

**Programme Specification**

**Title of Course: MSc Medicinal Chemistry**

**MSc Medicinal Chemistry with Management Studies**

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| **Faculty** |  SEC |
| **School** |  Life Sciences, Pharmacy and Chemistry |
| **Department**  |  Chemical & Pharmaceutical Sciences |
| **Delivery Institution** |  KU |

This Programme Specification is designed for prospective students, current students, academic staff and 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 they take full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes and content of each modules can be found in the course VLE site and in individual Module Descriptors.

**SECTION 1: GENERAL INFORMATION**

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| **Award(s) and Title(s):** | MSc in Medicinal Chemistry.MSc in Medicinal Chemistry with Management Studies. |
| **Intermediate Awards(s) and Title(s):** | PGDiploma, PGCertificate. |
| **FHEQ Level for the Final Award:** | Masters award level 7. |
| **Awarding Institution:** | Kingston University. |
| **Teaching Institution:** | Kingston University. |
| **Location:** | Penrhyn Road. |
| **Language of Delivery:** | English. |
| **Modes of Delivery:** | Full time. |
| **Available as:** | Full field, major/minor combination. |
| **Minimum period of registration:** | 1 year FT, 2 years FT with Professional Placement. |
| **Maximum period of registration:** | 2 years FT / 3 years FT with Placement. |
| **Entry Requirements:**  | The minimum entry qualifications for the programme are:A BSc Hons 2:2 or equivalent in Chemistry, Medicinal Chemistry,  Pharmacy, Pharmaceutical Science or a related discipline with a significant chemistry component.For international students: An IELTS academic test in English with an overall score of 6.5, with no element below 6.0, or meet the scores listed on the [**alternative online tests**](https://www.kingston.ac.uk/international/studying-at-kingston/language-requirements/alternative-tests-and-qualifications/)Normally, exemptions from the study of particular modules will only be granted only on the basis of relevant previous study at Masters level (RPL) or through Recognition of Prior Experiential Learning (RPEL). Students wishing to gain admission to the course with advanced standing will be required to provide certificates, a course/module synopsis and a portfolio of evidence of their previous learning or work-based experience. Students who have claimed a Diploma in the field will normally be allowed to apply for admission to MSc in the field provided that they do so within a period not normally exceeding 2 years. |
| **Programme Accredited by:** |  |
| **QAA Subject Benchmark Statements** | None. |
| **Approved Variants:** | None. |
| **UCAS Code:** | None. |

**SECTION 2: THE COURSE**

1. **Aims of the Course**

Medicinal chemistry centres on the research and development of agents that have the potential to be used therapeutically.

The aim of the programme is to teach students how medicinal chemistry is used to discover small molecule therapeutics or biologics. Also, it will arm students with critical and technical knowledge of the analysis, development and design of medicines plus related disciplines (such as drug screening and biomarkers). Students will study and explore recent trends in chemical and biological therapeutics and cutting-edge technologies used within the pharmaceutical industry. Students completing this course would be well qualified for medicinal chemistry roles in the pharmaceutical industry or indeed positions that are related to the medicinal chemistry ‘hub’. They will acquire key job-ready skills aimed at maximising student employability. Example themes include data handling, organic synthesis, patents, process development, medical statistics and clinical trials. Students completing the course will develop a clear understanding of the scientific challenges and other responsibilities of the medicinal chemistry profession (such as legal, commercial and regulatory considerations).

The course emphasises the key skills required in this specialised area of science including computing and statistical skills, data collection, communication skills, time management, organisational and team-working skills. Kingston University’s links with industry provide a practical base for our courses (and complements the practical elements of the curriculum) which is also relevant to professional placement. They also help us to ensure the programme is kept up-to-date and relevant to the workplace. Students choosing the “with management studies” pathway will gain an insight into how the business world operates and introduces marketing concepts and people management skills. This will give students specialised knowledge of the techniques and applications relating to medicinal chemistry while building awareness of management in different business/organisational contexts and developing the analytical skills for management decision making.

Key features of the programme include:-

***Golden thread of medicinal chemistry***

The programme features a considerable amount of medicinal chemistry content across its level 7 modules. The new module “Medicinal Chemistry in the Pharmaceutical Industry” and CH7070 focus on complementary themes that will aid students to be prepared for employment within the pharmaceutical sector. Key analytical chemistry themes that are relevant to the medicinal chemist will be illuminated in the CH7010 module and important drug development aspects are explored in CH7060. It is expected that the research project (CH7100) taken alongside these modules will be in an area of medicinal chemistry.

***Problem-based learning***

The students will acquire key job-ready skills and future student employability is a unique selling point for this course where students will apply their learning to real-world challenges.

***Real-world project work***

The course’s project module will allow students to develop their independent thinking skills by undertaking research on a topic relevant to medicinal chemistry (e.g. analytical chemistry, pharmaceutical science, pharmaceutical technology or their with management versions).

These projects will take place at Kingston University. However, depending on availability, students can take their MSc project:

* in industry – potential placements include analytical companies and pharmaceutical companies; or
* as collaborative research with other academic institutions.

***Careers and Networking events***

Recent events have included:

* First one-day organic synthesis/drug discovery symposium at Kingston University London (organised by Dr Stephen Wren, November 2019). This event included a poster session for students and a networking/series of short career trajectory talks by industrialists with space for Q&A.
* Careers and Networking day- major pharmaceutical companies discussing contemporary research methods and practice, alumni talking about their new jobs (alumni are asked to use social network platforms such as “LinkedIn” to keep in touch with staff and current students), careers staff showing students how to write CVs, present at interviews etc. and research staff discussing how funding is applied for and how to publish/present research findings.

The programme also helps develop employment-ready students through an optional 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 (this option is available to both September and January intakes).

\*N.B. It is the responsibility of the student to identify the placement.

1. **Intended Learning Outcomes**

The course outcomes are referenced to the relevant QAA subject benchmarks indicated and the Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies (2014), and relate to the typical student. The course provides opportunities for students to develop and demonstrate knowledge and understanding specific to the subject, key skills and graduate attributes in the following areas:

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| **Programme Learning Outcomes***Programme learning outcomes should be expressed as an action verb that clearly describes what the student will be able to do on completion of the course. Further guidance on writing learning outcomes can be found in the* [*University’s Level Descriptors*](https://d68b3152cf5d08c2f050-97c828cc9502c69ac5af7576c62d48d6.ssl.cf3.rackcdn.com/documents/aboutkingstonuniversity/howtheuniversityworks/policiesandregulations/documents/2017-18_AG02_University_level_descriptors_Vs1.pdf) *and in the* [*SEEC Credit Level Descriptors for Higher Education - 2016*](http://www.seec.org.uk/wp-content/uploads/2016/07/SEEC-descriptors-2016.pdf) |
|  | **Knowledge and Understanding**On completion of the course students will be able to: |  | **Intellectual Skills**On completion of the course students will be able to |  | **Subject Practical Skills**On completion of the course students will be able to |
| A1 | evaluate the role of the medicinal chemist scientist in the multi-disciplinary environment of the pharmaceutical industry.  | B1 | solve complex problems that can arise during theoretical and experimental investigations. | C1 | carry out practical work safely taking into account safety requirements relevant to the medicinal chemist (e.g COSHH). |
| A2 | apply the principles and fundamental concepts within medicinal chemistry to the design and optimisation of potential therapeutics. | B2 | demonstrate the ability to be independent, autonomous and self-managed learners. | C2 | apply practical techniques used widely in the analytical and pharmaceutical industry. |
| A3 | apply skills in the interpretation/discussion of laboratory data to solve (wider) scientific problems. | B3 | be proficient at using appropriate techniques/procedures for undertaking scientific analyses. | C3 | plan/implement good scientific practice, reliably recording methods/results using appropriate methods for analysis of data. |
| A4 | use IT and computational methods to evaluate drug molecules/predict properties of therapeutic agents. | B4 | establish patterns/correlations in scientific data. | C4 | apply biological principles such as biomarkers/genetic networks to problems faced by the pharmaceutical industry. |
| A5 | apply specialist knowledge on quality assurance/control of pharmaceuticals (including advanced analytical techniques). | B5 | critically analyse information obtained from primary/secondary sources. | C5 | apply specialised knowledge of the analytical challenges particular to the pharmaceutical industry such that problems can be solved. |
| A6 | undertake research work in a logical, professional and safe manner. | B6 | Plan/conduct/report investigations with an effective self-critical attitude. | C6 | design controlled experiments to investigate qualitative/quantitative characteristics of pharmaceutical materials. |
| A7 | actively engage with cutting-edge research methods/results/literature searching methods (during written work). | B7 | contemplate solutions to medicinal chemistry problems faced by members of the pharmaceutical industry. | C7 | recommend improvements in methodology/ technology/interpretation that facilitate the discovery of potential therapeutics. |

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| **Programme Learning Outcomes (with Management Studies)***Programme learning outcomes should be expressed as an action verb that clearly describes what the student will be able to do on completion of the course. Further guidance on writing learning outcomes can be found in the* [*University’s Level Descriptors*](https://d68b3152cf5d08c2f050-97c828cc9502c69ac5af7576c62d48d6.ssl.cf3.rackcdn.com/documents/aboutkingstonuniversity/howtheuniversityworks/policiesandregulations/documents/2017-18_AG02_University_level_descriptors_Vs1.pdf) *and in the* [*SEEC Credit Level Descriptors for Higher Education - 2016*](http://www.seec.org.uk/wp-content/uploads/2016/07/SEEC-descriptors-2016.pdf) |
|  | **Knowledge and Understanding**On completion of the course students will be able to: |  | **Intellectual Skills**On completion of the course students will be able to |  | **Subject Practical Skills**On completion of the course students will be able to |
| A1 | evaluate the role of the medicinal chemist scientist in the multi-disciplinary environment of the pharmaceutical industry. | B1 | solve complex problems that can arise during theoretical and experimental investigations. | C1 | carry out practical work safely taking into account safety requirements relevant to the medicinal chemist (e.g COSHH). |
| A2 | apply the principles and fundamental concepts within medicinal chemistry to the design and optimisation of potential therapeutics. | B2 | demonstrate the ability to be independent, autonomous and self-managed learners. | C2 | apply practical techniques used widely in the analytical and pharmaceutical industry. |
| A3 | apply skills in the interpretation/discussion of laboratory data to solve (wider) scientific problems. | B3 | be proficient at using appropriate techniques/procedures for undertaking scientific analyses. | C3 | plan/implement good scientific practice, reliably recording methods/results using appropriate methods for analysis of data. |
| A4 | use IT and computational methods to evaluate drug molecules/predict properties of therapeutic agents. | B4 | establish patterns/correlations in scientific data. | C4 | apply biological principles such as biomarkers/genetic networks to problems faced by the pharmaceutical industry. |
| A5 | apply specialist knowledge on quality assurance/control of pharmaceuticals (including advanced analytical techniques). | B5 | evaluate financial risk/decision-making within a business environment | C5 | Apply specialised knowledge of the analytical challenges particular to the pharmaceutical industry such that problems can be solved. |
| A6 | undertake research work in a logical, professional and safe manner. | B6 | plan/conduct/report investigations with an effective self-critical attitude. | C6 | design controlled experiments to investigate qualitative/quantitative characteristics of pharmaceutical materials. |
| A7 | actively engage with cutting-edge research methods/results/literature searching methods (during written work). | B7 | contemplate solutions to medicinal chemistry problems faced by members of the pharmaceutical industry. | C7 | undertake a strategic analysis of commercial operations within a business environment. |

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 verbally. | 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 these 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. **Outline Programme Structure**

The MSc in Medicinal Chemistry is made up of four taught modules each worth 30 credits and a research project worth 60 credits (180 credits total). All students will be provided with the University regulations. Full details of each module will be provided in module descriptors and on module pages within Canvas.

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| **Level 7** (all core) |
| **Compulsory modules** | **Module code** | **Credit** **Value** | **Level**  | **Teaching Block** |
| Statistics and Quality Systems | CH7010 | 30 | 7 | 1 |
| Design Discovery & Development of Pharmaceuticals | CH7070 | 30 | 7 | 1 |
| Medicinal Chemistry in the Pharmaceutical Industry | CH7160 | 30 | 7 | 2 |
| Manufacture and Clinical Trials of Medicines | CH7060 | 30 | 7 | 2 |
| Project | CH7100 | 60 | 7 | 3 |
| For students on the MSc in Medicinal Chemistry with Management Studies route, the programme is also fixed, with four taught 30 credit modules and a research project (which may centre on a management theme) worth 60 credits as shown below. This route is available to students starting in September or January.

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| **Level 7** (all core) |
| **Compulsory modules** | **Module code** | **Credit** **Value** | **Level**  | **Teaching Block** |
| Business in Practice | CI7600 | 30 | 7 | 1 |
| Design Discovery & Development of Pharmaceuticals | CH7070 | 30 | 7 | 1 |
| Medicinal Chemistry in the Pharmaceutical Industry | CH7160 | 30 | 7 | 2 |
| Manufacture and Clinical Trials of Medicines | CH7060 | 30 | 7 | 2 |
| Project | CH7100 | 60 | 7 | 3 |

For students on the Professional Placement route, the following module is to be completed: |
| **Level 7**  |
| **Option modules** | **Module code** | **Credit** **Value** | **Level** | **Pre-requisites** |
| Professional Placement\*  | CH7900 | 120 | 7 | none |

 \*The Professional Placement module is for all placements route students and takes place after the completion of the taught modules, i.e. in September for September entry or end of January for January entry. Students are expected to engage in 10-12 months of work in the professional environment. Assigned hours of work are to be arranged by the supervisor at the host institution. There must be at least 30 hours week of work. All placements will be arrangements between Kingston University and the institution/company hosting the placement. Placements are secured by students based on availability and opportunity, taking into consideration the student’s academic background and proficiencies. Selection for placements will often be competitive and at the discretion of the host institution. Students will demonstrate professional responsibility through attendance at the workplace for the agreed time and hours, adherence to policies in place at the workplace, effective professional communication with supervisors and co-workers, and completion of tasks and duties as they are assigned.

Students joining the course in September undertake modules Statistics and Quality Systems (CH7010) (or Business in Practice CI7600 for the “with management thread”) and Design, Discovery and Development of Pharmaceuticals (CH7070) in teaching block 1 (TB1) then progress onto “Medicinal Chemistry in the Pharmaceutical Industry” (CH7160) and Manufacture and Clinical Trials of Medicines (CH7060) in teaching block 2 (TB2) followed by the project (CH7100) in teaching block 3 (TB3). Examinations for TB1 modules take place in early January while those for TB2 modules have examinations in April / May.

Students joining the course in January will initially take “Medicinal Chemistry in the Pharmaceutical Industry” (CH7160) and Manufacture and Clinical Trials of Medicines (CH7060) in TB2 followed by the project (CH7100) in TB3. They will then complete Statistics and Quality Systems (CH7010) and Design, Discovery and Development of Pharmaceuticals (CH7070) in TB1. These students will write up and submit their final project dissertation copy (CH7100) in January, after they completed all four taught modules so that the knowledge and skills they gained from the taught modules can be applied in the dissertation write up and maximise their performance. The ‘with management’ thread is also an option for January starters.

Students exiting the programme with 180 credits are eligible for the award of MSc (in Medicinal Chemistry).

Students starting the course in September will work on the placement for 10 –12 months, starting from September, after completion of the taught modules. Those students must confirm their placement before the Faculty deadline. Students on January intake will work on the placement for 10 –12 months, starting from January, after completing their taught modules. Students on this intake must also confirm their placement before the Faculty deadline. 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 learning in a real world situation.

The diagrams below illustrate the programme structure for each intake (January and September):

# September Intake: MSc Medicinal Chemistry

|  |  |  |
| --- | --- | --- |
| TB1 | TB2 | TB3 |
| CH7010 (30 credits) | CH7160 (30 credits)  | CH7100 (project; 60 credits) |
| CH7070 (30 credits) | CH7060 (30 credits) |  |

# September Intake: MSc Medicinal Chemistry with Management Studies

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| --- | --- | --- |
| TB1 | TB2 | TB3 |
| CI7600 (30 credits) | CH7160 (30 credits)  | CH7100 (project; 60 credits) |
| CH7070 (30 credits) | CH7060 (30 credits) |  |

# January Intake MSc Medicinal Chemistry

|  |  |  |
| --- | --- | --- |
| TB2 | TB3 | TB1 |
| CH7160 (30 credits)  | CH7100 (project; 60 credits) | CH7010 (30 credits) |
| CH7060 (30 credits) |  | CH7070 (30 credits) |

# January Intake MSc Medicinal Chemistry with Management Studies

|  |  |  |
| --- | --- | --- |
| TB2 | TB3 | TB1 |
| CH7160 (30 credits)  | CH7100 (project; 60 credits) | CI7600 (30 credits) |
| CH7060 (30 credits) |  | CH7070 (30 credits) |

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

The course utilises a wide range of teaching and learning methods that will enable all students to be actively engaged throughout the course. Teaching and learning and assessment 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.

The Kingston *Inclusive Curriculum Framework* is very important to this course. The academic content has been designed to be accessible both conceptually and practically. The aim is to encourage all students to see themselves reflected in the curriculum and to visualise a clear path to potential career pathways. The medicinal chemistry world is a fluid one with businesses spreading to all global territories. In addition, employees and unmet medical needs are diverse in nature within this sector. An example of how students will be taught about such a global environment is presented in the new module, “Medicinal Chemistry in the Pharmaceutical Industry.” This involves a discussion around drugs, diseases (like malaria) and therapeutic strategies of the developing world. This modern approach should help to equip the class for life in wider, industrial circles.

Therefore, this course is also in keeping with the *Graduate Attributes* of Kingston graduates. Students will become more globally aware, thoughtful, proactive, resilient and creative by virtue of the various activities. The new module “Medicinal Chemistry in the Pharmaceutical Industry” aims to develop a culture of professionalism which is important for building confidence and entry into employment. Overall, the course fosters a commitment to ethical practice within the therapeutics sector, and develops transferable skills such as team-working, effective communication, research and information literacy skills, and enterprise.

The assessment regime for each module provide formative opportunities. A range of assessment methods will be used that enable students to demonstrate the acquisition of knowledge and skills along with opportunities for feedback and ‘feedforward’ in each module that will allow students to enhance their performance in the summative assessments. All assessment procedures and criteria have been designed at level 7 and are indicated in the assessment strategy for all modules offered within the programme. The range of assessment methods used *may* include course work, oral presentations, in-class tests, tests comprising of multiple choice questions (MCQs), examinations, laboratory reports and poster presentations. Care has been taken to avoid assessment bunching. The team make use of technology enhanced learning to improve the student experience and facilitate feedback. Examples include online assessments and bespoke assignments produced using excel to enable a quick turnaround of marked material such as problem-solving practical assignments. Electronic feedback in pdf format is sent directly to the students email account. 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. An electronic personal development plan system is used to facilitate the process and will involve various touchpoints at different points of the academic year to ensure engagement between tutor and tutee. These will include for example an initial “get to know you” meeting where students will outline their background, describe what they hope to get from the course and how it will fit into their future career plans. A later meeting will look at results/feedback to date, discuss study methods and possible ways to improve performance.

All of the Course team are research active and regularly publish their work in peer reviewed journals. This research expertise is applied to respective modules i.e. research informed teaching on topics such as formulation and delivery of plasmid DNA and subunit vaccines delivered in CH7060, stability of therapeutic drugs in CH7010 and key lead optimisation/drug discovery strategies in CH7160 are a few examples. Many hold or have held leading positions in the field such as Hon. Secretary of Royal Society of Chemistry’s (RSC) Analytical Division, Members of the RSC or Pharmaceutical Science professional bodies, Chartered Chemists/EurChem/Chartered Scientists and have professional teaching qualifications such as PGCE(HE).

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

Students are supported by:

* A Module Leader for each module.
* A Course Leader to help students understand the programme structure.
* Personal Tutors to provide academic and personal support.
* Industrial mentors in the new CH7160 module (“Medicinal Chemistry in the Pharmaceutical Industry”) will share their experiences.
* A “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 and orientation programme at the beginning of each new academic year. This includes an induction to the University, the School, the Library, the Kingston University Student Union plus pastoral support and ancillary services.
* Staff Student Consultative Committee.
* Canvas – a versatile on-line interactive intranet learning environment.
* A substantial 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.
* 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 Monitoring and Enhancement procedures.
* Periodic review undertaken at subject level.
* Student evaluation including EMF, SSCC and MEQs.
* Moderation policies.
* Feedback from employers.
* Periodic course reviews. Aspects of the last review will be used to ensure that quality is maintained on this course, as outlined below:
* The proactivity and agility of the academic staff will ensure the delivery of high quality contemporary programmes.
* Staff approachability will be maximised as much as possible to ensure academic and pastoral care.
* A clear organisational structure will be used for quality assurance and governance.
1. **Employability and work-based learning**

The Department of Chemistry and Pharmaceutical Sciences Industry Liaison Group has a list of industrial contacts (numbering ~50). This helps to show that Kingston University is well connected to representatives of the pharmaceutical industry. The course team will interface with the Kingston Careers and Employability Service in order to publicise new career and networking events for the students.

The chemical and pharmaceutical industry is one of the UK’s largest and most successful manufacturing sectors, contributing about £20 billion a year of Added Value to the UK’s Gross Domestic Product (UK Chemical and Pharmaceutical Industry Facts and Figures, 2014\*). The MSc in Medicinal Chemistry is designed to provide graduates with the high level skills and advanced knowledge that are increasingly required for the development, analysis and production of medicines and for work in clinical trials and regulatory affairs. Students will have the opportunity to study and explore recent trends in chemical, biological therapeutics and modern techniques relevant to medicinal chemistry.

The course is ideal for graduates who wish to pursue a career in medicinal chemistry/drug discovery, marketing/sales, process development, regulatory affairs, medical statistics or clinical trials. Other possible career trajectories are project management and patenting/becoming an intellectual property specialist. The course would also prepare students to pursue academic and industrial careers in research. Recent surveys indicate most of our graduates finding employment/further education less than 6 months after graduation in many of the areas mentioned above.Research and development opportunities are extensive and varied, and include development of novel medical and therapeutic technologies, targeted and controlled drug delivery and other applications which involve biotechnology e.g. formulation studies. The university’s placement team is a resource that provides support for students who select the ‘with professional placement’ option. The ‘with management’ option provides additional choice for students in areas such as human resources and finance either within these industries or outside them..

One of the key employability skills at the postgraduate level is: articulation and demonstration of scientific knowledge on a chosen topic which is directly addressed in module CH7060. Career in research is addressed in several modules i.e. CH7010 and CH7070 where students learn to use wide range of research techniques and make scientific communications involving critical analysis through the report and practical write-ups. The course offers an opportunity to enhance knowledge and to develop hands-on practical skills through modules such as CH7010, CH7160 (the new module), CH7070 and also through a medicinal chemistry-related project (module CH7100). Past students have gained employment in the pharmaceutical industry, including Pfizer, GlaxoSmithKline, Wockhardt, contract research organisations such as PRA, Bristol labs. Several students have managed to obtain funded PhD positions in well reputed educational institutions across the UK and abroad.

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\*[http://www.cia.org.uk](http://www.cia.org.uk/Portals/0/Documents/CIA%20facts%20and%20figures%202014_MR.PDF)

***Work-based learning, including sandwich courses and higher or degree apprenticeships***

Work placements are actively encouraged – although it is the responsibility of individual students to source and secure such placements. However, the University will provide assistance in finding placements through professional placement tutors, and Jobs Central, the careers and employability service of the University. Jobs Central offers a range of services for students including career fairs, drop-in sessions, workshops and webinars on CV writing, cover letters, interview practice, psychometric testing and many others. Academic staff are usually able to provide advice students on finding a placement, often through their own networks of industrial colleagues. The faculty also has a Professional Placement module on the learning management system (Canvas) which provides students with a series of advice, tasks and exercises aimed at assisting with the process of securing a placement.

 The professional placement 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. It also provides valuable work experience which may open up further opportunities with the placement provider or with other companies.

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

The Society for Medicines Research (<https://www.smr.org.uk/Meetings/20190621>)

The European Federation for Medicinal Chemistry and Chemical Biology (<https://www.efmc.info/>).

Joint Pharmaceutical Analysis Group (Royal Society of Chemistry and Royal Pharmaceutical Society); <http://www.jpag.org/>

Associationof the British Pharmaceutical Industries (<http://www.abpi.org.uk>)

RoyalSociety of Chemistry – Analytical Division (<http://www.rsc.org/Membership/Networking/InterestGroups/Analytical>)

QAA benchmark for Chemistry (<https://www.qaa.ac.uk/academicinfrastructure/benchmark/honours/chemistry.asp>)

1. **Development of Course Learning Outcomes in Modules**

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

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Module Code** |  | CH7010 | CH7160 | CH7060 | CH7070 | CI7600 | CH7100 | CH7900 |
| **Programme Learning Outcomes** | **Knowledge & Understanding** | A1 |  | √ | √ | √ |  |  |  |
| A2 |  | √ | √ | √ |  |  |  |
| A3 |  | √ |  | √ |  |  |  |
| A4 |  | √ |  | √ |  |  |  |
| A5 |  |  | √ | √ |  |  |  |
| A6 |  |  |  |  |  | √ |  |
| A7 |  | √ |  |  | √ | √ |  |
| **Intellectual Skills** | B1 |  | √ | √ | √ |  | √ |  |
| B2 |  | √ |  |  |  |  |  |
| B3 |  | √ |  | √ |  |  |  |
| B4 |  | √ | √ | √ | √ |  |  |
| B5 |  | √ | √ | √ | √ |  |  |
| B6 |  | √ | √ | √ |  | √ |  |
| B7 | √ | √ | √ |  | √ |  | √ |
| **Practical Skills** | C1 |  | √ |  |  |  |  |  |
| C2 |  | √ |  | √ |  |  |  |
| C3 | √ | √ |  | √ |  |  |  |
| C4 |  |  | √ |  |  |  |  |
| C5 |  | √ | √ | √ | √ |  |  |
| C6 |  | √ |  | √ |  |  |  |
| C7 |  | √ |  |  |  | √ |  |

**Students will also be provided with formative assessment opportunities throughout the course to practise and develop their proficiency in the range of assessment methods utilised.**

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