1. **Title of the module**

LABS501 Advanced Laboratory/Industry Skills

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

Centre for Higher and Degree Apprenticeships

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)**

Flexible delivery model

Autumn and/or Spring and/or Summer

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

N/A

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

FdSc and BSc (Hons) in Applied Bioscience

FdSc and BSc (Hons) in Applied Chemical Sciences

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

8.1 Demonstrate knowledge and critical understanding of Health and Safety in the laboratory.

8.2 Demonstrate a range of higher-level laboratory/industry skills with an aptitude to develop others in the future.

8.3 Demonstrate an ability to generate, evaluate, critically analyse and present practical work to a high standard.

8.4 Show a critical understanding of the role of the laboratory technician/process operator in industry.

8.5 Demonstrate knowledge and critical understanding of experimental design.

8.6 Generate, evaluate, interpret and present practical work.

8.7 Show an understanding of the role of the laboratory technician/process operator in industry.

8.8 Lead continuous performance improvement within the scientific and technical environment.

8.9 Understand and apply basic root cause analysis in science.

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

9.1 Demonstrate the development of practical/technical skills.

9.2 Analyse, evaluate and correctly interpret data.

9.3 Present and communicate data effectively.

9.4 Obtain and use information from a variety of sources as part of self-directed learning.

9.5 Demonstrate time-management and organisational skills within the context of self-directed learning.

1. **A synopsis of the curriculum**

A in depth understanding of:

* Health and safety in the workplace and relevant legislation.
* Science skills such as GLP, keeping a laboratory notebook, making and recording measurements, identifying sources of error.
* SI units, concentration (molarities), dilutions.
* The preparation and use of buffers. Definition of pH and its relevance in biological systems. Acids and bases together with titrations.
* The use of a range of standard equipment found in the bioscience and chemistry sector.
* The generation and presentation of data (tables and graphs), together with writing laboratory reports.
* Mathematical calculations and statistics in planning and analysis of experiments.
* The application of Scientific Method.
* Root cause analysis and its application.
* Key bioscience and chemistry techniques

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

Barnard C. (2011) [Asking questions in biology a guide to hypothesis testing, experimental design and presentation in practical work and research projects](https://librarysearch.kent.ac.uk/client/en_GB/kent/search/results?qu=experimental+design&qf=FORMAT%09Format%09ER%09Ebooks&ir=Library&isd=true). Benjamin Cummings.

[Casella,](https://librarysearch.kent.ac.uk/client/en_GB/kent/search/results.displaypanel.displaycell.detail.mainpanel.fielddisplay.linktonewsearch?qu=Pitt%2C+Sarah+J.) G. (2008) Statistical design. Springer

Katoch, R. (2011) Analytical techniques in biochemistry and molecular biology. Springer.

1. **Learning and teaching methods**

Blended distance learning:

Contact hours: 132 hours

Private Study Time: 18 hours

Total Learning Time: 150 hours

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

Laboratory Report (2000 words) - write up of 3 experiments 60%

Practical Observation 40% - 1 hour

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 | 8.5 | 8.6 | 8.7 | 8.8 | 9.1 | 9.2 | 9.3 | 9.4 | 9.5 |
| **Learning/ teaching method** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Private Study** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| Teaching | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |  | **x** | **x** |  |  |
| Work based experience |  |  |  |  |  |  |  |  | **x** | **x** | **x** | **x** | **x** |
| **Assessment method** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Laboratory Report | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| Practical Observation | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |

1. **Inclusive module design**

The School/Collaborative Partner 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**

Blended distance learning – delivered from Medway or Canterbury campus

1. **Internationalisation**

Advanced Laboratory/Industry Skills is a core component of the Pharmaceutic R&D industry. With regards to the intended learning outcomes, in particular 8.5 and 8.6, the target learning outcomes within this module are applicable worldwide as part of the universal principles of Bioscience and chemical science, and reflect international aspects. Furthermore, the syllabus covers techniques that are widely used internationally as they are key in the pharmaceutical R&D industry.

**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.**

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