



MODULE SPECIFICATION

Code: USSJRF-20-1 **Title:** Biology for Forensic Science **Version:** 2

Level: 1 **UWE credit rating:** 20 **ECTS credit rating:** 10

Module type: Standard

Owning Faculty: Health and Life Sciences **Field:** Applied Sciences

Faculty Committee approval: Quality and Standards Committee **Date:** September 2011

Approved for Delivery by: University Centre Yeovil

Valid from: September 2011 **Discontinued from:**

Pre-requisites:
NONE

Co-requisites:
NONE

Entry Requirements:
NONE

Excluded Combinations:
NONE

Learning Outcomes:

The student will be able to:

- demonstrate detailed knowledge of the components of plant and animal cells and their function;
- relate DNA & RNA structure to function and describe the basic features of gene structure and expression;
- describe the modes of inheritance of characteristics and explain the mechanisms of evolutionary change;
- describe the major physiological systems of the human body
- describe the main physiological processes and their regulation down to cellular level;
- demonstrate knowledge of auxiliary biological topics important to forensic science;
- carry out and interpret simple biological experiments.

Syllabus Outline:

Cell Biology:

- Basic cell types, cell structure, organelles and their function;
- Cellular processes;
- Examples for specialised cells;

Genetics:

- Overview: genetics in context. Realities and expectations in view of recent developments;
- The genetic material and genomes. Non-coding DNA. The role of DNA and RNA;
- DNA replication, transcription and RNA translation;
- Altering the genetic material - mutation, recombination and gene cloning;
- Mendelian inheritance and variations, linkage;
- Gene inheritance patterns in humans and molecular approaches to diagnosing genetic disease;
- Population genetics. quantitative inheritance and heritability, eugenics.

Physiology:

- The importance of homeostasis in maintaining constancy in the human body.

- Introduction to endocrinology; structure and function of the pituitary, thyroid, adrenal, pancreas and parathyroid glands.
- The electrochemical nature of nervous signals; membrane and action potentials; nerve conduction, synaptic transmission.
- Histological structure of nerve and muscle tissue and physiology of muscle contraction.
- The neurotransmitters and receptors involved in autonomic function.

Anxilliary Topics:

- Immunoessays; plant DNA; mitochondrial DNA; environmental microorganisms.

Teaching and Learning Methods:

The module will be delivered as an appropriate mix of lectures, practical exercises, tutorials and student-centred learning activities.

Students will have the opportunity to develop a variety of skills through the different teaching and learning activities including: investigative skills and information synthesis in case study, laboratory skills and data analysis and teamwork in practicals, reflection, conceptualisation and information assimilation in lectures and applying knowledge gained, communication and presentation skills in tutorials, practicals and examination.

Reading Strategy:

All students will be encouraged to make full use of the print and electronic resources available to them through membership of the University. These include a range of electronic journals and a wide variety of resources available through web sites and information gateways. The University Library's web pages provide access to subject relevant resources and services, and to the library catalogue. Many resources can be accessed remotely. Students will be presented with opportunities within the curriculum to develop their information retrieval and evaluation skills in order to identify such resources effectively.

Any **essential reading** will be indicated clearly, along with the method for accessing it, e.g. students may be expected to purchase a set text, be given or sold a print study pack or be referred to texts that are available electronically, etc. This guidance will be available either in the module handbook, via the module information on Blackboard or through any other vehicle deemed appropriate by the module/programme leaders.

If **further reading** is expected, this will be indicated clearly. If specific texts are listed, a clear indication will be given regarding how to access them and, if appropriate, students will be given guidance on how to identify relevant sources for themselves, e.g. through use of bibliographical databases.

Indicative Reading List:

Current versions of the following:

Core text books:

- Alberts B et. al.; Essential Cell Biology, Garland Science.
- Gunn, A.; Essential Forensic Biology, Wiley.

Generic overview texts:

- Russell PJ; iGenetics A Molecular Approach, Pearson Education.
- Robinson TR; Genetics For Dummies, Wiley.
- Wingerd B; The Human Body, University Readers.
- Godfrey H; Understanding The Human Body, Elsevier.

Further reading for interest :

- Buxton J & Turney J.; The Rough Guide to Genes & Cloning, Rough Guide.
- Pallen M; The Rough Guide to Evolution, Rough Guide.
- Venter, CJ; A Life Decoded, Penguin Press Science.
- Jones S; The Language of the Genes, Flamingo.
- Ridley M; Genome, Fourth Estate.
- Watson J; DNA: The Secret of Life, Arrow Books.
- Henig RM; A Monk and Two Peas, Weidenfeld & Nicolson.

Assessment:

Weighting between components A and B (standard modules only) A: 40% B: 60%

FIRST ATTEMPT

First Assessment Opportunity

Component A (*controlled*)

Description of each element

EX1 Exam (2 hours) Assessment Period 2

Element Wt (Ratio)

(*within Component*)

Final Assessment 1

Component B

Description of each element

CW1 Portfolio of worksheets/ practical reports.

CW2 Laboratory based exercises in which students will be assessed on their practical skills, theoretical appreciation and interpretation of data provided/generated during the session.

Element Wt (Ratio)

(*within Component*)

1

1

Second Assessment Opportunity (Resit) further attendance at taught classes is not required

Component A (*controlled*)

Description of each element

EX2 Exam (2 hours) Assessment Period 3

Element Wt (Ratio)

(*within Component*)

Final Assessment 1

Component B

Description of each element

CW3 Extended Portfolio of rewritten practical reports and virtual laboratory/ data interpretation exercises

Element Wt (Ratio)

(*within Component*)

1

EXCEPTIONAL SECOND ATTEMPT Attendance at taught classes is required.

Specification confirmed by**Date**
(Associate Dean/Programme Director)