**ASTON UNIVERSITY PROGRAMME SPECIFICATION 2012-2013**

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| Programme Title | MSc in Drug Delivery |
| UCAS/JACS Code | |
| School/Subject Area | LHS, Pharmacy |
| Final Award | MSc |
| Interim Award(s) | Diploma (120 credits)<br>Certificate (60 credits) |
| Mode(s) of Study | FT |
| Normal Length of Programme | 1 year FT (12 months) |
| Total Credits | 180 |
| Programme Accredited By | N/A |
| Dates Programme Specification Written and Revised | March 2006<br>Revised Aug 09 |

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| Educational Aims of the Programme | This programme aims to raise to an advanced level the awareness, skills and knowledge of scientists working in the Pharmaceutical and Medical fields in relation to the formulation and design of drug carriers systems and the specific requirements of a given drug in combination with its desired pharmacological action and its intended route of administration.<br><br>The main goal of this programme is to prepare students for an academic or industrial career in the Pharmaceutics/Drug Delivery arena – an area in considerable demand in response to the continued increase in development of highly complex and sensitive drug molecules.<br><br>The programme provides specialist training and practical experience the design and development of effective drug delivery systems, as well as promoting directly applicable skills for career and professional development. This course is designed to provide a rigorous postgraduate scheme of education and training for life science or physical science-based graduate students seeking employment in the pharmaceutical industry or at the life sciences interface. Students will gain an overview of Drug Delivery and have hands-on experience of Pharmaceutical Formulation and Drug Delivery. This will enable them to communicate across disciplinary boundaries whist having depth in their own area. The course is also an excellent foundation for studies at the PhD level.<br><br>In doing so, it aims to:<br><br>1. develop the students' understanding of the biology of specific targets for drug-based intervention<br>2. provide an overview of the role of molecular modelling in rational drug design<br>3. Provide an understanding of the biopharmaceutical, pharmacokinetic and physicochemical principles important in the design and formulation of drug dosage systems.<br>4. address the latest advances in drug delivery and targeting and develop an understanding of the concept of drug targeting using drug carriers and provide an in depth appreciation of the strategies available and utilised for a particular drug and biological barrier.<br>5. provide an insight into the regulatory procedures and laboratory processes required for analysis of pharmaceutical drug delivery products.<br>6. develop research skills and transferable skills relevant to drug delivery in preparation for a career in the pharmaceutical industry or academia<br>7. develop students' understanding of advanced research methodology to enable them to carry out independent work of publishable standard |

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| Relevant Subject Benchmark Statements and other External and Internal Reference Points used to inform programme outcomes | Framework for Higher Education Qualifications.<br>The expertise of staff will also provide a good source of benchmarking against other programmes available. |

| Programme Structures and Requirements: Levels, Modules and Credits | | | | |
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| Module Title | Credits | Level | Module Code | Core / Elective |
| Research Methods 1: Professional Development | 10 | 7 | BI4001 | Core |
| Research Methods 2: Communication Skills | 10 | 7 | BI4002 | Core |
| Drug Dosage Form Design | 20 | 7 | PHM010 | Core |
| Research Project | 60 | 7 | PHM012 | Core |
| Drug Discovery | 20 | 7 | PHM008 | Core |
| Chemotherapy and Selective Toxicity | 20 | 7 | PHM009 | Core |
| Principles of Product Analysis and Validation | 10 | 7 | PHM015 | Core |
| Advanced Drug Delivery & Targeting | 20 | 7 | PHM014 | Core |
| Research Literature Review | 10 | 7 | PHM013 | Core |
| **TOTAL** | **180** | | | |

| Programme Outcomes, Learning and Teaching and Assessment Strategies | | | |
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| A. Knowledge and Understanding | | | |
| | On successful completion of their programme, students are expected to have knowledge and understanding of: | Learning, Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated | |
| | | Learning and Teaching Methods | Assessment Methods |
| 1 | The basis for the selective action of anti-infective agents (Aim 1) | Lectures, essay, CAL classes, seminar [PHM009] | Examination [PHM009]<br>Essay [PHM009]<br>Seminar [PHM009] |
| 2 | The basis for cancer chemotherapy (Aim 1) | Lectures, essay, CAL classes, seminar [PHM009] | Examination [PHM009]<br>Essay [PHM009]<br>Seminar [PHM009] |
| 3 | An overview of the cross-disciplinary nature of drug discovery (Aim 2) | Lectures, essay, seminar [PHM008] | Examination [PHM008]<br>Essay [PHM008]<br>Seminar [PHM008] |

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| 4 | Pharmacokinetics and bio-distribution in the context of drug delivery and controlled drug release from dosage forms<br>(Aim 3) | Lectures, practical classes, computer assisted learning, directed and independent study in both individual and group formats [PHM010] | Examination [PHM010]<br>Coursework submission [PHM010] |
| | The latest advances in drug delivery and targeting and the advantages and current limitations of carrier systems.<br>(Aim 4) | Lectures, coursework, and independent study [PHM010] | Examination [PHM010]<br>Coursework submission [PHM010] |
| | Product analysis and validation<br>(Aim 5) | Lectures, practical classes, seminars, directed and independent study in both individual and group formats [PHM014] | Examination [PHM014]<br>Coursework submission [PHM014]<br>Seminar [PHM014] |
| 5 | Ability to recognise and address ethical issues relevant to conducting research<br>(Aim 7) | Seminar<br>Group Discussion<br>Directed and independent<br>Study in both individual and group formats [B14001] | Ethics Proposal [B14001]<br>Mock grant [B14001]<br>Oral Interview [B14001]<br>Written CV [B14001] |
| 6 | Potential sources and techniques used for obtaining research funding<br>(Aim 7) | | |
| 7 | The importance of communication skills to professional development<br>(Aim 6) | | |
| 8 | The necessary constituents and presentation style for written and oral academic presentations<br>(Aim 6) | Seminar<br>Group discussion<br>Directed and independent<br>study at both the individual and group level [B14002] | Research Abstract [B14002]<br>Poster Presentation [B14002] |
| 9 | Appreciation of and sensitivity to needs/objectives of undergraduate teaching and assessment<br>(Aim 6) | | Lecture [B14002]<br>Handout [B14002] |
| 10 | The requirements and processes involved in publishing research<br>(Aim 7) | | Research Abstract [B14002]<br>Critical Review [B14002] |
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| **B.** | Intellectual Skills | | |
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| | On successful completion of their programme, students are expected to be able to: | Learning, Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated | |
| | | Learning and Teaching Methods | Assessment Methods |
| 1 | synthesise knowledge from a variety of disciplines<br>(Aims 1, 2, 3, 4 and 5) | Lectures<br>[PHM010, PHM008, PHM009, PHM015, PHM014]<br>CAL<br>[PHM009],<br>Essay<br>[PHM009, PHM008]<br>Seminars<br>[PHM009, PHM008, PHM010, BMSMSc,12] | Examination<br>[PHM009, PHM008, PHM010, PHM015, PHM014]<br>Essay<br>[PHM009, PHM008]<br>Seminar<br>[PHM009, PHM008, PHM014]<br>Practical Report<br>[PHM014] |
| 2 | critically analyse the differences in biochemical processes between the host and infectious organisms or cancer cells.<br>(Aim 1) | Lectures, CAL classes, essay and seminars<br>[PHM009, PHM008] | Examination<br>[PHM009, PHM008]<br>Essay<br>[PHM009, PHM008]<br>Seminar<br>[PHM009, PHM008] |
| 3 | Identify and develop appropriate methods to be used and data to be acquired<br>(Aim 5) | Lectures, seminar, practicals<br>[PHM014] | Examination<br>[PHM014]<br>Practical reports<br>[PHM014]<br>Seminar<br>[PHM014] |
| 4 | Use and apply good Laboratory Practice<br>(aim 3,5,6,7) | Practicals<br>[PHM010] | Practical course work<br>[PHM010] |
| 4 | Analyse data and apply statistics<br>(Aim 5) | Practicals [PHM015, PHM010] | Practical reports<br>[PHM015, PHM010] |
| 5 | Critical analyse one's own and others' work<br>(Aim 7) | Discussions with supervisor during extended project<br>[PHM012] | Poster presentation<br>[PHM012]<br>Project report (incorporating literature review) [PHM012] |

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| 6 | Critically read and evaluate scientific literature. | Essay<br>[PHM009, B14001, PHM008]<br>Seminar<br>[PHM009, PHM014, PHM008]<br>Project<br>[PHM012]<br><br>Lecture, group discussion, directed and independent study at an individual level<br>[B14002] | Essay<br>[PHM009, PHM008]<br>Annotated Bibliography<br>[PHM014]<br>Seminar<br>[PHM009, PHM014, PHM008]<br>Project report<br>[PHM012]<br>Research Abstract<br>[B14002]<br>Poster Presentation<br>[B14002]<br>Critical Review<br>[B14002] |
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| | C. Professional Skills | | |
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| | On successful completion of their programme, students are expected to be able to: | Learning, Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated | |
| | | Learning and Teaching Methods | Assessment Methods |
| 1 | Demonstrate and apply an understanding of site directed drug delivery and targeting<br>(Aims 5) | Lectures, course work<br>[PHM014] | Examination<br>[PHM014]<br>Essay plan<br>[PHM014]<br>Annotated bibliography<br>[PHM014]<br>Coursework<br>[PHM014] |
| 2 | operate across the discipline boundaries in the field of drug delivery.<br>(Aims 1, 2, 3, 4 & 5) | Lectures<br>[PHM009, PHM008, PHM015, PHM014, PHM010]<br>Essay<br>[PHM009, PHM008]<br>Seminars<br>[PHM009, PHM008, PHM014] | Examination [PHM008, PHM015]<br>Essay [PHM008]<br>Seminar [PHM008] |
| 3 | Demonstrate grant writing skills, conduct a risk assessment, and complete an ethics proposal for submission to a review board<br>(Aims 6 & 7) | Seminar<br>Group Discussion<br>Group and independent study<br>[B14001] | Minigrant<br>Ethics Proposal<br>Oral Interview<br>[B14001] |

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| 4 | communicate effectively to other academics and to students.<br>(Aims 6 & 7) | Seminar<br>Group Discussion<br>Directed and independent<br>Study at an individual level<br>[B14002] | Research Abstract<br>[B14002]<br>Poster Presentation<br>[B14002]<br>Lecture<br>[B14002]<br>Handout<br>[B14002] |
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| D. Transferable Skills | | | |
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| | On successful completion of their programme, students are expected to show: | Learning, Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated | |
| | | Learning and Teaching Methods | Assessment Methods |
| 1 | Effective written communication<br>(Aim 6) | Essay<br>[PHM009, B14001]<br><br>Lecture, group discussion, directed and independent study at an individual level<br>[B14002] | Examination<br>[PHM009, PHM015, PHM014]<br>Essay<br>[PHM009]<br>Project report<br>[PHM012]<br>Poster presentation<br>[PHM012, B14002]<br>Minigrant<br>[B14001]<br>Ethics proposal<br>[B14001]<br>Written CV<br>[B14001]<br>Research Abstract<br>[B14002] |
| 2 | Effective oral communication<br>(Aim 6) | Seminar<br>[PHM009, PHM014, B14001]<br>Lecture, group discussion, directed and independent study at an individual level<br>[B14002] | Seminar<br>[PHM009, PHM014]<br>Oral interview<br>[B14001]<br>Lecture<br>[B14002] |
| 3 | Independent study, including good time management (all aims ) | Directed reading (all modules). | D5 is assessed in all submitted coursework. |
| 4 | Job interview skills<br>(Aim 6) | Seminar<br>Group Discussion<br>Independent Study<br>[B14001] | Oral Interview [B14001]<br>Written CV [B14001] |
| 5 | IT Skills / Powerpoint presentation<br>(Aim 6) | CAL classes [PHM009]<br><br>Seminar<br>Group Discussion<br>Independent Study<br>[B14001] | Lecture [B14002] |

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| Entry Requirements | Applicants must hold at least a 2nd class honours degree in a life Sciences -based subject e.g., chemistry, biochemistry, pharmacy, pharmaceutical technology, chemical engineering, pharmacology, physiology, physical science, biotechnology or biological chemistry from a UK University, or when outside the UK a degree or qualification deemed to be at least of equivalent standing. Students whose first language is not English must demonstrate a satisfactory command of written and spoken English. For international students this is demonstrated by an IELTS score of 6.5 or higher overall, but with no score below a 6.0 or equivalent qualifications. |

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| Programme Regulations | The programme is governed by the current General Regulations for Postgraduate Taught Programmes. In addition, the following Regulations also apply:<br><br><u>Failure in modules</u><br><br>1.1 Students who fail to pass 180 credits may be eligible for the award of Postgraduate Diploma or Certificate if they have passed a minimum of 120 or 60 credits respectively. |

This specification provides a concise summary of the main features of the programme and the threshold learning outcomes that a student might normally be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. The individual modules included in the programme may differ from those included in this programme specification as our programmes are subject to continuous review. Information on admissions requirements and career opportunities is available in the relevant prospectus. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the appropriate module guides and programme handbook(s) which are available to students on enrolment.