

Programme Specification and Curriculum Map for Biomedical Science

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|-----------------------------------|---|
| 1. Programme title | Biomedical Science |
| 2. Awarding institution | Middlesex University |
| 3. Teaching institution | Middlesex University |
| 4. Programme accredited by | Institute of Biomedical Science |
| 5. Final qualification | BSc (Hons) Biomedical Science (IBMS-accredited) BSc (Hons) Applied Biomedical Science (IBMS-accredited) BSc (Hons) Biomedical Science (Sandwich) (IBMS-accredited) Cert HE Biomedical Science (not IBMS-accredited) DipHE Biomedical Science (not IBMS-accredited) BSc Biomedical Science (IBMS-accredited) |
| 6. Academic year | 2018/19 |
| 7. Language of study | English |
| 8. Mode of study | BSc (Hons) Biomedical Science: Full-time or Part-time BSc (Hons) Applied Biomedical Science: Year 4 (placement) is Full-time only, Year 1-3 is Full-time or Part-time BSc (Hons) Biomedical Science (Sandwich): Placement Year is Full-time only, University Year 1-3 is Full-time or Part-time BSc (Hons) Biomedical Science with Foundation Year: Full-time or Part-time |

9. Criteria for admission to the programme

Candidates require Maths and English equivalent to at least GCSE grade 4 as well as 112 UCAS tariff points from one of the following awards:

- A-levels (including two A levels with at least one science subject, preferably in biology or chemistry at grade C or better).
- Or Pearson's National Diploma or Certificate in biology, chemistry, forensic science, laboratory and industrial science, healthcare 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.

Additionally, overseas students, whose first language is not English, will need a qualification that demonstrates competence in English language IELTS 7.0 (with minimum 6.5 in all components).

Applicants can make a claim for entry onto the programme with or without advance standing on the basis of either of prior certified learning or experiential learning.

DBS and occupational health clearances are also required for Applied Biomedical Science. These must be achieved before transfer from the BSc in Biomedical Science. Students, who do not get either a DBS or health clearance, will not be able to transfer to the Applied Biomedical Science degree.

10. Aims of the programme

For all programmes, including the CertHE and DipHE programmes, the aims are:

- To help students to develop the knowledge, skills, attitude and ethical values required providing patient-centred care and working safely and effectively in the NHS as a biomedical scientist.
- To apply scientific principles and theories underpinning biomedical science to patient care.
- To enable students to carry out competently diagnostic investigations relevant to the role of a biomedical scientist.
- To develop the student's ability to apply scientific methods and approaches to research, development and innovation.
- To help the student develop a range of transferable academic skills required for effective life-long learning, communication, team working and leadership.
- To give the student an opportunity to gain work experience in a biomedical laboratory.
- To prepare the student for employment in a biomedical science laboratory.

For the BSc Biomedical Science, Applied Biomedical Science, and Biomedical Science (Sandwich), an additional aim is:

- To provide the student with the skills required for postgraduate studies in biomedical and health sciences.

For the Applied Biomedical Science, an additional aim is:

- To enable students to acquire the knowledge, skills and behaviour required to apply for Registration with the HCPC as a Biomedical Scientist.

For the Biomedical Science (Sandwich), an additional aim is:

- To enable students to gain relevant practical experience and develop workplace skills relevant to careers in biomedical science-related research, service or industry.

11. BSc Programme outcomes

A. Knowledge

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

1. The scope of practice of biomedical scientist and skills required by a biomedical scientist to provide a high-quality diagnostic service.
2. Normal and abnormal biological processes.
3. The principles of diagnosis and management of human disease.
4. The importance of scientific research in the advancement of healthcare practice.
5. Bioanalytical techniques used in clinical pathology and biomedical research.

Teaching/learning methods

Students gain knowledge and understanding through lectures, seminars, laboratory classes, peer presentations, debates, placements in clinical physiology departments, designing and undertaking a research project, role-play and practical clinical sessions.

Assessment Method

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

B. Skills

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

1. Critically evaluate research evidence in the context of current theory or practice.
2. Solve clinical problems.
3. Appraise and synthesise information to gain new insights into aspects of current practice.

Teaching/learning methods

Students acquire skills through lectures, seminars, discussions, peer presentations, a research project and debates, through reading, group work, problem-based learning exercises, structured and directed learning, analysis of case studies, and through reflection, placement and development of portfolio material.

4. Reflect on own learning and practice to develop personally and professionally.
5. Present information in the most effective format to communicate ideas clearly.
6. Design and undertake a research project.
7. Perform a wide range of common biomedical laboratory techniques competently, and in accordance with health and safety guidelines.
8. Communicate their ideas clearly using a variety of media.
9. Work both collaboratively and with an appreciation of the skills required for leadership.
10. Demonstrate an autonomous and reflective approach to lifelong learning.
11. Formulate learning and career development plans.
12. Use a range of information technologies.
13. Demonstrate a high level of numeracy and problem-solving skills.

In addition, Applied Biomedical Science students will be able to:

14. Work within scope of practice for a biomedical scientist and according to the HCPC professional codes of conduct.

In addition, Sandwich students will be able to:

15. Acquire real-world knowledge and skills required to work in biomedical science research or industry.

Assessment Method

Students' cognitive skills are assessed by formative and summative assessment as written work, examinations, online quizzes, case studies, assessment of clinical practice and peer presentation, work in the form of portfolios, and project and research work.

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

12.1 Overall structure of the programme

The BSc(Hons) Biomedical Science can be studied over three years full time, or part-time over six years. In contrast, the mode of study for the BSc (Hons) Applied Biomedical Science and the BSc(Hons) Biomedical Science (Sandwich) are normally completed in four-years of full-time study.

They are modular programmes. Each module has a credit value of 15 or 30 credits, apart from the placement modules, which are worth 120 credits. The total credit required for each award are as follows:

DipHE Biomedical Science – 240 credit points at level 4 and 5

BSc(Hons) Applied Biomedical Science –480 credit points

BSc(Hons) Biomedical Science – 360 credit points

BSc(Hons) Biomedical Science (Sandwich) – 480 credit points

12.2 Levels and modules

| | | |
|---|--------------------------------|---------------------------------|
| Level 4 | | |
| COMPULSORY | OPTIONAL | PROGRESSION REQUIREMENTS |
| All students must take all of the following: BMS1154 BMS1654 BMS1514 BMS1854 BMS1994 | There are no optional modules. | All modules must be passed. |
| Level 5 | | |
| COMPULSORY | OPTIONAL | PROGRESSION REQUIREMENTS |
| All students must take all of the following: BMS2075 BMS2225 BMS2125 BMS2135 BMS2145 BMS2515 | There are no optional modules. | All modules must be passed. |
| Level 6 | | |
| COMPULSORY | OPTIONAL | PROGRESSION REQUIREMENTS |
| Students must also take the following: BMS3136 BMS3326 BMS3336 BMS3346 BMS3006 (Only the BSc in Biomedical Science (Sandwich)) BMS3576 (Only the BSc in Applied Biomedical Science) | There are no optional modules. | Not applicable. |

12.3 Non-compensatable modules

| Module level | Module code |
|---------------------|--------------------|
| 4 | All |
| 5 | All |
| 6 | All |

13. A curriculum map relating learning outcomes to modules

See Curriculum Map attached.

14. Information about assessment regulations

The assessment regulations are the general university regulations (<https://www.mdx.ac.uk/about-us/policies/university-regulations>). All modules of the programme must be passed either by assessment or pre-accreditation.

Formative assessment relates to summative assessment, therefore participation with formative part supports students with their final assessment. It is recommended to students to participate in all forms of assessment.

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

Applied Biomedical Science

The placement on the 'Applied' programme is specifically designed to train biomedical scientists to work in pathology laboratories, providing a service for the NHS. Students transfer to the Applied programme if successful at interview in their third year. The placement takes place in one of our partner pathology laboratories during year 4 of the programme. Successful completion of the IBMS Registration Training Portfolio is an absolute requirement for graduation on the 'Applied' programme.

Students are only placed in a University and IBMS approved learning environments. Placement Tutors 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 HCPC Standards of Proficiency. An academic from the University visits the student on placement to monitor the student's progress. Both parties will also ensure that a robust quality monitoring processes will be in place and establish clear lines of communications.

Before students can transfer from the Biomedical Science programme, they must get an enhanced DBS and Occupational Health clearance. Placement is unpaid.

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

Each placement area is assigned a Placement Tutor and given a copy of the placement handbook, which outlines for example lines of communication, contact details of key academic staff, attendance policy and complaint procedures. Practice learning is assessed using the training manual and written assignments.

Sandwich Route

The Sandwich programme differs from the Applied Programme as students complete their placement between Year 2 and Year 3 of their academic study at University, particularly in a research institute, biotechnology or pharmaceutical company, food and drinks production company, scientific and technology sales company or a public health organisation, either in the UK or abroad. It is a programme primarily for students, who are seeking work experience or career outside of the NHS. Students, however, may be given the opportunity to complete the IBMS Registration Training Portfolio in an IBMS approved training department while on the Sandwich placement, but it is not a requirement. Students are also required to be pro-active to find their own placements with the help of MDXworks, our careers and employment service, and any required DBS or health check is carried out by the placement provider. Some placements are paid.

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

Each placement area is assigned a Placement Tutor and given a copy of the placement handbook, which outlines for example lines of communication, contact details of key academic staff, attendance policy and complaint procedures. Practice learning is assessed using the training manual 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.

16. Future careers (if applicable)

Biomedical science graduates can gain employment in a wide variety of settings, particularly laboratory-based work. Graduates could be employed in the National Health Service, pharmaceutical, forensic, Public Health, veterinary, agriculture or university laboratories; others may obtain posts in sales and marketing of biomedical products, or in education at all level.

17. Particular support for learning (if applicable)

Specialist laboratory facilities, online resources and learning resource facilitates are available to learn and develop skills. Additionally, student support, such as English language, learning Support, and dyslexic and disability support, are also available. See: <https://www.mdx.ac.uk/student-life/student-support>

18. JACS code (or other relevant coding system)

C700 BSc (Hons) Biomedical Science
C700 BSc (Hons) Applied Biomedical Science
C700 BSc (Hons) Biomedical Science (Sandwich)

19. Relevant QAA subject benchmark group(s)

Biomedical Sciences (2015)

20. Reference points

The following reference points were used in designing the Programme:

Internal documentation:

Middlesex University (2006) *Learning Framework Document*. MU.
Middlesex University (2018) *Middlesex University Regulations*. MU.
Middlesex University (2018) *LQE Handbook*. MU.

External Documentation:

Department of Health (DH) (2017) *Modernising Scientific Careers Programme BSc (Hons) in Healthcare Science (Life Sciences), Learning Outcomes and Indicative Content*. DH.
Institute of Biomedical Science (IBMS) (2017) *Criteria and Requirements for the Accreditation and Re-accreditation of BSc (Hons) degrees in Biomedical Science*. IBMS.
Quality Assurance Agency (2015) *Subject Benchmark Statements for Biomedical Sciences*. QAA.

21. Other information

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

Curriculum map for *DipHE Biomedical Science*

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 | | | |
|------------------|---|-----|--|
| A1 | The scope of practice of biomedical scientist and skills required by a biomedical scientist to provide a high-quality diagnostic service. | | |
| A2 | Normal and abnormal biological processes. | | |
| A3 | The principles of diagnosis and management of human disease. | | |
| A4 | The importance of scientific research in the advancement of healthcare practice. | | |
| A5 | Bioanalytical techniques used in clinical pathology and biomedical research. | | |
| Skills | | | |
| B1 | Critically evaluate research evidence in the context of current theory or practice. | B11 | Formulate learning and career development plans. |
| B2 | Solve clinical problems. | B12 | Use a range of information technologies. |
| B3 | Appraise and synthesise information to gain new insights into aspects of current practice. | B13 | Demonstrate a high level of numeracy and problem-solving skills. |
| B4 | Reflect on own learning and practice to develop personally and professionally. | | |
| B5 | Present information in the most effective format to communicate ideas clearly. | | |
| B6 | Design and undertake a research project. | | |
| B7 | Perform a wide range of clinical procedures competently, and in accordance with health and safety guidelines. | | |
| B8 | Communicate their ideas effectively using a variety of media. | | |
| B9 | Work both collaboratively and with an appreciation of skills required for leadership. | | |
| B10 | Demonstrate an autonomous and reflective approach to lifelong learning. | | |

Curriculum map for BSc(Hons) Biomedical Science Degrees

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 | | | |
|------------------|---|-----|--|
| A1 | The scope of practice of biomedical scientist and skills required by a biomedical scientist to provide a high-quality diagnostic service. | | |
| A2 | Normal and abnormal biological processes. | | |
| A3 | The principles of diagnosis and management of human disease. | | |
| A4 | The importance of scientific research in the advancement of healthcare practice. | | |
| A5 | Bioanalytical techniques used in clinical pathology and biomedical research. | | |
| Skills | | | |
| B1 | Critically evaluate research evidence in the context of current theory or practice. | B11 | Formulate learning and career development plans. |
| B2 | Solve clinical problems. | B12 | Use a range of information technologies. |
| B3 | Appraise and synthesise information to gain new insights into aspects of current practice. | B13 | Demonstrate a high level of numeracy and problem-solving skills. |
| B4 | Reflect on own learning and practice to develop personally and professionally. | B14 | Work within scope of practice for a biomedical scientist and according to the HCPC professional codes of conduct. (BSc (Hons) Applied Biomedical Science only) |
| B5 | Present information in the most effective format to communicate ideas clearly. | B15 | Acquire real-world knowledge and skills required to work in biomedical science research or industry. (BSc (Hons) Biomedical Science (Sandwich) only) |
| B6 | Design and undertake a research project. | | |
| B7 | Perform a wide range of clinical procedures competently, and in accordance with health and safety guidelines. | | |
| B8 | Communicate their ideas effectively using a variety of media. | | |
| B9 | Work both collaboratively and with an appreciation of skills required for leadership. | | |
| B10 | Demonstrate an autonomous and reflective approach to lifelong learning. | | |

| Programme outcomes | | | | | | | | | | | | | | | | | | | | |
|---|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|---|
| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 | B10 | B11 | B12 | B13 | B14 | B15 | |
| 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 | 6 |

| | Module Code | Programme outcomes | | | | | | | | | | | | | | | | | | |
|--|-------------|--------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|
| | | A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 | B10 | B11 | B12 | B13 | B14 |
| Professional Practice for Biomedical Science | BMS1154 | x | | | x | | x | | x | x | x | x | | x | x | x | x | x | | |
| Biomolecular Science | BMS1654 | | x | | | | | | | x | | x | | | | | | | | |
| Human Sciences | BMS1514 | | x | x | | | | x | | | x | | | | | | | | | |
| Cell Sciences | BMS1854 | | x | | | | | | | x | | x | | | | | | | | |
| Introduction to Biomedical Science | BMS1994 | x | | | | x | x | x | | | x | | x | | | | | | | |
| Research Methods and Professional Practice | BMS2075 | | | | x | | | | x | x | x | x | | x | x | x | x | x | | |
| Molecular & Genetic Sciences | BMS2225 | | x | | | x | | x | x | | x | | x | | | | | | | |
| Cellular Sciences | BMS2125 | | x | | | x | | | x | | x | | x | | | | | | | |
| Blood Sciences | BMS2135 | | x | | | x | | | x | | x | | x | | | | | | | |
| Infection Sciences | BMS2145 | | x | | | x | | | x | | x | | x | | | | | | | |
| Clinical Sciences | BMS2515 | | x | x | | | | x | x | | x | | | | | | | | | |
| Dissertation | BMS3336 | | x | | x | | x | x | x | x | x | | x | x | x | x | x | x | | |
| Cellular and Molecular Pathology | BMS3326 | | x | x | | x | | x | x | | x | | x | | | | | | | |
| Transplantation, Transfusion & Specialist Biochemistry | BMS3136 | | x | x | | x | | x | x | | x | | x | | | | | | | |
| Medical Microbiology | BMS3346 | | x | x | | x | | x | x | | x | | x | | | | | | | |
| Placement for Employability | BMS3006 | | | | | | | x | x | x | x | | | x | x | x | x | x | | x |
| Clinical Laboratory Practice | BMS3576 | x | | | | x | | x | x | x | x | | x | x | x | x | x | | x | |

