

## MODULE DESCRIPTOR

### Module Title

Biochemistry Of Eukaryotes And Prokaryotes

|           |              |             |        |
|-----------|--------------|-------------|--------|
| Reference | PL2101       | Version     | 1      |
| Created   | October 2022 | SCQF Level  | SCQF 8 |
| Approved  | June 2023    | SCQF Points | 15     |
| Amended   | August 2021  | ECTS Points | 7.5    |

### Aims of Module

To give students a comprehensive understanding of the principles of biochemistry and metabolism relevant to animals, plants and microbes.

### Learning Outcomes for Module

On completion of this module, students are expected to be able to:

- 1 Describe primary pathways/cycles for carbohydrate, lipid and nitrogenous compound metabolism in selected organisms.
- 2 Demonstrate appreciation of secondary metabolic pathways in different organisms.
- 3 Explain biological metabolic intermediaries and end-products of pathways and cycles in selected organisms.
- 4 Describe major control sites in selected pathways and their control/integration under different environmental conditions.

### Indicative Module Content

Molecules relevant to the study of biochemistry. Enzymes. Pyruvate and Acetyl CoA as crossroad molecules. Glycolysis, gluconeogenesis, glycogen. Citric acid cycle and electron transport chain. Oxidative phosphorylation and production of ATP. Carbon and nitrogen cycles. Proteins and amino acids. Fatty acid and lipid metabolism. Membrane channels, partitioning and compartmentalisation. Microbial pathways and cycles and use of microbial metabolism as a screening method. Integration of metabolism. Bacterial mutants to analyse bacterial metabolic pathways. Growth of yeast under aerobic versus anaerobic conditions. Fructose-Glucose concentration equilibrium analysis.

### Module Delivery

Lecture-based supported by tutorials, online support material and guided reading.

| Indicative Student Workload   | Full Time | Part Time |
|---|-----------|-----------|
| Contact Hours   | 36        | N/A       |
| Non-Contact Hours   | 114       | N/A       |
| Placement/Work-Based Learning Experience [Notional] Hours             | N/A       | N/A       |
| TOTAL   | 150       | N/A       |
| Actual Placement hours for professional, statutory or regulatory body |           |           |

## ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

### Component 1

|              |                          |            |      |                    |            |
|--------------|--------------------------|------------|------|--------------------|------------|
| Type:        | Examination              | Weighting: | 100% | Outcomes Assessed: | 1, 2, 3, 4 |
| Description: | Closed Book Examination. |            |      |                    |            |

## MODULE PERFORMANCE DESCRIPTOR

### Explanatory Text

Component 1 (EX1) comprises 100% of the module grade. A minimum of a Grade D is required to pass the module. A non-submission will result in an NS grade.

| Module Grade | Minimum Requirements to achieve Module Grade:                                  |
|--------------|--|
| <b>A</b>     | A  |
| <b>B</b>     | B  |
| <b>C</b>     | C  |
| <b>D</b>     | D  |
| <b>E</b>     | E  |
| <b>F</b>     | F  |
| <b>NS</b>    | Non-submission of work by published deadline or non-attendance for examination |

### Module Requirements

|                          |   |
|--------------------------|---|
| Prerequisites for Module | None, in addition to SCQF level 8 entry requirements or equivalent. |
| Corequisites for module  | None.   |
| Precluded Modules        | None.   |

## INDICATIVE BIBLIOGRAPHY

- 1 STRYER, L. et al. 2019. Biochemistry. 9th Edition. Freeman.
- 2 MADIGAN M. T. Brock 2014. Biology of microorganisms. Brock biology of microorganisms. 14th Edition. Benjamin Cummings.