# Al-Mustaqbal University
# جامعة المستقبل

*First Cycle – Bachelor's Degree (B.Sc.) -Prosthetics and Orthotics Engineering*

بكالوريوس - هندسة الاطراف والمساند الصناعية

## Table of Contents | جدول المحتويات



# 1. Mission & Vision Statement

### Vision Statement

The management and employees of the Department of Prosthetics and Orthotics seek to make the department creative and pioneering in this field of scientific knowledge in Iraq and the region through the quality of its graduates and the research carried out in a manner that meets the requirements of society associated with rapid technological developments.

### Mission Statement

1. Providing highly qualified engineering staff in the field of prosthetics and orthotics engineering to meet the demand for this specialty locally, while adhering to professional ethics.
2. Graduating engineers with the ability to solve engineering problems, teamwork skills, and leadership in the profession.
3. Preparing competent scientific and research graduates who are distinguished by a high level of knowledge and technological creativity to contribute to research ideas and conduct research for the benefit and development of society.

4. Guiding and directing students and graduates to enhance the spirit of citizenship and instill a spirit of commitment in them to obtain knowledge and serve the community.

5. Providing a good working environment for students, faculty members, and members of the department, in line with the internationally approved standards in quality assurance and academic accreditation for competing engineering programs.

## 2. Program Specification

| | | | |
|---|---|---|---|
| **Program code:** | BSc-OPE | **ECTS** | 240 |
| **Duration:** | 4 levels, 8 Semesters | **Method of Attendance:** | Full Time |

Prosthetics & Orthotics Engineering is a wonderfully wide-ranging subject, and Leeds, with one of the UM's'largest and most diverse P&O teaching groups, is well equipped to deliver. The emphasis of the program is the whole organism to which everything is related, be it the molecules that form proteins or communities of organisms in an ecosystem. The degree is popular - –for some, it's the breadth of the subject that appeals, for others it's the path to specialization. All students have the opportunity to transfer onto our specialist degrees in Genetics, Zoology, and Ecology at the end of the first year.

Level 1 exposes students to the fundamentals of engineering, suitable for progression to all programs within the Prosthetics & Orthotics program group. Programme-specific core topics are covered at Level 2 preparing for research-led subject specialist modules at Levels 3 and 4. A Leeds P&O graduate is therefore trained to appreciate how research informs teaching, according to the University and School Mission statements.

The educational program includes a curriculum plan over four years of study aimed at providing the student with the theoretical and practical information and skills necessary to qualify him to be at level of (level 1) according to the

classification of the International Organization of Parties and Supporters ISPO. The curriculum plan includes courses of medical and engineering specialization in addition to the general requirements and represents Limits and support materials are the basic curricula of this plan. Medical subjects constitute 25%, limbs and support materials 35%, engineering materials 30%, and general materials 10% of the total hours of the curriculum plan. The program is subject to education To a periodic review to assess its quality and achieve its educational goals by following the system of ensuring the quality of higher education in force in the college and university.

At Levels 2, 3, and 4 students are free to choose more than half of their module credits with the proviso a range of modules are selected that reflect the complexity of engineering and medicine to ensure the breadth of knowledge expected of a graduate with a O&P degree. This allows students to develop their wide-ranging interests in O&PE. Decisions on what to study are made with input from personal tutors.

The research ethos is developed and fostered from the start via practicals, which are either embedded in lecture modules or taught in dedicated practical modules, research seminars, and tutorials. There is a compulsory field course in Level 1, which students must pass to progress into Level 2, and optional field courses in Levels 2, 3, and 4. At Level 4 all students carry out an independent research project, which may be a xx credit library or data analysis project, or a xx credit field or laboratory-based project.

Academic tutorials are held at Levels 1 and 2 with the same tutor, who is also the personal tutor, providing continuity and progressive guidance. Level 1 and 2 tutorials include a number of workshops to teach skills, e.g. library use and presentation skills, followed by assessed exercises, e.g. essays and talks, as opportunities to practice these skills in a subject-specific context.

International years and Industrial placements are also offered and individual needs are discussed with the appropriate tutor and accommodated wherever possible.

## 3. Program Goals

Department goals: The development plan is based on the aspirations and mission of the Department of Prosthetics and Orthotics Engineering in determining the requirements necessary to advance in keeping pace with the development of teaching and learning methods. The Department of Prosthetics and Orthotics Engineering strives to ensure outputs of distinguished scientific value in line with the aspirations of the Ministry of Higher Education and Scientific Research in Iraq regarding the importance of developing the department's plan. Accordingly, the Prosthetics and Orthotics Engineering Department followed the following strategy in drawing up the development plan strategy:

1- Engage students in learning the essentials of Prosthetic and Orthotic manufacturing and prepare them to work in public and private sectors including, but not limited to, relevant governmental sectors, rehabilitation centers, prosthetics and orthotics manufacturing centers, etc.

2- Teach the students the methods of scientific and critical thinking and problem solving and improve the responsibility and leadership skills of the graduates.

3- Teach the students the essential scientific and engineering concepts required for their degree.

4- Teach the students the essential knowledge of the human body and diagnostic skills required in amputee-related diseases.

5- Teach the students the basics of electrical circuits, electronics, programming, and the other tools required to design and implement smart prosthetics and orthotics.

## 4. Student Learning Outcomes

Below are the graduate outcomes for the POE program. These are published on the College of Engineering / POE department website:

A. The ability to distinguish, describe, and solve problems in PO engineering by applying the fundamental principles of mathematics, science, and engineering.

B. The ability to apply both analysis and synthesis in the design process of engineering solutions that meet the needs of society within specific factors and constraints described in the field of POE.

C. The ability to perform accurate experiments, evaluate and interpret the results, and reach conclusions by applying engineering concepts.

D. The ability to actively communicate both verbally and in writing with others at work.

E. The ability to work successfully within a team and set goals, manage procedures, and achieve goals.

F. The ability to determine ethical and professional responsibilities in engineering cases and make focused judgments that consider economic and social situations.

G. The ability to use suitable learning methods to observe and obtain newly required knowledge and apply it properly.

Table 2.1 shows the relation between the POE graduate outcomes with those of the Iraqi Board of Credentials.

## 5. Academic Staff

Mohammed Hamza Al Maamori | Ph.D. in Material Technology| Professor
Email: mohammed.hamzah.daham@uomus.edu.iq
Mobile no.: 07801030819

---

Mujtaba A. Flayyih | Ph.D. in Mechanical Engineering | lecturer
Email: mujtaba_abdulkadhim@uomus.edu.iq
Mobile no.: 07813890415

---

Tayser Sumer Gaaz | Ph.D. in Material Engineering| Assist Professor
Email: tayser.sumer.gaaz@uoums.edu.iq
Mobile no. : 0773 764 8546

---

Muntadher Saleh Mahdi| MSc. in Prosthetics and Orthotics Engineering | Assistant lecturer.
Email: muntadher.saleh.mahdi@uomus.edu.iq
Mobile no.:07803348634

---

Ghadeer Haider Abbas | MSC. in Architecture Engineering | Assistant lecturer.
Email: ghadeer.haider@uomus.edu.iq
Mobile no.: 07818258495

---

Noor Adnan Madlool | B.Sc Biomedical Engineering | Teaching Assistant.
Email: noor.adnan@uomus.edu.iq
Mobile no.:07711780948

---

Hadeer Hussam Hashim| B.SC. in BioMedical Engineering | Teaching Assistant
E-mail: hadeer.hussam@uomus.edu.iq
Mobile number: 07804769766

---

Aya Talib Hassan | B.SC. in Prosthetics and Orthotics Engineering | Teaching Assistant
E-mail: Aya.Talib.Hassan@uomus.edu.iq
Mobile number: 07804585784

# 6. Credits, Grading and GPA

***Credits***

University of Al Mustaqbal / College of Engineering & Technologies Dept. of Prosthetics & Orthotics Engineering is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structured and unstructured workload.

***Grading***

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

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

***Calculation of the Cumulative Grade Point Average (CGPA)***

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

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

   CGPA = [ (1st ᵐodule score x ECTS) + (2nd ᵐodule score x ECTS) + ……] / 24

# 7. Curriculum/Modules

**Semester 1 | 30 ECTS | 1 ECTS = 25 hrs**

| Code | Module | SSWL | USSWL | ECTS | Type | Pre-request |
|---|---|---|---|---|---|---|
| UOMU013011 | COMPUTER SCIENCE I | 48 | 27 | 3.00 | S | |
| UOMU013012 | ENGINEERING DRAWING | 63 | 87 | 6.00 | B | |
| UOMU013013 | MATHEMATICS I | 78 | 72 | 6.00 | B | |
| UOMU000006 | ENGLISH LANGUAGE I | 33 | 17 | 2.00 | S | |
| UOMU013015 | PHYSICS | 108 | 42 | 6.00 | B | |

| | | | | | | |
|---|---|---|---|---|---|---|
| UOMU013016 | LOGIC CIRCUITS | 78 | 47 | 5.00 | E | |
| UOMU000008 | ARABIC LANGUAGE I | 33 | 17 | 2.00 | S | |

**Semester 2 | 30 ECTS | 1 ECTS = 25 hrs**

| Code | Module | SSWL | USSWL | ECTS | Type | Pre-request |
|---|---|---|---|---|---|---|
| UOMU013021 | MATHEMATICS II | 78 | 47 | 5.00 | B | |
| UOMU000004 | DEMOCRACY & FREEDOM+HUMAN RIGHTS | 33 | 17 | 2.00 | S | |
| UOMU013023 | MECHANICS-DYNAMIC | 78 | 47 | 5.00 | C | |
| UOMU013024 | PHYSICS OF MATERIALS | 48 | 52 | 4.00 | B | |
| UOMU013025 | BIOLOGY | 63 | 37 | 4.00 | C | |
| UOMU013022 | COMPUTER-AIDED DRAFTING | 63 | 62 | 5.00 | E | |
| UOMU013027 | COMPUTER PROGRAMMING | 78 | 47 | 5.00 | E | |

**Semester 3 | 30 ECTS | 1 ECTS = 25 hrs**

| Code | Module | SSWL | USSWL | ECTS | Type | Pre-request |
|---|---|---|---|---|---|---|
| UOMU013031 | PRINCIPLES OF PROSTHETICS AND ORTHOTICS | 123 | 77 | 8.00 | C | |
| UOMU013032 | STRENGTH OF MATERIALS I | 63 | 37 | 4.00 | C | |
| UOMU013033 | ANATOMY I | 63 | 37 | 4.00 | C | |
| UOMU013034 | BIOMATERIALS | 33 | 42 | 3.00 | C | |
| UOMU013035 | ELECTRIC CIRCUITS | 63 | 37 | 4.00 | B | |
| UOMU013036 | MATHEMATICS III | 78 | 47 | 5.00 | B | |
| UOMU0000011 | جرائم حزب البعث | 33 | 17 | 2.00 | S | |

**Semester 4 | 30 ECTS | 1 ECTS = 25 hrs**

| Code | Module | SSWL | USSWL | ECTS | Type | Pre-request |
|---|---|---|---|---|---|---|
| UOMU013043 | STRENGTH OF MATERIALS II | 78 | 47 | 5.00 | C | |
| UOMU013041 | PROSTHETICS I | 78 | 47 | 5.00 | C | |
| UOMU013042 | ORTHOTICS I | 78 | 47 | 5.00 | C | |
| UOMU013044 | ANATOMY II | 63 | 37 | 4.00 | C | |
| UOMU013045 | ELECTRONICS | 63 | 37 | 4.00 | C | |
| UOMU0000019 | COMPUTER SCIENCE II | 48 | 27 | 3.00 | S | |
| UOMU0000013 | ARABIC LANGUAGE II | 33 | 17 | 2.00 | S | |
| UOMU0000015 | ENGLISH LANGUAGE II | 33 | 17 | 2.00 | S | |

**Semester 5 | 30 ECTS | 1 ECTS = 25 hrs**

| Code | Module | SSWL | USSWL | ECTS | Type | Pre-request |
|---|---|---|---|---|---|---|
| UOMU013051 | PROSTHETICS II | 78 | 47 | 5.00 | C | |
| UOMU013052 | BIOMECHANICS II | 78 | 47 | 5.00 | C | |
| UOMU013053 | ORTHOTICS II | 63 | 37 | 4.00 | C | |
| UOMU013054 | REHABILITATION I | 63 | 37 | 4.00 | C | |
| UOMU013055 | ENGINEERING ANALYSIS | 63 | 37 | 4.00 | B | |
| UOMU013056 | MANUFACTURING PROCESSES | 48 | 27 | 3.00 | B | |
| UOMU013057 | COMPUTER APPLICATIONS | 78 | 47 | 5.00 | E | |

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

| Code | Module | SSWL | USS | ECTS | Type | Pre-request |
|---|---|---|---|---|---|---|

| | | | WL | | | |
|---|---|---|---|---|---|---|
| UOMU013061 | PROSTHETICS III | 78 | 47 | 5.00 | C | |
| UOMU013062 | ORTHOTICS III | 63 | 37 | 4.00 | C | |
| UOMU013063 | PATHOLOGY | 63 | 37 | 4.00 | C | |
| UOMU013064 | ARTIFICIAL INTELLIGENCE | 63 | 37 | 4.00 | C | |
| UOMU013065 | REHABILITATION II | 63 | 37 | 4.00 | C | |
| UOMU013066 | ROBOTICS I | 63 | 37 | 4.00 | C | |
| UOMU013067 | NUMERICAL ANALYSIS+ Statistic | 78 | 47 | 5.00 | B | |

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

| Code | Module | SSWL | USSWL | ECTS | Type | Pre-request |
|---|---|---|---|---|---|---|
| UOMU013071 | CLINICAL PRACTICE I | 108 | 42 | 6.00 | C | |
| UOMU013072 | MECHANICAL DESIGN | 63 | 62 | 5.00 | C | |
| UOMU013073 | ROBOTICS II | 63 | 62 | 5.00 | C | |
| UOMU013074 | ENGINEERING PROJECT (PART 1) | 63 | 37 | 4.00 | C | |
| UOMU013075 | BIOSIGNAL | 48 | 52 | 4.00 | C | |
| UOMU013076 | REHABILITATION III | 48 | 52 | 4.00 | C | |
| UOMU013077 | ETHICS | 34 | 16 | 2.00 | B | |

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

| Code | Module | SSW | USSWL | ECTS | Type | Pre-request |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| | | L | | | | |
| UOMU013081 | CLINICAL PRACTICE II | 109 | 41 | 6.00 | C | |
| UOMU013082 | SMART PROSTHETICS | 79 | 46 | 5.00 | C | |
| UOMU013083 | ENGINEERING PROJECT (PART 2) | 66 | 34 | 4.00 | C | |
| UOMU013084 | NERVOUS SYSTEM | 63 | 37 | 4.00 | C | |
| UOMU013085 | CONTROL SYSTEMS | 79 | 46 | 5.00 | B | |
| UOMU013086 | ENGINEERING MANAGEMENT | 18 | 32 | 2.00 | B | |
| UOMU013087 | TRIBOLOGY | 64 | 36 | 4.00 | E | |

8. Contact

**Program Manager:**

Mujtaba A. Flayyih | Ph.D. in Mechanical Engineering | lecturer
Email: mujtaba_abdulkadhim@uomus.edu.iq
Mobile no.: 07813890415

**Program Coordinator:**

Muntadher Saleh Mahdi| MSc. in Prosthetics and Orthotics Engineering | Assistant lecturer.

Email: muntadher.saleh.mahdi@uomus.edu.iq
Mobile no.:07803348634