كلية العلوم

College of Sciences

Information Technology – Medical Physics

Academic Guide for the College of Science for the 2024/2025 Academic Year

University of Warith Al-Anbiya (PBUH) – College of Science Email: cos@uowa.edu.iq

Contents

1- About the College

Dean of the College
Prof. Dr. Shaimaa Hussein Nofal

The "College of Science" at the University of Warith Al-Anbiya (PBUH) is considered a modern and innovative pillar in the academic environment for the current academic year. With the establishment of this college, we aspire to prepare a generation of inspired and qualified graduates in the fields of Medical Physics and Information Technology, who will be pioneers in their fields and active contributors to the advancement of society.

The establishment of the college reflects our commitment to providing high-quality education that aligns with the latest scientific and technological advancements. Our students are offered unique opportunities to acquire the necessary skills and in-depth knowledge in their specializations, whether in the field of modern Medical Physics or Information Technology.

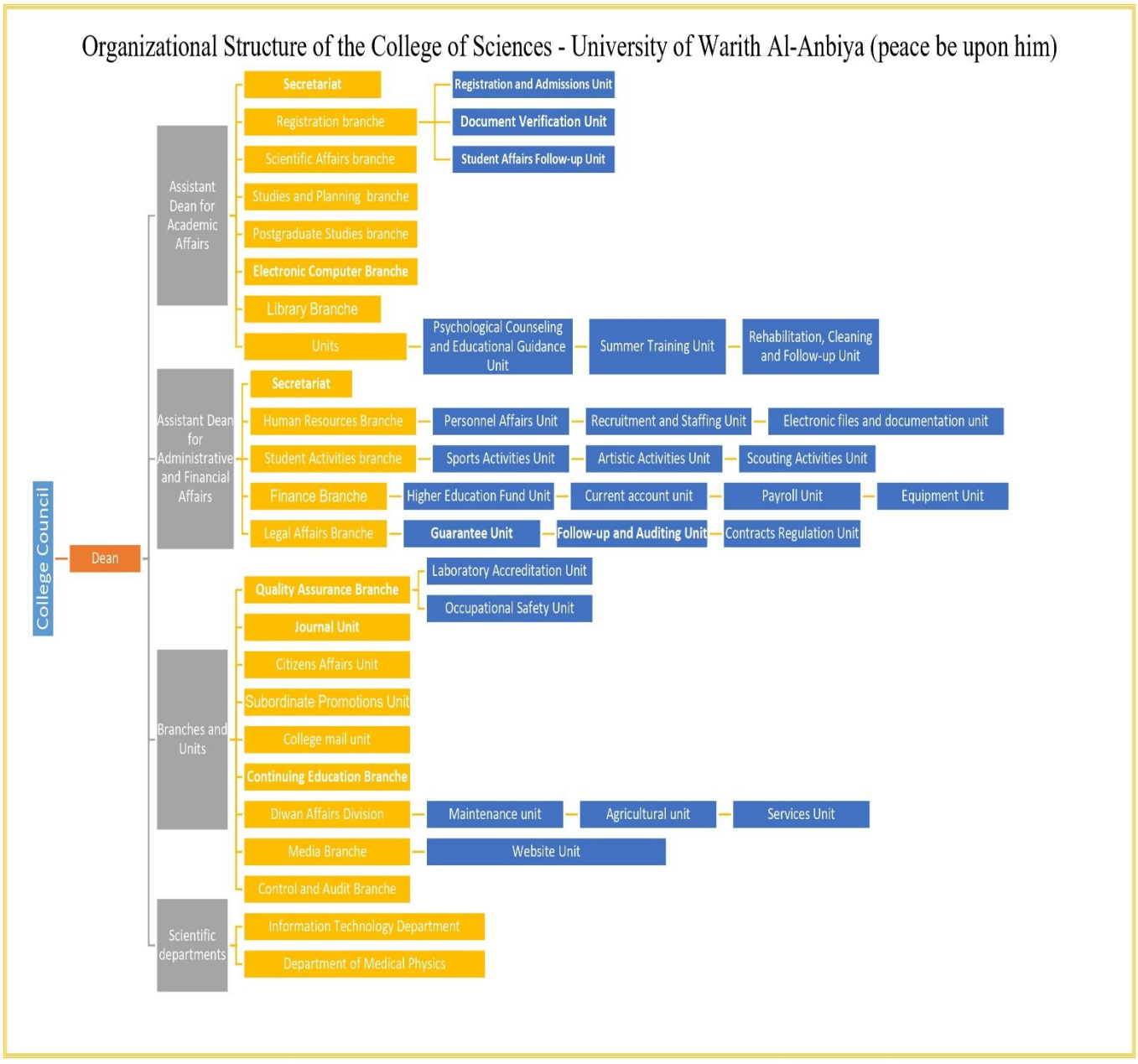
Department of Information Technology

The Department of Information Technology is distinguished by offering academic programs that keep pace with the rapid developments in this advanced field. The department focuses on equipping students with skills in software design and development, IT infrastructure management, and solving complex technical problems. The department aims to produce experts in the field of Information Technology who are capable of addressing contemporary challenges.

Department of Medical Physics

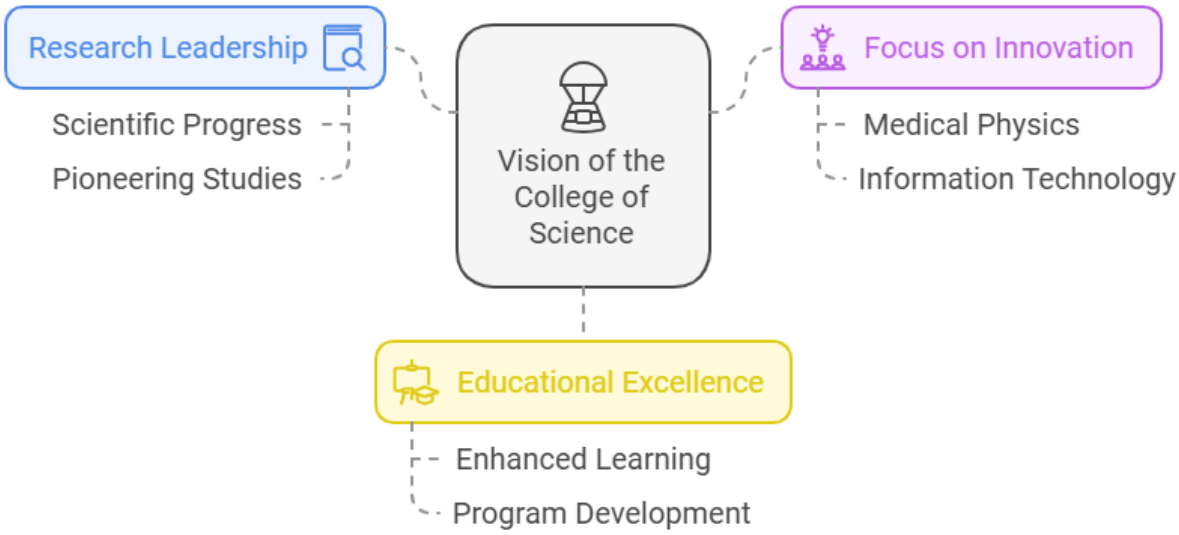
The Department of Medical Physics adopts a comprehensive approach that combines a deep understanding of physics with its application in the medical field. The department focuses on training students to use physical techniques in diagnosing and treating diseases. The program includes the study of medical principles, medical imaging techniques, and medical devices. The department aims to prepare graduates who integrate medical knowledge with a profound understanding of physics to enhance patient care.

2- College Structure



3- The Vision of the College of Science in Education and Scientific Research

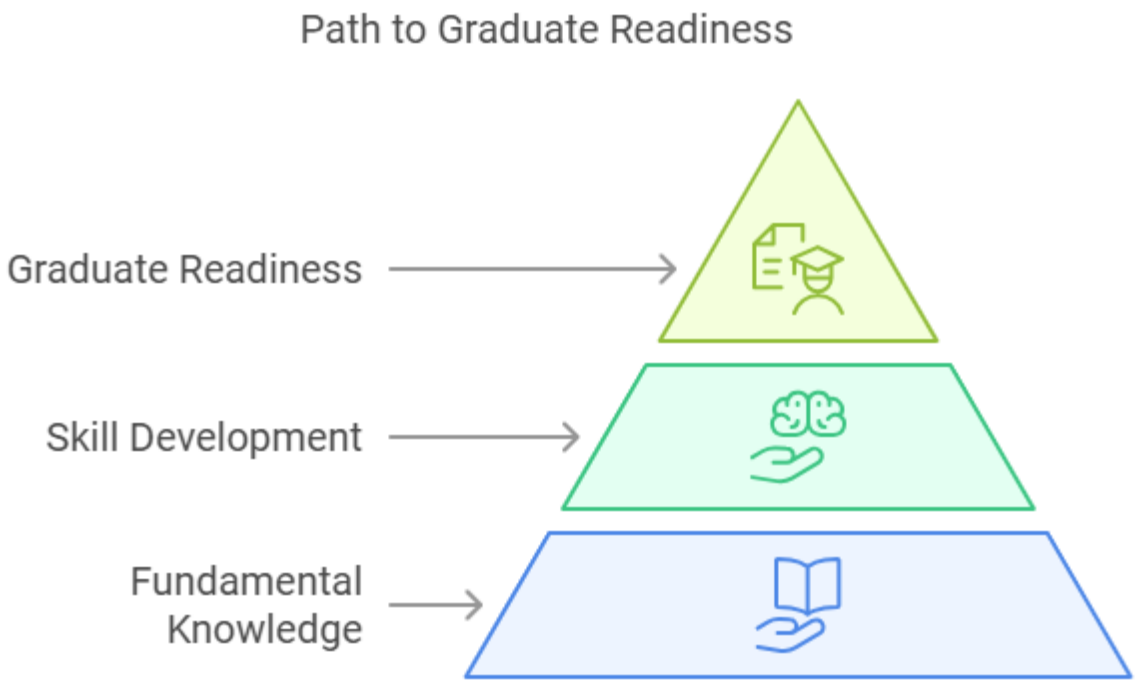
The College of Science aims to be one of the leading educational and research institutions in the region, focusing on excellence in Medical Physics and Information Technology.



The College of Science is considered a center for knowledge and innovation, offering an educational environment that encourages critical thinking and scientific exploration. By focusing on the fields of Medical Physics and Information Technology, the college aims to prepare qualified graduates who are capable of facing contemporary scientific and technological challenges.

4- College Mission

The College of Science is committed to providing high-quality scientific education that focuses on developing knowledge and skills in the fields of modern Medical Physics and Information Technology. We aim to graduate qualified students who possess deep knowledge and the ability to contribute to scientific and technological advancement.



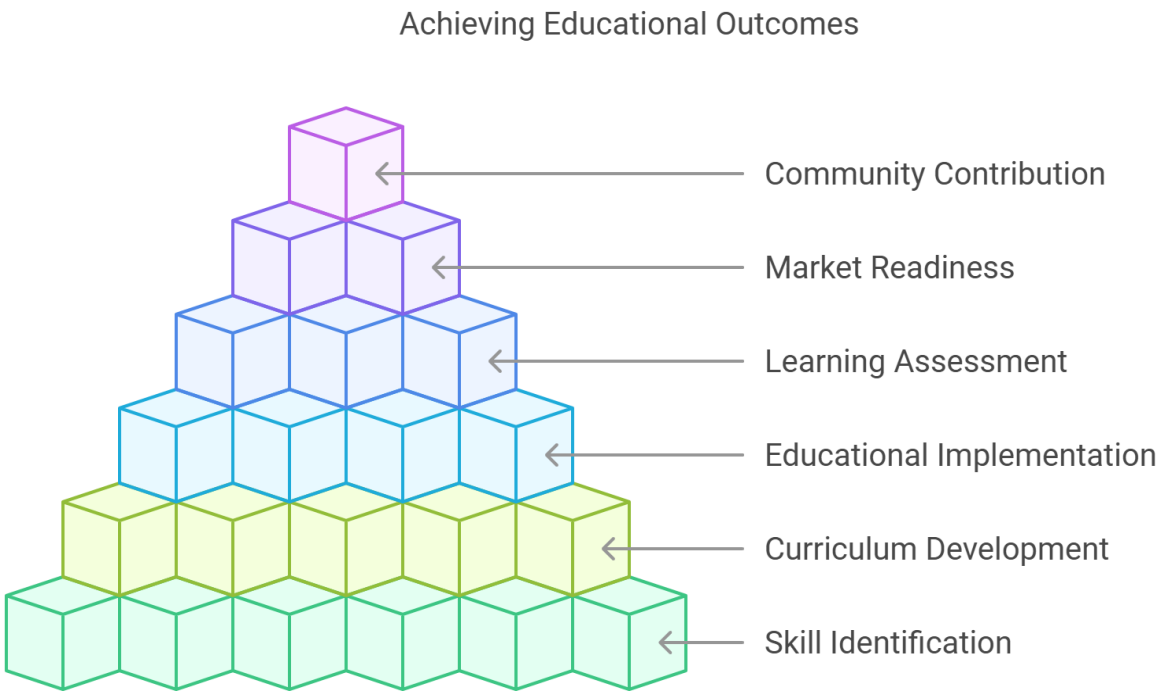
5- College Objectives

- **Providing an educational environment that encourages critical thinking and creativity in the fields of Medical Physics and Information Technology.**
- **Equipping students with the practical and technical skills necessary to excel in the sciences.**
- **Promoting scientific research and innovation in the fields of Medical Physics and Information Technology.**
- **Developing educational programs that are updated in accordance with advancements in science and technology.**
- **Strengthening interaction and partnerships with healthcare institutions and technology companies to enhance employment and training opportunities for students.**

Through achieving this vision, mission, and the outlined objectives, we strive to qualify our students to be pioneers in their fields and active contributors to societal progress and scientific development.

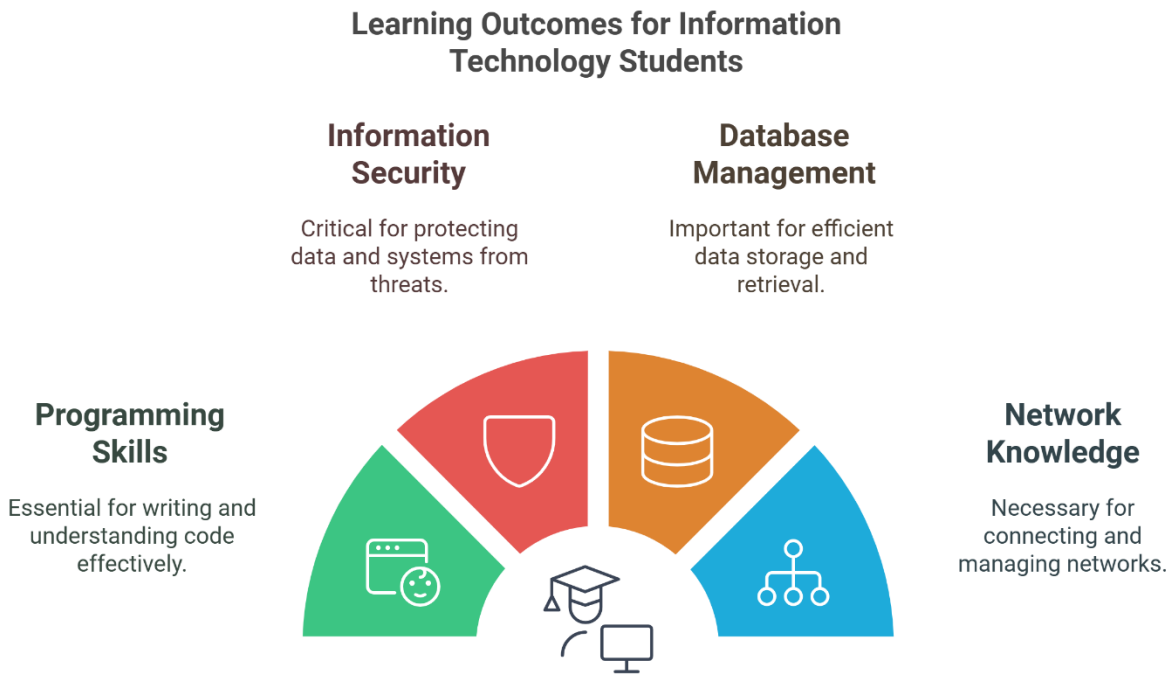
6- Educational Outcomes

These outcomes aim to define the skills and knowledge that students should possess upon completing their studies in these departments, contributing to their preparation for the job market and their role in societal development.

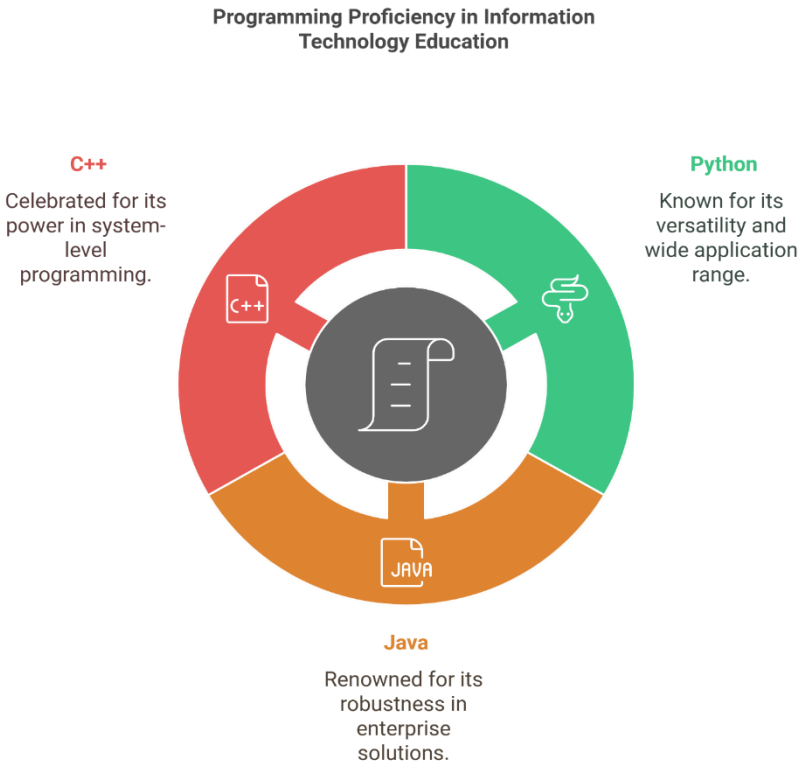


Educational Outcomes for the Department of Information Technology

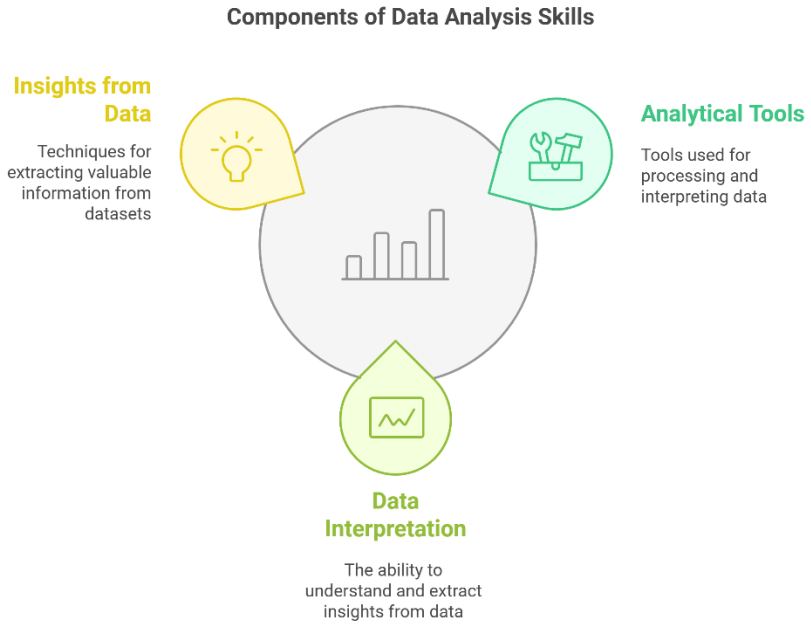
1. **Technical Knowledge: Students must acquire comprehensive knowledge of the fundamentals of Information Technology, including programming, databases, networking, and information security.**



2. **Programming Skills: Students should be able to write and develop programs using multiple programming languages such as Python, Java, and C++.**


Programming Proficiency in Information Technology Education
C++
Celebrated for its power in system-level programming.
Python
Known for its versatility and wide application range.
C++
JAVA
Java
Renowned for its robustness in enterprise solutions.

3. **Data Analysis: Students should be able to analyze data and use various analytical tools to extract valuable information.**



4. **Problem Solving: Students should be able to apply critical thinking to solve complex technical problems.**
5. **Effective Communication: Students should possess strong communication skills, both verbal and written, to enable them to work within interdisciplinary teams.**
6. **Continuous Learning: Students should be aware of the importance of continuous learning to keep up with the rapid advancements in the field of Information Technology.**

7- Courses for the Department of Information Technology

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	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

Code	Module	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	S	
UOWA 103	Human Rights & Democracy	33	17	2	S	
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	CS209, CS203, IT262
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

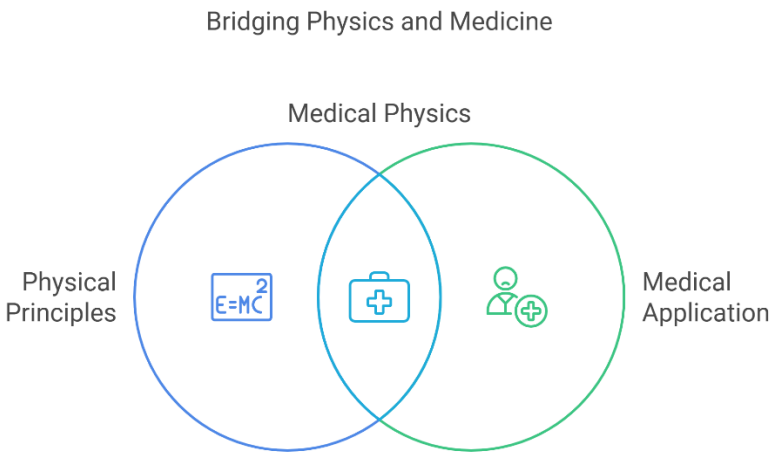
Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
IT452	Cyber-Attacks and Detection	63	87	6	C	IT381, IT401
IT445	Network Design	63	87	6	C	IT243
IT422	Cloud Computing Emerging Technologies	63	87	6	E	IT421
IT472	Internet of Things	63	87	6	E	IT421, IT461
IT492	Graduation Project II	61	14	3	C	IT441
UOWA402	English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

Teaching Staff

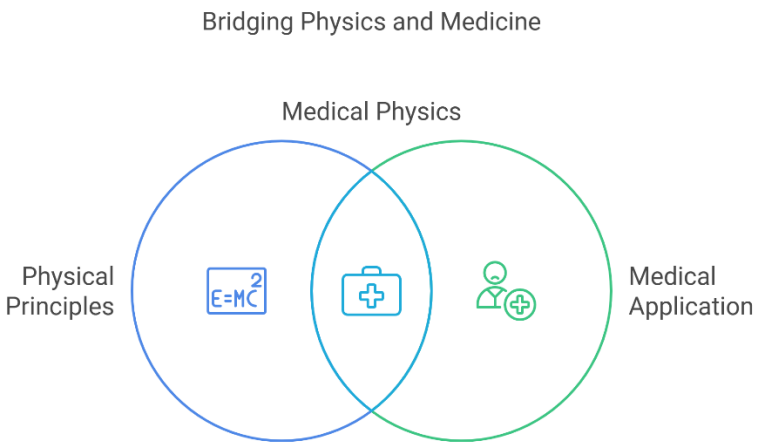
Name	Degree	Academic Rank	Email
Hayder Mohammed Ali Ghanimi	**PhD**	**Assistant Professor**	**hayder.alghanami@uowa.edu.iq**
Nabil Sadiq Abdul abbas	**MSc**	**Assistant lecturer**	**nabeel@uowa.edu.iq**
Bandar Abdul abbas Almankoshi	**MSc**	**Assistant lecturer**	**bandar@uowa.edu.iq**
Ayman Muhammad Jabr	**MSc**	**Assistant lecturer**	**ayman.mo@uowa.edu.iq**
Muhammad Jamal Altaif	**PhD**	**Lecturer**	
Karrar Sadeq Mohsen Al , Ghadhri	**MSc**	**Assistant lecturer**	**karar.sadeq@uowa.edu.iq**

Learning Outcomes for the Medical Physics Department

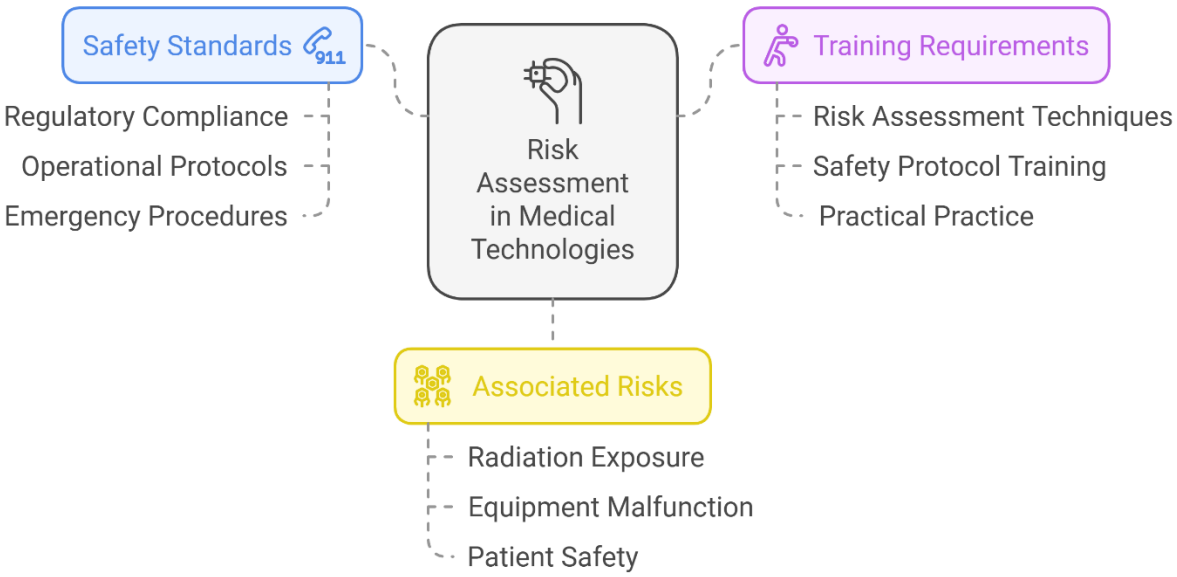
1. **Physical Knowledge: Students must understand the fundamental principles of physics and apply them in the medical field.**



2. **Medical Technologies: Students should be familiar with modern medical technologies, such as magnetic resonance imaging (MRI), X-rays, and radiation therapy.**



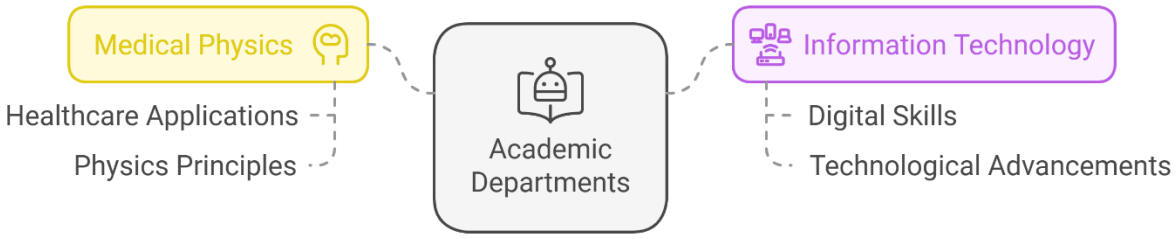
3. **Risk Assessment: Students should be able to evaluate the risks associated with the use of medical technologies and apply safety standards.**



4. **Scientific Research: Students should be capable of conducting scientific research and critically analyzing results.**
5. **Interdisciplinary Collaboration: Students should possess the skills to collaborate with professionals in medicine, engineering, and technology fields.**
6. **Patient Communication: Students should be able to communicate effectively with patients and understand their needs.**

Academic Departments

1- Curriculum / Medical Physics Department



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 l	**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 ll	**78**	**72**	**6**	**C**	Research Project l

Faculty Staff of the Medical Physics Department

Name	Position/Degree	Email	Mobile No.
Asst. Prof. Shaymaa Hussein Nowfal	PhD in Physics	shaymaa@uowa.edu.iq	07725236775
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Thoalffakar Abbas Al Hamed	Lecturer in Medical Physiology	Thoalffakar.Ab@g.uowa.edu.iq	07725418110
Asst. Lect. Ahmed H. Hashim	MSc in Physics	ahmad.hasan@uowa.edu.iq	07816683107
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Sajjad Ahmad Kazim	MSc in Chemistry	Sajad.ah@uowa.edu.iq	+964 774 940 0510
Asad Abbas Khalaf	PhD in Chemistry	Asaad.ab@uowa.edu.iq	

9- Education System

The College of Science's education system follows the Bologna Process, a modern educational framework aimed at improving the quality of higher education and enhancing alignment among European universities. This system focuses on achieving unified academic standards and facilitating student mobility between countries and universities.

Features of the Bologna Process

1. **Degree Structure: The Bologna Process adopts a three-tier degree structure, consisting of a Bachelor's degree, Master's degree, and Doctorate. This structure allows students to choose the academic path that best suits their goals.**
2. **Credit System: The European Credit Transfer and Accumulation System (ECTS) is used to measure academic workload. Each 60 ECTS credits represent a full academic year, making it easier to compare study programs across universities.**
3. **Competency-Based Learning: The system focuses on developing students' competencies through active learning and interaction with academic content. This approach enhances critical thinking and problem-solving skills.**

Objectives of the Education System

- **Enhancing Academic Mobility: The system aims to facilitate student transfers among European universities, offering diverse educational experiences.**
- **Improving Education Quality: By establishing unified academic standards, the system seeks to raise the quality of higher education and ensure its consistency.**

- **Meeting Labor Market Needs: The system prepares graduates with the skills and knowledge required to meet the evolving demands of the labor market.**

Advantages of the Education System

- **Flexible Study Programs: The system allows students to select courses that align with their interests and academic goals.**
- **Promoting International Collaboration: It encourages cooperation among universities and educational institutions, fostering the exchange of knowledge and experiences.**
- **Developing Personal Skills: The system emphasizes the growth of personal and social skills, helping students adapt to various work environments.**

Implementation of the Education System

The College of Science applies the Bologna Process by:

- **Developing Curricula: Study programs are regularly updated to meet academic standards and labor market requirements.**

- **Providing Academic Support: The college offers academic advising and workshops to support students throughout their educational journey.**
- **Encouraging Research: The college supports research activities and promotes collaboration between students and faculty members.**

10- Application Steps

Phase One: Account Creation

- **Download the application for the Directorate of Private University Education and enter the required information.**
- **Choose a username, password, and phone number (the system ensures they are not previously used).**
- **The system captures a live photo of the student.**
- **Perform a scan of the unified national ID card (front side).**
- **Perform a scan of the unified national ID card (back side).**
- **Once the personal photo matches the ID card photo, the system creates the account.**

Phase Two: Data Entry

- Use the application to start the data entry process.
- Log in using the student account created in Phase One.
- Select the type of student.
- Enter the exam number.
- Verify the accuracy of the data.
- Upload supporting documents if available.
- Add a diploma certificate if applicable.
- Enter the secret code.
- Complete data verification.
- If the student wishes to delete all information in their student account, this can be done via the application due to its linkage with the live photo.
- For cases requiring review by the Ministry of Higher Education or auditing centers, the student can book an appointment electronically.

- Students can apply through the "Private Channels" field by following the instructions and conditions for each channel, as activation requirements differ from one channel to another.

11- Agreements with Governmental Universities and Colleges

University of Karbala, College of Applied Medical Sciences,

University of Karbala, College of Science, Department of

These agreements aim to enhance academic and research collaboration among educational institutions, contributing to the educational process's development and improving education quality.

The Committee for Preparing the Academic Guide for the College of Science

- **Asst. Prof. Dr. Shaymaa Hussein Nowfal**
- **Asst. Prof. Dr. Haider Mohammed Ali Al-Ghanami**
- **Asst. Lect. Karrar Sadiq Mohsen**

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