

Albayan University جامعة البيان



First Cycle – Bachelor's Degree (B.Sc.) - Computer Technical Engineering

بكالوريوس – هندسة تقنيات الحاسوب (الدورة الأولى) - الكلية التقنية الهندسية جامعة البيان



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1- Mission & Vision Statement

Vision Statement

To produce highly qualified and motivated graduates through a rigorous curriculum of theory and emphasize the technical application that develops the ability to solve problems, build systems, and develop and implement computer driven solutions, individually and in teams.

Mission Statement

Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety and cultural, societal, and environmental concerns.

1. Program Specification

Programme code:	BSc-IT	ECTS	240
Duration:	4 levels, 8 Semesters	Method of Attendance:	Full Time

The Computer Engineering Techniques program is designed to provide students with the skills to improve themselves by preparing them for a career in the digital sector. Students will learn how to administer and support the computing infrastructure of an organization. The curriculum consists of an integrated set of courses that builds a solid theoretical foundation for the students. Once the foundation is established, the program develops domain-specific skills in the fields of digital and analog system design, database development and administration, mobile communications, networking, artificial intelligence, and programming. In its entirety, the program aims to prepare the students for careers in companies where they will be involved with the design, implementation, and operation of computer systems.

Moreover, the students will be provided with a knowledge of Internet technologies sufficient for the design and management of network information systems. Level 1 builds a solid foundation for the student in mathematics and computer essentials, suitable for progression to all program modules. Program-specific core topics are covered at Level 2 preparing for application-specific led modules at levels 3 and 4. At Levels 2, 3, and 4 IT students cover designing and administering complex network systems, database systems, and designing security solutions related to cyber-security. Students acquire programming skills in Python and C ++, the basics of routing and switching, designing IT networks and wide area network technologies in addition to mobile networks and information theory. Eventually, IT graduates will gain knowledge, skills, and competencies that are industry-oriented and market-driven.

The research ethos is developed and fostered from the start via practical's, which are either embedded in lecture modules or taught in dedicated practical modules, research seminars, and tutorials. There is a compulsory field course in Level 1, which students must pass in order to progress into Level 2, and optional field courses in Levels 2, 3, and 4. At Level 4 all students carry out an independent research project.

2. Program Goal

Computer Engineering Techniques is a field that involves the application of engineering and technological principles to the design, development, and maintenance of computer hardware, software, and network systems. To be successful in this field, professionals need to possess specific competencies. Below are some of the essential competencies for the Department of computer engineering techniques:

1. Programming Skills: Proficiency in programming languages is essential for computer technology engineers to have expertise in programming languages such as C++, Matlab, and Python. They should be able to develop, test, and maintain programs that meet the needs of users.

2. Mathematical Skills: They should be skilled in mathematical concepts such as algebra, trigonometry, and calculus, as they play a vital role in the design, development, and testing of computer components and systems.

3. Knowledge of Computer Hardware Skills: Specialists should have a solid knowledge of computer hardware, including processors, memory, storage, and other essential components, and this is covered in computer organization, Microprocessors, and advanced computer architecture subjects.

4. Networking Skills: Professionals should be able to design, configure, troubleshoot, and maintain computer networks and their protocols of operation besides the security of the network and the Internet in general.

5. Communication Systems Skills: Proficiency in different types of communication systems: analog, digital, and mobile communication give the computer technology engineer a solid foundation for his field of operation in the future.

6. System Design and Troubleshooting Skills: Specialists should have the skills to design and implement systems and also to identify and diagnose system malfunctions before applying corrective action and this is covered through many subjects such as instruments and measurement, control systems, real-time systems, microcontrollers, and other.

7. Problem-Solving Skills: In this field, professionals are expected to have excellent problem-solving skills, as they are responsible for identifying and assessing complex problems and designing effective solutions, and this is mostly covered in subjects like project management and information theory besides engineering analysis.

Electrical and Electronics Skills: Solid foundation skills in electrical and electronics circuits and systems, their design and implementation are also crucial.

9. Database Management Skills: Knowledge of database structure, queries, and management is essential to ensure the optimum working of software applications.

10. Research and Development Skills: Specialists must be up to date on technological trends and keep themselves informed about emerging technologies and industry best practices.

In summary, Computer Engineering Techniques Specialist include hardware and software configuration, programming skills, networking and security knowledge, troubleshooting, database management, collaboration, communication, time management, custom solutions designing, and research and development. Overall, possessing these competencies equips Computer Engineering

Techniques Specialist Professionals with the requisite skills to design, implement and maintain computer systems and networks effectively.

3. **Student Learning Outcomes**

The Department of Computer Engineering Technique requires professionals to possess generic competencies in addition to the technical skills and knowledge required to perform their roles effectively. Below are some of the generic competencies required by the Department of Computer Engineering Techniques:

1. Analytical Thinking: The ability to identify and analyze complex problems and provide practical solutions is essential for professionals in this field.

2. Continuous Learning: Keeping up to date with new technologies, tools, and techniques is crucial for professionals to remain competitive.

3. Adaptability: Being able to adapt and navigate changes is essential as the technology landscape is ever-changing.

4. Creativity: The ability to think creatively and innovate helps to develop new solutions and products.

5. Teamwork: Professionals must be able to work collaboratively with colleagues, clients, and other stakeholders to achieve the desired results.

Communication Skills: Effective communication skills are essential to understanding and articulating technical issues to colleagues, clients, and other stakeholders in a clear and concise manner.

7. Project Management: Competence in project management is essential, including planning, organization, and resource allocation.

8. Time Management: The ability to manage time is crucial to ensure project milestones are met.

9. Leadership: Professionals must be able to motivate and lead teams to achieve project objectives.

10. Custom Solutions Designing: The ability to design, develop, and maintain custom software applications and solutions, catering to end-user business requirements.

In conclusion, professionals in the Department of Computer Engineering Techniques must possess both technical and generic competencies to excel in their roles. Analytical thinking, continuous learning, adaptability, creativity, teamwork, communication skills, project management, time management, leadership, and customer service are among the essential generic competencies required. These competencies help to enhance competence and promote good performance in the department of computer engineering techniques.

4. **Academic Staff** كل التدريسين الموجودين بالجانب النظري والعملية

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5. **Credits, Grading and GPA**

Credits

Middle Technical University is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 30 hrs student workload, including structured and unstructured workload.

Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

GRADING SCHEME				
مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب - قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
Number Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Calculation of the Cumulative Grade Point Average (CGPA)

- The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.

CGPA of a 4-year B.Sc. degree:

$$CGPA = [(1^{st} \text{ module score} \times ECTS) + (2^{nd} \text{ module score} \times ECTS) + \dots] / 240$$

6. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 30 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
07021101	Digital Fundamentals	88	92	6.00	C	
07021102	Electrical Engineering Fundamentals	88	92	6.00	C	
07021103	Mathematics I	59	91	5.00	B	
07021104	Engineering Drawing	59	91	5.00	B	
07021105	Engineering Workshops	60	90	5.00	B	
07021106	English Language (Beginner)	45	45	3.00	S	

Semester 2 | 30 ECTS | 1 ECTS = 30 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
07021201	Digital Systems	88	92	6.00	C	07021101
07021202	Electrical Circuits	88	92	6.00	C	07021102
07021203	Programming Essentials	88	92	6.00	C	
07021204	Mathematics II	59	91	5.00	B	07021103
07021205	Human Rights and Democracy	59	61	4.00	S	
07021206	Arabic Language	45	45	3.00	S	

Semester 3 | 30 ECTS | 1 ECTS = 30 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
07022101	Engineering Mathematics	59	91	5.00	B	07021204
07022102	Object Oriented Programming	88	92	6.00	B	
07022103	Computer Organization & Architecture	74	106	6.00	C	
07022104	Electronics Fundamentals	88	62	5.00	C	07021202
07022105	Communication Fundamentals	74	76	5.00	C	
07022106	English Language (Intermediate)	45	45	3.00	S	

Semester 4 | 30 ECTS | 1 ECTS = 30 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
07022201	Advanced Engineering Mathematics	59	91	5.00	B	07022101
07022202	Python Programming	74	76	5.00	B	
07022203	Microprocessors	102	78	6.00	C	07022103
07022204	Analog Communications	74	76	5.00	C	07022104
07022205	Electronics Circuits	60	90	5.00	C	07022105
07022206	Instrumentation and Measurement	60	60	4.00	C	

Semester 5 | 30 ECTS | 1 ECTS = 30 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
07023101	Operating Systems	74	76	5.00	C	
07023102	Control Engineering Fundamentals	74	76	5.00	C	
07023103	Digital Signal Processing	74	76	5.00	C	
07023104	Digital Controllers	74	76	5.00	C	
07023105	Digital Communications	74	76	5.00	C	07022205
07023106	Elective	74	76	5.00	E	

Semester 6 | 30 ECTS | 1 ECTS = 30 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
07023201	Advanced Control Systems	74	76	5.00	C	07023102
07023202	Computer Network Fundamentals	88	92	6.00	C	
07023203	Database Systems	88	92	6.00	C	
07023204	Engineering Analysis	74	76	5.00	C	
07023205	English Language (Advanced)	45	45	3.00	S	
07023206	Elective	74	76	5.00	E	

Semester 7 | 30 ECTS | 1 ECTS = 30 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
07024101	Information Theory and Coding	88	92	6.00	C	
07024102	Computer Networks Protocols	88	92	6.00	C	07023202
07024103	Mobile Communications	74	76	5.00	C	07023105
07024104	Engineering Management	74	76	5.00	B	
07024105	Professional Ethics	45	45	3.00	S	
07024106	Elective	74	76	5.00	E	

Semester 8 | 30 ECTS | 1 ECTS = 30 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
07024201	Fiber Optics Communication	74	76	5.00	C	
07024202	Advanced Computer Technology	74	76	5.00	C	
07024203	Network Security & Cybersecurity	74	76	5.00	C	
07024204	Cloud Computing	74	76	5.00	C	
07024205	Project	74	76	5.00	C	
07024206	Elective	74	76	5.00	E	

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CETxx06	Real-Time Systems	74	76	5.00	E	
CETxx06	Parallel Computing	74	76	5.00	E	
CETxx06	Digital Image Processing	74	76	5.00	E	
CETxx06	IoT Fundamentals	74	76	5.00	E	
CETxx06	Artificial Intelligence	74	76	5.00	E	
CETxx06	Web Design	74	76	5.00	E	
CETxx06	Distributed Computing & Systems	74	76	5.00	E	
CETxx06	Reconfigurable Computing Systems	74	76	5.00	E	
CETxx06	Wireless Sensor Networks	74	76	5.00	E	
CETxx06	Optimization Algorithms	74	76	5.00	E	

6. Contact

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