The University Of Sheffield.

Programme Specification

A statement of the knowledge, understanding and skills that underpin a taught programme of study leading to an award from The University of Sheffield

1	**Programme Title**	Genomic Approaches to Drug Discovery
2	**Programme Code**	BMST27
3	**JACS Code / HECoS Code**	J700 / 100134
4	**Level of Study**	Postgraduate
5a	**Final Qualification**	MSc
5b	**QAA FHEQ Level**	7
6a	**Intermediate Qualification(s)**	PG Diploma, PG Certificate
6b	**QAA FHEQ Level**	7
7	**Teaching Institution** (if not Sheffield)	Not applicable
8	**Faculty**	Science
9	**Department**	School of Biosciences
10	**Other Departments providing credit bearing modules for the programme**	RIS
11	**Mode(s) of Attendance**	Full-time
12	**Duration of the Programme**	1 year
13	**Accrediting Professional or Statutory Body**	Not applicable
14	**Date of production/revision**	February 2022

15. Background to the programme and subject area

Studies utilising Genomic Approaches to Drug Discovery are a rapidly advancing area of biomedical research with enormous therapeutic and commercial potential. The demand for skills in this area is increasing as the academic research base broadens and industry begins to adopt the new technologies associated with this area. Consequently employability and further training opportunities (PhD) for graduates with training in this knowledge base and skills are high. Our MSc programme offers practical and theoretical training in areas associated with the treatment of human disease, including the use of modern molecular, genomic and medium and high throughput screening approaches. This unique research-led masters course provides laboratory training to future scientists in drug screening and gene discovery using the latest automated genomics techniques. Students will also gain training in pharmaceutical industry practices through direct contact with industry leaders from a wide range of companies. Examples are drawn from the forefront of biomedical research, many of which are undertaken within our department.

In the governmental review of higher education in the UK, the School of Biosciences was awarded top scores for both research and teaching: in the 2014 Research Excellence Framework (REF 2014) the University of Sheffield was placed 5th nationally for research in biological sciences and 1st nationally for research in Allied Health science, and was awarded Silver in the last Teaching Excellence Framework (TEF). We are located in a central position within the University campus and offer excellent research and teaching facilities. Students on our MSc programme study a range of modules that provide detailed theory and specific practical skills within the area of Genomic Approaches to Drug Discovery. Additionally students have the opportunity to undertake an individual research project in one of our laboratories to provide further practical experience and training in research methods in this area. The research project and associated literature review, seminar programmes and taught modules provide a range of subject specific and transferable skills pertinent to a career in academia or in industry.

Further information about the programme may be found at:
https://www.sheffield.ac.uk/postgraduate/taught/courses/2022/genomic-approaches-drug-discovery-msc

16. Programme aims

For all its taught postgraduate programmes the Department aims to:

- develop in students an independence of thought, intellectual curiosity and critical approach to evidence, theories and concepts;
- encourage students to maximise their academic potential in all aspects of their programme;
- encourage an understanding of, and commitment to, life-long learning;
- provide stimulating and enjoyable teaching that is informed and invigorated by the research and scholarship of its staff;
- develop an appreciation of ethical issues and public awareness of these issues;
- provide a supportive environment for students and access to specialist central services as required;
- prepare students for further postgraduate work and/or a professional career in genomic drug discovery and related areas.

The specific aims for the Certificate in Genomic Approaches to Drug Discovery are to provide students with an opportunity to:

- obtain a detailed knowledge base of some areas relevant to Genomic Approaches to Drug Discovery.

In addition candidates completing the PGDip will:

- obtain more comprehensive knowledge of areas in Genomic Approaches to Drug Discovery acquire more extensive training in specific practical skills related to this area.

In addition candidates completing the MSc will:

- conduct an individual research project in a laboratory working within this area;
- acquire transferable skills relevant to a career in academia or the biosciences industry.

17. Programme learning outcomes

Knowledge and understanding: C*andidates completing the Certificate (learning outcomes from 60 credits from those available) and the PGDip (learning outcomes from 120 credits from those available) will have:*	
K1	an in-depth knowledge of specific subject areas and topics in Genomic Approaches to Drug Discovery.
K2	an appreciation of the impact of Genomic Approaches to Drug Discovery on society, health and economic prosperity.
K3	a critical understanding of how research advances biological knowledge and its applications.
K4	an understanding of how genomic screens can be designed.
K5	an understanding of uncertainty and variability in biological information and the importance of this in drawing conclusions from data.
K6	a critical knowledge of research techniques and methods in Genomic Approaches to Drug Discovery.
K7	a detailed knowledge of theory behind practical techniques and their application in Genomic Approaches to Drug Discovery.
K8	a working knowledge of the terminology and language of the biomedical sciences.
K9	a knowledge of a range of presentation methods, including numerical, graphical, written and oral.
K10	an understanding of how the postgraduate experience can be applied to career development in industry or academia.
K11	an understanding of ethical issues, the relevance of public understanding of science and the responsibilities of the researcher.
K12	a knowledge of the process of research and its relationship to application for research funding.
K13	a detailed, critical knowledge of the retrieval and evaluation of scientific information.

In addition, candidates completing the MSc will have:	
K14	a detailed knowledge of the topic studied for their research project.
K15	knowledge of experimental design, execution and analysis of outcomes.
K16	a critical understanding of original research findings in relation to current literature.

Skills and other attributes: C*andidates completing the Certificate (learning outcomes from 60 credits from those available) and the PGDip (learning outcomes from 120 credits from those available) will be able to:*	
S1	critically analyse, synthesize and summarise published information.
S2	formulate relevant questions.
S3	demonstrate independent thinking.
S4	analyse and interpret data in a critical, reliable and objective manner.
S5	present information in a manner appropriate to the audience and in a critical and informative manner.
S6	demonstrate understanding of the ethical implications of design of genomic drug discovery screens at the individual and societal levels.
S7	take responsibility for their own learning.
S8	work effectively as part of a team.
S9	work in a safe, risk-free way with consideration for others, taking due account of statuary requirements.
S10	demonstrate understanding of, and competency in the use of, laboratory equipment and techniques.
S11	Demonstrate the ability to plan and manage their own time effectively.
In addition, candidates completing the MSc will be able to:	
S12	apply and potentially adapt the advanced research techniques and practical skills obtained from their research project.
S13	demonstrate awareness of the uncertainties and limitations of the research techniques, data and conclusions of their research project and modify their experimental approach as necessary.
S14	demonstrate appreciation of the need for effective communication of scientific issues, research findings and their consequences to the general public and other interested parties including funding agencies.
S15	retrieve scientific information and analyse it critically.

18. Teaching, learning and assessment

Development of the learning outcomes is promoted through the following teaching and learning methods:

Candidates on this programme will have a good degree from a relevant area and as such will be expected to be relatively sophisticated learners.

Practical skills will be acquired through demonstration and practice, usually in research laboratories, practical class laboratories or computer rooms. Theoretical information will be provided during lectures, seminars, reading lists and through tutorials. In addition students are expected to undertake a significant amount of independent learning using the University Library and appropriate web resources. Tutorials, seminars, debate and individual meetings with staff will provide opportunities for discussion and feedback.

Opportunities to demonstrate achievement of the learning outcomes are provided through the following assessment methods:

Learning outcomes are carefully matched to the method of assessment (e.g. oral presentation skills are assessed via two independent markers of the presentation). Formative assessment occurs at several stages including meetings with supervisors, coursework and through web materials. The linkage between the main teaching, learning and assessment methods adopted for each learning outcome are tabulated below.

	Teaching and Learning					Assessment methods			
LEARNING OUTCOME abbreviated – (see Section 17 for full text)	Lectures	Seminars	Tutorials	Laboratory classes	Individual project	Written examinations	On-going assessments (including: essays, poster and oral presentations)	Laboratory reports & individual project	Self / peer assessment*
For Certificate and PGDip candidates:									
K1	√		√	√		√	√	√	√
K2	√	√		√	√	√	√	√	√
K3	√	√	√			√	√		√
K4	√	√	√	√		√	√	√	√
K5	√	√	√	√	√	√	√	√	√
K6		√		√	√			√	√
K7	√	√		√	√	√	√	√	√
K8	√	√	√	√	√	√	√	√	√
K9		√	√	√	√		√	√	√
K10			√		√		√		√
K11	√	√		√	√		√	√	√
K12	√	√	√		√	√	√	√	√
K13	√		√		√	√	√	√	√
In addition, for MSc candidates:									
K14			√		√	√	√	√	√
K15									
K16									
For Certificate and PGDip candidates:									
S1			√		√	√	√	√	√
S2		√	√	√	√			√	√
S3		√	√	√	√	√	√	√	√
S4		√	√	√	√	√	√	√	√
S5		√	√		√	√	√	√	√
S6	√	√	√	√	√	√	√	√	√
S7			√	√	√			√	√
S8			√	√	√		√	√	√
S9				√	√			√	√
S10				√				√	√
S11				√	√			√	√

In addition, for MSc candidates									
S12				√	√			√	√
S13		√	√	√	√		√	√	√
S14	√	√	√	√	√	√	√	√	√
S15			√		√	√	√	√	√

* students are encouraged and expected to continually review and reflect on their performance. Self and peer assessment is included here for completeness, although it is generally designed to aid students' learning rather than to contribute to the final degree classification.

19. Reference points

The learning outcomes and programme content have been developed with reference to existing PGT (QAA FHEQ Level 7) provision within the School of Biosciences. In agreement with the University's Learning and Teaching Strategy, the programme has been designed to benefit from our excellent research-led teaching, and the programme-level approach ensures that students will develop broad skills which cut across individual modules and result in the development of deeper knowledge and understanding. In accordance with the vision set out in The Sheffield Masters Graduate, the programme is designed to allow students to deepen their discipline-based knowledge while at the same time gaining the confidence to apply this knowledge within local, national, and international contexts, and to encourage creative and strategic problem-solving skills which transcend the component disciplines.

20. Programme structure and regulations

The programme is offered as full-time study only and consists of 120 credits of core modules, including a Research Project (60 credits), a Literature review (15 credits), and three MSc skills modules (Advanced scientific skills, Critical analysis of current science and Ethics, the Law and Public Awareness of science), 30 credits of practical modules in this specialist field and 30 credits of lecture modules (optional).

Details to be included in the Regulations

Detailed information about the structure of programmes, regulations concerning assessment and progression and descriptions of individual modules are published in the University Calendar available on-line at http://www.shef.ac.uk/govern/calendar/regs.html.

21. Student development over the course of study

The programme is designed to run as a 180 credit MSc, however the 60 credit Certificate or 120 credit Diploma are available as exit qualifications for students who fail to meet satisfactory levels of attainment.

The Certificate is designed to provide a largely theoretical background to the Genomic Approaches to Drug Discovery. The Diploma includes more opportunities for acquisition of practical skills, a literature review project and a more comprehensive theoretical training. The distinguishing feature of the MSc is that is contains a 60 credit individual laboratory research project combined to a literature review project that builds on theory and practical modules and provides the candidate with opportunities to design, execute, interpret and present original scientific results.

22. Criteria for admission to the programme

Candidates will normally have a good (upper second class or better) degree in a relevant area of Bioscience or Medical Science. In addition, international students where English is not their first language or who have not been taught in English will also have an IELTS mean of 6.5 (with a minimum of 6.0 in all 4 components).

23. Additional information

Sheffield combines the advantages of a top quality University, an outstanding Students' Union, a large city and a pleasant location close to the Peak District National Park. The School of Biosciences is one of the major

centres of biological excellence in the UK.
This specification represents a concise statement about the main features of the programme and should be considered alongside other sources of information provided by the teaching department(s) and the University. In addition to programme specific information, further information about studying at The University of Sheffield can be accessed via our Student Services web site at http://www.shef.ac.uk/ssid.