1. **Title of the module**

BIOS5010 (BI501) - Gene Expression and its Control

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**

Prerequisite:

BIOS3020 Molecular and Cellular Biology

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

Biochemistry and related programmes

Biomedical Science and related programmes

Biology and related programmes

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

Have:

8.1 demonstrate an understanding of how genes are organised, expressed and controlled in both prokaryotes and eukaryotes.

8.2 demonstrate an awareness of the contribution of modern molecular and cellular technologies in furthering our understanding of gene expression and its control.

8.3 demonstrate an appreciation of the importance of fundamental research into gene structure and function for future developments in the fields of human genomics and disease.

8.4 to analyse data from laboratory experiments that address issues relating to gene structure and/or expression.

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

9.1 Extract and interpret information at an intermediate level.

9.2 Analyse and evaluate experimental data at an intermediate level.

9.3 Have acquired skills in written communication and receiving critique.

1. **A synopsis of the curriculum**

The module deals with the molecular mechanisms of gene expression and its regulation in organisms ranging from viruses to man. This involves descriptions of how genetic information is stored in DNA and RNA, how that information is decoded by the cell and how this flow of information is controlled in response to changes in environment or developmental stage. Throughout, the mechanisms in prokaryotes and eukaryotes will be compared and contrasted and will touch on the latest developments in how we can analyse gene expression, and what these developments have revealed.

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

Core Texts (**one** of the following):

* Krebs, J.E., Goldstein, E.S. and Kilpatrick, S.T. “*Lewin's Genes XII*”, Jones and Bartlett Learning, Publishers, 2018 [ISBN-978-1-284104493]
* Krebs, J.E., Goldstein, E.S., Kilpatrick, S.T. “*Lewin’s Essential Genes 3rd edition*” Jones and Bartlett Learning, 2013, [ISBN: 978-1-4496-4479-6]
* Watson, J.D., Baker, T.A., Bell, S.P., Gann, A., Levine, M. & Losick, R. “*Molecular Biology of the Gene, 7th Edition*”, Pearson, 2014 [ISBN: 978-0-321-85149-9]

In addition, the following books are recommended for supplementary/background reading:

* Craig, N., Cohen-Fix, O., Green, R., Greider, C., Storz, G., Wolberger, C. ‘*Molecular Biology: Principles of Genome Function’*, *2nd edition* OUP Oxford; 2014, ISBN-13: 978-0198705970
* Latchman, D.S. ‘*Gene Control’*. Garland Science, 2014, ISBN-10: 0815365136

1. **Learning and teaching methods**

Total contact hours: 30

Private study hours: 120

Total study hours: 150

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

Assignment 1, word limit 750-1000 words (20%)

Assignment 2, word limit 1500-2000 words (20%)

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*** | ***8.4*** | ***9.1*** | ***9.2*** | ***9.3*** |
| **Learning/ teaching method** |  |  |  |  |  |  |  |
| Lectures | **X** | **X** | **X** | **X** |  | **X** |  |
| Supervision | **X** | **X** | **X** | **X** | **X** | **X** | **X** |
| Revision | **X** | **X** | **X** |  |  |  |  |
| Directed learning | **X** | **X** | **X** | **X** | **X** | **X** |  |
| **Assessment method** |  |  |  |  |  |  |  |
| Assignment 1: Problem solving |  |  |  | **X** | **X** | **X** | **X** |
| Assignment 2: Laboratory practical | **X** | **X** | **X** | **X** | **X** | **X** | **X** |
| Examination | **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**

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 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) |
| 20/01/20 | Minor | Sep 20 | 13 | No |
|  |  |  |  |  |

Revised FSO Feb 2020