Module Specification

Module Title	Transmissions Genetics	Module Code	BIO241

Credit Value	15	Level	5	Mode of Delivery	On Campus		Semester B

Pre-requisite modules	Co-requisite modules	Overlapping modules
Heredity and Gene Action		

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 reviews how different model organisms are studied using a combination of genetics and reverse genetics to provide the modern view of inherited biological information. It examines a number of seminal experiments in detail and also explores the precise molecular mechanisms involved in ensuring that DNA, the repository of inherited information, achieves the difficult balance of change and stability necessary for evolution to occur.

2) Module Aims

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

This aim of this module is to provide the students with an understanding of how the gene paradigm has changed with time. It examines the roles played by different types of model organisms in elucidating how inherited 2-D genetic information manifests as 4-D biological information. The first half of the module explains how classical approaches to genetics are gradually giving way to a genomics-based approach to this subject. The second half examines the various biological systems that provide the inherited variation necessary for evolution to occur. By the end of the module the students should appreciate the range of organisms and techniques used in genetics, understand the importance of dynamic processes in giving rise to phenotypes, and be able to discuss the principles that underlie the generation of variation in biological systems.

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	Illustrate how phenotypic analysis in a diversity of model organisms has altered our notion of what genes are.
A2	Relate Mendel's laws to the chromosome theory of inheritance and understand the inheritance patterns and molecular mechanisms of mobile genetic elements
A3	To demonstrate how cloning technology can be used to analyse genes and genomes, understand the origin, consequences and detection of mutations and explain the molecular basis of DNA recombination, replication and repair
A4	Extract basic information from web-based research resources.

A 5	Design and execute basic experiments
A 6	Analyse experimental results and produce a critical appraisal of them in a scientific report.

Disciplinary skills - able to:	
B1	This module will enhance students' understanding of the principles that underlie the generation of variation in biological systems. They will also understand the different types of experimental approaches used in the study of inherited biological information
B2	They will also appreciate, and gain a fundamental understanding of, the different biological processes, which are of great scientific and technological interest, occurring in all living organisms. They will also gain an appreciation of the way in which scientific theories are developed and modified

Attributes:	
C1	The module will enhance students' general scientific understanding and knowledge of experimental design and laboratory techniques through lecture material and laboratory exercises. The course work will improve planning and organisational skills
C2	The on-line exercises will develop their ability to explore web-based biological resources. Overall, the module will 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 detailed list of page references for each of the following books is supplied for each lecture in the module handout at the beginning of term. They are meant to be used **in conjunction** with lecture notes. Each reference approaches the topic in a different way. The references should be mixed and matched to suit individual student's taste.

Alberts, *et al.* Molecular Biology of the Cell (2002).
Brooker , R. Genetics (Analysis and Principles) (1999).
Hartwell, L. *et al.* Genetics (From Genes to Genomes) (2004).
Klug & Cummins Concepts of GENETICS 6th ed. (2000).

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)
Lectures	Scheduled	22
Laboratory exercises	Scheduled	12
	Total	34

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	34	23
Placement	0	0
Independent Study	108	77
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
Examination	Exam	Exam	2 Hours and 30 Minutes	75%	Yes	
Coursework	Written assignment	Coursework		25%	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	Examination	2 Hours and 30 Minutes