicate effectively using written, oral, graphical, and presentational skills.
	D4. Demonstrate efficient IT capabilities.	D4. Clarify efficient IT capabilities
	D5. Lead and motivate individuals.	D5. Manage and motivate people.
	D6. Effectively manage tasks, time, and resources.	D6. Maintain management of self/Time, flexibility to adapt to change, working under contradictory conditions and engage in long-life-self learning. D7. Apply management of data and knowledge
	D7. Search for information and engage in lifelong self-learning discipline.	D8. Search for information and engage in lifelong self-learning discipline.
	D8. Acquire entrepreneurial skills.	D9. Acquire entrepreneurial skills.
	D9. Refer to relevant literatures.	D10. Refer effectively to relevant literature.

7- Curriculum Structure and Contents

7.1 Program duration:

The program duration is at least five academic years including 3 semesters per year with max. total number of 15 semesters. Each semester is 14 weeks long except summer one that can extend to only 8 weeks.

7.2 Program structure:

The program is based on credit-hours system where the credit hour (Cr-h) is the study measurement unit that equals one lecture hour or two practical / exercise hours in a weak within one semester.

Total Units of the program : 205 Units
Compulsory : 158 Units
Elective : 47 Units

The program has two stages in addition to the preparatory year (Diploma stage and Bachelor stage). In general, it consists of five levels over its all stages as follow:

Preparatory year = Level (0) = 44 Cr-h
Diploma stage = Level (1) + Level (2) = 82.5 Cr-h
Bachelor stage = Level (3) + Level (4) = 78.5 Cr-h

7. 3 Program Registration Rules:

- **The student can apply for 20 Cr-h in each first and second semesters of the academic year.**
- **The student can apply for two courses only with 7 Cr-h or less in the summer semester.**

7.4 Program gap analysis in Relation to NARS Subject Area

1- Humanities and Social Sciences							
Stage	**Level**	**No.**	**Course Title**	**Course Code**	**Category**	**No. of Unites**	
Preparatory Stage	**Level (0)**	1	**Technical Concepts**	**ENG 011**	**Mandatory**	**1**	
		2	**Civil Heritage**	**HUM 001**		**1**	
		3	**English Language (A)**	**LNG 001**		**1**	
		4	**English Language (B)**	**LNG 002**		**1**	
		5	**Physical Education And Activities (A)**	**PHE 001**		**0.5**	
		6	**Physical Education And Activities (B)**	**PHE 002**		**0.5**	
Diploma Stage	**Level (1)**	**7**	**Engineering Economy**	**ENG 151**	**Mandatory**	**1**	
		8	**English Language (C)**	**LNG 101**		**1**	
		9	**Principles Of management**	**MNG 101**		**1**	
		10	**Physical Education And Activities (C)**	**PHE 101**		**0.5**	
	Level (2)	**11**	**Physical Education And Activities (D)**	**PHE 102**		**0.5**	
		12	**Physical Education And Activities (E)**	**PHE 103**		**0.5**	
	For Level 1-2	**13**	**Modern Egyptian History**	**HUM 102**	**Elective**	**1**	**required only *(3 units)***
		14	**Islamic Civilization**	**HUM 103**		**1**	
		15	**Arabic Literature**	**HUM 104**		**1**	
		16	**Technical English (1)**	**LNG 102**		**1**	
		17	**Germany Language (A)**	**LNG 103**		**1**	
		18	**French Language (A)**	**LNG 104**		**1**	

1- Humanities and Social Sciences							
Stage	**Level**	**No.**	**Course Title**	**Course Code**	**Category**	**No. of Unites**	
BSc. Stage	**Level (3)**	19	**Project Management**	**MNG 201**	**Mandatory**	**1**	
		20	**English (D)**	**LNG 201**		**1**	
		21	**Physical Education and activities (I)**	**PHE 201**		**o.5**	
		22	**Physical Education And activities (II)**	**PHE 202**		**0.5**	
		23	**Physical Education And activities (III)**	**PHE 203**		**0.5**	
	For Level 3-4	**24**	**English literature**	**HUM 202**	**Elective**	**1**	**required only *(7 units)***
		25	**Trade Law**	**HUM 203**		**1**	
		26	**Industrial Phycology**	**HUM 204**		**1**	
		27	**Islamic Civilization (II)**	**HUM 205**		**1**	
		28	**Islamic Studies**	**HUM 206**		**1**	
		29	**Technical English (2)**	**LNG 202**		**1**	
		30	**Germany Language (B)**	**LNG 203**		**1**	
		31	**French Language (B)**	**LNG 204**		**1**	
		32	**Engineering Economy (lI)**	**MNG 221**		**1**	
		33	**Behavior Discipline**	**MNG 222**		**1**	
		34	**Economics Of management**	**MNG 223**		**1**	

Total Unites for Humanities and Social Sciences	23 unites
Standard percentage for Humanities and Social Sciences	(Tolerance 9-12%)
Actual percentage	11.22 %

2- Mathematics and Basic Sciences							
Stage	**Level**	**No**	**Course Title**	**Course Code**	**Category**	**No. of Unites**	
Preparatory Stage	**Level (0)**	**1**	**Mechanics (1)**	**ENG 021**	**Mandatory**	**2**	
		2	**Mechanics (2)**	**ENG 022**		**2**	
		3	**Mathematics (1)**	**MTH 001**		**3**	
		4	**Mathematics (2)**	**MTH 002**		**3**	
		5	**Physics (A)**	**PHY 001**		**3**	
		6	**Physics (B)**	**PHY 002**		**3**	
		7	**Intro. to Computer**	**CS 001**		**1**	
		8	**Computer. Prog.(A)**	**CS 002**		**2**	
Diploma stage	**Level (1)**	**9**	**Mathematics (C)**	**MTH 101**	**Mandatory**	**3**	
		10	**Physics (C)**	**PHY 106**		**2**	
	For Level 1-2	**11**	**Mathematics (D)**	**MTH 102**	**Elective (Basic)**	**3**	**required only *(6 units)***
		12	**Numerical Methods**	**MTH 103**		**3**	
		13	**Mechanics (3)**	**ENG 121**		**3**	
		14	**Statistical Methods**	**MTH 105**		**2**	
B. Sc. stage	**Level (3)**	**15**	**Mathematical Analysis**	**MTH 205**	**Mandatory**	**3**	
		16	**Advanced Calculus**	**MTH 206**		**3**	
	For Level 3-4	**17**	**Numerical Solution of differential Equations**	**MTH 207**	**Elective (Basic)**	**3**	**required only *(4 units)***
		18	**Selected Topics In mathematics**	**MTH 210**		**3**	
		19	**Solid State Physics**	**PHY 211**		**3**	

Total Unites for Mathematics and Basic Sciences	40
Standard percentage for Mathematics and Basic Sciences	(Tolerance 20-26%)
Actual percentage	19.51 %

3- Basic Engineering Sciences							
Stage	**Level**	**No**	**Course Title**	**Course Code**	**Category**	**No. of Unites**	
Preparatory stage	**Level (0)**	**1**	**Industrial Chemistry**	**CHM 001**	**Mandatory**	**2**	
		2	**Eng. Drawing (A)**	**ENG 003**		**2**	
		3	**Eng. Drawing (B)**	**ENG 004**		**2**	
		4	**Prod. Tech. (A)**	**ENG 005**		**3**	
		5	**Prod. Tech. (B)**	**ENG 006**		**3**	
Diploma Stage	**Level (1)**	**6**	**Electrical Circuits**	**EET 113**	**Mandatory**	**3**	
		7	**Electronic Components**	**EET 114**		**3**	
		8	**Electronic Circuits**	**EEC 117**		**3**	
		9	**Electrical Measurements**	**EEI 118**		**3**	
	Level (2)	**10**	**Analog Control Systems**	**EEC 163**		**2**	
		11	**Digital Control Systems**	**EEC 161**		**2**	
	For Level 1-2	**12**	**Electromagnetic Fields (A)**	**EET 111**	**Elective (Engineering)**	**3**	**required only *(8 units)***
		13	**Electromagnetic Field (B)**	**EET 112**		**3**	
		14	**Electrical Machines**	**EEI 170**		**2**	
		15	**Control Lab (1)**	**EEL 176**		**1**	
		16	**File Organization**	**EEC 112**		**2**	
		17	**Software Engineering**	**EEC 115**		**2**	
B. Sc. Stage	**Level (3)**	**18**	**System Analysis**	**EET 204**	**Mandatory**	**3**	
	For Level 3-4	**19**	**Communication (2)**	**EET 240**	**Elective (Engineering)**	**3**	**required only *(10 units)***
		20	**Theory of sampling**	**EET 244**		**2**	
		21	**Shaping Circuits**	**EEC 242**		**3**	
		22	**Advanced Microprocessors**	**EEC 209**		**2**	
		23	**Sampled Data Systems**	**EET 207**		**3**	
		24	**Computer system analysis**	**EEC 202**		**2**	

Total Unites for Basic Engineering Sciences	49 unit
Standard percentage for Basic Engineering Sciences	21% (tolerance 20-23%)
Actual Percentage	23.9 %

4- Applied Engineering and Design							
Stage	**Level**	**No**	**Course Title**	**Course Code**	**Category**	**No. of Unites**	
Preparatory stage	**Level (0)**	**1**	**Chemistry Laboratory**	**CHM 002**	**Mandatory**	**1**	
		2	**Workshop (A)**	**ENG 009**		**1**	
		3	**Workshop (B)**	**ENG 010**		**1**	
Diploma stage	**Level (1)**	**4**	**Electrical Engineering Lab (1)**	**EEL 121**	**Mandatory**	**1**	
		5	**Logic Circuit (1)**	**EEC 110**		**2**	
	Level (2)	**6**	**Control System Components**	**EEI 120**		**3**	
		7	**Transmission Lines**	**EET 162**		**2**	
		8	**Electronic Engineering Lab (2)**	**EEL 122**		**1**	
		9	**Industrial Process Control**	**EEI 164**		**2**	
		10	**Communication Systems**	**EET 139**		**3**	
	For Level (1-2)	**11**	**Network Analysis**	**EEC 193**	**Elective (Technology)**	**3**	**required only *(6 units)***
		12	**Computer Aided Design**	**EEC 194**		**2**	
		13	**Electronic Lab (c)**	**EEL 187**		**1**	
		14	**Industrial Safety**	**EEI 182**		**2**	
		15	**Industrial Systems**	**EEI 137**		**3**	
		16	**Technical Calculations**	**EEI 183**		**2**	
		17	**Advanced Electronic Circuits**	**EEI 184**		**3**	
		18	**Non-Electrical Measurements**	**EEI 185**		**3**	
		19	**Control Lab (2)**	**EEL 182**		**1**	
		20	**Industrial Electronics (2)**	**EEI 192**		**3**	
		21	**Logic Circuits**	**EEI 186**		**2**	
		22	**Engineering Graphics (C)**	**ENG 111**		**1**	

4 - Applied Engineering and Design						
Stage	**Level**	**No**	**Course Title**	**Course Code**	**Category**	**No. of Unites**
B. Sc. stage	**Level (3)**	**23**	**Wave Shaping Circuits**	**EET 232**	**Mandatory**	**3**
		24	**Switching Circuits**	**EET 205**		**3**
		25	**Communication (1)**	**EET 208**		**3**
		26	**Organization of microprocessor**	**EEC 201**		**2**
	Level(4)	**27**	**Antenna and wave propagation**	**EET 237**		**3**
		28	**Advanced Industrial Electronics**	**EEC 222**		**3**
		29	**Advanced electronic lab**	**EEL 212**		**1**
		30	**Communication laboratory**	**EEL 235**		**1**

Total Unites for Applied Engineering and Design	**42**
Standard percentage for Applied Engineering and Design	**(Tolerance 20-22%)**
Actual Percentage	**20.49 %**

5- Computer Applications and ICT							
Stage	**Level**	**No**	**Course Title**	**Course Code**	**Category**	**No. of Unites**	
Diploma stage	**Level(1)**	**1**	**Introduction to microprocessor**	**EEC 116**	**Mandatory**	**2**	
		2	**Advanced Programming (A)**	**EEC 130**		**2**	
		3	**Data structures**	**EEC 111**		**2**	
B. Sc. stage	**Level (3)**	**4**	**Computer Graphics**	**EEC 220**	**Mandatory**	**2**	
		5	**Computer Interfacing**	**EEC 230**		**2**	
	Level (4)	**6**	**Computer Networks**	**EEC 210**		**2**	
		7	**Operating systems**	**EEC 203**		**2**	
	For Level 3-4	**8**	**Computer Applications**	**EEC 221**	**Elective (Technology)**	**2**	**required only *(6 units)***
		9	**Computers In Communications**	**EET 271**		**3**	
		10	**Computers In Industry**	**EEI 260**		**3**	
		11	**Introduction To Database**	**EEC 223**		**2**	
		12	**Artificial Intelligence.**	**EEC 225**		**2**	
		13	**Compiler Design**	**EEC 224**		**3**	
		14	**Practical Training (4)**	**EEP 202**		**1**	
		15	**Logic Circuits (2)**	**EEI 250**		**3**	
		16	**Stochastic Control**	**EEI 231**		**3**	

Total Unites for Computer Applications and ICT	17
Standard percentage for Computer Applications and ICT	(Tolerance 9-11%)
Actual Percentage	8.29 %

6- Projects and Practice						
Stage	**Level**	**No**	**Course Title**	**Course Code**	**Category**	**No. of Unites**
Preparatory Stage	**Level (0)**	**1**	**Intro. Indus. Training**	**ITR 001**	**Mandatory**	**5**
Diploma stage	**Level (1)**	**2**	**Practical Training (1)**	**EEI 132**		**2**
		3	**Industrial Training (1)**	**ITR 101**		**5**
	Level (2)	**4**	**Practical Training (2)**	**EEI 133**		**2**
B. Sc. Stage	**Level (3)**	**5**	**Practical Training (3)**	**EEP 233**		**2**
	Level (4)	**6**	**Graduation Project**	**EEP 234**		**3**

Total Unites for Projects and Practice	**19**
Standard percentage for Projects and Practice	**(Tolerance 8-10%)**
Actual Percentage	**9.27 %**

7- Discretionary Subjects						
Stage	**Level**	**No**	**Course Title**	**Course Code**	**Category**	**No. of Unites**
Diploma Stage	**Level (2)**	**1**	**Industrial Training (2)**	**ITR 102**	**Mandatory**	**5**
B.Sc Stage	**Level (3)**	**2**	**Industrial Training (3)**	**ITR 201**		**5**
	Level (4)	**3**	**Industrial Training (4)**	**ITR 202**		**5**

Total Unites for Discretionary Subjects	15
Standard percentage for Discretionary Subjects	(Tolerance 6 - 8%)
Actual Percentage	**7.32** %

7.5 Indicative Curricula Content by Subject Area in Relation to NARS Subject Tolerance

	Subject Areas	Percentage of existing	Tolerance (NARS) %
1	Humanities and Social Sciences (Univ. Req.)	11.22%	9 –12 %
2	Mathematics and Basic Sciences	19.51%	20 –26 %
3	Basic Engineering Sciences (Faculty/Spec. Req.)	23.90%	20 –23 %
4	Applied Engineering and Design	20.49%	20 –22 %
5	Computer Applications and ICT	8.29%	9 –11 %
6	Projects and Practice	9.27%	8 –10 %
Subtotal		92.68%	92-94%
7	Discretionary (Institution character-identifying) subjects	7.32%	6-8%
	Total	100.00%	100%

The analysis shows that there is a defect in NARs tolerance range in Mathematics and Basic Sciences by -0.51%, Basic Engineering Sciences by +0.9%, and Computer Applications and ICT by -0.71. The academic council recommended updating the program bylaw to be matched with NARS tolerance.

8- Courses Contributing to the Program:

8-1 Preparatory Year: Level (0)

Code	*Course Title*	Weekly hours					Program ILOs covered by course
		Lect.	Exc.	Lab	Total	Total Cr-h	
CHM 001	Industrial Chemistry	2	0	0	2	2	A1,A3,A8,B5
CHM 002	Chemistry Laboratory	0	0	3	3	1	A3,A5, B7, C5
CS 001	Intro. to Computer	0	0	2	2	1	A2,A8,B8,D4
CS 002	Comp. Prog.(A)	1	0	2	3	2	A1,A5,B1,B8,C6
ENG 003	Eng. Drawing (A)	1	0	4	5	2	A4,B3,B4,C2
ENG 004	Eng. Drawing (B)	1	0	4	5	2	A4,B3,B4,C2
ENG 005	Prod. Tech. (A)	2	2	0	4	3	A3, A8, A12, B3
ENG 006	Prod. Tech. (B)	2	2	0	4	3	A3,A8,A12,B6,C5
ENG 009	Workshop (A)	0	0	6	6	1	A3,A5,B3
ENG 010	Workshop (B)	0	0	6	6	1	A5,B3,B9
ENG 011	Technical Concepts	2	0	0	2	1	A7,A8,A11,B10
ENG 021	Mechanices (A)	2	2	0	4	2	A1, A4, A5, B3
ENG 022	Mechanices (B)	2	2	0	4	2	A4, A5, A8, B2, B5
HUM 001	Civil Heritage	2	0	0	2	1	A9,A11,D9
ITR 001	Intro. Indus. Training	0	0	30	30	5	A2,A3,A4,A10,B10,C11,D2
LNG 001	Eng. Lang. (A)	0	0	3	3	1	A9,A10,D3
LNG 002	Eng. Lang. (B)	0	0	3	3	1	A9,A10,D3
MTH 001	Mathematics (A)	2	2	0	4	3	A1,A5,B1,B3
MTH 002	Mathematics (B)	2	2	0	4	3	A1,A5,B1,B3
PHE 001	Phys. Educ. & Activ. (A)	0	0	3	3	0.5	A9,A11,D1
PHE 002	Phys. Educ. & Activ. (B)	0	0	3	3	0.5	A9,A11,D1
PHY 001	Physics (A)	2	0	3	5	3	A1,A3,A7,B7
PHY 002	Physics (B)	3	0	2	5	3	A1,A3,A7,B7
Total Weekly Hours		26	12	74	112	44	

8-2 Diploma Stage Core Courses (Mandatory): Level (1)

Code	*Course Title*	Weekly hours					Program ILOs covered by course
		Lect.	Exc.	Lab	Total	Total Cr-h	
MTH 101	Mathematics (C)	2	2	-	4	3	A5-B1-B2-C1
PHY 106	Physics (C)	2	1	-	3	2	A5-B2-B3-B5
EEC 110	Logic Circuit (1)	2	-	-	2	2	A4-A12-A20-B3-B5-B15-D4
EEL 121	Electrical Engineering Lab(1)	-	-	3	3	1	A12-A24-B5-B6-B16-C2-C5-C15-C18-D1-D7
EET 113	Electrical Circuits	2	2	-	4	3	A4-A13-A15-B2-B7-B16-B17-C7-C13
EET 114	Electronic Components	2	2	-	4	3	A3-A4-A8-A12-A15-B5-B6-B16-B20-C3-C17-D8
ENG 151	Engineering Economy	1	-	-	1	1	A1-A9-B1-C9-D6
LNG 101	English (C)	1	1	-	2	1	A9-A10--B4-D3
EEC 130	Advanced Programming (A)	1	-	2	3	2	A2-A20-B1-C6-C14-C19-D4
PHE 101	Physical Edu.& Activities (C)	-	-	1	1	0.5	A9-B4-C11-D1
EEC 111	Data structures	2	-	-	2	2	A20-A22-A24-B17-B20-C20-D4-D7
EEC 116	Introduction to microprocessor	2	-	-	2	2	A20-A22-C3-C14-D4
EEC 117	Electronic Circuits	2	2	-	4	3	A4-A5-A15-B5-B16-B20-C2-C3-C14
EEI 118	Electrical Measurements	2	2	-	4	3	A14-A24-B5-B6-B16-C5-C15-C18
MNG 101	Principles Of management	1	-	-	1	1	A7-A11-B3-C8-D5-D6
EEI 132	Practical Training (1)	1	-	2	3	2	A5-A24-B2-B3-B6-B9-B14-C8-C10-C15-C19-D9
ITR 101	Industrial Training (1)	-	-	30	30	5	A6-A8-A16-B6-B13-B14-C8-C11-C12-C17-D1-D3
Total Weekly Hours		23	12	38	73	36.5	

8-3 Diploma Stage Core Courses (Mandatory): Level (2)

Code	*Course Title*	Weekly hours					Program ILOs covered by course
		Lect.	Exc.	Lab	Total	Total Cr-h	
EEC 163	Analog Control Systems	2	-	-	2	3	A4-A16-A20-B1-B3-B13-C3-C7-D8
EEI 120	Control System Components	2	2	-	4	3	A5-A12-A15-A16-A20-B3-B5-B6-B13-C5-C17
EEL 122	Electronic Engineering Lab. 2	-	-	-	3	1	A10-A12-A15-A24-B5-B6-B16-B20-C5-C15-C16-D1-D1-D10
EET 162	Transmission Lines	2	-	-	2	2	A17-A18-A19-B5-B15-C6
EEI 133	Practical Training (2)	1	-	2	3	2	A5-A24-B2-B3-B6-B9-B14-C8-C10-C15-C19-D1-D9
PHE 102	Physical Education And Activities (D)	-	-	1	1	0.5	A9-B5-D1-D3
EEC 161	Digital Control Systems	2	-	-	2	2	A4-A16-A20-A24-B1-B2-B3-B13-C3-C7-D8
EEI 164	Industrial Process Control	2	-	-	2	2	A4-A5-A16-A20-B3-B4-B11-B19-C6-C17-D2
EET 139	Communication Systems	2	2	-	4	3	A2-A12-A17-A18-A19-B5-B15-C7-C14-D4
PHE 103	Physical Education And activities (e)	-	-	1	1	0.5	A9-C3-D3
ITR 102	Industrial Training (2)	-	-	30	30	5	A6-A8-A16-B6-B13-B14-C8-C11-C12-C17-D1-D3-D9
Total Weekly Hours		13	4	34	54	24	

8-4 Diploma Stage Elective Courses*: Level (1&2)

Code	Course Title	Weekly hours					Program ILOs covered by course
		Lect.	Exc.	Lab	Total	Total Cr-h	
MTH 102	Mathematics (D)	2	2	-	4	3	A5-B1-B2-C1
MTH 103	Numerical Techniques	2	2	-	4	3	A1-A5-B1-C1-C7
MTH 105	Statistical Techniques	2	1	-	3	2	A1-A5-B1-C7
ENG 121	Mechanics 3	2	2	-	4	3	A5-A8-B3-B4-B5-B7-C1-C5
EEC 112	File Organization	2	-	-	2	2	A2-A7-B3-B4-B5-B7-C1-C5
EET 111	Electromagnetic Fields (A)	2	2	-	4	3	A1-A5-A18-A19-B2-B7-B20-C7-D8
EEI 170	Electrical Machines	2	-	-	2	2	A4-A15-B2-B3-B5-B16-C5-C17-C18-D2
EEC 115	Software Engineering	2	-	-	2	2	A2-A20-A22-B1-B8-C6-C13-C14-C19-D4
EEL 176	Control Lab (1)	-	-	3	3	1	A16-B19-C2-C15-D7
EET 112	Electromagnetic Field (B)	2	2	-	4	3	A1-A5-A18-A19-B2-B7-B20-C7-D8
EEC 193	Network Analysis	2	2	-	4	3	A2-A12-A13-A14-A21-A22-A23-B2-B15-B19-C20-D4-D7
EEI 186	Logic Circuits	2	-	-	2	2	A4-A8-A12-A14-A20-A22-B5-C2-C18-D4
EEL 187	Electronic Lab (c)	-	-	3	3	1	A10-A24-B5-B6-B16-B20-C15-C16-C18-D1-D8-D10
EEI 183	Technical Calculations	2	-	-	2	2	A7-B10-B18-D7
EEI 184	Advanced Electronic Circuits	2	2	-	4	3	A4-A12-A15-B5-B16-B20
EEI 185	Non-Electrical Measurements	2	2	-	4	3	A16-B4-B5-B6-C2-C5
EEI 192	Industrial Electronics (2)	2	2	-	4	3	A15-A16-A20-B5-B13-B16-C3
EEL 182	Control Lab (2)	-	-	3	3	1	A16-A20-B19-C2-C15-D7
EEI 137	Industrial Systems	2	2	-	4	3	A6-A16-A20-A24-B9-B15-B19-C8-C11
EEC 194	Computer Aided Design	2	-	-	2	2	A2-A4-A15-A20-A22-B12-C2-C6-C14-C19-D4
ENG 111	Engineering Graphics (C)	-	3	-	3	1	A4-A8-B2-B3-C3-C4-D6
EEI 182	Industrial Safety	2	-	-	2	2	A6-A9-A11-A14-B7-B9-B10-C8-C11-C20-D1-D2-D5
HUM 102	Modern Egyptian History	1	-	-	1	1	A12-B9-C10-C11-D8
HUM 103	Islamic Civilization	1	-	-	1	1	A11-B4-C11-D8
HUM 104	Arabic Literature	1	-	-	1	1	A10-A12-B4-C12
LNG 104	French Language (A)	1	-	-	1	1	A9-A10-B4-C12
LNG 103	German Language (A)	1	-	-	1	1	A9-A10-B4-C12
LNG 102	Technical English (1)	1	-	-	1	1	A9-A10-A12-B4-B9-C12-D3
Total Weekly Hours		42	24	9	75	56	

**** Note: The student should select any number of courses in diploma stage with maximum 23 units through levels 1&2***

8-5 Bachelor Stage Core Courses (Mandatory): Level (3)

Code	*Course Title*	Weekly hours					Program ILOs covered by course
		Lect.	Exc.	Lab	Total	Total Cr-h	
MTH 205	Mathematical Analysis	2	2	-	4	3	A1-A5-A13-B1-B2-B3-B4-B7-B12-B17-C1-C13
EET 205	Switching Circuits	2	2	-	4	3	A4+A8+A12+A15+A17+B5+B16+C2+C3
EEC 201	Organization of microprocessor	2	-	-	2	2	A2+A20+A23+B3+B19-C3-C6-C13-C19-D4
EET 204	System Analysis	2	2	-	4	3	A1-A5-A14-A20-B5-B11-B17-C3-C7
MNG 201	Project Management	1	-	-	1	1	A7-A9-B3-B9-B10-C8-C9-C11-D6-D8
PHE 201	Physical Education and activities (1)	-	-	1	1	0.5	A6-A9-C8-C9-C20-D1-D5-D9
MTH 206	Advanced Calculus	2	2	-	4	3	A1-A4-A5-A13-B1-B2-B4-B7-B11-B16-B17-C1-C13-D4
EET 208	Communication (1)	2	2	-	4	3	A12-A17-A18-A19-A20-B3-B15-B20-C18-D8
EET 232	Wave Shaping Circuits	2	2	-	4	3	A4-A12-A15-A17-A18-B2-B16-C13-D8
EEC 230	Computer Interfacing	2	-	-	2	2	A2-A12-A13-A20-A22-B12-B15-B19-C13-C19-D4
EEC 220	Computer Graphics	2	-	-	2	2	A23-B17-C13-D3-D4
EEP 233	Practical Training (3)	1	-	2	3	2	A5-A15-A22-A24-B6-B9-B12-B14-B18-C4-C8-C10-C19-D9
LNG 201	English (D)	1	1	-	2	1	A10-A20-B14-C10-C12-C16-C17-C20-D3-D4-D10
PHE 202	Physical Education And activities (ii)	-	-	1	1	0.5	A6-A9-C8-C9-C20-D1-D5-D9
ITR 201	Industrial Training (3)	-	-	30	30	5	A6-A8-A16-A21-B6-B12-B13-B14-C8-C11-C16-D1-D5-D7
Total Weekly Hours		21	13	34	68	34	

8-6 Bachelor Stage Core Courses (Mandatory): Level (4)

Code	*Course Title*	Weekly hours					Program ILOs covered by course
		Lect.	Exc.	Lab	Total	Total Cr-h	
EET 237	Antenna and wave propagation	2	2	-	4	3	A1-A18-A19-B5-B15-C1-C7-D8
EEC 203	Operating systems	2	-	-	2	2	A2-A13-A20-A22-A23-B8-B17-C6-C13-C14-C19-D4
EEC 222	Advanced Industrial Electronics	2	2	-	4	3	A8-B12-B13-C2-C17-D8
EEL 212	Advanced electronic lab	-	-	3	3	1	A8-A12-A24-B5-B6-B16-B20-C5-C15-C16-C18-D1-D8
EEC 210	Computer Networks	2	-	-	2	2	A2-A12-A13-A14-A21-A22-A23-B2-B15-B19-C19-C20-D4-D7
EEP 234	Graduation Project	-	2	5	7	3	A10-A14-B6-B9-B12-B14-B18-C2-C3-C11-C14-C15-C16-C19-D1-D2-D3-D4-D5-D8
EEL 235	Communication laboratory	-	-	3	3	1	A8-A10-A12-A24-B5-B6-B16-B20-C5-C15-C16-C17-C18-D1-D4-D7-D8-D10
PHE 203	Physical Education And activities (iii)	-	-	1	1	0.5	A6-A9-C7-C8-C20-D1-D5-D9
ITR 202	Industrial Training (4)	-	-	30	30	5	A6-A8-B6-B13-B14-C8-C11-C16-D1-D3-D6-D8
Total Weekly Hours		8	6	42	56	20.5	

8-7 Bachelor Stage Elective Courses*: Level (3&4)

Code	*Course Title*	Weekly hours					Program ILOs covered by course
		Lect.	Exc.	Lab	Total	Total Cr-h	
MTH 207	Numerical Solution of differential Equations	2	2	-	4	3	A1-A5-A13-B1-B7-B11-B17-C1-C13
MTH 210	Selected Topics In mathematics	2	2	-	4	3	A1-A5-A13-B1-B4-B7-B11-B17-C1-C13
PHY 211	Solid State Physics	2	2	-	4	3	A1-A3-A4-A6-B2-B7-B10-C1-D3
EET 240	Communication (2)	2	2	-	4	3	A12-A17-A18-A19-A20-B3-B15-B20-C18-D8
EET 244	Theory of sampling	2	-	-	2	2	A1-A14-A17-A20-B15-B16-C2-C3-C13-C18-D4
EEC 242	Shaping Circuits	2	2	-	4	3	A4-A8-A12-A15-A17-B5-B16-C2-C3
EEC 209	Advanced Microprocessors	2	-	-	2	2	A2-A20-A22-C3-C14-D4
EEC 202	Computer system analysis	2	-	-	2	2	A20-A24-B5-B11-C3-C18-D4
MNG 222	Behavior Discipline	1	-		1	1	A6-A7-A9-B9-B10-C8-C10-D1-D2-D3-D5-D6
EET 207	Sampled Data Systems	2	2	-	4	3	A1-A5-A14-A20-A24-B3-B5-B11-B17-B20-C3-C7-C18
EEI 260	Computers In Industry	2	2	-	4	3	A5-A14-A20-A21-B18-C3-C13-C14-D4-D7
EEI 250	Logic Circuits (2)	2	2	-	4	3	A4-A12-A20-B3-B5-B15-D4
EET 271	Computers In Communications	2	2	-	4	3	A20-B15-C3-C13-D4
EEC 223	Introduction To Database	2	-	-	2	2	A2-A7-A24-B2-B7-B20-C12-C20-D4-D7
EEC 225	Artificial Intelligence.	2	-	-	2	2	A2-A12-A13-A20-A22-B12-B15-B19-C13-C19-D4
EEC 221	Computer Applications	2	-	-	2	2	A2-A7-B9-B18-B19-C6-C13-C14-C19-D4
EEC 224	Compiler Design	2	-	2	4	3	A2-A20-C13-C19-C20
EEP 202	Practical Training (4)	1	-	1	2	1	A5-A15-A22-A24-B6-B9-B12-B14-B18-C4-C8-C10-C19-D9
EEI 231	Stochastic Control	2	-	2	4	3	A1-A13-A16-B1-B17-C1-C7-C13
HUM 205	Islamic Civilization (ii)	1	-	-	1	1	A12-B4-D8
MNG 223	Economics Of management	1	-	-	1	1	A9-B9-B10-C9-C11
HUM 204	Industrial Physiology	1	-	-	1	1	A9-A11-B7-C8-C10
HUM 202	English literature	1	-	-	1	1	A11-A13-B4-C12
HUM 206	Islamic Studies	1	-	-	1	1	A11-A13-B4-D8
HUM 203	Trade Law	1	-	-	1	1	A7-A10-B8-B9-C12
LNG 202	Technical English (2)	1	-	-	1	1	A9-A20-B14-C10-C12-C16-C17-C20-D3-D4-D10
LNG 203	German Language (B)	1	-	-	1	1	A9-A10-B4-C12
LNG 204	French Language (B)	1	-	-	1	1	A9-A10-B4-C12
MNG 221	Engineering Economy (2)	1	-	-	1	1	A7-A11-B9-B10-C9-C11-D5-D6-D8
Total Weekly Hours		38	18	5	55	47	

**** Note: The student should select any number of courses in diploma stage with maximum 24 units through levels 3&4***

9- Courses Contents:

Code	Course title	Contents
Preparatory Year – Level (0)		
CHM 001	Industrial Chemistry	Kinetic molecular theory of gases, ideal gases. Boyle's law, Charlie's law, Avogadrro's law, ideal gas equation, some useful forms derived from ideal gas equation, Dalton's law, Graham's law and it's practical application, deviation of gases from ideal behavior, real gases, Van Der Waal's equation, liquifaction of gases and Joule-Thomson effect and it's application, Liquid state. Environmental chemistry petroleum
CHM 002	Chemistry Laboratory	Qualitative analysis : identification of a simple salt. Quantitative analysis, volumetric analysis (neutralization, titration, oxidation, reduction, complex formation, precipitation).
CS 001	Intro. to Computer	Computer terminology and concepts. The history, state of the art and future of data processing Basic hardware and software concepts- The computer's effect on society, Operating Systems, DOS as an example.
CS 002	Comp. Prog.(A)	Structured programming with the high level language PASCAL. The techniques of good programming style and how to design, code, debug, and document program laboratory assignments. Topics progress from basic PASCAL syntax and semantics to sequential non-text files. The control features, data structures, standard I/0 libraries and the operators of the language.
ENG 003	Eng. Drawing (A)	Drawing practice, graphics geometry and tangency construction, projection of bodies of simple geometric, pictorial representation and technical sketching, orthographic projection, pictorial drawing and sectioned views.
ENG 004	Eng. Drawing (B)	Types of sectioned views, assembly drawing, familiarity with specifications, reading of blue prints, interpretation of various symbols commonly used, interpretation of material lists and bills of materials.
ENG 005	Prod. Tech. (A)	Introduction to production (manufacturing processes), manufacturing elements, properties of engineering materials, classification according to machinability, cast-ability. Principles of cutting and forming properties. Tools and tool geometry, machine tools simplified analysis, forming machines simplified analysis, wood working, timber kinds and properties, Wood working tools and equipment, wood working machines, types of joints technology, finessing and protection processes, safety, costing. Sheet metal working, developing of surfaces. Shearing bending, duct tubes rolling, seam joints, safety, costing, .Bench works, marking sawing,

		chiseling, filing, etc. Casting of metals, the foundry, foundry sands, molding technology, pattern making, core making, melting in the foundry, pouring different casting processes, felting, cleaning, finishing and inspection. Powder metallurgy, rolling, forging process, wire drawing, extrusion, cupping and deep drawings, spinning, blanking and piercing, enclosing, coining and stamping
ENG 006	Prod. Tech. (B)	Welding: Joining of metals, mechanical joining, metallurgical joining, fusion welding, oxyacetylene welding and cutting, under water welding and cutting, electric arc welding. Physics of arc, power sources, TIG and MIG, argon welding, coated electrodes classifications, standards, coding systems, CO2 welding, carbon arc welding. Cold welding cladding. Hot pressure welding, forge welding, electric resistance welding, spot and seam welding, flash welding, percussive welding, projection welding, friction welding, diffusion welding, ultrasonic welding. Brazing, soldering, surfacing tests, welding defects, safety, costing. Machining processes: Theory of metal cutting, tool geometry, cutting speeds, feeds, cutting fluids, tool materials, work piece materials and properties, machinability. Machine tools classification, the lathe, description of mechanisms, turning processes, cylindrical, internal, taper, threads. Profile copying, cam turning, NC and CNC machines.
ENG 009	Workshop (A)	Practical training on the basic workshops like, machining (lathe, milling, shaping, drilling, and grinding machines). Identification of the main parts of each machine and how to select the cutting variables on each machine performance of simple exercises. Wood working; hand tools, types of wood and machines, filing. Welding; simple joints on arc welding and oxyacetylene welding. Length and angle measurements using micrometer, vernier and protractors. Sheet metal works; Cutting, Rolling, Binding and making joints on sheets. Casting; recognition of the main elements and tools used in casting and how to make a mold using a core and a pattern for a simple casting.
ENG 010	Workshop (B)	Machining: Practical training on metal cutting, operations on center lathe, milling m/c, shaper and drilling m/c, gear cutting on milling m/c. hand press and mechanical press of different capacities, shearing (blanking, piercing and deep drawing processes). Welding: Oxyacetylene; different techniques used in oxyacetylene welding, fluxes, welding and cutting torches, prepare and make some joints, safety during welding operations. Arc welding; the main elements, different coatings, welding methods, prepare and make some joints, safety. Resistance welding; main elements, joints of different shapes. Soldering and brazing; the main differences between them and the tools used, joints by soldering.
ENG 011	Technical Concepts	Industry and technology. Engineering materials, standardization and interchange-ability. Material

		handling and storage. Energy. Pollution and waste disposal. Information systems. Report writing. Selected industries (textiles, garment, plastics, refrigeration, pumps, electric, etc.).
ENG 021	Mechanices (A)	Introduction to engineering mechanics. Vector analysis. Forces on particles and rigid bodies, equilibrium of particles and rigid bodies, forces and moments, applications on beams. Analysis of simple structures, kinematics of particles. displacement, velocity and acceleration using scalar and vectorial methods, kinetics of particles- Newton's law, work and energy, impulse and momentum.
ENG 022	Mechanices (B)	Dynamics of a Particle: Kinematics of a Particle. Motion of a particle (position, displacement, velocity and acceleration). Coordinate systems (Cartesian, natural, polar and cylindrical). Kinetics of a Particle. Equation of motion. Applications (projectile, simple harmonic motion, motion in resisting medium). Work and. energy. Principle of conservation of energy. Momentum. Impulse. Impact
HUM 001	Civil Heritage	Definition of Cultural heritage, its source, ups and downs, objectives and motivations. Throwing light on some of the scientific facts brought about by human civilization
ITR 001	Intro. Indus. Training	The student learns to identify the various production units and the way they inter-connect in the production process. The student is also trained to operate the various pieces of machinery in order to recognize his technical inclinations as a prelude to his selection of a specification within the institute. The student is also trained to identify the raw materials, as well as the handling, processing and machining of materials to obtain intermediate and final products. The duration of this industrial training is thirty hours per week spread over a minimum of five days for one academic term.
LNG 001	Eng. Lang. (A)	Cambridge English course, developing reading skills, listening and keep listening- Basic technical English, from current course books and other authentic materials. English grammar in use.
LNG 002	Eng. Lang. (B)	Headway intermediate course, developing reading skills, authentic reading, writing skills, task listening. Basic technical English interface, English for technical communication Grammar.
MTH 001	Mathematics (A)	Functions, limits of functions, techniques for finding limits, limits involving infinity, continuous functions, the derivative, techniques of differentiation, differentials, the chain rule, implicit differentiation applications of the derivatives, extreme of functions, the mean value theorem, optimization problems, Newton's method, anti derivative and indefinite integration, the definite integral, the fundamental theorem of calculus.

MTH 002	Mathematics (B)	Applications of the definite integral, area, solids of revolution, arc length and surfaces of revolution, logarithmic and exponential functions and their derivatives, inverse trigonometric and hyperbolic functions and their derivatives and integrals, techniques of integration, integration by parts, trigonometric integrals, integrals of rational functions, reduction formulae, indetermined forms and improper integrals.
PHE 001	Phys. Educ. & Activ. (A)	General physical education concepts and theoretical topics. Introduction of sports psychology. The effect of movement activities on Organs of the body. Physical gymnastic exercises (1)
PHE 002	Phys. Educ. & Activ. (B)	Functional anatomy of muscles skeletal system, biomechanics of connective tissue, functional aspects of muscle and a discussion of mechanics and energetic. Factors that contribute to sport injuries, principles of prevention and car, first aid management, the treatment of injuries, rehabilitation techniques in sports medicine and safe practice and the low.
PHY 001	Physics (A)	Properties of Matter: physical quantities, standard units, dimensions, oscillations- Gravitation- Fluid statics, surface tension, fluid dynamics, viscosity. Elasticity, waves in elastic media, sound waves- Heat: temperature and temperature measurement, thermal expansion, heat transfer, the first law of thermodynamics, kinetic theory of gases, entropy and the second law of thermodynamics.
PHY 002	Physics (B)	Electricity and magnetism: charge and matter, the electric field, Gauss law, electric potential, capacitors and dielectrics, current resistance and electromotive forces, the magnetic field, Ampere's law, Biot- Savart law. Maxwell's equations in integral form.
Diploma Stage Core Courses (Mandatory)– Level (1-2)		
MTH 101	Mathematics (C)	Sequences, convergent or divergent series, positive terms series, convergence tests, alternating series and absolute convergence, power series-Maclaurin and Taylor series, conic sections, rotation of axes, polar coordinates, integrals in polar coordinates, polar equations of conics, functions of several variables, limits and continuity, partial derivatives, chain rule, directional derivatives, extreme, double integrals, area and volume, double integrals in polar coordinates, change of variables and Jacobians.
PHY 106	Physics (C)	Physical optics: interference, diffraction, polarization, electro- and magneto- optical effects. Modern physics: basic constituents of matter, the atomic structure, the interaction of similar and dissimilar atoms, the interaction of photons and electrons, basic properties of atomic nuclei,

		radioactivity.
EEC 110	Logic Circuit (1)	Binary numbers, Boolean algebra, systematic reduction of Boolean expression, KARNOUGH maps, Decoders, Multiplexers, Design for combinational circuits.
EEL 121	Electrical Engineering Lab(1)	Calculate the resistance value by using the color code – Verification of Ohm's law – Verification of KVL and KCL – Verification of simple resistive circuit (series – parallel circuits) – Verification of superposition theorem - Verification of max power transfer – Measuring AC Circuits – Measuring the Ch's of diode.
EET 113	Electrical Circuits	Dc circuits, Resistors in parallel, series and delta-star. Voltage, current, power, kirchof's laws. Methods of solutions. Mesh current method, node voltage method. Network theorems; thevenin, theorem superposition theorem. Maximum power transfer theorem. Introduction to Ac circuits. Concept of impedance, phasor concept, voltage, current and power in Ac circuits. Balance tree phase circuits.
EET 114	Electronic Components	Semiconductor theory. P.N Junction. Semiconductor diodes types and applications. Special purpose diodes, Bipolar junction transistor, MOSFET transistor.
ENG 151	Engineering Economy	Economy Principles, Economics of construction, housing, and transportation, Risk analysis, Bases of economic evaluation of engineering projects, Accounting systems, Financing- Legal relationships in the Practice of Civil Engineering, contractual law, Bids and Tenders, Housing law- Urban planning law, Land Ownership, traffic and transportation law, Dispute resolution laws and regulations, Professional responsibility.
LNG 101	English (C)	Headway upper intermediate, developing ready - authentic materials, ideas for a story. English for communication. Grammar.
EEC 130	Advanced Programming (A)	Basic Concepts of C language – Creation of file execution – Reading and writing data – Simple printing arithmetic – Assignment operators – Incrementing and decrementing – Conditional statement – Repeated execution arrays – Strings .
PHE 101	Physical Edu.& Activities (C)	General culture topic may be selected from the following areas: comparative study of liberal and socialist systems party systems, and their role in democratic societies the role of the media in forming public opinion reports on field trips to social societies museums, news media writing brochures, leaflets, TV and press interviews
EEC 111	Data structures	Concepts of data and data processing & structures, Algorithms and sub algorithms structures, Definitions of arrays records & pointers, Data structures lists, Linked lists, stacks, Queues, Graphs, Trees, Operations on data structures, sorting, deleting, validation, security …. etc.
EEC 116	Introduction to	Computer structure, Internal organization of CPU.

	microprocessor	Internal and external buses , the fetch , decode, execute cycle. Instruction set, addressing modes, programming using assembly language.
EEC 117	Electronic Circuits	Operational Amplifier, Ideal Op Amp application frequency response of open loop gain. Non-ideal Op Amp Bipolar junction transistor amplifier, Dc and Ac analysis of common emitter, common base, common collector amplifier. MOSFET amplifiers. Analysis of common source, common gate and common drain amplifier. MOSFET active load.
EEI 118	Electrical Measurements	Electrical units and dimensions, Error in measurements, Measurement of resistance(low-high), Measuring of capacitance & inductance (self and mutual), Dc and Ac bridges, Measuring instruments, Ammeters and voltmeters (moving iron, moving coil, electrostatic and induction types), Wattmeters and power measurements, Electronic measuring instruments, Oscilloscopes, Digital instruments, Measurement of non electrical quantities.
MNG 101	Principles Of management	Overview of functional responsibilities of managers such as planning, organizing, leading and control. The student applies same to a real life project of his choice.
EEI 132	Practical Training (1)	Familiarization with basic tools, identification of electric and electronic components, Printed Circuit Board (PCB), PCB production, layout, etching, Basic measuring Instruments, Project assignment.
ITR 101	Industrial Training (1)	The student should study one or two electronic systems. The student must be able to write a technical report describing the main details of the system.
EEC 163	Analog Control Systems	Impulse response, transfer function, block diagram, mathematical modeling, stability, time domain analysis, transient response, steady sate error analysis , root locus, PID controller.
EEI 120	Control System Components	Operational amplifier realization - Analysis of Electrical circuits under transient conditions. State and output differential equations - Matlab/Simulink Program Fundamentals and its application on circuit analysis and control systems
EEL 122	Electronic Engineering Lab. 2	Verification of transistor Ch's – Verification of different configurations of the transistor amplifiers (common emitter – common base – common collector) – Verification of MOSFET configuration and measuring the different parameters. Measuring the different parameters of Op Amp circuits and applications.
EET 162	Transmission Lines	Lumped and distributed parameters of transmission lines. Main parameters of transmission lines (RL, CG) Effect of frequency on transmission line. Incident and reflected waves. Standing wave ratio, reflection coefficient matching of resistive load to the transmission line (Q.W.T) stub matching reactive parts of the load, Smith chart and it's application in transmission line.
EEI 133	Practical Training (2)	Several applications project in analog circuits, digital circuits and analog to digital circuits. Analog circuits projects : Several applications using

		(Op Amp and transistors and thermo couples) in analog circuits. Digital circuits projects : Several applications using (counters {up/down counters} & linear feedback shift register & decoders & multiplexers connected with 7 segments) in digital circuits.
PHE 102	Physical Education And Activities (D)	Introduction to music, The main features include :.theoretical orientation, musical instruments, musical note, playing music, training on solo and choir singing.
EEC 161	Digital Control Systems	Z transform, block diagram, signal flow graph, gain formula, stability, bilinear transformation, time domain analysis, steady state error, root locus, PID controller, state feedback and observers, introduction to state variables.
EEI 164	Industrial Process Control	Introduction to measurement systems, steady state model, dynamic model, noise and error analysis, typical measurement systems, linear variable differential transducers LVDT , potentiometers, variable inductance transducers, strain gauges thermocouples, resistance temperature detectors, piezoelectric sensors, thermistors, applications to liquid level, fluid flow, temperature pressure, and angular rotation, signal conditioning. Actuators and Controllers, relays, timers, control valves , servo motors, stepper motors and hydraulic actuators
EET 139	Communication Systems	Analog and continuous time signals. Analog signal transmission. Analog modulation techniques (AM,SSB,PM,FMNB,FMWB). Phase locked loop (PLL). Super heterodyne receivers. Analog Demodulators. Frequency Division multiplexing using signal bandwidth, and channel bandwidth noise classification and analysis-effect of noise on analog communication. systems.
PHE 103	Physical Education And activities (e)	Introduction to knitting : a brief study of knitting machines, kinds of strings, training on various types of hand made stitches, computerized knitting, basics of knitting machine maintenance
ITR 102	Industrial Training (2)	The student should study one electronic system, and should do detailed analysis and evaluation of the system.
Diploma Stage Elective Courses – Level (1&2)		
MTH 102	Mathematics (D)	
MTH 103	Numerical Techniques	Types of errors, algorithms and convergence, solutions of equations in one variable, interpolation and polynomial approximation, divided differences, central differences, inverse interpolation, numerical differentiation and integration, composite integration, Romberg integration, numerical solution of ordinary differential equations, initial value problems, Euler's method, Runge - Kutta methods, multi step methods
MTH 105	Statistical Techniques	Definition of statistics, frequency tables and histograms, cumulative frequency, bosic statistical concepts, probability, conditional probability and independence, rules of probability, random variables

		and their expected values, discrete probability distributions, continuous probability distributions, bivariate and marginal probability distribution expected values of functions of random variables.
ENG 121	Mechanics 3	Distributed loads, friction, center of gravity and moments of inertia work and potential energy. Kinetics of system of particles, kinematics of rigid bodies in plane motion. work. energy and momentum of rigid bodies, vibration.
EEC 112	File Organization	Design and Specifications of file Structure , Fundamental of file processing operations, Secondary storage and system software, File structure concepts, Organizing , Indexing files .
EET 111	Electromagnetic Fields (A)	Electric charge. Charge distributions , Coulomb's law. The Field concept. Electric field . The field for different charge distributions. Electric flux & flux density . The divergence. Gauss's law & the divergence theorem. Work done in moving a point charge. Potential difference . Potential of a point charge. Potential of different charge distributions. Potential gradient. Relationship between electric field and Potential. The electric dipole. The energy in electrostatic field. Dielectrics. The nature of dielectrics materials. The field in a dielectric. Boundary conditions. Capacitance. Current & Current density. Conductors, Resistance, Continuity equation. Relaxation time Laplace's equation & Poissons equation. Solution of laplace's in one variable , two variables & three variables.
EEI 170	Electrical Machines	Introduction to electric machines, basics operation of electric machines, Magnetic Circuits, D.c Machines construction and types, D.c generators types and characteristics, D.c Motors, Transformers, A.c Machines Construction and types, Synchronous generators, Synchronous Motors, Induction Motors, Wound rotor induction motors, Squirrel cage Induction motors, Single phase induction motors, special machines.
EEC 115	Software Engineering	Software life cycle-Introduction to system analysis, work flow and data flow, design of computer, Program implementation cycles, Creation of user manual and programmer manual.
EEL 176	Control Lab (1)	Basic components of control system. Flow, level Rig, Interfacing , Temperature Rig., variable Resistance Transducers, capacitive Transducers, Inductive Transducers, Strain Gauges, Operational Amplifiers, Realization of System using Operational Amplifiers, servo Motors, PID - Controllers.
EET 112	Electromagnetic Field (B)	Magnetic field in Vacuum. The Boit- Savart Law. Basic laws of magnetic field. Gauss's theorem for the magnetic field. Ampere's circuital law. Curl & curl of the magnetic field. Vector magnetic potential. Stocke's theorem. Maxwell's equations for static fields. Magnetic forces & torques. The Lorentz force. Electron motion under the action of different fields. The cyclotron. Ampere's force. Torque & magnetic moment. Motors. Magnetic materials and its nature. Magnetization & permeability. Classification of magnetic materials. Electromagnetic induction.

		Relation between electricity & magnetism. Lenz's law. Production of induced voltage and current. Faraday's law of electromagnetic induction. Generators. Inductance. Neumann's formulas. The betatron. Energy of a system of current loops. Time-varying fields & Maxwell's. equations. Displacement current. Maxwell's equations: differential & integral forms. Material equations. Properties of Maxwell's equation. Wave equation and its solution in difference media, scalar & vector potential , Equations of electrodynamics in the 4-d form.
EEC 193	Network Analysis	Sinusoidal steady state analysis: Kirchoff's laws in phasor domain, series parallel, and Delta-to-wye simplifications. Source transformation Node voltage method , mesh current method. Power calculations, Types of powers. Maximum Power transfer.
EEI 186	Logic Circuits	Adders , comparators, decoders, encoders, multiplexers, de-multiplexers, digital system applications; flip-flops , shift registers, binary codes and coding systems ,counters, memories organization - RAMs , ROMs and PROMs - other type of memories.
EEL 187	Electronic Lab (c)	Operational amplifier familiarities—Verification of OP-amp. Characteristics –feedback op-amp.-inverting and non-inverting op-amp. Op-amp. applications: comparator ampl, summing ampl.,op differentiator and integrator.-Oscillating and Timing circuits: vibrators , astable and monostable circuits---Timing integrated circuit IC555.
EEI 183	Technical Calculations	Cost of components. Cost of labors. Cost of total project.
EEI 184	Advanced Electronic Circuits	Differential amplifier,. Current sources and current mirrors. BJT differential Amplifier with active load. MOSFET differential amplifier with Active load. Feedback amplifiers. Frequency response oscillators. Active RC filters. Power amplifiers.
EEI 185	Non-Electrical Measurements	A study of the methods and techniques used to monitor industrial processes, Analysis of sensing devices for detecting changes in pressure, temperature, humidity, sounds , light. Indicating and recording devices,Velocity , Acceleration, Strain Measurements.
EEI 192	Industrial Electronics (2)	Higher power electronics. thyristors, The silicon control switch,. Single phase control of DC,. motors, Phase control of triac circuits, thyristor protection.
EEL 182	Control Lab (2)	Applications of Control Systems to different industrial problems. Tuning PID - Controllers, Speed control of DC - Motors, Washing Machine Installation, Frequency Response, and their applications, 6800 Microprocessor programming, Microprocessor applications.
EEI 137	Industrial Systems	Measuring systems., Controlling systems., telemetering, .Transfer of information., Safety systems, Watching systems. etc.
EEC 194	Computer Aided Design	Introduction to CAD – Network topology matrices topology matrices - Formulation of mode-voltage and loop current methods for linear network – Computer methods for solution of system of linear algebraic equations – Introduction to SPICE in simple analysis – Introduction to VLS

ENG 111	Engineering Graphics (C)	Construction drawing, working drawing, threads, fasteners, locking devices, drawing representation of welding, rivets gears, pulleys and bearings, types of keys and splins fits and tolerance. -Introduction in computer-aided drafting
EEI 182	Industrial Safety	Introduction, General definitions, types of injuries, hazardous area, general causes of accidents, Safety organization. Function and qualifications of safety men, Economics of safety, calculations of the cost of an accident. Plant safety policy, in planning, design, erection, and operation, Kinds of hazards, fire, explosion, radiation, noise, overheating-Accident investigation and analysis; measure of safety, fire protection and prevention. Prevention wears, head, eye, and face.
HUM 102	Modern Egyptian History	Particular attention is given to important events determining the life of the Egyptian in the twentieth century. The appearance development and growth of Egyptian middle class and its role in the national movement.
HUM 103	Islamic Civilization	Difference between culture and civilization , Ibn Khaldun's concept of civilization, the foundation of Islamic civilization. The decline of Islamic civilization.
HUM 104	Arabic Literature	Introduction to Arabic literature, students are introduced to various Arabic literature forms selected readings from representative contemporary literary figures.
LNG 104	French Language (A)	An elementary French course. Drill in pronounciation, elementary principles of inflection and basic sentence patterns. Reading of easy texts.
LNG 103	German Language (A)	Beginner's course. Development of speaking ability and mastering of German basic structures. Reading and understanding of simple texts.
LNG 102	Technical English (1)	characteristics of technical writing, Levels of form English, Technical terms, Technical vocabular Technical passages, Technical essays, Differe technical subjects
Bachelor Stage Core Courses (Mandatory)– Level (3-4)		
MTH 205	Mathematical Analysis	
EET 205	Switching Circuits	Pulse fundamentals – Resistive capacitive circuits (RC) – Transistor switching – ICs Op-Amp switching circuits – Schmitt trigger circuits and voltage comparator – Monostable and astable multivibrators – Ic timers (555)
EEC 201	Organization of microprocessor	Internal organization of microprocessor. Addressing modes, assembly language, and executable and non-executable instructions. Design for microprocessor control circuit.
EET 204	System Analysis	Signal and their functional representation, System classification and representation. Convolution and impulse response, Corrlation, Fourier series, Fourier

		transform, Spectrum of temporal and special signals response and application of linear filters.
MNG 201	Project Management	A study of management techniques for planning scheduling, controlling, costs and leveling resource requirement. The completion of a project schedule using the. critical path method is required. Topics covered are the estimate as a basis for scheduling, networks, arrow diagrams, time scaled diagram, resource leveling and computer applications.
PHE 201	Physical Education and activities (1)	Introduction to Plastic Arts : Appreciation of the artistic aspects of natural elements, studying the artistic effect of light and shadow, arts workshop woodwork practice, making simple original color designs on glass material, metal and leather artistic creation
MTH 206	Advanced Calculus	Triple integrals, change of variables in multiple integrals, triple integrals in cylindrical and spherical coordinates, differentiation of vector functions, surfaces, tangents and normals, gradien't fields, divergence and curl of vector fields, line integrals, Green's theorem, surface integrals, flux of a vector field, Gauss divergence theorem, stoke's theorem
EET 208	Communication (1)	Introduction to pulse and digital communication techniques. Introduction to information theory Multiplexing techniques. Transmission of signals. Signal distortion over a communication channel, Digital communication systems including PCM and DM. Line coding techniques. Digital carrier systems ASK, FSK, QPSK, DPSK, MSK, PSK.
EET 232	Wave Shaping Circuits	Linear wave shaping (Passive wave shaping (RC , LC , RLC Circuits). Active wave shaping (Op Amp circuits) – Diode wave shaping : voltage clipper and voltage clamps – Oscillators (negative resistance oscillators , VNR and RL oscillators - Feed back oscillators (RC and RL oscillators, Op Amp RC oscillators, Wien bridge oscillators – Phase shift oscillators). Non linear wave shaping (non linear amplifiers, Precision rectifiers, Precision peak detectors, Precision clamping circuits.
EEC 230	Computer Interfacing	Microprocessor pins, Memory interfacing, I/O interfacing. Introduction to Parallel and serial interfacing. Interrupt.
EEC 220	Computer Graphics	Description of: computer graphics objectives, Two-dimensional transformations, Viewing transformation, Graphics hardware, CAD/CAM macromedia and GIS packages, Case studies.
EEP 233	Practical Training (3)	Microprocessor architecture. Interfacing basics. Assembly language. Project including microprocessor interfacing, computer interfacing.
LNG 201	English (D)	Language power, discovering discourse, writing academic English, Technical English.
PHE 202	Physical Education And activities (ii)	Introduction to Dramatic Arts : Origin and development of dramatic art vocal training and oral performance character representation dealing with the audience study of different dramatic forms, play acting .

ITR 201	Industrial Training (3)	The student should be trained in one of the following areas: Computer and information, Electronics, Communication, Control., Software. The student must be able to show his ability of understanding a specific application.
EET 237	Antenna and wave propagation	Radiation and propagation of waves, Fundamentals parameters , potential functions , linear wire antennas, loop antennas, loop antennas, arrays, frequency independent antenna , aperture antennas, microstrip antennas, slot Antennas.
EEC 203	Operating systems	Understanding supervisory and control software for contemporary multi-programmed computer systems. Mastering Processes, synchronization, inter process communication, scheduling, memory management, security, system performance evaluation, and visual machines overview on object-oriented system, and case study.
EEC 222	Advanced Industrial Electronics	Controlled Rectifiers, Review of single phase controlled rec. , 3 Phase rectifying circuits (uncontrolled and controlled) Ac Choppers : Integral cycle control and phase delay angle control, Dc choppers: Buck regulators + Boost regulators, Inverters : Square wave + PWM voltage source inverters + 3 Phase inverters and constant V/f Ac motor control.
EEL 212	Advanced electronic lab	Shift registers, Decoders (I segment decoder), multiplexers. Project I : (Design and realization of 4-digits counter). Project 2 :(Redesign and realization of project I with multiplexing. semiconductor memories). Project 3: (Display of a message of characters stored on a memory chip on a 7 segment display units). Flip-Flop, shift register, and memory.
EEC 210	Computer Networks	This Course introduces the basic concepts and principles that underline computer Networks. It presents an overview of networks terminology, examines different network topologies and architectures, discusses the physical components of computer networks, and reviews the principles of network connectivity. Understanding the Networks principles (components, standards, protocols and parameters); describing the features and functions of different Networks architectures; extension of the local area network (LAN); showing the relationship between Network and the open systems interconnection reference model (OSI,TCP/IP,IEEE802.x).
EEP 234	Graduation Project	Design , realization ,and measurement of an electronic system in communication, electronics, control on computers.
EEL 235	Communication laboratory	Improving handling skills of measuring equipments used in communication system testing. Emphasizing the communication principles through experimental work on educational trainers (PLL , SSB, FM, PCM, DM, …..Etc.). Improving the diagnosis ability through troubles shooting procedures of communication systems (TV, Telephone , ……)
PHE 203	Physical Education And activities (iii)	Photography : History of Photography from 1826 up to the present time, theoretical aspects of

		photography types of cameras : Polaroid, automatic, single reflex (SLR) etc. photography in practice taking photo picture, developing , printing, making home made line films, using video .
ITR 202	Industrial Training (4)	The student should continue in this training in the same topic of specialization of ITR 201 with deep understanding of the topic, in addition to the realization and measurement of a selected project in the same field.
Bachelor Stage Elective Courses – Level (3&4)		
MTH 207	Numerical Solution of differential Equations	Numerical Solution of ordinary differential equations, methods for first order differential equations, multi step methods, methods or second order differential equations, numerical methods for elliptic partial differential equations, Neumann and mixed problems, irregular boundary, stability of the solutions, methods for parabolic equations, methods for hyperbolic equations.
MTH 210	Selected Topics In mathematics	One or more of the following topics may be offered: 1) Mathematical modeling via differential and difference equations. 2) Discrete - Event system simulation. 3) Mathematical models of operations research. 4) Discrete mathematics. 5) Linear algebra.
PHY 211	Solid State Physics	Definition of the Solid State and Crystal Growth, Crystalline Amorphous and Nano solids, Atomic Binding, Crystal Lattices and Structures, X-ray Diffraction, Brillouin Zones, Lattice Vibrations and Phonons, Thermal properties of Solids, Free electron theory, Semiconductor materials – Band theory in semiconductors – energy gap in semiconductors – holes – Fermi level in semiconductor – effect of impurities on semiconductors – Superconductivity – Electrical properties of semiconductors - Optical properties of solids - Applications).
EET 240	Communication (2)	Transmission media, Fundamentals of optical fiber communication system, Propagation in optical fibers, Optical sources, optical detectors, satellite communication system, Mobile communication systems, GSM system.
EET 244	Theory of sampling	Microwave frequencies. Main aspects of microwaves. Microwave applications. Transmission structures & resonators. Coaxial lines & microstrip lines. Design of microwave circuit elements. Waveguides: theory, modes and design. Microwaves tubes: klystron, traveling – wave tube , and magnetron. Microwave semiconductor devices: BJT, MESFET, HEMT , IMPATT , and Gunn diode.
EEC 242	Shaping Circuits	Passive filters, Active filters, Oscillators, Modulators and demodulators circuits, phase -locked-loop circuit and its applications.
EEC 209	Advanced Microprocessors	Recent trends in CPU, registers, memory, ALU, distributed data processing.
EEC 202	Computer system	Basic Understanding of the development of

	analysis	information systems by analyzing the origins, activities, and major considerations of systems analysis and design. Techniques for data gathering/feasibility study, data analysis, system design, system programming are covered with specific business activity examples
MNG 222	Behavior Discipline	A study of organization theories, concepts and structures, individual and group behavior, communication process, leadership, conflict management, motivation, management of change.
EET 207	Sampled Data Systems	Types of discrete signals. Properties of discrete systems (linear , time invariance , causality , memory. Impulse response, Convolution sum. Convolution techniques for discrete systems . Difference equations and their classical solutions. Z-transform (definition-properties-mapping between s-z planes). Solutions of difference equation using Z-transform, Stability in z domain - frequency response (applications to digital filters), Discrete Fourier Series and their properties Discrete Fourier transform and its properties. Discrete time systems.
EEI 260	Computers In Industry	Introduction to real time computers, RT requirements .RT operating system ,cases study .
EEI 250	Logic Circuits (2)	Adders , comparators, decoders, encoders, multiplexers, de-multiplexers, digital system applications; flip-flops , shift registers, binary codes and coding systems ,counters, memories organization - RAMs , ROMs and PROMs - other type of memories.
EET 271	Computers In Communications	Serial communication ,modems, RS standards; routing, session control, file transfer ; e-mail, virtual terminals, TCP/IP protocol models .
EEC 223	Introduction To Database	Data models, defining the elements of DB, schema definition and use, the realization of DB model, calculus on relational algebra, non relational database.
EEC 225	Artificial Intelligence.	Computational methods for studying intelligence, automated problem solving, heuristic search, planning, Inference, natural language processing , and machine learning .prolog, knowledge representation, symbolic logic.
EEC 221	Computer Applications	Computer in business and government - Computer integrity, privacy and security – Information services for computer – computers and electronics – Computer and education – Computer and national development – Computer and social power – Matlab.
EEC 224	Compiler Design	Comparison of programming languages – Algorithms + data structures – Compiler definition, meaning, and classification – Logical structures – Code generation and optimization – Compiler language description – Computer compiler package.
EEP 202	Practical Training (4)	A study of motor control systems used in industry. A study of ladder diagrams, sequence control, and relay logic as a basic reference for the application of programmable controllers (PCs) and stability of the control system. Power rectification, inverted methods and SCR motor control will also be studied.
EEI 231	Stochastic Control	Brief review of probability theory, stochastic integral and stochastic differential equations, stability,

		control of completely observed systems, linear filtering, control of partially observed systems, linear quadratic regulators.
HUM 205	Islamic Civilization (ii)	Intellectual aspect of Islam prominent Arab and Muslim scholars and their contribution to various scientific feed mathematics, astronomy, chemistry, medicine…..etc.
MNG 223	Economics Of management	Resource allocation money, material, machine and manpower. Economic aspects in marketing, economic considerations in decision making
HUM 204	Industrial Physiology	An introduction to the history, methods and the major theories, concepts of industrial psychology. The course provides non-majors with an overview of the field of industrial psychology, while majors gain a foundation for further study.
HUM 202	English literature	Introduction to the forms of literature, short story, novel, drama and poetry. Developing students' critical ability through carefully selected sample literary texts.
HUM 206	Islamic Studies	Traditions of prophet Mohamed , Islamic society in Madina , Muslims treatment of non Muslims. The role of the mosque in Islamic society .
HUM 203	Trade Law	Kinds of contracts, contract constituents, contract administration, the limitations as imposed by law, disputes, claims, arbitration, the legal variables encountered in business and commercial transactions.
LNG 202	Technical English (2)	Chief features of technical language, Developed technical topics, write a technical paper, write a technical research, Translation of some technical texts, Various technical words.
MNG 221	Engineering Economy (2)	Costing and costing systems, depreciation methods, breakeven analysis, replacement analysis, decision making under certainty, decision making under risk, evaluation of public projects.

10- Program Admission Requirements:

The Higher Institute of Engineering and Technology at New Minia accepts the Egyptian high school certificate (scientific division) or equivalent certificate awarded by foreign country according to the rules and grades that applied by the national admission office in the supreme council of universities. The specialist stages of the program start after a successful pass of the preparatory year (level 0) with at least 30 units out of the required 44 units. The students are then distributed among the different programs in the Higher Institute according to rules set by the institute council that depend on the final grade in the preparatory year as well as students' self-selection and departments requirements.

11- Regulations for Progression and Program Completion:

- The student should achieve at least 205 units in order to be graduated from the program.
- The student is promoted to the next level of the program specialist stages if he/she fulfills the minimum registered and required units of his/her academic year.
- The student must attend more than 75% of the lectures, tutorials and laboratory exercises for each course, as a condition to be allowed to take the final exam. The student who does not meet the 75% attendance will not be allowed to take the final exam. He should make a request with an excuse that the department and institute councils can accept in order to be allowed to go through the final exam. In the case of request rejection, the student is considered "fail" in the course he/she was not allowed to attend its finals.
- The student is required to submit a graduation project according to his/her selection and the rules set by the department council. An extension of four weeks is given to students after the summer semester of level (4).
- The student is entitled to be examined in courses he failed with the students currently studying these courses.
- The mark and grade remain the same without change for the student who failed to appear for an examination due to an acceptable excuse.
- The executive bylaws of the Institute Regulation Law, the successful completion of a course is evaluated according to grade points as follows:

Grade	GPA	Equivalent Grade	Percentage
A+	4.0	Distinct (+)	More than 95%
A	3.7	Distinct	From 90 to less than 95%
A-	3.3	Distinct (-)	From 85 to less than 90%
B+	3.0	Very Good (+)	From 80 to less than 85%
B	2.7	Very Good	From 75 to less than 80%
C+	2.3	Good (+)	From 70 to less than 75%
C	2.0	Good	From 65 to less than 70%
D+	1.7	Pass (+)	From 60 to less than 65%
D	1.3	Pass	From 55 to less than 60%
D-	1.0	Pass (-)	From 50 to less than 55%
F	0.0	Fail	Less than 50%

12- Program Evaluation Methods:

Evaluator	Tool	Sample
1- Senior students	**1- Questionnaire** **2- Discussion and feedback during annual** **3- program scientific conference**	**Sample of 25% out of students in years 1,2 and 3**
2- Alumni	**Feed-back from assistant staff and post graduate students**	**Sample of 5% of final year students**
3- Stakeholders (Employers)	**Personal meetings and Questionnaire**	**Samples from different sectors**
4-Internal Evaluator(s)	**Internal Report**	**1-2 Internal evaluator reports**
5-External Evaluator(s)	**External Report**	**1-2 External evaluator reports**
6- Other	**1- Student's scientific conference according to the universities law of 49 in 1972.** **2- Ministry of Higher Education and Scientific Research report (annually)**	**1-Senior students** **2-Alumni** **3-Employees** **4-other**

13- Program ILOs with adopted Teaching and Learning Methods and Assessment Methods during the Academic Year:

13.1 Teaching and Learning Methods:

Several teaching and learning strategies have been defined in the program for use in all courses such that the intended learning outcomes are attained. The course coordinator proposes the teaching and learning method suitable for the course and it is indicated in course specifications. Different teaching methods are usually used for different learning outcomes. The specifications are discussed and approved by the department council then endorsed by the institute council. By the end of each semester, the teaching and learning strategies are assessed and recommendations for modification are reported in the course report. The following teaching and learning methods are used:

1- Lecture
2- Presentations
3- Discussions
4- Tutorials
5- Lab experiments
6- Problem solving
7- Brain storming
8- Projects
9- Site visits and scientific trips
10- Reporting
11- Group working
12- Discovering

13.2 Assessment Methods during the Academic Year

The distribution of marks is indicated clearly in the bylaws. However, the assessment of student achievements is carried out using various assessing tools. The Institutes imposes a policy of using at least three assessments for each and every course. The course description indicates the number and schedule of each assessment method. The weight given to any assessment is also reported in the course description. The following shows the major assessment methods adopted by the program:

1- Written Exams
2- Oral Exam
3- Projects
4- Report
5- Quiz
6- Presentation
7- Practical Test
8- Observations

In the end, the matrix of the courses- program ILOs will show also the Program ILOs with adopted Teaching and Learning Methods and Assessment Methods during the Academic Year.

14- Support to Outstanding Students and Students with Difficulties

Students who face difficulties are considered by the instructors of different courses. Simplified materials, extra tutoring, peer studying and frequent follow up are usually given to such students.

High-achievers are usually given more reading, additional assignments, research topics and their outcome is assessed. They are involved in tasks of mutual interest to students and program administration. They also take part in organizing the various events and activities held in the institute.

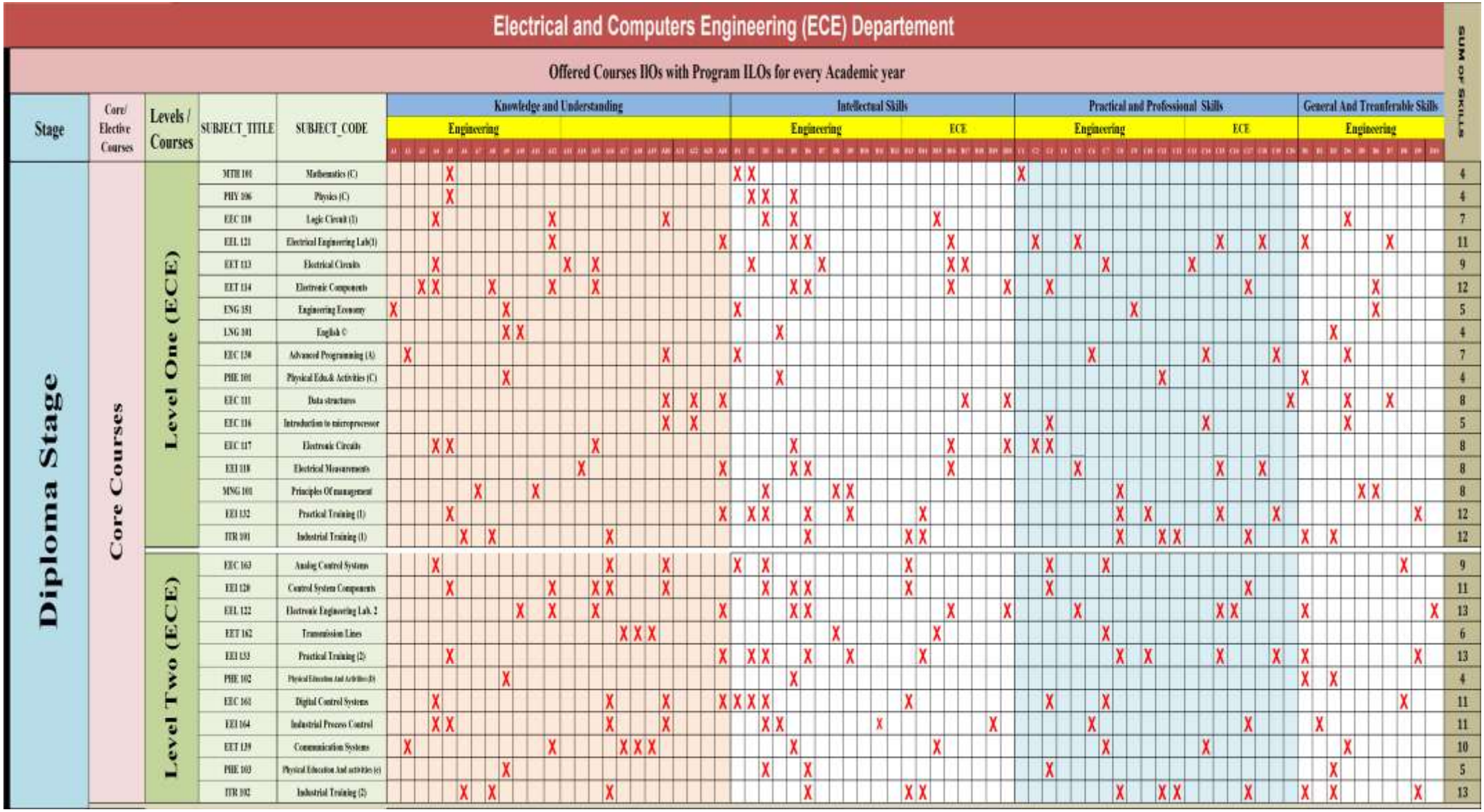
Currently, no handicapped are enrolled in the institute. However, several facilities are prepared for their support. All exterior stair cases are provided with ramp entrances. A special parking zone is prepared for the students with special needs. In addition, inside the institute buildings, the elevator is available for those students.

15- Matrix of Courses and Program ILOS

Electrical and Computers Engineering (ECE) Departement

Offered Courses IlOs with Program ILOs for every Academic year

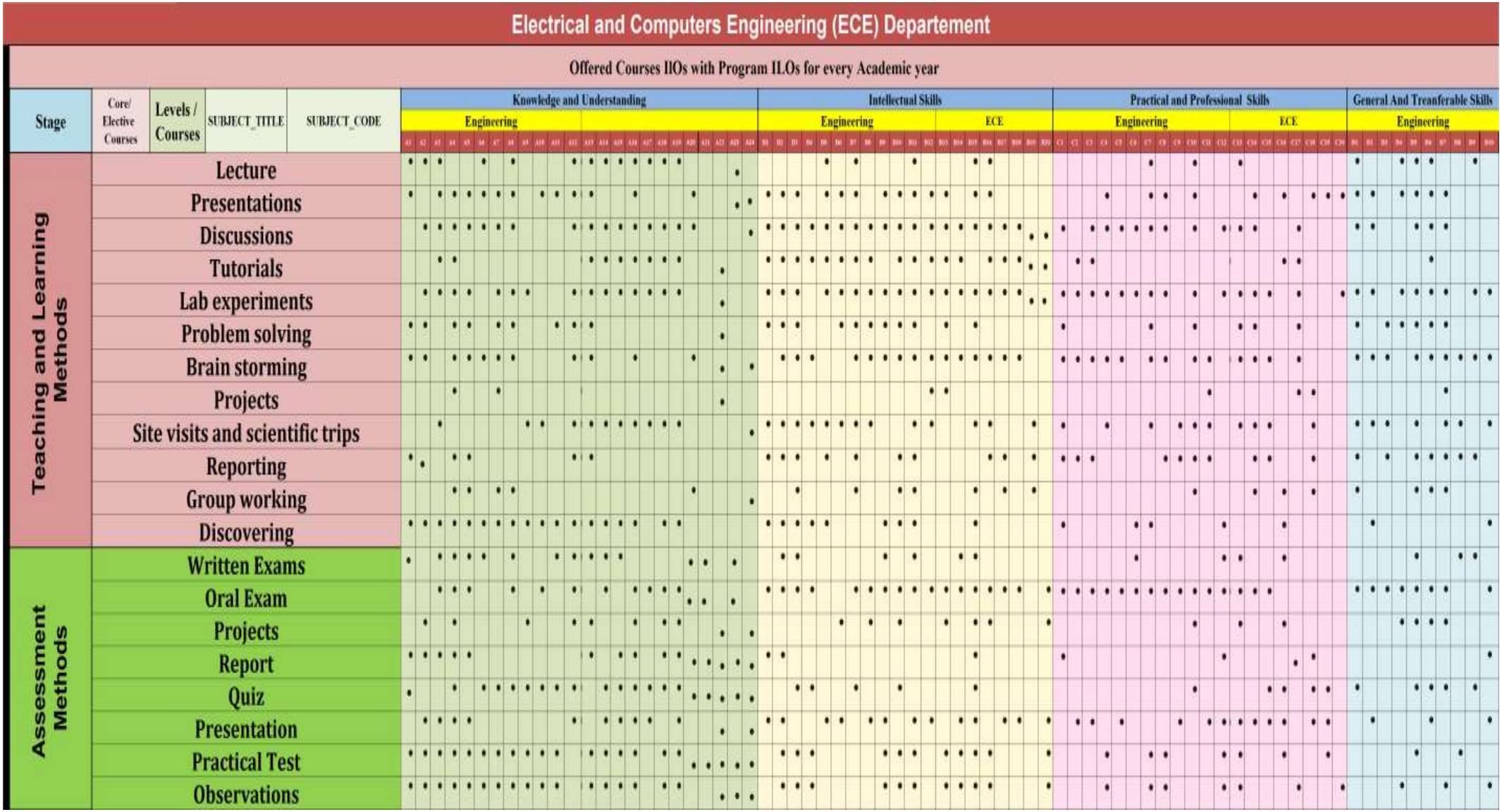
Stage	Core/ Elective Courses	Levels / Courses	SUBJECT_TITLE	SUBJECT_CODE	Knowledge and Understanding		Intellectual Skills			Practical and Professional Skills			General And Transferable Skills			SUM OF SKILLS
					Engineering		Engineering		ECE	Engineering		ECE	Engineering			
preparatory Year	Core Courses	Level Zero	CHM 001	Industrial Chemistry	A1 A3 A7		B5			C1 C4 C5			D1 D4 D6			4
			CHM 002	Chemistry Laboratory	A2 A4 A7		B7			C5			D1 D5 D6			7
			CS 001	Intro. to Computer	A2 A7		B8			C1 C5			D3 D6			6
			CS 002	Comp. Prog.(A)	A2 A7		B8			C1 C5			D3 D6			6
			ENG 003	Eng. Drawing (A)	A4 A6		B2 B3			C2			D2 D5			7
			ENG 004	Eng. Drawing (B)	A4 A6		B2 B3			C2			D2 D5			7
			ENG 005	Prod. Tech. (A)	A3 A4 A5 A7		B2 B7									6
			ENG 006	Prod. Tech. (B)	A3 A7 A12		B6			C5						5
			ENG 009	Workshop (A)	A3 A6		B3 B9			C5 C6 C10			D2 D3 D5			10
			ENG 010	Workshop (B)	A3 A6		B3 B9			C5 C6 C10			D2 D3 D5			10
			ENG 011	Technical Concepts	A8 A9 A11		B10									4
			ENG 021	Mechanics (A)	A1 A6		B1 B2 B7			C1						6
			ENG 022	Mechanics (B)	A1 A6		B1 B2 B7			C1						6
			HUM 001	Civil Heritage	A10 A11 A12										D9	4
			ITR 001	Intro. Indus. Training			B1 B2 B3 B8			C1 C8 C9 C10 C11			D2 D3 D4 D5 D6			13
			LNG 001	Eng. Lang. (A)	A10 A11					C11			D3			4
			LNG 002	Eng. Lang. (B)	A10 A11					C11			D3			4
			MTH 001	Mathematics (A)	A1 A6		B1 B2 B7			C1						6
			MTH 002	Mathematics (B)	A1 A6		B1 B2 B7			C1						6
			PHE 001	Phys. Educ. & Activ. (A)	A10 A12								D1 D6			4
			PHE 002	Phys. Educ. & Activ. (B)	A10 A12								D1 D6			4
			PHY 001	Physics (A)	A1 A2 A7		B2 B7			C1						6
			PHY 002	Physics (B)	A1 A2 A7		B2 B7			C1						6


Electrical and Computers Engineering (ECE) Departement
Offered Courses IlOs with Program ILOs for every Academic year
Stage
Core/ Elective Courses
Levels / Courses
SUBJECT_TITLE
SUBJECT_CODE
Knowledge and Understanding
Engineering
Intellectual Skills
Engineering
ECE
Practical and Professional Skills
Engineering
ECE
General And Treanferable Skills
Engineering
SUM of SKILLS
Diploma Stage
Core Courses
Level One (ECE)
Level Two (ECE)
MTH 101 Mathematics (C) 4
PHY 106 Physics (C) 4
EEC 110 Logic Circuit (1) 7
EEL 121 Electrical Engineering Lab(1) 11
EET 113 Electrical Circuits 9
EET 114 Electronic Components 12
ENG 151 Engineering Economy 5
LNG 101 English © 4
EEC 120 Advanced Programming (A) 7
PHE 101 Physical Edu.& Activities (C) 4
EEC 111 Data structures 8
EEC 116 Introduction to microprocessor 5
EEC 117 Electronic Circuits 8
EEI 118 Electrical Measurements 8
MNG 101 Principles Of management 8
EEI 132 Practical Training (1) 12
ITR 101 Industrial Training (1) 12
EEC 163 Analog Control Systems 9
EEI 120 Control System Components 11
EEL 122 Electronic Engineering Lab. 2 13
EET 162 Transmission Lines 6
EEI 133 Practical Training (2) 13
PHE 102 Physical Education And Activities (D) 4
EEC 161 Digital Control Systems 11
EEI 164 Industrial Process Control 11
EET 129 Communication Systems 10
PHE 103 Physical Education And activities (e) 5
ITR 102 Industrial Training (2) 13

Electrical and Computers Engineering (ECE) Departement

Offered Courses IIOs with Program ILOs for every Academic year

Stage	Core/ Elective Courses	Levels / Courses	SUBJECT_TITLE	SUBJECT_CODE	Knowledge and Understanding		Intellectual Skills			Practical and Professional Skills				General And Treanferable Skills								SUM OF SKILLS
					Engineering		Engineering		ECE	Engineering			ECE									
					A1	A2	B1	B2	B3	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	
B.S.C Stage	Elective Courses For Level Three and Four	Basic Courses	MTH 207	Numerical Solution of differential Equations	X		X			X											X																9
			MTH 210	Selected Topics In mathematics	X		X			X											X																	10
			PHY 211	Solid State Physics																																			0
		Engineering Courses	EET 240	Communication (2)				X																															10
			EET 244	Theory of sampling	X				X																														11
			EEC 242	Shaping Circuits			X			X																														9
			EEC 209	Advanced Microprocessors		X																																		6
			EEC 202	Computer system analysis																																				7
			MNG 222	Behavior Discipline				X																																12
			EET 207	Sampled Data Systems	X			X																																13
		Technonlgy Courses	EEI 260	Computers In Industry				X																																10
			EEI 250	Logic Circuits (2)			X																																	7
			EET 271	Computers In Communications																																				5
			EEC 223	Introduction To Database		X																																		10
			EEC 225	Artificial Intelligence.		X																																		11
			EEC 221	Computer Applications		X																																		10
			EEC 224	Compiler Design		X																																		5
			EEP 202	Practical Training (4)				X																																14
			EEI 231	Stochastic Control	X																																			8
		Humanity Courses	HUM 205	Islamic Civilization (ii)																																				3
			MNG 223	Economics Of management																																				7
			HUM 204	Industrial Phycology																																				5
			HUM 202	English literature																																				4
			HUM 206	Islamic Studies																																				3
			HUM 203	Trade Law																																				5
			LNG 202	Technical English (2)																																				11
			LNG 203	German Language (B)																																				4
			LNG 204	French Language (B)																																				4
			MNG 221	Engineering Economy (2)																																				9


Electrical and Computers Engineering (ECE) Departement
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Stage
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SUBJECT_TITLE
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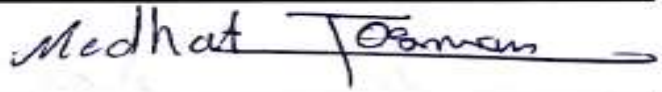
Lecture
Presentations
Discussions
Tutorials
Lab experiments
Problem solving
Brain storming
Projects
Site visits and scientific trips
Reporting
Group working
Discovering
Assessment Methods
Written Exams
Oral Exam
Projects
Report
Quiz
Presentation
Practical Test
Observations

Program Coordinator:	
Head of Electrical and Computer Engineering Dept.	**Dr. Omar Makram Kamel**
Signature:	

Quality Assurance Unit	
Dr. Medhat Mohammed Osman	
Signature:	

Dean and Chairman:	
Prof. Dr. Gamal El-Dean Ali Abo Al-Magd	
Signature: