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**Programme Specification**

**Title of Course: MSc in Pharmaceutical Technology**

**Date Specification Produced: December 2012**

**Date Specification Last Revised: November 2017**

This Programme Specification is designed for prospective students, current students, academic staff and potential employers. It provides a concise summary of the main features of the programme and the intended learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the teaching, learning and assessment methods, learning outcomes and content of each module can be found in Student Handbooks and Module Descriptors.**SECTION 1: GENERAL INFORMATION**

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| **Title:** | MSc |
| **Awarding Institution:** | Kingston University |
| **Teaching Institution:** | Kingston University |
| **Location:** | Penrhyn Road |
| **Programme Accredited by:** | N/A |

**SECTION2: THE PROGRAMME**

1. **Programme Introduction**

The MSc in Pharmaceutical Technology is a programme that covers the methods by which a medicine is designed and developed, and ultimately manufactured. The programme covers the traditional paradigm of the formulation of a small molecule active as well as the more recent shift towards the formulation of proteins, nucleotides and other macromolecules, and multi-molecular assemblies such as liposomes. Students will get hands-on experience with a range of analytical techniques including differential scanning calorimetry and X-ray diffraction, as well as a variety of development and manufacturing techniques such as spray drying and tabletting.

The programme is delivered predominantly by research-active lecturers, many of whom have a background in industry or regulatory affairs (including the MHRA; the UK regulatory body). This, along with the use of external speakers ensures the course covers leading edge subjects and remains relevant. The majority of staff also have a post-graduate qualification in teaching.

Whilst a significant proportion of the programme is delivered through traditional tutorials, lectures and practicals, and written assignments and exams make up a significant proportion of the assessment strategy, technology-enhanced learning and assessment is used extensively throughout the program. The online workspace Blackboard is used to deliver material to support lectures and can be accessed via a web-browser or mobile phone app. The electronic voting system Turningpoint is used to provide interactivity during lectures and tutorials. A variety of assessments (including practical results and tests) are submitted online to maximise accessibility and provide instant feedback. 24h access to the Learning Resource Centre ensures that students with only limited IT provision at home are not disadvantaged significantly.

Employability has been embedded into the programme through the use of wide variety of relevant formative and summative assessments culminating in the research project and dissertation. Our online ePDP has been designed to aid the development self-critical faculties through the course. To improve their public-speaking skills and confidence, students will be guided through the production of a number of presentations with additional support from the SEC study skills centre (S3) and the Wellness seminars provided by student support services.

The programme also helps develop employment-ready students through an integrated industrial experience in the form of a work placement on the two year version of the programme.

This integrated placement provides students with an exciting opportunity to apply and develop their knowledge and skills in a real-world setting, which enables them to develop their self-confidence. Students undertaking such placement activities are in a stronger position to gain the skills and experience that employers desire today.

1. **Aims of the Programme**
* To provide graduates with a broad but deep knowledge base covering the formulation of medicines from drug to product.
* To provide graduates with an understanding of the regulations that governs product development, manufacture
* To produce post-graduates with a knowledge and skills base that allows pursuit of both scientific and non-scientific careers in a variety of pharmaceutical work environments.
* To provide a course relevant to industry and regulatory bodies.
* To foster an atmosphere in which teamwork, exchange of ideas and debate are encouraged.
* To equip graduates with key problem solving skills in preparation for their careers.
* To provide the skills required for self-management and autonomy in the planning, organisation and conduct of an independent research project.
* To provide students with opportunities to develop their written and oral communication skills, and practical skills to aid employability.
* To enable students to identify, locate and critically appraise secondary and primary sources.
* To offer the opportunity for students to express originality and creativity in the quest for new knowledge, the application of current knowledge to new situations or the analysis of knowledge from a novel standpoint.
* To give students a critical awareness of and engagement with current research methods and techniques.
* Give students on the 2 year version an opportunity to develop further skills, preparing them for higher levels of employment
1. **Intended Learning Outcomes**

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, skills and other attributes in the following areas. The programme outcomes are referenced to the QAA subject benchmarks Chemistry and Pharmacy and the Framework for Higher Education Qualifications in England, Wales and Northern Ireland (2008), and relate to the typical student.

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| **Programme Learning Outcomes** |
|  | **Knowledge and Understanding****On completion of the course students will be able to:** |  | **Intellectual skills – able to:****On completion of the course students will be able to:** |  | **Subject Practical skills** **On completion of the course students will be able to:** |
| A1 | apply pharmaceutical technologies in a variety of situations | B1 | discuss and solve the problems that can arise during pharmaceutical development | C1 | carry out subject related practical work safely and understand safety requirements, including preparing completed CoSHH forms |
| A2 | understand and use the principles and theories introduced in the courses and apply that knowledge to familiar and unfamiliar situations | B2 | demonstrate the ability to be both independent, autonomous learners and to interact with co-workers in a variety of situations, to mutual benefit | C2 | select and use in an efficient manner the techniques used widely in the pharmaceutical industry  |
| A3 | display advanced skills in interpretation and discussion of data, be it from laboratory or patient, and recognise the significance of the results to industry/society in general | B3 | select appropriate techniques and procedures for carrying out particular pharmaceutical analyses | C3 | plan and implement GxP and consistent practice, reliably recording methods and results using appropriate methods to critically analyse the data and evaluate the level of its uncertainty |
| A4 | utilise specialist knowledge of quality assurance and control of pharmaceuticals | B4 | assemble data from a variety of sources and discern and establish connections | C4 | use a range of complex instruments and understand their technological basis  |
| A5 | discuss new strategies in pharmaceutical science and technology | B5 | critically analyse and appraise both primary and secondary information sources | C5 | be conversant with the detailed and strict requirements of facilities used in manufacturing medicines for use by patients |
| A6 | understand how a research project operates and undertake research in a logical and safe manner | B6 | plan, carry out and report investigations with an effective self-critical attitude | C6 | design controlled experiments to investigate qualitative and/or quantitative characteristics of forensic samples and apply and adapt problem solving skills to unfamiliar, complex and open-ended situations |
| A7 | understand how to prepare a research report and poster in the correct format and to have an active engagement and familiarity with recent and current research methods, results and publications  | B7 | develop an understanding of the challenges particular to the pharmaceutical industry, and with reflection and recall of both theoretical and practical skills, surmount those challenges. | C7 | recommend improvements in methodology, technology or interpretation that enhance the performance of processes and/or procedures. |
| **Key Skills** |
|  | **Self-Awareness Skills** |  | **Communication Skills** |  | **Interpersonal Skills** |
| AK1 | Take responsibility for own learning and plan for and record own personal development | BK1 | Express ideas clearly and unambiguously in writing and the spoken work | CK1 | Work well with others in a group or team |
| AK2 | Recognise own academic strengths and weaknesses, reflect on performance and progress and respond to feedback | BK2 | Present, challenge and defend ideas and results effectively orally and in writing | CK2 | Work flexibly and respond to change |
| AK3 | Organise self effectively, agreeing and setting realistic targets, accessing support where appropriate and managing time to achieve targets | BK3 | Actively listen and respond appropriately to ideas of others | CK3 | Discuss and debate with others and make concession to reach agreement |
| AK4 | Work effectively with limited supervision in unfamiliar contexts |  |  | CK4 | Give, accept and respond to constructive feedback |
|  |  |  |  | CK5 | Show sensitivity and respect for diverse values and beliefs |
|  | **Research and information Literacy Skills** |  | **Numeracy Skills** |  | **Management & Leadership Skills** |
| DK1 | Search for and select relevant sources of information | EK1 | Collect data from primary and secondary sources and use appropriate methods to manipulate and analyse this data | FK1 | Determine the scope of a task (or project) |
| DK2 | Critically evaluate information and use it appropriately | EK2 | Present and record data in appropriate formats | FK2 | Identify resources needed to undertake the task (or project) and to schedule and manage the resources |
| DK3 | Apply the ethical and legal requirements in both the access and use of information | EK3 | Interpret and evaluate data to inform and justify arguments | FK3 | Evidence ability to successfully complete and evaluate a task (or project), revising the plan where necessary |
| DK4 | Accurately cite and reference information sources | EK4 | Be aware of issues of selection, accuracy and uncertainty in the collection and analysis of data | FK4 | Motivate and direct others to enable an effective contribution from all participants |
| DK5 | Use software and IT technology as appropriate |  |  |  |  |
|  | **Creativity and Problem Solving Skills** |  | **Creativity and Problem Solving Skills** |  |  |
| GK1 | View problems from a range of perspectives to find solutions to problems | GK3 | Imagine, create and exploit ideas |  |  |
| GK2 | Work with complex ideas and justify judgements made through effective use of evidence |  |  |  |  |
| **Teaching/learning methods and strategies** |
|  The range of learning and teaching strategies includes* formal lectures
* e-learning
* group projects
* seminars and workshops
* case studies
* practical investigations and fieldwork
* demonstrations of equipment and techniques
* independent learning from guided texts and work books
* research projects
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| **Assessment strategies** |
| The assessment strategies employed in the Fields include the following:* practical reports
* essays
* problem-solving exercises
* data interpretation exercises
* case studies
* group and individual presentations
* literature surveys (formative and summative)
* unseen examinations/tests, (MCQ, short answer, essay)
* major project report
* oral questioning at the poster session
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In addition to the programme learning outcomes identified overleaf, the programme of study defined in this programme specification will allow

students to develop a range of Key Skills as follows:

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| **Key Skills** |
| **Self-Awareness Skills** | **Communication Skills** | **Interpersonal Skills** | **Research and information Literacy Skills** | **Numeracy Skills** | **Management & Leadership Skills** | **Creativity and Problem Solving Skills** |
| Take responsibility for own learning and plan for and record own personal development | Express ideas clearly and unambiguously in writing and the spoken work | Work well with others in a group or team | Search for and select relevant sources of information | Collect data from primary and secondary sources and use appropriate methods to manipulate and analyse this data | Determine the scope of a task (or project) | Apply scientific and other knowledge to analyse and evaluate information and data and to find solutions to problems |
| Recognise own academic strengths and weaknesses, reflect on performance and progress and respond to feedback | Present, challenge and defend ideas and results effectively orally and in writing | Work flexibly and respond to change | Critically evaluate information and use it appropriately | Present and record data in appropriate formats | Identify resources needed to undertake the task (or project) and to schedule and manage the resources | Work with complex ideas and justify judgements made through effective use of evidence |
| Organise self effectively, agreeing and setting realistic targets, accessing support where appropriate and managing time to achieve targets | Actively listen and respond appropriately to ideas of others | Discuss and debate with others and make concession to reach agreement | Apply the ethical and legal requirements in both the access and use of information | Interpret and evaluate data to inform and justify arguments | Evidence ability to successfully complete and evaluate a task (or project), revising the plan where necessary |  |
| Work effectively with limited supervision in unfamiliar contexts |  | Give, accept and respond to constructive feedback | Accurately cite and reference information sources | Be aware of issues of selection, accuracy and uncertainty in the collection and analysis of data | Motivate and direct others to enable an effective contribution from all participants |  |
|  |  | Show sensitivity and respect for diverse values and beliefs | Use software and IT technology as appropriate |  |  |  |

1. **Entry Requirements**

The minimum entry qualifications for the programme are:

Candidates with a UK or UK equivalent (stated by NARIC) second class Bachelor Honour's degree in a Chemistry , Pharmacy or Life Science discipline are qualified to register for the MSc.

Candidates with an alternative qualification such as an HND are normally expected to have appropriate experience in analysis or pharmaceutical science.

Candidates who do not qualify under the regulations above, but who have appropriate experience are still eligible to apply. A detailed description of appropriate experience and a statement of support from an employer should accompany the application. If these documents are satisfactory, the candidate will normally be interviewed (overseas applicants will often be interviewed by telephone/SKYPE).

British nationals/majority English-speaking nation nationals need a GCSE Grade C or above in English or an equivalent qualification. Students who are not a national of a majority English speaking country or who have not completed an academic qualification equivalent to a UK Bachelor’s degree in one are required to provide evidence of appropriate competence in use of the English Language, for example by having passed one of the following recognised English Language examinations (or equivalent):

British Council IELTS test: Band 6.5 overall or above (with the following minimum scores: W=6.0 and R=5.5, L=5.5, S=5.5); PTEA overall 61 or above (with the following minimum scores W=56 and R,L,S=51)

1. **Programme Structure**

This programme is offered in full-time mode, and leads to the award of PG Diploma or MSc. Entry is normally in September.

**E1. Professional and Statutory Regulatory Bodies**

None

**E2. Work-based learning, including sandwich programmes**

Work placements are actively encouraged – although it is the responsibility of individual students to source and secure such placements. This allows students to reflect upon their own personal experience of working in an applied setting, to focus on aspects of this experience that they can clearly relate to theoretical concepts and to evaluate the relationship between theory and practice.

The 2-year version of the programme is designed to include work-based learning through assessments and the reflective report. Many of the students on the programme are already working and they can use that experience to relate to theoretical concepts and to evaluate the relationship between theory and practice.

While it is the responsibility of individual students to secure such placements, the KUTalent support offers each student support at all stages of the application process, including writing CVs, completing application forms, participating in mock interviews, assessment centre activities and psychometric tests. The process of applying for a placement gives students the opportunity to experience a real-life, competitive job application process.

The business experience period enables students to apply their learning in the real-world work environment, to reflect upon their own personal experience of working in an applied setting, to focus on aspects of this experience that they can clearly relate to theoretical concepts and to evaluate the relationship between theory and practice. Students will be assessed during and at the end of this period, normally through a portfolio. This will be marked as pass/fail.

Students who undertake work-based placements often benefit greatly from the experience, gaining real experience and work achievements

**E3. Outline Programme Structure**

The MSc is made up of four modules each worth 30 credit points with an additional 60 credits that must be obtained via a research project (180 credits total). All students will be provided with the University regulations (Postgraduate Credit Framework). Full details of each module will be provided in module descriptors and student module guides.

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| **Course: Pharmaceutical Technology (Full time) NPPHT** |
| Statistics and Quality SystemsCH7010 | Project module CH7100(60 credits) |
| Pharmaceutical and Analytical TechnologyCH7050 |
| Manufacture and Clinical Trials of MedicinesCH7060 |
| Advanced Pharmaceutical Technology and Formulation CH7090 |
| Professional Placement CI7900 |

Students exiting the programme with 60 credits are eligible for the award of PGCertStudents exiting the programme with 120 credits are eligible for the award of PGDip |

Students starting the course in September will work on the placement for between 10 – 12 months, starting from June, before their dissertation. Those students must confirm their placement before 15 May. Students on courses with January intake will work on the placement for between 10 – 12 months, starting from February, after completing their dissertation. Students on this intake must confirm their placement before 20 December. In either case, the suitability of the placement requires approval of the Course Leader.

Students on placement must complete a portfolio assessment which includes a reflection on how the theories they have learnt during their teaching year have helped them in their placement and demonstrate ability to apply their teaching in a real world situation.

1. **Principles of Teaching, Learning and Assessment**

This programme has been designed to take account of the KU Curriculum Design Principles. The course utilises a wide range of teaching and learning methods that will enable all students be actively engaged throughout the course. Teaching and learning methods are carefully crafted to suit the content and the learning outcomes of the module – typically using lectures in the early parts of modules to ensure that students have the key knowledge relating to the module. Through a variety of group and seminar work, practical and laboratory sessions students are then given the opportunity to develop more individual interests and personal and key skills.

A range of assessment methods will be used that enable students to demonstrate the acquisition of knowledge and skills. Methods include course work, oral presentations, in-class tests, MCQs, examinations, laboratory reports and poster presentations. The assessment regime for each module has been designed to provide formative opportunities that allow students to practice and to receive feed forward on their performance in preparation for the summative assessment. Care has been taken to avoid assessment bunching. Students are supported by their allocated personal tutor, who will help students draw together the themes of the curriculum synoptically by discussing with them their Personal Development Plan. The development of academic skills is threaded throughout the course and assessed both formatively and summatively. Tutors test progress in the development of these skills, but also identify where students may need additional support, which may come via the Academic Skills Centre or other tailored support.

Most of the Course team are research active and regularly publish their work in respected journals. Many hold or have held important positions in the field and regularly attend national meetings e.g. Chair of Register of Analytical Chemists, President of South-East Region Analytical Division (SERAD), Hon. Secretary of Royal Society of Chemistry’s (RSC) Analytical Division, RSC Committee for Accreditation and Validation of Courses. Some are Fellows or Members of the RSC or RPSGB. Most have professional teaching qualifications e.g. PGCE(HE).

1. **Support for Students and their Learning**

Students are supported by:

* A Module Leader for each module
* A Course Director to help students understand the programme structure
* Personal Tutors to provide academic and personal support
* A project “placement” tutor to give general advice on placements and visit students
* Technical support to advise students on IT and the use of software
* A designated programme administrator
* An induction week at the beginning of each new academic session. This includes an induction to the University, the School, Learning Resource Centre, the Graduate Centre, the Union of Kingston Students, University and School pastoral support and ancillary services
* Staff Student Consultative Committee
* Canvas – a versatile on-line interactive intranet an learning environment based on the Blackboard system
* The SEC Study Skills Centre that provides academic skills support
* Student support facilities that provide advice on issues such as finance, regulations, legal matters, accommodation, international student support etc.
* Disabled student support
* The Union of Kingston Students
* Careers and Employability Service
1. **Ensuring and Enhancing the Quality of the Course**

The University has several methods for evaluating and improving the quality and standards of its provision. These include:

* External examiners
* Boards of study with student representation
* Annual review and development
* Periodic review undertaken at subject level
* Student evaluation
* Moderation policies

The School of Pharmacy and Chemistry achieved the top category of “broad confidence” as a result of a Discipline Audit Trail (DAT) of Chemistry, which was a part of the Institutional Audit of Kingston University in 2005. In the 2010 Internal Subject Review of Pharmacy and Chemistry courses, the report evaluated the programmes as current and valid and commended the quality of the learning opportunities available to enhance the students’ experience.

1. **Employability Statement**

Recent Graduates of the related Pharmaceutical Science MSc course found jobs in many areas including the pharmaceutical industry, pharmacy, contract research and teaching. They perform a variety of roles including laboratory technical support, laboratory management, and may be expected to present evidence through reports. There is a great student demand for this limited job market and for related degree courses. There are a variety of other career paths for which the course would be a suitable introduction including environmental measurement laboratories, insurance companies, occupational health and safety laboratories, industrial quality assurance laboratories, medicinal and scientific research laboratories. The course would also prepare students for a PhD in a related discipline.

Recent surveys indicate most of our graduates finding employment/further education less than 6 months after graduation in many of the areas mentioned above.

1. **Approved Variants from the Postgraduate Regulations**

No approved variants from the PR

1. **Other sources of information that you may wish to consult**

**Development of Programme Learning Outcomes in Modules**

This map identifies where the programme learning outcomes are summatively assessed across the modules for this programme. It provides an aid to academic staff in understanding how individual modules contribute to the programme aims, a means to help students monitor their own learning, personal and professional development as the programme progresses and a checklist for quality assurance purposes. Include both core and option modules.

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|  |  |  | **PG Diploma** | **MSc** |
|  | **Module Code** |  | CH7010 | CH7050 | CH7060 | CH7090 | CH7100 |
| **Programme Learning Outcomes** | **Knowledge & Understanding** | A1 |  | F/S |  | F/S |  |
| A2 |  | F/S | S | F/S | F/S |
| A3 | F | F/S |  | F/S |  |
| A4 |  | F | S | F | F/S |
| A5 |  | S | F | F/S |  |
| A6 |  |  |  |  | F |
| A7 |  |  |  |  | S |
| **Intellectual Skills** | B1 |  | F | S | F/S | F/S |
| B2 | F | F | F | F | F |
| B3 |  | F | F | F/S | F |
| B4 | F | F/S | S | F | F |
| B5 |  | F/S | S | F | F |
| B6 |  |  | S |  | F/S |
| B7 | F/S |  | S |  | F |
| **Practical Skills** | C1 | F | F |  | F |  |
| C2 | F | F |  | F | F |
| C3 | F/S | F/S |  | F/S | F |
| C4 | F/S | F/S | S | F/S |  |
| C5 | F |  | S | F/S | F |
| C6 |  |  |  |  | F |
| C7 |  |  |  |  | F/S |
| **Transferable Skills** | AK1 | F | F |  | F | F |
| AK2 | F | F |  | F | F |
| AK3 | F | S | F/S | F | F |
| AK4 | F | S | F/S | F | F |
| BK1 | F | S | F/S | S | F |
| BK2 |  | F | F/S | F | F/S |
| BK3 | F | F | F | F | F |
| CK1 | F | F/S | F | F | F |
| CK2 | F | F | F | F | F |
| CK3 | F | F/S | F | F | F |
| CK4 | F | F | F | F | F |
| CK5 |  | F | F | F | F |
| DK1 | F/S | F/S | F/S | F/S | F |
| DK2 | F/S | F/S | S | F/S | F |
| DK3 | F | F | S | F | F |
| DK4 | F/S | F/S | S | F | F |
| DK5 | F | F | S | F | F |
| EK1 | F/S | F/S | F/S | F/S | F/S |
| EK2 | F/S | F/S | F/S | F | F/S |
| EK3 | F/S | F/S | S | F | F/S |
| EK4 | F/S | F | F/S | F | F/S |
| FK1 |  | F | F | F | F/S |
| FK2 |  | F | F | F | F/S |
| FK3 |  | F | F | F | F/S |
| FK4 |  | F | F | F |  |
| GK1 | F/S | F | F | F | F/S |
| GK2 | F/S | F | F/S | F | F/S |
| GK3 |  | F | F/S | F | F/S |

**S**  indicates where a summative assessment occurs.

**F** where formative assessment/feedback occurs.

**Technical Annex**

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| **Final Award(s):** | MSc Pharmaceutical Technology |
| **Intermediate Award(s):** | PGDiploma |
| **Minimum period of registration:** | 1 year |
| **Maximum period of registration:** | 2 years |
| **FHEQ Level for the Final Award:** | 7 |
| **QAA Subject Benchmark:** | N/A |
| **Modes of Delivery:** | FT |
| **Language of Delivery:** | English |
| **Faculty:** | SEC |
| **School:** | Pharmacy and Chemistry |
| **JACS code:** | B900 Subjects Allied to Medicine |
| **UCAS Code:** |  |
| **Course Code:** | NPPHT |
| **Route Code:** |  |
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