BSc Pharmaceutical Sciences

BSc Pharmaceutical Sciences with Foundation Year

Programme Specification

1. Programme title	BSc (Hons) Pharmaceutical Sciences BSc (Hons) Pharmaceutical Sciences with Foundation Year
2. Awarding institution	Middlesex University
3a. Teaching institution	Middlesex University
3b. Language of study	English
4a. Valid intake dates	September
4b. Mode of study	FT/PT
4c. Delivery method	☒ On-campus/Blended ☐ Distance Education
5. Professional/Statutory/Regulatory body	Royal Society of Chemistry (subject to approval) for BSc (Hons) Pharmaceutical Sciences only
6. Apprenticeship Standard	Not applicable
7. Final qualification(s) available	BSc (Hons) Pharmaceutical Sciences BSc (Hons) Pharmaceutical Sciences with Foundation Year BSc (Hons) Pharmaceutical Chemistry BSc Pharmaceutical Sciences BSc Pharmaceutical Chemistry DipHE Pharmaceutical Sciences CertHE Life Sciences
8. Academic year effective from	**2025/26**

9. Criteria for admission to the programme

For all BSc (Hons) Pharmaceutical Sciences programmes, candidates require Maths and English equivalent to at least GCSE grade 4 or equivalent qualifications as well as 112-128 UCAS tariff points from one of the following awards:

- A-levels, including a minimum of two A levels with at least one science subject, either in biology or chemistry at grade C or better (BBC)
- Edexcel BTEC Level 3 Extended Diploma minimum two subjects in Applied Science (Chemistry or Biology) (DMM)
- Access to HE Diploma course in science or natural and physical sciences (Pass with 45 credits at level 3, of which 30 must be at Distinction and 15 credits at Merit or higher)
- High school equivalent, such as an International Baccalaureate (28 points)

For more information about the foundation year visit:
https://www.mdx.ac.uk/courses/undergraduate/foundation-year-in-science

Overseas candidates, whose first language is not English, will need a qualification that demonstrates competence in English language IELTS 6.0 (with minimum 5.5 in all components) or an equivalent English qualification.

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

10. Aims of the programme

The programme aims to:

- provide students with a sound knowledge in chemical and biological subjects related to drug design and development;
- give students an understanding of the mode of action of drugs and their pharmacology;
- develop the student's numerical, computational and analytical skills;
- gain competence using laboratory equipment and software;
- develop the student's ability to apply scientific method and approaches to research, and drug development and innovation;
- develop the student's reflective practice, critical thinking, research, communication, team working and leadership skills;
- enable students to acquire knowledge of the ethical, legal, societal and global responsibilities related to drug design and development.

11. Programme outcomes*

A. Knowledge and understanding

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

1. Chemical core concepts related to pharmaceutical sciences;
2. Normal and abnormal biochemical, cellular and physiological processes and their relation to disease;
3. The principles of the drug discovery process including drug design, development, delivery, and action;
4. Therapeutic and toxic effects of drugs on the human body;
5. Analytical or computational techniques used in pharmaceutical research and product development;
6. The importance of research in the advancement of pharmaceutical sciences;
7. Ethical, legal, societal and global responsibilities in pharmaceutical research, drug discovery and sustainable development.

8. Chemistry core concepts -e.g. inorganic, physical, analytical, computational, organic and synthetic chemistry

Additional programme outcomes for the BSc in Pharmaceutical Chemistry.

9. Synthesis, isolation, purification and characterisation techniques.

Teaching/learning methods
Students gain knowledge and understanding through bite size videos covering threshold concepts, seminars, computational workshops, project-work, laboratory classes, peer presentations, debates, designing and undertaking a research project.

Assessment methods
Students' knowledge and understanding are assessed by summative and formative assessment, including oral/video presentations, laboratory reports, online quizzes, in-class tests and unseen theory examinations.

B. Skills

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

1. Formulate ideas through the evaluation of appropriate research evidence, scientific concepts, principles or review of previous experience (GC1);
2. Generate, analyse and critically evaluate scientific information and data using the most appropriate technology (GC1,4);
3. Perform a wide range of common pharmaceutical laboratory techniques competently, in accordance with quality assurance and health and safety guidelines (GC1);
4. Communicate their ideas or information effectively to both scientific and non-scientific audiences using a variety of media (GC6);
5. Demonstrate a high level of numeracy and research skills (GC1, 8);
6. Propose and design an ethical, novel and feasible approach or product to solve a real-world problem (GC2, 5);
7. Work collaboratively to solve complex real-world problems with changing briefs within a specified time-frame (GC3, 7 and 8).

Additional programme outcomes for the BSc in Pharmaceutical Chemistry.

8. Perform a wide range of common chemical laboratory techniques or procedures following risk assessment and in accordance with health and safety guidelines (GC1);
9. Apply practical skills to the study of chemistry related sciences (GC8).

Teaching/learning methods
Students learn skills through a variety of methods:

- Cognitive skills are developed through bite size concept videos, seminars, discussions, peer presentations, project-work, research projects, and problem-solving exercises.
- Practical skills are developed through laboratory practical classes and video demonstrations and undertaking research projects.
- Employability skills are developed through attending workshops, seminars, places of employment, or careers fairs.

Assessment methods
Students' skills are assessed by a variety of formative and summative assessment methods including written work such as lab reports, practical examinations, portfolios student observable behaviours, and audio-visual graphical presentations.

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

1. Curiosity and learning,
2. collaborative innovation,
3. resilience and adaptability,
4. technological agility,
5. entrepreneurship,
6. communication, empathy, and inclusion,
7. leadership and influence,
8. problem solving and delivery.

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

12.1 Structure of the programme

BSc Full-time Pharmaceutical Sciences/ Pharmaceutical Sciences with Foundation Year

Year 1 – all modules are core (Exit with CertHE)

Level 4
Semester 1
CHE1609 Fundamentals of Chemistry (30 credits)
BIO1120 Skills for Scientists (30 credits)
Semester 2
BIO1557 Cell Sciences and Genetics (30 credits)
BIO1640 Form and Function (30 credits)

Year 2 – Two core and optional modules (Exit with DipHE)

Level 5
Semester 1
CHE2735 Pharmaceutics and Biopharmaceutics (30 credits)
OR
CHE2365 Inorganic and Physical Chemistry (30 credits)
CHE2319 Pharmaceutical Chemistry (30 credits)

Semester 2
BMS2745 Pharmaceutical Product Development (30 credits)
OR
CHE2325 Analytical and Organic Chemistry (30 credits)
CHE2125 Research Methods and Science Innovation (30 credits)

Year 3 – Two core and optional modules

Level 6 (Year 5)
Semester 1
BMS3311 Pharmacology and Toxicology (30 credits)
OR
CHE3326 Advanced Organic Chemistry and Synthesis (30 credits)
CHE3736 Drug Design and Development (30 credits)

Semester 2
CHE3786 Medical and Pharmaceutical Bioanalytical Techniques (30 credits)
OR
CHE3316 Advanced Inorganic and Physical Chemistry (30 credits)
BMS3796 Dissertation (30 credits)

Students who achieve at least 300 credits (including at least 60 credits in Year 3 modules), will be awarded pharmaceutical sciences or pharmaceutical chemistry degrees depending on their chosen route.

BSc Part-time Pharmaceutical Sciences/ Pharmaceutical Sciences with Foundation Year

Indicative Part time structure

Years 1 & 2 modules are core (Exit with CertHE)

Level 4 (Year 1)
Semester 1
CHE1609 Fundamentals of Chemistry (30 credits)

Semester 2
BIO1557 Cell Sciences and Genetics (30 credits)

Level 4 (Year 2)
Semester 1
BIO1120 Skills for Scientists (30 credits)

Semester 2
BIO1640 Form and Function (30 credits)

Years 3 & 4 – Two core and optional modules (Exit with DipHE)

Level 5 (Year 3)
Semester 1
CHE2735 Pharmaceutics and Biopharmaceutics (30 credits)
OR
CHE2365 Inorganic and Physical Chemistry (30 credits)

Semester 2
BMS2745 Pharmaceutical Product Development (30 credits)
OR
CHE2325 Analytical and Organic Chemistry (30 credits)

Level 5 (Year 4)
Semester 1
CHE2319 Pharmaceutical Chemistry (30 credits)

Semester 2
CHE2125 Research Methods and Science Innovation (30 credits)

Years 5 & 6 – Two core and optional modules

Level 6 (Year 5)
Semester 1
BMS3311 Pharmacology and Toxicology (30 credits)
OR
CHE3326 Advanced Organic Chemistry and Synthesis (30 credits)

Semester 2
CHE3786 Medical and Pharmaceutical Bioanalytical Techniques (30 credits)
OR
CHE3316 Advanced Inorganic and Physical Chemistry

(30 credits)

Level 6 (Year 6)
Semester 1
CHE3736 Drug Design and Development (30 credits)

Semester 2
BMS3796 Dissertation (30 credits)

Students who achieve at least 300 credits (including at least 60 credits in Year 3 modules), will be awarded pharmaceutical sciences or pharmaceutical chemistry degrees depending on their chosen route.

12.2 Levels and modules

Level 4

Compulsory
Students must take all of the following:
BIO1557
BIO1120
CHE1609
BIO1640

Optional
There are no optional modules.

Progression requirements
Student can progress in accordance with University assessment regulations but must pass CHE1609 to progress onto the pharmaceutical chemistry route.

Level 5

Compulsory
Students must take all of the following:
CHE2125
CHE2319

Optional
At the end of the Year 1 students choose either the Pharmaceutical Chemistry route (modules CHE2325, CHE2365, CHE3326, CHE3316) or the Pharmaceutical Sciences route (modules CHE2735, BMS2745, BMS3311, CHE3786).

A route will not run with less than 15 students.
Progression requirements
Students can progress in accordance with University assessment regulations.

Level 6

Compulsory
Students must take all of the following:
CHE3736
BMS3796

Optional

At the end of the Year 1 students choose either the Pharmaceutical Chemistry route (modules CHE2325, CHE2365, CHE3326, CHE3316) or the Pharmaceutical Sciences route (modules CHE2735, CHE2745, BMS3311, CHE3786).

A route will not run with less than 15 students.

Progression requirements
Students can be awarded a degree in accordance with programme and University assessment regulations.

*Please refer to your programme page on the website re availability of option modules

12.3 Non-compensatable modules

Module level
Module code
Level 4
CHE1609
Level 5
CHE2365, CHE2325
Level 6
CHE3326, CHE3316, BMS3796

13. Information about assessment regulations

This programme will run in line with general University regulations, which can be found here: Policies | Middlesex University.

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

Not applicable

15. Future careers / progression

Pharmaceutical Science graduates can gain employment in a wide variety of settings, particularly laboratory-based work. The degree is directly related to employment within the pharmaceutical industry is areas such as target identification, biological evaluation, preclinical and clinical testing. Other career opportunities include sales and marketing of pharmaceutical products, science writing, or in education at all levels. Pharmaceutical Science graduates can also progress onto an MSc or a PhD within drug development or a related field.

16. Particular support for learning

Specialist laboratory facilities, online resources and learning resource facilities are available to help 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

17. HECos code(s)

100250 (Pharmacology), 100251 (Pharmacy), and 100423 (Pharmaceutical Chemistry)

18. Relevant QAA subject benchmark(s)

Biomedical Science and Biomedical Sciences (Pharmacology) 2023

Pharmacy 2002

Chemistry 2022

19. Reference points

Internal documentation:

1. Middlesex University (2023) *Middlesex University Regulations.* MU.
2. Middlesex University (2023) *Learning and Quality Enhancement Handbook.* MU
3. Middlesex University (2023) *2031 Learning Framework.* MU.

External Documentation:
Academy of Pharmaceutical Sciences (2023) *APS Accreditation Process.* *https://www.apsgb.co.uk/wp-content/uploads/2023/03/Accreditation-Process-March-2023.pdf*
Royal Society of Chemistry (2015) *Accreditation of Degree Programmes.* Royal Society of Chemistry.

20. Other information

None.

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

21. Curriculum map for

BSc (Hons) Pharmaceutical Sciences, BSc (Hons) Pharmaceutical Sciences with Foundation Year, BSc (Hons) Pharmaceutical Chemistry (Exit Award)

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	Chemical core concepts related to pharmaceutical sciences;
A2	Normal and abnormal biochemical, cellular and physiological processes and their relation to disease;
A3	The principles of the drug discovery process including drug design, development, delivery, and action;
A4	Therapeutic and toxic effects of drugs on the human body;
A5	Analytical or computational techniques used in pharmaceutical research and product development;
A6	The importance of research in the advancement of pharmaceutical sciences;
A7	Ethical, legal, societal and global responsibilities in pharmaceutical research and drug discovery and sustainable development.
A8	Chemistry core concepts e.g. inorganic, physical, analytical, computational, organic and synthetic chemistry
A9	Synthesis, isolation, purification and characterisation techniques

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	Perform a wide range of common pharmaceutical laboratory techniques competently, in accordance with quality assurance and health and safety guidelines;
B4	Communicate their ideas or information effectively to both scientific and non-scientific audiences using a variety of media;
B5	Demonstrate a high level of numeracy and research skills;
B6	Propose and design an ethical, novel and feasible approach or product to solve a real-world problem;
B7	Work collaboratively to solve complex real-world problems with changing briefs within a specified time-frame.
B8	Perform a wide range of common chemical laboratory techniques or procedures following risk assessment and in accordance with health and safety guidelines
B9	Apply practical skills to the study of chemistry related sciences

Programme outcomes - Highest level achieved by graduates

A 1	A 2	A 3	A 4	A 5	A 6	A 7	A 8	A 9	B 1	B 2	B 3	B 4	B 5	B 6	B 7	B 8	B 9
6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6

23b Mapping by level of study and module

Module Title	**Module Code by Level**	**A 1**	**A 2**	**A 3**	**A 4**	**A 5**	**A 6**	**A 7**	**A 8**	**A 9**	**B 1**	**B 2**	**B 3**	**B 4**	**B 5**	**B 6**	**B 7**	**B 8**	**B 9**
Cell Sciences and Genetics	BIO1557		X									X	X		X				
Skills for Scientist	BIO1120							X	X	X		X		X	X		X	X	X
Fundamentals of Chemistry	CHE1609		X		X				X	X	X	X		X				X	X
Form and Function	BIO1640			X									X	X	X				
Pharmaceutics and Biopharmaceutics	CHE2735	X		X	X						X	X	X	X					
Pharmaceutical Chemistry	CHE2319	X		X	X	X					X	X		X					
Inorganic and Physical Chemistry	CHE2365								X	X								X	X
Research Methods and Science Innovation	CHE2125						X	X			X	X		X	X	X	X		
Pharmaceutical Product Development	BMS2745	X				X					X	X	X	X					
Analytical and Organic Chemistry	CHE2325								X	X								X	X
Drug Design and Development	CHE3736	X		X	X	x	X	X	X		X	X		X	X		X		X
Pharmacology and Toxicology	BMS3311		X	X	X						X	X							
Advanced Organic Chemistry and Synthesis	CHE3326								X	X								X	X
Dissertation	BMS3796		X				X	X		X	X	X	X	X	X	X	X		X
Medical and Pharmaceutical Bioanalytical Techniques	CHE3786					X					X	X	X	X	X				
Advanced Inorganic and Physical Chemistry	CHE3316								X	X								X	X