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**Programme Specification**

**Title of Course: PGDip / MSc Perfusion Science**

**Date Specification Produced:** September 2016, for academic year 2016/17

**Date Specification Last Revised:** August 2022

This Programme Specification is designed for prospective students, current students, academic staff and potential employers. It provides a concise summary of the main features of the programme and the intended learning outcomes that a typical student 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 teaching, learning and assessment methods, learning outcomes and content of each module can be found in Student Handbooks and Module Descriptors.

**SECTION 1: GENERAL INFORMATION**

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| **Title:** | MSc Perfusion Science |
| **Awarding Institution:** | Kingston University |
| **Teaching Institution:** | NESCOT COLLEGE |
| **Location:** | Reigate Road, Ewell |
| **Programme Accredited by:** | Society of Clinical Perfusion Scientists of Great Britain and Ireland (SOPGI) |

**SECTION 2: THE PROGRAMME**

**Programme Introduction**

There is an increasing demand in the UK for professionally registered perfusion scientists who have successfully attended an appropriate recognised and accredited programme of study. There is currently only one such course available in the U.K., the M.Sc. degree course in Perfusion Science offered by Nescot. Over the last ten years, this course has been very successful in satisfying the demand for trained perfusionists

The term "perfusion" is derived from the French verb 'perfuse' meaning to 'pour over or through'. Perfusionists employ artificial blood pumps to propel open-heart surgery patients' blood through their body tissue, replacing the function of the heart while the cardiac surgeon operates.   When a patient's blood is continuously removed and returned through plastic tubing to allow health care professionals to perform an artificial organ function on the blood, it is called "extra-corporeal circulation (ECC)" - outside the body blood circulation.

Presently there are many "artificial organs" that can be placed in an ECC to substitute for a patient's failing organs, in a range of conditions from coronary artery disease, heart attacks, heart failure, heart valve disease, respiratory failure (smoker's lung), kidney failure and surgery to transplant hearts, lungs and kidneys. They can also be used to deliver chemotherapy drugs to cancer patients' organs and/or limbs via a cannula into the patient's blood stream. The Perfusionist controls the flow of blood through the ECC devices to help the physician treat the patient.

By combining different components, the Perfusionist uses his education and knowledge of anatomy, physiology, chemistry, physics and electronics to support the patient's life-functions during various surgical and life-support procedures.

The course has been designed to address both academic and professional needs by integrating academic knowledge and understanding with the needs of the working professional perfusion scientist and the demands of The Society of Perfusion Scientists of Great Britain and Ireland (SOPGI) for professional registration and accreditation. As a result, it is expected that all students on this course will have a substantive clinical post. Students who successfully complete the Postgraduate Diploma course in Perfusion Science receive professional accreditation and registration from SOPGI. This is subject to satisfactorily completing the prescribed amount of practical work and a *viva voce* conducted by representatives of SOPGI .

Students will be required to complete the Postgraduate Diploma in Perfusion Science for registration by SOPGI. Forthcoming legislation will probably require that all perfusionists are registered with the Health Professions Council (HPC).

The MSc course is planned as a taught two year part-time block release course followed by up to four years of a work-based period during which time a research project is completed. Students entering the course will have a good honours degree in Biological Sciences or its equivalent. It is intended that the Postgraduate Certificate course will normally be completed in one year, the Postgraduate Diploma in two years and the MSc in up to a further four years.

1. **Aims of the field/course**

* To ensure that the students possess comprehensive knowledge and skills in both the academic content of the subject and in the professional and vocational skills necessary for current and future employment in Perfusion Science.
* to provide the students with an intellectually challenging and satisfying programme of a standard appropriate to their academic development and professional needs.
* to develop the students’ abilities to master complex techniques by thoroughly understanding the principles that govern them and to apply these techniques in designing strategies to investigate problems.
* to develop the students’ judgement and problem solving skills and enhance their ability to critically evaluate data and formulate hypotheses.
* to provide the MSc students with the support and opportunities to organise and conduct a research project and to report their findings in an appropriate scientific manner.
* to advise and offer opportunities for students to develop the knowledge and skills that allow the pursuit of a career in a wide range of environments.
* to provide a structured and supportive environment for students who specialise in distinctive areas of Perfusion Science so that they may share their experiences to mutual benefit.
* to provide an up to date appreciation of the role and responsibilities of the Perfusion Scientist.
* to ensure a close and continuous partnership between the academic staff at Nescot and those responsible for training and education in the workplace.

1. **Intended Learning Outcomes**

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, skills and other attributes in the areas noted in the table below. There are no QAA benchmarks for this subject at level 7. The programme outcomes are referenced to the QAA Masters Degree Characteristics (March 2010) and to the Framework for Higher Education Qualifications in England, Wales and Northern Ireland (2008.

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| --- | --- | --- | --- | --- | --- | --- |
| **Programme Learning Outcomes** | | | | | | |
|  | **Knowledge and Understanding**  **On completion of the course students will be able to:** |  | **Intellectual skills – able to:**  **On completion of the course students will be able to:** | |  | **Subject Practical skills**  **On completion of the course students will be able to:** |
| A1 | Demonstrate an in depth knowledge and understanding of a range of topics within perfusion science | B1 | Demonstrate the ability to learn independently | | C1 | Demonstrate perfusion competence in the clinical situation of cardiac surgery |
| A2 | Locate, analyse and report on contemporary research publications both in text and electronic form | B2 | Apply subject knowledge and understanding to the clinical situation | | C2 | Demonstrate skills in the evaluation of clinical data |
| A3 | Apply theoretical knowledge in the clinical situation | B3 | Assemble, interpret and critically evaluate information and data from a variety of sources | | C3 | Plan and design experimental projects |
| A4 | Complete a novel research project | B4 | Critically evaluate and accurately present findings on an individual research project related to perfusion | | C4 |  |
|  | | | |  | | |

In addition to the programme learning outcomes identified overleaf, the programme of study defined in this programme specification will allow

students to develop a range of Key Skills as follows:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Key Skills** | | | | | | |
| **Self Awareness Skills** | **Communication Skills** | **Interpersonal Skills** | **Research and information Literacy Skills** | **Numeracy Skills** | **Management & Leadership Skills** | **Creativity and Problem Solving Skills** |
| Take responsibility for own learning and plan for and record own personal development | Express ideas clearly and unambiguously in writing and the spoken work | Work well with others in a group or team | Search for and select relevant sources of information | Collect data from primary and secondary sources and use appropriate methods to manipulate and analyse this data | Determine the scope of a task (or project) | Apply scientific and other knowledge to analyse and evaluate information and data and to find solutions to problems |
| Recognise own academic strengths and weaknesses, reflect on performance and progress and respond to feedback | Present, challenge and defend ideas and results effectively orally and in writing | Work flexibly and respond to change | Critically evaluate information and use it appropriately | Present and record data in appropriate formats | Identify resources needed to undertake the task (or project) and to schedule and manage the resources | Work with complex ideas and justify judgements made through effective use of evidence |
| Organise self effectively, agreeing and setting realistic targets, accessing support where appropriate and managing time to achieve targets | Actively listen and respond appropriately to ideas of others | Discuss and debate with others and make concession to reach agreement | Apply the ethical and legal requirements in both the access and use of information | Interpret and evaluate data to inform and justify arguments | Evidence ability to successfully complete and evaluate a task (or project), revising the plan where necessary |  |
| Work effectively with limited supervision in unfamiliar contexts |  | Give, accept and respond to constructive feedback | Accurately cite and reference information sources | Be aware of issues of selection, accuracy and uncertainty in the collection and analysis of data | Motivate and direct others to enable an effective contribution from all participants |  |
|  |  | Show sensitivity and respect for diverse values and beliefs | Use software and IT technology as appropriate |  |  |  |

1. **Entry Requirements**

The minimum entry qualifications for the programme are:

An honours degree or postgraduate degree in an appropriate scientific discipline. The qualification would normally be in a relevant biological science, but other subjects such as chemistry or physical science may be appropriate if accompanied by relevant clinical experience.

Applicants must be in employment in a clinical area as a perfusionist.

Applicants with qualifications that do not meet these requirements, but with significant professional experience, may also be considered. The university rules concerning APL and APPL will be applied.

A minimum IELTS score of 6.0, with no element being less than 5.5, is required for those for whom English is not their first language.

1. **Field/Course Structure**

This programme is offered in block release mode, and leads to the award of MSc Perfusion Science with the option of leaving early with either a PGCert in Perfusion Science or a PGDip in Perfusion Science. Intake is normally in September.

**E1. Professional Bodies**

The course is run with guidance from the professional body, The Society of Clinical Perfusion Scientists of Great Britain and Ireland (SOPGI).

**E2. Work-based learning, including sandwich programmes**

It is a requirement of the course that the students are employed as perfusionists. A students practical training is provided at their employer’s hospital and it is the employer who is responsible for all clinical training and clinical outcomes. This training is complemented by the academic learning supplied by the course at NESCOT.

**E3. Outline Programme Structure**

Each taught year contains two modules each worth 30 credit points. The minimum standard required by the professional body for accreditation is a PGDip which may be achieved at the end of year 2 after achieving 120 credits. The MSc is achieved by completing a project at the students’ place of work and achieving a total of 180 credits.

All students will be provided with the University regulations and specific additions that are required for accreditation by the professional body. Full details of each module will be provided in module descriptors and student module guides.

**Course Structure**

**Year 1**

Basic Perfusion equipment and techniques

PF7700

30 credits

MP1

Cardiopulmonary pathology and it’s investigation

PF7701

30 credits

MP2

**Year 2 Award on successful completion; Postgraduate Diploma in Perfusion Science**

Advanced perfusion techniques

PF7702

30 credits

Cardiothoracic and related pathologies

PF7703

30 credits

**Year 3 + Award on successful completion; M.Sc in perfusion science**

Experimental project PF7704,

or

Project Dissertation PF7705

60 credits

MP 5

(Work Based)

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Level 7 modules** | | | | | | | |  |
| **Compulsory modules** | **Module code** | **Credit**  **Value** | **Level** | **%**  **Written exam** | **% practical exam** | **%**  **course-work** | **Teaching Block** |  |
| Basic Perfusion equipment and techniques | PF7700 | 30 | 7 | 50 | 0 | 50 | Year 1 |  |
| Cardiopulmonary pathology and its investigation | PF7701 | 30 | 7 | 50 | 0 | 50 | Year 1 |  |
| Advanced perfusion techniques | PF7702 | 30 | 7 | 50 | 0 | 50 | Year 2 |  |
| Cardiothoracic and related pathologies | PF7703 | 30 | 7 | 50 | 0 | 50 | Year 2 |  |
| **Option modules** |  |  |  |  |  |  |  | **Pre-requisites** |
| Project | PF7704 | 60 | 7 |  |  | Thesis 100% | Years 3 - 6 | PF7700  PF7701  PF7702  PF7703 |
| Project Dissertation | PF7705 | 60 | 7 |  |  | Thesis 100% | Years 3 - 6 | PF7700  PF7701  PF7702  PF7703 |
| Students exiting the programme with 60 credits are eligible for the award of PgCert  Students exiting the programme with 120 credits are eligible for the award of PgDip | | | | | | | |  |

1. **Principles of Teaching Learning and Assessment**

Students on the MSc in Perfusion Science come from a wide variety of backgrounds, and all are likely to find the programme challenging for different reasons. These individual challenges, coupled with the higher demands of a postgraduate programme that is coupled with a clinical training regime, guide our teaching and assessment which are designed to ensure that students are given the best opportunity to learn effectively.

There are three Curriculum Design Principles, and these are linked to the teaching, learning and assessment strategies for the programme (see section C of this document) as follows:

* Assessment for learning designed at programme level with opportunities for feedback explicitly specified at the design stage
  + All assessments have been designed at level 7; students are encouraged to reflect on the link between intended learning outcomes and the requirements for each assessment, and ensure that they understand how they can meet these.
  + Feedback will enable the students to learn from each assessment experience, evaluate and feed-forward that learning to future assessments.
  + Students will receive feedback on all assessments; this will take a variety of forms and may be individual, group or generic and may be provided by teaching staff, peers (fellow students) or visiting experts. Peer assessment encourages students to take part in a key aspect of higher education: making critical judgements on the work of others. We thus bring together the values and practices of teaching with those of research, to develop learning.
* Research-led and research informed teaching with increased opportunities for postgraduate research and capstone projects
  + The Curriculum content is heavily research-led and research informed.
  + Modules incorporate opportunities to explore current developments in the field.
  + Teaching teams draw on the academic strengths and research interests of staff.
  + Many international known experts teach their specialities on the course
  + Students complete their MSc by conducting a research project.
* A robust, academically-led personal tutor system which helps to personalize students’ experience and track their academic development

The Research Project/Project Dissertation, which comprises one third of the programme, is designed as a ‘capstone’ project, and aims to give students the opportunity to use and synthesise the knowledge and skills they have acquired during their degree and is done at their place of work and should complement their clinical activity

1. **Support for Students and their Learning**

In order to assist students in achieving their learning outcomes a raft of initiatives is used to support postgraduate students in both academic and pastoral issues. These are summarised below, and include skills workshops that offer English language support, academic surgeries, detailed induction and orientation programmes at the start of the academic year, and subject-based conference style events.

Students are encouraged to discuss academic and pastoral concerns with their Course Leader, personal tutors and/or lecturers.

The Personal development Plan (PDP) has been designed to ease a student’s transition into postgraduate study by building a rapport between themselves and academic staff as soon as possible, so personalising their experience at NESCOT. They will meet with their personal tutor in every block release week.

The PDP aims;

* To provide appropriate academic advice and guidance to students throughout their time at NESCOT by monitoring their progress and helping to identify individual needs
* To foster a close and engaged academic relationship with students
* To help to develop students’ ability to be self-reliant and self-reflective and their ability to use feedback to best advantage
* To provide a link between curricular and co-curricular aspects of employability
* To provide, where appropriate, pastoral care

1. **Ensuring and Enhancing the Quality of the Course**

The University has several methods for evaluating and improving the quality and standards of its provision. These include:

* External examiners
* Boards of study with student representation
* Annual review and development
* Periodic review undertaken at the subject level
* Student evaluation
* Moderation policies
* Liaison with SOPGBI

1. **Employability Statement**

Preparation for work is an integral part of the MSc in Perfusion Science. The programme has been designed to enable students to develop their employability skills to support progression and success in a competitive economy.

The programme has been developed in consultation with the SOPGI. This enables workplace training to be embedded in the curriculum . Visiting speakers and workplace visits contribute to programme delivery.

The vocational aspect of the programme is emphasised in taught material, practical and presentations. These are complemented by the work based clinical logbook encourage self-reflection, skills profiling and supports each student in their personal development.

In addition to developing subject specific skills some modules place emphasis on developing the transferable skills essential to successful employment. This includes oral and written communication and presentation skills.

All students are already employed in a substantive post, mainly within the NHS . These posts are usually as trainee perfusionists. On completion of the PGDip part of the course, the student will usually be promoted into a level 7 position. However there is a national and international shortage of perfusionists . Employability is enhanced because of the international reputation of this qualification. Opportunity for promotion is greatly enhanced if the student completes the MSc.

1. **Approved Variants from the UMS/PCF**

There are no variations to the PCF

1. **Other sources of information that you may wish to consult**

**Development of Programme Learning Outcomes in Modules**

Achieving the PGDip in Perfusion Sciences is a requirement by The Society of Clinical Perfusion Scientists to attain professional status and entry to the register of The College of Clinical Perfusion Scientists. More information is available on their website www.scps.org.uk

This map identifies where the programme learning outcomes are assessed across the modules for this programme. It provides an aid to academic staff in understanding how individual modules contribute to the programme aims, and a means to help students monitor their own learning, personal and professional development as the programme progresses and a checklist for quality assurance purposes. Include both core and option modules.

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|  |  |  |  |  | **Level 7** | | | | |
|  | **Module Code** |  | PF7700 | PF7701 | PF7702 | PF7703 | PF7704 | PF7705 |
| **Programme Learning Outcomes** | **Knowledge & Understanding** | A1 | S | S | S | S | S | S |
| A2 | S | S | S | S | S | S |
| A3 | F | F | F | F | S | S |
| A4 |  |  |  |  | S | S |
| **Intellectual Skills** | B1 | F/S | F/S | F/S | F/S | S | S |
| B2 | F | F | F | F/S | S | S |
| B3 | F/S | F/S | F/S | F/S | S | S |
| B4 |  |  |  |  | S | S |
| **Practical Skills** | C1 | F | F | F | F |  |  |
| C2 | F/S | F/S | F/S | F/S |  |  |
| C3 | S | S | S | S | S | S |
|  |
| **Transferable Skills** | AK1 | F | F | F | F | F | F |
| AK2 | F | F | F | F | F | F |
| AK3 | F | F | F | F | F/S | F/S |
| AK4 | F | F | F | F | F/S | F/S |
|  | BK1 | F/S | F/S | F/S | F/S | F/S | F/S |
|  | BK2 | F/S | F/S | F/S | F/S | F/S | F/S |
|  | BK3 | F | F | F | F | F | F |
|  | CK1 | F | F | F | F | F | F |
|  | CK2 | F | F | F | F | F | F |
|  | CK3 | F | F | F | F | F | F |
|  | CK4 | F | F | F | F | F | F |
|  | CK5 | F | F | F | F | F | F |
|  | DK1 | S | S | S | S | S | S |
|  | DK2 | S | S | S | S | S | S |
|  | DK3 | S | S | S | S | S | S |
|  | DK4 | S | S | S | S | S | S |
|  | DK5 | S | S | S | S | S | S |
|  |  | EK1 | S | S | S | S | S | S |
|  |  | EK2 | S | S | S | S | S | S |
|  |  | EK3 | S | S | S | S | S | S |
|  |  | EK4 | S | S | S | S | S | S |
|  |  | FK1 | F | F | F | F | F | F |
|  |  | FK2 | S | S | S | S | S | S |
|  |  | FK3 | S | S | S | S | S | S |
|  |  | FK4 | F | F | F | F | F | F |
|  |  | GK1 | S | S | S | S | S | S |
|  |  | GK2 | S | S | S | S | S | S |

**S**  indicates where a summative assessment occurs.

**F** where formative assessment/feedback occurs.

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| **Course; MSc Perfusion** | | | | | **Coursework 1** | | | | **Coursework 2** | | | | **Coursework 3**  **Examination** | | | |
| **Level** | **Module Name** | **Module code** | **Credit value** | **Core/**  **option** | **Type of coursework** | **Word Length** | **Weighting %** | **S/F\*** | **Type of coursework** | **Word Length** | **Weighting %** | **S/F\*** | **Type of course work** | **Word length** | **Weighting %** | **S/F\*** |
| 7 | Basic Perfusion equipment | PF7700 | 30 | Core | 2 x Essay | 3000 + 2000 | 40 | S | 2 x Practical | 1000 | 10 | S | Written | 2 hours | 50 | S |
| 7 | Cardiopulmonary pathology | PF7701 | 30 | Core | 2 x essay (one with a presentation) | 2 x 2000 | 40 | S | Practical | 1000 | 10 | S | Written | 2 hours | 50 | S |
| 7 | Advanced perfusion techniques | PF7702 | 30 | Core | Presentation  And practical | N/A  1000 | 30 | S | Essay | 2000 | 20 | S | Written | 2 hours | 50 | S |
| 7 | Cardiothoracic and related pathologies | PF7703 | 30 | Core | 2 x Essay (one with a poster) | 2 x 2000 | 40 | S | Practical | 1000 | 10 | S | Written | 2 hours | 50 | S |
| 7 | Project | PF7704 | 60 | Core | Research Project | 20,000 | 100 | S |  |  |  |  |  |  |  |  |
| 7 | Project Dissertation | PF7705 | 60 | Core | project | 20,000 | 100 | S |  |  |  |  |  |  |  |  |

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| **Technical Annex** |  |
| **Final Award:** | **M.Sc. Perfusion Science** |
| **Intermediate Awards** | **PGDip Perfusion Science** |
| **Minimum period of registration** | **1 year** |
| **Maximum period of registration** | **6 years** |
| **FHEQ Level for the Final Award: Masters** | **7** |
| **QAA Subject Benchmark** | **N/A** |
| **Modes of Delivery** | **BLOCK RELEASE** |
| **Faculty** | **Health, Science, Social Care and Education** |
| **School:** | **Life Sciences, Pharmacy and Chemistry** |
| **JACS code:** |  |
| **UCAS Code:** |  |
| **Course Code** |  |
| **Route Code:** |  |

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|  | *This is the* [*Joint Academic Coding System*](http://www.qaa.ac.uk/WorkWithUs/Documents/jacs_codes.pdf) *(JACS) agreed jointly by UCAS and HESA.* |
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