

Faculty of Life Sciences

Programme Specification

Programme title: MSc Cancer Pharmacology

Academic Year:	2019-20
Degree Awarding Body:	University of Bradford
Partner(s), delivery organisation or support provider (if appropriate):	N/A
Final and interim award(s):	[Framework for Higher Education Qualifications (FHEQ) level 7] MSc Postgraduate Diploma Postgraduate Certificate
Programme accredited by (if appropriate):	N/A
Programme duration:	12 months
QAA Subject benchmark statement(s):	N/A
Date last confirmed and/or minor modification approved by Faculty Board	April 2019

Please note: This programme specification has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but changes may occur given the interval between publishing and commencement of teaching. Any change which impacts the terms and conditions of an applicant's offer will be communicated to them. Upon commencement of the programme, students will receive further detail about their course and any minor changes will be discussed and/or communicated at this point.

Introduction

Modern cancer medicine is focused on identifying new opportunities for therapeutic intervention that are effectively 'target orientated' and are based upon a greater understanding of the molecular aspects of cancer. These new therapeutics are quite distinct from the classical chemotherapeutic agents and they offer the prospect of truly selective cancer therapies that are tailored towards the individual patient's tumour. This is an exciting time to be involved in cancer therapeutics, and cancer pharmacology plays a key role in drug development. In both the laboratory and the clinic, cancer pharmacology has had to adapt to the changing face of drug development by establishing experimental models and target orientated approaches.

The Cancer Pharmacology programme is run by the Institute of Cancer Therapeutics, which is situated in purpose-built facilities at the heart of the University campus. The Institute has an international reputation as a centre of excellence in Cancer Pharmacology. It is a multidisciplinary organisation incorporating a broad spectrum of skills ranging from chemistry through preclinical studies to early clinical trials, being one of the few centres nationally that has all the necessary research tools and expertise in-house to progress anticancer medicines and biomarkers from concept to the clinic. The Cancer Pharmacology programme is designed to provide the student with 'state of the art' learning opportunities in modern cancer pharmacology, focussed on the cancer biology of target and biomarker identification and validation, development of preclinical screening programmes in silico, in vitro and in vivo, mechanisms of anticancer drug action, pharmacodynamics and pharmacokinetics. It meets the demands of employers and students at taught postgraduate level, and has a strong track record in graduates progressing to employment in the field or PhD study.

For career progression within this sector, students require a postgraduate qualification. To be admitted to the programme, students will already have a first degree qualification in a scientific discipline, usually from biology, chemistry, medicine, pharmacy or related disciplines. The programme promotes advanced scholarship within specialised areas concomitant with the development of key transferable skills (in IT, communication, research and analysis) and practical research techniques. The programme uses a range of teaching strategies to promote independent study and research to develop a systematic and critical understanding of the molecular basis of cancer and cancer pharmacology, and enhance autonomous learning and personal transferable skills. This programme will facilitate development of the skills students require for careers in academia, industry or for further research. Enhancement of independent learning skills during the programme will equip students with the skills to succeed as lifelong learners.

Programme Aims

The programme is intended to:

- A1 Enable students to develop a systematic understanding and critical awareness of, and skills in, selected disciplines within the field of cancer biology and pharmacology.
- A2 Enable students to develop practical skills in selected disciplines within the field of preclinical cancer pharmacology.
- A3 Develop, within the context of cancer pharmacology, a comprehensive understanding of communication, research and the scientific method.
- A4 Provide students with a detailed knowledge of pre-clinical experimental approaches and legislative regulations.
- A5 Provide learning opportunities to enable students to think critically and to further develop as an autonomous and lifelong learner.
- A6 Further develop students' ability in a range of personal and key skills.
- A7 Provide a supportive educational environment, which meets the needs of students from a variety of backgrounds.

Programme Learning Outcomes

To be eligible for the award of Postgraduate Certificate at FHEQ level 7, students will be able to:

- LO1 Critically evaluate specialized areas of cancer biology and cancer pharmacology.
- LO2 Critically evaluate scientific literature, discuss and communicate scientific data.
- LO3 Write and interpret scientific reports.
- LO4 Critically evaluate and appraise experimental laboratory techniques, including obtaining a Home Office personal licence for animal studies.
- LO5 Demonstrate critical thinking through ability to independently recognise, define and prioritise problems.
- LO6 Critically analyse a therapeutic target and current therapeutic approaches to that specific target.
- LO7 Develop autonomy in learning required for continuing professional development; apply skills in; time-management, presentation, written communication and problem-solving.
- LO8 Demonstrate critical thinking through ability to independently analyse, interpret, objectively evaluate and prioritise information and data, recognising their limitations.
- LO9 Effectively communicate their understanding of research to different audiences through oral presentation.

Additionally, to be eligible for the award of Postgraduate Diploma at FHEQ level 7, students will be able to:

- LO10 Critically analyse the pre-clinical and clinical pharmacology of anticancer drugs.
- LO11 Critically evaluate pre-clinical screening strategies in vitro and in vivo and develop a preclinical screening cascade.

Additionally, to be eligible for the award of Degree of Master at FHEQ level 7, students will be able to:

- LO12 Demonstrate a conceptual understanding of research and scientific method through the ability to independently critically evaluate methodology, and formulate conclusions based on complete and incomplete data.
- LO13 Demonstrate self-direction and originality in implementing a research project.

LO14 Safely plan, design and execute practical investigations, from the problem recognition stage through to the evaluation and critical appraisal of results and findings.

LO15 Make decisions in complex and unpredictable situations and use problem solving strategies to develop innovative solutions.

LO16 Exercise initiative and personal responsibility.

LO17 Effectively communicate and interact with professionals from other disciplines.

Curriculum

Postgraduate Certificate/Postgraduate Diploma

FHEQ Level	Module Title	Type	Credits	Semester	Module Code
7	Molecular Basis of Cancer and Cancer Therapy	Core	20	1	INC7002-B
7	Practical Skills in Research	Core	20	1	LIS7018-B
7	Critical Appraisal	Core	20	1	LIS7022-B
7	Cancer Pharmacology	Core	20	2	INC7003-B
7	Preclinical Models for Drug Evaluation	Core	20	2	INC7001-B
7	Case Studies in Drug Discovery	Option	20	2	INC7011-B
7	Innovation in Life Science Industry: From Concept to Market Place	Option	20	2	BIS7011-B

Postgraduate Certificate

Students will be eligible to exit with the award of Postgraduate Certificate if they have successfully completed 60 credits and achieved the award learning outcomes.

Postgraduate Diploma

Students will be eligible to exit with the award of Postgraduate Diploma if they have successfully completed at least 120 credits and achieved the award learning outcomes.

Degree of Master

In addition to the modules outlined above

FHEQ Level	Module Title	Type	Credits	Semester (s)	Module Code
7	Cancer Therapeutics Research Project	Core	60	3	INC7019E

Students will be eligible for the award of Degree of Master if they have successfully completed at least 180 credits and achieved the award learning outcomes.

Learning and Teaching Strategy

A wide variety of teaching methods appropriate to the learning outcomes of the individual modules are employed throughout the programme; formal lectures from ICT research/teaching staff and visiting clinicians and industrial researchers, small group workshops and discussions with peers, laboratory practicals, journal clubs, group and one-to-one tutorials, and a large component of individual research. These are supported by material provided on the virtual learning environment, provided by the University. Students will also attend the Cancer Therapeutics and Molecular Pharmacology Research Seminar programme. Self-directed independent learning forms a significant component at MSc level; students will be supported to develop the attributes and skills needed for life-long learning and continued professional development. Directed private study will involve students in a variety of activities, which include directed reading of selected textbooks and specified source literature, use of the virtual learning environment (directed Web-based materials), report writing, preparing presentations to deliver to peers, and other assignments.

Some learning outcomes (LO) are focussed on particular modules. For example, LO4 in *Practical Skills for Research*; LO6 in *Molecular Basis of Cancer and Cancer Therapeutics*, LO10 in *Cancer Pharmacology* and LO11 in *Preclinical Models for Drug Evaluation*. Acquisition of other learning outcomes will occur gradually and cumulatively through a number of modules employing a mix of lectures, laboratory investigations, coursework, workshops, individual project work and independent research guided by module tutors. Specialist knowledge in the field (LO1) is introduced in *Molecular Basis of Cancer* in semester 1, extended in *Cancer Pharmacology* in semester 2 (LO10), and further embedded in the *Research Project*. Key skills for working as a research professional are embedded in the curriculum and some modules (eg *Practical Skills In Research*, *Critical Appraisal*) develop or consolidate and assess one or more of the key skills. The MSc *Research Project* will allow students to demonstrate all skills and knowledge developed through the year, and its completion is essential to demonstrate mastery of LO12-17.

Assessment Strategy

A range of assessment methods are used, supported by formative assessments to allow students to practice skills and knowledge (eg by feedback on drafts or low stakes scaffolding assignments) before final summative assessment at the end of a module or course. Written examinations are used to test LO1, LO4 (Home Office examination), LO6, and LO11. A range of types of coursework are also used to assess these, and other learning outcomes; essays of varying length, journal club presentations, preparation of portfolios of reports on experimental work and reflective statements, assessment of students' laboratory and transferable skills and

professionalism during the project period, optionally poster presentation, grant application. The final MSc project is assessed by dissertation, viva voce examination and on professional performance to conducting research, and allows students to demonstrate achievement of all learning outcomes developed as part of the Postgraduate Certificate/Postgraduate Diploma taught programme, and more specifically, achievement of LO12-17 required for the MSc degree.

Assessments have been arranged through the course to ensure students have a balanced load in each semester

More detailed description of the way that learning is related to assessment in the modules that make up this programme can be found in the module descriptors

Assessment Regulations

This Programme conforms to the standard University Regulations which are available at the following link:

<http://www.bradford.ac.uk/agpo/ordinances-and-regulations/>

Admission Requirements

The University welcomes applications from all potential students and most important in the decision to offer a place is our assessment of a candidate's potential to benefit from their studies and of their ability to succeed on this particular programme. Consideration of applications will be based on a combination of formal academic qualifications and other relevant experience.

The standard entry requirements for the programme are as follows:

An Honours degree in a scientific discipline related to the course subject or equivalent, at 2.2 classification or above. Applicants whose first language is not English will need to demonstrate proficiency in English in accordance with University Regulations. For further details, see <http://www.bradford.ac.uk/international/before-you-apply/english-language-requirements/>

Applications are welcome from students with non-standard qualifications or with significant relevant experience

Recognition of Prior Learning

If applicants have prior certificated learning or professional experience which may be equivalent to parts of this programme, the University has procedures to evaluate and recognise this learning in order to provide applicants with exemptions from specified modules or parts of the programme.

Minor Modification Schedule

Version Number	Brief description of Modification	Date of Approval (Faculty Board)
2	Updates to align sem 1 curriculum with MRes to enable student transfer	April 2019