Programme Specification

MEng Biomedical Engineering **UCAS Code: H161**

For students entering Part 1 in September 2020 **UFBIOENGM**

UFBIOENGMSY

UFBIOENGMWY

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

Awarding Institution	University of Reading
Teaching Institution	University of Reading
Length of Programme	4 years
Length of Programme with placement/year abroad	MEng Biomedical Engineering with Study Year Abroad - 5 years (internal transfer only) MEng Biomedical Engineering with Industrial Year - 5 years (internal transfer only)
Accreditation	Accreditation to be sought from the Institute of Engineering and Technology (IET) and the Institute of Physics and Engineering in Medicine (IPEM). Students must achieve a 2:2 or above in order to graduate with an accredited degree.

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.
- Critical awareness of current problems and new insights at the forefront of biomedical engineering;
- A comprehensive understanding of techniques applicable the your own research or advanced scholarship.
- Originality in the application of knowledge, together with a practical understanding of how established techniques of research and enquiry are used to create and interpret knowledge in the field of biomedical engineering.
- Conceptual understanding that will enable you to evaluate critically current research and advanced scholarship, to evaluate methodologies and develop critiques of them, and to propose new hypotheses.

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.
Placement/Study abroad year:	The MEng Biomedical Engineering 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.
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 collaborating with others in planning, managing and conducting an in-depth group project in biomedical engineering.
Part 4:	Part 4 of the MEng programme has a strong research focus. You will conduct a substantial individual research project of relevance to current research in the School. Modules will provide you with knowledge and understanding of topics at the cutting edge of biomedical engineering research.

Module information
Each part comprises 120 credits, allocated across a range of compulsory and optional modules as shown below. Compulsory modules are listed.
Part 1 Modules:

Module	Name	Credits	Level
BI1BEC1	Building Blocks of Life	20	4
BI1BH12	Human Physiology	20	4
BI1EE17	Electronics	20	4
BI1KS17	Key Skills in Biomedical Engineering	10	4
BI1MA17	Mathematics	20	4
BI1PH17	Physics for Biomedical Engineering	10	4
BI1PR17	Programming	20	4

All modules at Part 1 of the programme are compulsory.

Part 2 Modules:

Module	Name	Credits	Level
BI2BC17	Biocybernetics	20	5
BI2BT5	Introduction to Bioinformatics and Computational Biology	10	5
BI2DE17	Digital and Embedded Technologies	10	5
BI2FN17	Fundamentals of Neuroscience	10	5
BI2SM21	Biomedical Systems Design and Project Management	10	5
BI2SP17	Signal Processing	20	5
BI2ST17	Sensors and Transducers for Biomedical Engineering	10	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 MEng Biomedical Engineering 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 and Part 4 as described below may be subject to variation.

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
BI3PRO	Research Project	40	6

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

Part 4 modules:

Module	Name	Credits	Level
BIMGP22	Group Project	80	M
BIMRM22	Research Management, Ethics and Current Topics in Biomedical Engineering	20	M

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 is set out in the Further Programme Information. 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. Required and recommended textbooks may often be available second-hand at lower cost and some copies are normally available in the University Library.

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 2019.

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 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.

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

If accreditation of this programme is approved, graduates from this programme may, after a period of professional experience, together with other appropriate educational requirements, apply for Chartered Engineer status.

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 assesses through a combination of written examinations and coursework.
Progression

Progression

Part 1
In order to progress from Part 1 to Part 2, a student shall normally be required to achieve the following at Part 1:
(i) an overall weighted average of 40% over 120 credits; and
(ii) a mark of at least 40% in individual modules amounting to not less than 100 credits; and
(iii) a mark of at least 30% in individual modules amounting to not less than 120 credits.

The achievement of a threshold performance at Part 1 qualifies a student for a Certificate of Higher Education if they leaves the University before completing the subsequent Part.

To gain a threshold performance at Part 1 a student shall normally be required to achieve:

(i) an overall average of 40% over 120 credits taken in Part 1; and
(ii) a mark of at least 30% in individual modules amounting to not less than 100 credits taken in Part 1.

Part 2
In order to progress from Part 2 to Part 3, a student shall normally be required to achieve the following in Part 2:

(i) an overall weighted average of at least 50% over 120 credits; and
(ii) a mark of at least 40% in individual modules amounting to not less than 100 credits; and
(iii) a mark of at least 30% in individual modules amounting to not less than 120 credits.
The achievement of a threshold performance at Part 2 qualifies the student for a Diploma of Higher Education if he or she leaves the University before completing the subsequent Part.
To gain a threshold performance at Part 2 a student shall normally be required to achieve:
(i) a weighted average of 40% over 120 credits taken in Part 2; and
(ii) a mark of at least 40% in individual modules amounting to not less than 80 credits; and
(iii) a mark of at least 30% in individual modules amounting to not less than 120 credits.

Part 3
In order to progress from Part 3 to Part 4, a student shall normally be required to achieve the following in Part 3:
(i) an overall weighted average of at least 40% over 120 credits, and
(ii) a mark of at least 40% in individual modules amounting to not less than 100 credits;
(iii) a mark of at least 30% in individual modules amounting to not less than 120 credits;
(iv) a mark of at least 40% in the BI3PRO project module.
Students who do not meet the above requirements for progression to Part 4 will be eligible for the award of BEng if they achieve:
(i) a mark of at least 40% in individual modules amounting to not less than 80 credits; and
(ii) a mark of at least 40% in the Part 3 major project module.
Placement Year
Students are required to pass the placement year in order to progress on the programme which incorporates the placement year. Students who fail the placement year transfer to the non-placement year version.

Classification

To be eligible for honours, a student shall normally be required to have satisfied all of the above progression requirements and to achieve the following in Part 4:
(i) a mark of at least 50% in individual modules amounting to not less than 80 credits;
(ii) a mark of at least 50% at first attempt in the Part 4 major project module.

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 in the calculation of the degree classification is:
Part 2 20%
Part 3 40%
Part 4 40%

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.

MEng Biomedical Engineering for students entering Part 1 in session 2020/21
26 April 2022