1. **Title of the module**

LABS402 Biochemistry

1. **School or partner institution which will be responsible for management of the module**

Digital and Lifelong Learning (DaLL)

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 programmes of study to which the module contributes**

FdSc and BSc (Hons) in Applied Bioscience

FdSc and BSc (Hons) in Applied Chemical Sciences

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

8.1 Demonstrate understanding of the principles of the protein structure and synthesis together with an ability to explain their functions in general terms and practical applications.

8.2 Understand the key principles of static enzyme Biochemistry, enzyme classification and basic principles of enzyme functioning.

8.3 Nucleic acid structure and their disparate cellular roles. Demonstrate understanding of the basic principles of structure and function and to be able to describe at least one practical application.

8.4 Carbohydrate Biochemistry. Understand biochemical principles, biological functions and applications

8.5 Lipids. Demonstrate knowledge of the principles of classification, structure and functions.

8.6 Biological membranes. Understand basic mechanisms of static integration of biologically active compounds into membranes.

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

9.1 Demonstrate the development of practical laboratory-based skills.

9.2 Analyse, evaluate and correctly interpret data.

9.3 Demonstrate an ability to present and communicate 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.

Protein Biochemistry

Amino acids: levels of the protein structural organisation; Primary, secondary, tertiary and quaternary structure of proteins

Protein synthesis

Basic description of the protein biological functions and practical applications of protein Biochemistry. (Medicine, Biomedicine and Biotechnology).

Enzymes as biological catalysers: their structure function and classification.

Principles of enzyme technology and using enzymes as drug targets.

Biochemistry of the nucleic acids, purine and pyrimidine nucleotides.

Structural organisation of different types of nucleic acids (DNA and RNAs).

Basic description of the nucleic acid biological functions.

Practical applications of the nucleic acid Biochemistry. (Plasmids, Biotechnology,).

Biochemistry of carbohydrates: structural organisation of monosaccharides, disaccharides, oligosaccharides and polysaccharides.

Basic description of the carbohydrate biological functions and practical applications of the carbohydrate biochemistry (Medicine, Biomedicine and Biotechnology).

Biochemistry and classification of lipids: structural organisation and functions of triacylglycerols, phospholipids, sphingolipids, cardiolipins and steroids.

Biological membranes as a classic example of static interaction of biologically active compounds. Principles of integration of lipids, proteins, and carbohydrates into membranes.

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

Medical biochemistry at a glance book by J. G. Salway; ProQuest (Firm) 2012

Biochemistry for dummies by John T. Moore; Richard Langley; ProQuest (Firm) 2011

Biochemistry by B. D. Hames; N. M. Hooper; ProQuest (Firm) 2011

Biochemistry by B. D. Hames; N. M. Hooper 2011

The chemical reactions of life: from metabolism to photosynthesis ProQuest (Firm) 2010

Fundamentals of Biochemistry, Voet, 5th Edition, Wiley 2016

Biochemistry, Garrett/Grisham, 6th edition, Brooks/Cole 2016

Lehninger principles of biochemistry 7th Edition, W.H. Freeman 2017

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

Essay question (1, 600 words; 70%) Moodle quiz (30%)

Both 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 | 9.1 | 9.2 | 9.3 | 9.4 | 9.5 |
| **Learning/ teaching method** |  |  |  |  |  |  |  |  |  |  |  |
| **Teaching** | **x** | **x** | **x** | **x** | **x** | **x** |  | **x** | **x** |  |  |
| Private Study | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| Work-based experience |  |  |  |  |  |  | **x** | **x** | **x** | **x** | **x** |
| **Assessment method** |  |  |  |  |  |  |  |  |  |  |  |
| Assignments | **x** |  | **x** | **X** |  |  | **x** | **x** | **x** | **x** | **x** |
| MCQ | **x** | **x** | **x** | **x** | **x** | **x** |  |  |  |  | **x** |

1. **Inclusive module design**

The School/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 – Canterbury or Medway campus

1. **Internationalisation**

International vocation is an important part of Applied Bioscience. The intended learning outcomes 8.1, 8.1, 8.3, and 8.4, for this module cover key universal principles and concepts of biochemistry and therefore are the basic core components of Applied Bioscience worldwide. Furthermore, learning outcome 8.7, describes how these concepts can be applied to the pharmaceutical R&D industry worldwide.

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**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 20 | 13 | No |
|  |  |  |  |  |