

Program Specification

A- Basic Information

Program Title				
Electrical Engineering and Computer Engineering				
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	No. of Levels	5 Levels
	Diploma (Level 1-2)	82.5 Units	No. of Semesters	15 Semesters
	Bachelor (Level 2-3)	78.5 Units	Academic Year	2022/2023
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		5/9/2022	
	Academic council		No. (46) 19/9/2022	

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 program aims at preparing a distinguished graduate of electrical and computer engineering able to carry scientific research and serve national industrial projects and regional community.	The program seeks to prepare a graduate in accordance with the national academic reference standards able to compete in the job marketing, carry research and serve community and country.

2- 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
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.
15. Select and use proper analytical tools, or develop systems to generate, transmit, control and use electrical power energy.

3- 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 (2018) 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.(8) 5/4/2020 and the institute academic council No. (16) in 21/4/2020.

4- Graduate Attributes for Engineering According to NARS2018	
<i>Upon successful completion of program, the graduate should be able to:</i>	
1. Master a wide spectrum of engineering knowledge and specialized skills and can apply acquired knowledge using theories and abstract thinking in real life situations;	
2. Apply analytic critical and systemic thinking to identify, diagnose and solve engineering problems with a wide range of complexity and variation; .	
3. Behave professionally and adhere to engineering ethics and standards;	
4. Work in and lead a heterogeneous team of professionals from different engineering specialties and assume responsibility for own and team performance;	
5. Recognize his/her role in promoting the engineering field and contribute in the development of the profession and the community;	
6. Value the importance of the environment, both physical and natural, and work to promote sustainability principles;	
7. Use techniques, skills and modern engineering tools necessary for engineering practice;	
8. Assume full responsibility for own learning and self-development, engage in lifelong learning and demonstrate the capacity to engage in post- graduate and research studies;	
9. Communicate effectively using different modes, tools and languages with various audiences; to deal with academic/professional challenges in a critical and creative manner;	
10. Demonstrate leadership qualities, business administration and entrepreneurial skills	

5- EECE Graduate Attributes	
<i>Upon successful completion of program, the graduate should be able to:</i>	
1. Analyze electrical and computer systems using knowledge of mathematics, basic sciences, engineering ideas, and IT tools.	
2. Examine, develop, and analyze an electrical and computer system, component, or process to suit the required needs while staying within realistic restrictions.	
3. Design and conduct experiments as well as analyze and interpret data.	
4. Identify, formulate and solve engineering problems	
5. Use current advanced techniques, skills, and tools necessary for computing practices to specify, design, and implement computer-based systems.	
6. Work effectively within multi-disciplinary teams and Communicate effectively.	
7. Managing projects related to computer systems in diverse fields of applications.	
8. Design and implementation of electrical installations in various engineering projects.	
9. Demonstrate knowledge of contemporary engineering issues.	
10. Consider the impacts of engineering solutions on society and environment	
11. Working effectively on low and high pressure networks.	
12. Display professional and ethical responsibilities, and contextual understanding.	
13. Identify, formulate and solve fundamental engineering problems using neat systematic analytical approaches or creative approaches specially when dealing with new technologies.	
14. 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	
15. Design, and Maintenance of various electronic circuits.	
16. Apply control theory and measurement principals for industrial variables, signal conversion, conditioning and processing.	
17. Develop, and implement computer-based systems, using current sophisticated techniques, skills, and tools required for computing practices.	
18. Develop, manage, and maintain digital and analogue communication systems, as well as mobile communication, coding, and decoding systems.	
19. Develop and manage the construction of electrical power energy including generation, transmission, control, and consumption systems.	

6- Program Aims in Relation to NARS 2018 Graduate Attributes

NARS 2018 Graduate attributes	EECE Program Aims Upon successful completion of program, the graduate should be able to:	Graduate Attributes
Apply analytic critical and systemic thinking to identify, diagnose and solve engineering problems with a wide range of complexity and variation.	1. Apply knowledge of mathematics, basic sciences and engineering concepts and IT tools to the modeling of electrical and computer systems.	1. Analyze electrical and computer systems using knowledge of mathematics, basic sciences, engineering ideas, and IT tools.
Master a wide spectrum of engineering knowledge and specialized skills and can apply acquired knowledge using theories and abstract thinking in real life situations.	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.	2. Examine, develop, and analyze an electrical and computer system, component, or process to suit the required needs while staying within realistic restrictions.
	3. Design and conduct experiments as well as analyze and interpret the resulting outcomes.	3. Design and conduct experiments as well as analyze and interpret data.
Use techniques, skills and modern engineering tools necessary for engineering practice.	4. Identify, formulate and solve fundamental engineering problems using neat systematic analytical approaches or creative approaches specially when dealing with new technologies.	4. Identify, formulate and solve electrical engineering problems.
	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.	5. Use current advanced techniques, skills, and tools necessary for computing practices to specify, design, and implement computer-based systems.
Work in and lead a heterogeneous team of professionals from different engineering specialties and assume responsibility for own and team performance.	6. Work effectively within multi-disciplinary teams.	6. Work effectively within multi-disciplinary teams and Communicate effectively.
Communicate effectively using different modes, tools and languages with various audiences; to deal with academic/professional challenges in a critical and creative manner.	7. Communicate effectively orally and in written form.	7. Managing projects related to computer systems in diverse fields of applications.

Value the importance of the environment, both physical and natural, and work to promote sustainability principles.	8. Consider the impacts of engineering solutions on society and environment, taking in consideration quality assurance, health and safety requirement to manage risks.	8. Design and implementation of electrical installations in various engineering projects.
Recognize his/her role in promoting the engineering field and contribute in the development of the profession and the community.	9. Describe current and contemporary technologies of electronic circuits and systems starting from design, design automation to integrated circuit fabrication.	9. Demonstrate knowledge of contemporary engineering issues. 10. Consider the impacts of engineering solutions on society and environment
Behave professionally and adhere to engineering ethics and standards.	10. Express professional and ethical responsibilities, and contextual understanding, taking in consideration humanitarian interests and moral issues.	11. Working on low and high pressure networks. 12. Display professional and ethical responsibilities, and contextual understanding.
Assume full responsibility for own learning and self-development, engage in lifelong learning and demonstrate the capacity to engage in post-graduate and research studies	11. Engage in self- and life- long learning and able to refer to relevant literatures.	13. Identify, formulate and solve fundamental engineering problems using neat systematic analytical approaches or creative approaches specially when dealing with new technologies.
Demonstrate leadership qualities, business administration and entrepreneurial skills.		14. 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.
EECE Aims in Relation to Graduate Attributes		
12. Manipulate with the electronic circuits, all the way from the discrete components level, circuit analysis, design, evaluation, and troubleshooting using proper tools.		15. Design and Maintenance of various electronic circuits.
13. Use current advanced techniques, skills, and tools necessary for computing practices to specify, design, and implement computer-based systems.		16. Apply control systems and measurement principals for industrial variables, signal conversion, conditioning and processing.

14. Implementing phases of the computer system development life cycle, procurement and installation of hardware, software design, data manipulation and system operations..	17. Develop, and implement computer-based systems, using current sophisticated techniques, skills, and tools required for computing practices.
	18. Manage, and maintain digital and analogue communication systems, as well as mobile communication, coding, and decoding systems.
15. Select and use proper analytical tools, or develop systems to generate, transmit, control and use electrical power energy.	19. Design and supervise the construction of systems to generate, transmit, control and use electrical power energy.

7- Contribution of NARS to Program Competencies

A. General competencies of engineering graduate (الجدارات العامة لخريج الهندسة)

NARS2018 for EECE Program	Program Competencies
<i>Upon successful completion of program, the graduate should have a knowledge and understanding of:</i>	<i>Upon successful completion of Elec. & Comp. program, the graduate should be able to:</i>
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics, as appropriate to the EECE discipline.
A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions in the EECE discipline.
A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the EECE discipline and within the principles and contexts of sustainable design and development.
A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
A5. Practice research techniques and methods of investigation as an inherent part of learning.	A5. Practice research techniques and methods of investigation as an inherent part of learning, as appropriate to the EECE discipline.
A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	A6. Plan, supervise and monitor implementation of EECE projects, taking into consideration other trades requirements.
A7. Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.	A7. Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams.
A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
A9. Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	A9. Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.
A10. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	A10. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.

B. Specialized competencies for electrical Engineering graduate (جدارات تخصصية لخريج الهندسة الكهربائية)	
NARS2018 for EECE Program	Program Competencies
<i>Upon successful completion of program, the graduate should have the ability to:</i>	<i>Upon successful completion of Elec. & Comp. program, the graduate should be able to:</i>
B1. Select, model and analyze electrical power systems applicable to the specific discipline by applying the concepts of: generation, transmission and distribution of electrical power systems.	B1. Select, model and analyze electrical power systems applicable to the EECE discipline by applying the concepts of: generation, transmission and distribution of electrical power systems.
B2. Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.	B2. Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.
B3. Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.	B3. Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.
B4. Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application.	B4. Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application.
B5. Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.	B5. Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.

C. Sub-specialized (specific discipline) Competencies for Electrical Engineering and Computers Engineering graduate (جدارات لخريج برنامج الهندسة الكهربائية والحاسبات)	
ARS2018 for EECE Program	Program Competencies
<i>Upon successful completion of program, the graduate should have the ability to:</i>	<i>Upon successful completion of Elec. & Comp. program, the graduate should be able to:</i>
C1. Basics of design and analyzing electrical and computer engineering systems, while considering the constraints of applying inappropriate technology and the needs of commercial risk evaluation..	C1. Basics of design and analyzing electrical and computer engineering systems, while considering the constraints of applying inappropriate technology and the needs of commercial risk evaluation.
C2. Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creatively computer controlled systems using new information technologies ..	C2. Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creatively computer controlled systems using new information technologies.
C3. Proposing 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.	C3. Proposing 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.

8- Curriculum Structure and Contents

8.1 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.

8.2 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 week 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

8 3. Program Registration Rules :

- The student can register for 20 Cr-h in either first or second semester of the academic year.
- The student can register for two courses only with 7 Cr-h or less in the summer semester. The total semester units is 12 Cr-h.

8.4 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	

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
		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
		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
		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

**required only
(6 units)**

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 <u>(6 units)</u>
		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 %

8.5 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.

9-Courses Contributing to the Program:

**9-1 Preparatory Year:
Level (0)**

S.	Course code	Course title	C H	No. of hours / week				Program ILOs covered by course				
				Lec .	Tut .	Lab .	Total l					
1	CHM 001	Industrial Chemistry	2	2	0	0	2	A1	-		-	
2	CHM 002	Preparatory Chemistry Lab	1	0	0	2	2	A2	-		-	
3	CS 001	Introduction To Computer Science	1	1	0	1	2	A2	-		-	
4	CS 002	Computer Programming (A)	2	1	0	2	3	A2	-		-	
5	ENG 003	Engineering Graphics (A)	2	1	3	0	4	A2	-	A3	-	
6	ENG 004	Engineering Graphics (B)	2	1	3	0	4	A2	-	A3	-	
7	ENG 005	Production Technology (A)	3	2	2	0	4	A1	-	A3	-	
8	ENG 006	Production Technology (B)	3	2	2	0	4	A1	-	A3	-	
9	ENG 009	Production Technology Workshop (A)	1	0	0	2	2	A3	-	A6	-	
10	ENG 010	Production Technology Workshop (B)	1	0	0	2	2	A3	-	A6	-	
11	ENG 011	Technology Concepts	1	1	0	0	1	A6	-		-	
12	ENG 021	Mechanics (1)	2	2	1	0	3	A1	-		-	
13	ENG 022	Mechanics (2)	2	2	1	0	3	A1	-	A3	-	
14	HUM 001	Culture Heritage	1	1	0	0	1	A03	-		-	
15	ITR 001	Industrial Training (A)	5	0	0	30	30	A2	-	A6	-	A7
16	LNG 001	English Language (A)	1	1	1	0	2	A5	-		-	
17	LNG 002	English Language (B)	1	1	1	0	2	A5	-		-	
18	MTH 001	Mathematics (1)	3	2	2	0	4	A1	-		-	
19	MTH 002	Mathematics (2)	3	2	2	0	4	A1	-		-	
20	PHE 001	Physical Education (A)	0.5	0	0	3	3	A01	-		-	
21	PHE 002	Physical Education (B)	0.5	0	0	3	3	A01	-		-	
22	PHY 001	Physics (1)	3	2	0	3	5	A1	-	A3	-	
23	PHY 002	Physics (2)	3	3	0	2	5	A1	-	A3	-	
Total weekly hours				27	18	50	95					

9-2Diploma Stage Core Courses (Mandatory):

Level (1)

S.	Course code	Course title	C H	No. of hours / week				Program ILOs covered by course
				Le c.	Tu t.	La b.	Tot al	
1	EEC 110	Logic Circuit (1)	2	2	0	0	2	A1 - A3 - B2 - B3 - C1 - - - -
2	EEL 121	Electrical Engineering Lab.	1	0	0	3	3	A2 - A4 - A5 - B2 - B3 - C2 - C3 - -
3	EET 113	Electrical Circuits	3	2	2	0	4	A1 - A3 - A4 - B1 - B2 - C1 - - - -
4	EET 114	Electronic Components	3	2	2	0	4	B2 - C2 - C3 - - - - - - - -
5	EEC 130	Advanced Programming (A)	2	1	0	2	3	A1 - A2 - A5 - B2 - C1 - C3 - - -
6	EEC 111	Data Structures	2	2	0	0	2	A1 - A2 - A5 - A10 - C1 - - - - -
7	EEC 116	Introduction To Microprocessor	2	2	0	0	2	A1 - A3 - A4 - A9 - B3 - B4 - B5 - C1 - C3
8	EEC 117	Electronic Circuits	3	2	2	0	4	A1 - A3 - B2 - B3 - C1 - C2 - - - -
9	EEI 118	Electrical Measurements	3	2	2	0	4	A1 - A2 - B1 - B2 - C1 - C2 - - - -
10	EEI 132	Practical Training (1)	2	1	0	2	3	A2 - A5 - B1 - B2 - B3 - C1 - C2 - -
11	ITR 101	Industrial Training (1)	5	0	0	30	30	A2 - A3 - B2 - - - - - - - -
12	ENG 151	Engineering Economy (1)	1	1	0	0	1	A1 - A4 - - - - - - - -
13	LNG 101	English (C)	1	1	1	0	2	A10 - - - - - - - -
14	MNG 101	Principles Of Management	1	1	0	0	1	A3 - A4 - - - - - - - -
15	MTH 101	Mathematics (C)	3	2	2	0	4	A1 - - - - - - - -
16	PHY 106	Physics (C)	2	2	1	0	3	A1 - A3 - - - - - - - -
17	PHE 101	Physical Education And Activities (C)	0.5	0	0	1	1	A01 - - - - - - - -
Total weekly hours				23	12	38	73	

9-3Diploma Stage Core Courses (Mandatory):

Level (2)

S.	Course code	Course title	C H	No. of hours / week				Program ILOs covered by course
				Lec.	Tut.	Lab.	Total	
1	EEC 163	Analog Control Systems	2	2	0	0	2	A5 - A8 - B2 - B4 - C1 - C2 - -
2	EEI 120	Control System Component	3	2	2	0	4	A5 - A8 - B2 - B4 - C1 - - -
3	EEL 122	Electronic Eng. Lab.	1	0	0	3	3	A2 - A4 - B3 - B4 - B5 - - -
4	EET 162	Transmission Lines	2	2	0	0	2	A1 - A3 - B1 - B2 - - - -
5	EEI 133	Practical Training (2)	2	1	0	2	3	A2 - A4 - A7 - B3 - B4 - B5 - C1 - C2
6	EEC 161	Digital Control Systems	2	2	0	0	2	A8 - B2 - B4 - C1 - C2 - C3 - -
7	EEI 164	Industrial Process Control	2	2	0	0	2	A5 - B2 - B4 - C1 - C2 - - -
8	EET 139	Communication Systems	3	2	2	0	4	A2 - A8 - A9 - B2 - B4 - C2 - -
9	ITR 102	Industrial Training (2)	5	0	0	30	30	A2 - A3 - A5 - B2 - B3 - B4 - C1 -
10	PHE 102	Physical Education And Activities (D)	0.5	0	0	1	1	A01 - - - - - - - -
11	PHE 103	Physical Education And Activities (E)	0.5	0	0	1	1	A01 - - - - - - - -
Total weekly hours				13	4	37	54	

9-4 Diploma Stage Elective Courses*:**Level (1&2)**

S.	Course code	Course title	CH	No. of hours / week				Program ILOs covered by course
				Lec.	Tut.	Lab.	Total	
1	ENG 121	Mechanics (3)	3	2	2	0	4	A1 - A2 - - - - -
2	MTH 102	Mathematics (D)	3	2	2	0	4	A1 - - - - -
3	MTH 103	Numerical Methods	3	2	2	0	4	A1 - - - - -
4	MTH 105	Statistical Methods	2	2	1	0	3	A1 - - - - -
5	EET 111	Electromagnetic Fields (A)	3	2	2	0	4	A1 - B1 - B4 - - - -
6	EEI 170	Electrical Machines	2	2	0	0	2	A1 - A2 - B1 - B5 - C1 - -
7	EET 112	Electromagnetic Fields (B)	3	2	2	0	4	A1 - B1 - - - - -
8	EEC 112	File Organization	2	2	0	0	2	A1 - A3 - A5 - B2 - B3 - C1 - -
9	EEC 115	Software Engineering	2	2	0	0	2	A1 - A2 - A3 - B2 - B4 - C1 - -
10	EEL 176	Control Lab (1)	1	0	0	3	3	A2 - B2 - C2 - - - - -
11	EEC 193	Network Analysis	3	2	2	0	4	A1 - A3 - B1 - B2 - C1 - - -
12	EEI 186	Logic Circuits	2	2	0	0	2	A3 - A7 - A10 - B2 - B3 - B4 - C1 - C2
13	EEL 187	Electronic Lab (3)	1	0	0	3	3	A2 - A4 - B3 - B4 - B5 - C1 - -
14	EEC 194	Computer Aided Design	2	2	0	0	2	A2 - A3 - B1 - B3 - B4 - C1 - -
15	EEI 137	Industrial Systems	3	2	2	0	4	A3 - A4 - A5 - B1 - B5 - C1 - C2 -
16	EEI 182	Industrial Safety	2	2	0	0	2	A4 - A6 - C3 - - - - -
17	EEI 183	Technical Calculations	2	2	0	0	2	A3 - A4 - C2 - - - - -
18	EEI 184	Advanced Electronic Circuits	3	2	2	0	4	A2 - A3 - B2 - C1 - - - -
19	EEI 185	Non-Electrical Measurements	3	2	2	0	4	A2 - A3 - A4 - B2 - B4 - B5 - C2 - C3
20	EEI 192	Industrial Electronics (2)	3	2	2	0	4	A1 - A4 - B1 - B3 - C2 - - -
21	EEL 182	Control Lab (2)	1	0	0	3	3	A2 - A3 - A5 - B3 - B4 - C2 - -
22	ENG 111	Engineering Graphics (C)	1	0	3	0	3	A2 - A3 - A7 - A10 - B2 - B5 - -
23	LNG 102	Technical English (A)	1	1	0	0	1	A10 - - - - -
24	LNG 103	German Language (A)	1	1	1	0	2	A10 - - - - -
25	LNG 104	French Language (A)	1	1	1	0	2	A10 - - - - -
26	HUM 102	Modern Egyptian History	1	1	0	0	1	A03 - - - - -
27	HUM 103	Islamic Civilization (A)	1	1	0	0	1	A03 - - - - -
28	HUM 104	Arabic Literature	1	1	0	0	1	A03 - - - - -
Total weekly hours				42	26	9	77	

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

9-5 Bachelor Stage Core Courses (Mandatory):

Level (3)

S.	Course code	Course title	CH	No. of hours / week				Program ILOs covered by course
				Lec.	Tut.	Lab.	Total	
1	EET 205	Switching Circuits	3	2	2	0	4	A8 - A10 - B2 - B4 - - - -
2	EEC 201	Organization Of Microprocessor	2	2	0	0	2	A7 - A9 - B3 - B5 - C1 - - -
3	EET 204	System Analysis	3	2	2	0	4	A8 - A10 - B2 - B4 - C1 - - -
4	MTH 205	Mathematical Analysis	3	2	2	0	4	A1 - - - - - - -
5	EET 208	Communication (1)	3	2	2	0	4	A3 - A9 - B4 - B5 - C2 - - -
6	EET 232	Wave Shaping Circuits	3	2	2	0	4	A8 - A10 - B2 - B4 - - - -
7	EEC 230	Computer Interfacing	2	2	0	0	2	A1 - A2 - A4 - A7 - A10 - B2 - B4 - C1 - C3
8	EEC 220	Computer Graphics	2	2	0	0	2	A3 - A10 - B3 - B5 - C1 - - -
9	EEP 233	Practical Training (3)	2	1	0	2	3	A2 - A5 - A7 - B2 - B3 - B4 - C2 - C3 -
10	MTH 206	Advanced Calculus	3	2	2	0	4	A1 - - - - - - -
11	ITR 201	Industrial Training (3)	5	0	0	30	30	A2 - A3 - A5 - B1 - B2 - B3 - C1 - C2 -
12	MNG 201	Project Management	1	1	0	0	1	A3 - A4 - - - - - -
13	PHE 201	Physical Education And Activities (I)	0.5	0	0	1	1	A01 - - - - - - -
14	PHE 202	Physical Education And Activities (II)	0.5	0	0	1	1	A01 - - - - - - -
15	LNG 201	English (D)	1	1	1	0	2	A10 - - - - - - -
Total weekly hours				21	13	34	68	

9-6 Bachelor Stage Core Courses (Mandatory):

Level (4)

S.	Course code	Course title	C H	No. of hours / week				Program ILOs covered by course
				Le c.	Tu t.	Lab .	Tot al	
1	EET 237	Antenna And Wave Propagation	3	2	2	0	4	A2 - A3 - A9 - B2 - B3 - C1 - C3 - - -
2	EEC 203	Operating Systems	2	2	0	0	2	A3 - B4 - C1 - - - - -
3	EEC 222	Advanced Industrial Electronics	3	2	2	0	4	A3 - A8 - A10 - B2 - B5 - C1 - C3 - - -
4	EEL 212	Advanced Electronic Lab	1	0	0	3	3	A5 - A7 - A9 - A10 - B3 - B4 - B5 - C2 - C3 -
5	EEC 210	Computer Networks	2	2	0	0	2	A1 - A2 - A4 - A5 - A10 - B4 - B5 - C1 - -
6	EEP 234	Graduation Project	3	0	2	5	7	A5 - A6 - A8 - A9 - A10 - B3 - B5 - C1 - C2 - C3
7	EEL 235	Communication Laboratory	1	0	0	3	3	A2 - A4 - A7 - B4 - B5 - C1 - C2 - - -
8	ITR 202	Industrial Training (4)	5	0	0	30	30	A6 - A7 - A9 - A10 - B2 - B3 - B4 - C2 - C3 -
9	PHE 203	Physical Education and Activities (III)	0.5	0	0	1	1	A01 - - - - - - -
Total weekly hours				8	6	42	56	

9-7 Bachelor Stage Elective Courses*:

Level (3&4)

S.	Course code	Course title	CH	No. of hours / week				Program ILOs covered by course
				Lec.	Tut.	Lab.	Total	
1	MTH 207	Numerical Solution Of Differential Equations	3	2	2	0	4	A1 - - - - - - -
2	MTH 210	Selected Topics In Mathematics	3	2	2	0	4	A1 - - - - - - -
3	PHY 211	Solid State Physics	3	2	2	0	4	A1 - A2 - A5 - B1 - - - -
4	EET 240	Communication (II)	3	2	2	0	4	A3 - B3 - B5 - C1 - C3 - - -
5	EET 244	Theory Of Sampling	2	2	0	0	2	A3 - A9 - A10 - B1 - B4 - B5 - C1 - C3
6	EEC 242	Shaping Circuits	3	2	2	0	4	A3 - A4 - A5 - B2 - B3 - C1 - -
7	EEC 202	Computer System Analysis	2	2	0	0	2	A1 - A2 - B2 - B3 - C1 - C3 - -
8	EEC 209	Advanced Microprocessors	2	2	0	0	2	A3 - A7 - A9 - B3 - B5 - C1 - -
9	EET 207	Sampled Data Systems	3	2	2	0	4	A1 - A8 - B1 - B2 - C1 - C2 - -
10	EEP 202	Practical Training (4)	1	1	0	1	2	A2 - A3 - A10 - B2 - B3 - C2 - -
11	EEC 225	Artificial Intelligence	2	2	0	0	2	A9 - A10 - B1 - C3 - - - -
12	EEC 221	Computer Applications	2	2	0	1	3	A3 - A7 - A10 - B1 - B4 - C3 - -
13	EEC 223	Introduction To Database	2	2	0	0	2	A1 - A3 - A6 - C1 - - - -
14	EEC 224	Compiler Desgin	3	2	0	2	4	A1 - A2 - A5 - A9 - A10 - B2 - B4 - C3
15	EEI 231	Stochastic Control	3	2	2	0	4	A1 - - - - - - -
16	EEI 250	Logic Circuits (2)	3	2	2	0	4	A3 - A7 - A10 - B2 - B3 - B4 - C1 - C2
17	EEI 260	Computers In Industry	3	2	2	0	4	A4 - A7 - A9 - B2 - C1 - C2 - -
18	EET 271	Computers In Communications	3	2	2	0	4	A8 - A9 - A10 - B4 - B5 - C1 - -
19	HUM 202	English Literature	1	1	0	0	1	A03 - - - - - - -
20	LNG 203	German Language (B)	1	1	1	0	2	A10
21	LNG 204	French Language (B)	1	1	1	0	2	A10
22	HUM 203	Trade Law	1	1	0	0	1	A02 - - - - - - -
23	HUM 204	Industrial Psychology	1	1	0	0	1	A03 - - - - - - -
24	HUM 205	Islamic Civilization (B)	1	1	0	0	1	A03 - - - - - - -
25	HUM 206	Islamic Studies	1	1	0	0	1	A03 - - - - - - -
26	MNG 221	Engineering Economy (II)	1	1	0	0	1	A1 - A3 - A4 - - - - -
27	MNG 222	Behavior Discipline	1	1	0	0	1	A3 - A4 - - - - - -
28	MNG 223	Economics of Management	1	1	0	0	1	A3 - A4 - - - - - -
29	LNG 202	Technical English (B)	1	1	0	0	1	A10 - - - - - - -
Total weekly hours				46	22	4	72	

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

10-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, Avogadro's law, ideal gas equation, some useful forms derived from ideal gas equation, Dalton's law, Graham's law and its practical application, deviation of gases from ideal behavior, real gases, Van Der Waal's equation, liquifaction of gases and Joule-Thomson effect and its 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/O 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	Mechanics (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	Mechanics (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 care, first aid management, the treatment of injuries, rehabilitation techniques in sports medicine and safe practice and the law.
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.
EEL 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 state 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, basic 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 pronunciation, 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, gradient 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.

11- 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.

12- 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%

13- 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

14. Program Competencies with adopted Teaching and Learning Methods and Assessment Methods during the Academic Year:

14.1 Teaching and Learning Methods:

Several teaching and learning strategies have been defined in the program for use in all courses such that the competencies 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.

So the following teaching and learning methods are used:

**** Due to the effect of CORONA virus the Ministry of High Education has recommended the distance learning as a strategy of learning.**

So the following teaching and learning methods are used:

Face- to – Face learning	Distance Learning Using Microsoft Teams
1- Lecture	1. Lecture
2- Presentations	2. Discussions
3- Discussions	3. Problem solving
4- Tutorials	4. Brain storming
5- Lab experiments	5. Projects
6- Problem solving	6. Reporting
7- Brain storming	7. Group working
8- Projects	
9- Site visits and scientific trips	
10- Reporting	
11- Group working	
12- self-reading	

14.2 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 after the credence of distance learning strategy:

Face- to – Face learning	Distance Learning
<ol style="list-style-type: none">1. Written Exams2. Oral Exam3. Projects4. Report5. Quiz6. Presentation7. Practical Test8. Observations	<ol style="list-style-type: none">1. Dissertation2. On line quiz

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

15-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.

16- Matrix of Courses and Program Competencies

El-Minya Higher Institute of Engineering and Technology (MHIET)

			<div>Electrical Engineering and Computers Engineering (EECE) B.Sc. Program</div>			Offered courses competencies with program competencies for every academic year																											
						Institute competencies			A-level competencies (Engineering)										B-level competencies (Electrical)					C-level competencies (EECE)									
Stage	Compulsory / Elective cours	Levels / Courses	اسم المادة	Course code	Course title	A01	A02	A03	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3							
preparatory Year	Compulsory courses	Level Zero	كيمياء صناعية	CHM 001	Industrial Chemistry				X																								
			معمل كيمياء	CHM 002	Preparatory Chemistry Lab					X																							
			مقدمة في علوم الحاسب الآلي	CS 001	Introduction To Computer Science					X																							
			برمجة حاسب آلي (أ)	CS 002	Computer Programming (A)					X																							
			رسم هندسي (أ)	ENG 003	Engineering Graphics (A)					X	X																						
			رسم هندسي (ب)	ENG 004	Engineering Graphics (B)					X	X																						
			تكنولوجيا إنتاج (أ)	ENG 005	Production Technology (A)				X		X																						
			تكنولوجيا إنتاج (ب)	ENG 006	Production Technology (B)				X		X																						
			ورشة إنتاج (أ)	ENG 009	Production Technology Workshop (A)						X			X																			
			ورشة إنتاج (ب)	ENG 010	Production Technology Workshop (B)						X			X																			
			فكر تكنولوجي	ENG 011	Technology Concepts											X																	
			ميكانيكا (١)	ENG 021	Mechanics (1)					X																							
			ميكانيكا (٢)	ENG 022	Mechanics (2)					X		X																					
			تراث حضاري	HUM 001	Culture Heritage			X																									
			تدريب صناعي (تعليمي)	ITR 001	Industrial Training (A)					X						X	X																
			لغة إنجليزية (أ)	LNG 001	English Language (A)										X																		
			لغة إنجليزية (ب)	LNG 002	English Language (B)										X																		
			رياضة (أ)	MTH 001	Mathematics (1)					X																							
			رياضة (ب)	MTH 002	Mathematics (2)					X																							
			تربية رياضية (أ)	PHE 001	Physical Education (A)	X																											
			تربية رياضية (ب)	PHE 002	Physical Education (B)	X																											
			فيزياء (أ)	PHY001	Physics (1)					X		X																					
			فيزياء (ب)	PHY002	Physics (2)					X		X																					


						Institute competencies			A-level competencies (Engineering)										B-level competencies (Electrical)					C-level competencies (EECE)					
Stage	Compulsory / Elective cours	Levels / Course	اسم المادة	Course code	Course title	A01	A02	A03	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3			
Diploma Stage	Compulsory courses	Level One	دوائر منطقية (١)	EEC 110	Logic Circuit (1)				X		X									X	X			X					
			معمل الإلكترونيات (١)	EEL 121	Electrical Engineering Lab.							X		X	X							X	X				X	X	
			دوائر كهربية	EET 113	Electrical Circuits						X		X	X								X	X				X		
			مكونات الكترونية	EET 114	Electronic Components																		X				X	X	
			برمجة متقدمة	EEC 130	Advanced Programming (A)						X	X			X								X				X	X	
			تركيبات نتائج حاسبات	EEC 111	Data Structures						X	X			X					X						X			
			مقدمة ميكروبروسيسور	EEC 116	Introduction To Microprocessor						X		X	X					X					X	X	X	X		X
			دوائر الكترونية	EEC 117	Electronic Circuits						X		X										X	X			X	X	
			قياسات كهربية	EEL 118	Electrical Measurements						X	X										X	X				X	X	
			تدريب عملي (١)	EEL 132	Practical Training (1)							X				X						X	X	X			X	X	
			تدريب صناعي (١)	ITR 101	Industrial Training (1)								X	X									X						
			اقتصاد هندسي (1)	ENG 151	Engineering Economy (1)							X			X														
			لغة الإنجليزية (ج)	LNG 101	English (C)															X									
			مبادئ ء ادارة	MNG 101	Principles Of Management									X	X														
			رياضته (ج)	MTH 101	Mathematics (C)							X																	
			فيزياء (ج)	PHY106	Physics (C)							X		X															
			تربية رياضية و أنشطة (ج)	PHE 101	Physical Education And Activities (C)	X																							
		Level Two	نظم تحكم التالوج	EEC 163	Analog Control Systems										X			X				X		X		X	X		
			مكونات نظم التحكم	EEL 120	Control System Component										X			X				X		X		X			
			معمل الإلكترونيات (٢)	EEL 122	Electronic Eng. Lab.							X		X									X	X	X				
			خطوط نقل	EET 162	Transmission Lines						X										X								
			تدريب عملي (٢)	EEL 133	Practical Training (2)							X		X			X						X	X	X	X	X		
			نظم تحكم عددي	EEC 161	Digital Control Systems													X				X		X		X	X	X	
			التحكم في العمليات الصناعية	EEL 164	Industrial Process Control										X							X		X		X	X		
			نظم الصالات	EET 139	Communication Systems								X					X	X			X		X			X		
			تدريب صناعي (٢)	ITR 102	Industrial Training (2)								X	X		X						X	X	X		X			
			تربية رياضية و الأنشطة (د)	PHE 102	Physical Education And Activities (D)	X																							
			تربية رياضية و الأنشطة (هـ)	PHE 103	Physical Education And Activities (E)	X																							

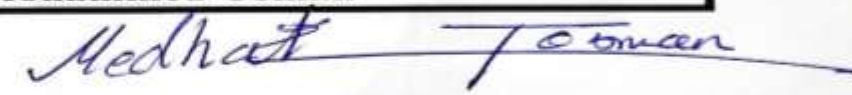
						Institute competencies			A-level competencies (Engineering)										B-level competencies (Electrical)					C-level competencies (EECE)			
Stage	Compulsory / Elective cours	Levels / Cours	اسم المادة	Course code	Course title	A01	A02	A03	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	
Diploma Stage	Elective Courses For Level One and Two	Basic courses	ميكانيكا (3)	ENG 121	Mechanics (3)				X	X																	
			رياضة (4)	MTH 102	Mathematics (D)				X																		
			طرق عددية	MTH 103	Numerical Methods				X																		
			طرق احصائية	MTH 105	Statistical Methods				X																		
		Engineering courses	مجالات كهرومغناطيسية ١	EET 111	Electromagnetic Fields (A)				X											X			X				
			الات كهربية	EEI 170	Electrical Machines				X											X					X		
			مجالات كهرومغناطيسية ٢	EET 112	Electromagnetic Fields (B)				X											X							
			تنسيق ملفات	EEC 112	File Organization				X			X		X							X	X			X		
			هندسة برمجية	EEC 115	Software Engineering				X	X	X										X		X		X		
			معمل التحكم (١)	EEL 176	Control Lab (1)					X											X					X	
			تحليل شبكات	EEC 193	Network Analysis				X			X								X	X				X		
		Technology courses	دوائر منطقية	EEI 186	Logic Circuits						X						X			X	X	X	X		X	X	
			معمل الإلكترونيات (3)	EEL 187	Electronic Lab (3)					X		X										X	X	X	X		
			التصميم بواسطة الحاسب	EEC 194	Computer Aided Design					X	X									X		X	X		X		
			نظم صناعية	EEI 137	Industrial Systems						X	X	X							X				X	X	X	
			امن صناعي	EEI 182	Industrial Safety							X		X													X
			حسابات فنية	EEI 183	Technical Calculations						X	X														X	
			دوائر الكترونية متقدمة	EEI 184	Advanced Electronic Circuits					X	X										X				X		
			قياسات غير كهربية	EEI 185	Non-Electrical Measurements					X	X	X									X		X	X		X	X
			الالكترونيات صناعية (٢)	EEI 192	Industrial Electronics (2)				X			X								X		X				X	
			معمل التحكم (٢)	EEL 182	Control Lab (2)					X	X		X									X	X			X	
		Humanity courses	رسم هندسي (ج)	ENG 111	Engineering Graphics (C)						X										X			X			
			لغة الإنجليزية فنية	LNG 102	Technical English (A)															X							
			لغة ألمانية (أ)	LNG 103	German Language (A)															X							
			لغة فرنسية (أ)	LNG 104	French Language (A)															X							
			تاريخ مصر الحديث	HUM 102	Modern Egyptian History			X																			
			حضارة إسلامية (أ)	HUM 103	Islamic Civilization (A)			X																			
			أدب عربي	HUM 104	Arabic Literature			X																			

						Institute competencies			A-level competencies (Engineering)										B-level competencies (Electrical)					C-level competencies (EECE)				
Stage	Compulsory / Elective courses	Levels / Courses	اسم المادة	Course code	Course title	A01	A02	A03	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3		
Bachelor's Stage	Compulsory courses	Level Three	دوائر فتح و غلق	EET 205	Switching Circuits											X		X		X		X						
			تركيبات ميكروبرسيور	EEC 201	Organization Of Microprocessor												X		X				X		X			
			تحليل نظم	EET 204	System Analysis													X		X		X		X				
			تحليل رياضي	MTH 205	Mathematical Analysis				X																			
			اتصالات (١)	EET 208	Communication (1)						X								X					X	X		X	
			تشكيل تموجات	EET 232	Wave Shaping Circuits													X		X		X		X				
			توصيلات حاسب	EEC 230	Computer Interfacing					X	X			X				X		X		X		X		X		X
			رسم بواسطة الحاسب	EEC 220	Computer Graphics															X			X		X			
			تدريب عملي (٣)	EEP 233	Practical Training (3)						X			X				X				X	X	X			X	X
			حسابات رياضية متقدمة	MTH 206	Advanced Calculus				X																			
			تدريب صناعي (٣)	ITR 201	Industrial Training (3)						X	X		X							X	X	X			X	X	
			ادارة مشروعات	MNG 201	Project Management							X	X															
			تربية رياضية و الأنشطة I	PHE 201	Physical Education And Activities (I)	X																						
			تربية رياضية و الأنشطة II	PHE 202	Physical Education And Activities (II)	X																						
			Level Four	لغة الانجليزية (د)	LNG 201	English (D)															X							
		هوائيات وانتشار موجات		EET 237	Antenna And Wave Propagation						X	X							X			X	X			X		X
		نظم تشغيل الحاسبات		EEC 203	Operating Systems								X											X		X		
		الكرونيات صناعية متقدمة		EEC 222	Advanced Industrial Electronics							X							X		X				X	X		X
		معمل الكرونيات متقدمة		EEL 212	Advanced Electronic Lab										X		X			X	X			X	X		X	X
		شبيكات حاسب		EEC 210	Computer Networks					X	X			X	X					X				X	X	X		
		مشروع البكالوريوس		EEP 234	Graduation Project										X	X		X	X	X			X		X	X	X	X
		معمل اتصالات		EEL 235	Communication Laboratory						X			X				X						X	X	X	X	
		تدريب صناعي (٤)		ITR 202	Industrial Training (4)											X	X			X	X		X	X			X	X
		تربية رياضية و الأنشطة III	PHE 203	Physical Education and Activities (III)	X																							

						Institute competencies			A-level competencies (Engineering)										B-level competencies (Electrical)					C-level competencies (EECE)			
Stage	Compulsory / Elective course	Levels / Courses	اسم المادة	Course code	Course title	A01	A02	A03	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	
Bachelor's Stage	Elective Courses For Level Three and Four	Basic courses	حل المعادلات التفاضلية عدديا	MTH 207	Numerical Solution Of Differential Equations				X																		
			موضوعات مختارة في الرياضيات	MTH 210	Selected Topics In Mathematics				X																		
			فيزياء الجوامد	PHY 211	Solid State Physics				X	X																	
		Engineering courses	اتصالات (II)	EET 240	Communication (II)						X								X	X			X		X		X
			نظرية عينات	EET 244	Theory Of Sampling						X								X	X	X		X	X	X		X
			دوائر تشكيل	EEC 242	Shaping Circuits						X	X	X									X	X		X		
			تحليل نظم حاسبات	EEC 202	Computer System Analysis				X	X												X	X		X		X
			معالجات صغيرة متقدمة	EEC 209	Advanced Microprocessors						X						X		X				X		X		
			نظم ذو عينات النتائج	EET 207	Sampled Data Systems				X									X			X	X			X	X	
			تدريب عملي (4)	EEP 202	Practical Training (4)					X	X								X		X	X				X	
		Technology courses	الذكاء الاصطناعي	EEC 225	Artificial Intelligence														X	X	X						X
			تطبيقات حاسب	EEC 221	Computer Applications						X						X			X	X			X			X
			مقدمة قواعد بيانات	EEC 223	Introduction To Database				X		X				X										X		
			تصميم مجمع معلومات	EEC 224	Compiler Desgin				X	X				X					X	X		X		X			X
			التحكم العشوائي	EEI 231	Stochastic Control				X																		
			دوائر منطقية (٢)	EEI 250	Logic Circuits (2)						X						X			X		X	X	X		X	X
			الحاسب الآلي في الصناعة	EEI 260	Computers In Industry														X			X			X		X
			الحاسب الآلي في الاتصالات	EET 271	Computers In Communications													X	X	X				X	X	X	
		Humanity courses	ادب انجليزي	HUM 202	English Literature			X																			
			قانون تجاري	HUM 203	Trade Law		X																				
			علم نفس صناعي	HUM 204	Industrial Psychology			X																			
			حضارة إسلامية	HUM 205	Islamic Civilization (B)			X																			
			دراسات إسلامية	HUM 206	Islamic Studies			X																			
			اقتصاد هندي II	MNG 221	Engineering Economy (II)				X			X	X														
			سلوك تنظيمي	MNG 222	Behavior Discipline							X	X														
			اقتصاديات الإدارة	MNG 223	Economics of Management							X	X														
			لغة الإنجليزية فنية (ب)	LNG 202	Technical English (B)															X							

Course code	Course title	Institute competencies			A-level competencies (Engineering)										B-level competencies (Electrical)					C-level competencies (EECE)		
		A01	A02	A03	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3
Teaching methods	Lecture	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	Presentations	√	√	√	√		√		√	√	√	√	√	√		√	√			√		√
	Discussions	√	√	√	√		√				√	√	√					√		√	√	√
	Tutorials				√			√	√	√			√	√	√	√	√	√	√		√	
	Lab experiments						√			√	√	√				√	√	√	√	√	√	√
	Problem solving							√	√			√	√	√		√	√				√	√
	Brain storming					√	√					√	√	√	√				√			
	Projects							√			√	√	√	√	√	√	√	√		√	√	√
	Site visits and scientific trips				√			√	√		√	√		√	√			√	√	√		
	Reporting	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	Group working					√	√			√	√	√	√	√	√			√	√	√	√	√
	Self-reading	√	√	√	√			√	√			√		√	√			√	√	√	√	√
	Distance Learning	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Assessment methods	Written Exams	√	√	√	√	√		√	√	√			√	√	√	√	√	√		√		
	Oral Exam				√				√	√		√	√	√	√			√	√	√		√
	Projects				√	√	√	√	√	√		√	√	√	√	√	√	√	√	√	√	√
	Report					√		√		√	√	√	√		√	√	√	√	√	√	√	√
	Quiz	√	√	√	√	√											√					√
	Presentation	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√	√	√	√	√	√
	Practical Test					√	√				√			√				√	√	√	√	√
	Observations	√	√	√		√	√				√	√		√				√	√		√	√
	Dissertation	√	√	√	√	√		√	√	√		√	√	√	√	√	√	√		√		
	On line quiz	√	√	√	√	√											√					√

Program Coordinator:	
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Quality Assurance Unit	
Dr. Medhat Mohammed Osman	
Signature:	

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