



Ministry of Higher Education and Scientific Research
Al-Farabi University
College of Technical Engineering
Department of Medical Instrumentation Techniques Engineering

Academic Program and Course Description Guide
Department of Medical Instrumentation Techniques
Engineering

Academic Year 2025-2026

Academic Program Description Form

University Name	Al-Farabi University
College / Institute	College of Technical Engineering
Scientific Department	Department of Medical Instrumentation Techniques Engineering
Academic or Professional Program Name	Bachelor of Engineering
Final Certificate Name	Bachelor in Medical Instrumentation Techniques Engineering
Academic System	Courses / Bologna System
Description Preparation Date	5 March 2026
File Completion Date	5 March 2026

Head of Department Name: <u>Dr. Yasmeen Farzi Azeer</u> Signature: _____ Date: <u>8/16</u> / 2026 Quality Assurance and University Performance Division Reviewed by: <u>Prof. Dr. Hassan Hammood</u> Division Manager Name: _____ Signature: _____ Date: ____ / ____ / 2026	Scientific Associate Name: <u>Dr. Ahmed Hussein</u> Signature: _____ Date: ____ / ____ / 2026 Dean's Approval <u>Approved</u> Dean of the College: <u>Assoc. Prof. Dr. Mazin Abdulnand</u> Signature: _____ Date: <u>20/6</u> / 2026
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1. Program Vision

The department seeks to be a leading academic program locally and internationally in medical devices technologies engineering, keeping pace with comparable programs in reputable international universities and supporting advanced technical education aligned with academic and professional standards.

2. Program Mission

The program provides an advanced learning environment using modern teaching methods and technologies, promotes applied research and innovation in medical technologies, artificial intelligence, medical data analysis, and digital health care, and builds partnerships with health, industrial, and research institutions.

3. Program Objectives

- Prepare engineering and technical cadres with scientific knowledge and practical skills in medical devices.
- Promote applied research in medical technologies, artificial intelligence, and biotechnology.
- Use modern technologies in education, including advanced laboratories, simulation, and intelligent systems.
- Strengthen partnerships with health and industrial institutions for practical training and expertise exchange.
- Serve the community and health sector through technical consultation and medical-technology development.

4. Program Accreditation

No program accreditation is currently available because the department is newly established.

5. External Influences / Factors

Middle Technical University / Electrical Engineering Technical College / Department of Medical Instrumentation Techniques Engineering.

6. Program Structure

Structure	Courses	Study Units	Percentage	Notes
Institution Requirements	61	40		Secondary course
College Requirements	8	32		Core course
Department Requirements	24	144		Core course
Summer Training	None	-		
Other	None			

7. Program Description - First Stage Courses

Year / Level	Code	Course	Theory	Practical
First Stage / Semester 1	MIET1101	Principles of Electrical Engineering (DC)	2	
First Stage / Semester 1	MIET1004	Computer Fundamentals	1	2
First Stage / Semester 1	MITE1104	Differential Mathematics	3	
First Stage / Semester 1	MITE024014	Engineering Drawing		4
First Stage / Semester 1	MITE0004	Democracy and Human Rights	2	
First Stage / Semester 1	MITE1106	English Language 1	1	
First Stage / Semester 1	MITE111	Medical Chemistry	3	2
First Stage / Semester 2	MITE1204	Principles of Electrical Engineering (AC)	2	
First Stage / Semester 2	MITE102	Medical Physics	2	
First Stage / Semester 2	MITE1201	Mechanics	2	
First Stage / Semester 2	MITE1205	Integral Mathematics	3	
First Stage / Semester 2	MITE1105	Engineering Workshops		4

8. Expected Program Learning Outcomes

Knowledge

- Understand engineering fundamentals related to medical electronics, medical physics, and programming.
- Understand basic medical principles such as anatomy, physiology, and biosignals.
- Know methods for designing, developing, and maintaining medical devices while observing international safety standards.

Skills

- Operate, calibrate, and maintain modern medical devices.
- Analyze medical signals and use engineering software such as MATLAB, LabVIEW, Proteus, and Python.
- Apply AI, IoT, quality testing, risk assessment, and multidisciplinary teamwork in medical-device projects.

Values

- Commit to professional ethics, patient rights, confidentiality, safety, quality, teamwork, and continuous learning.
- Apply sustainability principles in developing environmentally responsible engineering solutions.

9. Teaching, Learning, and Assessment

Teaching uses interactive lectures, laboratories, simulation, practical application, discussion, assignments, and applied projects. Assessment uses quizzes, assignments, presentations, class activities, practical work, reports, midterm examinations, and final examinations.

10. Teaching Staff

Academic Rank	General Specialization	Specific Specialization	Status
Assistant Professor	Electronic and Communications Engineering	Communications Engineering	Permanent staff
Assistant Professor	Computer Science	Data Mining	Permanent staff
Assistant Lecturer	Arabic Language	Rhetoric	Permanent staff
Assistant Lecturer	Software Engineering	Artificial Intelligence / Machine Learning	Permanent staff
Assistant Lecturer	Computer Technologies and Communication Networks	Artificial Intelligence and Robotics	Permanent staff
Assistant Lecturer	Medical Instrumentation Techniques Engineering		Permanent staff
Assistant Lecturer	Computer Engineering and Informatics	Artificial Intelligence	Permanent staff

11. Admission Criteria

Admission follows the central admission mechanism of the Ministry of Higher Education and Scientific Research / Department of Private University Education, according to capacity, department needs, and ministry requirements. Applicants must meet the required academic, health, and documentation conditions.

12. Program Development Plan

- Increase the use of educational technology.
- Develop and review the academic program and course descriptions.
- Encourage scientific research, teamwork, and professional skill development.
- Build cooperation with similar international programs and update outcomes to match labor-market needs.

13. Knowledge Outcomes	
Item	English Description
1	Understand the scientific and engineering foundations used in medical devices technologies engineering.
2	Connect medical physics, electronics, programming, chemistry, mechanics, and drawing with practical medical-device applications.
3	Recognize the role of safety standards, calibration, quality assurance, maintenance, and documentation in medical-device work.
4	Understand professional responsibilities related to patient safety, confidentiality, health-sector needs, and technical reliability.
Implementation Notes	The department applies these items through the approved course descriptions, weekly plans, teaching staff responsibilities, laboratory activities, student feedback, and quality assurance follow-up.
Evidence / Follow-up	Evidence may include course files, examination records, laboratory records, reports, meeting minutes, improvement plans, and review notes prepared by the department and quality assurance unit.

14. Skills Outcomes	
Item	English Description
1	Operate, test, calibrate, troubleshoot, and maintain basic medical and engineering devices under supervised laboratory conditions.
2	Use engineering software, computer applications, drawing tools, and programming fundamentals to support technical analysis and reporting.
3	Collect, organize, and interpret laboratory observations, measurements, and technical data.
4	Prepare reports and communicate technical findings clearly in academic and professional settings.
Implementation Notes	The department applies these items through the approved course descriptions, weekly plans, teaching staff responsibilities, laboratory activities, student feedback, and quality assurance follow-up.
Evidence / Follow-up	Evidence may include course files, examination records, laboratory records, reports, meeting minutes, improvement plans, and review notes prepared by the department and quality assurance unit.

15. Values and Professional Conduct	
Item	English Description
1	Commit to ethical conduct, patient privacy, safe practice, teamwork, accuracy, and respect for institutional rules.
2	Develop responsibility for continuous learning and responsible use of technology in health and engineering environments.
3	Promote cooperation between students, teaching staff, laboratories, hospitals, and technical institutions.
4	Respect quality procedures, safety instructions, and the correct documentation of practical work.
Implementation Notes	The department applies these items through the approved course descriptions, weekly plans, teaching staff responsibilities, laboratory activities, student feedback, and quality assurance follow-up.
Evidence / Follow-up	Evidence may include course files, examination records, laboratory records, reports, meeting minutes, improvement plans, and review notes prepared by the department and quality assurance unit.

16. Teaching and Learning Environment	
Item	English Description
1	Teaching methods include interactive lectures, laboratory work, workshops, discussion, presentations, assignments, practical exercises, and guided self-learning.
2	Learning environments include classrooms, engineering laboratories, computer laboratories, workshops, and approved external training settings where applicable.
3	The program uses modern presentation tools, practical demonstrations, course projects, and technical reports to connect theory with application.
4	Students are encouraged to ask questions, work in groups, solve engineering problems, and document their learning progress.
Implementation Notes	The department applies these items through the approved course descriptions, weekly plans, teaching staff responsibilities, laboratory activities, student feedback, and quality assurance follow-up.
Evidence / Follow-up	Evidence may include course files, examination records, laboratory records, reports, meeting minutes, improvement plans, and review notes prepared by the department and quality assurance unit.

17. Assessment Methods	
Item	English Description
1	Assessment includes short quizzes, homework, class participation, practical work, laboratory reports, midterm examinations, final examinations, and instructor evaluation.
2	Practical courses may include performance-based assessment, tool-use observation, technical drawings, programming tasks, laboratory records, and project reports.
3	Assessment is aligned with course outcomes and follows the academic regulations and instructions approved by the university and ministry.
4	Feedback is used to improve student achievement and support continuous program development.
Implementation Notes	The department applies these items through the approved course descriptions, weekly plans, teaching staff responsibilities, laboratory activities, student feedback, and quality assurance follow-up.
Evidence / Follow-up	Evidence may include course files, examination records, laboratory records, reports, meeting minutes, improvement plans, and review notes prepared by the department and quality assurance unit.

18. Program Review and Continuous Improvement	
Item	English Description
1	The department reviews course descriptions, learning outcomes, teaching methods, assessment tools, and labor-market alignment periodically.
2	Feedback from teaching staff, students, quality assurance procedures, and relevant external stakeholders supports program development.
3	The development plan emphasizes laboratories, educational technology, professional skills, applied research, and partnerships with health and industrial institutions.
4	This English version is prepared as a clean translated working copy for review, approval, and signatures.
Implementation Notes	The department applies these items through the approved course descriptions, weekly plans, teaching staff responsibilities, laboratory activities, student feedback, and quality assurance follow-up.
Evidence / Follow-up	Evidence may include course files, examination records, laboratory records, reports, meeting minutes, improvement plans, and review notes prepared by the department and quality assurance unit.

19. Course Description Summaries and Weekly Structures**MIET102 - Medical Physics**

Course Name	Medical Physics
Course Code	MIET102
Semester / Year	Second Semester / First Stage
Total Hours / Units	172 hours / semester 5 units (ECTS)
Course Coordinator	Hamdan Hamood Shihab
Email	hamdan.hamood@alfarabiuc.edu.iq
Course Objectives	Study physical phenomena in the human body, understand physical laws related to human functions, identify principles of medical-device operation, connect physics with practical medical applications, and conduct laboratory experiments that model the human body.
Teaching Strategy	Interactive lectures, modern presentation tools, discussions, laboratory or practical work where applicable, assignments, reports, and examinations.
Course Evaluation	Written examinations, short quizzes, homework, practical work, reports, discussion, class participation, and final examinations according to the course requirements.
Learning Resources	Medical physics references; laboratory manuals; instructor handouts and approved online resources.

MIET102 - Weekly Course Structure (Weeks 1-8)

Week	Hours	Topic / Unit	Teaching Method	Assessment
1	5	Introudaction	Theory and practical	Exams and reports
2	5	1 Forces on and in the human body.	Theory and practical	Exams and reports
3	5	2 Physics of the skeleton.	Theory and practical	Exams and reports
4	5	3,4 Heat and cold in medicine.	Theory and practical	Exams and reports
5	5	5,6 Energy , work and power.	Theory and practical	Exams and reports
6	5	7 Sound in medicine and physics of hearing.	Theory and practical	Exams and reports
7	5	8 Light in medicine	Theory and practical	Exams and reports
8	5	9 Introduction to physical and engineering optics	Theory and practical	Exams and reports

MIET102 - Weekly Course Structure (Weeks 9-15)

Week	Hours	Topic / Unit	Teaching Method	Assessment
9	5	10 Laser physics and laser in medicine	Theory and practical	Exams and reports
10	5	11 Physics of vision	Theory and practical	Exams and reports
11	5	12 Physics of x-rays.	Theory and practical	Exams and reports
12	5	13 introduction to nuclear radiation	Theory and practical	Exams and reports
13	5	14,15 Radiation protection	Theory and practical	Exams and reports
14	5	Material Covered	Theory and practical	Exams and reports

Course Evaluation

Assessment includes written examinations, short quizzes, homework, practical work, reports, discussion, class participation, midterm examinations, and final examinations according to the course requirements.

Learning and Teaching Resources

Medical physics references; laboratory manuals; instructor handouts and approved online resources.

MITE1101 - DC Circuits	
Course Name	DC Circuits
Course Code	MITE1101
Semester / Year	First Semester / First Stage
Total Hours / Units	150 hours / ECTS 6
Course Coordinator	Ahmed Matar
Email	ahmad.matar@alfarabiuc.edu.iq
Course Objectives	Understand DC circuit fundamentals including voltage, current, resistance, and power; analyze circuit components; apply Ohm, Kirchhoff, Thevenin, and Norton laws; use simulation software; and develop practical laboratory problem-solving skills.
Teaching Strategy	Interactive lectures, modern presentation tools, discussions, laboratory or practical work where applicable, assignments, reports, and examinations.
Course Evaluation	Written examinations, short quizzes, homework, practical work, reports, discussion, class participation, and final examinations according to the course requirements.
Learning Resources	Electrical circuit analysis references; laboratory manuals; simulation tools; instructor handouts and approved online resources.

MITE1101 - Weekly Course Structure (Weeks 1-8)

Week	Hours	Topic / Unit	Teaching Method	Assessment
1	5	Fundamental quantities (voltage, current, power, energy)	Theory and practical	Exams and reports
2	5	Resistance, capacitance, inductance	Theory and practical	Exams and reports
3	5	Series & parallel resistors	Theory and practical	Exams and reports
4	5	Kirchhoff laws (KCL & KVL)	Theory and practical	Exams and reports
5	5	Delta-Wye conversion	Theory and practical	Exams and reports
6	5	Fundamental quantities (repetition)	Theory and practical	Exams and reports
7	5	Resistance & sources	Theory and practical	Exams and reports
8	5	Mesh analysis	Theory and practical	Exams and reports

MITE1101 - Weekly Course Structure (Weeks 9-15)				
Week	Hours	Topic / Unit	Teaching Method	Assessment
9	5	Node analysis	Theory and practical	Exams and reports
10	5	Examples for nodal	Theory and practical	Exams and reports
11	5	Superposition theorem	Theory and practical	Exams and reports
12	5	Thevenin theorem	Theory and practical	Exams and reports
13	5	Norton theorem	Theory and practical	Exams and reports
14	5	Maximum power transfer	Theory and practical	Exams and reports
15	5	Final Examination	Theory and practical	Exams and reports

Course Evaluation

Assessment includes written examinations, short quizzes, homework, practical work, reports, discussion, class participation, midterm examinations, and final examinations according to the course requirements.

Learning and Teaching Resources

Electrical circuit analysis references; laboratory manuals; simulation tools; instructor handouts and approved online resources.

MITE1103 - Engineering Drawing	
Course Name	Engineering Drawing
Course Code	MITE1103
Semester / Year	First Semester / First Stage
Total Hours / Units	125 hours / 5
Course Coordinator	Maryam Jabbar
Email	Mariam.jabbar@alfarabiuc.edu.iq
Course Objectives	Develop engineering drawing and CAD skills, communicate engineering information through drawings, and use two-dimensional computer-aided design techniques for clear and accurate technical representation.
Teaching Strategy	Interactive lectures, modern presentation tools, discussions, laboratory or practical work where applicable, assignments, reports, and examinations.
Course Evaluation	Written examinations, short quizzes, homework, practical work, reports, discussion, class participation, and final examinations according to the course requirements.
Learning Resources	Engineering drawing and AutoCAD references; laboratory exercises; instructor handouts and approved online resources.

MITE1103 - Weekly Course Structure (Weeks 1-8)				
Week	Hours	Topic / Unit	Teaching Method	Assessment
1	4	Introducing AutoCAD	Theory and practical	Exams and reports
2	4	Drawing settings	Theory and practical	Exams and reports
3	4	Drawing Tools: Line, Circle, Arc, Ellipse, Donut, Polygon, Rectangle, Point, Multiline, Pline, Spline, Xline	Theory and practical	Exams and reports
4	4	Drawing Tools (same tools)	Theory and practical	Exams and reports
5	4	Drawing Tools (same tools)	Theory and practical	Exams and reports
6	4	Drawing Tools (same tools)	Theory and practical	Exams and reports
7	4	Tools Modify: Erase, Undo, Redo, Explode, Move, Copy, Rotate, Mirror, Array, Align, Scale, Stretch, Lengthen, Trim, Extend, Break, Join, Chamfer, Fillet	Theory and practical	Exams and reports
8	4	Tools Modify (same tools)	Theory and practical	Exams and reports

MITE1103 - Weekly Course Structure (Weeks 9-15)				
Week	Hours	Topic / Unit	Teaching Method	Assessment
9	4	Tools Modify (same tools)	Theory and practical	Exams and reports
10	4	Display Control: Zoom, Pan, Redraw, Clean Screen	Theory and practical	Exams and reports
11	4	Dimension: Linear, Aligned, Radius, Diameter, Center Mark, Angle, Arc length, Continuous, Baseline, Tolerance, Dimension Space, Dimension Break, Jogged radius, Ordinate	Theory and practical	Exams and reports
12	4	Tools Annotation: Text, Style, Mtext, Scale text, Spell	Theory and practical	Exams and reports
13	4	Hatching Objects	Theory and practical	Exams and reports
14	4	Drawing Exercises	Theory and practical	Exams and reports
15	4	Final Examination	Theory and practical	Exams and reports

Course Evaluation

Assessment includes written examinations, short quizzes, homework, practical work, reports, discussion, class participation, midterm examinations, and final examinations according to the course requirements.

Learning and Teaching Resources

Engineering drawing and AutoCAD references; laboratory exercises; instructor handouts and approved online resources.

MITE5110 - Human Rights and Democracy	
Course Name	Human Rights and Democracy
Course Code	MITE5110
Semester / Year	First Semester / First Stage
Total Hours / Units	50 hours / 2
Course Coordinator	Ahmed Abbas Ali
Email	Ahmed9altimimy@gmail.com
Course Objectives	Introduce core concepts of human rights and democracy, explain their relation to social justice and civic responsibility, and help students understand their role in a democratic society based on equality and public responsibility.
Teaching Strategy	Interactive lectures, modern presentation tools, discussions, laboratory or practical work where applicable, assignments, reports, and examinations.
Course Evaluation	Written examinations, short quizzes, homework, practical work, reports, discussion, class participation, and final examinations according to the course requirements.
Learning Resources	Prescribed course references, instructor handouts, laboratory materials where applicable, scientific references, and approved online resources.

MITE5110 - Weekly Course Structure (Weeks 1-8)				
Week	Hours	Topic / Unit	Teaching Method	Assessment
1	1	Human rights: definition and objectives; Mesopotamian civilizations.	Theory	Exams and reports
2	1	Human rights in divine laws and Islam.	Theory	Exams and reports
3	1	Human rights in modern and contemporary history.	Theory	Exams and reports
4	1	International and regional human-rights conventions.	Theory	Exams and reports
5	1	Human rights in contemporary history.	Theory	Exams and reports
6	1	Human rights in Iraqi constitutions.	Theory	Exams and reports
7	1	Economic, social, cultural, and political rights.	Theory	Exams and reports
8	1	Modern human rights: environment, development, and solidarity.	Theory	Exams and reports

MITE5110 - Weekly Course Structure (Weeks 9-15)				
Week	Hours	Topic / Unit	Teaching Method	Assessment
9	1	Human-rights guarantees at the national level.	Theory	Exams and reports
10	1	Human-rights guarantees at the international level.	Theory	Exams and reports
11	1	The concept and origins of democracy.	Theory	Exams and reports
12	1	Human Rights and Democracy scheduled topic	Theory	Exams and reports
13	1	Human Rights and Democracy scheduled topic	Theory	Exams and reports
14	1	Human Rights and Democracy scheduled topic	Theory	Exams and reports
15	1	Final examination.	Theory	Exams and reports

Course Evaluation

Assessment includes written examinations, short quizzes, homework, practical work, reports, discussion, class participation, midterm examinations, and final examinations according to the course requirements.

Learning and Teaching Resources

Prescribed course references, instructor handouts, laboratory materials where applicable, scientific references, and approved online resources.

MITE1106 - English Language	
Course Name	English Language
Course Code	MITE1106
Semester / Year	First Semester / First Stage
Total Hours / Units	50 hours / 2
Course Coordinator	Yahya Haroun Dhaigham
Email	yehiei.haroun@alfarabiuc.edu.iq
Course Objectives	Develop beginner English communication skills through self-introduction, personal description, hobbies, family, daily routine, directions, requests, plans, shopping, comparison, and practical conversation.
Teaching Strategy	Interactive lectures, modern presentation tools, discussions, laboratory or practical work where applicable, assignments, reports, and examinations.
Course Evaluation	Written examinations, short quizzes, homework, practical work, reports, discussion, class participation, and final examinations according to the course requirements.
Learning Resources	Prescribed course references, instructor handouts, laboratory materials where applicable, scientific references, and approved online resources.

MITE1106 - Weekly Course Structure (Weeks 1-8)				
Week	Hours	Topic / Unit	Teaching Method	Assessment
1	1	Unit 1: Hello (is/am/are, my/your)	Theory	Exams and reports
2	1	Unit 2: Your world (he/she/they)	Theory	Exams and reports
3	1	Unit 3: All about you	Theory	Exams and reports
4	1	Unit 4: Family and friends	Theory	Exams and reports
5	1	Unit 5: The way I live	Theory	Exams and reports
6	1	Unit 6: Everyday life	Theory	Exams and reports
7	1	Unit 7: My favorites	Theory	Exams and reports
8	1	Unit 8: Where I live	Theory	Exams and reports

MITE1106 - Weekly Course Structure (Weeks 9-15)				
Week	Hours	Topic / Unit	Teaching Method	Assessment
9	1	Unit 9: Past times	Theory	Exams and reports
10	1	Unit 10: Past events	Theory	Exams and reports
11	1	Unit 11: Can / Can't	Theory	Exams and reports
12	1	Unit 12: Shopping	Theory	Exams and reports
13	1	Unit 13: Present continuous	Theory	Exams and reports
14	1	Unit 14: Future plans	Theory	Exams and reports
15	1	Final Examination	Theory	Exams and reports

Course Evaluation

Assessment includes written examinations, short quizzes, homework, practical work, reports, discussion, class participation, midterm examinations, and final examinations according to the course requirements.

Learning and Teaching Resources

Prescribed course references, instructor handouts, laboratory materials where applicable, scientific references, and approved online resources.

MITE1104 - Differential Mathematics	
Course Name	Differential Mathematics
Course Code	MITE1104
Semester / Year	First Semester / First Stage
Total Hours / Units	125 hours / 5
Course Coordinator	Noor Alaa
Email	noor.alaa@alfarabiuc.edu.iq
Course Objectives	Build a strong understanding of differential calculus and its engineering applications, including functions, limits, continuity, differentiation techniques, optimization, motion analysis, and applied problem solving.
Teaching Strategy	Interactive lectures, modern presentation tools, discussions, laboratory or practical work where applicable, assignments, reports, and examinations.
Course Evaluation	Written examinations, short quizzes, homework, practical work, reports, discussion, class participation, and final examinations according to the course requirements.
Learning Resources	K.A. Stroud and Dexter J. Booth, Engineering Mathematics; E. Kreyszig, Advanced Engineering Mathematics; instructor handouts and approved online resources.

MITE1104 - Weekly Course Structure (Weeks 1-8)

Week	Hours	Topic / Unit	Teaching Method	Assessment
1	5	Differential Mathematics scheduled topic	Theory	Exams
2	5	Differential Mathematics scheduled topic	Theory	Exams
3	5	Differential Mathematics scheduled topic	Theory	Exams
4	5	Differential Mathematics scheduled topic	Theory	Exams
5	Applying differentiation to rate-of-change and motion problems.	Applying differentiation to rate-of-change and motion problems.	Theory	Exams
6	5	Differential Mathematics scheduled topic	Theory	Exams
7	5	Differential Mathematics scheduled topic	Theory	Exams
8	5	Differential Mathematics scheduled topic	Theory	Exams

MITE1104 - Weekly Course Structure (Weeks 9-15)				
Week	Hours	Topic / Unit	Teaching Method	Assessment
9	5	Differential Mathematics scheduled topic	Theory	Exams
10	5	Differential Mathematics scheduled topic	Theory	Exams
11	5	Differential Mathematics scheduled topic	Theory	Exams
12	5	Differential Mathematics scheduled topic	Theory	Exams
13	5	Differential Mathematics scheduled topic	Theory	Exams
14	5	Differential Mathematics scheduled topic	Theory	Exams
15	5	Differential Mathematics scheduled topic	Theory	Exams, discussion, and class participation

Course Evaluation

Assessment includes written examinations, short quizzes, homework, practical work, reports, discussion, class participation, midterm examinations, and final examinations according to the course requirements.

Learning and Teaching Resources

K.A. Stroud and Dexter J. Booth, Engineering Mathematics; E. Kreyszig, Advanced Engineering Mathematics; instructor handouts and approved online resources.

MITE1004 - Computer Fundamentals	
Course Name	Computer Fundamentals
Course Code	MITE1004
Semester / Year	First Semester / First Stage
Total Hours / Units	75hours / 3
Course Coordinator	Marwan Qahtan
Email	marwan.qahtan@alfarabiuc.edu.iq
Course Objectives	Understand computer hardware and software fundamentals, analyze computer components and performance, select suitable specifications, and gain practical skills in Microsoft Office applications.
Teaching Strategy	Interactive lectures, modern presentation tools, discussions, laboratory or practical work where applicable, assignments, reports, and examinations.
Course Evaluation	Written examinations, short quizzes, homework, practical work, reports, discussion, class participation, and final examinations according to the course requirements.
Learning Resources	Prescribed course references, instructor handouts, laboratory materials where applicable, scientific references, and approved online resources.

MITE1004 - Weekly Course Structure (Weeks 1-8)				
Week	Hours	Topic / Unit	Teaching Method	Assessment
1	5	Introduction to computer	Theory and practical	Exams and reports
2	5	Hardware and Software	Theory and practical	Exams and reports
3	5	Central Processing Unit	Theory and practical	Exams and reports
4	5	Memory	Theory and practical	Exams and reports
5	5	Storage Devices	Theory and practical	Exams and reports
6	5	Motherboard	Theory and practical	Exams and reports
7	5	Operating System	Theory and practical	Exams and reports
8	5	Windows Desktop	Theory and practical	Exams and reports

MITE1004 - Weekly Course Structure (Weeks 9-15)				
Week	Hours	Topic / Unit	Teaching Method	Assessment
9	5	Installing and removing programs	Theory and practical	Exams and reports
10	5	Utility programs	Theory and practical	Exams and reports
11	5	Internet	Theory and practical	Exams and reports
12	5	Cloud services	Theory and practical	Exams and reports
13	5	Artificial Intelligence Websites and Programs	Theory and practical	Exams and reports
14	5	Artificial Intelligence Websites and Programs (Contd.)	Theory and practical	Exams and reports
15	5	Virtual Reality	Theory and practical	Exams and reports

Course Evaluation

Assessment includes written examinations, short quizzes, homework, practical work, reports, discussion, class participation, midterm examinations, and final examinations according to the course requirements.

Learning and Teaching Resources

Prescribed course references, instructor handouts, laboratory materials where applicable, scientific references, and approved online resources.

MITE111 - Medical Chemistry	
Course Name	Medical Chemistry
Course Code	MITE111
Semester / Year	First Semester / First Stage
Total Hours / Units	☐ Hours: 175 hours / semester ☐ Units: 7 ECTS
Course Coordinator	Noor Alaa
Email	noor.alaa@alfarabiuc.edu.iq
Course Objectives	Introduce basic medical chemistry concepts, analytical chemistry, concentration expressions, pH, electrolytes, organic chemistry, biomolecules, and laboratory practices relevant to medical-device technologies.
Teaching Strategy	Interactive lectures, modern presentation tools, discussions, laboratory or practical work where applicable, assignments, reports, and examinations.
Course Evaluation	Written examinations, short quizzes, homework, practical work, reports, discussion, class participation, and final examinations according to the course requirements.
Learning Resources	Medical chemistry references; laboratory manuals; instructor handouts and approved online resources.

MITE111 - Weekly Course Structure (Weeks 1-8)				
Week	Hours	Topic / Unit	Teaching Method	Assessment
1-3	15	Medical Chemistry scheduled topic	Lecture	Quiz or exam
4-5	10	Medical Chemistry scheduled topic	Lecture and laboratory	Assignment
6-7	10	Medical Chemistry scheduled topic	Lecture	Quiz or exam
8	5	Medical Chemistry scheduled topic	Lecture	Report
9-10	10	Medical Chemistry scheduled topic	Lecture	Quiz or exam
11	5	Medical Chemistry scheduled topic	Lecture	Assignment
12-13	10	Medical Chemistry scheduled topic	Lecture and laboratory	Project
14-15	10	Medical Chemistry scheduled topic	Lecture	Quiz or exam

MITE1105 - Engineering Workshops	
Course Name	Engineering Workshops
Course Code	MITE1105
Semester / Year	Second Semester / First Stage
Total Hours / Units	150 hours / 5
Course Coordinator	Marwan Qahtan
Email	marwan.qahtan@alfarabiuc.edu.iq
Course Objectives	Learn workshop safety, electrical conductors and installation methods, practical use of conductors, capacitors, inductors and semiconductors, and engineering workshop tool skills.
Teaching Strategy	Interactive lectures, modern presentation tools, discussions, laboratory or practical work where applicable, assignments, reports, and examinations.
Course Evaluation	Written examinations, short quizzes, homework, practical work, reports, discussion, class participation, and final examinations according to the course requirements.
Learning Resources	Prescribed course references, instructor handouts, laboratory materials where applicable, scientific references, and approved online resources.

MITE1105 - Weekly Course Structure (Weeks 1-8)				
Week	Hours	Topic / Unit	Teaching Method	Assessment
1	4	Lab 1: Industrial safety, protection from electric shock	Practical	Exams and reports
2	4	Lab 2: Tools used in workshops	Practical	Exams and reports
3	4	Lab 3: Measuring devices (Micrometer)	Practical	Exams and reports
4	4	Lab 4: Electrical installations and systems	Practical	Exams and reports
5	4	Lab 5: Types of installations, Bus-Bar	Practical	Exams and reports
6	4	Lab 6: Practical installations (switches & lamps)	Practical	Exams and reports
7	4	Lab 7: Two-way switches, staircase lamp	Practical	Exams and reports
8	4	Lab 8: Motor control (contactor)	Practical	Exams and reports

MITE1105 - Weekly Course Structure (Weeks 9-15)				
Week	Hours	Topic / Unit	Teaching Method	Assessment
9	4	Lab 9: Operating three-phase motor	Practical	Exams and reports
10	4	Lab 10: Types of fuses	Practical	Exams and reports
11	4	Lab 11: Electric coil and types	Practical	Exams and reports
12	4	Lab 12: Capacitors and measurements	Practical	Exams and reports
13	4	Lab 13: Semiconductors (diode, transistor)	Practical	Exams and reports
14	4	Lab 14: PCB design and circuit building	Practical	Exams and reports
15	4	Lab 15: Review	Practical	Exams and reports

Course Evaluation

Assessment includes written examinations, short quizzes, homework, practical work, reports, discussion, class participation, midterm examinations, and final examinations according to the course requirements.

Learning and Teaching Resources

Prescribed course references, instructor handouts, laboratory materials where applicable, scientific references, and approved online resources.

MITE1201 - Engineering Mechanics	
Course Name	Engineering Mechanics
Course Code	MITE1201
Semester / Year	Second Semester / First Stage
Total Hours / Units	125 / 5
Course Coordinator	Marwan Qahtan
Email	marwan.qahtan@alfarabiuc.edu.iq
Course Objectives	Understand motion, forces, acceleration, Newton laws, work, energy, momentum, vibration, and mechanical concepts needed to analyze engineering and medical-device systems.
Teaching Strategy	Interactive lectures, modern presentation tools, discussions, laboratory or practical work where applicable, assignments, reports, and examinations.
Course Evaluation	Written examinations, short quizzes, homework, practical work, reports, discussion, class participation, and final examinations according to the course requirements.
Learning Resources	Prescribed course references, instructor handouts, laboratory materials where applicable, scientific references, and approved online resources.

MITE1201 - Weekly Course Structure (Weeks 1-8)

Week	Hours	Topic / Unit	Teaching Method	Assessment
1	7	Statics – definitions	Theory	Exams and reports
2	7	Forces and components	Theory	Exams and reports
3	7	Force components	Theory	Exams and reports
4	7	Composition of forces	Theory	Exams and reports
5	7	Resolution of forces	Theory	Exams and reports
6	7	Moment of force	Theory	Exams and reports
7	7	Moment of force (contd.)	Theory	Exams and reports
8	7	Coupling	Theory	Exams and reports

MITE1201 - Weekly Course Structure (Weeks 9-15)				
Week	Hours	Topic / Unit	Teaching Method	Assessment
9	7	Equilibrium of planar forces	Theory	Exams and reports
10	7	Free body diagram	Theory	Exams and reports
11	7	Centroid & center of gravity	Theory	Exams and reports
12	7	Centroid & center of gravity (contd.)	Theory	Exams and reports
13	7	Moment of inertia	Theory	Exams and reports
14	7	Stress, strain, shear & bending	Theory	Exams and reports
15	7	Final Examination	Theory	Exams and reports

Course Evaluation

Assessment includes written examinations, short quizzes, homework, practical work, reports, discussion, class participation, midterm examinations, and final examinations according to the course requirements.

Learning and Teaching Resources

Prescribed course references, instructor handouts, laboratory materials where applicable, scientific references, and approved online resources.

MITE1204 - AC Circuits	
Course Name	AC Circuits
Course Code	MITE1204
Semester / Year	Second Semester / First Stage
Total Hours / Units	175 hours / 6
Course Coordinator	Yasmin Fawzi
Email	dr.yasmen.fawzi@alfrabic.edu.iq
Course Objectives	Understand AC circuit principles, phasors, complex numbers, impedance, admittance, resonance, power, three-phase systems, and AC circuit-analysis techniques.
Teaching Strategy	Interactive lectures, modern presentation tools, discussions, laboratory or practical work where applicable, assignments, reports, and examinations.
Course Evaluation	Written examinations, short quizzes, homework, practical work, reports, discussion, class participation, and final examinations according to the course requirements.
Learning Resources	Electrical circuit analysis references; laboratory manuals; simulation tools; instructor handouts and approved online resources.

MITE1204 - Weekly Course Structure (Weeks 1-8)				
Week	Hours	Topic / Unit	Teaching Method	Assessment
1	8	AC circuits with steady-state sinusoidal excitation	Theory and practical	Exams and reports
2	8	Basic concepts of frequency, angular frequency, phase shift	Theory and practical	Exams and reports
3	8	Phasor representation of alternating voltages and currents, complex number representation of voltage and current phasors	Theory and practical	Exams and reports
4	8	Complex impedance, admittance, resistance, reactance, conductance and susceptance	Theory and practical	Exams and reports
5	8	Solution of simple circuits by combining impedances in series and parallel	Theory and practical	Exams and reports
6	8	Analysis and applications of series and parallel resonant circuits, bandwidth and Q factor	Theory and practical	Exams and reports
7	8	AC power absorbed by a resistor, inductor and capacitor	Theory and practical	Exams and reports
8	8	Relationships between power, reactive power and VA, power factor	Theory and practical	Exams and reports

MITE1204 - Weekly Course Structure (Weeks 9-15)				
Week	Hours	Topic / Unit	Teaching Method	Assessment
9	8	Principle of conservation of power and reactive power, reactive power absorbed by capacitors and inductors, power factor correction, complex power in terms of phasor voltages and currents	Theory and practical	Exams and reports
10	8	Poly phase and three phase system	Theory and practical	Exams and reports
11	8	Delta connection, Wye connection	Theory and practical	Exams and reports
12	8	The power in balance phase circuit	Theory and practical	Exams and reports
13	8	Unbalance Wye and delta connected load, the rotating magnetic field	Theory and practical	Exams and reports
14	8	Magnetically coupled circuits	Theory and practical	Exams and reports
15	8	Final Examination	Theory and practical	Exams and reports

Course Evaluation

Assessment includes written examinations, short quizzes, homework, practical work, reports, discussion, class participation, midterm examinations, and final examinations according to the course requirements.

Learning and Teaching Resources

Electrical circuit analysis references; laboratory manuals; simulation tools; instructor handouts and approved online resources.

MITE1203 - Arabic Language	
Course Name	Arabic Language
Course Code	MITE1203
Semester / Year	Second Semester / First Stage
Total Hours / Units	90 hours / 2
Course Coordinator	Firas Dawood
Email	firas.ali@gmail.com
Course Objectives	Develop correct Arabic language, reading, writing, expression, spelling, grammar, punctuation, and professional communication skills for academic and workplace contexts.
Teaching Strategy	Interactive lectures, modern presentation tools, discussions, laboratory or practical work where applicable, assignments, reports, and examinations.
Course Evaluation	Written examinations, short quizzes, homework, practical work, reports, discussion, class participation, and final examinations according to the course requirements.
Learning Resources	Prescribed course references, instructor handouts, laboratory materials where applicable, scientific references, and approved online resources.

MITE1203 - Weekly Course Structure (Weeks 1-8)

Week	Hours	Topic / Unit	Teaching Method	Assessment
1	3	Introduction to common linguistic errors.	Theory	Exams and reports
2	3	Taa marbuta and open taa.	Theory	Exams and reports
3	3	Hamzat al-wasl and hamzat al-qat.	Theory	Exams and reports
4	3	Medial and final hamza.	Theory	Exams and reports
5	3	Long and short alif.	Theory	Exams and reports
6	3	Solar and lunar letters.	Theory	Exams and reports
7	3	The letters daad and dhaad.	Theory	Exams and reports
8	3	Numbers and numerals.	Theory	Exams and reports

MITE1203 - Weekly Course Structure (Weeks 9-15)				
Week	Hours	Topic / Unit	Teaching Method	Assessment
9	3	Objects in Arabic grammar.	Theory	Exams and reports
10	3	Parts of speech.	Theory	Exams and reports
11	3	Meanings of prepositions.	Theory	Exams and reports
12	3	Arabic Language scheduled topic	Theory	Exams and reports
13	3	Arabic Language scheduled topic	Theory	Exams and reports
14	3	Introduction to common linguistic errors.	Theory	Exams and reports
15	3	Final examination.	Theory	Exams and reports

Course Evaluation

Assessment includes written examinations, short quizzes, homework, practical work, reports, discussion, class participation, midterm examinations, and final examinations according to the course requirements.

Learning and Teaching Resources

Prescribed course references, instructor handouts, laboratory materials where applicable, scientific references, and approved online resources.

MITE1205 - Integral Mathematics	
Course Name	Integral Mathematics
Course Code	MITE1205
Semester / Year	Second Semester / First Stage
Total Hours / Units	150 hours / 5
Course Coordinator	Huda Muwaffaq
Email	huda.muwaffaq@alfarabiuc.edu.iq
Course Objectives	Develop a comprehensive understanding of indefinite and definite integration, integration techniques, applications of integrals, and engineering problem solving.
Teaching Strategy	Interactive lectures, modern presentation tools, discussions, laboratory or practical work where applicable, assignments, reports, and examinations.
Course Evaluation	Written examinations, short quizzes, homework, practical work, reports, discussion, class participation, and final examinations according to the course requirements.
Learning Resources	K.A. Stroud and Dexter J. Booth, Engineering Mathematics; E. Kreyszig, Advanced Engineering Mathematics; instructor handouts and approved online resources.

MITE1205 - Weekly Course Structure (Weeks 1-8)				
Week	Hours	Topic / Unit	Teaching Method	Assessment
1	5	Integral Mathematics scheduled topic	Theory	Exams
2	5	Integral Mathematics scheduled topic	Theory	Exams
3	5	Integral Mathematics scheduled topic	Theory	Exams
4	5	Integral Mathematics scheduled topic	Theory	Exams
5	Applying different integration methods to solve problems.	Integral Mathematics scheduled topic	Theory	Exams
6	5	Integral Mathematics scheduled topic	Theory	Exams
7	5	Integral Mathematics scheduled topic	Theory	Exams
8	5	Integral Mathematics scheduled topic	Theory	Exams

MITE1205 - Weekly Course Structure (Weeks 9-15)				
Week	Hours	Topic / Unit	Teaching Method	Assessment
9	5	Integral Mathematics scheduled topic	Theory	Exams
10	5	Integral Mathematics scheduled topic	Theory	Exams
11	5	Integral Mathematics scheduled topic	Theory	Exams
12	5	Integral Mathematics scheduled topic	Theory	Exams
13	5	Integral Mathematics scheduled topic	Theory	Exams
14	5	Integral Mathematics scheduled topic	Theory	Exams
15	5	Integral Mathematics scheduled topic	Theory	Exams

Course Evaluation

Assessment includes written examinations, short quizzes, homework, practical work, reports, discussion, class participation, midterm examinations, and final examinations according to the course requirements.

Learning and Teaching Resources

K.A. Stroud and Dexter J. Booth, Engineering Mathematics; E. Kreyszig, Advanced Engineering Mathematics; instructor handouts and approved online resources.

MIE202 - Computer Programming	
Course Name	Computer Programming
Course Code	MIE202
Semester / Year	Academic Year 2025-2026
Total Hours / Units	3 hours / 4
Course Coordinator	Maryam Jabbar Mousa Mohammed
Email	Mariam.jabbar@alfarabiuc.edu.iq
Course Objectives	Introduce C++ programming, software-development effort, programming fundamentals, syntax, data types, control structures, loops, arrays, functions, and engineering programming applications.
Teaching Strategy	Interactive lectures, modern presentation tools, discussions, laboratory or practical work where applicable, assignments, reports, and examinations.
Course Evaluation	Written examinations, short quizzes, homework, practical work, reports, discussion, class participation, and final examinations according to the course requirements.
Learning Resources	C++ programming textbooks and manuals; laboratory examples; instructor handouts and approved online programming resources.

MIE202 - Weekly Course Structure (Weeks 1-8)

Week	Hours	Topic / Unit	Teaching Method	Assessment
1	3	Downloading and installing the development environment	Practical	Exams, discussion, and class participation
2	3	A simple C++ program using basic program construction (Identifiers, comments, variables, Assignment statements, output statement(cin).	Practical	Exams, discussion, and class participation
3	3	A simple C++ program using input and output statements (cin, cout).	Practical	Exams, discussion, and class participation
4	3	Arithmetic and logical expression: Arithmetic operators, logical operators, relational operators.	Practical	Exams, discussion, and class participation
5	3	programs using selection statement (if-statement)	Practical	Exams, discussion, and class participation
6	3	programs using selection statements(if-statement and switch statement)	Practical	Exams, discussion, and class participation
7	3	programs using loop statements(for statement)	Practical	Exams, discussion, and class participation
8	3	programs using loop statements(while and do statements)	Practical	Exams, discussion, and class participation

MIE202 - Weekly Course Structure (Weeks 9-15)				
Week	Hours	Topic / Unit	Teaching Method	Assessment
9	3	Functions (call by value)	Practical	Exams, discussion, and class participation
10	3	Functions (call by reference)	Practical	Exams, discussion, and class participation
11	3	One dimensional array Week	Practical	Exams, discussion, and class participation
12	3	Two-dimensional array	Practical	Exams, discussion, and class participation
13	3	Mid-term Exam	Practical	Exams, discussion, and class participation
14	3	Pointers	Practical	Exams, discussion, and class participation
15	3	Structures and Structure type functions	Practical	Exams, discussion, and class participation

Course Evaluation

Assessment includes written examinations, short quizzes, homework, practical work, reports, discussion, class participation, midterm examinations, and final examinations according to the course requirements.

Learning and Teaching Resources

C++ programming textbooks and manuals; laboratory examples; instructor handouts and approved online programming resources.