Royal Holloway, University of London
Course specification for a postgraduate award
MSc BIOMEDICAL ELECTRONIC ENGINEERING (3700)

Section 1 – Introduction to your course

This course specification is a formal document, which provides a summary of the main features of your course and the learning outcomes that you might reasonably be expected to achieve and demonstrate if you take full advantage of the learning opportunities that are provided. Further information is contained in the University prospectus, and in various handbooks, all of which you will be able to access online. Alternatively, further information on the University's academic regulations and policies can be found here. Further information on the University's Admissions Policy can be found here.

Your degree course in Biomedical Electronic Engineering provides progressive structures in which you will be able to gain ever-wider knowledge and understanding, and appropriate skills. You will have access to a varied and up-to-date curriculum ranging from biomedical engineering, to embedded electronic systems, to machine learning. Using open-source tools for biosensing and neuroscience, you will work in a creative space with the aim of making brain-computer interfacing and other biosensors more accessible for rapid prototyping and quicker delivery of products in the consumer landscape.

While Royal Holloway keeps all the information made available under review, courses and the availability of individual modules, especially optional modules are necessarily subject to change at any time, and you are therefore advised to seek confirmation of any factors which might affect your decision to follow a specific course. In turn, Royal Holloway will inform you as soon as is practicable of any significant changes which might affect your studies.

The following is brief description for some of the most important terminology for understanding the content of this document:

Degree course – Also referred to as 'programme', this term refers to the qualification you will be awarded upon successful completion of your studies. 'Courses' were formerly known as 'programmes' at Royal Holloway.
Module – This refers to the credits you will study each year to complete your degree course. Postgraduate taught degrees at Royal Holloway comprise 180 credits. On some degree courses a certain number of optional modules must be passed for a particular degree title. 'Modules' were formerly known as 'course units' at Royal Holloway.

Section 2 – Course details			
Date of specification update	May 2024	**Location of study**	Egham Campus
Course award and title	MSc Biomedical Electronic Engineering	**Level of study**	Postgraduate
Course code	3700	**Year of entry**	2025/26
Awarding body	Royal Holloway, University of London		
Department or school	Electronic Engineering	**Other departments or schools involved in teaching the course**	N/A
Mode(s) of attendance	Full time and part time	**Duration of the course**	One year (52 weeks) full-time Two years (104 weeks) part-time
Accrediting Professional, Statutory or Regulatory Body requirement(s)	N/A		
Link to Coursefinder for further information:	https://www.royalholloway.ac.uk/studying-here/	**For queries on admissions:**	https://royalholloway.ac.uk/applicationquery

Section 3 – Degree course structure

3.1 Mandatory module information

The following table summarises the mandatory modules which students must take in each year of study

Module code	Module title	Credits	FHEQ level	Module status (Mandatory Condonable MC or Mandatory Non-Condonable MNC
EE5100	Agile Engineering	30	7	MC
EE5014	Team Project	30	7	MC
EE5017	Voice Technologies	15	7	MC
EE5018	Fundamentals of Biomedical Engineering	15	7	MC
EE5081	Pattern Recognition for Biomedicine	15	7	MC
EE5090	System on Chip Design	15	7	MC
EE5022	Engineering Project	60	7	MNC

This table sets out the most important information for the mandatory modules on your degree course. These modules are central to achieving your learning outcomes, so they are compulsory, and all students on your degree course will be required to take them. You will be automatically registered for these modules each year. Mandatory modules fall into two categories: 'condonable' or 'non-condonable'.

In the case of mandatory 'non-condonable' (MNC) modules, you must pass the module before you can proceed to the next year of your course, or to successfully graduate with a particular degree title. In the case of mandatory 'condonable' (MC) modules, these must be taken but you can still progress or graduate even if you do not pass them. Please note that although Royal Holloway will keep changes to a minimum, changes to your degree course may be made where reasonable and necessary due to unexpected events. For example: where requirements of relevant Professional, Statutory or Regulatory Bodies have changed and course requirements must change accordingly, or where changes are deemed necessary on the basis of student feedback and/or the advice of external advisors, to enhance academic provision.

3.2 Optional modules

No optional modules available.

Section 4 – Progressing through each year of your degree course

For further information on the progression and award requirements for your degree, please refer to Royal Holloway's Academic Regulations.

Progression throughout the year/s is monitored through performance in summative or formative coursework assignments. Please note that if you hold a Student Visa and you choose to leave (or are required to leave because of non-progression) or complete early (before the course end date stated on your CAS), then this will be reported to UKVI.

All postgraduate taught students are required to take and pass the non-credit bearing Moodle-based Academic Integrity module SS1001 in order to be awarded. The pass mark for the module assessment is stated in the on-line Academic Integrity Moodle module. Students may attempt the assessment as often as they wish with no penalties or capping. Students who otherwise meet the requirements for award as stipulated in the Academic Taught Regulations but fail to pass the Moodle-based Academic Integrity module will not be awarded.

Section 5 – Educational aims of the course

The aims of this course are to:

1. Equip students with an advanced understanding of electronic engineering in the context of biomedical applications.
2. Provide students with the capacity of translating biomedical electronic engineering fundamentals to healthcare practice.
3. Promote open-source tools for biosensing and neuroscience, with the aim of making brain-computer interfacing and other biosensors more accessible for rapid prototyping and quicker delivery of products in the consumer landscape.
4. Expose students to the latest cutting-edge research and up-to-date curriculum in the discipline and related topics.
5. Engage the students in extensive teamwork in state-of-the-art laboratories, promoting an environment for creativity, invention, and product development.
6. Expose students to examples of good practice in the discipline.
7. Expose students to real-world, current, and cutting-edge projects and research.
8. Enhance students' employability by the involvement of external industry partners, in the form of guest lectures and seminars, student sponsorship, potential internships and the proposal of project topics.

Section 6 - Course learning outcomes **In general terms, the courses provide opportunities for students to develop and demonstrate the following learning outcomes. (*Categories – Knowledge and understanding (K), Skills and other attributes (S), and Transferable skills (*)*)**
Analyse and formulate a wide range of biomedical engineering problems (K, S) such as data acquisition, amplification, filtering of biomedical datasets.
Design, create and integrate software and hardware components of modern biomedical engineering systems and computer-controlled equipment (K, S) such as in bio data acquisition (e.g. OpenBCI software, Ganglion board, ELVIS system).
Constructing, analysing, and solving biomedical engineering problems into healthcare solutions (K, S) such as automated prognosis via the classification of diseases using machine learning.
Understanding of the healthcare context in which engineering is practiced, as well as the effects of engineering projects on society (K, *).
Acquiring analysis, problem-solving, and decision-making skills in the context of engineering projects (S, *).
Working in small teams to deliver presentations and collaborate on engineering projects (S, *).
Working independently on a major engineering project, potentially involving student-led prototyping and/or industrial collaboration (K, S, *).
Key transferable skills, including academic writing and oral presentations, computer programming (e.g. MATLAB), and project management (S, *).
Independent learning ability required for continuing professional development (*).

Section 7 - Teaching, learning and assessment
Teaching and learning on your course are closely informed by the active research of staff, particularly in product development and prototyping for biomedical engineering, using signal processing, embedded electronic systems and machine learning. In general terms, the course provides an opportunity for you to develop and demonstrate the learning outcomes detailed herein. Teaching follows several different complementary models: face-to-face, online, pre-recorded, workshops, presentations, practical sessions, labs. Assessments cover a variety of activities: groupwork, presentations, reports, Moodle quizzes, etc. Across the course, examples and case-studies are international and cover many different backgrounds. Modules feature built-in formative assessments (e.g. Moodle quizzes, workshops, presentations) that complement and lead up to summative assessment. Students have a close relationship with their tutors, and with the teaching staff in general, which means they have many opportunities for feedback. They receive oral feedback in workshops, presentations, practical sessions, and labs. Contact hours come in various forms and may take the form of time spent with a member of staff in a lecture or seminar with other students. Contact hours may also be laboratory or, studio-based sessions, project supervision with a member of staff, or discussion through a virtual learning environment (VLE). These contact hours may be with a lecturer or teaching assistant, but they may also be with a technician, or specialist support staff. The way in which each module on your degree course is assessed will also vary. Assessments designated as 'summative' will receive a mark which will count towards your overall mark for the module, and potentially your degree classification, depending on your year of study. On successful completion of the module, you will gain the credits listed. More detailed information on modules, including teaching and learning methods, and methods of assessment, can be found via the online Module Catalogue. The accuracy of the information contained in this document is reviewed regularly by the university and may also be checked routinely by external agencies.

Section 8 – Additional costs
There are no single associated costs greater than £50 per item on this degree course.
These estimated costs relate to studying this particular degree course at Royal Holloway. General costs such as accommodation, food, books and other learning materials and printing etc., have not been included, but further information is available on our website.

Section 9 – Indicators of quality and standards	
QAA Framework for Higher Education Qualifications (FHEQ) Level	7
Your course is designed in accordance with the FHEQ to ensure your qualification is awarded on the basis of nationally established standards of achievement, for both outcomes and attainment. The qualification descriptors within the FHEQ set out the generic outcomes and attributes expected for the award of individual qualifications. The qualification descriptors contained in the FHEQ exemplify the outcomes and attributes expected of learning that results in the award of higher education qualifications. These outcomes represent the integration of various learning experiences resulting from designated and coherent courses of study.	
QAA Subject benchmark statement(s)	http://www.qaa.ac.uk/quality-code/subject-benchmark-statements
Subject benchmark statements provide a means for the academic community to describe the nature and characteristics of courses in a specific subject or subject area. They also represent general expectations about standards for the award of qualifications at a given level in terms of the attributes and capabilities that those possessing qualifications should have demonstrated.	

Section 10– Intermediate exit awards (where available)		
You may be eligible for an intermediate exit award if you complete part of the course as detailed in this document. Any additional criteria (e.g. mandatory modules, credit requirements) for intermediate awards is outlined in the sections below.		
Award	**Criteria**	**Awarding body**
PG Diploma	Passes in at least 120 credits, with fails of between 40% to 49% for up to 40 credits condonable (with the exception of any course specific requirements).	Royal Holloway and Bedford New College
PG Certificate	Passes in at least 60 credits with no condonable fails	Royal Holloway and Bedford New College