Programme Specification and Curriculum Map for Medical Science with Innovation and Enterprise

1. Programme title	BSc Medical Science with Innovation and Enterprise
2. Awarding institution	Middlesex University
3. Teaching institution	Middlesex University
4. Programme accredited by	Not applicable (N/A)
5. Final qualification	BSc (Hons) Medical Science with Innovation and Enterprise Cert HE Medical Science DipHE Medical Science BSc Medical Science
6. Academic year	2021
7. Language of study	English
8. Mode of study	BSc Medical Science with Innovation and Enterprise 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 112-128 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.

Overseas candidates, whose first language is not English, will need a qualification that demonstrates competence in English language IELTS 6.0 (with minimum 5.0 in all components) or an equivalent English qualification.

Candidates 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.

10. Aims of the programme

The programme aims:

- To help the student to develop knowledge, skills, attitude and ethical values in the field of medical science.
- To enable the student to competently carry out diagnostic investigations.
- 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 prepare the student for employment in the development and sales of medical products and services.
- To provide the student with the knowledge required for postgraduate studies in enterprise and innovation particularly in the field of medical science.

11. BSc Programme outcomes

A. Knowledge On completion of this programme the successful student will have knowledge and understanding of: 1. Normal and abnormal biochemical, cellular and physiological processes. 2. The principles of diagnosis and management of human disease. 3. The importance of scientific research in the advancement of medical research. 4. A range of medical interventions. 5. Analytical techniques used in medical diagnostic or research. 6. How to identify and develop a business idea into a desirable product or service.	**Teaching/learning methods** Students gain knowledge and understanding through on-campus or on-line lectures, seminars, laboratory classes, peer presentations, case studies, debates, designing and undertaking a research project, role-play and practical clinical sessions. **Assessment methods** Students' knowledge and understanding are assessed by summative and formative assessment, including peer presentations, laboratory reports, objective-structured practical examinations, online quizzes, and unseen theory examinations..
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. Present information in the most effective format to communicate ideas clearly. 4. Design and undertake a research project. 5. Perform a wide range of common medical laboratory techniques competently, and in accordance with health and safety guidelines. 6. Collaborate with diverse range of people and behave ethically in the development a desirable product or service.	**Teaching/learning methods** Students acquire skills through on-campus or on-line 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. **Assessment methods** Students' cognitive skills are assessed by formative and summative assessment as written work, examinations, online quizzes, case studies, 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: BSc Medical Science with Innovation and Enterprise

Figure 1: Full-Time

Year 1

BMS1111 Professional Development and Trends in Medical Science (15 Credits)	BMS1514 Human Sciences (30 Credits)	BMS1654 Biomolecular Science (15 Credits)	BMS1854 Cell Sciences (30 Credits)	MGT1990 Creativity and Innovation (30 Credits)

Year 2

BMS2075 Research Methods and Professional Development (30 Credits)	BMS2515 Clinical Sciences (30 Credits)	BMS2221 Molecular Biology and Genomics (15 Credits)	BMS2211 Pharmacology and Toxicology (15 Credits)	MGT2990 Design Processes and Project Management (30 Credits)

Year 3

BMS3336 Dissertation (30 Credits)	BMS3314 Clinical Diagnostics (30 Credits)	Optional modules: Select either one from list A or two from list B. List A: BMS3315 Neuropharmacology (30 Credits) BMS3496 Clinical Neurology (30 Credits) BMS3736 Drug Development (30 credits) BMS3326 Cell and Molecular Pathology (30 Credits) List B: BIO3232 Bioinformatics (15 Credits) and either BIO3556 Gene Expression and Control (15 Credits) or BIO3226 Gene Technology (15 Credits)	MGT3990 Networking and Business Development (30 credits)

Figure 2: Part-Time

Year 1

BMS1111 Professional Development and Trends in Medical Science (15 Credits)	BMS1514 Human Sciences (30 Credits)	BMS1654 Biomolecular Science (15 Credits)	BMS1854 Cell Sciences (30 Credits)

Year 2

BMS2515 Clinical Sciences (30 Credits)	BMS2221 Molecular Biology and Genomics (15 Credits)	BMS2211 Pharmacology and Toxicology (15 Credits)	MGT1990 Creativity and Innovation (30 Credits)

Year 3

BMS2075 Research Methods and Professional Development (30 Credits)	BMS3314 Clinical Diagnostics (30 Credits)	MGT2990 Design Processes and Project Management (30 Credits)

Year 4

BMS3336 Dissertation (30 Credits)	MGT3990 Networking and Business Development (30 credits)	Optional modules: Select either one from list A or two from list B. List A: BMS3315 Neuropharmacology (30 Credits) BMS3496 Clinical Neurology (30 Credits) BMS3736 Drug Development (30 credits) BMS3326 Cell and Molecular Pathology (30 Credits) List B: BIO3232 Bioinformatics (15 Credits) and either BIO3556 Gene Expression and Control (15 Credits) or BIO3226 Gene Technology

To exit with
a Cert HE in Medical Science, students must achieve 120-225 credit points at level 4 and above.
To exit with a DipHE in Medical Science, students must achieve 240-285 credit points at level 4 and above.
To exit with an ordinary degree in Medical Science, students must achieve 300-315 credit points at level 4 and above.

12.2 Levels and modules		
Level 4		
COMPULSORY	OPTIONAL	PROGRESSION REQUIREMENTS
All students must take all of the following: BMS1111 BMS1514 BMS1654 BMS1854 MGT1990	There are no optional modules.	Normally all modules must be passed but a marginal failed module, except for MGT1990, can be compensated in accordance with University regulations.
Level 5		
COMPULSORY	OPTIONAL	PROGRESSION REQUIREMENTS
All students must take all of the following: BMS2075 BMS2221 BMS2211 BMS2515 MGT2990	There are no optional modules.	Normally all modules must be passed but a marginal failed module, except for MGT2990, can be compensated in accordance with University regulations.
Level 6		
COMPULSORY	OPTIONAL	PROGRESSION REQUIREMENTS
Science students must take the following: BMS3314 BMS3336 MGT3990	Students must either select either one from list A or two from list B. List A BMS3315 BMS3496 BMS3736 BMS3326 List B BIO3232 and either BIO3556 or BIO3226	Not applicable.

12.3 Non-compensatable modules	
Module level	***Module code***
4	MGT1990
5	MGT2990
6	BMS3336 and MGT3990

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).

Normally all modules must be passed either by assessment or pre-accreditation. To pass a module with multiple assessments, students must achieve an aggregate grade of at least 16 with no lower than a grade 18 for any component.

Formative assessments prepare students for their summative assessments. It is therefore recommended that students should engage with all forms of assessment.

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

Not applicable

16. Future careers (if applicable)

The programme prepares graduates for possible careers in biomedical consultancy, biomedical research, healthcare and medical start-up and spin off companies, medical product and device companies, pharmaceutical industry, technology transfer and science communication.

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)	B990
19. Relevant QAA subject benchmark group(s)	Biomedical Sciences (2019)

20. Reference points

The following reference points were used in designing the Programme:

Internal documentation:

Middlesex University (2020) *Middlesex University Regulations.* MU.
Middlesex University (2020) *LQE Handbook.* MU.

External Documentation:

Quality Assurance Agency (2019) *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 *BSc in Medical Science with Innovation and Enterprise*

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	Normal and abnormal biochemical, cellular and physiological processes.
A2	The principles of diagnosis and management of human disease.
A3	The importance of scientific research in the advancement of medical research.
A4	A range of medical interventions.
A5	Analytical techniques used in medical diagnostic or research.
A6	How to identify and develop business idea into a desirable product or service.
Skills	
B1	Critically evaluate research evidence in the context of current theory or practice.
B2	Solve clinical problems.
B3	Present information in the most effective format to communicate ideas clearly.
B4	Design and undertake a research project.
B5	Perform a wide range of common medical laboratory techniques competently, and in accordance with health and safety guidelines.
B6	Collaborate with diverse range of people and behaviour ethically in the development a desirable product or service.

BSc in Medical Science with Innovation and Enterprise

	Module Code	Programme outcomes											
		A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6
Professional Development and Trends in Medical Science	BMS1111		x	x		x		x	x	x	x		
Biomolecular Science	BMS1654	x											
Human Sciences	BMS1514	x			x								
Cell Sciences	BMS1854	x				x						x	
Creativity and Innovation	MGT1990						x						x
Research Methods and Professional Practice	BMS2075			x				x		x	x		
Molecular Biology and Genomics	BMS2221	x			x	x			x			x	
Pharmacology and Toxicology	BMS2211	x			x								
Design Processes and Project Management	MGT2990						x						x
Clinical Sciences	BMS2515	x	x		x				x				
Dissertation	BMS3336			x				x		x	x		
Clinical Diagnostics	BMS3314		x		x	x			x			x	
Networking and Business Development	MGT3990						x						x
Options													
Clinical Neurology	BMS3496	x			x				x				
Cellular and Molecular Pathology	BMS3326	x	x			x			x			x	
Drug Development	BMS3736				x				x				
Neuropharmacology	BMS3315	x			x				x				
Bioinformatics	BIO3232	x				x				x			
Gene Technology	BIO3226	x										x	
Gene Expression and Control	BIO3556	x										x	

Programme outcomes												
A1	A2	A3	A4	A5	A6		B1	B2	B3	B4	B5	B6
Highest level achieved by all graduates												
6	6	6	6	6	6		6	6	6	6	6	6