1. **Title of the module**

BIOS5210 (BI521) – Metabolism and Metabolic Regulation

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

Division of Natural Sciences

1. **The level of the module (Level 4, Level 5, Level 6 or Level 7)**

Level 5

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)**

Spring

1. **Prerequisite and co-requisite modules**

Co-requisite: BIOS5200 – Metabolism and Metabolic Disease

1. **The course(s) of study to which the module contributes**

Compulsory for BSc Biochemistry

Optional for BSc Biomedical Science

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

8.1 Understand key modes of metabolic regulation.

8.2 Understand key elements of plant and microbial metabolism that are distinct from human metabolism covered elsewhere.

8.3 Understand the importance of metabolic processes in biotechnological applications.

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

9.1 Communicate effectively using oral, written and visual methods.

9.2 Demonstrate an ability to analyse data from experimental, online and other sources and report results.

9.3 Demonstrate problem-solving skills.

1. **A synopsis of the curriculum**

**Principles of metabolic regulation:** Allostery, cooperativity, phosphorylation, and hormonal control. Metabolic regulation in response to cellular energy status. Transcriptional regulation.

**Plant metabolism:** Photosynthesis and carbon fixation.

**Microbial metabolism:** Nitrogen metabolism, stress responses, metals, and secondary metabolites.

**Metabolism in biotechnology:** Manipulating microbial metabolism for the production of useful compounds. Manipulating mammalian cell metabolism in biotechnology.

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

Garrett R.H. (2017). *Biochemistry* (Sixth Edition). Boston, MS: Cenage Learning.

Nelson D.L., Cox, M.M., and Lehninger A.L. (2017). *Lehninger Principles of Biochemistry*. (Seventh Edition). New York: W.H. Freeman.

1. **Learning and teaching methods**

Total Contact Hours: 24

Total Private Study Hours: 126

Total Study Hours: 150

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

* Practical report (2,000 words) – 30%
* Examination (2 Hours) – 70%

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* | *9.1* | *9.2* | *9.3* |
| **Learning/ teaching method** |  |  |  |  |  |  |
| Private Study | **x** | **x** | **x** |  | **x** | **x** |
| Practical | **x** | **x** |  | **x** | **x** | **x** |
| Lectures | **x** | **x** | **x** | **x** |  |  |
| **Assessment method** |  |  |  |  |  |  |
| Practical report | **x** | **x** |  | **x** | **x** | **x** |
| Exam | **x** | **x** | **x** | **x** | **x** |  |

1. **Inclusive module design**

The Division 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**

Canterbury

1. **Internationalisation**

Bioscience is an international discipline. This module presents subject-specific knowledge, research approaches and techniques, generated, developed and refined by scientists around the world. Mastery of the learning outcomes will equip students to apply the theories and techniques of the module in a wide range of international contexts. In compiling the reading list, consideration has been given to the range of texts that are available internationally and a selection has been identified to complement the delivery of the material. The Division of Natural Sciences is an international community of students and staff. Group activities e.g. in practicals, tutorials, workshops and self-study will naturally draw on the international make-up of the student body; the module teaching team includes members with international experience of teaching and research collaboration.

**DIVISION 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) |
| 10/12/18 | Minor | September 2-19 | 8, 9, 10, 11 | No |
| 20/01/20 | Minor | September 2020 | 12-14 | No |
| 15/02/21 | Major | September 2021 | 10-14 | No |

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| Revised FSO Feb 2020 |