

## Programme Specification

### BSc Engineering with Physiology

For students entering Part 1 in September 2022

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**This document sets out key information about your Programme and forms part of your Terms and Conditions with the University of Reading.**

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|--|--|
| Awarding Institution                           | University of Reading  |
| Teaching Institution                           | University of Reading  |
| Length of Programme                            | 3 years  |
| Length of Programme with placement/year abroad | BSc Engineering with Physiology with Study Year Abroad - 4 years (internal transfer only)<br>BSc Engineering with Physiology with Industrial Year - 4 years (internal transfer only) |
| Accreditation                                  | N/A  |

#### Programme information and content

The programme aims to provide you with a thorough degree level education in biomedical engineering, enabling you to deliver engineering solutions to solve healthcare problems. Based on a grounding in the fundamental principles of engineering and relevant aspects of biology and medicine, the programme covers the design of devices, systems and techniques for the diagnosis, monitoring, management and treatment of diseases, lesions, disorders and infirmity. Major areas covered include biomedical instrumentation and imaging technology, rehabilitation and assistive technology, wearable devices, brain-computer interfaces, biomaterials and synthetic biology.

The programme will prepare you for subsequent PhD studies or for pursuing a career in industry, the health professions or academia by providing you with:

- Practical, laboratory-based engineering experience in the design, construction, testing and characterisation of devices and systems for biomedical applications;
- Problem solving skills;
- Underpinning skills in mathematics, programming and relevant science and technology;
- Knowledge of the state-of-the-art in biomedical technology as applied in clinical practice;
- Understanding of medical ethics and health and safety issues associated with biomedical technology;
- The ability to work in an academic, industrial or research environment as individuals or as part of a team; and

The ability to plan, manage and conduct an in-depth individual project in biomedical engineering.

|         |   |
|---------|---|
| Part 1: | Introduces you to the fundamental underpinning principles and techniques in science and engineering needed for a career in biomedical engineering.  |
| Part 2: | Provides you with knowledge and understanding in more advanced areas of biomedical engineering, building upon the fundamentals learned in Part 1. It provides you with the opportunity to work in teams to design and develop an engineering solution for a real-world health-related need. Part 2 also offers the opportunity for gaining experience in industry with an industrial placement. |
| Part 3: | Gives you the opportunity to specialise in the areas of biomedical engineering that interest you the most, with a wide range of options informed by current research. You will gain experience in planning, managing and conducting your own in-depth research project in biomedical engineering.   |

### Module information

Each part comprises 120 credits, allocated across a range of compulsory and optional modules as shown below. Compulsory modules are listed.

#### Foundation modules:

#### Part 1 Modules:

| Module  | Name                               | Credits | Level |
|---------|------------------------------------|---------|-------|
| BI1AP12 | Anatomy & Physiology               | 20      | 4     |
| BI1BEC1 | Building Blocks of Life            | 20      | 4     |
| BI1BM12 | Key Skills in Biomedicine          | 10      | 4     |
| BI1EE17 | Electronics                        | 20      | 4     |
| BI1MA17 | Mathematics                        | 20      | 4     |
| BI1PH17 | Physics for Biomedical Engineering | 10      | 4     |
| BI1PR17 | Programming                        | 20      | 4     |

All modules at Part 1 are compulsory.

#### Part 2 Modules:

| Module  | Name  | Credits | Level |
|---------|---|---------|-------|
| BI2AP22 | Medical Applications of Physics                   | 20      | 5     |
| BI2MR22 | Medical Robotics and Prosthetics                  | 20      | 5     |
| BI2PS22 | Biomedical Problem Solving                        | 20      | 5     |
| BI2SP22 | Biomedical signal processing and feedback systems | 20      | 5     |
| BI2SW22 | Biomedical Sensors and Wearable Technology        | 20      | 5     |

Your remaining credits will be made up of optional modules from the School of Biological Sciences.

**Modules during a placement year or study year (if applicable):**

| Module | Name                    | Credits | Level |
|--------|-------------------------|---------|-------|
| BI2PEX | Professional Experience | 120     | 5     |

The BSc Engineering with Physiology with Industrial Year includes a year-long industrial placement. Many students find that the experience and knowledge gained during the Industrial Year allows them to make better use of their final year of University study, and provides useful background knowledge for more permanent career choices.

If you take a year-long placement or study abroad, Part 3 as described below may be subject to variation.

**Part 3 Modules:**

| Module | Name             | Credits | Level |
|--------|------------------|---------|-------|
| BI3RP3 | Research Project | 40      | 6     |

Your remaining credits will be made up of optional modules from the School of Biological Sciences.

**Optional modules:**

The optional modules available can vary from year to year. An indicative list of the range of optional modules for your programme can be found online in the Course Catalogue. Details of optional modules for each part, including any additional costs associated with the optional modules, will be made available to you prior to the beginning of the Part in which they are to be taken and you will be given an opportunity to express interest in the optional modules that you would like to take. Entry to optional modules will be at the discretion of the University and subject to availability and may be subject to pre-requisites, such as completion of another module. Although the University tries to ensure you are able to take the optional modules in which you have expressed interest this cannot be guaranteed.

**Additional costs of the programme**

The additional costs for the programme are around £200 per year for essential text books.

Costs are indicative, but will vary on the basis of module choice and are subject to inflation and other price fluctuations. The estimates were calculated in 2021. Required and recommended textbooks may often be available second-hand at lower cost and some copies are normally available in the University Library.

**Placement opportunities**

**Placement:** You will be provided with the opportunity to undertake a credit-bearing placement as part of your Programme. This will form all or part of an optional module. You will be required to find and secure a placement opportunity, with the support of the University.

**Study Abroad:** You may be provided with the opportunity to undertake a Study Abroad placement during your Programme. This is subject to you meeting academic conditions detailed in the Programme Handbook, including obtaining the relevant permissions from your School, and the availability of a suitable Study Abroad placement. If you undertake a Study Abroad placement, further arrangements will be discussed and agreed with you.

### **Teaching and learning delivery:**

You will be taught through lectures, tutorials, practical classes and project work.

The contact hours for your Programme will be 560 hours depending upon your module combination; however information about module contact hours can be located in the relevant module description.

### **Accreditation details**

N/A

The assessment of your work, your progression through your Programme and your degree classification are governed by the University's Student Regulations.

#### **Assessment**

The programme will be assessed through a combination of written examinations and coursework.

#### **Progression**

To gain a threshold performance at Part 1 and qualify for the CertHE, a student shall normally be required to achieve an overall average of 40% over 120 credits taken at Part 1 and a mark of at least 30% in individual modules amounting to not less than 100 credits. In order to progress from Part 1 to Part 2 a student shall normally be required to achieve a threshold performance at Part 1.

To gain a threshold performance at Part 2 and qualify for the DipHE, a student shall normally be required to achieve:

- an overall average of 40% over 120 credits taken at Part 2: and
- marks of at least 40% in modules amounting to not less than 80 credits; and
- marks of at least 30% in individual modules amounting to not less than 120 credits
- marks of at least 30% in individual modules amounting to not less than 120 credits, except that a mark below 30% may be condoned in no more than 20 credits of modules owned by the Department of Mathematics and Statistics.

In order to progress from Part 2 to Part 3 a student shall normally be required to achieve a threshold performance at Part 2.

Part 2 contributes one third of the overall assessment and Part 3 the remaining two thirds. In order to be eligible for Honours, students must gain an overall weighted average mark of 40%, at least 40% in modules amounting to 80 credits in Part 3. For a Pass degree, candidates must have an average of at least 35%, and at least 35% in modules amounting to 80 credits in Part 3.

Placement Year/Year Abroad (or combination thereof)

Students are required to pass their year out in order to progress on the programme which incorporates the placement year, study abroad year or combination thereof.

Students who fail the placement year transfer to the non-placement year version of the programme.

### **Classification**

The University's honours classification scheme is based on the following:

| Mark       | Interpretation         |
|------------|------------------------|
| 70% - 100% | First class            |
| 60% - 69%  | Upper Second class     |
| 50% - 59%  | Lower Second class     |
| 40% - 49%  | Third class            |
| 35% - 39%  | Below Honours Standard |
| 0% - 34%   | Fail                   |

The weighting of the Parts/Years in the calculation of the degree classification is:

Three-year programmes

Part 2 one-third

Part 3 two-thirds

Four-year programmes, including placement year or study abroad:

Normally:

Part 2 one-third

Placement or Year Out - not included in classification

Part 3 two-thirds

(Where a student fails a placement year or study abroad year, which does not contribute to classification they transfer to the three-year version of the programme).

**For further information about your Programme please refer to the Programme Handbook and the relevant module descriptions, which are available at <http://www.reading.ac.uk/module/>. The Programme Handbook and the relevant module descriptions do not form part of your Terms and Conditions with the University of Reading.**

BSc Engineering with Physiology for students entering Part 1 in session 2022/23

17 July 2023

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