1. **Title of the module**

BIOS5210 (BI521) - Metabolism and Metabolic Regulation

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

Biosciences

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**

Prerequisites:

Stage 1 Biosciences Modules

BIOS5200 Metabolism and Metabolic Disease

1. **The programmes of study to which the module contributes**

BSc Biochemistry (compulsory)

BSc Biomedical Science (optional)

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, carbon fixation, and secondary metabolites.

**Microbial metabolism:** Nitrogen cycle, stress responses, omics approaches, 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)**

**Core Text:**

Nelson DL, Lehninger Principles of Biochemistry. Editions 5 – 7.(2017)

**Recommended Reading:**

* Osgood M, Ocorr KA, The Absolute, Ultimate Guide to Lehninger Principles of Biochemistry: Study Guide and Solutions Manual, 7th edition, W.H. Freeman, 2017
* Selected articles from scientific journals may also be recommended.
1. **Learning and teaching methods**

Total contact hours: 27

Private study hours: 121

Total study hours: 150

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

Practical report (25%) Worksheet provided.

In-class test (15%)

Exam, 2 hr (60%).

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** |
| Workshops | **X** | **X** |  | **X** | **X** | **X** |
| Practical | **X** | **X** |  | **X** | **X** | **X** |
| Lectures | **X** | **X** | **X** |  |  |  |
| **Assessment method** |  |  |  |  |  |  |
| Test | **X** | **X** |  |  |  | **X** |
| Practical report | **X** | **X** |  | **X** | **X** | **X** |
| Exam | **X** | **X** | **X** | **X** | **X** |  |

1. **Inclusive module design**

The School 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 School of Biosciences 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.

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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 the delivery of revised version | Section revised | Impacts PLOs (Q6&7 cover sheet) |
| 10/12/18 | Minor | September 2-19 | 8, 9, 10, 11 |  |
| 20/01/20 | Minor | September 2020 | 12-14 | No |

Revised FSO Feb 2020