Programme Specification

A	NATURE OF THE AWARD	
1	Programme Title	Healthcare science practitioner (integrated degree)
2	Final award	BSc Hons Healthcare Science (Cardiac Physiology) **or** BSc Hons Healthcare Science (Respiratory and Sleep Physiology)
3	Intermediate awards	Dip HE; CertHE
4	Awarding institution/body	St George's Hospital Medical School, a constituent college of the University of London
5	Teaching institution	St George's, University of London
6	Programme accredited by	• Health Education England (Modernising Scientific Careers) • Registration Council for Clinical Physiologists
7	UCAS/JACS code	B120
8	QAA benchmark statements	Biosciences
9	Date specification produced	October 2016 (updated April 2022)

B	FEATURES OF THE PROGRAMME	
1	Mode of study	Apprenticeships
2	Usual length of programme	3 years
3	Other features of the programme	Work-based learning placements in NHS clinical departments will take place throughout the programme

C	EDUCATIONAL AIMS OF THE PROGRAMME

The BSc Healthcare Science programme aims to:

1. Provide apprentices with the opportunity to develop relevant knowledge, understanding, skills, and professional behaviour to work as an effective Healthcare Science Practitioner.

2. Provide apprentices with a solid foundation of knowledge in the physiological systems that comprise the human body, and an understanding of how disease processes change normal physiological function to bring about pathology.

3. Develop apprentices' ability in a range of relevant diagnostic measurement procedures to recognised professional standards.

4. Engender an understanding of the multidisciplinary approach to the study of human disease and an appreciation of the many healthcare science specialisms, and to provide a holistic view of the areas which contribute to high-quality patient care.

5. Foster apprentices' philosophy of patient-centred care.

6. Give apprentices the opportunity to gain work experience, acquainting them with the practices, demands and requirements of a career as a Healthcare Science Practitioner within NHS Clinical Physiology departments.

7. Foster apprentices' critical thinking, reflection and skills of self-directed learning as a basis for lifelong personal and professional development.

D	**LEARNING OUTCOMES OF THE PROGRAMME**

On successful completion of the programme, it is anticipated that the graduate will be able to:

1. Demonstrate a thorough knowledge and theoretical understanding of health sciences integrated with an understanding of the investigation and diagnosis of health problems and disease.

2. Apply principles, concepts and the requisite practical skills essential for safe, effective and competent practice as a Healthcare Science Practitioner.

3. Demonstrate the appropriate personal skills, professional attitudes, and behaviours for effective working with colleagues and patients.

4. Critically analyse and interpret scientific and clinical data to inform practice and enable appropriate contribution to patient management in the relevant clinical context.

5. Identify personal learning needs enabling effective lifelong learning through critical self-reflection and independent study.

A	Knowledge and understanding	
A 1	Demonstrate detailed understanding of the scientific basis of relevant areas of human physiology (this will incorporate knowledge of basic physiology and anatomy; knowledge of the different levels of organisation and complexity, from molecules, through cells and organs, to the entire human organism; knowledge of key biochemical, physiological, and pathophysiological and pharmacological processes)	*Indicative teaching and learning methods* The learning and teaching methods that will enable the outcomes to be achieved may include: - Lectures - Small group tutorials - Case based learning - Dissecting Room teaching - IT based learning - Peer presentations - Self-directed learning (facilitated by worksheets, textbooks and on-line resources) - Independent study - Work-based placement learning - Designing and undertaking a Research Project
A 2	Identify the physiological rationale for the pharmacological treatment of a range of relevant pathologies.	
A 3	Recognise the relationship between pathogenic processes and altered physiological responses.	
A 4	Explain the principles and applications of appropriate physiological methods and technologies relevant to clinical physiology	
A5	Outline and apply health & safety procedures relevant to the work of a clinical physiologist within the NHS	*Indicative assessment methods* Assessment methods that enable these outcomes to be demonstrated may include: - Essays - Posters - Student presentations - Work-based placement portfolio - Work-based placement competency assessments - Written examinations which may incorporate essays, SBAs and SAQs - OSCE - Research Project
A6	Describe appropriate practical scientific methods and approaches, and techniques used in their analysis.	
A7	Apply the principles of mathematics, physics and chemistry to the study of physiological and pathophysiological processes	
A8	Define the theoretical and ethical basis of scientific research and clinical audit	
A9	Describe the administrative structures and processes associated with the operation of a NHS clinical physiology department and with cognisance of the structure and policies of the NHS	

B	**Intellectual/Cognitive Skills**	
B 1	Integrate and link information across course components, including material encountered in different years, from different disciplines	*Indicative teaching and learning methods* The learning and teaching methods that will enable the outcomes to be achieved may include: - Lectures - Small group tutorials - Case based learning - Dissecting Room teaching - IT based learning - Peer presentations - Self-directed learning (facilitated by worksheets, textbooks and on-line resources) - Independent study - Work-based placement learning - Designing and undertaking research project
B 2	Apply strategies for appropriate selection of relevant information from a large body of knowledge	
B 3	Critically evaluate and synthesise research literature and a variety of types of information and evidence in order to gain coherent understanding of theory and practice	
B 4	Develop own ideas through critical appraisal and integration of appropriate literature, concepts and principles	
B 5	Understand the different approaches to research including qualitative and quantitative methods	
B 6	Critically assess, integrate and summarise scientific and clinical data from a range of sources and draw reasonable conclusions	*Indicative assessment methods* Assessment methods that enable these outcomes to be demonstrated may include: - Essays - Posters - Student presentations - Work-based placement portfolio - Work-based placement competency assessments - Written examinations which may incorporate essays and SAQs - OSCE - Research Project
B 7	Apply principles of scientific enquiry to plan and undertake hypothesis-driven research	
B 8	Plan and conduct a research task (including logistics, risk assessment and ethical approval where appropriate)	
B 9	Collect, analyse and present research data	
B 10	Assess the risk factors relevant to health and safety associated with working in clinical physiology department	
B 11	Utilise problem-solving skills in a variety of theoretical and practical situations	

C	**Professional/Practical Skills**	
C 1	Perform a range of physiological diagnostic techniques competently, and in accordance with health and safety guidelines	*Indicative teaching and learning methods* The learning and teaching methods that will enable the outcomes to be achieved may include: - Lectures - Small group tutorials - Case based learning - Dissecting Room teaching - IT based learning - Peer presentations - Self-directed learning (facilitated by worksheets, textbooks and on-line resources) - Independent study - Work-based placement learning - Designing and undertaking research project
C 2	Explain the principles and limitations of a range of more advanced practical techniques	
C 3	Make informed judgements about the instrumentation used to perform physiological measurements and recognise the limitations of such instrumentation	
C 4	Perform quality control and assurance procedures according to protocol; detect and avoid error	
C 5	Follow safe working practices in the clinical environment with awareness of the needs, roles, rights and responsibilities of self, fellow workers, and patients.	*Indicative assessment methods* Assessment methods that enable these outcomes to be demonstrated may include: - Essays - Posters - Student presentations - Work-based placement portfolio - Work-based placement competency assessments - Written examinations which may incorporate essays and SAQs - OSCE - Research Project
C 6	Demonstrate awareness of the ethical and legal dimensions of working as a health professional	
C 7	Understand why an integrated, interdisciplinary team approach is necessary to facilitate high quality patient care	

D	**Key Transferable Skills**	
D 1	Present information and arguments for different purposes to a variety of audiences in a range of contexts by written, oral and visual means.	*Indicative teaching and learning methods* The learning and teaching methods that will enable the outcomes to be achieved may include: - Lectures - Small group tutorials - Case based learning - Dissecting Room teaching - IT based learning - Peer presentations - Self-directed learning (facilitated by worksheets, textbooks and on-line resources) - Independent study - Work-based placement learning - Designing and undertaking research project
D 2	Analyse and present scientific and clinical data	
D 3	Use a range of information technology and demonstrate information management	
D 4	Identify sources and uses of data and information; analyse, evaluate and use information	
D 5	Identify scientific and clinical problems and devise solutions	
D6	Work effectively as part of a team to collect data and information and/or to produce reports and presentations	*Indicative assessment methods* Assessment methods that enable these outcomes to be demonstrated may include: - Essays - Posters - Student presentations - Work-based placement portfolio - Work-based placement competency assessments - Written examinations which may incorporate essays and SAQs - OSCE - Research Project
D7	Study independently, plan work and time to meet targets within deadlines	
D8	Critically evaluate own academic, personal and professional performance and progress and reflect on feedback given.	
D9	Demonstrate critical reasoning and problem-solving skills and make professional judgements in a variety of settings	
D10	Demonstrate an autonomous and reflective approach to lifelong learning	

E	Programme structure and features

The three-year BSc Healthcare Science degree programme is modular in structure comprising several core modules which are compulsory for all Healthcare Science students, in addition to specialist modules separated into two pathway routes, which provide students with more focused teaching and work-based training in either Cardiac Physiology or Respiratory and Sleep Physiology.

Each year of the programme is divided into two semesters however, most programme modules stretch across both semesters, particularly those modules which incorporate work-based training.

All modules in Year 1 are compulsory core modules. In Years 2 and 3 the apprentice's module enrolment will depend upon the specialist pathway route they are following (either Cardiac Physiology or Respiratory and Sleep Physiology).

The composition of the course is as follows:

Year 1 (Level 4)

Compulsory Core Modules

- Scientific Basis of Healthcare Science 1 (30 credits)
- Scientific Basis of Healthcare Science 2 (30 credits)
- Professional Practice 1 (15 credits)
- Scientific Basis of Cardiovascular, Respiratory & Sleep Science (30 credits)
- Clinical Training 1 (15 credits)

Year 2 (Level 5)

Compulsory Core Modules

- Scientific Basis of Healthcare Science 3 (15 credits)
- Professional Practice 2 (15 credits)
- Research Methods (15 credits)
- Instrumentation, Signal Processing and Imaging (15 credits)
- Pathophysiology of Common Cardiovascular and Respiratory Conditions (15 credits)

Specialist Modules (Students must follow one of the speciality pathway routes)

Cardiac Physiology

- Cardiac Physiology (30 credits)
- Clinical Training 2 – Cardiac Physiology (15 credits)

Or

Respiratory and Sleep Physiology

- Respiratory and Sleep Physiology (30 credits)
- Clinical Training 2 – Respiratory and Sleep Physiology (15 credits)

Year 3 (Level 6)

Compulsory Core Module

- Professional Practice 3 (15 credits)

Specialist Modules (Students must continue in the same speciality pathway as that followed in Year 2)

Cardiac Physiology

- Applying Cardiac Physiology to Practice (45 credits)
- Research Project in Cardiac Physiology (30 credits)
- Clinical Training 3 – Cardiac Physiology (30 credits)

or

Respiratory and Sleep Physiology

- Applying Respiratory and Sleep Physiology to Practice (45 credits)
- Research Project in Respiratory or Sleep Physiology (30 credits)
- Clinical Training 3 – Respiratory and Sleep Physiology (30 credits)

Work-Based Training

Structured clinical placements focusing on competence-based training and assessment are an integral part of the BSc Healthcare Science programme. In Year 1 apprentices will complete a minimum of 9 weeks' work-based training and 1 weeks' SGUL-based skills training, gaining experience in both Cardiac Physiology and Respiratory and Sleep Physiology. Work-based training in Years 2 and 3 will comprise approximately 15 and 25 weeks respectively and the students' placements will be within their selected specialist discipline.

Progression

Apprentices must normally pass all Year 1 modules to progress from Year 1 to Year 2 and must normally pass all Year 2 modules to progress from Year 2 to Year 3. Apprentices must pass all Year 3 modules for which they are enrolled to graduate with BSc Honours Healthcare Science. Normally, all modules in a programme year must be passed before the following programme year is commenced. The Apprentice must also complete and End point assessment within their final year of the programme.

Intermediate Awards

Intermediate awards shall only be given to apprentices who cease to be registered on the BSc Hons Healthcare Science programme (that is to say, they are exit qualifications, not qualifications that students will automatically get en route to the BSc (Hons) Healthcare Science).

Apprentices who have successfully completed all modules of the first year of the programme for BSc (Hons) Healthcare Science shall be eligible for the SGUL award of Undergraduate Certificate in Healthcare Science.

Apprentices who have successfully completed all modules of the first two years of the programme for BSc (Hons) Healthcare Science shall be eligible for the SGUL award of Undergraduate Diploma in Healthcare Science.

Programme reference points
QAA benchmark statement for Biosciences;
QAA qualifications framework for England, Wales and Northern Ireland.
HPC Standards of Education and Training
Department of Health's 'Modernising Scientific Careers' indicative curriculum documentation for Healthcare Science (Physiological Sciences pathway)
The Registration Council for Clinical Physiologists Accreditation Standards
Health Education England, Healthcare Science Implementation Network Group, Education and Training Standards

The description of the structure of the programme, including the lists of modules, is indicative and should not be regarded as full and definitive. For up-to-date information, see the Canvas Course Homepage.

F	**General teaching and learning strategies**

The teaching and learning strategies of the Healthcare Science programme are designed to encourage apprentices to move from some degree of dependence towards greater self-direction; students will be encouraged to develop insight into their own learning styles and thus to become responsible for their own learning and professional development. Personal development and lifelong learning will be encouraged through academic study, work-based practice, pastoral support from the Personal Tutor, development of the knowledge and skills for reflective practice, and the encouragement of self-directed learning activities.

The diversity of subjects covered within the programme is managed by the integration and sequencing of topics throughout the course ensuring that the apprentices develop a wide perspective on the role of Healthcare Science Practitioners in the NHS. During the early stages of the course students have the opportunity for inter-professional learning experiences; this fosters the necessary principles behind team working in the provision of healthcare and learning that is compatible with a range of other healthcare disciplines. Apprentices also encounter a large volume of information appropriate to understanding the foundations of healthcare science. As the course progresses apprentices must learn to build on their acquired knowledge to be able to select and apply appropriate practical techniques involved in the diagnosis of human pathology and be able to critically analyse and interpret scientific and clinical data.

Apprentices will encounter a wide range of teaching and learning strategies appropriate to the learning context. Combining these strategies during the course will enable apprentices to develop an investigative, independent, and individualised approach to learning. It will also lay the foundation for further studies and research within continuing education. The course therefore sets out to ensure that the student learns actively and effectively.

G	Assessment

The assessment strategies for the programme modules have been designed to demonstrate that the aims and learning outcomes of each module are achieved and reflect the teaching and learning strategies employed in the delivery of the module. Since the course combines academic rigor closely allied to practical competencies the assessment methods effectively reflect factors that lie at the foundation of the discipline; this includes knowledge, analysis and decision making, safety and accuracy, and research methodology.

Assessment will be by a combination of academic coursework and examinations, on-going work-based placement assessment and a research project in the final year. Apprentices will receive a single percentage mark for each module that they complete at each level. Summative assessments from all years of the programme will contribute to the final degree classification.

A range of assessment approaches will be used, and these may include essays; posters; student presentations; work-based placement portfolio; work-based placement competency assessments; literature review; research project; OSCE examinations and written examinations which may incorporate essays, SBAs and SAQs.

H	Support for students and their learning

In addition to its staff resources, St George's has a wealth of teaching and research laboratories, an extensive computer network, a large library and well-equipped computer classrooms, specialized workshops and efficient academic service facilities. As a college of the University of London, St George’s apprentices also have access to University of London central student support facilities, Senate House library and the libraries of other University of London colleges.

The library at St George’s, University of London, houses over 40,000 books and audio-visual items, 10,000 journal subscriptions, and has over 250 reader seats (divided into silent and group study areas) plus over 100 computer workstations. A dedicated liaison librarian works with staff and students studying biosciences to ensure that the stock and facilities are appropriate for the needs of students and teachers.

The area has WiFi throughout as well as some desks with fixed data points (ethernet cables to connect laptop directly to the network rather than using WiFi). Power sockets are available, and several laptops are available for loan on an hourly basis. During term time the library is open 24 hours from 08.00 Monday to 21.00 Saturday, and 09.00 to 21.00 on Sundays.

All students receive an introduction to the library and how to access print and electronic resources as part of the enrolment and induction activities in Semester 1. The library also provides training sessions for both information literacy and Microsoft Office applications. Use of any specialised software packages will be covered as part of modular teaching.

Students can use their SGUL username and password to gain access to electronic resources (such as online databases and peer reviewed journals), the University Intranet and VLE (Canvas) both on campus and off-site. Several areas within SGUL have WIFI connectivity.

Within their first week at St George's, students take part in an induction programme to help their orientation; this includes introductions to inter-professional learning, use of the Dissecting Room and general study methods. There are also induction sessions concerning the Registry, the Student Union, the Personal Tutor system, Safety and Occupational Health and Sexual Health Awareness.

Most lecturers provide slides and Panopto recordings for their teaching sessions which are made available to students via the virtual learning environment, Canvas.

The Vice-President of the Students' Union and the Vice-Principal (Education) have overall responsibility for non-academic student welfare. In addition, all students have personal tutors who provide pastoral care as well as academic advice. There is also a Counsellor service which provides completely confidential help for students with problems. The Staff/Student Health Service, headed by a consultant, provides a full healthcare service for students, administers health questionnaires which are sent to students before arrival at St George's, and ensures that all students are given appropriate immunisations and health checks.

I	**Criteria for admissions**

The standard entry criteria are as follows:

Five GCSEs graded C(4) or above which must include English Language, Mathematics and Science

AND

Three A levels with minimum grades of BBB to include Biology and at least one other science subject or math's

AND

Evidence of work experience (voluntary or paid) in a healthcare or community setting.

IN ADDITION

Applicants offered a place on the programme will be required to clear relevant Occupational Health and Disclosure & Barring Service (DBS) checks

Alternative qualifications

Alternative equivalent entry qualifications, including the International Baccalaureate, will also be considered. The BSc Hons Healthcare Science Admissions Tutor and Course Team will seek advice and guidance from the Admissions Department and the Undergraduate Admissions Advisory Group. Alternative qualifications must be attained at a level equivalent to NQF Level 3 and incorporate teaching and assessment in Biology at a breadth and depth comparable to A2 level. International and EU qualifications will be assessed using National Academic Recognition Information Centre (NARIC) and UCAS Overseas Qualifications manual.

English Language qualifications

All applicants must hold English Language GCSE at grade C or above. Alternatively, applicants should have achieved an overall score of at least 7.0 in IELTS (International English Language Testing System) with each individual skills section scoring at least 6.0.

Initial Needs Assessments

Candidates able to show evidence of a prior qualification containing elements substantially similar to those within the BSc Hons Healthcare Science degree may be exempted from not more than one third of the course of study and examinations leading to the degree.

Candidates who have completed 120 credits at level 4 on a relevant, comparable course within the last five years may present a claim to advanced standing to enter Year 2 (level 5) directly. Candidates seeking exemption from Year 1 (level 4) will be required to present evidence of qualifications and practical experience which demonstrates sufficiently comparable coverage of Year 1 academic content and clinical competencies. Candidates may be required to undertake a short entry examination to demonstrate basic clinical competencies.

J	**Career opportunities**

The BSc Healthcare Science programme is designed to meet the needs of the Department of Health's Modernising Scientific Careers (MSC) programme in respect of the education and training of Healthcare Science Practitioners in the Physiological Sciences division, covering the specialist disciplines of Cardiac Physiology and Respiratory and Sleep Physiology. The programme combines a rigorous and modern academic course with practical work-based clinical training in an intense three-year period.

Graduates of the BSc Hons Healthcare Science degree are equipped for direct entry as Healthcare Science Practitioners into the Career Framework for Healthcare Scientists in the NHS. Opportunities for career progression within the NHS exist through professional practice and development into Senior Healthcare Science Practitioner roles, as well as progression into management, education and training, or academic career pathways.

K	Methods for evaluating and improving the quality and standards of teaching and learning

A range of methods are employed to evaluate and improve the quality and standards of teaching and learning:

- The Course Committee meetings have standing agenda items on course progress where student representatives can raise any issues.
- Student feedback surveys are disseminated for each year of the programme. The content of these surveys is reviewed by the Course Committee.
- An annual programme monitoring report is prepared by the Course Director and approved by the Course Committee and the Undergraduate Medicine & Bioscience Education Committee.

- External Examiners' reports are reviewed by the Chair of Examiners and by the Exam Boards, as well as the Course Committee. Points requiring action are sent to the relevant members of academic or administrative or the Course Committee.
- The Chair of Examiners analyses the final degree marks annually, to monitor consistency between modules and years.
- Ongoing audit of clinical placement sites

Other methods:

- Staff appraisal against St George's criteria
- Teaching skills courses for staff
- Review of research activities of teaching staff

L	**Regulation of assessment**

The course complies with the General Regulations for Students and Programme of Study as devised by St George's, University of London.

Examinations are conducted according to the Schemes of Assessment for the BSc Healthcare Science programme.

M	**Indicators of quality and standards**

External review

- QAA Institutional Audit Report
- External Examiner reports
- Health Education England (Modernising Scientific Careers)
- Registration Council for Clinical Physiologists

Internal review

- Monitoring and responding to student feedback
- Feedback from clinical placement sites
- Monitoring of course content
- Regular analysis of student performance in assessments
- Annual analysis of student progression and final degree outcomes

Please note: This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical apprentice might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the Canvas Course Homepage .

Key sources of information are:
Canvas Course Homepage
The St George's, University of London prospectus
The St George's, University of London Intranet
SGUL General Regulations for Students and Programme of Study