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| **Title:** | Introductory Cell Biology APPROVED |
| **Long Title:** | Introductory Cell Biology |

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| **Module Code:** | BIOL6023 | **Duration:** | 1 Semester |

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| **Credits:** | 5 |
| **NFQ Level:** | Fundamental |
| **Field of Study:** | Biochemistry & Cell Biology |
| **Valid From:** | Semester 1 - 2017/18 ( September 2017 ) |
| **Module Delivered in** | 3 programme(s) |
| **Module Coordinator:** | Brigid Lucey |
| **Module Author:** | HELEN O SHEA |
| **Module Description:** | An introduction to the essential techniques and relevant concepts in modern cell biology, including cell organisation and culture, cell communication and the cell cycle, cancer, developmental biology, immunology, advances in Molecular Biology and Biotechnology. |

| **Learning Outcomes** | |
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| *On successful completion of this module the learner will be able to:* | |
| LO1 | Distinguish between different types of cells, viruses and subcellular organisms. |
| LO2 | Describe the principles and laboratory practices used in mammalian cell culture. |
| LO3 | Describe how cells communicate and cycle and outline the consequences of abnormal cell division (cancer). |
| LO4 | Illustrate how the early embryo forms and develops. |
| LO5 | Describe the structure and function of the innate and acquired immune system. |
| LO6 | Outline, using selected examples, how advances in cell and molecular biology and biotechnology have impacted on everyday life. |

| **Pre-requisite learning** | | |
|---|---|---|
| ***Module Recommendations***<br>*This is prior learning (or a practical skill) that is strongly recommended before enrolment in this module. You may enrol in this module if you have not acquired the recommended learning but you will have considerable difficulty in passing (i.e. achieving the learning outcomes of) the module. While the prior learning is expressed as named CIT module(s) it also allows for learning (in another module or modules) which is equivalent to the learning specified in the named module(s).* | | |
| 12884 | BIOL6007 | Biomolecules and Cells |
| ***Incompatible Modules***<br>*These are modules which have learning outcomes that are too similar to the learning outcomes of this module. You may not earn additional credit for the same learning and therefore you may not enrol in this module if you have successfully completed any modules in the incompatible list.* | | |
| No incompatible modules listed | | |
| ***Co-requisite Modules*** | | |
| No Co-requisite modules listed | | |
| ***Requirements***<br>*This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed. You may not enrol on this module if you have not acquired the learning specified in this section.* | | |
| No requirements listed | | |

## Module Content & Assessment

| Indicative Content |
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| **1. Distinctions between cells and organisms.**<br>Cell organization. Viruses – structure and function. Animal viruses. Prions. |
| **2. Mammalian cell culture**<br>Principles and practices used in mammalian cell culture. Use of Laminar flow cabinets, aseptic technique, counting cells using a haemocytometer. Cell culture – demonstration of making tissue culture medium, passing cells, infection of cells in vitro. |
| **3. Cell communication**<br>Cooperation between cells – communication through chemicals (hormones, paracrines, neurotransmitters). |
| **4. Cell Cycle and Cancer**<br>The Cell Cycle, control and cancer; oncogenes / tumor suppressor genes. |
| **5. Development and Growth**<br>Development in the early embryo; Cell Growth and Differentiation; into tissues, organs & organisms. |
| **6. Immunology**<br>Cell and organs of the Innate and Acquired Immune System |
| **7. Applied Topics**<br>Selected examples, to illustrate how advances in cell and molecular biology and biotechnology have impacted on everyday life. |

| Assessment Breakdown | % |
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| Course Work | 100.00% |

**Course Work**

| *Assessment Type* | *Assessment Description* | *Outcome addressed* | *% of total* | *Assessment Date* |
|---|---|---|---|---|
| Practical/Skills Evaluation | Laboratory Reports | 1,2 | 40.0 | Every Second Week |
| Multiple Choice Questions | MCQ and similar format | 1,2,3 | 20.0 | Week 6 |
| Short Answer Questions | Short Answer Questions on e.g. cell organisation and culture, cell communication, the cell cycle, cancer, developmental biology, immunology, selected examples to depict advances in molecular biology and biotechnology. | 1,2,3,4,5,6 | 40.0 | Sem End |

No End of Module Formal Examination

| Reassessment Requirement |
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| **Repeat examination**<br>*Reassessment of this module will consist of a repeat examination. It is possible that there will also be a requirement to be reassessed in a coursework element.* |

**The institute reserves the right to alter the nature and timings of assessment**

## Module Workload

| Workload: Full Time | | | | |
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| *Workload Type* | *Workload Description* | *Hours* | *Frequency* | *Average Weekly Learner Workload* |
| Lecture | Cell Biology Theory | 3.0 | Every Week | 3.00 |
| Lab | Cell Biology Practical | 1.0 | Every Week | 1.00 |
| Independent & Directed Learning (Non-contact) | Assignments and study | 3.0 | Every Week | 3.00 |
| | | | Total Hours | 7.00 |
| | | | Total Weekly Learner Workload | 7.00 |
| | | | Total Weekly Contact Hours | 4.00 |

**This module has no Part Time workload.**

## Module Resources

*Recommended Book Resources*

- **Alberts, B., Johnson, A., Lewis, J., Morgan, D., Raff, M., Roberts, K., Walter, P. 2014, *Molecular Biology of the Cell*, 6th Ed., Ed., Garland Science New York [ISBN: 9780815344322]**
- **Bruce Alberts, Dennis Bray, Karen Hopkin, Alexander D Johnson, Julian Lewis, Martin Raff, Keith Roberts, Peter Walter 2016, *Essential Cell Biology*, 4th Ed., Ed., Garland Science New York [ISBN: 9780815345732]**

*This module does not have any article/paper resources*

*Other Resources*

- **website: *The Bio-Web: Resources for Molecular and Cell Biologists***
  **http://www.cellbiol.com/education.php**
- **website: *The Biology Project: Cell Biology***
  **http://www.biology.arizona.edu/cell_bio/ cell_bio.html**

## Module Delivered in

| Programme Code | Programme | Semester | Delivery |
|---|---|---|---|
| CR_SBIBI_7 | Bachelor of Science in Applied Biosciences and Biotechnology | 4 | Mandatory |
| CR_SFSTE_7 | Bachelor of Science in Food and Health Science | 4 | Mandatory |
| CR_SBIOS_6 | Higher Certificate in Science in Applied Biosciences | 4 | Mandatory |