1. **Title of the module**

LABS401 Biology of Eukaryotic and Prokaryotic Cells

1. **Division which will be responsible for management of the module**

Digital and Lifelong Learning

1. **The level of the module (Level 4, Level 5, Level 6 or Level 7)**

Level 4

1. **The number of credits and the ECTS value which the module represents**

30 credits (15 ECTs)

1. **Which term(s) the module is to be taught in (or other teaching pattern)**

Flexible delivery model

Autumn and/or Spring and/or Summer

1. **Prerequisite and co-requisite modules**

N/A

1. **The programmes of study to which the module contributes**

FdSc and BSc (Hons) in Applied Bioscience

1. **The intended subject specific learning outcomes.  
   On successfully completing the module students will be able to:**

8.1 Describe the diversity and classification of cell types. Including similarities and differences between prokaryotes and eukaryotes and general features of microbes and animal cell lines.

8.2 Demonstrate knowledge of structure and function of cell boundaries and cellular components (including cell membranes, cell wall and organelles).

8.3. Demonstrate knowledge of cellular dynamics (cell shape and molecular transport).

8.4. Demonstrate knowledge of cooperation between cells (including cell-to-cell communication and tissues).

8.5. Demonstrate knowledge of cellular replication and genetic transmission (including mitosis and binary fission; meiosis and horizontal transfer).

8.6. Apply an understanding of microscopy techniques to the preparation and imaging of specimens (including staining methods).

8.7 Understand the use of general handling and importance of safety for cell lines and microorganisms (including storage, risk assessment and control of microbial environment).

8.8. Apply an understanding of culturing techniques to the growth and maintenance of cells and microorganisms.

8.9. Demonstrate knowledge of applications of cell and microbiology (including identification of microbes and biotechnology).

1. **The intended generic learning outcomes.  
   On successfully completing the module students will be able to:**

9.1 Demonstrate the development of practical/technical skills

9.2 Analyse, evaluate and correctly interpret data

9.3 Communicate and present data effectively

9.4 Obtain and use information from a variety of sources as part of self-directed learning.

9.5 Manage their time and use their organisation skills within the context of self-directed learning.

1. **A synopsis of the curriculum**

This module will cover the fundamental biological aspects of eukaryotic and prokaryotic cells, including those that are essential for their use and application in the workplace. This will cover the:

* Classification of cell types (prokaryotes versus eukaryotes; microbes and cell lines; repositories)
* Cellular structure and function: a description of outer boundaries (cell membranes and cell walls) and inner boundaries (membrane-bound organelles)
* Communication and cooperation between cells (cell to cell contact, specialised cells and tissues, colonies)
* Replication and the transmission of genetic material (mitosis and binary fission; meiosis and horizontal transfer)
* Biotechnology and cell culture - Discussing the different applications of biotechnology (cancer cell lines, stem cells, 3D cell cultures, drug screening, general description of genetic engineering)
* Microscopy techniques and how these can be used to image different cell types
* General handling and safety for cell lines, including including storage, risk assessment and control of microbial environment.
* How to grow different organisms, such as through cell culture, and including maintenance, growth conditions and growth characteristics.

1. **Reading list (Indicative list, current at time of publication. Reading lists will be published annually)**

Albers et al. (2009) Essential Cell Biology. Garland.

Albers et al. (2008) Molecular Biology of the Cell. Garland.

Bolsover et al. (2011) Cell Biology: A Short Course. Wiley-Blackwell.

# Hugo & Russell (2011) Pharmaceutical Microbiology, 8th edition. Wiley-Blackwell.

Rosenberg, E. (2013) [The Prokaryotes Applied Bacteriology and Biotechnology](https://librarysearch.kent.ac.uk/client/en_GB/kent/search/results?qu=bacteriology&qf=FORMAT%09Format%09ER%09Ebooks&ir=Library&isd=true). Springer.

Madigan, M. et al. (2009) Brock Biology of microorganisms. Pearson International.

Baker, S. (2011) Microbiology. Garland Science.

1. **Learning and teaching methods**

Blended Distance learning:

Contact Hours: 120

Private Study Hours: 30

Total Study Hours: 150

1. **Assessment methods**
   1. Main assessment methods

Two coursework assignments and a Moodle Quiz.

Weighting:

2 Essay assignments 70% (35% each; 1,600 words each)

Moodle Quiz (30%)

All assessments must be passed to pass the module. The pass mark for this module is 40%.

13.2 Reassessment methods

Like for like

1. ***Map of module learning outcomes (sections 8 & 9) to learning and teaching methods (section12) and methods of assessment (section 13)***

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** | 8.1 | 8.2 | 8.3 | 8.4 | 8.5 | 8.6 | 8.7 | 8.8 | 8.9 | 9.1 | 9.2 | 9.3 | 9.4 | 9.5 |
| **Learning/ teaching method** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Private Study** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| Teaching | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |  |
| Work based experience |  |  |  |  |  | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| **Assessment method** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Assignment 1 | **x** | **x** |  | **x** |  | **x** |  |  | **x** |  | **x** | **x** | **x** | **x** |
| Assignment 2 |  |  |  |  |  |  | **x** | **x** | **x** | **x** |  |  | **x** | **x** |
| Moodle Quiz |  | **x** | **x** | **x** | **x** |  | **x** |  | **x** |  |  |  | **x** | **x** |

1. **Inclusive module design**

The Division recognises and has embedded the expectations of current equality legislation, by ensuring that the module is as accessible as possible by design. Additional alternative arrangements for students with Inclusive Learning Plans (ILPs)/declared disabilities will be made on an individual basis, in consultation with the relevant policies and support services.

The inclusive practices in the guidance (see Annex B Appendix A) have been considered in order to support all students in the following areas:

a) Accessible resources and curriculum

b) Learning, teaching and assessment methods

1. **Campus(es) or centre(s) where module will be delivered**

Blended distance learning – delivered from Medway and Canterbury campus

1. **Internationalisation**

International vocation is an important part of Applied Bioscience. The intended learning outcomes 8.1 to 8.7, for this module cover key universal principles and concepts of cell biology and microbiology, and therefore, are core components of industrial Bioscience worldwide. Furthermore, learning outcome 8.8 and 8.9 cover key universal techniques used in the pharmaceutical R&D industry worldwide.

**DIVISIONAL USE ONLY**

**Revision record – all revisions must be recorded in the grid and full details of the change retained in the appropriate committee records.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date approved | Major/minor revision | Start date of delivery of revised version | Section revised | Impacts PLOs (Q6&7 cover sheet) |
| 05/10/20 | Minor | Sept 2020 | 13 | No |
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