

Computer and Control Engineering

Program Specification

According to 2013 Regulation
2023 - 2024

Computers and Control Engineering

Program Specification

According to 2013 Regulation

Administrative Information

Program title	Computers and Control Engineering, CCE
Program type	Single
Award / degree	B.Sc. Degree
Dept. (s) responsible	Communication and Computer Engineering
Coordinator	Dr. Sahar Kamal Hussein
External evaluator	Prof.: Osama Elsayed Electronics and Communication Dept., Assuit University
Date of most recent approval of program specification by the Department council	Department council's in 11/9/2023
Date of most recent approval of program specification by the Academic council	27/9/2023

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Program Specification

A. General Information

1. Basic Information

- **Program Title:** Computers and Control Engineering Program
- **Program Type:** Single
- **Department:** Communication and Computer Engineering Depatement
- **Coordinator:**
- **Assistant Co-ordinator:** Dr. Sahar Kamal Hussein
- **Year of operation:** 2023-2024
- **Dates of program specifications approval:** 2013

2. Staff Members

The Electronics and Communications Engineering Program is taught by (35) highly qualified staff members.

No. of staff members	Full time	Part time
Engineering Courses	19	-
Basic Sciences Courses	16	-

3. External Evaluators:

The program was evaluated by external evaluator **Prof.: Osama Elsayed**. The evaluation showed that the program specification agrees with the National Academic Reference Standards. However, the reviewer gave objective comments, which were taken into consideration in the final version of the program specifications.

External Evaluators	Date of review	Action
Prof. Dr.: Osama Elsayed	July 2023	All comments were covered

B. Specialized Information

1. Educational objectives of the computer and control engineering Program

The computer and control engineering program adopted the NARS attributes for engineering and computer and control engineering. The computer and control engineering program aim (graduate attributes) to

1. Applying basic engineering sciences, principles of algorithms, and theories of computer science in the modeling and design of computer and control systems.
2. Analyzing, implementing, modeling, designing, and testing various computer control systems, operating, maintaining, and repairing them, as well as designing and implementing integrated systems, computer-related electronic devices, and modern software systems used in building computer systems.
3. Implementing, modeling, and designing database systems, analyzing, and designing computer networks, communication systems, defining specifications and necessary equipment for them, as well as designing websites and mobile applications.
4. Applying the acquired knowledge in the implementation of pattern recognition techniques, signal /image processing and analysis, as well as the design and modeling of various artificial intelligence systems and their control.
5. Apply engineering methods, tools, and skills in the field of computer and control technology to be able to analyze and model engineering problems and choose the optimal solution for them.
6. Developing self-learning skills and focusing on scientific research, effective communication, technical presentations, preparing reports, and providing them with team work ethics.
7. Application and implementation of applied and research projects in response to the needs of society and the development of the environment in accordance with the highest quality standards.

2. The Attributes of a Computer and Control engineer

A) General specifications for a graduate of computer and control engineering program:

1. Mastering a wide spectrum of engineering knowledge and specialized skills, also can apply acquired knowledge using theories and abstract thinking in real-life situations.
2. Applying analytic and systemic thinking to identify, diagnose and solve engineering problems with a wide range of complexity and variation.
3. Behaving professionally and adhere to engineering ethics and standards.
4. Leading / working in a heterogeneous team of professionals from different engineering specialties and assume responsibility for own and team performance.

5. Recognizing his/her role in promoting the engineering field and contribute to the development of the profession and the community.
6. Value the importance of the environment, both physical and natural, and work to promote principles of sustainability.
7. Applying and using techniques, skills, and modern engineering tools necessary for engineering practice.
8. Having full responsibility for own learning and self-development, engage in lifelong learning and demonstrate the capability to engage in post-graduate and research studies.
9. Communicating effectively using different modes, tools, and languages with various audiences; to deal with academic/professional challenges in a professional and creative manner.
10. Demonstrating leadership qualities, business administration and project management skills.

B) Special specifications for a graduate of computer and control engineering program:

- 1- Mastering the acquired knowledge for modeling, designing, implementing, and operating computers and electronic devices related to computers, network systems and automatic control systems, and embedded systems also determining the specifications , equipment necessary for them and also its maintenance, and repair.
- 2- Mastering the application, development and design of various artificial intelligence systems, image processing techniques and pattern recognition, as well as developing and designing databases, websites and mobiles and satellites applications.

3. Learning Outcomes (LO's)

3.1 Competencies of engineering graduate (Level A)

The engineering graduate must be able to:

A- General Engineering NARS Competencies in 2018			
A1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	A1.1	Identify, and formulate complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
		A1.2	Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
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.	A2.1	Develop and conduct appropriate experimentation and/or simulation.
		A2.2	Analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.
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.	A3.1	Apply engineering design processes to produce cost-effective solutions that meet specified needs.
		A3.2	Illustrate contextual constraints such as global, social, cultural, economic, environmental, ethical and sustainability imperatives as an integral part of the design process.
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		A5.1	Identifies current developments and technologies related to engineering.

	Practice research techniques and methods of investigation as an inherent part of learning.	A5.2	Applies selected research literature in the engineering approaches.
A6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	A6.1	Apply fundamental engineering processes and the project management tools to the planning, design, simulation, and execution of project work. Plan implementation of engineering projects, taking into consideration other trades requirements.
		A6.2	Supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.
A7	Function efficiently as an individual and as a member of multi-disciplinary and multicultural 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.	A9.1	Use creative, innovative, and flexible thinking to anticipate and respond to new situations.
		A9.2	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.

2.2 Competencies of basic electrical engineering (Level B)

The electrical engineering graduate must be able to:

B- Electrical NARS Competencies in 2018			
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.	B1.1	Select, and model, electrical power systems applicable to the specific discipline by applying the concepts of generation, transmission, and distribution of electrical power systems.
		B1.2	Analyze electrical power systems applicable to the specific 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.	B2.1	Design an electrical/electronic/digital system or component for a specific application: and identify the tools required to optimize this design.
		B2.2	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.	B3.1	Design elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools.
		B3.2	Implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools.
		B3.3	Identify the tools required to optimize the design of an

			electrical/electronic/digital system or component for an electrical 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.	B4.1	Measure the performance of electronic circuits, instrumentation, sensors, and communication systems using appropriate lab equipment effectively and safely.
		B4.2	Estimate and evaluate the performance of electrical/ electronic drivers, circuits, instrumentation, sensors, and actuators as stand-alone systems or as part of electronics and communication systems.
B5	Adopt suitable national and international standards and codes to design, build, operate, inspect, and maintain electrical/electronic/digital equipment, systems, and services.	B5.1	Take on suitable national and international standards to carry out specialized communications systems designs.
		B5.2	Examine the design of different in electrical/electronic/digital equipment, systems and services based on national and international codes.

3.3 High specified competencies (Level C)

In addition to the competencies for all engineering programs (Level A) and the competencies for the basic electrical engineering discipline (Level B), the Computer and Control Program graduate must be able to (Level C)

C- Computer and Control Engineering ARS			
C1	Recognize, Explain, Analyze, describe, develop computer hardware, software developing applications, information technology systems and its user interface	C1.1	Recognize, explain, and describe computer hardware and computer software.
		C1.2	Analyze and develop software applications, information technology systems and its user interface.
C2	Apply and develop new methodologies to design artificial intelligent systems, data base and signal / image process.	C2.1	Apply, develop, and design artificial intelligence and database systems
		C2.2	Apply new methodologies to design signal /image processing techniques
C3	Explain, describe, analyze, and design, simulate, model, implement and test embedded systems, control systems and their applications to achieve acceptable quality measure.	C3.1	Explain, describe, and analyze embedded systems, control systems and their applications.
		C3.2	Design, simulate, model, implement and test, embedded systems, control systems and their applications to achieve acceptable quality measure.
C4	Explain, describe, analyze principles and advanced topics related to cloud computing, big data, computer networks, cryptography, and communication systems, for network's performance, control and troubleshooting and maintenance all types of systems.	C4.1	Explain, describe , analyze principles and advanced topics related to cloud computing, big data, computer networks, cryptography, and communication systems, for network's performance,
		C4.2	Control and troubleshooting and maintenance all types of systems.

4. Academic Standars

National Academic Reference Standards (NARS 2018) was adapted.

5. Bookmarks

- The program Competences were prepared by taking the faculty members opinion.
- The program Competences were reviewed by two external reviewers accredited by the National Authority for Quality Assurance and Accreditation of Education, namely:
 - 1- **Prof.: ElSayed M. Elrabeay (2021/2022)**
 - 2- **Prof.: Osama Elsayed (2021/2022-2022/2023)**
- UMass Lowell- Electrical & Computer Engineering, USA
<https://www.uml.edu/catalog/undergraduate/engineering/departments/electrical-computer-engineering/learning-outcomes-ece.aspx>
- Computer Engineering Department FT-EIC ITS, Indonesia
<https://www.its.ac.id/komputer/academic/program-leaming-outcomes/>
- Electrical Engineering & Mechanical Engineering Departments Accredited by National Board of Accreditation (NBA), India
<https://www.mmcoe.edu.in/index.php/computer-engineering/computer-engineering/learning-outcomes>
- Electrical Engineering & Mechanical Engineering Departments Accredited by National Board of Accreditation (NBA), India
<https://www.mmcoe.edu.in/index.php/computer-engineering/computer-engineering/learning-outcomes>
- UMass Lowell- Electrical & Computer Engineering, USA
<https://www.uml.edu/catalog/undergraduate/engineering/departments/electrical-computer-engineering/learning-outcomes-ece.aspx>
- Karmaveer Adv. Baburao Ganpatrao Thakare College of Engineering, Maharashtra
https://kbtcoe.org/wp-content/uploads/2021/03/Instru-Control_PSOs-COs_19-20-compressed.pdf
- Computer Engineering Department FT-EIC ITS, Indonesia
<https://www.its.ac.id/komputer/academic/program-leaming-outcomes/>
- Devi Ahilya University, USA

<https://www.mdc.edu/asa/documents/competencies/pdf/EET4730C%20Feedback%20Control%20Systems.pdf>

6. Program Structure and Contents:

6.1 Program duration: The duration of the program is five academic years, including the preparatory year

6.2 Program Content:

The following are the subjects taught during this program

Prep. Year / 1st Semester

***Lastly taught in academic year 2018/2019 due to new regulation start in 2019/2020**

Code	Course Name	Teaching Hours						Marking				Subject Area						
		Lectures	Exercises	Practical	Total hours	Credit Hours	Written Exam Duration	Year work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
PHM 011	Mathematics (1)	2	2	-	4	3	2	60	-	90	150		√					
PHM 031	Mechanics (1)	2	2	-	4	3	2	60	-	90	150		√					
PHM 021	Physics (1)	2	1	1	4	2	2	30	30	40	100		√					
ARC 011	Engineering drawing & Projection (1)	1	3	-	4	2	2	50	-	50	100			√				
HUM 021	Production Technology	1	1	2	4	2	2	30	30	40	100			√				
Hum 021	History of engineering and technology	2	-	-	2	2	2	30	-	70	100	√						
CHE 001	Chemistry (1)	2	1	1	4	2	2	30	30	40	100		√					
HUM 011	Technical English language (1)	-	2	2	4	1	1	15	15	20	50	√						
Total		12	12	6	30	17	15	305	105	440	850	3	10	4	-	-	-	-

Prep. Year/ 2nd Semester

Code	Course Name	Teaching Hours						Marking				Subject Area						
		Lectures	Exercises	Practical	Total hours	Credit Hours	Written Exam Duration	Year work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
PHM 012	Mathematics (2)	2	2	-	4	3	2	60	-	90	150		√					
PHM 032	Mechanics (2)	2	2	-	4	3	2	60	-	90	150		√					
PHM 022	Physics (2)	2	1	1	4	2	2	30	30	40	100		√					
ARC 012	Engineering drawing & Projection (2)	1	3	4	8	3	2	45	45	60	150			√(2)		√(1)		
HUM 012	Technical English language (2)	-	2	2	4	1	1	15	15	20	50	√						
ECE 001	International Computer Driving License (ICDL)	-	-	4	4	1	2	15	15	20	50					√		
SCX 0P1	Selective Course (1)	2	1	1	4	2	2	30	30	40	100			√				
SCX 0P2	Selective Course (2)	2	1	-	3	2	2	40	-	60	100			√				
Total		11	12	12	35	17	15	295	135	420	850	1	8	6	-	2	-	-

***Lastly taught in academic year 2019/2020 due to new regulation start in 2019/2020**

Code	Course Name	Teaching Hours					Written Exam Duration	Marking				Subject Area						
		Lectures	Exercises	Practical	Total hours	Credit Hours		Year work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
ECE 141	Circuits (2)	2	2	-	4	3	2	30	40	80	150			√				
ECE 111	Electronics (2)	2	1	1	4	2	2	30	30	40	100			√				
ECE 121	Measurements and Laboratory (1)	2	-	2	4	2	2	20	40	40	100			√				
PHM 110	Mathematics (3)	2	2	-	4	3	2	60	-	90	150		√					
PHM 121	Physics (3)	2	1	1	4	2	2	20	20	60	100		√					
ECE 143	Mechanical Engineering (1)	2	-	2	4	2	2	30	30	40	100			√				
ECE 191	Information Technology	2	-	2	4	2	2	30	30	40	100					√		
Total		17	6	8	28	16	14	220	190	390	800	-	5	9	-	2	-	-

Code	Course Name	Teaching Hours						Marking				Subject Area						
		Lectures	Exercises	Practical	Total hours	Credit Hours	Written Exam Duration	Year work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
ECE 122	Measurements and Laboratory (2)	2	-	2	4	2	2	20	40	40	100			✓				
PHM 111	Mathematics (4)	2	2	-	4	3	2	60	-	90	150		✓					
PHM 122	Physics (4)	2	2	1	5	3	2	30	30	90	150		✓					
ECE 144	Mechanical Engineering (2)	2	-	2	4	2	2	30	30	40	100			✓				
ECE 181	Training Project (1)	-	2	-	2	1	-	-	50	-	50						✓	
ECP1 03	Logic design	2	2	2	6	3	2	40	40	70	150					✓		
HUM 101	Selective Course (Humanities (1))	2	1	-	3	2	2	30	-	70	100	✓						
Total		12	9	7	28	16	12	210	190	400	800	2	6	4	-	3	1	-

FirstYear / 3rd Semester (summer)

Code	Course Name	Teaching Hours						Marking				Subject Area						
		Lectures	Exercises	Practical	Total hours	Credit Hours	Written Exam Duration	Year work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
ECE 13X	Practical field training (1)	-	-	3	3	1	-	25	25	-	50						✓	
ECE 182	Training Project (2)	-	2	-	2	1	-	-	50	-	50						✓	
Total		-	2	3	5	2	-	25	75	-	100	-	-	-	-	-	2	-

SecondYear/ 1st Semester

Code	Course Name	Teaching Hours						Marking				Subject Area						
		Lectures	Exercises	Practical	Total hours	Credit Hours	Written Exam Duration	Year work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
ECE 261	Electrical and Magnetic Fields (1)	2	1	-	3	2	2	40	-	60	100				√			
ECE 223	Measurements and Laboratory (3)	1	-	2	3	1	2	15	15	20	50			√				
ECE 213	Electronics (3)	2	1	1	4	2	2	30	30	40	100			√				
PHM 211	Mathematics (5)	2	2	-	4	3	2	60	-	90	150		√					
ECE 283	Training Project (3)	-	2	-	2	1	-	-	50	-	50						√	
ECE 291	Microprocessors	2	2	2	6	3	2	40	60	50	150					√		
ECE 242	Circuits (3)	2	2	2	6	3	2	40	40	70	150			√				
HUM 203	Technical written reports	2	1	-	3	2	2	30	-	70	100	√						
Total		13	11	7	31	17	14	255	195	400	850	2	3	6	2	3	1	-

SecondYear/ 2nd Semester

Code	Course Name	Teaching Hours					Written Exam Duration	Marking				Subject Area						
		Lectures	Exercises	Practical	Total hours	Credit Hours		Year work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
ECE 262	Electrical and Magnetic Fields (2)	2	1	-	3	2	2	40	-	60	100				✓			
ECE 224	Measurements and Laboratory (4)	1	-	2	3	1	2	15	15	20	50			✓				
ECE 214	Electronics (4)	2	1	1	4	2	2	30	20	50	100			✓				
PHM 212	Mathematics (6)	2	1	-	3	2	2	40	-	60	100		✓					
ECE 251	Electrical Signal Analysis	2	-	2	4	2	2	40	-	60	100				✓			
ECE 231	Dynamics system and control	2	2	-	4	3	2	60	-	90	150			✓				
ECE 292	Computer Engineering (1)	2	-	4	6	3	2	45	45	60	150					✓		
Total		13	5	9	27	15	14	270	80	400	750	-	2	6	4	3	-	-

Second Year/ 3rd Semester (Summer Course)

Code	Course Name	Teaching Hours					Written Exam Duration	Marking				Subject Area						
		Lectures	Exercises	Practical	Total hours	Credit Hours		Year work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
ECE 23X	Practical Field training (2)	-	-	3	3	1	-	25	25	-	50						✓	
ECE 284	Training Project (4)	-	2	-	2	1	-	-	50	-	50						✓	
Total		-	2	3	5	2	-	25	75	-	100	-	-	-	-	-	2	-

Third Year/ 1st Semester

Code	Course Name	Teaching Hours						Marking				Subject Area						
		Lectures	Exercises	Practical	Total hours	Credit Hours	Written Exam Duration	Year work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
CCE 351	Commuciations (1)	2	0	2	4	2	2	30	30	40	100				√			
CCE 371	Automatic Control	2	-	2	4	2	2	40	-	60	100				√			
CCE 391	Computer Architecture (1)	2	2	2	6	3	2	45	45	60	150					√		
CCE 392	Software Engineering	2	2	2	6	3	2	45	45	60	150					√		
CCE 393	Computer Eng. (2)	2	-	2	4	2	-	30	30	40	100					√		
CCE 317	Computer Aided Design (CAD)	1	-	2	3	1	2	15	15	20	50					√		
EPM 305	Power Eng. And Electrical Machines (1)	2	-	2	4	2	2	30	30	40	100				√			
HUM 3XX	Humanities Optional (2)	2	1	-	3	2	2	30	-	70	100	√						
Totals		15	5	14	34	17	14	265	195	390	850	2	-	-	6	9	-	-

Third Year/ 2nd Semester

Code	Course Name	Teaching Hours						Marking				Subject Area					
		Lectures	Exercises	Practical	Total hours	Credit Hours	Written Exam Duration	Year work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice
CCE 352	Communications (2)	2	-	2	4	2	2	30	30	40	100				√		
CCE 372	Digital Control	2	-	2	4	2	2	40	-	60	100				√		
CCE 394	Computer Architecture (2)	2	2	2	6	3	2	45	45	60	150					√	
CCE 395	Data Bases	2	-	2	4	2	2	30	30	40	100					√	
CCE 361	Electromagnetic Waves	2	-	2	4	2	2	30	30	40	100				√		
HUM 303	Legislation, Contracts, and Specifications	2	1	-	3	2	-	30	-	70	100	√					
EPM 306	Power Eng. And Electrical Machines (2)	2	-	2	4	2	2	30	30	40	100			√			
Total		14	3	12	29	15	12	235	165	350	750	2	-	2	6	5	-

Third Year/ 3rd Semester (Summer Course)

Code	Course Name	Teaching Hours						Marking				Subject Area					
		Lectures	Exercises	Practical	Total hours	Credit Hours	Written Exam Duration	Year work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice
CCE 33X	Practical Field Project (3)	-	-	3	3	1	-	25	25	-	50						√
CCE 383	Training Project (5)	-	-	4	4	1	-	0	50	-	50						√
Totals		-	-	7	7	2		25	75		100	-	-	-	-	-	2

Fourth Year/ 1st Semester

Code	Course Name	Teaching Hours						Marking				Subject Area						
		Lectures	Exercises	Practical	Total hours	Credit Hours	Written Exam Duration	Year work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
CCE 491	Computer Networks (1)	2	1	1	4	2	2	30	30	40	100							√
CCE 4XX	Optional Course (1)	2	-	2	4	2	2	30	30	40	100							√
CCE 4XX	Optional Course (2)	2	-	2	4	2	2	30	30	40	100							√
CCE 411	Data Structures	2	2	2	6	3	2	30	50	70	150					√		
BSM 492	Artificial Intelligence	2	2	-	4	3	2	60	-	90	150							√
HUM 4XX	Humanities Optional (3)	2	1	-	3	2	2	30	-	70	100	√						
CCE 481	Project	2	-	3	5	3	-	50	-	-	50						√	
Totals		14	6	10	30	17	12	260	140	350	750	2	-	-	-	3	3	9

Fourth Year/ 2nd Semester

Code	Course Name	Teaching Hours						Marking				Subject Area						
		Lectures	Exercises	Practical	Total hours	Credit Hours	Written Exam Duration	Year work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
CCE 493	Computer Networks (2)	2	1	1	4	2	2	30	30	40	100							√
CCE 494	Operating Systems	2	1	2	5	3	2	45	45	60	150							√
CCE 495	Computer Drawing Applications	2	2	2	6	3	2	45	45	60	150					√		
CCE 4XX ₃	Optional Course (3)	2	-	2	4	2	2	30	30	40	100							√
CCE 4XX ₄	Optional Course (4)	2	-	2	4	2	2	30	30	40	100							√
HUM 442	Project Management	2	1	-	3	2	2	30	-	70	100						√	
CCE 482	Project	2	-	3	5	3	-	70	180	-	250						√	
Totals		14	5	12	31	17	12	280	360	310	950	-	-	-	-	3	5	9

6.3 Program Structure

Total teaching hours and subjects distribution over the subject areas

	Course teaching (Contact) hours	Course teaching (Credit) hours	Humanities & Social Sciences	Math & Basic Sciences	Basic Eng	Applied Eng& Design	Computer Appl& ICT*	Projects* & Practice	Discretionary
Total Prep year 1 st Semester	30	17	3	10	4	-	-	-	-
Total Prep year 2 nd Semester	35	17	1	8	6	-	2	-	-
Total 1 st year 3 rd Semester	28	16	-	5	9	-	2	-	-
Total 1 st year 4 th Semester	28	16	2	6	4	-	3	1	-
Total 1 st year 5 th Semester	5	2	-	-	-	-	-	2	-
Total 2 nd year 6 th Semester	31	17	2	3	6	2	3	1	-
Total 2 nd year 7 th Semester	27	15	-	2	6	4	3	-	-
Total 2 nd year 8 th Semester	5	2	-	-	-	-	-	2	-
Total 3 rd year 9 th Semester	34	17	2	-	-	6	9	-	-
Total 3 rd year 10 th Semester	29	15	2	-	2	6	5	-	-
Total 3 rd year 11 th Semester	7	2	-	-	-	-	-	2	-
Total 4 th year 12 th Semester	30	17	2	-	-	-	3	3	9
Total 4 th year 13 th Semester	31	17	-	-	-	-	3	5	9
Total of Five Years	320	170	16	37	37	36	18	14	12
% of Five Years	100%		9.40	20.76	21.76	21.18	10.59	8.24	7.1
NARS %	100%		9-12%	20-26%	20-23%	20-22%	9-11%	8-10%	6-8%

	Subject Area							Total Hours	Percentage	Requirements of the Engineering Sector Committee
	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Selective course			
Humanitarian Courses								28	8.75%	8-10%
Mathematics and Basic Science Courses								56	17.5 %	15-20%
Basic Engineering Courses								111	34.7%	30-35%
Applied Engineering Courses Including Projects & Training								125	39%	35-40%
Total Credit Hours	16	37	37	36	18	14	12	170		
Percentage	9.4 %	20.76 %	21.76 %	21.18 %	10.59 %	8.24 %	7.1 %		100%	
NARS Engineering Requirements	9-12%	20-26%	20-23%	20-22%	9-11%	8-10%	6-8%			

From the above table show the credit hours distribution and the requirement of

From the above table show the credit hours distribution and the requirement of

- The engineering sector of supreme council of higher education
- The Egyptian NARS, 2018 edition

It is the evident that the current program fulfills the NARS and The engineering sector requirements

7. Course Contents

Course Code: }
Course Name: } Please look to appendix (3)
Contents: }

8. Program Admission Requirements

- Secondary Egyptian Schools Graduates.
- Secondary School Certificate Graduates of other countries are eligible to join this program if they met the minimum grades set by Admission Office of the Ministry of Higher Education.

- The study begins with a preparatory year for all students before specialization in Electronics and Communications Engineering. Students' departmental allocation is in accordance with the institute Council regulations.
- The student must study two specific courses Electronics (1) and Circuits (1) Engineering

9. Regulations for Progression and Program Completion

- a- The student is considered successful if he passes the examination in all courses of his class.
- b- The student is promoted to the next higher level if he fails in not more than two subjects of his class or from lower classes,
- c- In addition to the two subjects mentioned in the previous item, the student who fails in two subjects in humanities and social sciences, whether from his class or from lower classes, is admitted to the transfer to the consecutive higher level. Passing successfully in all courses before obtaining the B.Sc. degree is prerequisite.
- d- The referred student has to sit the examination in the courses in which he has failed together with the students studying the same courses. The student gets a pass grade when he passes the examination successfully. In the case the student was considered absent with acceptable excuse in a course, he gets the actual grade,
- e- The grades of the successful student in a course and in the general grade are evaluated as follows:
 - Distinction: from 85% of the total mark and upwards.
 - Very good: from 75% to less than 85% of the total mark.
 - Good: from 65% to less than 75% of the total mark.
 - Pass: from 50% to less than 65% of the total mark.
- f- The grades of a failing student in a course is estimated in one of the following grades:
 - Weak: from 30% to less than 50% of the total mark.
 - Very weak: less than 30% of the total mark.
- g- The B.Sc. general grade for the students is based on the cumulative marks obtained during all the years of study. The students are then arranged serially according their cumulative sum.
- h- The student is awarded an honor degree if his cumulative sum is distinction or very good provided that he gets a grade not less than very good in any class of study other

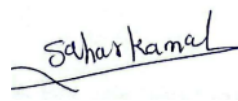

than the preparatory year. Moreover, he should have not failed in any examination he has sat in any other than the preparatory year.

10. Student Assessment (Methods and rules for student assessment)

Method (tool)	LO's
1. Written exam	To assess competencies: A, B & C
2. Quizzes and reports	To assess competencies: A, B & C
3. Oral exams	To assess competencies: A, B & C
4. Practical	To assess competencies: A, B & C
5. Project applied on a practical field problem	To assess competencies: A, B & C

11. Program Evaluation

Evaluator	Tool
1- Senior students	Questionnaire
2- Alumni	Questionnaire
3- Stakeholders	Questionnaire
4- External Evaluator(s) (External Examiner (s))	Report
5- Other societal parties	Questionnaire

Title	Name	Signature
Coordinator of the Program	Dr. Sahar Kamal Hussein	
Chairman of the Department Council	Prof. Dr. Salah Elagooz	
Date of Approval	11/9/2023	

Appendix (1)

Matrices

Appendix (2)

The Internal Regulations for the undergraduate

Appendix (3)

Course Specification