

MSc Cardiology

Programme Specification



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| 1. Programme title | MSc Cardiology |
| 2. Awarding institution | Middlesex University |
| 3a. Teaching institution | Hendon |
| 3b. Language of study | English |
| 4a. Valid intake dates | September |
| 4b. Mode of study | 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 | 2024/25 |

9. Criteria for admission to the programme

Applicants:

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

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.

The programme 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.
- 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
- Equip students with the design, critical analysis and practical skills necessary to carry out an individualised experimental research project
- Allow students to develop the skills to evaluate literature in the context of their current research and propose new hypotheses relevant to their research

| 11. Programme outcomes* | |
|--|---|
| <p>A. Knowledge and understanding On completion of this programme the successful student will have knowledge and understanding of :</p> <p>PGCert/PGDip and MSc</p> <ol style="list-style-type: none"> 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 <p>PGDip and MSc only</p> <ol style="list-style-type: none"> 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 <p>MSC Only</p> <ol style="list-style-type: none"> 10. Designing and conducting an original research project | <p>Teaching/learning methods Students gain knowledge and understanding through:</p> <ul style="list-style-type: none"> • attending lectures • participatory seminars • small group discussions • directed learning • group and individual exercises • laboratory sessions <p>Assessment methods Students' knowledge and understanding is assessed by:</p> <ul style="list-style-type: none"> • seminar presentations • laboratory investigations • written assignments • unseen examinations • project work. |
| <p>B. Skills On completion of this programme the successful student will be able to:</p> <p>MSc/PGDip/PGCert</p> <ol style="list-style-type: none"> 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. | <p>Teaching/learning methods Students learn skills through:</p> <ul style="list-style-type: none"> • lectures • group discussions • formative assessment • peer-review of seminar presentations • directed reading • individual project <p>Assessment methods Students' skills are assessed by:</p> |

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|--|--|
| <ol style="list-style-type: none"> 3. Debate ethical and legal issues in Cardiology. 4. Propose new hypotheses relevant to discipline. 5. Present, analyse and critically evaluate physiological data <p>MSc and PGDip only</p> <ol style="list-style-type: none"> 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 <p>MSc only</p> <ol style="list-style-type: none"> 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 | <ul style="list-style-type: none"> • written assignments • peer and self-assessment • unseen examinations • case studies • research project |
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12. Programme structure (levels, modules, credits and progression requirements)

12. 1 Overall structure of the programme

The programme can be studied over either one-year full time or two years part time.

- PgCert Cardiology (60 credits):
 - **Full-time** students will take the two 15-credit and one 30 credit specialist modules in one year.
 - **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):
 - **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.

- **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.
- **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.

MSc Cardiology (Full-time) October Start

| Term 1 (Autumn term - October) | Term 2 (Winter term - January) | Term 3 (Summer - June) |
|---|---|--|
| BMS4887 Experimental Design and Statistics 15 credits | BMS4477 Bioethics 15 credits | BMS4997 Research Project 60 credits |
| BMS4597 Cardiac Imaging and Diagnostics 15 credits | BMS4677 Leadership and Management 15 credits | |
| BMS4007 Cardiac Rhythm Management 15 credits | BMS4067 Clinical Electrophysiology 15 credits | |
| BMS4107 Cardiac Ultrasound 30 credits | | |

MSc Cardiology (Part-time) October Start

YEAR 1 – Specialist Modules

| Term 1 (Autumn term - October) | Term 2 (Winter term - January) |
|--|---|
| BMS4007 Cardiac Rhythm Management 15 credits | BMS4067 Clinical Electrophysiology 15 credits |
| BMS4107 Cardiac Ultrasound 30 credits | |

YEAR 2 – Core Modules

| Term 1 (Autumn term - October) | Term 2 (Winter term - January) | Term 3 (Summer - June) |
|--|--|--|
| BMS4887 Experimental Design and Statistics 15 credits | BMS4477 Bioethics 15 credits | BMS4997 Research Project 60 credits |
| BMS4597 Cardiac Imaging and Diagnostics 15 credits | BMS4677 Leadership and Management 15 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 |
|--|--------------------------------------|---|
| <p>All students must complete the 3 specialist modules in order to gain PgCert Cardiology:</p> <p>BMS4107 Cardiac Ultrasound BMS4007 Cardiac Rhythm Management BMS4067 Clinical Electrophysiology</p> | <p>There are no optional modules</p> | <p>All modules must be passed to exit with the PGCert Cardiology award.</p> <p>On passing all modules, students can opt to progress to PGDip Cardiology or MSc Cardiology</p> |

| Level 7 | | |
|---|-------------------------------|--|
| COMPULSORY | OPTIONAL | PROGRESSION REQUIREMENTS |
| <p>All students must complete the following modules for PgDip Cardiology:</p> <p>CORE MODULES</p> <p>BMS4677 Leadership and Management BMS4477 Bioethics BMS4887 Experimental Design and Statistics BMS4597 Cardiac Imaging and Diagnostics</p> <p>SPECIALIST MODULES</p> <p>BMS4107 Cardiac Ultrasound BMS4007 Cardiac Rhythm Management BMS4067 Clinical Electrophysiology</p> | There are no optional modules | <p>All modules must be passed to exit with PGDip Cardiology award.</p> <p>On passing all modules, students can opt to progress to MSc Cardiology</p> |

| Level 7 | | |
|---|-------------------------------|--|
| COMPULSORY | OPTIONAL | PROGRESSION REQUIREMENTS |
| <p>All students must complete the following modules for the MSc Cardiology:</p> <p>CORE MODULES</p> <p>BMS4677 Leadership and Management BMS4477 Bioethics BMS4887 Experimental Design and Statistics BMS4597 Cardiac Imaging and Diagnostics</p> <p>SPECIALIST MODULES</p> <p>BMS4107 Cardiac Ultrasound BMS4007 Cardiac Rhythm Management BMS4067 Clinical Electrophysiology</p> <p>BMS4997 Research Project</p> | There are no optional modules | <p>Students must pass all taught modules before they can progress onto the project stage.</p> <p>Progression onto the project stage is not compulsory and students can opt to exit with PGDip Cardiology award</p> <p>Students must pass the project module to exit with MSc Cardiology award.</p> |

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

| 13. Information about assessment regulations |
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| <p>This programme will run in line with general University Regulations:</p> <p>https://www.mdx.ac.uk/_data/assets/pdf_file/0040/577687/Regulations-2020-21.pdf</p> |

| 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.

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| 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 Sciences 2016/17*. 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 | |
| | | | | | | | | | | | | | | | | | | | | | | | |
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| 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 |