Course Specification
Part A

HLST178 MSc Pharmacology and Drug Discovery

Faculty of Health and Life Sciences
School of Life Sciences

Academic Year 2021-22

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

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 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 scientific 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).
It renews the UK science offer and supports 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 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.

Furthermore, the course design allows graduates to acquire, cultivate and develop their problem
solving and critical review skills, as well as data handling, presentation and interpretational
scientific skills. Students are supported by our excellent staff with recognised research
expertise and outstanding laboratory facilities. They are encouraged to develop key transferable skills including digital competence, team working and leadership, to prepare them for global career opportunities.

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.
<table>
<thead>
<tr>
<th><strong>2 Available Award(s) and Modes of Study</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>Title of Award</strong></td>
<td><strong>Mode of attendance</strong></td>
</tr>
<tr>
<td>MSc Pharmacology and Drug Discovery (HLST178)</td>
<td>3 Semesters (12 months) F/T 6 semesters (24 months) P/T</td>
</tr>
</tbody>
</table>
| Fall back awards:  
PgD Pharmacology and Drug Discovery  
PgC Pharmacology and Drug Discovery |  |
| **3 Awarding Institution/Body** | Coventry University. |  |
| **4 Collaboration** | None. |  |
| **5 Teaching Institution and Location of delivery** | Coventry University, School of Life Sciences.  
Coventry University Main Campus |  |
| **6 Internal Approval/Review Dates** | Latest review: 03/2018.  
Date for next review: Academic year 2023/2024. |  |
| **7 Course Accredited by** |  |
| **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 for Biology (RSB) [https://www.rsb.org.uk/education/accreditation](https://www.rsb.org.uk/education/accreditation) |  |
| **10 Date of Course Specification** | March 2018 (updated March 2021) |  |
| **11 Course Director** | Dr Afthab Hussain |  |
12 Outline and Educational Aims of the Course

MSc Pharmacology and Drug Discovery (HLST178) is designed to meet the needs of the pharmaceutical industry for suitably trained 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.

The key educational aims of MSc Pharmacology and Drug Discovery 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.
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 pharmacology and molecular biology techniques.

4. Demonstrate an independent approach to learning, reflect on their own practice 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.

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

MSc Pharmacology and Drug Discovery is a full-time course with 180 credits taken over one year (3 semesters). There are currently 2 intakes per academic year, in September and January. Whist there are no bespoke day release options for part time study, students may elect to take less than 180 credits in an academic year and spread the course over 2 years. However, this option requires students to start in September and to study some modules with the September intakes and some with the January intakes over the two years.

Students enrolled on MSc Pharmacology and Drug Discovery are not permitted to transfer to MSc Pharmacology and Drug Discovery with Professional Experience (HLST179) as these courses differ in some content from the start. Similarly, students enrolled on MSc Pharmacology and Drug Discovery with Professional Experience are not able to transfer to MSc Pharmacology and Drug Discovery

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 module sequence may be subject to change.

Table 14.1 MSc Pharmacology and Drug Discovery (3 semesters)
<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>
</tr>
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<tbody>
<tr>
<td>7</td>
<td>7007BMS</td>
<td>Research Techniques in Pharmacology</td>
<td>30</td>
<td>30</td>
<td>M</td>
<td>1,2,3,4,5</td>
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<tr>
<td>7</td>
<td>7008BMS</td>
<td>Principles of Pharmacology and Drug Discovery</td>
<td>20</td>
<td>20</td>
<td>M</td>
<td>1,2,5</td>
</tr>
<tr>
<td>7</td>
<td>7009BMS</td>
<td>Current Topics in Pharmacology and Drug Discovery</td>
<td>15</td>
<td>15</td>
<td>M</td>
<td>1,2,5</td>
</tr>
<tr>
<td>7</td>
<td>7023BMS</td>
<td>Drug Discovery: from bench to bedside</td>
<td>15</td>
<td>15</td>
<td>M</td>
<td>2,3,4,5</td>
</tr>
<tr>
<td>7</td>
<td>7050CRB</td>
<td>Entrepreneurial Practice</td>
<td>10</td>
<td>10</td>
<td>M</td>
<td>4,7</td>
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<tr>
<td>7</td>
<td>7016BMS</td>
<td>Research Principles and Preparation</td>
<td>10</td>
<td>10</td>
<td>M</td>
<td>1,6</td>
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<tr>
<td>7</td>
<td>7021BMS</td>
<td>Critical Review in Pharmacology</td>
<td>10</td>
<td>10</td>
<td>M</td>
<td>1,2</td>
</tr>
<tr>
<td>7</td>
<td>7022BMS</td>
<td>Pharmacology Scientific Presentation</td>
<td>10</td>
<td>10</td>
<td>M</td>
<td>1,2</td>
</tr>
<tr>
<td>7</td>
<td>7017BMS</td>
<td>Research Project</td>
<td>60</td>
<td>60</td>
<td>M</td>
<td>1,3,6</td>
</tr>
</tbody>
</table>
Table 14.2 Proposed Study Plan (including Sept and Jan intakes and P/T pathway). Please note that this is indicative and may be subject to change.

<table>
<thead>
<tr>
<th>Year</th>
<th>Modules</th>
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<th>Modules</th>
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<tbody>
<tr>
<td>Sept-Dec</td>
<td>7007BMS, 7008BMS, 7021BMS</td>
<td>Jan- April</td>
<td>7050CRB, 7009BMS, 7022BMS, 7023BMS, 7016BMS</td>
<td>May-Aug</td>
<td>7017BMS</td>
<td>Sept-Dec</td>
<td>7016BMS, 7022BMS, 7050CRB</td>
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<tr>
<td>FT MSc Sept start</td>
<td></td>
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<tr>
<td>FT MSc Jan start</td>
<td>7007BMS, 7008BMS, 7021BMS</td>
<td>7007BMS, 7008BMS, 7021BMS</td>
<td>7009BMS, 7022BMD, 7023BMS, 7016BMS</td>
<td>7017BMS</td>
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<tr>
<td>P/T MSc Sept start</td>
<td>7008BMS</td>
<td>7007BMS, 7021BMS</td>
<td>7009BMS, 7023BMS</td>
<td>7016BMS, 7022BMS, 7050CRB</td>
<td>7017BMS</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.

Semester 2

In 7009BMS students will focus on current topics in Pharmacology and Drug Discovery. In 7023BMS students will work in team, 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 7016BMS students will apply knowledge of pharmacology and drug discovery and develop a project proposal.
Semester 3

Students will carry out an independent 6-week research project in pharmacology and drug discovery in the final module 7017BMS.

Students on MSc Pharmacology and Drug Discovery are supported throughout the course to develop their career plans and profile during academic tutorial sessions and by the Faculty Employment Support Team.

15 Criteria for Admission and Selection Procedure

The general requirements are in line with University Policy. Admission requirements can be accessed at the following link:


The requirements for admissions to MSc Pharmacology and Drug Discovery are:

1. an Honours degree in a pharmacology, medicine, dentistry, pharmacy or biology based undergraduate course, and students will normally have achieved a lower second class (2.2) 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 6.5 (with no component less than 5.5). Alternatively students may be admitted with IELTS 6.0 if they attend and pass a compulsory five week pre-sessional English course, operated by Coventry University, before joining their master's programme.

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: Highly qualified staff - 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 (VLE)
Study Support information is accessible from student services home page