

MSc Drug Toxicology and Safety Pharmacology

<https://www.bradford.ac.uk/courses/pg/drug-toxicology-and-safety-pharmacology/>

Academic Year:	2026/27
Degree Awarding Body:	University of Bradford
Final and interim award(s):	Framework for Higher Education Qualifications (FHEQ) level 7] MSc Postgraduate Diploma Postgraduate Certificate
Programme duration:	12 months full time September, January
Date last confirmed and/or minor modification approved by Faculty Board	May 2026

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 on the terms and conditions of an applicant's offer will be communicated to them. Upon commencement of the programme, students will receive further details about their course and any minor changes will be discussed and/or communicated at this point.

Introduction

For any new therapeutic agent to progress to the market, or before any chemical can be used in living organisms including humans, a thorough identification and understanding of its toxicity and safety is required. Accordingly, drug toxicology and safety pharmacology are a central and integral component of the chemical and pharmaceutical industries. The discipline of safety pharmacology and toxicological evaluation is dynamic, expanding and multidisciplinary, adapting in response to the demands for new medicines and the improvement in assessment methodology.

In both the academic and the pharmaceutical industry, safety pharmacology has had to adapt to the ever-changing processes of drug development by establishing experimental models and target-oriented assessment approaches. This is an exciting time to be involved in this area and, against a backdrop of increasing competitiveness in the chemical and pharmaceutical sectors, the demand for employees with hands-on experience in this field is high.

Throughout the MSc Drug Toxicology and Safety Pharmacology programme, you will develop desirable hands-on experience and have access to various Continued Professional Development (CPD) opportunities through seminars and workshops. These include, but are not limited to, weekly seminars from external researchers and seminars guiding you through career opportunities outside of academia and applying for PhDs, to provide you with as much information as possible so you can tailor your career ambitions accordingly.

There are several workshops and interactive lectures on the development of students' scientific

(and non-scientific) skills such as presentation skills, critical appraisal and extracting information from scientific journal articles, which are all key qualities for employment. The development of transferable skills is a core component of the programme, further enhancing your employability in the future.

The programme uses a range of teaching strategies to promote independent study and research to develop a systematic and critical understanding of drug toxicology and safety pharmacology and enhance students' autonomous learning and development. This programme facilitates the development of the skills required for careers in academia, industry and further research as well as scientific-related roles such as pharmaceutical sales or project management. 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 toxicology and safety pharmacology.
- A2 Provide students with practical and hands-on skills applicable to the Drug Toxicology and Safety Pharmacology subject area.
- A3 Develop within the context of Drug Toxicology and Safety Pharmacology, a comprehensive understanding of communication, research and scientific method.
- A4 Develop in-depth knowledge of pre-clinical experimental approaches and legislative regulations.

Programme Learning Outcomes

On successful completion of the programme, students will be able to:

1. Critically evaluate specialised areas of toxicology and safety pharmacology.
2. Critically evaluate scientific literature, discuss and communicate scientific data.
3. Write and interpret scientific reports.
4. Demonstrate the ability to carry out experimental laboratory techniques relating to toxicology and safety pharmacology.
5. Demonstrate critical thinking through ability to independently recognise strengths and limitations in data and research approaches.
6. Apply scientific principles to the critical analysis of problems in order to determine the safety profile of agents under evaluation.
7. Demonstrate autonomy in learning required for continuing professional development within scientific research.
8. Demonstrate an understanding of research through discussions with different audiences.
9. Demonstrate practical in vitro skills applicable to the drug toxicology and safety pharmacology discipline.
10. Understand molecular mechanisms of toxicity and apply that knowledge for the critical analysis of toxicity problems.
11. Critically evaluate elements of pre-clinical screening strategies in vitro and in vivo.

12. Demonstrate a conceptual understanding of research and scientific methods, leading to the formulation of scientific conclusions based on generated data.
13. Safely plan, design and execute practical investigations, from the problem recognition stage through to the evaluation and critical appraisal of results and findings.
14. Make decisions in complex and unpredictable situations and use problem solving strategies to develop innovative solutions.
15. Engage in scientific discussions with scientific professionals.

Curriculum

The curriculum for students starting in September and in January is outlined in the tables below. The curriculum has been carefully developed to ensure an equivalent student experience regardless of entry point. In Semester 2, modules underpin the Cancer Therapeutics Research Project which runs in Semester 3. The modules in semester 1 are 'standalone' modules and are taken at the start or end of the programme depending on the entry point. Semester 1 content ties the other content within the programme together by providing background and the progression to the regulatory side of drug development.

For each intake, new students are introduced to members of the previous intake of students and paired up with a "buddy". The buddy system facilitates peer interaction with students who are already familiar with the course and the university who can offer advice or guidance as new students are settling in. The buddy system has shown significantly enhanced student experience and reduced settling in time for new students, particularly international students.

September Start

FHEQ Level	Module Code	Module Title	Type	Credits	Semester
7	INC7023-B	Cancer Pharmacology and Regulatory Toxicology	Core	20	1
7	INC7001-B	Preclinical Models for Drug Evaluation	Core	20	1
7	INC7009-B	Molecular Mechanisms of Toxicity	Core	20	1
7	INC7011-B	Case Studies in Drug Discovery	Core	20	2
7	INC7024-D	Research Skills for Postgraduate Students	Core	40	2
7	INC7019-E	Cancer Therapeutics Research Project	Core	60	3

January Start

FHEQ Level	Module Code	Module Title	Type	Credits	Semester
7	INC7011-B	Case Studies in Drug Discovery	Core	20	2
7	INC7024-D	Research Skills for Postgraduate Students	Core	40	2
7	INC7019-E	Cancer Therapeutics Research Project	Core	60	3
7	INC7023-B	Cancer Pharmacology and Regulatory Toxicology	Core	20	1
7	INC7001-B	Preclinical Models for Drug Evaluation	Core	20	1

7	INC7009-B	Molecular Mechanisms of Toxicity	Core	20	1
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Learning and Teaching Strategy

A variety of teaching methods appropriate to the learning outcomes of the individual modules are employed throughout the programme and are supported by the virtual learning environment provided by the University. You will experience lectures from the Institute of Cancer Therapeutics (ICT) research/teaching staff, visits from clinicians and industrial researchers, small group workshops, one-to-one tutorials and practical classes. The learning activities have been designed to suit a variety of different learning styles and include but are not limited to group discussions in teams, independent learning through traditional lectures and interactive lectures using learning technologies such as smart quizzes, providing every student an opportunity to develop their skills in a way that suits them best.

You will also attend the ICT Research Seminar programme, which includes weekly research presentations from external researchers who come especially to share their research breakthroughs with members of the ICT. This is a real opportunity to engage and build a network with senior researchers outside the University of Bradford. The seminar series has received consistently positive feedback from previous students and exposes you to the types of research carried out externally.

Self-directed independent learning forms a significant component at MSc level. You will be supported to develop the attributes and skills needed for life-long learning and continued professional development. Self-directed independent study includes a variety of activities, for example, reading of selected textbooks and specified source literature, use of the virtual learning environment, report writing and preparing presentations.

Acquisition of programme learning outcomes will occur gradually and cumulatively through completion of modules employing a mix of lectures, laboratory investigations, coursework, workshops, individual project work and independent research guided by module tutors.

Assessment Strategy

A variety of assessments will take place throughout the programme, supported by formative (unweighted) assessments that allow you to practice your skills and knowledge before the final summative assessments. Assessments are spread across the semesters to reduce burden on students. Students will develop the skills to achieve the programme and individual module learning outcomes in a progressive and cohesive manner through a variety of assessment types.

Assessments test your development of the skills expected within a scientific career, whether this be in academia, industry or a related role within science. Exams test the core knowledge required in the areas of cancer and drug development as well as the ability to link topics to one another in scientific writing.

A wide variety of coursework types, from portfolios to lab reports, to written essays, further support the development of skills that you can transfer into your chosen career.

- Portfolios – develop key organisational skills through the assembly of smaller components to form a larger piece of work, resembling an industry-style study folder.

- Lab reports – develop scientific writing skills in the format of journal articles and help to train critical analysis.
- Written essays – develop deeper thinking and critical appraisal in concisely structured formats.

Oral presentations/discussions form the final assessment style on the programme. These develop your communication skills through various scientific real-life settings. The viva is the final assessment for the research project module where students engage in an in-depth scientific discussion about their project.

All summative assessments are subject to plagiarism and Artificial Intelligence (AI) checks. At the beginning of the course, you will have library workshops to become familiar with referencing and citing scientific articles. This programme operates a **no AI** policy across the assessments, where if you are found to be using AI, you will be reported for an academic misconduct investigation. Occasionally some assessments may allow for some AI-assisted Editing to make light improvements to the work. If this is the case, this will be made clear by the module leader for that assessment.

Levels of AI at the University of Bradford:

1. Red – No AI – The assessment must be completed with no AI assistance. Any evidence of the use of AI will lead to academic misconduct. AI must not be used at any point during the assessment.
2. Yellow – AI-Assisted Editing – AI can be used for research and to make improvements in the quality of the work. **Any AI used must be cited and, if asked, a copy of unedited work must be submitted as an appendix.**
3. Green – Full AI – AI can be used as a support to meet the assessment's requirements, acting as a collaborative partner. **You may use AI throughout your assessment to support your work and do not need to specify what you have used.** Please note that none of the assessments on this programme operate this option.

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, Continuation and Award Regulations

This programme follows the Assessment, Continuation and Award regulations published on the University's website <https://www.bradford.ac.uk/about/legal-and-governance/governance/regulations/> for postgraduate courses (Regulation 9).

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 related scientific discipline 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
July 2025	Annual Changes for the 2025 academic year, including changes to academic regulation.
May 2026	Changes to academic regulation.