
BSc (Hons) Healthcare Science (Cardiac Physiology) (Apprenticeship)

Programme Specification

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

9. Criteria for admission to the apprenticeship programme

Candidates must be employed as an apprentice in an appropriate department that delivers a full range of cardiac investigations. They would normally require English and Maths 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

NB: Any apprentice who has not achieved appropriate English and/or Maths qualification(s) at admission, can complete Functional Skills Level 2 in either or both (depending on qualification(s) held) in parallel with the apprenticeship programme and organised through the University. Apprentices will be required to hold appropriate English and Maths qualifications before they can be entered for the End-point Assessment.

The programme is open to applicants with diverse educational backgrounds, allowing them to claim entry based on prior certified learning or experiential learning. Should an employer have a candidate that they consider suitable but does not hold relevant qualifications, this can be discussed with the Programme Leader to determine what can be done, if anything, to admit them to the apprenticeship programme, particularly if they have a minimum 2-years' experience in roles such as Cardiographer, Assistant Physiologist or similar ancillary/assistant roles.

Those candidates claiming RPL must have completed/partly completed an equivalent programme at another HEI to be admitted via the RPL process and evidence must be provided. This approach recognises and values both formal education and practical experience in the admission process.

Apprentices are subject to an initial assessment that determines English and Maths skills, plus any prior learning that may exempt them from elements of the programme, the RPL process will then be followed.

All applicants for this programme must meet the requirements of the Education and Skills Funding Agency (ESFA) funding rules, including having the right to live and work in the UK. They also need to have been resident in the UK for a minimum of 3 years.

The healthcare science programmes have clear requirements for Disclosure Barring Service (DBS) checks and health clearance; apprentices are no exception. Such checks will be carried out by their employer prior to enrolment.

10. Aims of the programme

The programme aims to:

- Develop appropriate knowledge, skills, and behaviours during apprenticeship training. In addition, attitude and ethical values will be developed ensuring the graduate can provide 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 practitioner.
- Equip apprentices to competently perform diagnostic and therapeutic cardiac physiology investigations. The programme aims to provide hands-on training and practical skills necessary for apprentices 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 apprentices 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

NB: Knowledge, Skills and Behaviours (KSBs) can be found in full at the end of this document in section 23 Apprenticeship Standards Mapping

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

1. Skills, attitude and professional behaviours 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

Apprentices gain knowledge and understanding through bite sized videos covering threshold concepts, seminars, laboratory classes, peer presentations, debates, designing and undertaking a research project, role play, simulations and practical teaching sessions.

Experiential learning includes clinical practice (on-the-job plus off-the-job training), 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, employment (off-the-job) and development of portfolio material.

Assessment Method

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

B. Skills

On completion of this programme the successful apprentice 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. (3)
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

Apprentices 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, the workplace, 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

Apprentices' 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 by workplace OSPEs and portfolios of clinical practice. Additionally, workplace clinical assessment requires case study presentation (using a range of visual aids) which incorporates data analysis, interpretation and reflective practice.

Professional Practice culminates with the End-point Assessment (EPA); this includes elements of research undertaken on the programme with readiness to practice in the role of a Cardiac Physiology practitioner.

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
9. Apprenticeship knowledge, skills and behaviours (KSBs)

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

12.1 Structure of the programme

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

Year 1: BMS1084 includes **10 weeks** of dedicated clinical practice starting in Semester 2

Year 2: BMS2015 includes **15 weeks** of dedicated clinical practice starting at the end of

Semester 2

Year 3: BMS3236 Includes **25 weeks** of clinical practice.

Dedicated clinical practice periods coincide with PTP placement periods, so clinical assessments, if not already carried out, should be completed by the end of these periods, as per guidance for each year of study. Knowing about this dedicated period also allows mentors to plan ahead with an assessment schedule.

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 (includes EPA) (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:

- Apprentices, who have passed year 1 modules, can exit with a CertHE in Healthcare Science
- Apprentices, who have passed year 1 and 2 modules, can exit with a DipHE in Healthcare Science
- Apprentices 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.*)
- Apprentices that do not complete/pass their end point assessment will be ineligible for an apprenticeship degree, but could be awarded an ordinary degree – BSc Health Studies.

12.2 Levels and modules

Level 4

Compulsory

Apprentices 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

Apprentices 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

Apprentices 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.

Requirements of the End-point Assessment (EPA) Gateway must be met at the end of Semester 1

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 the following:

General University Regulations / Regulations for Apprenticeship Programmes:

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

Apprenticeship Standards

<https://www.instituteforapprentices.org/apprenticeship-standards/>

[Healthcare science practitioner \(integrated degree\) / Institute for Apprenticeships and Technical Education](#)

Apprenticeship Funding Rules

[Apprenticeship funding rules - GOV.UK \(www.gov.uk\)](#)

End Point Assessment Plan:

https://www.instituteforapprenticeships.org/media/1212/healthcare_science_practitioner.pdf

Apprenticeship gateway and resits for end-point assessment (EPA):

<https://www.gov.uk/guidance/apprenticeship-gateway-and-resits-for-end-point-assessment-epa#gateway>

NB: Before the apprentice can progress onto the End-point Assessment, they must meet the following minimum Gateway criteria:

Minimum requirements

- Completion of the Clinical Portfolio
- Display occupational competency.
- Have evidence of or pass functional skill levels in English and maths.
- Complete mandatory training
- Take any qualifications set out in the standard.
- Meet the minimum duration for their apprenticeship training.

- Off the Job Hours for all 3 years must have been recorded regularly on the apprenticeship delivery platform in use – such as Aptem

Only apprentices who complete the Gateway successfully can start the EPA

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

Apprentices will be employed as Cardiac Physiology Degree Apprentices for the duration of the programme.

Apprentices and employers are supported with regular tripartite reviews (normally every 12 weeks) which are 3-way meetings between the apprentice, employer and the University, to discuss general progress of the apprentice and any issues that may arise, positive or otherwise. Such meetings are arranged by the University.

Employers support apprentices with funding for course costs plus providing a minimum of 20% off the job (super numerate) training which must be recorded on a weekly basis by the apprentice.

In the final year, apprentices have an opportunity to undertake a research project, which could include a clinical audit. Research projects carried out in the workplace will normally require local ethical approval in addition to Middlesex ethical approval, plus support from the workplace mentor.

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)

Apprentice graduates may be retained by their employer 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 at least 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.
- Regular tripartite reviews (normally every 12 weeks) to discuss and assess apprentice progression and determine any support needs.
- Online provision and support functional skills English and Maths, via specialist providers such as Runway Training
- Aptem – an online apprentice management system that stores records of apprentice progress, achievements and off-the-job hours.

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 \(mdx.ac.uk\)](#)

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

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
- iv. Middlesex University *Regulations for Apprenticeship Programmes*. MU

External Documentation:

1. Quality Assurance Agency (2024) *The Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies*
2. Quality Assurance Agency (2022) *Higher Education in Apprenticeships Characteristics Statement*. QAA
3. Quality Assurance Agency (2018) *UK Quality Code, Advice and Guidance: Work-based Learning*. QAA
4. Health Education England (HEE) (2016) *Modernising Scientific Careers, Practitioner Training Programme, BSc (Hons) Healthcare Science Curriculum: Cardiovascular, Respiratory and Sleep Sciences 2016/17*

5. Degree Apprenticeship Standard for Healthcare Science Practitioner (Level 6): <https://haso.skillsforhealth.org.uk/wp-content/uploads/2017/04/L6-Healthcare-Science-Practitioner-Standard.pdf>
6. Degree Apprenticeship Standard for Healthcare Science Practitioner (Level 6) End-point Assessment: <https://haso.skillsforhealth.org.uk/wp-content/uploads/2017/04/L6-Healthcare-Science-Practitioner-Assessment-Plan.pdf>
7. Apprenticeship Funding Rules: [Apprenticeship funding rules - GOV.UK \(www.gov.uk\)](http://www.gov.uk)
8. OFSTED Education Inspection Framework: <https://www.gov.uk/government/publications/education-inspection-framework/education-inspection-framework>
9. Office for Students – Guidance to Quality Assurance: [Quality assessments - Office for Students](http://www.ofsted.gov.uk)

20. Other information

There are no fees/charges for the apprentices and the following are included in your programme:

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

Please note programme specifications provide a concise summary of the main features of the programme and the learning outcomes that a typical apprentice 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) (apprenticeship)

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, attitudes and professional behaviours 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 the 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
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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	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	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	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

22. The End-point Assessment Overview

The End-point Assessment (EPA) is the culmination of the apprenticeship and will be taken no earlier than at the end of the final year of the 3-year programme. It is embedded within BMS3236 Professional Practice module taken in the final year of the integrated apprenticeship degree. All components of the EPA must be passed and signed off by an independent external assessor, who is occupationally knowledgeable about role of the Cardiac Physiologist and has no direct involvement in the employment and training of the Apprentice, ensuring a level of independence and impartiality. The external assessor will be provided by a peer-Higher Education Institute or another organisation on the Register of End-point Assessment Organisations, which has not been involved in the delivery of the programme.

On-Programme	<ul style="list-style-type: none"> Professional Practice Portfolio that documents the assessments and tasks completed to demonstrate that the skills, knowledge and behaviours set out in the Standard have been achieved Confirmation that academic standards have been met by passing all modules
Gateway	<ul style="list-style-type: none"> Completion of Off the Job hours record Completion of the Professional Practice Portfolio Level 2 English and Mathematics must be achieved if not already held Must be signed off by employer Check all gateway requirements
EPA	<ul style="list-style-type: none"> Element 1: Readiness for Practice Test (RPT) Element 2: Professional discussion Element 3: Research Project Presentation and Review

The University and the employer are bound by contract to work together to support the Apprentice and to ensure that EPA is carried out. Both organisations will support the Apprentice to compile the Professional Practice Portfolio, which will be linked to the three Professional Practice modules and judged against the Middlesex University's Apprenticeship Mapping Document, over the three years. The University will arrange the EPA which will be assessed by independent assessors – independent meaning that they have not been involved in the delivery of the curriculum. For more information about Healthcare Science Practitioner Level 6 Apprenticeship Standards and EPA, please use the following links:

Apprenticeship Standards:

[Healthcare science practitioner \(integrated degree\) / Institute for Apprenticeships and Technical Education](#)

End-point Assessment plan from IfATE:

[healthcare_science_practitioner.pdf \(instituteofapprenticeships.org\)](#)

23. Apprenticeship Standards Mapping for BSc (Hons) Healthcare Science (Cardiac Physiology)

This section shows how the apprenticeship standards are mapped across the modules, including British values.

SKILLS: Working to the standards of GSP/HPC in your area of practice you will:		In your scientific, technical and clinical practice you will understand and apply knowledge of:
Person-centred Care and Professional Practice	<ul style="list-style-type: none"> prevent discriminatory practice against patients/carers/colleagues ensure that the highest standards of person-centred care are practiced so that each person is treated with dignity and respect develop effective partnerships with patients, treating patients/carers/families with kindness and compassion identify ways of promoting good mental health/well being use appropriate language to share complex technical information with the public/patients/colleagues, including giving/receiving feedback 	<ul style="list-style-type: none"> how the NHS Constitution/GSP/HPC Standards are used to support person-centred care equality and diversity legislation, policies and local ways of working the importance of probity, honesty and integrity in all aspects of your professional practice the work of your department & its impact on patient care through problem solving in the team how to involve patients and the public in HCS and in making choices about their care factors impacting on mental health and how to promote mental health and well being how to use and teach others to use appropriate language/feedback to share information to patients/families with complex needs, including giving oral/written explanations
Personal and Professional Development (PPD)	<ul style="list-style-type: none"> critically reflect on your technical/non-technical practice, keeping knowledge and skills updated & responding to appraisal/feedback work within your scope of practice as an autonomous practitioner promote the professional development/training of junior colleagues 	<ul style="list-style-type: none"> models of critical reflection and self-reflection to enhance the quality of patient care you provide personally and as a team leader the underpinning theories and benefits to staff of excellent appraisal processes how to lead an appraisal/performance review and support the development of an action plan
Health, Safety And Security	<ul style="list-style-type: none"> manage delegated junior staff training in security/health/safety practices that underpin their work, especially in infection control undertake delegated risk assessments & implement changes 	<ul style="list-style-type: none"> legislation/policies/regulations relating to health and safety at work and your responsibilities risk assessment methodologies, including strategies for dissemination of the findings, and approaches to implementing the changes required
Quality	<ul style="list-style-type: none"> strategically plan clinical and quality management processes undertake delegated clinical technical audits in your area of work 	<ul style="list-style-type: none"> quality management/improvement processes within the regulatory environment analysis, interpretation and communication of audit findings to promote quality
Technical Scientific Services	<ul style="list-style-type: none"> independently analyse/interpret accurately clinical technical data be responsible for the safety and functioning of equipment present/explain technical results to other professionals & patients coordinate drafting of SOPs & updating techniques/procedures evaluate and implement solutions to clinical technical problems 	<ul style="list-style-type: none"> the underpinning scientific principles of investigations offered by HCS services the principles and practice of equipment management, maintenance, repair and safety how to draft and update SOPs technical skills teaching frameworks; assessment methods & assessment of technical skills critical evaluation of the evidence base that underpins your clinical technical practice
Clinical Care	<ul style="list-style-type: none"> ensure that responsibilities for safeguarding and protecting patient confidentiality, including record keeping, are met conduct sensitive discussions with patients as required, including obtaining meaningful consent supervise the delivery of high quality clinical technical procedures 	<ul style="list-style-type: none"> 'duty of care' and safeguarding the appropriate support available in difficult situations or when a complaint is made the rights of patients with regard to giving informed & meaningful consent when required the role and importance of the key factors influencing dignity/rights/privacy/confidentiality of patients/colleagues
Audit/Service Improvement	<ul style="list-style-type: none"> manage audit and/or service improvement programmes act on the outcomes of audit/service improvement programmes 	<ul style="list-style-type: none"> the governance/ethical frameworks applied to clinical audit continuous improvement principles for the delivery of high quality outcomes
Research & Innovation	<ul style="list-style-type: none"> use research, reasoning and problem solving skills to support quality care improvements/innovation in your area of work 	<ul style="list-style-type: none"> the opportunities for research/innovation/implementation of change how to contribute to research and grant proposal writing as appropriate
Leadership	<ul style="list-style-type: none"> coordinate leadership activities across a HCS technical team 	<ul style="list-style-type: none"> advanced concepts of leadership and their application to practice

23.1 Mapping Process of Apprenticeship Standard Knowledge, Skills and Behaviours (KSBs) to Programme Modules

Knowledge	Module	Task	How will this prepare the apprentice for End-Point Assessment (EPA)?
K1 how the NHS Constitution/GSP/HCPC Standards are used to support person-centred care	L1 BMS1084 Professional Practice* L6 BMS2015 Research Methods and Professional Practice* L8 BMS3236 Professional Practice* L1 BMS3256 Pacing and Catheterisation**	Portfolio Competency assessment End Point Assessment Written examination	*Evidence in the Professional Portfolios will demonstrate that apprentices have met the Apprenticeship Standard: successful completion of the portfolio will demonstrate the ability to reflect on and discuss the responsibilities and attributes required for a Healthcare Science practitioner. ** The specialism assessment will demonstrate the acquisition of knowledge and skills required to work as a competent Healthcare Science Practitioner:
K2 equality and diversity legislation, policies and local ways of working	L1 BMS1084 Professional Practice L8 BMS3236 Professional Practice	Portfolio Portfolio	*Evidence in the Professional Portfolios will demonstrate that apprentices have met the Apprenticeship Standard: successful completion of the portfolio will demonstrate the ability to reflect on and discuss the responsibilities and attributes required for a Healthcare Science practitioner.

			** The specialism assessment will demonstrate the acquisition of knowledge and skills required to work as a competent Healthcare Science Practitioner:
K3 the importance of probity, honesty and integrity in all aspects of your professional practice	L1 BMS1084 Professional Practice L1 & L8 BMS3236 Professional Practice	Portfolio Portfolio	As above for the Professional Practice Portfolio and in addition the apprentice will be able to demonstrate high quality safe person-centred care
K4 the work of your department and its impact on patient care through problem solving in the team	L6 BMS2015 Research Methods and Professional Practice L6 BMS3236 Professional Practice	Competency assessment Competency assessment	Evidence in the Professional Portfolios will demonstrate that apprentices have met the Apprenticeship Standards: they will have developed clinical-reasoning skills and professional attributes outlined in the current Healthcare Science Practitioner Training Manual and the ability to work effectively within multi-disciplinary teams
K5 how to involve patients and the public in HCS and in making choices about their care	L5 BMS1084 Professional Practice L6 BMS2015 Research Methods and Professional Practice L8 BMS3236 Professional Practice	Reflection Competency assessment Endpoint assessment	Evidence in the Professional Portfolios will demonstrate that apprentices have met the Apprenticeship Standards: the apprentice will have demonstrated safe and effective clinical practice, developed clinical-reasoning skills, and demonstrated high quality safe person-

			centred care
K6 factors impacting on mental health and how to promote mental health and well being	L4 BMS1084 Professional Practice* L8 BMS3236 Professional Practice**	Case study Portfolio	*The module assessment will demonstrate the acquisition of knowledge required to work as a competent Healthcare Science Practitioner: apprentice will have discussed the psychosocial aspects of health and illness. **Evidence in the Professional Portfolio will demonstrate that apprentices have met the Apprenticeship Standards: the apprentice will have demonstrated high quality safe person-centred care
K7 how to use and teach others to use appropriate language/feedback to share information to patients/families with complex needs, including giving oral/written explanations	L2 BMS1084 Professional Practice L6 BMS2015 Research Methods and Professional Practice L8 BMS3236 Professional Practice	Case study Case study Competency assessment Endpoint assessment	The case study tasks incorporate discussion of barriers to effective communication which is developed further with clinical reasoning skills
K8 models of critical reflection and self-reflection to enhance the quality of patient care you provide personally and as a team leader	L3 BMS1084 Professional Practice L7 BMS3236 Professional Practice	Reflection Reflection	Reflective practice first focuses on areas for development then progresses to the continuous improvement of performance
K9 the underpinning theories and benefits to staff of excellent appraisal processes	L8 & 9 BMS3236 Professional Practice	Portfolio Endpoint assessment	Critical thinking will be continuously developed in order to review a range of areas including self- development, departmental protocols (health & safety, human

			rights management and quality assurance) leadership and innovation.
K10 how to lead an appraisal/performance review and support the development of an action plan	L8 & 9 BMS3236 Professional Practice	Endpoint assessment	Critical thinking will be continuously developed in order to review a range of areas including self- development, departmental protocols (health & safety, human rights management and quality assurance) leadership and innovation.
K11 legislation/policies/regulations relating to health and safety at work and your responsibilities	L6 BMS1084 Professional Practice L8 & 9 BMS3236 Professional Practice	Portfolio Portfolio	Critical thinking will be continuously developed in order to review a range of areas including self- development, departmental protocols (health & safety, human rights management and quality assurance) leadership and innovation.
K12 risk assessment methodologies, including strategies for dissemination of the findings, and approaches to implementing the changes required	L4 BMS2015 Research Methods and Professional Practice L1 BMS3236 Professional Practice L6 BMS3236 Professional Practice	Competency assessment Portfolio Endpoint assessment	Competency assessment (portfolio) will include explanation of equipment choice and procedure as part of working safely within the team.
K13 quality management/improvement processes within the regulatory environment	L1 BMS3236 Professional Practice L8 BMS3236 Professional Practice	Portfolio Endpoint assessment	Protocols will be subject to review with the aid of data from clinical audit. Improvements will be recommended and communicated via the departmental chain of management

K14 analysis, interpretation and communication of audit findings to promote quality	L1 BMS3236 Professional Practice L8 BMS3236 Professional Practice	Portfolio Endpoint assessment	Protocols will be subject to review with the aid of data from clinical audit. Improvements will be recommended and communicated via the departmental chain of management
K15 the underpinning scientific principles of investigations offered by HCS services	L8 BMS1084 Professional Practice L1, 2, 3 BMS2285 Applied Cardiac Physiology L2 BMS3236 Professional Practice	Portfolio (Clinical Assessments) OSCE Portfolio	The assessments from these tasks will enable the successful apprentice to discuss the value of epidemiology (generic module) and demonstrate detailed knowledge to justify basic cardiovascular tests (specialist modules)
K16 the principles and practice of equipment management, maintenance, repair and safety	L1 BMS2625 Medical Instrumentation and Imaging L3 BMS2625 Medical Instrumentation and Imaging L1 & L8 BMS3236 Professional Practice L2 & L3 BMS3256 Pacing and Catheterisation	Portfolio Portfolio Portfolio Written Examination	(Generic module) The assessments from these tasks will enable the successful apprentice to discuss the principles of the equipment function in the context of clinical technique and effects on patient health & safety. The specialist module assessment will demonstrate the development of underpinning knowledge in equipment selection, verification, and application.
K17 how to draft and update SOPs	L1 BMS3236 Professional Practice L8 BMS3236 Professional Practice	Portfolio Endpoint assessment	Protocols will be subject to review with the aid of data from clinical audit. Improvements will be recommended and communicated via the departmental chain of management.

			Apprentices reflect and review own practice to continuously improve personal performance and produce a professional portfolio
K18 technical skills teaching frameworks; assessment methods & assessment of technical skills	L8 BMS3236 Professional Practice	Portfolio	<p>Protocols will be subject to review with the aid of data from clinical audit. Improvements will be recommended and communicated via the departmental chain of management.</p> <p>Apprentices reflect and review own practice to continuously improve personal performance and produce a professional portfolio</p>
K19 critical evaluation of the evidence base that underpins your clinical technical practice	L3 BMS1084 Professional Practice L6 BMS2015 Research Methods and Professional Practice L8 BMS3236 Professional Practice	Portfolio Portfolio Portfolio	<p>Protocols will be subject to review with the aid of data from clinical audit. Improvements will be recommended and communicated via the departmental chain of management.</p> <p>Apprentices reflect and review own practice to continuously improve personal performance and produce a professional portfolio</p>
K20 'duty of care' and safeguarding	L1 BMS1084 Professional Practice L6 BMS2015 Research Methods and Professional Practice L8 BMS3236 Professional Practice	Portfolio	On successful portfolio completion the apprentice will have demonstrated knowledge of safeguarding via the concept of patient-centred care and will be able to

			<p>explain how national standards are used in patient management.</p> <p>The EPA provides another outlet to demonstrate that knowledge</p>
K21 the appropriate support available in difficult situations or when a complaint is made	L8 BMS3236 Professional Practice	Endpoint assessment	<p>On successful portfolio completion the apprentice will have demonstrated knowledge of safeguarding via the concept of patient-centred care and will be able to explain how national standards are used in patient management.</p> <p>The EPA provides another outlet to demonstrate that knowledge</p>
K22 the rights of patients with regard to giving informed & meaningful consent when required	L6 BMS2015 Research Methods and Professional Practice L1 & L8 BMS3236 Professional Practice	Competency assessment Portfolio	<p>On successful portfolio completion the apprentice will have demonstrated knowledge of safeguarding via the concept of patient-centred care and will be able to explain how national standards are used in patient management.</p> <p>The EPA provides another outlet to demonstrate that knowledge</p>
K23 the role and importance of the key factors influencing dignity/rights/privacy/confidentiality of patients/colleagues	L1 BMS1084 Professional Practice L6 BMS2015 Research Methods and Professional Practice L8 BMS3236 Professional Practice	Portfolio Competency assessment Portfolio	<p>As above and in addition, the apprentice will be able to recommend the appropriate procedures and guidelines.</p>

K24 the governance/ethical frameworks applied to clinical audit	L4 BMS2015 Research Methods and Professional Practice L8 BMS3236 Professional Practice	Report Endpoint assessment	The assessment tasks will enable the successful apprentice to discuss clinical audit and innovation in the context of service improvement. This will become part of the development of working within the clinical team.
K25 continuous improvement principles for the delivery of high quality outcomes	L6 BMS3236 Professional Practice L7 BMS3236 Professional Practice	Endpoint assessment Reflection	The assessment tasks will enable the successful apprentice to discuss clinical audit and innovation in the context of service improvement. This will become part of the development of working within the clinical team.
K26 the opportunities for research/innovation/implementation of change	L6 BMS2015 Research Methods and Professional Practice L8 BMS3236 Professional Practice	Report Endpoint assessment	The assessment tasks will enable the successful apprentice to discuss clinical audit and innovation in the context of service improvement. This will become part of the development of working within the clinical team.
K27 how to contribute to research and grant proposal writing as appropriate	L5 BMS2015 Research Methods and Professional Practice L8 BMS3236 Professional Practice	Report Endpoint assessment	As above and in addition, the apprentice will be able to design a research project, assessing risk, ethical and legal issues
K28 advanced concepts of leadership and their application to practice	L6 BMS3236 Professional Practice L8 BMS3236 Professional Practice L9 BMS3236 Professional Practice	Portfolio Endpoint assessment	On successful completion of the portfolio (including the reflective practice) the apprentice will be able to critically review leadership and management within the NHS

Skills	Module	Task	How will this prepare the apprentice for End-Point Assessment (EPA)?
S1 prevent discriminatory practice against patients/carers/colleagues	L1 BMS1084 Professional Practice L8 BMS3236 Professional Practice	Portfolio Portfolio	Aspects of discrimination, dignity, respect and practice with compassion are delivered theoretically during campus-based modules. They are then incorporated into both GSP and technical skills assessments during placement. Successful completion of the portfolio will demonstrate the achievement of these skills.
S2 ensure that the highest standards of person-centred care are practiced so that each person is treated with dignity and respect	L1 BMS1084 Professional Practice L7 BMS1084 Professional Practice L6 BMS2015 Research Methods and Professional Practice L8 BMS3236 Professional Practice	Portfolio Portfolio Portfolio	Aspects of discrimination, dignity, respect and practice with compassion are delivered theoretically during campus-based modules. They are then incorporated into both GSP and technical skills assessments during placement. Successful completion of the portfolio will demonstrate the achievement of these skills.
S3 develop effective partnerships with patients, treating patients/carers/families with kindness and compassion	L1 BMS1084 Professional Practice L6 BMS2015 Research Methods and Professional Practice L8 BMS3236 Professional Practice	Portfolio Portfolio Portfolio	Aspects of discrimination, dignity, respect and practice with compassion are delivered theoretically during campus-based modules. They are then incorporated into both GSP and technical skills assessments during placement. Successful completion of the portfolio will demonstrate the achievement of these skills.
S4 identify ways of promoting good mental health/well being	L4 BMS1084 Professional Practice	Portfolio Endpoint assessment	The Professional Practice modules provide

	L8 BMS3236 Professional Practice		underpinning knowledge of mental health and well-being issues and how to address them.
S5 use appropriate language to share complex technical information with the public/patients/colleagues, including giving/receiving feedback	L8 BMS3236 Professional Practice	Portfolio Endpoint assessment	Practiced throughout clinical practice, assessed via the GSP assessment and incorporated into the EPA.
S6 critically reflect on your technical/non-technical practice, keeping knowledge and skills updated & responding to appraisal/feedback	L3 BMS1084 Professional Practice L7 BMS3236 Professional Practice	Reflection Reflection	Reflection is via the reflective blog in all 3 years with reflective report of their experience as an apprentice submitted in the final year.
S7 work within your scope of practice as an autonomous practitioner	L6 BMS3236 Professional Practice	Portfolio	Assessed through the GSP assessment.
S8 promote the professional development/training of junior colleagues	L8 BMS3236 Professional Practice	Portfolio Endpoint assessment	Successfully assessed experiential learning at Levels 4 & 5 will provide the foundation to undertake elements of training or supervision of junior staff. The level 6 portfolio will provide the evidence of successful performance.
S9 manage delegated junior staff training in security/health/safety practices that underpin their work, especially in infection control	L8 BMS3236 Professional Practice	Endpoint assessment	Successfully assessed experiential learning at Levels 4 & 5 will provide the foundation to undertake elements of training or supervision of junior staff. The level 6 portfolio will provide the evidence of successful performance.
S10 undertake delegated risk assessments & implement changes	L8 BMS3236 Professional Practice	Endpoint assessment	Aspects of risk assessment and quality management are delivered theoretically during campus-based modules, (generic and professional practice). They are then incorporated into both GSP and technical

			skills assessments during placement. Successful completion of the portfolio will demonstrate the achievement of these skills.
S11 strategically plan clinical and quality management processes	L8 BMS3236 Professional Practice	Endpoint assessment	Aspects of risk assessment and quality management are delivered theoretically during campus-based modules, (generic and professional practice). They are then incorporated into both GSP and technical skills assessments during placement. Successful completion of the portfolio will demonstrate the achievement of these skills.
S12 undertake delegated clinical technical audits in your area of work	L8 BMS3236 Professional Practice	Endpoint assessment	As above and in addition: experience gained from successful completion of the instrumentation and Final Year Project assessments will aid the practice of these skills. The experience obtained from the clinical investigations (technical assessments) will also provide continued training in the safe
S13 independently analyse/interpret accurately clinical technical data	L3 BMS2285 Applied Cardiac Physiology L3 BMS2295 Exercise Tolerance Testing L5 BMS3236 Professional Practice L8 BMS3236 Professional Practice	Practical Examination Examination Competency assessment Endpoint assessment	As above and in addition: experience gained from successful completion of the instrumentation and Final Year Project assessments will aid the practice of these skills. The experience obtained from the clinical

			investigations (technical assessments) will also provide continued training in the safe
S14 be responsible for the safety and functioning of equipment	L6 BMS2015 Research Methods and Professional Practice L8 BMS3236 Professional Practice	Competency assessment Portfolio	As above and in addition: experience gained from successful completion of the instrumentation and Final Year Project assessments will aid the practice of these skills. The experience obtained from the clinical investigations (technical assessments) will also provide continued training in the safe
S15 present/explain technical results to other professionals & patients	L3 BMS2285 Applied Cardiac Physiology L3 BMS2295 Exercise Tolerance Testing BMS2015 Research Methods and Professional Practice L5 BMS3236 Professional Practice	Practical Examination Examination Report Competency assessment	The successful candidate will have the evidence from the practical examination, and in the portfolio of clinical practice, particularly in the Case Based Discussion assessment.
S16 coordinate drafting of SOPs & updating techniques/procedures	L1 BMS3236 Professional Practice	Portfolio Endpoint assessment	Underpinning knowledge for these skills presented across the 3 years of the programme, most notably in the Professional Practice modules. Each module / year has the corresponding skills incorporated into the clinical practice portfolio as training and assessment criterion for practical skills, case-based discussion, and Good Scientific Practice (GSP)

S17 evaluate and implement solutions to clinical technical problems	L8 BMS1084 Professional Practice L5 BMS2015 Research Methods and Professional Practice L8 BMS3236 Professional Practice	Portfolio Portfolio Portfolio	Underpinning knowledge for these skills presented across the 3 years of the programme, most notably in the Professional Practice modules. Each module / year has the corresponding skills incorporated into the clinical practice portfolio as training and assessment criterion for practical skills, case-based discussion, and Good Scientific Practice (GSP)
S18 ensure that responsibilities for safeguarding and protecting patient confidentiality, including record keeping, are met	L6 BMS1084 Professional Practice L6 BMS2015 Research Methods and Professional Practice L8 BMS3236 Professional Practice	Portfolio Portfolio Competency assessment	Underpinning knowledge for these skills presented across the 3 years of the programme, most notably in the Professional Practice modules. Each module / year has the corresponding skills incorporated into the clinical practice portfolio as training and assessment criterion for practical skills, case-based discussion, and Good Scientific Practice (GSP)
S19 conduct sensitive discussions with patients as required, including obtaining meaningful consent	L6 BMS1084 Professional Practice L6 BMS2015 Research Methods and Professional Practice L8 BMS3236 Professional Practice	Portfolio Portfolio Competency assessment	Underpinning knowledge for these skills presented across the 3 years of the programme, most notably in the Professional Practice modules. Each module / year has the corresponding skills incorporated into the clinical practice portfolio as

			<p>training and assessment criterion for practical skills, case-based discussion, and Good Scientific Practice (GSP)</p> <p>On successful completion of all 3 Clinical Practice portfolios, the apprentice will have demonstrated the skills required at the level (6) required for the Apprenticeship Standard.</p>
S20 supervise the delivery of high quality clinical technical procedures	L8 BMS3236 Professional Practice	Endpoint assessment	<p>Underpinning knowledge for these skills presented across the 3 years of the programme, most notably in the Professional Practice modules.</p> <p>Each module / year has the corresponding skills incorporated into the clinical practice portfolio as training and assessment criterion for practical skills, case-based discussion, and Good Scientific Practice (GSP)</p> <p>On successful completion of all 3 Clinical Practice portfolios, the apprentice will have demonstrated the skills required at the level (6) required for the Apprenticeship Standard.</p>
S21 manage audit and/or service improvement programmes	L9 BMS3236 Professional Practice	Endpoint assessment	<p>Underpinning knowledge for these skills presented across the 3 years of the programme, most notably in the Professional Practice modules.</p> <p>Each module / year has the corresponding skills</p>

			<p>incorporated into the clinical practice portfolio as training and assessment criterion for practical skills, case-based discussion, and Good Scientific Practice (GSP)</p> <p>On successful completion of all 3 Clinical Practice portfolios, the apprentice will have demonstrated the skills required at the level (6) required for the Apprenticeship Standard.</p>
S22 act on the outcomes of audit/service improvement programmes	L9 BMS3236 Professional Practice	Endpoint assessment	<p>Underpinning knowledge for these skills presented across the 3 years of the programme, most notably in the Professional Practice modules.</p> <p>Each module / year has the corresponding skills incorporated into the clinical practice portfolio as training and assessment criterion for practical skills, case-based discussion, and Good Scientific Practice (GSP)</p> <p>On successful completion of all 3 Clinical Practice portfolios, the apprentice will have demonstrated the skills required at the level (6) required for the Apprenticeship Standard.</p>
S23 use research, reasoning and problem-solving skills to support quality care improvements/innovation in your area of work	L5 BMS2015 Research Methods and Professional Practice L3 BMS3246 Final Year Project	Portfolio Report Endpoint assessment	<p>Underpinning knowledge for these skills presented across the 3 years of the programme, most notably in the Professional Practice modules.</p>

	L9 BMS3236 Professional Practice		<p>Each module / year has the corresponding skills incorporated into the clinical practice portfolio as training and assessment criterion for practical skills, case-based discussion, and Good Scientific Practice (GSP)</p> <p>On successful completion of all 3 Clinical Practice portfolios, the apprentice will have demonstrated the skills required at the level (6) required for the Apprenticeship Standard.</p>
S24 coordinate leadership activities across a HCS technical team	L9 BMS3236 Professional Practice	Endpoint assessment	<p>Underpinning knowledge for these skills presented across the 3 years of the programme, most notably in the Professional Practice modules.</p> <p>Each module / year has the corresponding skills incorporated into the clinical practice portfolio as training and assessment criterion for practical skills, case-based discussion, and Good Scientific Practice (GSP)</p> <p>On successful completion of all 3 Clinical Practice portfolios, the apprentice will have demonstrated the skills required at the level (6) required for the Apprenticeship Standard.</p>

Behaviours	Module	Task	How will this prepare the apprentice for End-Point Assessment (EPA)?
<p>B1 You will be compassionate; honest; conscientious and adhere to the underpinning HCPC Standards of Conduct, Performance and Ethics and HEE Good Scientific Practice.</p>	<p>L8 BMS1084 Professional Practice L6 BMS2015 Research Methods and Professional Practice L8 BMS3236 Professional Practice Note: elements of B1 occur across the programme but are not specifically assessed as per the modules above</p>	<p>Portfolio Portfolio Endpoint assessment</p>	<p>The GSP has been incorporated into the 'code of conduct' for placement training. These behavioural elements are observed and assessed in the practical skills that have patient contact. In addition, GSP is assessed as a separate requirement across all three years of the programme. Preparation for practice occurs during the specialist modules where assessment of practical skills includes patient contact scenarios. Successful completion of the clinical portfolio provides the evidence that the Behaviours have been observed in the clinical setting.</p>

23.2 Knowledge Map Apprenticeship standards

Module Title	Module Code by Level	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K12	K13	K14	K15	K16	K17	K18	K19	K20	K21	K22	K23	K24	K25	K26	K27	K28
Professional Practice	BMS1084	x	x	x			x	x	x			x				x				x	x			X					
Biological Basis of Healthcare	BMS1014				x											x													
Specialist Diagnostics	BMS1064				x											x	x												
Clinical Anatomy and Physiology	BMS1074				x											x													
Research Methods and Professional Practice	BMS2015	x			x			x					x		x					x	x		x	x	x		x	x	
Medical Instrumentation and Imaging	BMS2625				x											x	x												
Applied Cardiac Physiology	BMS2285	x		x	x											x	x												
Exercise Tolerance Testing	BMS2295	x		x	x											x	x												
Cardiovascular and Respiratory Conditions	BMS2445	x		x	x											x													
Professional Practice	BMS3236	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x		x	x	x	x	x	x			X
Final Year Project	BMS3246	x	x		x										x	X													
Provocative Diagnostics and Cardiac Imaging	BMS3226	X			x											x	X												
Pacing and Catheterisation	BMS3256	x			X											x	x												

23.3 Skills Map

Apprenticeship standards

Module Title	Module Code by Level	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20	S21	S22	S23	S24	B1
Professional Practice	BMS1084	x	x	x	x	x	x											x	x	x						X
Specialist Diagnostics	BMS1064		x			x								x	x	x										X
Clinical Anatomy and Physiology	BMS1074					x																				X
Research Methods and Professional Practice	BMS2015	x	x	x	x	x	x									x		x	x	x					x	X
Medical Instrumentation and Imaging	BMS2625					x								x	x	x										X
Applied Cardiac Physiology	BMS2285		x			x								x												X
Exercise Tolerance Testing	BMS2295		x			x								x	x									x		X
Cardiovascular and Respiratory Conditions	BMS2445		x			x								x												X
Professional Practice	BMS3236	x	x	x	x	x	x	x	x	x	x	x	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
Provocative Diagnostics and Cardiac Imaging	BMS3226		x			x	x							x	x			x		x						X
Pacing and Catheterisation	BMS3256		x			x	x							x	x			x		x						X

2 Mapping of additional apprenticeship-specific requirements to programme modules

23.4 British Values

Rule of Law

- Legislation
- Agreed ways of working, policies and procedures
- How the law protects you and others
- Codes of conduct

Democracy

- Leadership and accountability
- Joint decision making
- Team meetings
- The right to protest and petition
- Receiving and giving feedback

Individual Liberty

- Equality and Human Rights
- Personal Development
- Respect and Dignity
- Rights, choice, consent and individuality
- Values and principles

Respect and Tolerance

- Embracing diversity (age; disability; gender reassignment; marriage/civil partnership; pregnancy/maternity; race; religion/belief; sex; sexual orientation)
- The importance of religion, traditions, cultural heritage and preferences
- Tackling stereotyping, labelling, prejudice and discrimination

Module Code	Module Title	Where and how is evidence of British Values developed? Indicate task(s). Please note that British Values do not need to have summative assessments unless the applicable apprenticeship standard states they form part of the main programme's KSBs.
BMS1084	Professional Practice	<p>The module introduces British values; for a sessional and post-sessional activity, apprentices are required to compare NHS and British values. Additionally, the module integrates theory with practice; during work-based training, apprentices apply their understanding of protecting liberties and treating patients with dignity and respect for others. Their understanding of these values is assessed by the observed clinical event and the GSP assessments, which are based on the Academy of Healthcare Science codes of conduct.</p> <p>During work-based training, non-technical skills such as communication with patients and their relatives, empathy, medical ethics and practice of equality and diversity and tolerance are developed and assessed, alongside the technical skills that require patient contact. The successful apprentice will have the evidence recorded in the Clinical Practice Portfolio mainly in the form of witness statements.</p> <p>Feedback is both received and given in the context of accountability.</p>
BMS2015	Research Methods and Professional Practice	<p>This module integrates theory with practice during work-based training; apprentices apply their understanding of protecting liberties and treating patients with dignity and respect for others. Their understanding of these values is assessed by the observed clinical event and the Good Scientific Practice (GSP) assessments, which are based on the Academy of Healthcare Science codes of conduct.</p> <p>During work-based training, non-technical skills such as communication with patients and their relatives, empathy, medical ethics and practice of equality and diversity and tolerance are developed and assessed, alongside the technical skills that require patient contact. The successful apprentice will have the evidence recorded in the Clinical Practice Portfolio mainly in the form of witness statements.</p> <p>Feedback is both received and given in the context of leadership and accountability</p>
BMS3236	Professional Practice	<p>This module explores and develops a robust understanding of legislation, agreed ways of working, policies and procedures, how the law protects you and others plus codes of conduct. Integration of theory with practice continues in the workplace, cultivating the apprentice as a practitioner, applying their understanding of protecting liberties and treating patients with dignity and respect for others. Their understanding of these values is assessed by the observed clinical event and the Good Scientific Practice (GSP) assessments, which are based on the Academy of Healthcare Science codes of conduct.</p>

		<p>During work-based training, non-technical skills such as communication with patients and their relatives, empathy, medical ethics and practice of equality and diversity and tolerance are developed and assessed, alongside the technical skills that require patient contact. The successful apprentice will have the evidence recorded in the Clinical Practice Portfolio mainly in the form of witness statements.</p> <p>Feedback is both received and given in the context of leadership and accountability.</p>
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23.5 Safeguarding

The Ten Types of Abuse

- Discriminatory abuse
- Domestic violence or abuse
- Financial or material abuse
- Modern slavery
- Neglect or acts of omission
- Organisational or institutional abuse
- Physical abuse
- Psychological or emotional abuse
- Self-neglect
- Sexual abuse

The Six Principles

- Empowerment: People being supported and encouraged to make their own decisions and informed consent
- Protection: Support and representation for those in greatest need.
- Prevention: It is better to take action before harm occurs.
- Partnership: Local solutions through services working with their communities. Communities have a part to play in preventing, detecting and reporting neglect and abuse.
- Proportionality: The least intrusive response appropriate to the risk presented.
- Accountability: Transparency in safeguarding practice.

Module Code	Module Title	Where and how is evidence of Safeguarding developed?
BMS1084	Professional Practice	<p>This Year 1 module introduces and covers a range of topics related to safeguarding, such as duty of care, informed consent, risk assessment, health and safety at work and mental health and well-being. The apprentices' understanding of safeguarding is further developed and assessed in the workplace. The successful apprentice will have evidence of understanding of safeguarding recorded in the Academic and Clinical Practice Portfolio.</p> <p>The module also introduces and explores ideas of clinical governance and the ethical framework, with an emphasis of protecting patients/subjects.</p>
BMS2015	Research Methods & Professional Practice	In Year 2 the topics around safeguarding covered in BMS1084 are developed further and assessed in the workplace, the element of which is part of BMS2015. The successful apprentice will have evidence of understanding of safeguarding recorded in the Clinical Practice Portfolio.
BMS3236	Professional Practice	This final year module explores clinical governance in more depth, developing knowledge of the principles that underpin clinical governance. This knowledge is then applied to defining how it provides protection for patients via policies and procedures, how to recognise when signs of risk/abuse and how to address the situation, depending on circumstances. . These aspects of safeguarding are assessed by presentation of the Academic Portfolio and Clinical Practice Portfolio.

23.6 Continuous development of functional skills in English and mathematics

Functional skills in English:

- Listen, understand and make relevant contributions to discussions with others in a range of contexts.
- Apply understanding of language to adapt delivery and content to suit audience and purpose.
- Read a range of different text types confidently and fluently, applying knowledge and understanding of texts to one's own writing.
- Write texts of varying complexity, with accuracy, effectiveness, and correct spelling, punctuation and grammar.
- Understand the situations when, and audiences for which, planning, drafting and using formal language are important, and when they are less important.

Functional skills in mathematics:

- Demonstrate ability in mathematical skills and ability to apply these, through appropriate reasoning and decision making, to solve realistic problems of increasing complexity.
- Consider new areas of life and work and the corresponding mathematical concepts and problems which, while not of immediate concern, may be of value in later life.
- Develop an appreciation of the role played by mathematics in the world of work and in life generally.

Module Code	Module Title	Where and how is evidence of continuous development of functional skills in English and mathematics developed?
BMS1064	Specialist Diagnostics	Basic mathematical principles are delivered throughout this module along with applications of such, not only in the healthcare setting but in life. Formative assessment provides the opportunity for feedback prior to the summative; a clinical diagnostics workbook that will include mathematical problems.
BMS1084	Professional Practice	Principles of academic essay writing are delivered at the start of this module. Formative assessment provides the opportunity for feedback, including English skills, which is augmented by one-one meetings. Group work fosters and encourages listening, understanding and contributing to discussions/debates, whilst group presentations promote communication skills and cultivates language skills. Apprentices may also be referred to the campus-based Academic Learning Support Services & Disability and Dyslexia Support for additional assistance.
BMS2015	Research Methods and Professional Practice	Mathematic skills are further developed in this second-year module, with the focus on statistical methods and analysis relevant to research. Coursework assessment requires apprentices to identify and justify appropriate analytical methods for the data in question.