

MSc Cancer Pharmacology Programme Specification

Academic Year:	2023/4
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 full time
QAA Subject benchmark statement(s):	N/A
Date last confirmed and/or minor modification approved by Faculty Board	February 2023

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, focused 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 record of accomplishment 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 specialised areas of cancer biology and cancer pharmacology.
- LO2 Critically evaluate scientific literature and communicate scientific data.
- LO3 Write and interpret scientific reports.
- LO4 Demonstrate knowledge of experimental laboratory techniques relevant to cancer pharmacology.
- LO5 Demonstrate critical thinking through ability to independently recognise strengths and limitations in data and research approaches.
- 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 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 elements of pre-clinical screening strategies in vitro and in vivo.

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 and critically evaluate methodology, and formulate conclusions based on complete and incomplete data.
- LO13 Safely plan, design and execute practical investigations, from the problem recognition stage through to the evaluation and critical appraisal of results and findings.
- LO14 Make decisions in complex and unpredictable situations and use problem solving strategies to develop innovative solutions.
- LO15 Effectively communicate and interact with scientific professionals.

Curriculum (September Start)

FHEQ Level	Module Code	Module Title	Type	Credits	Semester
7	INC7002-B	Molecular Basis of Cancer and Cancer Therapy	Core	20	1
7	LIS7018-B	Practical Skills in Research	Core	20	1
7	LIS7022-B	Critical Appraisal	Core	20	1
7	INC7001-B	Preclinical Models for Drug Evaluation	Core	20	2
7	INC7003-B	Cancer Pharmacology	Core	20	2
7	INC7011-B	Case Studies in Drug Discovery	Core	20	2
7	INC7019-E	Cancer Therapeutics Research Project	Core	60	3

Curriculum (January Start)

FHEQ Level	Module Code	Module Title	Type	Credits	Semester
7	INC7001-B	Preclinical Models for Drug Evaluation	Core	20	2
7	INC7003-B	Cancer Pharmacology	Core	20	2
7	INC7011-B	Case Studies in Drug Discovery	Core	20	2
7	INC7002-B	Molecular Basis of Cancer and Cancer Therapy	Core	20	3
7	LIS7018-B	Practical Skills in Research	Core	20	3
7	LIS7022-B	Critical Appraisal	Core	20	3
7	INC7019-E	Cancer Therapeutics Research Project	Core	60	1

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 LO1-LO9.

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 LO1-LO11.

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 LO1-LO15.

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.

Acquisition of programme 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. Key skills for working as a research professional are embedded in the curriculum and some modules (e.g. 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 LO12-15.

Assessment Strategy

A range of assessment methods are used, supported by formative assessments to allow students to practise skills and knowledge (e.g., 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, LO6, LO10 and LO12. 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 poster and oral presentations. 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 LO12-15 required for the MSc degree.

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

A 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 Postgraduate Assessment Regulations which are available at:

<https://www.bradford.ac.uk/regulations>

Admission Requirements

We take into consideration a number of factors when assessing your application. It's not just about your grades; we take the time to understand your personal circumstances and make decisions based on your potential to thrive at university and beyond. 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 <https://www.bradford.ac.uk/international/entry-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
3	Updates to enable the programme to start Jan 21 instead of Sept 20 as a one off	October 2020
4	Specification reformatted and made accessible.	February 2021
5	Update to delivery periods to revert to Sept 21 start	June 2021
6	Annual changes for 2021 academic year	June 2021
7	Annual changes for 2022 academic year	March 2022
8	Reinstatement of Jan start for 2023/4 onwards	February 2023