MEU44BM1

Introductory Cell and Molecular Biology

ECTS Weighting¹

5 ECTS

Semester taught

Semester 1

Module Coordinator/s

Dr. Sarah Doyle doyles8@tcd.ie

Module Learning Outcomes with reference to the Graduate Attributes and how they are developed in discipline

On successful completion of this module, students should be able to:

1. Recognise the main microscopic architectural features of the mammalian cell.
2. Define and explain the fundamental activities of the mammalian cell.
3. Assign various cellular processes to a role in maintaining cellular homeostasis.
4. Assemble and describe a working model of the linkages between gene structure and protein expression in the human body.
5. Recognise and explain the role of the genetic code in inherited traits and disease.

Graduate Attributes: levels of attainment

To act responsibly - Not embedded
To think independently - Introduced
To develop continuously - Enhanced
To communicate effectively - Enhanced

Module Content

This module provides an integrated overview of the cellular level of organisation in the human body.

- Cell theory
- Biological Membranes
- Microscopy
- Cellular organelles

¹ TEP Glossary
• The cytoskeleton
• Intracellular Fluid, volume and pH
• Membrane Potential
• Import Export mechanisms
• Cell-cell communication 1 + 2
• Enzymes and Energy
• Cellular Respiration
• Composition and packaging of DNA & Chromosomal organisation
• DNA replication
• The cell cycle
• Gene transcription
• Translation of mRNA
• Transcription/translational control
• Post transcriptional control
• Heritability
• Genotyping
• Genetics of Heritable disease

Teaching and Learning Methods

Lectures
Laboratory simulation
## Assessment Details

Please include the following:
- Assessment Component
- Assessment description
- Learning Outcome(s) addressed
- % of total
- Assessment due date

<table>
<thead>
<tr>
<th>Assessment Component</th>
<th>Assessment Description</th>
<th>LO Addressed</th>
<th>% of total</th>
<th>Week due</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA</td>
<td>MCQ</td>
<td>Basic knowledge of cellular biology</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>CA</td>
<td>Lab practical</td>
<td>Understanding of microscopy</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>AE</td>
<td>Short notes, Essay question, Problem solving question</td>
<td>Overall ability to communicate breadth and depth of learning. Problem based on Genetics.</td>
<td>80</td>
<td></td>
</tr>
</tbody>
</table>

### Reassessment Requirements

### Contact Hours and Indicative Student Workload

- **Contact hours:** 30
- **Independent Study (preparation for course and review of materials):** 25
- **Independent Study (preparation for assessment, incl. completion of assessment):** 45

### Recommended Reading List

**Molecular biology of the Cell**

Bruce Alberts 5th ed Garland Science

ISBN 9780815341116

---

2 [TEP Guidelines on Workload and Assessment](#)
<table>
<thead>
<tr>
<th>Module Pre-requisite</th>
<th>3BIO1 Anatomy and Physiology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module Co-requisite</td>
<td></td>
</tr>
<tr>
<td>Module Website</td>
<td></td>
</tr>
<tr>
<td>Are other Schools/Departments involved in the delivery of this module? If yes, please provide details.</td>
<td>School of Medicine</td>
</tr>
<tr>
<td>Module Approval Date</td>
<td></td>
</tr>
<tr>
<td>Approved by</td>
<td></td>
</tr>
<tr>
<td>Academic Start Year</td>
<td></td>
</tr>
<tr>
<td>Academic Year of Date</td>
<td></td>
</tr>
</tbody>
</table>