1. **Title of the module**

BIOS8580 (BI858) - **Translating (Bio)Science to Business.**

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

School of 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**

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 programmes of study to which the module contributes**

MSc Biotechnology & Business

1. **The intended subject specific learning outcomes.
On successfully completing the module students will be able to:**
2. Have a systematic understanding of and a critical awareness of current issues and/or new insights related to translating a bioscience idea from the bench to the bedside (from university to utility).
3. Have insight and a comprehensive understanding of the translational pathway from investment to delivery.
4. Understand how our current knowledge impacts upon future commercial developments in modern molecular biosciences.
5. Assimilate and critically evaluate current research in the field of modern biosciences and to evaluate methodologies/research findings and develop critiques of them.
6. Appreciate the importance of planning and project management in the biosciences
7. **The intended generic learning outcomes.
On successfully completing the module students will be able to:**
8. Demonstrate communication skills: ability to organise information clearly and present information to different audiences.
9. Demonstrate analytical skills: interpretation of data, marshalling of information from published sources, critical evaluation of own research and that of others.
10. Demonstrate team working skills: the ability to work both independently and as part of a research group using peer support, diplomacy and collective responsibility.
11. Demonstrate self-motivation and independence: time and workload management in order to meet personal targets and imposed deadlines.
12. Demonstrate Information technology skills: use of appropriate technology to retrieve, analyse and present scientific information.
13. **A synopsis of the curriculum**

The module aims to develop an in depth understanding of translating laboratory findings from a modern bioscience laboratory to the clinic / commercial utility, based around lectures and interactive workshops. The programme content and specification ensures that the students exposure to modern biosciences (i.e. drawing from the existing advanced optional modules in Cancer Biology, Infectious Diseases, Biotechnology & Bioengineering and Reproductive Medicine) coupled with their exposure to existing Business Modules (CB933 Marketing & CB937 Financial & Management Accounting and BI934 Strategy) will provide the background and springboard to this Bioscience focussed innovation module. It will provide insight and expertise for all students wishing to engage on the translational pathway developing awareness of the funding and regulatory landscape drawing on the expertise and experience of experts who are engaged in this pathway.

Key topics to be taught will reflect the translational development pathway typically seen in the Biosciences and illustrated below .



The subjects to be tackled will be drawn from the following and will equip students with insight and experience to better interface and address the challenges of the development process. (each 3h workshops):

1. The process of ideation in the (bio)sciences – where do ideas come from and what should underpin their development?
2. The translational pathway – the concept of TRLs and the key stages in the development of bio-based innovations.
3. The regulatory landscape: devices, drugs and diagnostics
4. Valuing your technology, funding and the investment landscape in the biosciences – from free to VC?
5. Pitching and presentation – selling your idea
6. Intellectual Property and the law: an introductory view
7. Project management: its all in the planning.
8. Successful business / commercial case studies:
* Biotherapeutics
* Diagnostics
* Medical Device(s)

The module will involve a rotation of seminars covering key theoretical concepts underpinned by practical insight and experience from those that both inform; and have walked the Translational pathway. These will be accompanied by interactive workshops wherein students will analyse, present and discuss the relevant research and business literature. The students will gain experience in project design and management, literature analysis, scientific communication and the analysis and interpretation of business and scientific data.

1. **Reading list (Indicative list, current at time of publication. Reading lists will be published annually)**
* Adams & Sparrow (2007) Enterprise for Life Scientists: Developing Innovation and Entrepreneurship in the Biosciences
* Swamidass (2016) Engineering Entrepreneurship From Idea to Business Plan: A Guide for Innovative Engineers and Scientists
* Shimasaki (2009) The Business of Bioscience
* Hugget (2018) Molecular Diagnostics: Current Research and Applications
* Gassmann et al (2019) Leading Pharmaceutical Innovation: How to win the Life Science Race
1. **Learning and teaching methods**

Total contact hours: 28
Private study hours: 122
Total study hours: 150

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

**Assignment** – pitching an idea (30%). An individual assignment where students will present a business proposal, with accompanying report, to an audience comprising students and staff.

**Assignment** – evaluating a (supplied) commercial proposal (30%). Data and background on a commercial bioscience opportunity will be given to groups of students. They will have to write a report, commenting both as a group and as individuals, and evaluate both the commercial and scientific veracity of the proposition.

**Exam** - 2h (40%)

13.2 Reassessment methods

100% coursework

1. ***Map of module learning outcomes (sections 8 & 9) to learning and teaching methods (section12) and methods of assessment (section 13)***

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** | 8.1 | 8.2 | 8.3 | 8.4 | 8.5 | 9.1 | 9.2 | 9.3 | 9.4 | 9.5 |
| **Learning/ teaching method** |  |  |  |  |  |  |  |  |  |  |
| Workshop | **X** |  | **X** |  |  | **X** |  |  | **X** |  |
| Lectures | **X** | **X** | **X** | **X** | **X** | **X** |  | **X** | **X** |  |
| Case studies | **X** |  | **X** |  | **X** |  | **X** |  |  | **X** |
| **Private study** | **X** | **X** | **X** | **X** |  |  | **X** |  | **X** | **X** |
| **Assessment method** |  |  |  |  |  |  |  |  |  |  |
| Pitching an idea  | **X** | **X** |  |  | **X** | **X** |  | **X** | **X** |  |
| Evaluating a commercial proposal  |  | **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**

Science 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 and assessments e.g. in seminars, self-study and the scientific blog, 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.**

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| Date approved | Major/minor revision | Start date of delivery of revised version | Section revised | Impacts PLOs (Q6&7 cover sheet) |
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