1. **Title of the module**

LABS406 Basic Laboratory/Industry Skills

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

Digital and Lifelong Learning

1. **The level of the module (Level 4, Level 5, Level 6 or Level 7)**

Level 4

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**

45 credits at level 4 and H&S quiz must be passed

1. **The course(s) 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 Understand the key Health and Safety requirements when working in the laboratory.

8.2 Demonstrate an understanding, including the use of, of key laboratory/industry skills.

8.3 Use scientific method to test a hypothesis or theory.

8.4 Generate, evaluate, interpret and present practical work.

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

8.6 Understand how key scientific techniques fit within a scientific and technical environment (including industry).

8.7 Understand and apply basic root cause analysis in science.

8.8. Apply acquired skills for scientific writing, evaluation and presentation.

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

9.1 Demonstrate 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 basic understanding of the following will be gained through laboratory sessions and lecture/seminars:

* Health and safety in the lab and relevant legislation.
* Science skills such as GLP, keeping a laboratory notebook, making and recording measurements, identifying sources of error.
* How to use SI units to prepare solutions and dilutions.
* The preparation and use of buffers (such as in titrations). Definition of, and how to calculate pH.
* The use of a range of standard equipment and techniques used in the bioscience and/or chemistry sector (learners will have a choice of either chemical or bioscience techniques, depending on their field of work).
* The generation and presentation of data (tables and graphs), together with writing laboratory reports.
* Mathematical calculations and statistics in analysis of experiments.
* The application of Scientific Method.
* Root cause analysis and its application.
* How to create a ‘good’ laboratory report
* Assignment marking criteria and how to use this to evaluate and develop scientific writing and presentation/poster skills
1. **Reading list (Indicative list, current at time of publication. Reading lists will be published annually**)

# David Adams (2011) Effective Learning in the Life Sciences. Wiley-Blackwell.

# Michael McGhee (2008) A guide to Laboratory investigations. Radcliffe.

Graham Currell (2009) [Essential mathematics and statistics for science](https://librarysearch.kent.ac.uk/client/en_GB/kent/search/results?qu=statistics+for+science&qf=FORMAT%09Format%09ER%09Ebooks&ir=Library&isd=true). Wiley-Blackwell.

Sarah Pitt (2009) An introduction to biomedical science in professional and clinical practice. Wiley-Blackwell.

Dean, J.R (2011) Practical skills in chemistry. Prentice Hall.

Seiler, J.S. (2005) Good laboratory practice – the why and how. Spinger.

Hill, R. (2016) Laboratory safety for chemistry students. Wiley and Sons.

Meah M (2012) Essential laboratory skills for biosciences. Wiley-Blackwell.

1. **Learning and teaching methods**

Blended distance learning:

 Contact hours: 120 hours

 Private Study Time: 30 hours

 Total Learning time: 150 hours

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

Laboratory Report (1600 words) – full write up of 1 lab experiment (60%) and a write up of the principles of the technique used in another experiment (20%)

Moodle Quiz 20%

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** |
| 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** |
| Moodle Quiz | **x** | **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**

Blended distance learning – delivered from Medway or/and Canterbury campus

1. **Internationalisation**

Basic 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.

**DIVISIONAL 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) |
|  |  |  |  |  |
|  |  |  |  |  |