

## Liverpool John Moores University

Title: ORGANISATION AND CONTROL IN LIVING SYSTEMS  
Status: Definitive  
Code: **3001FNDSCI** (101206)  
Version Start Date: 01-08-2011

Owning School/Faculty: Natural Sciences & Psychology  
Teaching School/Faculty: Natural Sciences & Psychology

Team	Leader
Jennifer Sneddon	Y
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**Academic Level:** FHEQ3      **Credit Value:** 12.00      **Total Delivered Hours:** 36.00  
**Total Learning Hours:** 120      **Private Study:** 84

### Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	12.000
Practical	12.000
Workshop	12.000

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Test	Phase test	phase tests	60.0	
Presentation	Poster	poster	40.0	

### Aims

*To illustrate the major biochemical and genetic systems that control living organisms at the cellular level.*

### Learning Outcomes

After completing the module the student should be able to:

- 1 recount the metabolic pathways involved in respiration and photosynthesis
- 2 review the structure and function of enzymes as they operate in cellular biochemistry
- 3 explain the relationship between DNA structure and macro-variation in living organisms
- 4 practice experimental techniques and use appropriate analytical methods

### Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Phase tests	2	4
Poster	1	3

### Outline Syllabus

*Protein structure, enzyme structure and function. Enzymes and activation energy.*

*The regulation of enzyme function.*

*ATP and cellular energetics, ATP and cellular work, regeneration of ATP and the ATP cycle.*

*Oxidative metabolism.*

*Cellular respiration, glycolysis, Kreb's cycle, electron transfer, oxidation and reduction, the role of terminal oxidases.*

*Photosynthesis. Light absorption by chlorophyll, the 'Z' scheme and chemiosmosis, the Calvin cycle. Variations in photosynthetic processes as a result of environmental factors.*

*Cells, structure and function, The role of cell organelles including mitochondria and chloroplasts.*

*The development of tissues and organs. A review of some simple tissues to show cell specialisation for function.*

*The concept of organs as combinations of tissues developed for complex functions DNA Structure, protein synthesis, genes, alleles, meiosis and mitosis, monohybrid and dihybrid crosses. Variation selection and evolution.*

### Learning Activities

The module will be delivered using a combination of lectures, workshops and practicals.

### References

<b>Course Material</b>	Book
<b>Author</b>	Sadava, Heller, Orians, Purves, Hillis

<b>Publishing Year</b>	2008
<b>Title</b>	Life: The science of Biology
<b>Subtitle</b>	
<b>Edition</b>	8th
<b>Publisher</b>	W H Freeman
<b>ISBN</b>	0716776715

<b>Course Material</b>	Book
<b>Author</b>	Raven, Johnson
<b>Publishing Year</b>	2002
<b>Title</b>	Biology
<b>Subtitle</b>	
<b>Edition</b>	6th
<b>Publisher</b>	McGraw Hill
<b>ISBN</b>	0-07-112261-3

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### Notes

This module provides students with a background in cellular genetics and biochemistry. Key skills developed will include experimental, report writing and data analysis.