

## Module Specification

Module Title	Research Methods and Communication II	Module Code	BIO309			
Credit Value	15	Level	6	Mode of Delivery	On Campus	Semester A

Pre-requisite modules	Co-requisite modules	Overlapping modules
SBC264		

### 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).

In this module we look at advanced topics in experimental design, data analysis and science communication. Topics covered include the design of large-scale studies, advanced data analysis techniques in R, and statistics which build on Research Methods and Communications I from the year before. The tutorial component continues the theme from second year with further writing exercises, a mock exam essay and popular science writing practice.

### 2) Module Aims

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

This module aims to add to our students understanding of the way that science works, and to give them advanced knowledge of topics such as study design and data analysis. They will also receive further training in communicating science, and better understanding the place of science in society.

### 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	Understand the principles of experimental design, including advanced concepts such as the design of large-scale medical and genomics studies.
A2	Understand the use of statistical modelling techniques to describe patterns in data and to test hypotheses about those patterns.
A3	Know how to use multivariate statistics to find patterns in complex datasets with multiple response variables
A4	Present scientific concepts and results in a variety of different ways, including formal reports and popular science articles

Disciplinary skills - able to:	
B1	Design experiments and critically evaluate experimental designs
B2	Analyse data and draw appropriate inferences from it

B3	Present data and communicate ideas effectively
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Attributes:	
C1	Acquire and apply knowledge in a rigorous way
C2	Use quantitative data confidently and competently
C3	Produce analyses which are grounded in evidence

#### 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.

<p><a href="http://varianceexplained.org/r/empirical_bayes_baseball/">http://varianceexplained.org/r/empirical_bayes_baseball/</a></p> <p>Winter, B. (2013). Linear models and linear mixed effects models in R with linguistic applications. arXiv:1308.5499. [http://arxiv.org/pdf/1308.5499.pdf]</p>
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#### 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	16
Practical Classes and Workshops	Scheduled	14
Tutorial	Scheduled	3
Total		33

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	33	22
Placement	0	0
Independent Study	120	78
Total	153	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
Final Exam	Written Exam	Written	3 hours	75%	Yes	

Coursework	Report	Coursework	600 words	25%	No	
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**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
Exam	Exam	3 Hours