

Research and Analytical Methods

Module Code:	BIS7006-B
Academic Year:	2018-19
Credit Rating:	20
School:	School of Chemistry and Biosciences
Subject Area:	Biomedical Science
FHEQ Level:	FHEQ Level 7 (Masters)

Pre-requisites:

Co-requisites:

Contact Hours

Type	Hours
Lectures	22
Tutorials	10
Laboratory	33
Directed Study	135

Availability Periods

Occurrence	Location/Period
BDA	University of Bradford / Academic Year (Sept - May)

Module Aims

To provide a comprehensive understanding of selected important advanced biomedical techniques; to develop student autonomy in learning and to develop critical insight into research skills and laboratory techniques as well as enhance written communication skills.

Outline Syllabus

Advanced biomedical techniques: Introduction to biomedical analysis; Good laboratory and clinical practice; Sample preparation for bioanalysis. Analytical biochemical techniques: separation methods, GLC, HPLC, FPLC chromatography (ion, gel, affinity), electrophoresis, mass spectrometry. Methods to study cells: microscopy, cell culture, cell proliferation, identification of cell markers & cell purification by FACS. Recombinant DNA techniques:

Concepts of gene cloning and its impact on research and biotechnology. RNA techniques; isolation of RNA, cDNA synthesis, Polymerase Chain Reaction (PCR, real-time PCR), molecular analysis of gene expression (proteomics, microarray, Next generation sequencing); gene functions analysis (transgenic approaches, RNA silencing). Attendance at Postgraduate Seminars and production of summary of topic.

Module Learning Outcomes

On successful completion of this module, students will be able to...

- 1 Explain and critically evaluate advanced biomedical techniques and their applications in biomedical sciences, autonomously design experiments and carry out laboratory practice to a professional standard.
- 2 Demonstrate an understanding of research and scientific method, especially technique based approaches.
- 3 Undertake critical thinking.
- 4 Demonstrate effective written skills in note taking, structured practical reports and reflective statements.
- 5 Exercise initiative, personal responsibility and independent learning.
- 6 Develop practice through reflection on Postgraduate seminar series.

Learning, Teaching and Assessment Strategy

This module will be presented as a series of lectures, tutorials, workshops and laboratory sessions. Students will be responsible for their portfolio (2 structured practical exercises, techniques analysis, summary of a seminar, reflection on how to improve own presentation techniques from analysis of seminar series) which represents their directed study time)

Mode of Assessment

Type	Method	Description	Length	Weighting	Final Assess'
Summative	Coursework	Reflective statement on Postgraduate Seminars	0-250 words	10%	No
Summative	Coursework	Report on Postgraduate seminar	0-750 words	15%	No
Summative	Coursework	Evaluation of the methods to measure gene expression in mammalian cells	0-1500 words	25%	No

		in vitro and in vivo		
Summative	Coursework	Scientific report of molecular biology workshop - isolation and analysis of plasmid DNA	25%	No
Summative	Coursework	Scientific report on cell culture workshop	25%	Yes

Legacy Code (if applicable)

BM-9132L

Reading List

To view Reading List, please go to [rebus:list](#).