1. **Title of the module**

Metabolism and Enzymology

1. **Division or partner institution 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**

15 credits (7.5 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 course(s) of study to which the module contributes**

EdSc 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 Demonstrate the knowledge of enzymes kinetics and regulation.

8.2 Understand basic metabolic pathways (anabolic and catabolic).

8.3 Understand and demonstrate a knowledge of the role of energy conversions in cell metabolism.

8.4 Discuss human metabolic disorders.

8.5 Link the above knowledge to everyday activities in the bioscience lab environment.

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**

The characteristics of enzymes as biological catalysts, enzyme kinetics, enzyme classification

The role of nucleic acids in synthesis of macromolecules, particularly proteins and enzymes

Regulation of enzyme activity

Anabolic and catabolic metabolic pathways

Roles of ATP/NAD+/FAD

Aerobic respiration, oxidative phosphorylation

Products of glycolysis catabolism, anabolic formation of glucose, role of glycogen its formation and breakdown

Fat metabolism and fat as an energy store

Photosynthesis and its role in uptake of carbon dioxide and primary production of carbohydrate

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

Nelson & Cox (2009) Lehninger Principles of Biochemistry. WH Freeman.

Price & Stevens (2011) Fundamentals of enzymology: the cell and molecular biology of catalytic proteins. Oxford University Press, 3rd edition

Frayn (2010) Metabolic regulation: a human perspective. Blackwell’s

Feigenson & Gerald (2020) Metabolism principles. London: HS.

1. **Learning and teaching methods**

Blended distance learning:

Contact hours: 120 hours

Private Study Time: 30 hours

Total Learning Time: 150 hours

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

1 long essay (1, 600 words) weighing 70%

A Moodle Quiz weighing 30%

The pass mark for this module is 40%.

The weighted average for both the long essay and the Moodle Quiz component must be of a pass standard.

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 | 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** |
| ***Teaching*** | **x** | **x** | **x** | **x** | **x** |  |  |  |  |  |
| ***Work-based expirience*** |  |  |  |  |  | **x** | **x** | **x** | **x** | **x** |
|  |  |  |  |  |  |  |  |  |  |  |
| **Assessment method** |  |  |  |  |  |  |  |  |  |  |
| *Moodle Quiz* |  | **X** | **X** |  | **X** |  | **X** |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
| *Long Essay (1,600 words)* | **X** |  | **X** | **X** |  |  | **X** | **X** | **X** |  |
|  |  |  |  |  |  |  |  |  |  |  |

1. **Inclusive module design**

The Division/Collaborative Partner *(delete as applicable)* 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**

Metabolism and Enzymology is a core component of the Pharmaceutic R & D industry and this module reflects international aspects. With regards to the intended learning outcomes, in particular 8.4 and 8.5, the target learning outcomes within this module are applicable worldwide as part of the universal principles of Bioscience. With regard to subject content, the material within the syllabus is applied to a wide range of international contexts.

**If the module is part of a course in a Partner College or Validated Institution, please complete sections 18 and 19. If the module is not part of a course in a Partner College or Validated Institution these sections can be deleted.**

1. **Partner College/Validated Institution**
2. **University Division responsible for the course**

**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) |
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