

Principles of Bioinformatics

Module Code:	BIS7017-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	7
Practical classes and	28
Tutorials	5
Directed Study	160

Availability Periods

Occurrence	Location/Period
BDA	University of Bradford / Semester 1 (Sep - Jan)

Module Aims

To provide a comprehensive understanding of bioinformatics and its application to Biology.
To develop student autonomy in the use of web-based platforms for analysing and annotating biomedical big data.

Outline Syllabus

Data standards and formats in bioinformatics Galaxy workbench and its application in biomedical sciences, Galaxy workflows, tools and histories, quality control analysis, analysis of RNA sequencing data, analysis of ChIP-Seq data, identification of the genetic variation

using the exome sequencing, transcriptomics, background and application of specialist databases and genome browsers.

Module Learning Outcomes

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

- 1 Demonstrate knowledge and understanding of current and emerging technologies in bioinformatics and their role in research and healthcare
- 2 Develop detailed knowledge and understanding of applied bioinformatics techniques
- 3 Undertake critical thinking for design of bioinformatics analysis
- 4 Employ web-based system (i.e. Galaxy) to perform bioinformatics analysis
- 5 Employ specialist databases and genome browsers to extract, integrate and visualise data
- 6 Demonstrate and ability to interpret, synthesise and critically evaluate complex issues within the field of bioinformatics

Learning, Teaching and Assessment Strategy

Teaching sessions will include computer workshops, lectures, seminars and tutorials.

Knowledge and understanding-based elements will be assessed using a portfolio in which students can evidence the approach they have taken while working on tasks, and evaluate their strategy (LO1-3). Learning outcomes 3-5 will be assessed by computer assessment - bioinformatics analysis of data in Galaxy. Learning outcome 6 will be assessed by oral presentation to an assessment panel and peer group.

Mode of Assessment

Type	Method	Description	Length	Weighting	Final Assess'
Summative	Presentation	Presentation of e-portfolio	20 minutes	20%	Yes
Formative	Presentation	Presentation of e-portfolio	10 minutes	%	No
Summative	Coursework	E-Portfolio in Canvas with collection of evidence showing the bioinformatics analysis performed by students	2000 words or equivalent	40%	No

Formative	Coursework	Draft e-portfolio in Canvas, with collection of evidence showing bioinformatics analysis performed by students	500 words or equivalent	%	No
Summative	Computer-based assessment	Bioinformatics analysis of data in Galaxy	2 hours	40%	No
Formative	Computer-based assessment	Bioinformatics analysis of data in Galaxy	2 hours	%	No

Legacy Code (if applicable)

Reading List

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