MSc Cardiology

Programme Specification

1. Programme title	*MSc Cardiology* *PGDip Cardiology* *PGCert Cardiology*
2. Awarding institution	Middlesex University
3a. Teaching institution **3b. Language of study**	*Hendon* *English*
4a. Valid intake dates **4b. Mode of study**	*September* *Full time and Part time for each intake*
5. Professional/Statutory/Regulatory body	N/A
6. Apprenticeship Standard	N/A
7. Final qualification(s) available	*MSc Cardiology* *PGDip Cardiology* *PGCert Cardiology*
8. Year effective from	**2022/23**

9. Criteria for admission to the programme

Applicants for all programmes:

- Must have minimum 2:2 undergraduate degree in a science based subject
  or
- PGCert Cardiology for PGDip or MSc
  or
- PGDip Cardiology for MSc

Applicants with other qualifications and/or substantial work experience in Cardiac Physiology can be considered under the Recognition of Prior Learning (RPL) scheme. Past learning or experience will be mapped against existing programme modules within the programme and the mapping will be considered at the RPL board.

For the Clinical Practice module, some of part of the module professional requirements may be determined via RPL on an individual basis.

Credits from entry qualifications such as PGCert and PGDip will also be considered at the RPL board

The programmes are aimed at Cardiac Physiologists for clinical professional development, but applications from other healthcare professionals are also welcomed and will be assessed on an individual basis. This may include cardiac nurses, medical practitioners and radiographers working within cardiology.

Overseas Candidates should also be competent in English and have achieved, as a minimum, IELTS Overall 6.5 with a minimum 6.0 in each component – or an equivalent qualification

Applicants with a disability can enter the programme following assessment to determine if they can work safely in the laboratory. The programme team have experience of adapting teaching provision to accommodate a range of disabilities and welcome applications from students with disabilities.

10. Aims of the programme

The programme aims to prepare students for career progression in the field of Cardiology or careers in areas such as academia and medical research.

PGCert Cardiology aims to:

- Equip students with a mastery of the fundamental principles and recent advances in cardiology
- Give students a thorough grounding in the fundamental mechanisms underpinning the major pathological processes
- Provide students with sufficiently detailed information about the modern technologies used in diagnostics and research to enable them to solve complex problem related to disease investigation
- Allow students to develop mastery of communication, teamwork, writing and presentation.

In addition to the above, PGDip Cardiology aims to:

- Enable students to understand and apply the principles of leadership and management, health and safety, quality control, research and statistical methods in their professional lives.
- Enable students to critically evaluate legal requirements for human experiments and ethical issues relating to research with human subjects and human tissue.
- Provide students with the tools to acquire the essential facts, concepts, principles and theories relevant to their chosen research project.
- Give students the ability to critically evaluate current research literature in Cardiology, and an acquisition of the skills for lifelong learning

In further addition, the successful MSc Cardiology student will:

- Have acquired the design, critical analysis and practical skills necessary to carry out an individualised experimental research project
- Have developed the skills to evaluate literature in the context of their current research and propose new hypotheses relevant to their research

11. Programme outcomes*

A. Knowledge and understanding	Teaching/learning methods

On completion of this programme the successful student will have knowledge and understanding of : **PGCert/PGDip and MSc** 1. The aetiology and pathology of common cardiovascular diseases 2. The complexities of the cardiac conduction system 3. The pathology of cardiac valve disease and cardiomyopathies 4. Advanced cardiac imaging modalities used in modern cardiology **PGDip and MSc only** 5. Equipment, advanced diagnostic techniques and therapeutic interventions used in cardiology 6. The importance of calibration, safety testing, quality control and assurance procedures relating to physiological science services 7. The ethical and legal issues related to the collecting, handling and storing of data. 8. Research methods. 9. Clinical leadership and management **MSC Only** 10. Designing and conducting an original research project	Students gain knowledge and understanding through: • attending lectures • participatory seminars • small group discussions • directed learning • group and individual exercises • laboratory sessions **Assessment methods** Students' knowledge and understanding is assessed by: • seminar presentations • laboratory investigations • written assignments • unseen examinations • project work.
B. Skills On completion of this programme the successful student will be able to: **MSc/PGDip/PGCert** 1. Display mastery of the complex and specialised areas of knowledge and skills related to post graduate cardiology. 2. Critically assess cardiac disease processes through advanced technical or professional activity, accepting accountability for related decision making. 3. Debate ethical and legal issues in Cardiology. 4. Propose new hypotheses relevant to discipline.	**Teaching/learning methods** Students learn skills through: • lectures • group discussions • formative assessment • peer-review of seminar presentations • directed reading • individual project

5. Present, analyse and critically evaluate physiological data **MSc and PGDip only** 6. Design and develop a research project; present and critically evaluate the research findings. 7. Recognise and respond to moral, ethical and safety issues, which directly pertain to Cardiology 8. Critically assess health risk factors associated with working in a research or clinical setting 9. Demonstrate effective communication and presentation skills 10. Demonstrate leadership and managerial skills 11. Demonstrate competence in the use of information technology 12. Demonstrate numeracy and problem solving skills at a high level **MSc only** 13. Manage a research project and demonstrate a high level of research skills 14. Critically evaluate research findings in the context of the literature research	**Assessment methods** Students' skills are assessed by: • written assignments • peer and self-assessment • unseen examinations • case studies • research project

12. Programme structure (levels, modules, credits and progression requirements)
12. 1 Overall structure of the programme
• All programmes can be studied over either one-year full time or two years part time. • PgCert Cardiology (60 credits): o **Full-time** students will take the two 15-credit and one 30 credit specialist modules in one year. o **Part-time** students will normally take the two 15 credit modules in one year then the 30 credit module in the following year. The order in which this is done is the student's choice, but 30 credits must be undertaken in each year • PgDip Cardiology (120 credits): o **Full-time** students will take the four core modules at 15 credits each and the three specialist modules of 2x 15 credits and 1x 30 credits over one academic year. o **Part-time** students will take modules equating to 60 credits in each of the two years. o It is recommended that this be the 3 specialist modules of 2x 15 credits and 1x 30 credits in Year 1 and the 4 core modules of 15

credits each in Year 2. This recommendation will mean that should the student be unable to continue with study after Year 1, they will at least be awarded PGCert Cardiology.

- MSc Cardiology (180 credits):
    - **Full-time** students will take the four core modules at 15 credits each and the three specialist modules of 2x 15 credits and 1x 30 credits over one academic year.
    - Students will start their research project (60 credits) once all taught modules have been passed.
    - **Part-time** students will take modules equating to 60 credits in each of the two years.
    - It is recommended that this be the 3 specialist modules of 2x 15 credits and 1x 30 credits in Year 1 and the 4 core modules of 15 credits each in Year 2. This recommendation will mean that should the student be unable to continue with study after Year 1, they will at least be awarded PGCert Cardiology.
    - Students will undertake a research project worth 60 credits, once all taught modules have been passed.

PgDip/MSc Cardiology (Full-time) October Start

Term 1 (Autumn term - October)

BMS4887 Experimental Design and Statistics 15 credits	BMS4597 Cardiac Imaging and Diagnostics 15 credits	BMS4007 Cardiac Rhythm Management 15 credits	BMS4107 Cardiac Ultrasound 30 credits

Term 2 (Winter term - January)

BMS4477 Bioethics 15 credits	BMS4677 Leadership and Management 15 credits	BMS4067 Clinical Electrophysiology 15 credits

Term 3 (Summer - June) (MSc only)

BMS4997 Research Project 60 credits

PgDip/MSc Cardiology (Part-time) October Start

YEAR 1 – Specialist Modules **YEAR 2 – Core Modules**

Term 1 (Autumn term - October)

BMS4007
Cardiac Rhythm Management
15 credits

BMS4107
Cardiac Ultrasound
30 credits

Term 2
(Winter term - January)

BMS4067
Clinical Electrophysiology
15 credits

Term 1 (Autumn term - October)

BMS4887
Experimental Design and Statistics
15 credits

BMS4597
Cardiac Imaging and Diagnostics
15 credits

Term 2
(Winter term - January)

BMS4477
Bioethics
15 credits

BMS4677
Leadership and Management
15 credits

Term 3 (Summer - June) (MSc only)

BMS4997
Research Project
60 credits

PgCert Cardiology

Full-time: October start

Term 1
(Autumn term - October)

BMS4007
Cardiac Rhythm Management
15 credits

BMS4107
Cardiac Ultrasound
30 credits

Term 2
(Winter term - January)

BMS4067
Clinical Electrophysiology
15 credits

Part-time: October start

Students can choose order of modules taken, but 30 credits must be undertaken in each year

Year 1: Term 1
(Autumn Term – October)

BMS4007
Cardiac Rhythm Management
15 credits

Year 1: Term 2
(Winter term – January)

BMS4067
Clinical Electrophysiology
15 credits

Year 2: Terms 1&2

BMS4107
Cardiac Ultrasound
30 credits

The total number of credits required for each award is as follows:

PGCert Cardiology: 60 credits

PGDip Cardiology: 120 credits

MSc Cardiology: 180 credits

12.2 Levels and modules		
Level 7		
COMPULSORY	OPTIONAL	PROGRESSION REQUIREMENTS

All students must complete the 3 specialist modules in order to gain **PgCert Cardiology**: BMS4107 Cardiac Ultrasound BMS4007 Cardiac Rhythm Management BMS4067 Clinical Electrophysiology	There are no optional modules	All modules must be passed to exit with the PGCert Cardiology award. On passing all modules, students can opt to progress to PGDip Cardiology or MSc Cardiology
Level 7		
COMPULSORY	OPTIONAL	PROGRESSION REQUIREMENTS
All students must complete the following modules for **PgDip Cardiology**: **CORE MODULES** BMS4677 Leadership and Management BMS4477 Bioethics BMS4887 Experimental Design and Statistics BMS4597 Cardiac Imaging and Diagnostics **SPECIALIST MODULES** BMS4107 Cardiac Ultrasound BMS4007 Cardiac Rhythm Management BMS4067 Clinical Electrophysiology	There are no optional modules	All modules must be passed to exit with PGDip Cardiology award. On passing all modules, students can opt to progress to MSc Cardiology
Level 7		
COMPULSORY	OPTIONAL	PROGRESSION REQUIREMENTS
All students must complete the following modules for the **MSc Cardiology**: **CORE MODULES** BMS4677 Leadership and Management BMS4477 Bioethics BMS4887 Experimental Design and Statistics BMS4597 Cardiac Imaging and Diagnostics **SPECIALIST MODULES** BMS4107 Cardiac Ultrasound BMS4007 Cardiac Rhythm Management BMS4067 Clinical Electrophysiology BMS4997 Research Project	There are no optional modules	Students must pass all taught models before they can progress onto the project stage. Progression onto the project stage is not compulsory and students can opt to exit with PGDip Cardiology award Students must pass the project module to exit with MSc Cardiology award.

12.3 Non-compensatable modules	
Module level	**Module code**
7	There are no compensatable modules

13. Information about assessment regulations

This programme will run in line with general University Regulations:

https://www.mdx.ac.uk/__data/assets/pdf_file/0040/577687/Regulations-2020-21.pdf

14. Placement opportunities, requirements and support (if applicable)

Not applicable – there are no placement opportunities with this programme

15. Future careers / progression

Successful MSc students will be equipped to progress to PhD programmes in cardiology or specialised areas such as cardiac rhythm management, electrophysiology and cardiac ultrasound.

The programme is designed to help practitioner students with clinical professional development, in specialist areas such as cardiac rhythm management, electrophysiology and cardiac ultrasound. For those that work in the NHS a master's degree is also an important means for health care professionals to develop skills necessary to progress from practitioner to highly skilled practitioner and beyond Band 7 into senior management.

Other possible careers, particularly for those that are not employed in the NHS, include working as a cardiac researcher in academia, private sector biotechnology, or the pharmaceutical sector.

16. Particular support for learning (if applicable)

Specialist laboratory facilities equipped with professional standard software and hardware. Students have access to the online platform Epicardio© to assist with developing practical skills, knowledge and understanding in ECG, cardiac rhythm management and electrophysiology. They also have access to HP Vivid *i* cardiac ultrasound machines using real time imagery to develop assessment skills of findings in practical workshops.

Students employed in the sector may undertake a research project at their workplace where relevant and possible, such as a service improvement audit, or take a role in an existing research project. For those students not employed in the sector, a systematic review style project will be undertaken.

Middlesex University Library will provide access to specialist journals. For ease of access for students based at Hendon, the library has facilities for inter-library photocopying of any articles required. Other articles may be obtained from the British Library in London where a similar arrangement for photocopying articles exists.

Learning resources and other support for modules is delivered via myUniHub

The Learner Enhancement Team (LET) can provide one-to-one tutorials and workshops for those students needing additional support with literacy and numeracy.

Self-service laptops are available for loan for a maximum of 24 hours

Disability and Dyslexia Service aims to provide an inclusive teaching and learning environment which caters for all students.

17. JACS code (or other relevant coding system)	Cardiology B810
18. Relevant QAA subject benchmark(s)	There is no relevant benchmark for this subject

19. Reference points

Internal documentation

Middlesex University (2019) *Middlesex University Regulations.* London, MU
Middlesex University (2019) *Learning and Quality Enhancement Handbook.* London, MU
Middlesex University (2019) *Medical Science and Technology Learning, Teaching and Assessment Strategy*. S&T

External documentation

Quality Assurance Agency (2008) *Framework for Higher Qualification.* London, QAA
Quality Assurance Agency (2015) Characteristics Statement. Master's Degree. London, QAA
Department of Health (DH) (2016) *Modernising Scientific Careers. Scientist Training Programme MSc in Clinical Science Curriculum. Cardiac, Critical Care, Vascular, Respiratory and Sleep Sciences2016/17.* DH

20. Other information

Please note programme specifications provide a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve if s/he takes full advantage of the learning opportunities that are provided. More detailed information about the programme can be found in the rest of your programme handbook and the university regulations.

Curriculum map for MSc Cardiology

This section shows the highest level at which programme outcomes are to be achieved by all graduates, and maps programme learning outcomes against the modules in which they are assessed.

Programme learning outcomes

Knowledge and understanding	
A1	The aetiology and pathology of common cardiovascular diseases
A2	The complexities of the cardiac conduction system
A3	The pathology of cardiac valve disease and cardiomyopathies
A4	Advanced cardiac imaging modalities used in modern cardiology
A5	Equipment, advanced diagnostic techniques and therapeutic interventions used in cardiology
A6	The importance of calibration, safety testing, quality control and assurance procedures relating to physiological science services
A7	The ethical and legal issues related to the collecting, handling and storing of data
A8	Research methods.
A9	Clinical leadership and management
A10	Designing and conducting an original research project
Skills	
B1	Display mastery of the complex and specialised areas of knowledge and skills related to post graduate cardiology
B2	Critically assess cardiac disease processes through advanced technical or professional activity, accepting accountability for related decision making
B3	Debate ethical and legal issues in Cardiology
B4	Propose new hypotheses relevant to discipline
B5	Present, analyse and critically evaluate physiological data
B6	Design and develop a research project; present and critically evaluate the research findings
B7	Recognise and respond to moral, ethical and safety issues, which directly pertain to Cardiology
B8	Critically assess health risk factors associated with working in a research or clinical setting
B9	Demonstrate effective communication and presentation skills
B10	Demonstrate leadership and managerial skills
B11	Demonstrate competence in the use of information technology
B12	Demonstrate numeracy and problem solving skills at a high level
B13	Manage a research project and demonstrate a high level of research skills
B14	Critically evaluate research findings in the context of the literature research

Programme outcomes																							
A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14
Highest level achieved by all graduates																							
7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7

MSc Cardiology																									
Module Title	Module Code by Level	Programme Outcomes																							
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14
Leadership and Management	BMS4677									x				x				x	x	x	x				
Bioethics	BMS4477							x						x				x							
Experimental Design and Statistics	BMS4887						x		x						x	x	x	x		x		x	x	x	
Research Project	BMS4997							x	x		x				x	x	x	x	x	x			x	x	x
Cardiac Imaging and Diagnostics	BMS4597	x			x	x	x	x					x	x	x	x				x		x	x		
Cardiac Rhythm Management	BMS4007	x	x			x	x	x				x	x	x	x	x				x		x	x		
Clinical Electrophysiology	BMS4067	x	x			x	x	x				x	x	x	x	x				x		x	x		
Cardiac Ultrasound	BMS4107	x		x		x	x	x				x	x	x	x	x				x		x	x		

PGDip Cardiology																							
Module Title	Module Code by Level	Programme Outcomes																					
		A1	A2	A3	A4	A5	A6	A7	A8	A9	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	
Leadership and Management	BMS4677									x			x				x	x	x	x			
Bioethics	BMS4477							x					x				x						
Experimental Design and Statistics	BMS4887						x		x					x	x	x	x		x		x	x	
Cardiac Imaging and Diagnostics	BMS4597	x			x	x	x	x				x	x	x	x				x		x	x	
Cardiac Rhythm Management	BMS4007	x	x			x	x	x			x	x	x	x	x				x		x	x	
Clinical Electrophysiology	BMS4067	x	x			x	x	x			x	x	x	x	x				x		x	x	
Cardiac Ultrasound	BMS4107	x		x		x	x	x			x	x	x	x	x				x		x	x	

PGCert Cardiology											
Module Title	Module Code by Level	Programme Outcomes									
		A1	A2	A3	A4	A5	B1	B2	B3	B4	B5
Cardiac Rhythm Management	BMS4007	x	x			x	x	x	x	x	x
Clinical Electrophysiology	BMS4067	x	x			x	x	x	x	x	x
Cardiac Ultrasound	BMS4107	x		x	x	x	x	x	x	x	x