Programme Specification: Undergraduate

For Academic Year 2025/26

1. Course Summary

Names of programme and award title(s)	BSc (Hons) Bioengineering (Regenerative Medicine)
Award type	Single Honours
Mode of study	Full-time
Framework of Higher Education Qualification (FHEQ) level of final award	Level 6
Normal length of the programme	4 years
Maximum period of registration	The normal length as specified above plus 3 years
Location of study	Keele University, Greece - University Legal Entity Metropolitan College, Greece
Accreditation (if applicable)	Not applicable.
Regulator	Office for Students (OfS)
Tuition Fees	Please refer to the Keele University, Greece - University Legal Entity and Metropolitan College, Greece webpages for information in relation to Tuition Fees

How this information might change: *Please read the important information at http://www.keele.ac.uk/student-agreement/. This explains how and why we may need to make changes to the information provided in this document and to help you understand how we will communicate with you if this happens.*

2. What is a Single Honours programme?

The Single Honours programme described in this document allows you to focus exclusively on this subject as part of a 480-credit Honours degree. It enables you to gain, and be able to demonstrate, a distinctive range of graduate attributes.

3. Overview of the Programme

The BSc (Hons) Bioengineering (Regenerative Medicine) programme is an innovative undergraduate programme that focuses on Bioengineering in the wider context of Regenerative Medicine. The programme aims to develop aspiring bioengineers into a specialised workforce that will respond to the future demands for regenerative therapeutic strategies. This programme will equip you with a transdisciplinary bioengineering know-how, laboratory skills and lexicon that will allow you to work on research, discovery and production of regenerative medicines.

In your first year, you will study fundamental aspects of cell and molecular biology, biochemistry, genetics, human physiology and anatomy and key concepts of bioengineering. In the second year, you will explore core elements of bioengineering including stem cell biology, cell biology for regenerative medicine, molecular biology and concepts in immunology. You will learn research analytical skills and have an introduction to pharmacology. In your third year you will study biomaterials and tissue engineering, molecular pharmacology, cancer biology, cell signalling, concepts in biotechnology and look at the current research topics in our field. In the fourth year you will study biomedical engineering, current good manufacturing processes, nanomedicine, study concepts in applied regenerative medicine, precision medicine, work to gain employability and communication skills and

undertake an extensive research project.

During the first, second and third year of the programme you will acquire appropriate laboratory skills through sessions delivered in state-of-the-laboratories at the Metropolitan College site. These sessions provide a hands-on authentic experience of discipline appropriate laboratory skills. In your final year you will have the opportunity to utilise these skills within your final year research project (laboratory or computer based) to address research questions concerning human health and disease and the latest bioengineering strategies.

4. Aims of the programme

The Bioengineering (Regenerative Medicine) discipline integrates biochemical, molecular and cellular knowledge with engineering principles to design new types of advanced therapies to repair, replace and rejuvenate damaged or diseased tissues. While Cell Engineering looks at cell-related phenomena, Tissue Engineering covers a broad range of applications ranging from physiology to nanotechnology, from biochemistry to mechanobiology, placing more emphasis on the design of biocompatible scaffolds that promote desirable cell behaviour leading to replacement and remodelling of a whole tissue.

The broad aims of the BSc (Hons) Bioengineering (Regenerative Medicine) programme are to enable you to:

- develop a broad knowledge of molecular techniques and their applications to identify solutions for biological and medical problems.
- understand the critical potential of stem cells and reprogrammed pluripotent stem cells as pivotal source for engineered replacement of damaged tissues and cell therapies.
- learn the structural and mechanical properties of tissue to design optimised biocompatible materials that make possible the construction of engineered scaffolds for cells.
- acquire a range of graduate skills related to the research and commercial development of regenerative medicine products that should facilitate your postgraduate career.

5. What you will learn

The intended learning outcomes of the programme (what students should know, understand and be able to do at the end of the programme), can be described under the following headings:

- Subject knowledge and understanding
- Subject specific skills
- Key or transferable skills (including employability skills)

Subject knowledge and understanding

Successful students will be able to:

- K1 - describe the biochemical and molecular functions of cells and extracellular milieux;
- K2 - develop an understanding of the gross embryological, anatomical and physiological characteristics of the main systems of the human body;
- K3 - understand the sources and features of different types of human stem cells;
- K4 - evaluate the strategies to use stem cells as disease models and therapeutic tools;
- K5 - describe the physico-chemical properties of different biomaterials and nanomaterials that support tissue/organ growth, implantation and drug delivery;
- K6 - demonstrate familiarity with the concepts of genetic and genome engineering;
- K7 - discuss the concept of genomic medicine;
- K8 - understand core biological topics that underpin the study of pharmacology including: biochemistry, molecular biology, genetics, cell biology, physiology and anatomy, and their application to the development and pharmacology of acquired and inherited disease
- K9 - describe the principles that determine the three-dimensional structure of biological macromolecules (including nucleic acids, proteins and carbohydrates) and the application of this knowledge to rational drug design and ligand-target binding
- K10 - develop an understanding of signal transduction mechanisms of extra- and intra-cellular receptors in cell signalling pathways controlling cellular activities, with a focus on how these can be investigated experimentally and modified through relevant pharmacological approaches
- K11 - understand mechanisms of drug action in relevant tissues and organ systems, including the central nervous system, as well as drug toxicity and selective toxicity in the treatment of microbial infections and cancer
- K12 - describe the chemistry that underlies biological processes and their study, including chemical and thermodynamic principles applied to biochemical catalysis, the function of enzymes and other proteins, and the physicochemical properties of drug molecules including in context to pharmacokinetics and pharmacodynamics

Subject specific skills

Successful students will be able to:

- S1 - manage their own learning and utilise appropriate resources to the discipline;
- S2 - work safely and effectively in a scientific laboratory;
- S3 - collect, analyse and critically discuss scientific data relevant to the discipline;
- S4 - communicate confidently on topics related to the degree;
- S5 - understand the limits and ethical issues of the discipline and the need for codes of practice
- S6 - formulate hypotheses, design, plan, conduct, collate, analyse, report on and evaluate biological investigations
- S7 - apply scientific method, planning, and analytical skills to carry out a research project

Key or transferable skills (including employability skills)

Successful students will be able to:

- E1 - Effectively participate and work as a team or professional group.
- E2 - Constructively use feedback and take evidence-informed decisions.
- E3 - Identify and manage appropriate resources to solve problems.
- E4 - Confidently communicate information, ideas, problems and solutions to peers or professionals of the field of practice.
- E5 - Identify and work towards targets for personal, academic and career development
- E6 - Prepare, process, interpret and present data, using appropriate qualitative and quantitative techniques, statistical programmes, spreadsheets and programs for presenting data visually

Keele Graduate Attributes

The Keele Graduate Attributes are the qualities (skills, values and mindsets) which you will have the opportunity to develop during your time at Metropolitan College Greece (MCG), through both the formal curriculum and also through co- and extra-curricular activities (e.g., engagements with the wider University community such as acting as ambassadors, volunteering, peer mentoring, student representation, membership and leadership of clubs and societies). Our Graduate Attributes consist of four themes: **academic expertise, professional skills, personal effectiveness, and social and ethical responsibility.** You will have opportunities to engage actively with the range of attributes throughout your time at MCG: through your academic studies, where these attributes are embedded within your modules, through self-assessing your own strengths, weaknesses, and development needs, and by setting personal development goals. You will have opportunities to discuss your progress in developing graduate attributes with, for example, Academic Mentors, to prepare for your future career and lives beyond Keele.

6. How is the programme taught?

This Programme is delivered in Greek, with an emphasis on live, in-person, interactive sessions, supported by online materials on a VLE-Moodle allowing flexible engagement. Building on the expertise and experiences of staff and students, Metropolitan College Greece sets out a number of principles to ensure a high quality and engaging student experience. At the heart of the approach is 'active social learning', meaning that students are actively engaged in their learning both in person and online, learning through interaction and collaboration.

The key features of the University's approach are:

- Active social learning as a key principle

- Digital enhancement of learning

- Flexibility and responsiveness to students' learning and study needs

- Different and authentic assessment for learning

- Feedback that supports learning

Within this programme, there is a spiral curriculum developed at Keele University, that uses multiple forms of active learning including flipped-classrooms , audience response systems and technology enhanced learning complemented with authentic assessments and synoptic group tasks. Learning and teaching methods used on the programme vary according to the subject matter and level of the module. They include the following:

- Traditional lectures, workshops, science and computer laboratories (individual or in group), problem-based learning activities, journal clubs, virtual sessions.
- Seminars by scientists, clinicians or industry experts that are nationally and internationally recognised experts of the field.

- A research project (dissertation) that will expose the student to active research, supported by an experienced and active member of research staff.
- Digital resources: These include provision of short videos and directed reading, aligned with key learning outcomes and supporting campus-based lectures, tutorials and workshops focused on active learning through application of content as part of a 'flipped classroom' approach to delivery. This also gives you more flexibility to decide how, when and where to study, with the opportunity to submit questions based on the material anonymously in advance of taught sessions.

Apart from these formal activities, students are also provided with regular opportunities to talk through particular areas of difficulty, and any special learning needs they may have, with their Personal Academic Tutor or module lecturers on a one-to-one basis.

These learning and teaching methods enable students to achieve the learning outcomes of the programme in a variety of ways. For example:

- Lectures, workshops and virtual sessions expose students to the principles of Bioengineering and its related disciplines and give the opportunity to students to present their own ideas, discussing them with academics and their fellow students.
- Seminars, presentations and journal clubs allow students to gain knowledge from the most recent discoveries in Bioengineering, Cell and Tissue Engineering and Regenerative Medicine, asking questions about the subjects to experts of the field.
- Problem Based Learning sessions encourage students to critically consider the important challenges that scientists are facing in the field of Bioengineering to bring to the clinics novel experimental engineered tools.
- Laboratory sessions test practical skills, team working, organisational skills, initiative and expose students to some of the most used techniques relevant to biomedical discipline, Bioengineering and Regenerative Medicine.
- Research Projects help students to gain research experience by joining active research groups within Bioengineering related fields.

7. Teaching Staff

The programme of Bioengineering (Regenerative Medicine) has brought together expert bioengineers, pharmacists, material scientists and physicians to develop this research-led educative programme that will instruct students in the multiple aspects of translational medicine and Bioengineering. The programme will provide an outstanding and inspiring environment for students, connecting them with research active academics and scholars that have world-leading expertise in the field of Bioengineering and Regenerative Medicine. The academic staff contributing to the programme will also include experts from multiple fields of expertise ranging from molecular biology to regenerative medicine with extensive expertise in teaching academic programmes. Many conduct highly interdisciplinary world-leading research on subjects related to the field of Bioengineering [Regenerative Medicine], or related disciplines, such as cancer biology, pharmacology and molecular biology, publishing in well recognized international scientific journals.

The University will attempt to minimise changes to our core teaching teams, however, delivery of the programme depends on having a sufficient number of staff with the relevant expertise to ensure that the programme is taught to the appropriate academic standard.

Staff turnover, for example where key members of staff leave, fall ill or go on research leave, may result in changes to the programme's content. The University will endeavour to ensure that any impact on students is limited if such changes occur.

8. What is the structure of the Programme?

The academic year runs from September to June and is divided into two semesters. The number of weeks of teaching will vary from programme to programme, but you can generally expect to attend scheduled teaching sessions between the end of September and mid-December, and from mid-January to the end of April. Our degree courses are organised into modules. Each module is usually a self-contained unit of study and each is usually assessed separately with the award of credits on the basis of 1 credit = 10 hours of student effort. An outline of the structure of the programme is provided in the tables below.

All modules on this programme are compulsory modules, which are modules that you are required to study on this course.

Module Lists

Level 4

Compulsory modules	Module Code	Credits	Period
Molecules of Life	LSC-10097	30	Semester 1
Human Physiology and Anatomy	LSC-10101	30	Semester 1-2
Practical and Academic Skills in Bioscience	LSC-10103	0	Semester 1-2
Skills for Bioengineering	LSC-10117	30	Semester 1-2
Molecular Cell Biology	LSC-10066	30	Semester 2

Level 4 Module Rules

LSC-10103, Practical Skills in Bioscience is a compulsory, zero-credit module. All lab-work across this Level of study will be coordinated through this module and assessed within other credit-bearing modules across the year where appropriate. This module also provides helpful academic support and development material that provide added value to enhance your overall student experience. The module will be passed via attendance to a minimum threshold of 70% of taught laboratory sessions and successful completion of a competency skills audit.

Level 5

Year 2 Module List

Compulsory modules	Module Code	Credits	Period
Stem Cells and Regenerative Medicine	LSC-20149	30	Semester 1
Applications of Molecular Biology	LSC-20131	15	Semester 1
Cell Biology for Regenerative Medicine	LSC-20145	15	Semester 1
Practical and Professional Skills in Bioscience	LSC-20127	0	Semester 1-2
Introduction to Pharmacology	LSC-20169	30	Semester 2
Molecular, Cellular and Structural Immunology	LSC-20155	15	Semester 2
Research and Analytical Skills	LSC-20056	15	Semester 2

Year 3 Module List

Compulsory modules	Module Code	Credits	Period
Molecular Pharmacology	LSC-20113	30	Semester 1
Cell Signalling - MC	LSC-20161	15	Semester 1
Case Studies in Biotechnology - MC	LSC-20165	15	Semester 1
Practical and Professional Skills in Bioscience II - MC	LSC-20167	0	Semester 1-2
Current Topics in Regenerative Medicine	LSC-20141	15	Semester 2
Biomaterials and Tissue Engineering	LSC-20147	30	Semester 2
Cancer Biology - MC	LSC-20163	15	Semester 2

Level 5 Module Rules

LSC-20127 Practical and Professional Skills in Bioscience and LSC-20167 Practical and Professional Skills in Bioscience II are compulsory, zero-credit modules. All lab-work across this Level of study will be coordinated through these modules and assessed within other credit-bearing modules across the year where appropriate. The modules also provide helpful academic support and development material that provide added value to enhance your overall student experience. The modules will be passed via attendance to a minimum threshold of 70% of taught laboratory sessions and successful completion of a competency skills audit.

Level 6

Compulsory modules	Module Code	Credits	Period
Biomedical Engineering	LSC-30055	15	Semester 1
Applied Regenerative Medicine	LSC-30068	15	Semester 1
Research Project	LSC-30102	30	Semester 1-2
Nanomedicine	LSC-30122	15	Semester 1-2
Employability and Communication Skills in Bioscience	LSC-30106	15	Semester 2
Current Good Manufacturing Practice (cGMP)	LSC-30112	15	Semester 2
Precision Medicine	LSC-30120	15	Semester 2

Learning Outcomes

The table below sets out what students learn in the programme and the modules in which that learning takes place. Details of how learning outcomes are assessed through these modules can be found in module specifications.

Level 4

Subject Knowledge and Understanding	
Learning Outcome	**Module in which this is delivered**
K1 - describe the biochemical and molecular functions of cells and extracellular mileaux.	Molecular Cell Biology - LSC-10066 Molecules of Life - LSC-10097
K2 - understanding the gross embryological, anatomical and physiological characteristics of the main systems of the human body.	Human Physiology and Anatomy - LSC-10101

Subject Specific Skills	
Learning Outcome	**Module in which this is delivered**
S1 - manage their own learning and utilise resources appropriate to the discipline to solve problems.	Molecular Cell Biology - LSC-10066 Skills for Bioengineering - LSC-10117 Molecules of Life - LSC-10097 Human Physiology and Anatomy - LSC-10101
S2 - work safely and effectively in a scientific laboratory.	Practical and Academic Skills in Bioscience - LSC-10103 Molecular Cell Biology - LSC-10066 Molecules of Life - LSC-10097 Skills for Bioengineering - LSC-10117
S3 - collect, analyse and critically discuss scientific data relevant to the discipline.	Practical and Academic Skills in Bioscience - LSC-10103 Skills for Bioengineering - LSC-10117 Molecular Cell Biology - LSC-10066 Molecules of Life - LSC-10097 Human Physiology and Anatomy - LSC-10101
S4 - communicate confidently on topics related to the degree.	Molecules of Life - LSC-10097 Human Physiology and Anatomy - LSC-10101 Skills for Bioengineering - LSC-10117 Molecular Cell Biology - LSC-10066

Key or Transferable Skills (graduate attributes)	
Learning Outcome	**Module in which this is delivered**
E1 - Effectively participate and work as a team or professional group.	Skills for Bioengineering - LSC-10117 Molecular Cell Biology - LSC-10066 Human Physiology and Anatomy - LSC-10101 Molecules of Life - LSC-10097
E2 - Constructively use feedback and take evidence-informed decisions.	Skills for Bioengineering - LSC-10117 Molecular Cell Biology - LSC-10066 Practical and Academic Skills in Bioscience - LSC-10103 Human Physiology and Anatomy - LSC-10101 Molecules of Life - LSC-10097
E3 - Identify and manage appropriate resources to solve problems.	Molecular Cell Biology - LSC-10066 Molecules of Life - LSC-10097 Human Physiology and Anatomy - LSC-10101
E4 - Confidently communicate information, ideas, problems and solutions to peers or professionals of the field of practice.	Molecular Cell Biology - LSC-10066 Skills for Bioengineering - LSC-10117 Molecules of Life - LSC-10097 Human Physiology and Anatomy - LSC-10101 Practical and Academic Skills in Bioscience - LSC-10103

Level 5

Subject Knowledge and Understanding	
Learning Outcome	**Module in which this is delivered**
K1 - describe the biochemical and molecular functions of cells and extracellular mileaux.	Stem Cells and Regenerative Medicine - LSC-20149 Cell Biology for Regenerative Medicine - LSC- 20145 Biomaterials and Tissue Engineering - LSC-20147 Molecular, cellular and structural immunology - LSC-20155, Current Topics in Regenerative Medicine - LSC-20141, Introduction to Pharmacology, LSC-20169, Cancer Biology LSC-20163, Cell Signalling LSC-20161, Molecular Pharmacology - LSC-20113, Applications of Molecular Biology - LSC10103
K2 - understanding the gross embryological, anatomical and physiological characteristics of the main systems of the human body.	Cell Biology for Regenerative Medicine - LSC- 20145 Biomaterials and Tissue Engineering - LSC-20147 Current Topics in Regenerative Medicine - LSC-20141
K3 - understand the sources and features of different types of human stem cells.	Biomaterials and Tissue Engineering - LSC-20147 Cell Biology for Regenerative Medicine - LSC- 20145 Current Topics in Regenerative Medicine - LSC-20141 Stem Cells and Regenerative Medicine - LSC-20149
K4 - evaluate the strategies to use stem cells as disease models and therapeutic tools.	Current Topics in Regenerative Medicine - LSC-20141 Biomaterials and Tissue Engineering - LSC-20147 Stem Cells and Regenerative Medicine - LSC-20149 Molecular, cellular and structural immunology - LSC-20155
K5 - describe the physico-chemical properties of different biomaterials and nanomaterials that support tissue/organ growth, implantation and drug delivery.	Current Topics in Regenerative Medicine - LSC-20141 Biomaterials and Tissue Engineering - LSC-20147, Case Studies in Biotechnology LSC-20165
K6 - familiarise with the concepts of genetic and genome engineering.	Applications of molecular biology - LSC-20131, Cell Biology for Regenerative Medicine - LSC- 20145 Current Topics in Regenerative Medicine - LSC-20141 Stem Cells and Regenerative Medicine - LSC-20149 Molecular, cellular and structural immunology - LSC-20155, Cancer Biology LSC-20163
K9 - describe the principles that determine the three-dimensional structure of biological macromolecules (including nucleic acids, proteins and carbohydrates) and the application of this knowledge to rational drug design and ligand-target binding	Introduction to Pharmacology - LSC-20169, Molecular Pharmacology I - LSC-20113
K8 - understand core biological topics that underpin the study of pharmacology including: biochemistry, molecular biology, genetics, cell biology, physiology and anatomy, and their application to the development and pharmacology of acquired and inherited disease	Introduction to Pharmacology - LSC-20169 Molecular Pharmacology I - LSC-20113
K11 - Mechanisms of drug action in relevant tissues and organ systems, including the central nervous system, as well as drug toxicity and selective toxicity in the treatment of microbial infections and cancer	Cancer Biology - LSC-20163 Molecular Pharmacology I - LSC-20113, Introduction to Pharmacology - LSC-20169

Subject Specific Skills	
Learning Outcome	**Module in which this is delivered**
S1 - manage their own learning and utilise resources appropriate to the discipline to solve problems;	Stem Cells and Regenerative Medicine - LSC-20149 Applications of molecular biology- LSC-20131, Current Topics in Regenerative Medicine - LSC-20141 Molecular, cellular and structural immunology - LSC-20155, Biomaterials and Tissue Engineering - LSC-20147, Professional Development in Bioscience - LSC-30090, Research and Analytical Skills - LSC-20056, Introduction to Pharmacology, LSC-20169, Case Studies in Biotechnology LSC-20165
S2 - work safely and effectively in a scientific laboratory;	Cell Biology for Regenerative Medicine - LSC- 20145 Applications of molecular biology- LSC-20131, Biomaterials and Tissue Engineering - LSC-20147 Molecular, cellular and structural immunology - LSC-20015, Stem Cells and Regenerative Medicine - LSC-20149 , Professional Development in Bioscience - LSC-30090, Introduction to Pharmacology, LSC-20169
S3 - collect, analyse and critically discuss scientific data relevant to the discipline;	Cell Biology for Regenerative Medicine - LSC- 20145 Molecular, cellular and structural immunology - LSC-20155, Biomaterials and Tissue Engineering - LSC-20147 Applications of molecular biology - LSC-20131, Stem Cells and Regenerative Medicine - LSC-20149 , Professional Development in Bioscience - LSC-30090, Research and Analytical Skills - LSC-20056, Introduction to Pharmacology, LSC-20169, Case Studies in Biotechnology LSC-20165, Molecular Pharmacology - LSC-20113
S4 - communicate confidently on topics related to the degree;	Molecular, cellular and structural immunology - LSC-20155, Current Topics in Regenerative Medicine - LSC-20141 Cell Biology for Regenerative Medicine - LSC-20145 Biomaterials and Tissue Engineering - LSC-20147 Stem Cells and Regenerative Medicine - LSC-20149, Research and Analytical Skills - LSC-20056, Introduction to Pharmacology, LSC-20169, Cancer Biology LSC-20163
S5 - understand the limits and ethical issues of the discipline and the need of code of practice;	Molecular, cellular and structural immunology - LSC-20155, Current Topics in Regenerative Medicine - LSC-20141 Applications of molecular biology- LSC-20131, Stem Cells and Regenerative Medicine - LSC-20149, Cancer Biology LSC-20163, Case Studies in Biotechnology LSC-20165
S6 - formulate hypotheses, design, plan, conduct, collate, analyse, report on and evaluate biological investigations	Research and Analytical Skills - LSC- 20056, Introduction to Pharmacology - LSC-20169, Molecular Pharmacology I - LSC-20113
S7 - apply scientific method, planning, and analytical skills to carry out a research project	Molecular Pharmacology I - LSC-20113, Research and Analytical Skills - LSC- 20056

Key or Transferable Skills (graduate attributes)	
Learning Outcome	**Module in which this is delivered**
E1 - Effectively participate and work as a team or professional group.	Current Topics in Regenerative Medicine - LSC-20141 Cell Biology for Regenerative Medicine - LSC- 20145 Applications of molecular biology- LSC-20131, Research and Analytical Skills - LSC-20056, Introduction to Pharmacology, LSC-20169, Case Studies in Biotechnology LSC-20165
E2 - Constructively use feedback and take evidence-informed decisions.	Current Topics in Regenerative Medicine - LSC-20141 Applications of molecular biology- LSC-20131, Molecular, cellular and structural immunology - LSC-20015, Stem Cells and Regenerative Medicine - LSC-20149 Biomaterials and Tissue Engineering - LSC-20147, Research and Analytical Skills - LSC-20056, Introduction to Pharmacology, LSC-20169, Cancer Biology LSC-20163, Case Studies in Biotechnology LSC-20165Molecular Pharmacology - LSC-20113
E3 - Identify and manage appropriate resources to solve problems.	Cell Biology for Regenerative Medicine - LSC- 20145 Current Topics in Regenerative Medicine - LSC-20141 Molecular, cellular and structural immunology - LSC-20015, Research and Analytical Skills - LSC-20056, Introduction to Pharmacology, LSC-20169
E4 - Confidently communicate information, ideas, problems and solutions to peers or professionals of the field of practice.	Molecular, cellular and structural immunology - LSC-20155 Current Topics in Regenerative Medicine - LSC-20141 Applications of molecular biology- LSC-20131, Stem Cells and Regenerative Medicine - LSC-20149 Cell Biology for Regenerative Medicine - LSC- 20145 Biomaterials and Tissue Engineering - LSC-20147, Research and Analytical Skills - LSC-20056, Introduction to Pharmacology, LSC-20169, Cancer Biology LSC-20163, Molecular Pharmacology - LSC-20113
K10 - develop an understanding of signal transduction mechanisms of extra- and intra-cellular receptors in cell signalling pathways controlling cellular activities, with a focus on how these can be investigated experimentally and modified through relevant pharmacological approaches	Introduction to Pharmacology - LSC-20169, Molecular Pharmacology I - LSC-20113, LSC-10066
E5 - Identify and work towards targets for personal, academic and career development	Research and Analytical Skills - LSC-20056, Molecular Pharmacology I - LSC-20113, Introduction to Pharmacology - LSC-20169
E6 - Prepare, process, interpret and present data, using appropriate qualitative and quantitative techniques, statistical programmes, spreadsheets and programs for presenting data visually	Molecular Pharmacology I - LSC-20113

Level 6

Subject Knowledge and Understanding	
Learning Outcome	**Module in which this is delivered**
K3 - understand the sources and features of different types of human stem cells;	Precision Medicine - LSC-30120 Applied Regenerative Medicine - LSC-30068
K4 - evaluate the strategies to use stem cells as disease models and therapeutic tools;	Current Good Manufacturing Practice (cGMP) - LSC-30112 Precision Medicine - LSC-30120 Applied Regenerative Medicine - LSC-30068
K5 - describe the physico-chemical properties of different biomaterials and nanomaterials that support tissue/organ growth, implantation and drug delivery;	Biomedical Engineering - LSC-30055 Nanomedicine - LSC-30122 Current Good Manufacturing Practice (cGMP) - LSC-30112
K6 - familiarise with the concepts of genetic and genome engineering;	Precision Medicine - LSC-30120
K7 - discuss the concept of genomic medicine;	Precision Medicine - LSC-30120

Subject Specific Skills	
Learning Outcome	**Module in which this is delivered**
S1 - manage their own learning and utilise resources appropriate to the discipline to solve problems;	Current Good Manufacturing Practice (cGMP) - LSC-30112 Research Project - LSC-30102 Applied Regenerative Medicine - LSC-30068 Biomedical Engineering - LSC-30055
S2 - work safely and effectively in a scientific laboratory;	Precision Medicine - LSC-30120 Current Good Manufacturing Practice (cGMP) - LSC-30112 Nanomedicine - LSC-30122 Research Project - LSC-30102 Biomedical Engineering - LSC-30055
S3 - collect, analyse and critically discuss scientific data relevant to the discipline;	Precision Medicine - LSC-30120 Applied Regenerative Medicine - LSC-30068 Biomedical Engineering - LSC-30055 Employability and Communication Skills in Bioscience - LSC-30106 Research Project - LSC-30102 Current Good Manufacturing Practice (cGMP) - LSC-30112
S4 - communicate confidently on topics related to the degree;	Applied Regenerative Medicine - LSC-30068 Biomedical Engineering - LSC-30055 Nanomedicine - LSC-30122 Research Project - LSC-30102
S5 - understand the limits and ethical issues of the discipline and the need of code of practice;	Current Good Manufacturing Practice (cGMP) - LSC-30112 Precision Medicine - LSC-30120 Applied Regenerative Medicine - LSC-30068

Key or Transferable Skills (graduate attributes)	
Learning Outcome	**Module in which this is delivered**
E1 - Effectively participate and work as a team or professional group.	Applied Regenerative Medicine - LSC-30068 Research Project - LSC-30102 Precision Medicine - LSC-30120
E2 - Constructively use feedback and take evidence-informed decisions.	Research Project - LSC-30102 Applied Regenerative Medicine - LSC-30068 Current Good Manufacturing Practice (cGMP) - LSC-30112 Precision Medicine - LSC-30120
E3 - Identify and manage appropriate resources to solve problems.	Applied Regenerative Medicine - LSC-30068 Biomedical Engineering - LSC-30055 Research Project - LSC-30102 Precision Medicine - LSC-30120 Employability and Communication Skills in Bioscience - LSC-30106 Nanomedicine - LSC-30122
E4 - Confidently communicate information, ideas, problems and solutions to peers or professionals of the field of practice.	Biomedical Engineering - LSC-30055 Research Project - LSC-30102 Employability and Communication Skills in Bioscience - LSC-30106 Nanomedicine - LSC-30122 Applied Regenerative Medicine - LSC-30068 Current Good Manufacturing Practice (cGMP) - LSC-30112

9. Final and intermediate awards

Credits required for each level of academic award are as follows:

BSc (Hons) Bioengineering (Regenerative Medicine)	480 credits	You will require at least 480 credits across years 1, 2, 3, and 4. You must accumulate at least 120 credits in each of the four years of study, to graduate with a named single honours degree in this subject.
Diploma in Higher Education	240 credits	You will require at least 120 credits at level 4 or higher and at least 120 credits at year 2 or higher
Certificate in Higher Education	120 credits	You will require at least 120 credits at year 1 or higher

10. How is the Programme Assessed?

The wide variety of assessment methods used on this programme at Keele reflects the broad range of knowledge and skills that are developed as you progress through the degree programme. Teaching staff pay particular attention to specifying clear assessment criteria and providing timely, regular and constructive feedback that helps to clarify things you did not understand and helps you to improve your performance. The following list is representative of the variety of assessment methods used on your programme:

- Unseen Exam
- Laboratory Report
- Problem Based Studies (PBL)
- Dissertation
- Presentations
- Essays

Marks are awarded for summative assessments designed to assess your achievement of learning outcomes. You will also be assessed formatively to enable you to monitor your own progress and to assist staff in identifying and addressing any specific learning needs. Feedback, including guidance on how you can improve the quality of your work, is also provided on all summative assessments within three working weeks of submission, unless there are compelling circumstances that make this impossible, and more informally in the course of tutorial and seminar discussions.

11. Contact Time and Expected Workload

This contact time measure is intended to provide you with an indication of the type of activity you are likely to undertake during this programme. The data is compiled based on module diets of students on similar programmes in previous years. Every effort is made to ensure this data is a realistic representation of what you are likely to experience, but changes to programmes, teaching methods and assessment methods mean this data is representative and not specific.

The figure below is an example of activities that a student may expect on your chosen course by year stage of study. Contact time includes scheduled activities such as: lecture, seminar, tutorial, project supervision, demonstration, practical classes and labs, supervised time in labs/workshops. The figures are based on 1,200 hours of student effort each year for full-time students.

Activity

	Scheduled learning and teaching activities	**Guided independent Study**	**Placements**
Year 1 (Level 4)	37%	63%	0%
Year 2 (Level 5)	31.9%	68.1%	0%
Year 3 (Level 5)	30%	70%	0%
Year 4 (Level 6)	34.8%	65.3%	0%

12. Accreditation

This programme does not have accreditation from an external body.

13. University Regulations

The University Regulations form the framework for learning, teaching and assessment and other aspects of the student experience. Further information about the University Regulations can be found at: http://www.keele.ac.uk/student-agreement/

If this programme has any exemptions, variations or additions to the University Regulations these will be detailed in an Annex at the end of this document titled 'Programme-specific regulations'.

14. What are the typical admission requirements for the Programme?

See the relevant course page on the Keele University, Greece - University Legal Entity or Metropolitan College websites for the admission requirements relevant to this programme.

Recognition of Prior Learning (RPL) is considered on a case-by-case basis and those interested should contact the Programme Director. The University's guidelines on this can be found here: https://www.keele.ac.uk/qa/programmesandmodules/recognitionofpriorlearning/

15. How are students supported on the programme?

Students can contact any member of staff by email to request a meeting or discuss any problem they may be experiencing. Students are supported in the following ways:

Induction

Students are provided with a comprehensive induction on entry, which includes an introduction to the facilities,

support services, orientation, course structure, assessment regulations governing progression and award as well as timetable. Subsequent inductions are held throughout the first 2 weeks to ensure that all students receive the same information as those who normally started at the beginning of the academic year.

Student Handbook

During the first week of classes all students receive the Student Handbook, which contains comprehensive and detailed information about the services, policies and procedures of the University.

Student Services

All students have access to Student Services, which is focused on ensuring that every student has the best possible university experience. From academics to mental health, from dyslexia and disabilities to wellbeing, Student Services acts as the first point of contact for every student to provide guidance, advice or tools to restart their studies.

The **Academic Support Centre** offers assistance to students in many multifaceted learning tasks, such as improving academic writing skills, improving study skills, understanding research projects and research procedures, one-to-one advise, academic integrity and plagiarism, paraphrasing and referencing.

The **Counselling Centre** aims to optimise students' wellbeing by providing them with support and giving them the opportunity to examine the issues that prevent them from maximising their potential. It offers students free, voluntary and confidential counselling, and the opportunity to receive support and advice from trained professionals. The Counselling Centre provides personal support to students experiencing personal issues - such as anxiety, stress, depression, eating disorders and bereavement. It can also supports students in other areas of their lives such as family problems, relationship problems, difficulty in making decisions, problems adjusting to academic life and academic requirements. The services of the Counselling Centre are available to all registered students and any information provided is strictly confidential and will not be disclosed to third parties unless there is reason to believe that the student or others may be at risk.

The **Career and Employability Centre** provides professional, impartial and accessible guidance to students, helping them to develop the skills and qualifications needed for their careers. Services include support in CV writing, preparing for applications and interviews, developing employability skills and networking with companies and experts. It also assists students in identifying career opportunities, creating a personal career plan and participating in workshops on career development and work-life balance.

The **Alumni Office** is always at the side of graduates and is ready not only to support them at every step of their professional career, but also to raise their awareness of current social issues, to foster their voluntary participation in activities of common benefit; it acts as a bridge of communication between the University and its graduates, as well as with the labour market.

The University provides support to **students with special needs and learning difficulties** to ensure that they can study on an equal basis. If a student would like to make use of individualised support mechanisms, they should inform the Programme Leader and request support from the Learning Disability Centre by arranging an appointment in conjunction with the Programme Leader.

The **English Language Centre** provides support to all students regardless of the language of the programme. This is because much of the academic literature is available in English and students should be supported to access it. A team of experienced English language tutors ensures that this support is available in appropriate formats (e.g. English for Specific Purposes, English for Academic Purposes etc.). Thus, academic English courses are offered to help students develop the skills (e.g. reading comprehension skills) to manage English scientific texts.

Personal Academic Tutor

All students enrolled in the programme will have a Personal Academic Tutor, a member of the teaching staff who will provide academic guidance and support. Students will have several scheduled opportunities throughout the years to meet with the Personal Academic Tutor and make the most of the programme and academic resources. Within the School, there are a number of other roles (Programme Leader, Year Tutor, Student Representative) who work with Personal Academic Tutors to ensure that each student receives the necessary academic support.

Module Leader

The person in charge who guides and organises a specific module in the programme and ensures its quality through:

- the responsibility for its day-to-day organisation
- ensuring that all staff members teaching the module have a copy of the module guide
- coordinating group teaching where necessary
- ensuring that the module content and assessments are in line with the approved module guide and are reviewed frequently and remain up to date, proposing significant changes for approval where appropriate.

- cooperation and continuous communication with the Programme Leader on issues concerning the equipment and human resources of the module.

Programme Leader

The Programme Leader ensures the quality of the programme and is responsible for the day-to-day management of the programme. He/she is responsible for the coordination of all modules taught and contributing to the programme. He/she ensures that all faculty members are aware of the weekly/semester regulations that apply to students. Ensures that the content, deliverables and assessments of each module follow the programme guidelines.

16. Learning Resources

VLE-Moodle

All students will be assigned an email address, which will be the main channel of communication for all official School communications and the first point of contact for all academics. No personal email address will be used. New students will also have access to Moodle the University's asynchronous education and learning platform. All modules have a Moodle site which has the information required for that module.

Libraries

The University Library has a wide range of books and journals covering all topics of the programme. Several of these resources are also available electronically https://www.keele.ac.uk/library/ . There is also space for independent study and group work. A newly developed and appropriate borrowing policy is included in the student handbook.

Laboratory Practicals and Research Equipment

Laboratory practicals in the BSc (Hons) Bioengineering programme ensure that students acquire the necessary laboratory skills and are conducted in specially designed laboratories. Laboratory equipment covers a wide range of scientific disciplines and clinical applications, including Microbiology, Biochemistry, Chemistry, Immunology, Molecular Biology and Cell Culture. It also allows students and academic staff to participate in multi-disciplinary research projects, in collaboration with hospitals, research institutions and other health programmes. There is a Bioengineering Laboratory and an Augmented/Virtual Reality (VR Lab) where, using special equipment, physiology, anatomy and pathophysiology are taught through visual representations of specific topics.

IT Services

The University provides access to all the types of software and equipment that students will need to succeed in their degree. It has computer labs in operation that serve as physical learning and study destinations, providing students with the latest and greatest computing tools, software, printing and other technological resources to achieve their academic goals for teaching, research and presentation. Each lab meets modern educational requirements and features high-tech computers equipped with all necessary software applications and high-speed internet connectivity. Each student works alone on a computer when the teaching module requires individual practice and when the teaching module relates to group activities, students can work creatively in groups.

17. Additional Costs

Students are required to have appropriate PPE equipment such as laboratory coats and are expected to supply appropriate writing equipment such as pens, pencils, notebooks etc. Should further additional materials be required these will be clearly communicated in advance. Total estimated costs: £50

As to be expected there will be additional costs for inter-library loans and potential overdue library fines, print and graduation.

We do not anticipate any further costs for this programme.

18. Quality management and enhancement

The quality and standards of learning in this programme are subject to a continuous process of monitoring, review and enhancement.

- The School Education Committee (Keele University) is responsible for reviewing and monitoring quality management and enhancement procedures and activities across the School.
- Individual modules and the programme as a whole are reviewed and enhanced every year in the annual programme review which takes place at the end of the academic year.
- The programmes are run in accordance with the University's Quality Assurance procedures (Keele and MCG) and are subject to periodic reviews under the Revalidation process.

Student evaluation of, and feedback on, the quality of learning on every module takes place every year using a variety of different methods:

- The results of student evaluations of all modules are reported to module leaders and reviewed by the Programme Committee as part of annual programme review.
- Findings related to the programme from regular surveys of the student experience conducted by the University, are subjected to careful analysis and a planned response at programme and School level.
- Feedback received from representatives of students in all four years of the programme is considered and acted on at regular meetings of the Student Staff Voice Committee.

Board of Examiners

The Examinations Board is responsible for making decisions regarding the promotion, re-evaluation and graduation of students, as well as their study status (interruptions and suspensions, special circumstances). The Board of Examiners for a particular programme is responsible for:

a) assessment of each student in each module being assessed

b) overall assessment of each student's performance and the decision regarding his/her promotion at each intermediate stage of the programme

(c) a decision on the degree to be awarded to each student upon completion of the programme, or the decision to withdraw the student from the programme.

The way of making decisions of the Examination Board is dictated by the academic regulations of the University and, in some cases, by the specific regulations of the programme, which have been decided during the process of approval of the specific study programme and are explicitly defined in the official operating document of the programme.

External Examiners

The University appoints senior members of academic staff from other universities to act as external examiners on all programmes. They are responsible for:

- Approving examination questions
- Confirming all marks which contribute to a student's degree
- Reviewing and giving advice on the structure and content of the programme and assessment procedures

Information about current external examiner(s) can be found here:
http://www.keele.ac.uk/qa/externalexaminers/currentexternalexaminers/

19. The principles of programme design

The programme described in this document has been drawn up with reference to, and in accordance with the guidance set out in, the following documents:

a. UK Quality Code for Higher Education, Quality Assurance Agency for Higher Education: http://www.qaa.ac.uk/quality-code
b. QAA Subject Benchmark Statement: Biomedical Sciences (2019) https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmark-statement-biomedical-sciences.pdf?sfvrsn=2bf2c881_4
c. Keele University Regulations and Guidance for Students and Staff: http://www.keele.ac.uk/regulations

20. Annex - Programme-specific regulations

Programme Regulations: BSc (Hons) Bioengineering (Regenerative Medicine)

Final Award and Award Titles	BSc (Hons) Bioengineering (Regenerative Medicine)
Intermediate Award(s)	Diploma in Higher Education Certificate in Higher Education
Last modified	June 2025
Programme Specification	https://www.keele.ac.uk/qa/programmespecifications

The University's Academic Regulations which can be found on the Keele University website (https://www.keele.ac.uk/regulations/)[1] apply to and regulate the programme, other than in instances where the specific programme regulations listed below over-ride them. These programme regulations list:

- *Exemptions* which are characterised by the omission of the relevant regulation.
- *Variations* which are characterised by the replacement of part of the regulation with alternative wording.
- *Additional Requirements* which set out what additional rules that apply to students in relation to this programme.

The following **exemptions, variations** and **additional requirements** to the University regulations have been checked by Academic Services and have been approved by the Faculty Education Committee.

A) EXEMPTIONS

The clause(s) listed below describe where an exemption from the University's Academic Regulations exists:

For the whole duration of their studies, students on this Programme are exempt from the following regulations:

- **No exemptions apply.**

B) VARIATIONS

The clause(s) listed below describe where a variation from the University's Academic Regulations exists:

Variation 1: Progression from Year 2 to Year 3

This programme varies from Regulation D2.

1.1 To apply a progression rule from Year 2 ('Level 5a') to Year 3 ('Level '5b') aligned with clause 1.2; i.e.:

- You can progress to Level 5b if you meet one of the following credit thresholds:
  - **(a)** You are awarded 120 credits at Level 4 and 120 credits at Level 5a; or
  - **(b)** You are awarded 120 credits at Level 4 and a minimum of 105 credits at Level 5a, provided you still have an assessment attempt remaining on any compulsory or optional module you have failed.
- You must be awarded credit for the module you have failed at Level 5a either over the summer reassessment period or whilst studying at Level 5b.

1.2 The remaining clauses in section 1.2 of Regulation D2 will apply with 'Level 5' relating to Level 5a (Year 2).

Variation 2: Condonement

This programme varies from Regulation D5.

2.1 Condonement can be applied to a maximum of 75 credits of modules, subject to the following rules:

- A maximum of 45 credits across Level 4 and Level 5 (i.e. Years 1-3), provided that no other modules have been failed at those levels of study
- A maximum of 30 credits of Level 6, provided that no other modules have been failed at that level of study.

Note: Award calculation

3.1 In accordance with Regulation D2, 1.3.1, it should be noted that the 120 Level 5 credits with the highest module marks across Years 2 and 3 will be used in the calculation process.

3.2 The 120 Level 5 credits constitute one third of the weighted average module mark with the remaining two thirds coming from the Level 6 average module mark.

Additional Requirements

The programme requirements listed below are in addition to the University's Academic Regulations:

Additional requirement 1: Attendance

Attendance at tutorials, seminars, workshops and laboratory sessions on this programme is compulsory. Failure to attend a class without good cause will result in an informal warning. Failure to attend any subsequent classes without good cause will lead to the issuing of a formal University warning in accordance with Regulation B8 and could result in the requirement to withdraw from the university.

Additional requirement 2: Self-Certification

Self-certification of illness as a reason for absence from compulsory classes will be accepted for no more than two periods of absence, each covering no more than 7 days, per semester. Any subsequent absence for reasons of illness must be accompanied by a medical certificate.

Additional requirement 3: Laboratory and tutorial classes

1. Wearing a laboratory coat is compulsory in all laboratories. Students will not be allowed to attend the laboratory class without a laboratory coat.
2. Students must wear appropriate clothing in the laboratories, including sensible footwear. Closed shoes and low heels should be worn. This is to avoid tripping and to protect the feet in the case of spillages. Long hair must be tied back. Students who are inappropriately dressed may, at the discretion of the member of staff in charge, be excluded from the class and recorded as being absent without good cause.
3. Students who arrive late to laboratory classes may, at the discretion of the member of staff in charge, be excluded from the class and recorded as being absent without good cause.
4. Students who display serious misconduct in any class may, at the discretion of the member of staff in charge, be excluded from the class and recorded as being absent without good cause. Serious misconduct involves willful damage to property, injury or threat to persons, or persistent disruption of teaching.
5. The unauthorised use of mobile phones or headphones is not permitted in any class.
6. Students are not permitted to record, video or photograph taught sessions or meetings with staff, except with the permission in advance of the staff concerned. Permission will be given where this is part of an approved disability adjustment. Any permission to record, video or photograph is for personal use only and all recordings, videos or photographs remain the property of the presenter and the University.

Additional requirement 4: Health and Safety

1. Students must strictly follow the regulations and the School's Health and Safety procedures.

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[1] References to University Regulations in this document apply to the content of the University's Regulatory Framework as set out on the University website here https://www.keele.ac.uk/regulations/.

Version History

This document

Date Approved: 08 August 2025

What's Changed

LSC-20141 Current Topics in Regenerative Medicine semester changed from 1-2 to Sem 2 (accidental error in first submission)

Previous documents

Version No	Year	Owner	Date Approved	Summary of and rationale for changes
1	2025/26	ABIGAIL ROBERTS	07 July 2025	