

Module Specification

Module Title Module Code
Credit Value Level Mode of Delivery Semester

Pre-requisite modules	Co-requisite modules	Overlapping modules
Basic Biochemistry BIO161 OR Biomolecules of Life BMD123		

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 will develop students' understanding of electrical and chemical signalling in neurons and synaptic transmission. Students will learn about the mechanisms of excitability of nerve cells, voltage-dependent membrane permeability, ion channels and synaptic transmission. Neurotransmitters and their receptors will be covered and students will gain an understanding of intracellular signalling and synaptic modulation. The module will provide a critical understanding of the regulation of neuronal signalling, necessary for advanced study of neuronal circuitry/network function.

2) Module Aims

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

The module aims to develop students' understanding of both the molecular and cellular basis of neuronal signalling and synaptic transmission. Students will gain a critical understanding of experimental methods used to study cellular neurophysiology. Students will be expected to contribute to journal clubs/workshops, reading and evaluating evidence from classic and current journal articles. Practical sessions will enable students' understanding of aspects of theory and give students experience in designing experiments and using apparatus and insight into techniques in molecular and cellular neuroscience.

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:	
A 1	Demonstrate an understanding of scientific research methods used in neuroscience to study neuronal signaling and synaptic transmission.
A 2	Show a critical understanding of the evidence for mechanisms underlying neuronal signal transduction.
A 3	Display knowledge of the regulation of neurotransmission at molecular and cellular levels and show appreciation for important developments in the field.
A 4	Evaluate different neurotransmitter systems and their functional roles within the nervous system.

Disciplinary Skills - able to:	
B 1	Describe and identify appropriate experimental methods for the study of electrical and chemical signalling in neurons.
B 2	Critically evaluate scientific literature including original research articles and interpret findings
B 3	Plan, design and acquire quantitative data
B 4	Interpret data with awareness of experimental limitations
B 5	Identify conceptual arguments derived from scientific evidence

Attributes:	
C 1	Acquire knowledge of scientific research methods and their application in neuroscience
C 2	Communicate effectively to varied audiences by written and verbal means.
C 3	Apply knowledge of experimental design and analytic skills in research experimentation
C 4	Participate constructively as a member of a group/team
C 5	Have intellectual curiosity to continually learn from diverse sources of information

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.

John.H Byrne, Ruth Heidelberger and M. Neal Waxham. From Molecules to Networks: An introduction to Cellular and Molecular Neuroscience(Third edition, 2014) Academic Press, Elsevier.

Students will also be provided with selected review articles, classic and contemporary subject-related research articles.

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	22
Practical Classes and workshops	Scheduled	9
Guided independent study	Independent	119
Total		150

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	31	20
Placement		
Independent Study	119	80
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.

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Section 3 - Alternative Assessment Arrangements for Associate Students

This section **must only** be completed if the module will be made available to associate students in Semester A and where the credit value of the "associate" version is the same as for the main version, and the main version is assessed by exam in May which is not available to the associate students. All other aspects of the module specification remain the same as indicated in Section 2 above. To add alternative assessment arrangements please click 'Add Alternative Assessment'.

Section 4a - Half Module for Associate Students (for a half module to be taught in Semester A)

This section must be completed if the proposed module will take place over 2 semesters but will be made available to single-semester associate students in a half-credit format in [Semester A](#). Modules worth less than 30 credits taken over 2 semesters may not be made available in a half-credit format. To add details for the half module please click 'Add Half Module (Semester A)'.

Section 4b - Half Module for Associate Students (for a half module to be taught in Semester B)

This section must be completed if the proposed module will take place over 2 semesters but will be made available to single-semester associate students in a half-credit format in [Semester B](#). Modules worth less than 30 credits taken over 2 semesters may not be made available in a half-credit format. To add details for the half module please click 'Add Half Module (Semester B)'.