1. **Title of the module**

BIOS5470 (BI547) – Plant Physiology and Adaptation

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**

None

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

Compulsory for BSc Biology and related courses

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

8.1 Demonstrate detailed knowledge of plant specific features of cellular organisation and processes.

8.2 Demonstrate a cogent understanding of the process and regulation of photosynthesis.

8.3 Demonstrate a critical understanding of plant hormones and their role in the life cycle and responses to the environment.

8.4 Demonstrate a detailed understanding of how plants respond and adapt to environmental conditions.

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

9.1 Demonstrate effective communication skills.

9.2 Demonstrate a confident ability to generate, analyse and report experimental data.

9.3 Demonstrate assertive problem solving skills.

1. **A synopsis of the curriculum**

This module will cover the following areas:

Plant specific features of cellular organisation and processes – cell wall synthesis, cell division, endoreduplication, plasmadesmata.

Photosynthesis – mechanism and regulation of photosynthesis, photorespiration, C3, C4 and CAM.

Plant hormones and signalling – e.g. auxins, gibberellins, cytokinins etc. and their roles in tropism, photoperiodism, and flowering.

Adaptation and stress response – environmental stress, acclimatisation and adaptation.

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

Hopkins, W.G. and Hunter, N.P.A. (2008). *Introduction to Plant Physiology* (Fourth Edition). Hoboken, NJ: Wiley Publishing.

Smith, A.M., Coupland, G., Dolan, L., Harberd, N., Jones, J., Martin, C., Sablowski, R., Amery, A. (2010). *Plant Biology*, New York: Garland Science.

Taiz, L., Zeiger, E., Møller, I.M., and Murphy, A. (2018). *Plant Physiology and Development* (Sixth Edition). Sunderland, MA: Sinauer Associates.

1. **Learning and teaching methods**

Total Contact Hours: 30

Total Private Study Hours: 120

Total Study Hours: 150

1. **Assessment methods**
	1. Main assessment methods
* Practical Report (2,000 words) – 30%
* Examination (2 hours) – 70%

Both the practical report and the examination are compulsory sub-elements and must be passed to complete the module

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* | *9.1* | *9.2* | *9.3* |
| **Learning/ teaching method** |  |  |  |  |  |  |  |
| Private Study | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| Lecture | **x** | **x** | **x** | **x** |  |  |  |
| Workshop |  | **x** | **x** |  | **x** |  | **x** |
| Practical |  | **x** |  |  | **x** | **x** |  |
| **Assessment method** |  |  |  |  |  |  |  |
| Practical |  | **x** |  |  | **x** | **x** | **x** |
| Examination | **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**

Biosciences 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) |
| 31/01/20 | Minor | September 2020 | 8, 9, 13 | No |
| 17/12/20 | Major | September 2021 | 11, 13-14 | No |

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| Revised FSO Feb 2020 |