1. **Title of the module**

BIOS8360 (BI836) - Practical and Applied Research Skills for Advanced Biologists

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 7

1. **The number of credits and the ECTS value which the module represents**

30 credits (15 ECTS)

1. **Which term(s) the module is to be taught in (or other teaching pattern)**

Autumn

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

None

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

MSc Cancer Biology

MSc Reproductive Medicine

MSc Biotechnology and Bioengineering

MSc Drug Design

MSc Infectious Diseases

MSc Biomedicine

Schools concerned: Biosciences

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

Have:

1. Knowledge and understanding of key principles in molecular biology. (A1)
2. Practical experience of modern molecular biology and its application to solve research problems. (B1, B2, C1)
3. Experimental design within a biological research context. (B1, C1, C2)
4. Interpretation of biological data. (B2, B4, C3)
5. Organisation and presentation of experimental data. (C4)
6. **The intended generic learning outcomes.
On successfully completing the module students will be able to:**

Have a knowledge and understanding of:

1. Communication: ability to organise information clearly, present information in oral and written form, adapt presentation for different audiences. (D1)
2. Analytical skills: interpretation of data, marshalling of information from published sources, critical evaluation of own research and that of others. (B2)
3. Team work: the ability to work both independently and as part of a research group using peer support, diplomacy and collective responsibility. (D4)
4. Self-motivation and independence: time and workload management in order to meet personal targets and imposed deadlines. (D3)
5. Information technology: use of appropriate technology to retrieve, analyse and present scientific information. (B3)
6. **A synopsis of the curriculum**

The module aims to develop understanding and practical skills in molecular biology, based around interactive workshops, practical sessions and group work. The module will involve practical sessions covering key practical and transferable skills in molecular biology and biotechnology, in the context of an extended mini-project focused on CRISPR-Cas9-based genome editing - a cutting-edge technology with wide application in the biological sciences. These will be accompanied by interactive workshops and classes that review the theory of these techniques, and will use case studies to illustrate their impact and importance in both academic and industrial settings and in different biological contexts. Students will learn skills in experimental design using appropriate case studies that will embed them within the relevant research literature. They will also gain experience of analysis and statistical interpretation of complex experimental data.

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

The reading list will be research articles, which will be used to drive a case-study based approach to learning. Students will be provided with their own copies of this reading material, but in some cases they will be set tasks for retrieving appropriate journal articles to which we already have access.

1. **Learning and teaching methods**

Total contact hours: 62

Private study hours: 238

Total study hours: 300

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

Assessments associated with online workshops (Pass/Fail at 70% pass mark; multiple attempts permitted until pass mark is achieved)

Peer Review Assignment (40% of module mark)

Lab report (4,000 words) (60% of module mark)

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.A* | *8.B* | *8.C* | *8.D* | *8.E* | *9.A* | *9.B* | *9.C* | *9.D* | *9.E* |
| **Learning/ teaching method** |  |  |  |  |  |  |  |  |  |  |
| Seminars | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |
| Lab workshops | **X** | **X** | **X** |  |  |  |  |  | **X** |  |
| Online workshops |  | **X** |  |  |  |  |  |  | **X** | **X** |
| Self-study | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |
| **Assessment method** |  |  |  |  |  |  |  |  |  |  |
| Online Assessments | **X** | **X** | **X** | **X** | **X** | **X** | **X** |  |  |  |
| Peer Review Assignment |  |  |  | **X** |  | **X** | **X** | **X** |  |  |
| Lab Report | **X** | **X** | **X** |  |  | **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**

The MSc courses served by this module regularly attract international students, and some of the learning outcomes have been introduced to ensure that home and international students operate at the same level when the subject- and course-specific content is delivered in the spring term. These learning outcomes include those referring to critical evaluation of the scientific literature (8D), science writing skills (8E and 9A), and mode of study in the UK (9D).

**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.**

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| --- | --- | --- | --- | --- |
| Date approved | Major/minor revision | Start date of the delivery of revised version | Section revised | Impacts PLOs (Q6&7 cover sheet) |
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Revised FSO Jan 2018