1. **Title of the module**

LABS402 Biochemistry

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

Centre for Higher and Degree Apprenticeships (CHDA)

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

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

8.1 Demonstrate an understanding of the principles of the protein structure/folding and an ability to explain their functions in general.

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

8.3 Explain the basic principles of the nucleic acid structure and their disparate cellular roles and its practical applications.

8.4 Explain the principles of carbohydrate Biochemistry and the biological functions of the carbohydrates.

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

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

8.7 Demonstrate an ability to link this knowledge to everyday activities in the bioscience workplace.

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**

Protein Biochemistry

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

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, Bioreactors).

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, enzymes and carbohydrates associated with nucleic acid functioning.

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



Garrett RH & Grisham C.M. (2002) Principles of Biochemistry with a Human Focus. Brookes/Cole.

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

Voet, D.,Voet,J.G. and Pratt, C. (2012) Fundamentals of Biochemistry. Wiley.

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

Portfolio 30% - composed of 5 individual assignments where topics are applied to the workplace

Assignments 40% - 2 Assignments (20% each)

Exam - MCQ – 30%

The weighted average for both the overall coursework and the overall exam 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 | 8.6 | 8.7 | 9.1 | 9.2 | 9.3 | 9.4 | 9.5 |
| **Learning/ teaching method** |  |  |  |  |  |  |  |  |  |  |  |  |
| **Teaching** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |  | **x** | **x** |  |  |
| Private Study | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| Work-based experience |  |  |  |  |  |  |  | **x** | **x** | **x** | **x** | **x** |
| **Assessment method** |  |  |  |  |  |  |  |  |  |  |  |  |
| Portfolio |  |  |  |  |  |  |  | **x** | **x** | **x** | **x** | **x** |
| Assignments | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| MCQ | **x** | **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.

**FACULTIES SUPPORT OFFICE 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) |
| 05/10/20 | Minor | Sept 20 | 13 | No |
|  |  |  |  |  |