Module Specification

Module Title	Functional Genomics and Epigenetics	Module Code	BIO327

Credit Value	15	Level	6	Mode of Delivery	On Campus		Semester B

Pre-requisite modules	Co-requisite modules	Overlapping modules
SBS642 or SBS641		

1) Content Description

Provide a description of the module, as it will appear in the Module Directory and on the Student Information System (approx. 70-80 words).

This module is designed to provide students with an introduction into the variety of ways that genetics and genomics have been applied in the field of functional genomics. The module covers a variety of topics including protein expression, microarrays, proteomics, systems biology, genome projects (assembly. annotation and comparison) and the exciting new field of epigenetics.

2) Module Aims

Specify the aims of the module, i.e. the broad educational purposes for offering this module.

Make students aware of genomics and epigentics. Provide a basic grounding in some of the more robust technologies used in these areas. To appreciate the impact of genomic technologies and discoveries through the use of invited guest speakers and in depth analysis of hot-topics of the year. To develop an understanding and an appreciation of ‘omics science. Finally, an overview of human variation and the HapMap project, and of epigenetics and their impact on genome structure and function.

3) Learning Outcomes

Identify the learning outcomes for this module, i.e. knowledge, skills and attributes to be developed through completion of this module. Outcomes should be referenced to the relevant QAA benchmark statements and the Framework for Higher Education Qualifications in England, Wales and Northern Ireland (2008). The SEEC Credit Level Descriptors for Further and Higher Education 2003 and Queen Mary Statement of Graduate Attributes should also be used as a guiding framework for curriculum design.

Academic Content:	
A1	Be familiar with a variety of molecular techniques for DNA manipulation and analysis with particular emphasis on the expression of recombinant proteins
A2	Be familiar with post-genomic research technologies.
A3	Appreciate potential future developments in molecular biology
A4	Acquainted with DNA sequencing technologies, and able to appreciate how large scale genomics projects are undertaken.

Disciplinary skills - able to:

B1	Understand the value of fundamental research and be able to explain its benefits in terms of knowledge generation
B2	Understand the value of the human genome project and other large scale sequencing efforts, and their application to development and disease
B3	Appreciate how heterologous proteins can be made, and some of the limitations in this technology
B4	Understand how genomes can be explored using functional genomics approaches, including human variation and epigenetics

Attributes:	
C1	Enhance students' general scientific understanding and knowledge of functional genomics and epigenetics through lecture material
C2	Improve the students' ability to handle information, to conduct independent study and to extract information from the scientific literature

4) Reading List

Provide an indicative reading list for the module. This should include key texts and/or journals but should not be an exhaustive list of materials.

A comparative analysis of heterologous expression systems 2007.pdf
Computational biology - network comparisions and their future.pdf
Curran_10_commandments
Curran and Bugeja Chapter 3 Fungal Genetics A Post-Genomic Perspective. .pdf
Curran and Bugeja Chapter 6 The Biotechnological Exploitation of Heterologous Protein Production in Fungi. .pdf
Fn Genomics and Biotech Lectures 11 and 12.2007.ppt
Fugu_genome.pdf
Genomics and Drug dev review 2006.pdf
Gos_Micklem
Human_genome private.pdf
Human_genome public.pdf
Integrating databases to ID disease genes.pdf
John_Nichols
Novel DNA sequencing drive.pdf
Protein localisation studies in Pombe..pdf
Reference list Curran
SBC_assignment_final
Woolfe_et_al.pdf

5) Teaching and Learning Profile

Provide details of the method of delivery (lectures, seminars, fieldwork, practical classes, etc.) used to enable the achievement of learning outcomes and an indicative number of hours for each activity to give an overall picture of the workload a student taking the module would be expected to undertake. This information will form the Key Information Set for each undergraduate programme and will be used to populate the KIS widget found on the QMUL programme information pages. More information can be found online about KIS. You may also wish to refer to the QAA guidance on contact hours when completing this section.

Activity Type	KIS Category	Time Spent (in hours)
Lecture	Scheduled	32
Workshop	Scheduled	4
	Total	36

Specify the total module notional study hours. This should be a total of the hours given for each activity. The notional study hours for each academic credit point is 10. A 15 credit point module therefore represents 150 notional study hours.

Activity Type	Total Time Spent (in hours)	Percentage of Time Spent
Scheduled learning and teaching	36	24
Placement	0	0
Independent Study	114	76
Total	150	100

Use the information provided in the box above to specify the total time spent and the percentage time spent in each category of teaching and learning activity.

6) Assessment Profile

Provide details of the assessment methods used to assess the achievement of learning outcomes.

Description of Assessment	Assessment Type	KIS Category	Duration/Length	Percentage Weighting	Final element of assessment	Qualifying Mark
Written Examination	Examination	Written Exam	3 Hours	80%	Yes	
Coursework	Written assignment	Coursework		20%	No	

Final element of assessment: The assessment that takes place last. There should normally be only one element of assessment marked as final unless two assessment or submission dates occur on the same day.

Qualifying mark: A specified minimum mark that must be obtained in one or more elements of assessment in order to pass a module. This is in addition to, and distinct from, the requirement to achieve a pass in the module mark to pass the module.

Reassessment

Provide details of the reassessment methods used, specifying whether reassessment is either standard reassessment or synoptic reassessment.

○ Standard Reassessment ◉ Synoptic Reassessment

Synoptic reassessment details (if you have indicated synoptic reassessment above, please give details)		
Brief Description of Assessment	Assessment Type	Duration/Length of Examination/ Coursework
Resit Examination	Written Exam	3 Hours