Course Specification
Part A

HLST179 MSc Pharmacology and Drug Discovery with Professional Experience

Faculty of Health and Life Sciences
School of Life Sciences

Academic Year 2021/2022

Please note: This specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided.

We regularly review our course content, to make it relevant and current for the benefit of our students. For these reasons, course modules may be updated.

More detailed information on the learning outcomes, content, and teaching, learning and assessment methods of each module can be found in the Module Information Directory (MID), student module guide(s) and the course handbook.

The accuracy of the information contained in this document is reviewed by the University and may be verified by the Quality Assurance Agency for Higher Education.

Coventry University’s accreditation with CMI is currently ongoing for the relevant modules and is regularly reviewed and monitored by the CMI through their quality systems. Whilst Coventry University anticipates that these reviews will continue to be successful, if they were to be unsuccessful, the relevant module in this course would no longer be accredited and we would notify applicants and students of this change as soon as possible.
1. Introduction

Pharmacology and Drug Discovery plays a critical role in identifying and treating disease. Currently, there is demand for a whole new range of suitably trained professionals to speed up the critical task of translating laboratory medical research into commercially-ready medical pharmaco-therapeutics that can be used to diagnose and treat patients. MSc Pharmacology and Drug Discovery with Professional Experience is a versatile, stimulating, multidisciplinary degree course that encompasses an emerging area of science known as ‘Translational Medicine’. This area requires a new breed of Pharmacologist who can apply contemporary science knowledge and skills to experimental study design, management and data analysis, and who understands the legislation and other regulatory procedures surrounding drug development and disease treatment. The course is designed to meet these needs. It also covers relevant biotechnical innovations associated with “Pharmacology and Drug Discovery” as well as both classical clinical trial design and health-outcomes research.

The Life Sciences Industrial strategy set out by the UK government in 2017, supported by £146 million investment, emphasises the need for the UK to become a world-leading hub for health technology trends via the establishment of the Health Advanced Research Programme (HARP) and reinforces the UK science offer, as well as supporting growth and infrastructure projects within the industry (UKGOV; Life Sciences: Industrial strategy, 2017). The projects include:

- Medicines Manufacturing Innovation Centre: To accelerate the adoption of emerging and novel manufacturing technologies
- Vaccines Development and Manufacturing Centre: To develop and manufacture vaccines for clinical trials and prepare for emergency epidemic threats,
- Advanced Therapies Treatment Centre: To develop and deliver cell and gene therapies to a large number of patients
- Expanding the Cell and Gene Therapy Manufacturing Centre: Enhancing the UK’s offer in the fast-moving field of cell and gene therapy
- Research & Development to support innovation at the manufacturing centres: Through a new collaborative scheme to support SMEs working in this sector and boost innovation.


MSc Pharmacology and Drug Discovery with Professional Experience is designed to provide such specialist scientists by applying contemporary pharmacology and clinical sciences to topics including diagnosis, drug discovery and development, pharmacogenomics, understanding and treatment of disease, commercialisation and intellectual property, to develop the next generation of translational pharmacologists. The course will provide students with a thorough understanding of contemporary/current pharmacology and its application to new and emerging issues both nationally and globally. The course is designed to prepare graduates for a range of careers as well as providing a foundation for those wishing to further study pharmacology and drug discovery at PhD level.
A key component of the course is the incorporation of a period of Professional Experience. Students spend two semesters either off or on campus in a professional working environment, thus enhancing their employability skills, and developing insight into the application of their University knowledge to academic and commercial projects. Students are supported and assisted to apply for, and secure, Professional Experience opportunities during their first two semesters of study, by our Faculty Employability Support Team and the Course Director. All students are guaranteed a Professional Experience. Placements are, however, competitive and selective, and the range of available opportunities varies from year to year, so it is not possible to guarantee a specific Professional Experience in a specific organisation. The Professional Experience period includes a research based investigation, thus ensuring that students develop and apply research principles as a key component of their course.

An additional exciting and innovative feature of this course is the inclusion of a module focussed on Entrepreneurial Practice in the commercial sector. This module enables students to understand and apply business management principles in problem based scenarios. This gives students added skills and promotes innovative thinking which can applied in many sectors of life. These skills are particularly relevant to organisations centred on innovative science solutions and products, including start-ups, small to medium enterprises, as well as established multinational companies.

This module is currently accredited by the Chartered Management Institute (CMI). Upon successful completion of the module, you will gain the CMI Level 7 Certificate in Strategic Management and Leadership Practice at no additional cost.

Facilities and support for students studying this course include our new Science and Health Building (SHB) opened in 2017. This includes a purpose built “super-lab”, including state of the art scientific equipment, an analytical laboratory and research facilities. In addition, there are outstanding health simulation facilities, including life size electronically controlled mannequins, able to respond in real time to pharmacological interventions. Students are supported through the course by experienced academic staff who draw on their own research activities to inform the teaching and learning experience, a highly skilled technical support team and employability support from employability advisors.

MSc Pharmacology and Drug Discovery with Professional Experience therefore aims to produce graduates who are not only knowledgeable about their discipline and competent in planning and conducting research investigations, but who also understand commercial strategies and principles and are able to evidence their ability to apply their skills within a work based environment. Thus, it prepares students to access global career opportunities within the pharmacology and drug development industry.
## 2 Available Award(s) and Modes of Study

<table>
<thead>
<tr>
<th>Title of Award</th>
<th>Mode of attendance</th>
<th>UCAS Code</th>
<th>FHEQ Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSc Pharmacology and Drug Discovery with Professional Experience (HLST179)</td>
<td>5 semesters (up to 20 months) F/T</td>
<td>N/A</td>
<td>Level 7</td>
</tr>
</tbody>
</table>

Fall back awards:
- PgD Pharmacology and Drug Discovery
- PgC Pharmacology and Drug Discovery

<table>
<thead>
<tr>
<th>3 Awarding Institution/Body</th>
<th>Coventry University.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Collaboration</td>
<td>None.</td>
</tr>
</tbody>
</table>
| 5 Teaching Institution and Location of delivery | Coventry University, School of Life Sciences.  
Coventry University Main Campus. |
Date for next review: Academic year 2023/2024. |
| 7 Course Accredited by | Chartered Management Institute |
| 8 Accreditation Date and Duration | Not Applicable |
| 9 QAA Subject Benchmark Statement(s) and/or other external factors | There is no benchmark statement for a MSc award in Pharmacology and Drug Discovery or related subjects.  
However, this course conforms with the QAA Characteristic Statements for a Specialised or Advanced Study Masters programme [http://www.qaa.ac.uk/en/Publications/Documents/Masters-Degree-Characteristics-15.pdf](http://www.qaa.ac.uk/en/Publications/Documents/Masters-Degree-Characteristics-15.pdf)  
In addition, the course has been mapped to the accreditation criteria for the Royal Society of Biology [https://www.rsb.org.uk/education/accreditation](https://www.rsb.org.uk/education/accreditation) |
<table>
<thead>
<tr>
<th><strong>10 Date of Course Specification</strong></th>
<th>March 2018 (updated March 2021)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>11 Course Director</strong></td>
<td>Dr Afthab Hussain</td>
</tr>
</tbody>
</table>
12 Outline and Educational Aims of the Course

MSc Pharmacology and Drug Discovery with Professional Experience (HLST179) is designed to meet the needs of the pharmaceutical industry for suitably trained, experienced multi-disciplinary translational pharmacologists. The course provides contemporary and cutting-edge theoretical content and practical skills in pharmacology and drug discovery for graduates aspiring for a career in academia or within the pharmaceutical/healthcare industry. The course is formulated to develop independent critical learners and to greatly enhance student competencies including both practical and critical analysis skills allowing them to compete on the global job market. Moreover, students undertake a professional experience that will allow them to apply their knowledge and skills in a work based setting to develop creative solutions commercial problems and communicate them to scientific and non-scientific audiences.

The key educational aims of the MSc Pharmacology and Drug Discovery with Professional Experience are therefore to:

1. Develop the student’s theoretical and practical skills in advances at the forefront of modern pharmacology, drug discovery and development.

2. Offer students rigorous training and practice in the research, analytical, evaluative and presentational skills necessary to an independent professional laboratory scientist specialising in pharmacology and drug discovery.

3. Enhance students’ appreciation of the academic, local, global, and commercial contexts to pharmacology and drug discovery to enhance their creativity, employability and mobility.

4. Enable students to work independently and use initiative to solve creatively the diverse problems that they may encounter in both academic and commercial environments.

5. Enhance students’ ability to understand principles of entrepreneurship, commercial development and leadership and their relevance to pharmacology and drug discovery.

6. Provide opportunities in pharmacology and drug discovery to integrate knowledge and skills in theoretical and practical pharmacology and drug discovery in a work based environment to enhance employment opportunities.
13 Course Learning Outcomes

At the end of the course a student should be able to:

1. Demonstrate comprehensive knowledge of contemporary and cutting-edge pharmacology, drug discovery and development and apply this to provide creative solutions to commercial challenges.

2. Critically analyse, integrate and appraise scientific data and communicate effectively using oral, written and digital platforms to both scientific and non-scientific audiences.

3. Competently undertake laboratory work using a range of pharmacological and molecular biology techniques.

4. Demonstrate an independent approach to learning, reflect on their own practise and take responsibility for personal development within their professional field.

5. Work effectively independently or within a team demonstrating entrepreneurship, creativity and leadership skills.

6. Design and deliver an independent hypothesis driven research project with considerations for ethics and health and safety.

7. Critically evaluate the principles for leading and developing people and entrepreneurial practice in strategic contexts.

8. Evidence effective integration into a work-based environment and reflect on their learning experiences.

14 Course Structure and Requirements, Levels, Modules, Credits and Awards

MSc Pharmacology and Drug Discovery with Professional Experience is a full-time course with 180 credits taken over 5 semesters. There are currently 2 intakes per academic year, in September and January.

Students enrolled on MSc Pharmacology and Drug Discovery with Professional Experience are not permitted to transfer to MSc Pharmacology and Drug Discovery (HLST178) as these courses differ in some content from the start. Similarly, students enrolled on MSc Pharmacology and Drug Discovery are not able to transfer to MSc Pharmacology and Drug Discovery with Professional Experience.

PgD and PgC Pharmacology and Drug Discovery are only available as fall back awards. All modules on the course are mandatory. The modules are detailed in Table 14.1, the indicative sequence of study for each route is shown in table 14.2. Please note that this sequence may be subject to change.
<table>
<thead>
<tr>
<th>Module credit level</th>
<th>Module Code</th>
<th>Title</th>
<th>Learning Credit Value</th>
<th>Assessment Credit Value</th>
<th>Mandatory/Optional</th>
<th>Course Learning Outcomes</th>
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<tbody>
<tr>
<td>7</td>
<td>7007BMS</td>
<td>Research Techniques in Pharmacology</td>
<td>30</td>
<td>M</td>
<td>1,2,3,4,5</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>7008BMS</td>
<td>Principles of Pharmacology and Drug Discovery</td>
<td>20</td>
<td>M</td>
<td>1,2,5</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>7009BMS</td>
<td>Current Topics in Pharmacology and Drug Discovery</td>
<td>15</td>
<td>M</td>
<td>1,2,5</td>
<td></td>
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<tr>
<td>7</td>
<td>7023BMS</td>
<td>Drug Discovery: from bench to bedside</td>
<td>15</td>
<td>M</td>
<td>2,3,4,5</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>7050CRB</td>
<td>Entrepreneurial Practice</td>
<td>10</td>
<td>M</td>
<td>4,7</td>
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<tr>
<td>7</td>
<td>7013BMS</td>
<td>Professional Experience Preparation</td>
<td>10</td>
<td>M</td>
<td>1,2,5,6,</td>
<td></td>
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<tr>
<td>7</td>
<td>7021BMS</td>
<td>Critical Review in Pharmacology</td>
<td>10</td>
<td>M</td>
<td>1,2</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>7022BMS</td>
<td>Pharmacology Scientific Presentation</td>
<td>10</td>
<td>M</td>
<td>1,2</td>
<td></td>
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<tr>
<td>7</td>
<td>7018BMS</td>
<td>Professional Experience in Life Sciences 1</td>
<td>0</td>
<td>M</td>
<td>4,8</td>
<td></td>
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<tr>
<td>7</td>
<td>7019BMS</td>
<td>Professional Experience in Life Sciences 2</td>
<td>0</td>
<td>M</td>
<td>4,8</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>7020BMS</td>
<td>Life Sciences Professional Experience Project and Reflection</td>
<td>60</td>
<td>M</td>
<td>1,2,4,5,6,8</td>
<td></td>
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</tbody>
</table>
Table 14.2 Proposed Study Plan (including Sept and Jan intakes). Please note that this is indicative only and may be subject to change.

<table>
<thead>
<tr>
<th></th>
<th>Year 1 Sept-Dec</th>
<th>Year 1 Jan- April</th>
<th>Year 1 May-Aug</th>
<th>Year 2 Sept-Dec</th>
<th>Year 2 Jan-April</th>
<th>Year 2 May-Aug</th>
</tr>
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<tbody>
<tr>
<td><strong>FT MSc</strong></td>
<td>7007BMS</td>
<td>7008BMS</td>
<td>7021BMS</td>
<td>7018BMS</td>
<td>7019BMS</td>
<td>7020BMS</td>
</tr>
<tr>
<td><strong>Sept start</strong></td>
<td>7007BMS</td>
<td>7008BMS</td>
<td>7021BMS</td>
<td>7018BMS</td>
<td>7019BMS</td>
<td>7020BMS</td>
</tr>
<tr>
<td><strong>FT MSc</strong></td>
<td>7007BMS</td>
<td>7008BMS</td>
<td>7021BMS</td>
<td>7018BMS</td>
<td>7019BMS</td>
<td>7020BMS</td>
</tr>
<tr>
<td><strong>Jan start</strong></td>
<td>7007BMS</td>
<td>7008BMS</td>
<td>7021BMS</td>
<td>7018BMS</td>
<td>7019BMS</td>
<td>7020BMS</td>
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**Semester 1**

Modules 7007BMS and 7008BMS are designed to ensure that students have a firm grasp of the underlying principles of Pharmacology and Drug Discovery, both theoretical and practical. These modules also aim to help students develop logical thinking and problem-solving skills. Reporting of scientific information through diverse formats (traditional written laboratory report, oral presentation and blogs) are used to develop communication skills. Module 7021BMS requires students to draw on their knowledge and skills developed in 7007BMS and 7008BMS, in the form of a critical review of a research article in pharmacology.

In 7013BMS students prepare for their professional experience with support from the Faculty employability advisors to help produce CVs, become familiar with application processes and practice interview techniques in order to apply for, and secure, professional experience placements in semester 2. Specific Professional Experience places cannot be guaranteed, particularly those hosted by outside agencies, as these places are competitive and selective. However, all students will be assured of a campus-based experience if they are unsuccessful, or opt not to apply for, external opportunities.

**Semester 2**

In 7009BMS students will focus on current topics in Pharmacology and Drug Discovery. In 7023BMS students will work in teams, using their prior laboratory practical and computational pharmacology experience in a ‘mini-project’ to investigate the drug discovery process all the way from first principles of target identification through to clinical evaluation in a human simulation.

Students who successfully complete module 7050CRB (Entrepreneurial Practice) and meet the CMI learning outcomes will gain a Level 7 Certificate in Strategic Management and Leadership Practice based on the following CMI units: Leading and Developing People to Optimise Performance (unit 702); Entrepreneurial Practice (unit 711).
Students who successfully complete this module will be awarded Foundation Chartered Manager status and be able to use the designation ‘fCMgr’ after their name.

7022BMS requires students to integrate their knowledge of pharmacology and drug discovery and design and present a poster at a symposium. In module 7013BMS, students begin to explore their preferred host organisation in terms of their business interests and structure and the student’s potential role, together with consideration of possible research opportunities. They are briefed on the requirements for successful research projects, including ethical and risk assessment aspects.

The Professional Experience: Semesters 3-5

The Professional Experience involves a minimum of 20 weeks across 2 semesters (3 and 4). This is incorporated into zero credit rated modules 7018BMS and 7019BMS. Students report the results of a research based investigation, conducted as part of the Professional Experience, and reflect on their skills development, in 7020BMS in Semester 5.
15 Criteria for Admission and Selection Procedure

The general requirements are in line with University Policy and can be accessed at:

The requirements for admissions for MSc Pharmacology and Drug Discovery with Professional Experience are:

1. an Honours degree in a pharmacology, medicine, dentistry, pharmacy or biology based undergraduate course –and students will normally have achieved a upper second class (2.1) classification or above
2. or equivalent appropriate qualification

Students whose first language is not English must demonstrate proficiency in the English language equivalent to IELTS 7 (with no component less than 6).

16 Academic Regulations and Regulations of Assessment

This Course conforms to the standard University Regulations Mode R.
17 Indicators of Quality Enhancement

QAA Audit
The QAA’s review of higher education undertaken in February 2015 confirmed that Coventry University meets UK expectations in:

- the setting and maintenance of the academic standards of its awards;
- the quality of student learning opportunities;
- the enhancement of student learning opportunities.
- the quality of the information about learning opportunities;

The University has well established mechanisms for the review and evaluation of teaching, learning, assessment, the curriculum and outcome standards.

External examiners’ reports: These have consistently accentuated the high quality, both of provision and quality of graduates from MSc courses within Life Sciences. Such reports confirm the standard of assessments, level of subject-based material and development of key, “transferable”, skills.

Student feedback. The School of Life Sciences received a rating of 90.1% for overall satisfaction in the 2016 National Student Satisfaction (NSS) survey. The Post Graduate Taught Evaluation Survey (PTES) for 2016-17 indicated that 85% of students were satisfied with their course.

Course and Module student questionnaires have consistently shown good ‘overall ratings’ with 100% satisfaction for some courses and modules in Life Sciences.

Facilities: State-of-the-art Library, excellent provision of, and access to, IT and computing facilities. The new Science and Health Building has provided students with extensive new state-of-the-art laboratory space in the shape of the “super-lab”, which has been furnished with a range of newly-purchased and up-to-date laboratory equipment. Equipment includes: thermal cyclers, including fluorimetric thermal cyclers, ABI Prism Genetic analyser for fragment analysis and Sanger Sequencing, Ion Torrent and Ion Chef for Next Generation sequencing, biosafety level 2 cell culture cabinets and incubators, bacterial cell culture facilities including anaerobic chambers, fluorescent microscopes, confocal microscope, flow cytometers, spectrophotometers, transilluminators and ELISA plate readers. In addition there is a well equipped analytical lab with HPLC, UPLC, GC-MS and research laboratory space.

Staff and staff development: The majority of full time academic staff have higher degrees (or significant industry experience) and a significant number are Fellows or Senior Fellows of the Higher Education Academy (HEA). Innovative teaching and assessment strategies are incorporated into modules and courses, reflecting staff interest and expertise. Many staff are involved in research and are linked to the Faculty Research Centre in Sport, Exercise and Life Sciences. Research areas include cardiac toxicity of common drugs, cell adhesion in liver, vaccine design, prostate cancer, iron metabolism, antimicrobial resistance, RNA stability and processing, molecular genetics of inherited disorders and behaviours, cancer genotyping and macrophage activation. Staff are engaged in continuing professional development including membership of professional institutions such as the Institute of Biomedical Science, the Royal Society for Biology, the Royal Society of Chemistry and the HEA. Staff appraisal and regular peer observation, which improves practice and quality of staff teaching within the School, occur annually.
18 Additional Information
Enrolled students have access to additional, key sources of information about the course and student support including,
Faculty Postgraduate Handbook
Student Course Handbook
Module Information Directory
Virtual Learning Environment
Study Support information is accessible from student services home page
Professional Experience Handbook – student and host