كلية العلوم

COLLEGE OF SCIENCE

Medical Physics - Information Technology - Forensic Sciences

Academic Guide for the College of Sciences for the Academic Year

2025-2026

Contents

Dean of the College
Assistant Professor

Dr. Shaimaa Hussein Nawfal

Message from the Respected Dean of the College

In the name of Allah, the Most Gracious, the Most Merciful.
Imam Al-Husayn said: ***"The pursuit of knowledge is the fertilization of understanding."***

My dear students and esteemed faculty members,
Peace, mercy, and blessings of Allah be upon you.
It gives me great pleasure, as we take confident steps toward academic excellence, to welcome you to the College of Science—this distinguished academic institution that we take pride in as a beacon of contemporary thought and a nurturing environment for building generations equipped with research skills and sound scientific values.
Today, our college represents not merely an educational space, but a comprehensive environment aimed at shaping a scientific mindset capable of addressing the challenges of our time with competence and proficiency.
At the College of Science, we firmly believe that specialized scientific disciplines constitute the primary driving force behind societal development. Accordingly, the college administration has been committed to establishing and advancing pioneering, high-quality departments that align with the demands of the modern scientific revolution and supply the labor market with graduates who possess both knowledge and expertise.

About the College

The College of Science at Warith Al-Anbiyaa University is regarded as one of the modern academic pillars established with the aim of contributing to the development of higher education and scientific research. This is achieved through the provision of advanced academic programs that keep pace with the rapid developments across various fields of science and technology. The College also seeks to provide a stimulating educational and research environment based on contemporary academic standards, ensuring the preparation of qualified scientific cadres capable of creativity and innovation.

Through the establishment of this College, the University aspires to prepare a generation of graduates distinguished both academically and practically, capable of leadership in their respective fields—particularly in medical physics, information technology, and forensic science. This, in turn, contributes to supporting healthcare, technological, and security institutions, while strengthening the role of scientific research in serving society.

Furthermore, the establishment of the College of Science reflects the University's commitment to delivering high-quality education aligned with the latest scientific and technological advancements. The College offers its students diverse opportunities to acquire in-depth scientific knowledge and advanced practical skills, in addition to developing their abilities in critical thinking and scientific research, thereby qualifying them to actively contribute to societal development and address contemporary scientific and technological challenges.

Establishment Date of the College

The College of Science at Warith Al-Anbiyaa University was established in 2023 as a leading academic institution aimed at strengthening the foundations of higher education and scientific research. It seeks to prepare qualified scientific cadres equipped with specialized knowledge and practical skills in accordance with quality assurance and academic accreditation standards.

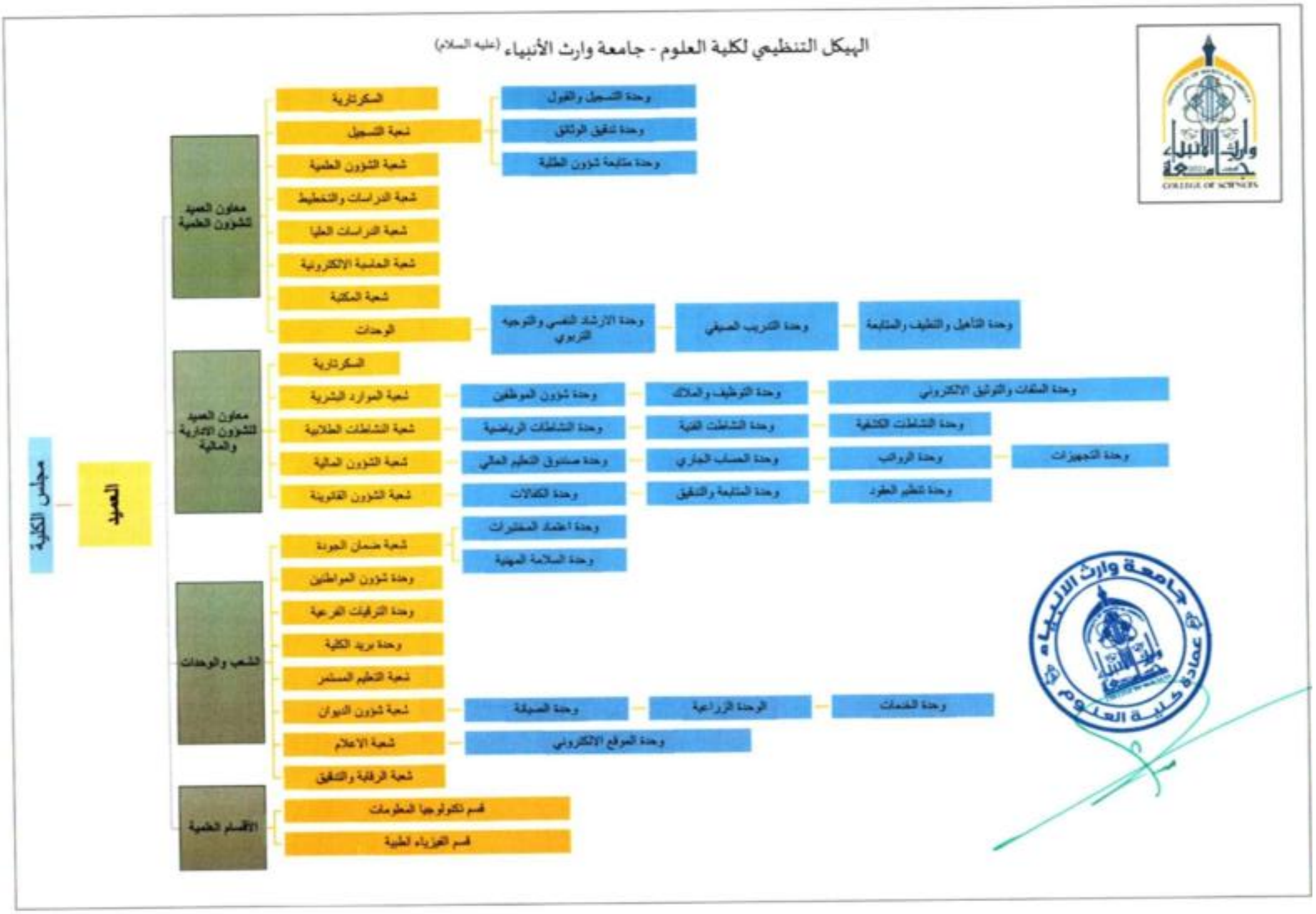
In line with its vision of qualitative academic expansion and keeping pace with scientific and technological advancements, the College introduced the Department of Forensic Science starting from the 2025–2026 academic year. This addition represents a significant advancement in the field of forensic sciences by preparing specialized professionals capable of utilizing modern technologies to serve security and judicial institutions and enhance the justice system.

The College of Science comprises the following academic departments:

1. **Department of Medical Physics**
2. **Department of Information Technology**
3. **Department of Forensic Science**

The College is committed to providing an integrated educational and research environment that fosters a culture of creativity and innovation, supports applied scientific research, and contributes effectively to community service and sustainable development.

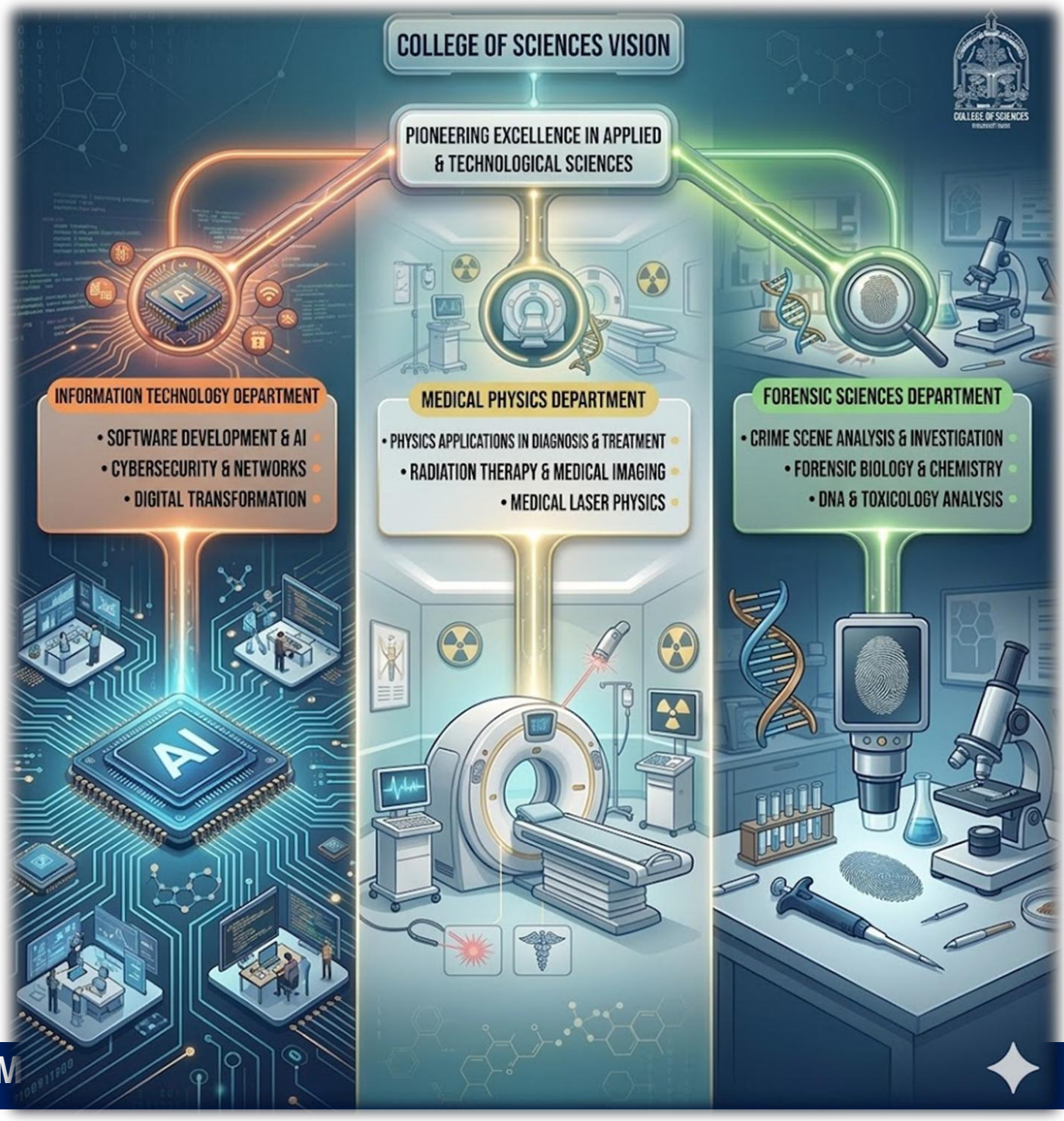
الهيكل التنظيمي لكلية العلوم - جامعة وارث الأنبياء (عليه السلام)



Vision of the College

The College of Science at Warith Al-Anbiyaa University (peace be upon him) aspires to be a leading academic institution in education and scientific research at both the local and regional levels. It aims to achieve scientific excellence and advance knowledge in the fields of Medical Physics, Information Technology, and Forensic Science. The College also seeks to play an active role in supporting scientific and technological development while meeting the needs of society and the labor market.

The College is committed to providing an integrated educational and research environment that encourages critical thinking, scientific creativity, and intellectual exploration. This approach ensures the preparation of qualified scientific professionals equipped with the academic and research skills necessary to address contemporary scientific and technological challenges and to contribute effectively to community service and sustainable development.



The College of Science at Warith Al-Anbiyaa University (peace be upon him) is committed to providing distinguished, high-quality scientific education that emphasizes the development of both theoretical knowledge and practical skills in the fields of Medical Physics, Information Technology, and Forensic Science. This is achieved through modern academic programs based on the latest scientific and technological standards.

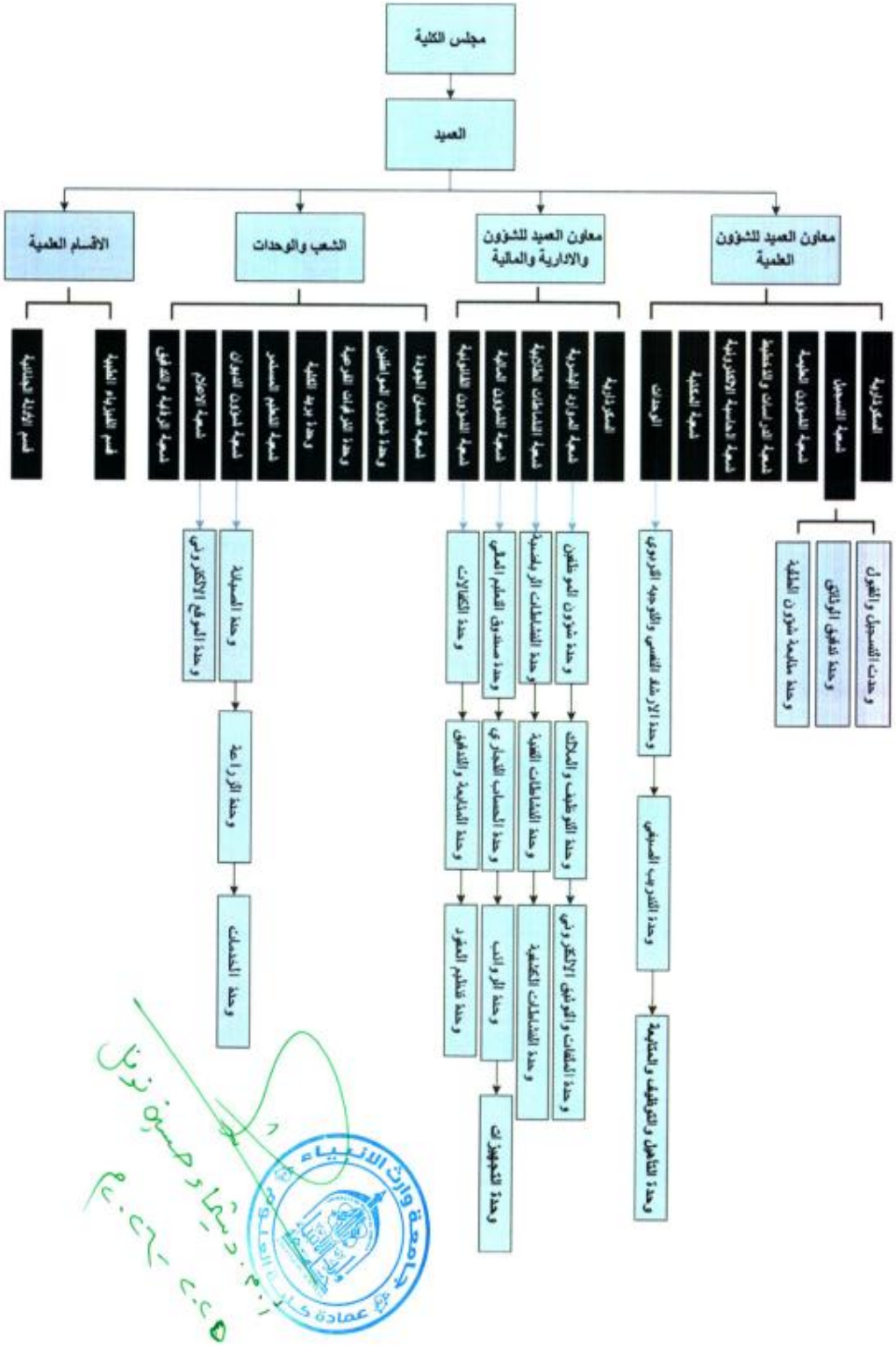
The College aims to prepare graduates who possess scientific competence, creativity, and research capabilities, enabling them to contribute effectively to scientific and technological advancement, support healthcare, technological, and security institutions, and address contemporary scientific and societal challenges. In doing so, the College strengthens the University's role in serving the community and promoting sustainable development.

The College of Science at Warith Al-Anbiyaa University (peace be upon him) seeks to achieve a set of strategic objectives that support its educational and research mission, which include:

- **Providing a stimulating educational and research environment** that encourages critical thinking, scientific creativity, and develops students' analytical and reasoning skills.

- **Developing practical and technical skills** among students through advanced academic programs that integrate theoretical knowledge with hands-on applications.
- **Supporting scientific research and innovation** by encouraging students and faculty members to conduct studies that contribute to knowledge advancement and community service.
- **Continuously developing and updating academic programs and curricula** to keep pace with modern scientific and technological advancements and meet labor market requirements.
- **Strengthening collaboration and scientific partnerships** with healthcare institutions, research centers, and technology companies, thereby providing students and graduates with opportunities for professional training and development.

Academic Structure



Organizational Structure Table of the College of Science

College of Science / Department of Medical Physics – Forensic Evidence Unit

No.	Position	Name	Academic Title
1	Dean of the College	Asst. Prof. Dr. Shaimaa Hussein Nofal	Assistant Professor, PhD
2	Assistant Dean for Administrative Affairs	Asst. Prof. Haider Mohammed Ali	Assistant Professor
3	Head of the Department of Medical Physics	Asst. Prof. Dr. Shaimaa Hussein Nofal	Assistant Professor, PhD
4	Head of the Department of Forensic Evidence	—	—

Scientific Affairs Committee Table

No.	Position	Name	Academic Rank
1	Dean of the College	Asst. Prof. Dr. Shaimaa Hussein Nofal	Assistant Professor (PhD)
2	Assistant Dean for Administrative Affairs	Asst. Prof. Haider Mohammed Ali	Assistant Professor
3	Head of the Department of Medical Physics	Asst. Prof. Dr. Shaimaa Hussein Nofal	Assistant Professor (PhD)
4	Head of the Department of Forensic Evidence	—	—

Website Management Committee

No.	Position	Name	Academic Rank
1	Chairperson	Asst. Prof. Dr. Shaimaa Hussein Nofal	Assistant Professor
2	Member	Mohammed Raed	Administrative
3	Member	Abdullah Raed	Administrative
4	Member	Huda Samir	Administrative

Higher Education Platform Committee (SIS, HR)

No.	Position	Name	Academic Rank
1	Chairperson	Asst. Lect. Ali Hamed	Assistant Professor
2	Member	Mohammed Raed	Administrative
3	Member	Abdullah Raed	Administrative
4	Member	Huda Samir	Administrative
5	—	Sabreen Mohammed	Administrative

Formation of the College Council

No.	Position	Name	Academic Rank
1	Council Chair, Department of Medical Physics	Asst. Prof. Dr. Shaimaa Hussein Nofal	Assistant Professor (PhD)
2	Council Chair, Department of Information Technology	Asst. Prof. Dr. Haider Mohammed Ali	Assistant Professor (PhD)
3	Council Secretary	Asst. Lect. Nabil Sadiq	Assistant Professor
4	Assistant Dean	Lect. Dr. Ahmed Mousa	Assistant Professor
5	Dean	Asst. Prof. Dr. Shaimaa Hussein Nofal	Assistant Professor (PhD)

Academic Departments

The College of Science comprises several academic departments aimed at providing specialized educational programs that integrate theoretical foundations with practical applications. These programs keep pace with modern scientific and technological advancements and prepare students to enter the workforce while contributing to community service.

Department of Information Technology

The Department of Information Technology is a vital department within the college, keeping pace with rapid developments in digital technologies and computer systems. It offers modern academic programs designed to equip students with both theoretical knowledge and practical skills in information technology.

The department's academic program focuses on preparing students in key areas, including:

- Designing and developing software and computer applications.
- Managing IT infrastructure and networks.
- Analyzing complex technical problems and developing appropriate software solutions.

The department aims to graduate skilled professionals capable of keeping up with technological advancements and contributing to the development of various technological sectors.

Vision:
To achieve academic and research excellence locally and regionally in information technology and computer science, positioning the department as a scientific beacon and a model for integrating theoretical knowledge with modern technologies. The department seeks to graduate creative national competencies that contribute to building a knowledge-based society, support digital transformation and sustainable development, and compete effectively in a rapidly evolving technological environment.

Mission:
The department strives to provide high-quality higher education that actively supports sustainable development goals through academic and research excellence, while enhancing its role in serving the community.

Objectives:

1. Provide high-quality education emphasizing excellence and innovation.
2. Develop the capacities and competencies of academic and administrative staff to enhance institutional performance.
3. Upgrade infrastructure to keep pace with scientific and technological developments.
4. Expand the use of information technology to support education, learning, and e-management.
5. Support scientific research and apply its outcomes to sustainable development.
6. Strengthen partnerships with academic institutions and participate in international rankings.
7. Reinforce the department's role in community service through developmental and knowledge-based initiatives.

Department of Medical Physics

The Department of Medical Physics provides a comprehensive academic program combining the theoretical foundations of physics with practical applications in medical and healthcare fields. Its goal is to train specialists who possess both scientific knowledge and technical skills necessary for applying physical techniques in disease diagnosis and treatment.

The program covers key topics, including:

- Various medical imaging techniques.
- Medical devices used in diagnosis and treatment.
- Applications of physics in radiotherapy and medical diagnostics.

The department seeks to graduate professionals capable of working in healthcare institutions and research centers, contributing to the development of medical technologies and improving healthcare quality.

Vision:
To adopt an integrated approach combining a deep understanding of physics with its medical applications, preparing students to utilize physical techniques in diagnosing and treating diseases, and covering medical principles, imaging techniques, and medical devices.

Mission:
The department aims to provide high-quality applied medical education, enabling students to acquire the knowledge and skills necessary for delivering excellent healthcare services. It also supports applied scientific research to improve community health and promotes sustainable development through partnerships with healthcare and research institutions, while adhering to ethical and professional standards and fostering innovation and creativity.

Objectives:

- Train graduates who combine medical knowledge with a deep understanding of physics to enhance patient care.
- Equip students with advanced scientific knowledge in radiation physics, medical imaging, and nuclear medicine.
- Provide students with practical skills to work in hospitals and healthcare centers, particularly in radiology and radiotherapy departments.
- Support scientific research and technological development in medical devices, diagnostic imaging, and biophysics.
- Contribute to community service by raising awareness about radiation risks and providing technical support to healthcare institutions.
- Collaborate with academic and research institutions through partnerships, conferences, and specialized workshops.
- Achieve quality standards and academic accreditation in education, training, and research.

Department of Forensic Evidence

The Department of Forensic Evidence focuses on studying and applying modern scientific methods to analyze crime-related evidence, using knowledge from physics, chemistry, biology, and digital technologies to serve the justice system.

Its objective is to train specialists capable of handling crime scenes and analyzing forensic evidence using advanced scientific techniques. The academic program covers core areas, including:

- Analysis of biological, chemical, and physical evidence related to crimes.
- Techniques for examining fingerprints and material traces at crime scenes.
- Use of modern technologies in forensic investigations and digital evidence analysis.

The department aims to graduate professionals qualified to work in forensic laboratories, security institutions, and research centers, contributing to justice through precise scientific methods in crime detection and evidence analysis.

Vision:
To be a leader in education, research, and practical application in forensic sciences, adhering to the highest standards of professionalism and scientific ethics, and meeting community needs by producing qualified graduates proficient in scientific knowledge, practical techniques, and modern technology for forensic evidence analysis.

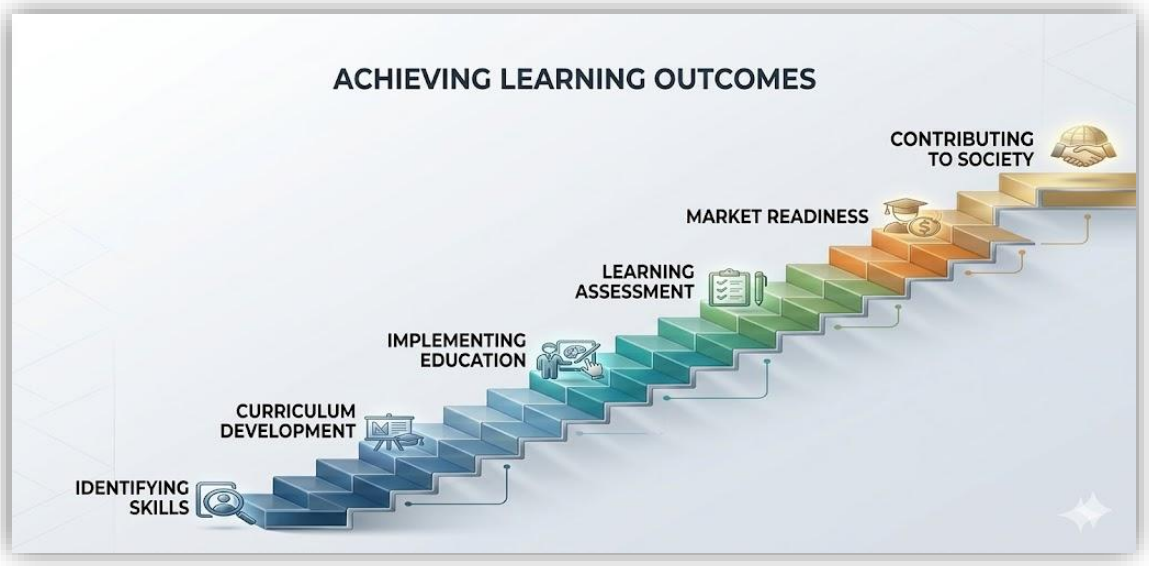
Mission:
To prepare specialized scientific personnel in forensic sciences who possess theoretical knowledge and practical skills, capable of analyzing forensic evidence using modern techniques according to scientific and ethical standards, thereby supporting the justice system, serving the community, and enhancing research collaboration with relevant institutions.

Objectives:

- Prepare graduates with scientific and practical competence in forensic sciences to work efficiently in security, judicial, and forensic laboratory institutions.
- Equip students with specialized theoretical knowledge and modern practical skills in forensic evidence analysis using advanced technologies.
- Develop students' scientific, critical, and analytical thinking for addressing criminal cases and analyzing incidents.
- Support scientific research in forensic sciences and encourage applied studies contributing to societal problem-solving.
- Promote adherence to professional ethics, legal standards, and humanitarian principles in handling forensic evidence.

Learning Outcomes

The learning outcomes of the College of Science aim to define the knowledge, skills, and competencies that students acquire upon completing their academic programs across the various departments. These outcomes contribute to producing graduates who are scientifically and practically qualified, capable of meeting the demands of the labor market, and prepared to contribute effectively to community service.



Learning Outcomes – Department of Information Technology

Graduates of the Department of Information Technology are expected to achieve a set of learning outcomes, including the following:

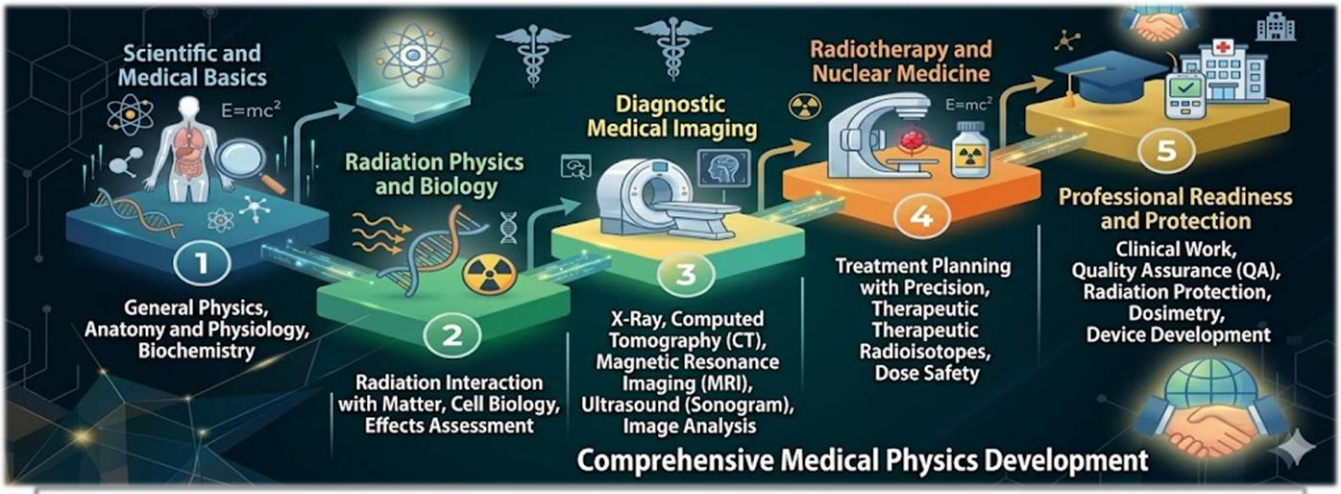
1. **Technical Knowledge:** Acquire comprehensive knowledge of the fundamentals of information technology, including programming, databases, networking, and information security.
2. **Programming Skills:** Demonstrate proficiency in multiple modern programming languages, such as Java, Python, and C++, and apply them in developing software and computer applications.
3. **Data Analysis:** Analyze data and information using modern tools and techniques to extract meaningful insights.
4. **Problem-Solving Skills:** Develop the ability to address complex technical problems through critical thinking and logical analysis.

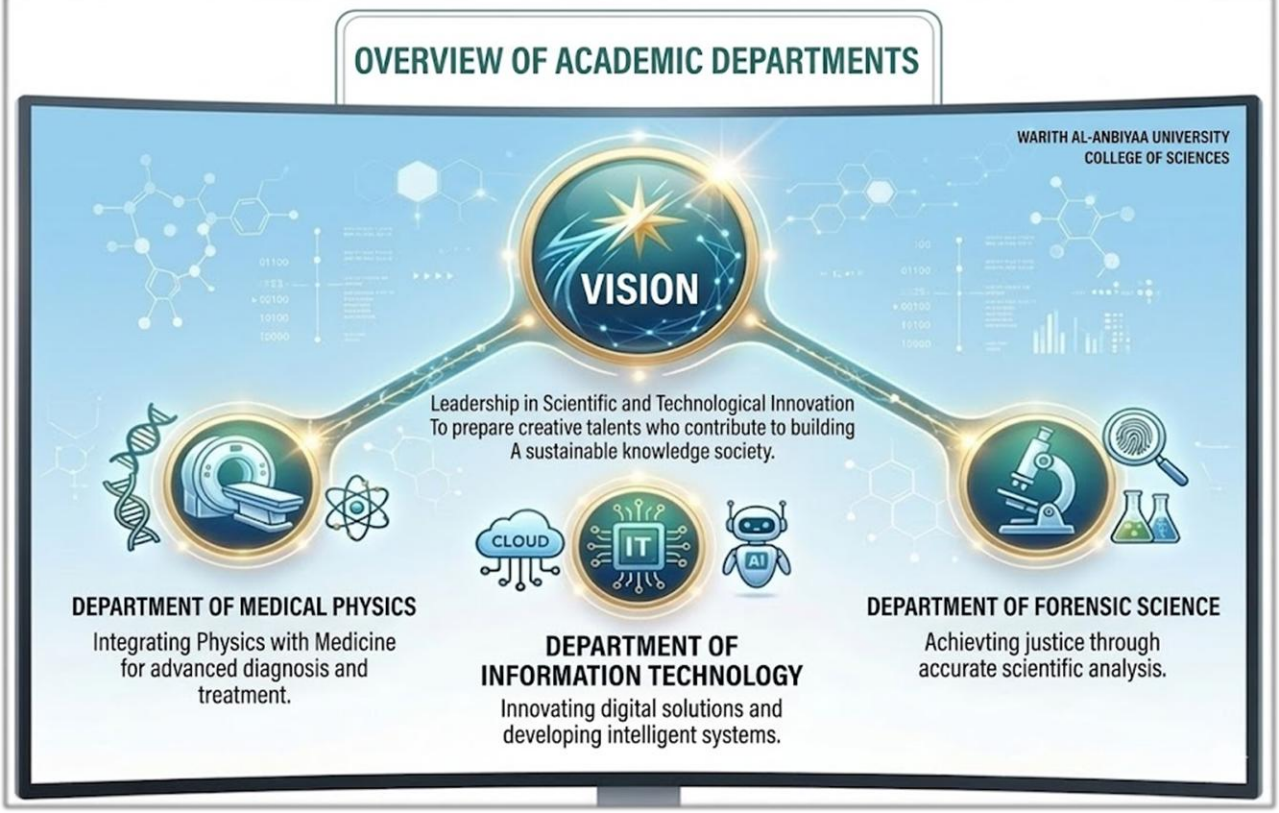
5. **Communication and Teamwork:** Possess strong communication skills, both written and oral, enabling effective collaboration within multidisciplinary teams.
6. **Continuous Learning:** Embrace the concept of lifelong learning and self-development to keep pace with rapid advancements in the field of information technology.

Learning Outcomes – Department of Medical Physics

Graduates of the Department of Medical Physics are expected to achieve a set of scientific and professional competencies, including:

1. **Physics Knowledge:** Understand the fundamental principles of physics and their applications in medical and healthcare contexts.
2. **Medical Technologies:** Demonstrate familiarity with modern medical technologies used in diagnosis and treatment, such as magnetic resonance imaging (MRI), X-rays, and radiotherapy.
3. **Risk Assessment:** Assess risks associated with the use of medical devices and technologies and apply professional safety standards.
4. **Scientific Research:** Conduct scientific research and analyze results critically using modern research methodologies.
5. **Interdisciplinary Collaboration:** Work effectively in collaboration with professionals in medicine, engineering, and technology.
6. **Patient Communication:** Develop effective communication skills with patients and healthcare staff to enhance the quality of healthcare delivery.


Scientific and Medical Basics
E=mc²
1
General Physics, Anatomy and Physiology, Biochemistry
Radiation Physics and Biology
2
Radiation Interaction with Matter, Cell Biology, Effects Assessment
Diagnostic Medical Imaging
3
X-Ray, Computed Tomography (CT), Magnetic Resonance Imaging (MRI), Ultrasound (Sonogram), Image Analysis
Radiotherapy and Nuclear Medicine
E=mc²
4
Treatment Planning with Precision, Therapeutic Therapeutic Radioisotopes, Dose Safety
5
Professional Readiness and Protection
Clinical Work, Quality Assurance (QA), Radiation Protection, Dosimetry, Device Development
Comprehensive Medical Physics Development


OVERVIEW OF ACADEMIC DEPARTMENTS
WARITH AL-ANBIYAA UNIVERSITY
COLLEGE OF SCIENCES
VISION
Leadership in Scientific and Technological Innovation
To prepare creative talents who contribute to building
A sustainable knowledge society.
CLOUD
IT
AI
DEPARTMENT OF MEDICAL PHYSICS
Integrating Physics with Medicine for advanced diagnosis and treatment.
DEPARTMENT OF INFORMATION TECHNOLOGY
Innovating digital solutions and developing intelligent systems.
DEPARTMENT OF FORENSIC SCIENCE
Achievting justice through accurate scientific analysis.

Curriculum / Courses – Department of Information Technology

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Cod	Module Name	SSWL	usswl	ECTS	Type	Pre-request
IT104	Programming Fundamentals I	78	97	7	C	
IT103	Computer Organization	63	87	6	C	
IT101	Information Technology Fundamentals	48	52	4	C	
IT102	Digital Logic	63	87	6	C	
IT105	Calculus I	48	77	5	C	
UOWA 103	Arabic Language	33	17	2	S	
Total		333	417	30		

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Cod	Module Name	SSWL	usswl	ECTS	Type	Pre-request
IT112	System Administration	63	112	7	C	IT111
CSIT102	Calculus II	48	77	5	B	CSIT101
CS104	programming Fundamentals II	78	97	7	C	CS102
CSIT104	discrete Structures	48	102	6	B	
UOWA 102	English Language I	33	42	3	5	
UOWA 103	human Rights & Democracy	33	17	2	3	
Total		270	430			

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
IT242	Computer Networks	63	87	6	C	IT212
CS203	Object Oriented Programming I	78	72	6	C	CS104
IT231	Principles of Database Systems	63	87	6	C	CS104
CSIT202	Microprocessors	63	87	6	C	CSIT103
CSIT201	Probability and Statistics	48	27	3	B	CSIT101
UOWA 104	Professional Ethics	18	7	1	S	
UOWA 105	Baath crimes	33	17	2	S	
Total		366	384	30		

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
IT 243	Network Routing and Switching	63	87	6	C	IT242
CS209	Object Oriented Programming II	78	72	6	C	CS203
IT232	Database Systems: Design and Development	63	87	6	C	IT231
IT262	Data Structure	63	87	6	C	CS104
IT272	Project Management Principles	33	42	3	E	
UOWA 202	English Language II	33	42	3	S	UOWA102
Total		333	417	30		

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
IT321	Information Technology Governance	33	42	3	E	IT121
IT333	DBMS Administration	63	87	6	E	IT323
IT381	User Experience Design	63	87	6	C	IT121
IT331	Operating System	63	87	6	C	CSIT202
341	Web Design and Programming	63	87	6	C	CS203,CS209,IT 262
CSIT301	Communication Skills	33	42	3	S	
Total		318	432	30		

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
IT372	Advanced Computer Architecture	48	77	5	C	CSIT202
IT362	Software Engineering	63	87	6	C	
IT332	Linux Operating System	63	62	5	C	IT331
IT342	Web Application Development	63	62	5	C	IT341
UOWA302	English Language III	33	42	3	S	UOWA202
IT381	Cybersecurity Principles	63	87	6	C	IT212
Total		333	417	30		

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
IT401	Information Security Technologies	63	87	6	C	IT381
IT444	Wireless Networks	48	27	3	E	IT243
IT431	Mobile Applications	63	87	6	E	IT372, IT332
IT461	Data Storage Engineering	63	87	6	E	IT342
IT441	Graduation Project I	61	14	3	C	IT112
Total		300	389	30		

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
IT452	Cyber-Attacks and Detection	63	87	6	C	IT381, IT401
IT445	Network Design	63	87	6	C	IT243
IT422	Cloud Computing Emerging Technologies	63	87	6	E	IT421
IT472	Internet of Things	63	87	6	E	IT421, IT461
IT492	Graduation Project II	61	14	3	C	IT441
UOWA402	English Language IIII	35	40	3	B	UOWA302
Total		348	402	30		

College Staff Framework

No.	Name	Position
1	Mohamed Raed	Administrative Staff
2	Abdullah Raed	Administrative Staff
3	Sabreen Mohamed	Administrative Staff
4	Huda Samir	Administrative Staff
5	Baneen Abbas	Administrative Staff
6	Di Al-Oyoun Ahmed	Administrative Staff
7	Adhra Amer	Administrative Staff
8	Montazer Idris	Administrative Staff
9	Ali Mahdi	Administrative Staff

Academic Staff of the Information Technology Department

Name	Degree	Academic Title	Email
Haider Mohamed Ali Alghanami	PhD	Assistant Professor	hayder.alghanami@uowa.edu.iq
Nabeel Sadiq Abdul Abbas	Master's	Lecturer	nabeel@uowa.edu.iq
Hussein Zaki Jasim	Master's	Lecturer	Hussein.almngoshi@uowa.edu.iq
Elaf Ali Safouk	Master's	Assistant Lecturer	Elaf.ali@uowa.edu.iq
Karar Sadiq Mohsen Alghadri	Master's	Assistant Lecturer	karar.sadeq@uowa.edu.iq
Ibrahim Uday Mohamed Al-Rubaie	Master's	Assistant Lecturer	ibrahim.al@uowa.edu.iq
Ali Abdulhussein Ibrahim	Master's	Assistant Lecturer	ali.abdulhussein@uowa.edu.iq
Maki Hasan Abdul Rahim	PhD	Lecturer	maky.h@uowa.edu.iq

Academic Courses of the Department of Medical Physics

Semester 1 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MPH101	Mechanics	**93**	**132**	**9**	**C**	None
MPH102	Analytical Chemistry	93	82	**7**	**C**	None
MPH103	General Biology	**93**	**132**	**9**	**C**	None
UOWA101	Human Rights and Democracy	**33**	**18**	**2**	**S**	None
UOWA102	Computer Science	**63**	12	2	**S**	None

Semester 2 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MPH1206	Organic Chemistry	**78**	**97**	**7**	**B**	None
MPH1207	Electricity and Magnetism	**78**	**97**	**7**	**B**	None
MPH1208	Mathematics	**48**	**102**	**6**	**B**	None
MPH1219	MatLab	**63**	**62**	**5**	**S**	Computer Science
UOWA105	English Language	**48**	**77**	**2**	**S**	None

Semester 3 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MPH23011	Heat and Thermodynamics	**78**	**97**	**7**	B	None
MPH23012	Optics	**78**	**97**	**7**	C	None
MPH23013	Analog and Digital Electronics	**63**	**87**	**6**	B	None
MPH23114	Physiology	**63**	**87**	**6**	C	General Biology
UOWA107	Professional Ethics	**33**	**67**	**4**	S	None

Semester 4 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MPH24116	Electromagnetic Waves	**48**	**77**	**5**	C	Electricity and Magnetism
MPH24117	Molecular Biology	**78**	**97**	**7**	C	General Biology
MPH24018	Medical Terminology	**33**	**92**	**5**	B	None
MPH24019	Atomic Physics	**78**	**122**	**8**	C	None
MPH24020	Phonetics Science	**33**	**92**	**5**	C	None

Semester 5 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MPH35021	Medical Physics	**78**	**72**	**6**	**C**	None
MPH35022	Anatomy	**78**	**97**	**7**	**C**	None
MPH35123	Physics of Diagnostic Radiology	**78**	**97**	**7**	**C**	Atomic Physics
MPH35024	Quantum Mechanics in Medicine	**33**	**67**	**4**	**C**	None
MPH35025	Basics of Laser	**63**	**87**	**6**	**B**	None

Semester 6 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MPH36026	Medical Imaging	**78**	**97**	**7**	C	None
MPH36027	Material Science	**63**	**62**	**5**	B	None
MPH36128	Medical Laser Application	**78**	**97**	**7**	C	Basics of Laser
MPH36129	Biochemistry	**63**	**62**	**5**	B	Organic Chemistry
MPH36130	Biostatics	**63**	**87**	**6**	B	None

Semester 7 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MPH47131	Medical Image Processing and Analysis	78	97	7	C	MatLab
MPH47132	Medical Instrumentation Physics	63	87	6	C	Analog and Digital Electronics
MPH47133	Radiotherapy Physics	78	97	7	C	Physics of Diagnostic Radiology
MPH47134	Nanotechnology	48	52	4	C	Material Science
CS401	Research Project I	78	72	6	C	None

Semester 8 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MPH48036	Neurophysics	78	72	6	C	None
MPH48037	Biomaterials	33	92	5	C	None
MPH48138	Physics of Nuclear Medicine	78	97	7	C	Atomic Physics
MPH48039	Environmental Pollution	63	87	6	B	None
CS402	Research Project II	78	72	6	C	Research Project I

Academic Staff of the Department of Medical Physics

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Shaimaa Hussein Nofal	PhD	Assistant Professor	shaymaa@uowa.edu.iq
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Ashraf Hussein Saleh Al-Sulaikhi	Master's	Assistant Lecturer	Ashraf.H@uowa.edu.iq
Dirgham Adel Obeid Hassoun	Master's	Assistant Lecturer	dirgham.ad@uowa.edu.iq
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Learning Outcomes of the Forensic Evidence Department

The Department of Forensic Evidence aims to prepare graduates with the scientific knowledge and practical skills necessary to analyze forensic evidence using modern scientific methods. The main learning outcomes include:

1. **Acquisition of foundational knowledge** in forensic science and its applications in crime analysis and criminal investigations.
2. **Ability to analyze biological, chemical, and physical evidence** related to crime scenes using advanced scientific techniques.
3. **Familiarity with methods for collecting, preserving, and documenting forensic evidence** in accordance with recognized scientific and legal standards.
4. **Utilization of modern technologies** in the analysis of digital and forensic evidence to support investigations and crime detection.
5. **Development of analytical thinking and scientific reasoning skills** for interpreting forensic examination results.
6. **Ability to work within multidisciplinary teams** and collaborate with law enforcement and judicial authorities in criminal investigations

Academic Staff of the Department of Forensic Evidence

Name	Degree	Academic Title	Email
Ashraf Hussein Saleh Al-Sulaikhi	Master's	Assistant Lecturer	Ashraf.H@uowa.edu.iq
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College Infrastructure

The College of Science possesses a comprehensive infrastructure that supports the educational process, having been established and equipped to meet the requirements of modern university education. This infrastructure includes a range of administrative offices, lecture halls designed for delivering courses, and advanced scientific laboratories that enhance the practical and applied skills of students. The most prominent facilities can be summarized as follows:

Scientific Laboratories

The Department of Medical Physics includes a dedicated scientific laboratory to support the practical aspects for students, particularly first-year students. This laboratory serves as a modern educational environment, designed in accordance with the laboratory quality standards approved by the Ministry of Higher Education and Scientific Research, with a capacity of up to 50 students.

The laboratory is equipped with a set of modern devices and educational technologies that support the study of physical applications in medical fields, such as physical measurement techniques, simulation devices related to medical imaging and radiation, as well as advanced educational tools and training software that enhance students' practical skills.

The laboratory aims to develop students' scientific and practical skills, enabling them to understand the physical principles associated with medical applications, in alignment with the curriculum requirements. The teaching approach within the laboratory relies on modern educational methods that combine theoretical explanation with direct practical application under the supervision of faculty, providing feedback to students and documenting performance and results in laboratory records, thus enhancing the quality of practical education and improving learning outcomes.

Biology Laboratory

This laboratory focuses on training students in the collection, documentation, and preliminary analysis of biological evidence obtained from crime scenes (such as blood, saliva, semen, hair, and tissues). The course emphasizes the application of forensic serology techniques and microscopic examination to distinguish between human and animal samples, with strict adherence to proper preservation methods to prevent sample degradation or contamination before DNA analysis.

Chemistry Laboratory

This laboratory focuses on the practical application of chemical principles and analytical techniques to examine and identify the nature of physical evidence collected from crime scenes. Students learn how to handle unknown samples (such as powders, liquids, stains, and glass fragments) without compromising their integrity, while strictly adhering to the **Chain of Custody** procedures to ensure the legality and reliability of the evidence in court.

General Physics Laboratory

This laboratory serves as the practical gateway to studying classical physics, with a particular focus on **Mechanics** and **Properties of Matter**. The course aims to transition students from theoretical understanding of physical laws to their practical demonstration. More importantly, this laboratory emphasizes teaching students the fundamentals of laboratory work: how to measure, record data, graphically represent results, and calculate measurement errors.

Atomic Physics Laboratory

This laboratory focuses on the practical verification of theories that laid the foundations of modern physics in the early 20th century. The course allows students to replicate the great historical experiments that led to the understanding of atomic structure, electron behavior, and the dual nature of light (wave and particle). This laboratory serves as a practical bridge linking the theoretical concepts of **Quantum Mechanics** with experimental reality.

Molecular Biology Laboratory

This laboratory focuses on the study of macromolecules that form the basis of life, specifically nucleic acids (**DNA** and **RNA**) and proteins. Students progress from studying the cell in general to examining the nucleus to understand the genetic code, as well as the processes of extraction, amplification, and analysis. This laboratory provides the practical application of the **Central Dogma of Molecular Biology**.

Thermodynamics Laboratory

This laboratory is dedicated to the practical study of concepts such as **heat**, **temperature**, methods of **thermal energy transfer**, and the applications of the **laws of thermodynamics**. The course aims to equip students of Medical Physics with the skills necessary to measure the thermal properties of materials. This knowledge provides the scientific foundation for understanding how the human body interacts with heat and how to manage the thermal output of complex medical devices.

Optics Laboratory

The Optics Laboratory aims to equip students with both scientific knowledge and practical (experimental) skills by allowing them to explore wave phenomena—such as **interference, diffraction, and polarization**—in a hands-on manner. Additionally, students are trained to work with **laser light sources**.

All known properties of light are described in terms of the experiments through which they were discovered, as well as through numerous illustrative experiments used to demonstrate them. Although these properties are diverse, their demonstrations can be grouped and classified under three main categories: **Geometrical Optics**, **Wave Optics**, and **Quantum Optics**.

Physiology Laboratory

The Physiology Laboratory is a specialized facility for studying the functions of living organs and systems. It focuses on understanding physiological processes such as:

1. **Respiration**
2. **Circulatory system**
3. **Digestion**
4. **Metabolism**
5. **Nervous system**
6. **Excretory system**
7. **Immune system**

General Biology Laboratory

One of the laboratories of the Department of Medical Physics at the College of Science, University of Waraith Al-Anbiyaa, the General Biology Laboratory is equipped with various instruments and tools that assist students in studying human biology and examining organs and systems in detail.

This laboratory is considered an essential requirement for students of the Department of Medical Physics. The course focuses on providing students with applied knowledge of the cellular and tissue foundations of living organisms. This biological understanding aims to build a solid scientific foundation that enables medical physicists to comprehend the interactions between biological systems and various physical agents, such as **ionizing radiation, ultrasound, and magnetic fields**.

Mechanics Laboratory

One of the laboratories of the Department of Medical Physics at the College of Science, University of Waraith Al-Anbiyaa, the Mechanics Laboratory is equipped with various instruments and tools that help students conduct experiments, obtain results, and compare them with theoretical values. The laboratory also provides opportunities to discuss and analyze discrepancies between theoretical and experimental results.

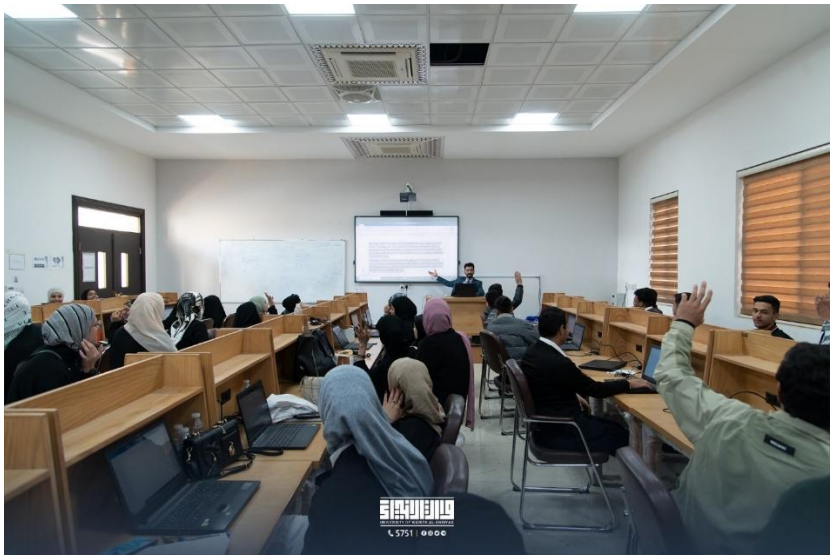
Analytical Chemistry Laboratory

The Analytical Chemistry Laboratory focuses on the study of **qualitative analysis** (identifying substances) and **quantitative analysis** (determining the amount of a substance) through hands-on experiments using laboratory instruments, glassware, and chemical reagents, while adhering to **chemical safety and security protocols**.

This laboratory provides students with practical foundations in both qualitative and quantitative chemical analysis. The course emphasizes the development of **fine motor skills** in handling glassware and chemical materials, training students to accurately calculate solution concentrations, and teaching the principles of data processing and experimental error analysis.

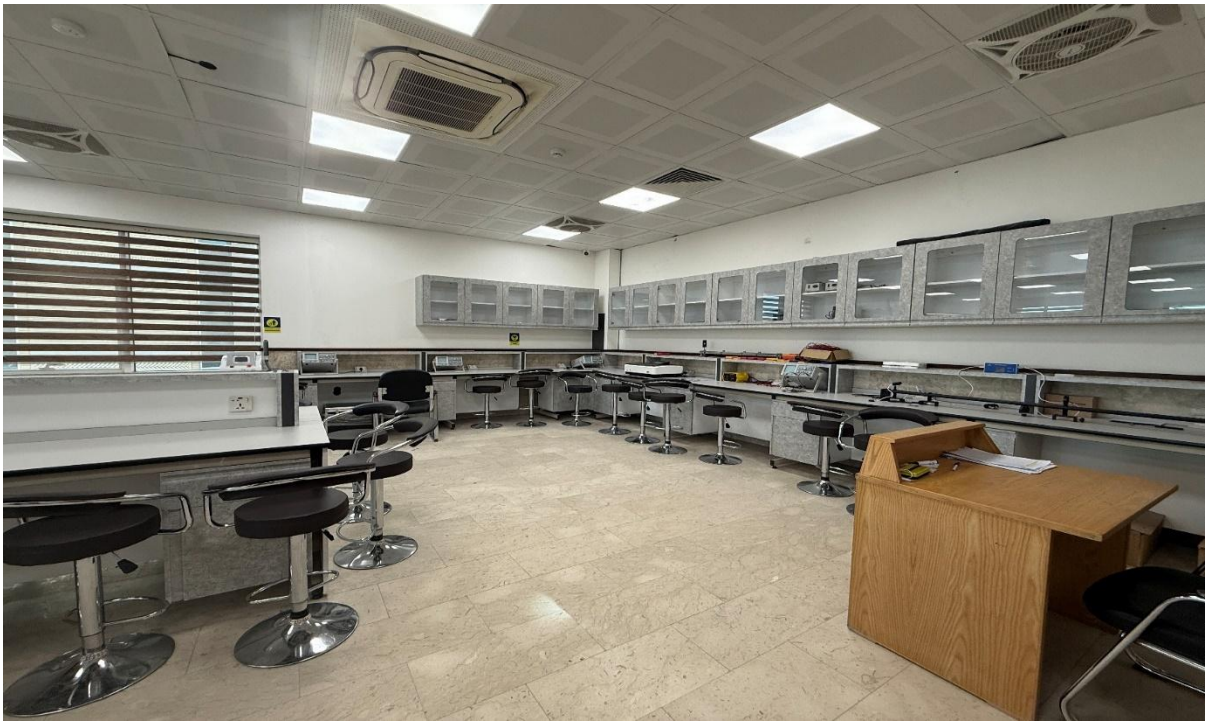
Computer Laboratory

The Computer Laboratory, one of the laboratories at the College of Science, University of Waraith Al-Anbiyaa, is equipped with **50 laptop computers** and educational tools such as a projector and a data display device. Students use this laboratory to practice computer skills and various software applications, with the aim of enhancing their technical and computational abilities.



Department of Forensic Evidence

Forensic Evidence Principles Laboratory
This laboratory serves as the initial practical introduction to handling crime scenes and physical evidence. The course focuses on the fundamental principles and philosophy underlying forensic science, particularly **Locard's Exchange Principle**. Students are trained in the first steps of investigation: how to approach a crime scene, document it, and collect and package evidence correctly to prevent contamination and preserve its legal validity in court (**Chain of Custody**).



Education System

Education System at the College of Science, University of Waraith Al-Anbiyaa (peace be upon him)

The College of Science at the University of Waraith Al-Anbiyaa adopts the **Bologna Process**, an internationally recognized modern education system designed to enhance the quality of higher education and promote academic compatibility among universities. This system contributes to improving learning outcomes and meeting labor market requirements.

The system is based on a set of principles that enhance the efficiency of the educational process and provide a flexible academic framework, enabling students to acquire knowledge and skills according to internationally approved scientific standards.

Academic Degree Structure:
The system follows a three-tier academic structure, which includes:

- **Bachelor’s Degree**
- **Master’s Degree**
- **Doctoral Degree**

Credit Hour System (ECTS):
The system utilizes the **European Credit Transfer and Accumulation System (ECTS)**, where one academic year is equivalent to **60 credits**. This approach helps organize the academic workload for students and facilitates the comparison of study programs between different universities.

Objectives of the Education System:

- **Enhancing Academic Mobility:** Providing students with the opportunity to transfer easily between universities and educational institutions.
- **Improving the Quality of Higher Education:** Implementing standardized academic criteria to ensure the quality of programs and learning outcomes.
- **Aligning Education with Labor Market Needs:** Preparing graduates with the knowledge and skills necessary to keep pace with scientific and technological developments and meet labor market demands.

Competency-Based Learning:
The College of Science emphasizes a **competency-based learning approach**, focusing on learning outcomes and practical competencies. Modern teaching methods encourage active learning and the practical application of scientific knowledge.

This approach aims to develop students' abilities in **analytical thinking, problem-solving, and scientific research**, thereby enhancing both their academic and practical skills. It also ensures that graduates acquire the scientific and professional competencies required to meet the demands of their specialized fields and adapt to ongoing scientific developments and labor market needs.

Features of the Education System:
The education system at the College of Science is characterized by several features that enhance the efficiency and quality of the learning process, including:

- **Flexibility in Study Plans:** Students can select certain courses within approved academic guidelines, in line with their scientific interests and specialization requirements.
- **Modern Teaching and Assessment Methods:** Emphasis on performance evaluation and the achievement of learning outcomes, enhancing educational quality and aligning with academic standards.
- **Promotion of Academic and Scientific Collaboration:** Collaboration with universities and research institutions fosters knowledge exchange and the development of curricula.
- **Support for Personal and Professional Skills Development:** Encouraging analytical thinking, teamwork, and effective communication, preparing students to integrate efficiently into the labor market.

Implementing the Bologna Process contributes to advancing the educational process at the college, enhancing students' academic competence, and increasing their ability to compete in diverse scientific and professional environments.

Implementation Mechanism of the System at the College:
The College of Science ensures the application of the Bologna Process through a set of academic and administrative procedures designed to maintain high-quality education and achieve distinguished learning outcomes. These include:

- **Periodic Curriculum Updates and Development:** Curricula are regularly revised to comply with quality and accreditation standards and to keep pace with scientific developments in various disciplines.
- **Academic Advising and Continuous Student Monitoring:** Guiding students academically and supporting their progress and academic success.
- **Provision of a Stimulating Educational and Research Environment:** Promoting scientific research and innovation, and encouraging students to develop their scientific and practical skills.
- **Compliance with Ministry of Higher Education and Scientific Research Regulations:** Ensuring adherence to accredited academic standards and maintaining education quality.

Application Steps

Application Procedure at the College of Science

The application process for admission to the College of Science is conducted through the **official electronic system** approved by the Department of Private Universities at the Ministry of Higher Education and Scientific Research. This process follows a series of organized steps designed to ensure data accuracy and facilitate smooth submission.

Stage One: Account Creation
The application process begins with the creation of a personal electronic account via the official application of the Department of Private Universities. This stage includes the following steps:

- Downloading the official application on a mobile device.
- Accurately entering the required personal information.
- Selecting a username and password for the account.
- Capturing a live personal photo through the application for identity verification.
- Scanning the national ID card (front and back) electronically.

The system then verifies the match between the live photo and the national ID data, activating the student's electronic account.

Stage Two: Data Entry and Application Completion
Once the account is created and activated, the student proceeds to complete the application by entering the required academic data. This stage involves:

- Logging into the application using the created account.
- Entering the student's examination number.
- Reviewing and verifying the accuracy of all entered data before submission.
- Uploading required documents and files, if applicable.
- Entering the secure code for the application process.
- Finalizing data verification and submitting the application electronically.

Account Verification Procedures
After entering the required data into the electronic system, the student completes account verification through the following steps:

- Entering the verification code sent via the system to confirm the accuracy of the entered information.
- Completing the verification process, making the account fully active and ready to continue with the application.
- If the student wishes to delete all information in the account, this can be done through the electronic application, as the system relies on live facial recognition to ensure data accuracy and protect user privacy.

Auditing and Review Procedures

- If additional verification is required, the student's data may be reviewed by the Ministry of Higher Education and Scientific Research or an authorized auditing center through the designated electronic reservation system, ensuring accuracy according to approved instructions.
- Students may also apply through designated channels within the system ("Channels" section), adhering to specific instructions and requirements for each channel. Note that activation procedures and requirements may vary between channels, according to regulations issued by the competent authorities.

Collaborative Agreements with Universities and Academic Institutions

The College of Science at the University of Waraith Al-Anbiyaa (peace be upon him) is keen to expand its academic and scientific cooperation with universities, educational institutions, and research centers. These agreements aim to enhance the educational process and improve the quality of academic programs by promoting scientific and knowledge exchange, as well as providing broader opportunities for collaboration in education and research.

Objectives of the Agreements:

- Strengthening academic and research collaboration between educational institutions.
- Developing curricula and academic programs in line with modern scientific advancements.
- Facilitating the exchange of scientific and academic expertise among faculty members and researchers.
- Supporting joint research activities and scientific projects.
- Improving the quality of education and elevating the academic standards for students.

Key Partner Institutions:

- **University of Karbala**
- **College of Applied Medical Sciences**

The College seeks to expand these partnerships in the future to further enhance its academic standing, achieve scientific excellence, and serve the community.

Agreements Concluded with Governmental Universities and Colleges

Twinning Agreement between the College of Science at the University of Waraith Al-Anbiyaa and the College of Applied Medical Sciences at the University of Karbala

A **scientific twinning agreement** was signed between the College of Science / Department of Medical Physics at the University of Waraith Al-Anbiyaa (peace be upon him) and the University of Karbala to strengthen academic cooperation.

In the framework of promoting academic collaboration and the exchange of scientific expertise, **Assistant Professor Dr. Shaymaa Hussein Nofal**, Dean of the College of Science at the University of Waraith Al-Anbiyaa, signed a twinning agreement with **Assistant Professor Dr. Hassan Faisal Neama Al-Yasari**, Dean of the College of Applied Medical Sciences at the University of Karbala.

The agreement includes the adoption of the **Bologna Process**, organization of assessment exams, as well as arranging joint workshops and seminars, and developing collaborative research projects between the two parties. The agreement also aims to enhance curricula and exchange technical expertise to elevate the academic quality of education and promote scientific research between the universities.

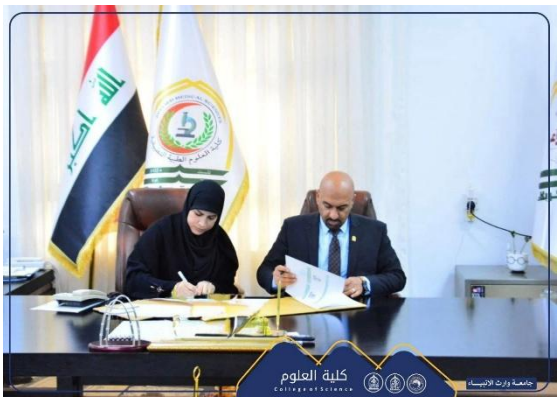
Areas of Cooperation

1. Teaching
The collaboration in the teaching field includes:

1. Developing and unifying curricula for corresponding programs between the two colleges.
2. Exchanging books, scientific resources, and academic references.
3. Organizing workshops on modern teaching methods and summer training programs.
4. Joint supervision of student graduation projects.
5. Facilitating the use of scientific laboratories between the two parties under coordinated arrangements.
6. Cooperation in e-learning and exchanging expertise in modern educational technologies.

2. Scientific Research
Collaboration in scientific research includes:

1. Conducting specialized joint research and publishing in reputable international journals and indexed databases.
2. Evaluating research by specialists from both colleges and exchanging research expertise.
3. Organizing joint scientific conferences and seminars.
4. Joint supervision of postgraduate students and participation in scientific defense committees.
5. Collaboration in the requirements for academic promotions of faculty members.
6. Utilizing specialized laboratories for joint research purposes.



Agreements Concluded with Governmental Universities and Colleges

Between the Department of Medical Physics at the University of Waraith Al-Anbiyaa (peace be upon him) and the Department of Medical Physics at the University of Karbala

Within the framework of enhancing academic cooperation and exchanging scientific expertise, a Memorandum of Understanding (MoU) for academic twinning was signed between the College of Science / Department of Medical Physics at the University of Waraith Al-Anbiyaa (peace be upon him) and the College of Applied Medical Sciences at the University of Karbala. The MoU was signed by Assistant Professor Dr. Shaymaa Hussein Nofal, Dean of the College of Science at the University of Waraith Al-Anbiyaa, and Assistant Professor Dr. Hasan Faisal Nima Al-Yasari, Dean of the College of Applied Medical Sciences at the University of Karbala, with the aim of strengthening academic and research collaboration between the two institutions.

The MoU includes the adoption of the Bologna academic framework, the organization of assessment examinations, the holding of joint workshops and scientific seminars, and the development of collaborative research projects. It also aims to enhance the quality of curricula, exchange scientific and technical expertise, and elevate the level of education and research in both institutions.

Areas of Cooperation

1. Education and Teaching
The two parties collaborate in the following academic areas:

1. Development and unification of curricula for corresponding programs between the two colleges.
2. Exchange of books, scientific resources, and academic references.
3. Organizing workshops on the latest teaching methods and techniques, as well as summer training programs for students.
4. Joint supervision of student graduation projects.
5. Providing access to scientific laboratories between the two institutions under coordinated arrangements.
6. Collaboration in e-learning and the exchange of expertise in modern educational applications and technologies.

2. Scientific Research
Research cooperation encompasses the following areas:

1. Conducting joint scientific research in areas of mutual interest and publishing in reputable journals and academic databases.
2. Evaluation of scientific research by specialists from both colleges and exchange of research expertise.
3. Organizing joint scientific conferences and seminars at national and international levels.
4. Joint supervision of graduate students and participation in scientific defense committees.
5. Collaboration on the academic promotion requirements of faculty members.
6. Utilization of specialized laboratories for joint research purposes.

Memorandum of Academic Twinning and Joint Collaboration

In the framework of enhancing academic cooperation and exchanging scientific expertise, a Memorandum of Understanding (MoU) for academic twinning was signed between the College of Science / Department of Medical Physics at the University of Waraith Al-Anbiyaa and the College of Applied Medical Sciences at the University of Karbala. The MoU was signed by Assistant Professor Dr. Shaymaa Hussein Nawfal, Dean of the College of Science at the University of Waraith Al-Anbiyaa, and Assistant Professor Dr. Hassan Faisal Nema Al-Yasari, Dean of the College of Applied Medical Sciences at the University of Karbala, with the aim of strengthening academic and research collaboration between the two parties.

The MoU includes the adoption of the Bologna Process, organization of assessment examinations, conducting joint workshops and scientific seminars, and the development of collaborative research projects. It also aims to improve curriculum quality, exchange scientific and technical expertise, and enhance the level of education and research at both institutions.

Areas of Cooperation

1. Education and Teaching
The two parties collaborate in the following academic areas:

1. Development and unification of curricula for corresponding programs between the two colleges.
2. Exchange of books, scientific resources, and academic references.
3. Organization of workshops on the latest teaching methodologies and summer training programs for students.
4. Joint supervision of student graduation projects.
5. Coordinated access to scientific laboratories between the two parties.
6. Collaboration in e-learning and exchange of expertise in modern educational technologies and applications.

2. Scientific Research
Research collaboration includes the following areas:

1. Conducting joint scientific research in fields of mutual interest and publishing in reputable journals and scientific repositories.
2. Peer evaluation of research outputs by experts from both colleges and exchange of research expertise.
3. Organization of joint scientific conferences and seminars at national and international levels.
4. Joint supervision of postgraduate students and participation in academic defense committees.
5. Collaboration in the academic promotion requirements for faculty members.
6. Use of specialized laboratories for joint research purposes.

agreements aim to strengthen academic and research cooperation between educational institutions, thereby contributing to the development of the educational process and enhancing the quality of education.

Central Library

The Central Library of the College of Science is concerned with providing reliable and specialized scientific resources, including books, theses, peer-reviewed journals, and conference proceedings. These resources are entered into an integrated digital system that allows easy access, whether for physical consultation or electronic research.

The library operates according to the Dewey Decimal Classification and follows an organized procedure consisting of sequential steps, starting from recording each book in storage with a unique serial entry number, stamping it with the official library seal, and assigning a digital identifier to each book, periodical, or reference, placing it on the appropriate shelf. The digital content of the resources is also preserved to ensure effective searching and consultation.

Library Vision
The Central Library aims to be one of the leading academic libraries in the region in terms of service quality and infrastructure development. Future development plans include:

- Expanding the library space and constructing an additional floor for reading.
- Establishing an electronic division equipped with the Internet and the latest digital technologies.
- Continuously developing digital content and electronic services to keep pace with scientific and technological advancements.

Workshops and Professional Developmen

The College of Computer Science and Information Technology at the University of Warith Al-Anbiya aims to enhance students' practical skills by organizing advanced training workshops in the fields of **Fiber Optics** and modern **networking technologies**.

These workshops focus on:

- **Deepening theoretical understanding** of contemporary technologies.
- **Expanding practical applications** within laboratories, including advanced connectivity techniques, testing and measurement devices, and network maintenance procedures.
- **Aligning training with labor market requirements** to ensure students' readiness for careers in information and communication technology.

The college emphasizes its commitment to providing high-quality training programs designed to prepare qualified technical personnel who combine theoretical knowledge with practical experience, demonstrate creativity, and are competitive, thereby enhancing the college's academic role in serving the community and keeping pace with future technological developments.

Feedback Portal

The College of Science at the University of Warith Al-Anbiya (peace be upon him) provides its students, staff, and visitors with an active platform to contribute to the development of the academic and administrative environment through the electronic Feedback Portal. This portal enables users to easily submit ideas, suggestions, comments, and complaints.

Submissions can be made confidentially or publicly, according to the user's preference, and there is no requirement to create an account beforehand. All contributions are directed immediately to the College Dean's Office and relevant departments for review and appropriate action.

Access to the portal is available via scanning the dedicated QR code for each service, such as:

- Submitting a comment
- Submitting an idea
- Filing a complaint

This initiative aims to promote transparency and foster a culture of constructive communication between the College and its members, thereby enhancing academic and administrative performance and improving the quality of services provided.

Academic Guide Preparation Committee

Role	Name	Email
Supervision & Follow-up	Assist. Prof. Dr. Shaymaa Hussein Noufel	shaymaa@uowa.edu.iq
Report Preparation	Mohammed Raed	mohammed.raed@uowa.edu.iq
Report Preparation	Abdullah Raed	–

Approval

Respectfully, Dean of the College of Science