

## **BSc (Hons) Healthcare Science (Cardiac Physiology)**

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### **Programme Specification**

<b>1.</b>	<b>Programme title</b>	BSc (Hons) Healthcare Science (Cardiac Physiology)
<b>2.</b>	<b>Awarding institution</b>	Middlesex University
<b>3a</b>	<b>Teaching institution</b>	Middlesex University
<b>3b</b>	<b>Language of study</b>	English
<b>4a</b>	<b>Valid intake dates</b>	September
<b>4b</b>	<b>Mode of study</b>	Full-time only
<b>4c</b>	<b>Delivery method</b>	<input checked="" type="checkbox"/> On-campus/Blended <input type="checkbox"/> Distance Education
<b>5.</b>	<b>Professional/Statutory/Regulatory body</b>	National School for Healthcare Science
<b>6.</b>	<b>Apprenticeship Standard</b>	N/A
<b>7.</b>	<b>Final qualification(s) available</b>	BSc (Hons) Healthcare Science (Cardiac Physiology) BSc Health Studies CertHE Healthcare Science DipHE Healthcare Science
<b>8.</b>	<b>Academic year effective from</b>	2024/2025

## 9. Criteria for admission to the programme

Candidates normally require English and Maths equivalent to at least GCSE grade 4 or equivalent such as an IELTS score band 7.0 (depending on NHS requirements at time of application) plus a minimum of 120 UCAS points achieved from the following awards or equivalent:

- A-levels (including two A2s with at least one science subject, preferably in biology or chemistry at grade C or better, plus those with Practical Endorsement)
- 2x AVCEs or one double award in science
- Or BTEC National Diploma or Certificate in biology, chemistry, forensic science, laboratory and industrial science, or medical science
- Or Access course in applied science, clinical physiology, human or life sciences, medical or paramedical science, or science.
- Or high school equivalent, such as an International Baccalaureate

The programme is open to applicants with diverse educational backgrounds, allowing them to claim entry based on prior certified learning or experiential learning. However, those seeking advanced standing through the RPL process must have completed or partly completed a comparable programme at another HEI and must provide evidence of their achievements in that programme. This approach recognises and values both formal education and practical experience in the admission process.

All candidates are invited to interview prior to receiving an offer, which involves a full day on campus, combining an Open Day and Taster Day with the interview, providing candidates with an experience of the programme teaching strategy and facilities, plus the opportunity to speak with current students. This early session is followed by a group interview in which candidates discuss healthcare scenarios provided by the interview team. By combining these elements, the interview process provides a comprehensive understanding of each candidate's suitability for the programme and healthcare, ensuring that not only their skills and knowledge are assessed but also their ability to integrate into the programme's culture and effectively communicate in a healthcare setting.

The programme has clear requirements for Disclosure Barring Service (DBS) checks and health clearances, ensuring that students are fit for placement. The programme covers the cost of these checks, and there's a provision for students who may face challenges in obtaining clearances to discuss their options with the programme team.

## 10. Aims of the programme

The programme aims to:

- Develop knowledge, skills, attitude, and ethical values for providing patient-centred care while ensuring safety. The emphasis is on holistic development, incorporating not only technical skills but also cultivating a patient-focused mindset and ethical values.
- Apply scientific principles and theories in healthcare science to patient care, integrating theoretical knowledge with practical application is crucial, emphasising the relevance of scientific principles to the day-to-day responsibilities of a Cardiac Physiologist.

- Equip students to competently perform diagnostic and therapeutic cardiac physiology investigations. The programme aims to provide hands-on training and practical skills necessary for students to excel in their role as Healthcare Science Practitioners specialising in cardiac physiology.
- Apply scientific methods and approaches to research, development, and innovation in healthcare science. Fostering a research-oriented mindset indicates a commitment to staying current with advancements in the field and encouraging students to contribute to the growth and improvement of healthcare science practices.
- Develop graduate competencies for effective life-long learning, communication, team working, and leadership. Recognising the importance of skills beyond technical expertise, the programme aims to instil qualities such as communication, teamwork, and leadership, which are essential for a successful and fulfilling career.

## **11. Programme outcomes**

### **A. Knowledge and understanding**

On completion of this programme the successful student will have a knowledge and understanding of:

1. Skills and attitude required to work as a Cardiac Physiologist
2. Normal and abnormal human physiology
3. The principles of diagnosis and management of human disease
4. The sciences underpinning quality healthcare
5. The importance of scientific research in the advancement of healthcare practice
6. The role and skills required by the cardiac physiology practitioner in the delivery and monitoring of diagnostic and therapeutic investigations
7. The role of the Healthcare Science practitioner and skills required for service improvement, as indicated by the Academy of Healthcare Science.

### **Teaching/learning methods**

Students gain knowledge and understanding through bite sized videos covering threshold concepts, seminars, laboratory classes, peer presentations, debates, placements in clinical physiology departments, designing and undertaking a research project, role play and practical clinical sessions.

Experiential learning includes clinical practice and the research project. These skills are consolidated with reading, group work, problem-based learning exercises, structured and directed learning, analysis of case studies, through reflection, placement and development of portfolio material.

### **Assessment Method**

Students' knowledge and understanding is assessed by summative and formative assessment, including peer presentations, laboratory reports, objective-structured practical examinations, online quizzes, unseen theory examinations and assessment of clinical practice.

### **B. Skills**

On completion of this programme the successful student will be able to:

1. Formulate ideas through the evaluation of appropriate research evidence, scientific concepts, principles, or review of previous experience (4)
2. Generate, analyse, and critically evaluate scientific information and data using the most appropriate technology (4,7,8)
3. Appraise and synthesise evidence-based information to gain new insights into aspects of current clinical practice (4)
4. Reflect on own learning and practice to develop personally and professionally (6)
5. Communicate their ideas or information effectively to both scientific and non-scientific audience using a variety of media – the latter should include patients, relatives carers and colleagues.
6. Propose, design and carry out an ethical research project or clinical audit (1-8)
7. Perform a wide range of clinical procedures competently, and in accordance with health and safety guidelines (4)
8. Work within scope of practice and professional codes of conduct (as specified by the PSRB requirements) (3,4)
9. Work both collaboratively, with an appreciation of skills required for leadership, to solve complex real-world problems (1,5)
10. Demonstrate an autonomous and reflective approach to lifelong learning (2)
11. Formulate learning and career development plans (1)
12. Use a range of information technologies (7)
13. Demonstrate a high level of numeracy, research and problem-solving skills (8)

### **Teaching/learning methods**

Students learn skills through a variety of methods:

Cognitive skills are developed through bite size videos, seminars, discussions, peer presentations, research projects, and problem-solving exercises.

Practical skills are developed through laboratory practical classes, virtual labs / video demonstrations and undertaking research projects.

These skills are consolidated by reading, group work, problem-based learning exercises, structured and directed learning, analysis of case studies, through reflection, clinical practice and development of a portfolio of evidence of clinical practice

### **Assessment Method**

Students' skills are assessed via formative and summative assessment through written work, practical examinations, online quizzes, case studies, peer presentations and assessment of clinical practice in the workplace.

Written work includes laboratory reports and research findings, with clinical skills also assessed in the workplace compiling a portfolio of clinical practice. Additionally, placement assessment requires case study presentation (using a range of visual aids) which incorporates data analysis, interpretation and reflective practice.

The above learning, teaching and assessment will be designed to develop and assess these graduate competencies:

1. Leadership and Influence
2. Entrepreneurship
3. Communication, Empathy and Inclusion
4. Curiosity and Learning
5. Collaborative Innovation
6. Resilience and Adaptability
7. Technological Agility
8. Problem Solving and Delivery

## 12. Programme structure (levels, modules, credits and progression requirements)

### 12.1 Structure of the programme

#### The professional practice modules incorporate the clinical practice and assessment:

Year 1: BMS1084

includes **10 weeks** of clinical practice starting in Semester 2

Year 2: BMS2015

includes **15 weeks** of clinical practice starting at the end of Semester 2

Year 3: BMS3236

Includes **25 weeks** of clinical practice on placement.

Provision of a Programme Planner covering all 3 years, provides a structured and organised approach to the cohort's academic and clinical experiences. Emphasis on adhering to placement periods, attendance, allowances for extenuating circumstances, and the proactive communication approach with the Programme Leader demonstrates commitment to both a well-structured educational programme and individualised support for students facing challenges.

### Overall structure of the programme

#### Year 1

BMS1064 Specialist Diagnostics (30 Credits) Semester 1	BMS1074 Clinical Anatomy and Physiology (30 Credits) Semester 1	BMS1084 Professional Practice (30 Credits) Semester 2	BMS1014 Biological Basis of Healthcare (30 Credits) Semester 2	EXIT POINT: Pass all year 1 modules: CertHE Healthcare Science
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#### Year 2

BMS2445 Cardiovascular and Respiratory Conditions (30 Credits) Semester 1	BMS2285 Applied Cardiac Physiology (30 Credits) Semester 1	BMS2015 Research Methods and Professional Practice (30 Credits) Semester 2	BMS2295 Exercise Tolerance Testing (15 Credits) Semester 2	BMS2625 Medical Instrumentation and Imaging (15 Credits) Semester 2	EXIT POINT: Pass all year 1 and 2 modules: DipHE Healthcare Science
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#### Year 3

BMS3256 Pacing and Catheterisation (30 Credits) Semester 1	BMS3226 Provocative Diagnostics and Cardiac Imaging (30 Credits) Semester 1	BMS3236 Professional Practice (30 Credits) Semester 2	BMS3246 Final Year Project (30 credits) Semester 2	EXIT POINT: 300-330 credits ordinary degree BSc Health Studies
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## **EXIT POINTS:**

- Students, who have passed year 1 modules, can exit with a CertHE in Healthcare Science
- Students, who have passed year 1 and 2 modules, can exit with a DipHE in Healthcare Science
- Students completing 300-330 credits will be eligible for the BSc Health Studies award. *(Note: this is an ordinary degree, i.e. non-honours, and graduates will not be entitled to work as a Healthcare Science Practitioner).*

## **12.2 Levels and modules**

### Level 4

#### **Compulsory**

Students must take all the following:

BMS1064 Specialist Diagnostics  
BMS1074 Clinical Anatomy and Physiology  
BMS1084 Professional Practice  
BMS1014 Biological Basis of Healthcare

#### **Optional**

There are no optional modules.

#### **Progression requirements**

All module assessments must be passed.

Exit point 120 credits:

#### **CertHE (Healthcare Science)**

### Level 5

#### **Compulsory**

Students must take all the following:

BMS2285 Applied Cardiac Physiology  
BMS2445 Cardiovascular and Respiratory Conditions  
BMS2625 Medical Instrumentation and Imaging  
BMS2015 Research Methods and Professional Practice  
BMS2295 Exercise Tolerance Testing

#### **Optional**

There are no optional modules.

#### **Progression requirements**

All module assessments must be passed.

Exit point 240 credits:

#### **DipHE (Healthcare Science)**

### Level 6

#### **Compulsory**

Students must take all the following:

BMS3226 Provocative Diagnostics and Cardiac Imaging  
BMS3256 Pacing and Catheterisation  
BMS3236 Professional Practice  
BMS3246 Final Year Project

### **Optional**

There are no optional modules.

### **Progression requirements**

All module assessments must be passed.

Exit point: 300-330 credits:

**BSc Health Studies (ordinary degree)**

## **12.3 Non-compensatable modules**

### **Module level**

4-6

### **Module code**

All

## **13. Information about assessment regulations**

This programme will run in line with general University Regulations:

<https://www.mdx.ac.uk/about-us/policies>

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

Placements are an integral part of the programme. Over the three years, students will spend a total maximum of 50 weeks in a clinical physiology department normally in London or the South East; maximum 10 weeks in year 1, maximum 15 weeks in year 2 and maximum 25 weeks in year 3.

Students are only placed in University approved learning environments. The designated Placement Officer, in collaboration with placement providers, will ensure that learning opportunities and support will be available in the placement area to help students meet the module learning outcomes and complete the Practitioner Training Programme (PTP) clinical portfolio.

Prior to going on placement, students are required to have enhanced DBS and Occupational Health clearance. Students, who do not get either will be unable to go on placement, but will be able to discuss their options with the programme team. DBS checks and Occupational Health appointments are arranged and funded by the University.

The University and placement providers will also ensure that a robust quality monitoring processes will be in place and establish clear lines of communication  
Students are notified in advance of their placement allocation and contact details of placement staff.

Students will be required to attend placement Monday to Friday during normal working hours; 37.5 hours per week maximum. Their duty rota may include Bank Holidays. Any absences must be reported to both the Programme Leader and the placement mentor, following local sickness reporting policies.

At the start of each placement, students will receive an induction, plus both support and guidance will be provided for students with diverse needs.

Each student and placement provider are given a copy of the Clinical Portfolio, which outlines, for example, lines of communication, contact details of key academic staff, attendance policy and complaints procedures. Practice learning is assessed using the Clinical Portfolio and written assignments.

In the final year, students have an opportunity to undertake a research project, which could include a clinical audit. Research projects carried out on placement will normally require local ethical approval in addition to Middlesex ethical approval.

## **15. Future careers / progression**

On completion of programme, graduates are qualified Healthcare Scientists and are eligible to apply for admission to the Academy for Healthcare Science (ACHS) register:

[Home - The Academy For Healthcare Science \(ahcs.ac.uk\)](http://ahcs.ac.uk)

Graduates may be retained by their placement provider or apply for a Band 5 post in Cardiac Physiology at another NHS institution or an equivalent post in the private sector. Steady progression to Band 7 can be achieved in several years via Clinical Professional Development (CPD) within post.

Alternatively, suitable graduates could gain a place on one of the following training programmes:

**Scientist Training Programme (STP);** study at Master's level to become a Clinical Scientist  
STP graduates can work in the NHS at Band 7 or higher. Applicants must have a 2:1 minimum degree classification in the PTP degree (or a relevant science degree).

*Further information can be found using the following link:*

[Scientist Training Programme \(hee.nhs.uk\)](http://hee.nhs.uk)

**Echo Training Programme (ETP);** study at Master's level to become a Clinical Scientist  
STP graduates can work in the NHS at Band 7 or higher.

Applicants should have a 2:1 minimum degree classification in the PTP degree (or a relevant science degree). Alternatively applicants may have a 2:2 degree classification plus 5 years cardiology experience.



Further information can be found using the following link:

[Echocardiography Training Programme \(hee.nhs.uk\)](http://hee.nhs.uk)

**Highly Specialist Scientist Training Programme (HSST)**; Offers opportunities for Healthcare Scientists to train to become eligible for consultant scientist posts. Applicants must be registered as a Clinical Scientist with the Health and Care Professions Council (HCPC) and have a minimum of 1 year of workplace experience post STP graduation.

*This is a unique post and other eligibility criteria can be found via the following link:*

[Higher Specialist Scientist Training programme \(hee.nhs.uk\)](http://hee.nhs.uk)

For those graduates that aim to progress to Band 8 or above via CPD, a master's degree will be essential.

## 16. Particular support for learning

Key areas:

- Dedicated Healthcare Science department at the new StoneX facility, which houses specialist clinical skills laboratories. The equipment used for teaching is identical to that used in clinical practice and can develop practical skills.
- Equipment includes ECG, exercise testing, ambulatory monitoring and analysis, and plethysmography box, plus Heartworks Echo simulator, clinical simulation mannequins and the Epicardio simulation online platform for ECG, cardiac rhythm management (pacing) and electrophysiology.
- Online support for all modules available on My Learning. This support encompasses varied resource materials such as teaching slides, key concept videos, reading lists, excerpts from books and journals, links to specific websites (such as NICE), videos of live clinical practice (such as angiography) .
- Learning resource facilities at the University including computing suites and internet access, including online access to reading lists and materials.
- Access to the library 24/7 in each semester, including access to academic writing and language plus maths, statistics and numeracy support on campus or online
- Academic Advisors Scheme serves as an enhancement for all students, ensuring that every undergraduate (UG) student is assigned a dedicated academic advisor during the academic year, encompassing consistent elements, such as needs and resource limitations, aimed at improving student outcomes.

**UniHelp** is the University's central service; you can contact UniHelp online, by phone, in person and via Chat.

<http://unihub.mdx.ac.uk/your-support-services/unihelp>

**Support and Wellbeing** Find what you need and how you need it through a range of expert support services, online tools and self-help resources, including childcare, counselling and mental health, disability and dyslexia, health and wellbeing and religious needs

[Support & Wellbeing | UniHub \(mdx.ac.uk\)](http://unihub.mdx.ac.uk)

**Student Welfare Advice Team (SWAT)** – providing information and advice on money and funding matters, housing and other miscellaneous issues, via private consultation, workshops and information leaflets. Access is via UniHub and the MDX intranet.

### **Learning Enhancement Team (LET)**

They provide academic support to you in areas such as writing essays and reports, giving presentations and participating in academic discussions.

Contact Details: <http://unihub.mdx.ac.uk/let> or email: [LET@mdx.ac.uk](mailto:LET@mdx.ac.uk)

**17. HECos code(s)** 100260

**18. Relevant QAA subject benchmark(s)** N/A

### **19. Reference points**

The following reference points were used in designing the Programme:

#### **Internal documentation:**

- i. Middlesex University 2031 *Learning Framework*
- ii. Middlesex University *Middlesex University Regulations*. MU
- iii. Middlesex University *Learning and Quality Enhancement Handbook*. MU

#### **External Documentation:**

1. Quality Assurance Agency (2024) The Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies
2. Quality Assurance Agency (2018) *UK Quality Code, Advice and Guidance: Work-based Learning. QAA*
3. Health Education England (HEE) (2016) *Modernising Scientific Careers, Practitioner Training Programme, BSc (Hons) Healthcare Science Curriculum: Cardiovascular, Respiratory and Sleep Sciences 2016/17*
4. Office for Students – Guidance to Quality Assurance:  
[Quality assessments - Office for Students](#)

### **20. Other information**

The following are included in your course fees:

- A free electronic core textbook for every module.
- Printing and photocopying required for study.
- Self-service laptops available for 24-hour loan

The following course-related costs are not included in the fees:

(see programme handbook for further details)

- Travel costs during placement

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 they take 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.

## 21. Curriculum map for BSc (Hons) Healthcare Science (Cardiac Physiology)

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	Skills and attitude required to work as a Cardiac Physiologist
A2	Normal and abnormal human physiology
A3	The principles of diagnosis and management of human disease
A4	The sciences underpinning quality healthcare
A5	The importance of scientific research in the advancement of healthcare practice
A6	The role and skills required by the cardiac physiology practitioner in the delivery and monitoring of diagnostic and therapeutic investigations
A7	The role of a Healthcare Science Practitioner and skills required for service improvement, as indicated by the Academy of Healthcare Science

#### Skills

B1	Formulate ideas through the evaluation of appropriate research evidence, scientific concepts, principles, or review of previous experience
B2	Generate, analyse, and critically evaluate scientific information and data using the most appropriate technology
B3	Appraise and synthesise evidence-based information to gain new insights into aspects of current clinical practice
B4	Reflect on own learning and practice to develop personally and professionally
B5	Communicate their ideas or information effectively to both scientific and non-scientific audience using a variety of media – the latter should include patients, relatives carers, and colleagues.
B6	Propose, design and carry out an ethical research project or clinical audit
B7	Perform a wide range of clinical procedures competently, and in accordance with health and safety guidelines
B8	Work within scope of practice and professional codes of conduct (as specified by the PSRB requirements)
B9	Work both collaboratively, with an appreciation of skills required for leadership, to solve complex real-world problems
B10	Demonstrate an autonomous and reflective approach to lifelong learning
B11	Formulate learning and career development plans

B12	Use a range of information technologies
B13	Demonstrate a high level of numeracy, research and problem-solving skills

Programme outcomes

A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
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Highest level achieved by all graduates

6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
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Module Title	Module Code by Level	A 1	A 2	A 3	A 4	A 5	A 6	A 7	B 1	B 2	B 3	B 4	B 5	B 6	B 7	B 8	B 9	B 10	B 11	B 12	B 13
Professional Practice	BMS1084	x	x	x	x	x	x		x	x	x	x	x		x	x	x	x	x	x	x
Biological Basis of Healthcare	BMS1014		x		x				x												x
Specialist Diagnostics	BMS1064	x	x	x	x		x				x		x							x	x
Clinical Anatomy and Physiology	BMS1074		x	x	x		x			x		x	x								x
Research Methods and Professional Practice	BMS2015	x			x	x			x		x		x	x	x	x	x	x	x	x	x
Medical Instrumentation and Imaging	BMS2625				x						x		x								
Cardiovascular and Respiratory Conditions	BMS2445	x			x	x			x		x		x	x	x	x	x	x	x	x	x
Applied Cardiac Physiology	BMS2285	x	x	x	x	x	x		x	x	x		x								x
Exercise Tolerance testing	BMS2295	x	x	x	x	x	x		x	x	x		x								x
Professional Practice	BMS3236	x		x			x	x	x	x	x	x	x			x	x	x	x	x	
Final Year Project	BMS3246					x		x	x	x	x	x	x	x			x				x
Provocative Diagnostics and Cardiac Imaging	BMS3226	x	x	x	x		x		x	x	x		x								x
Pacing and Catheterisation	BMS3256	x	x	x	x		x		x	x	x		x								x