

**MODULE SPECIFICATION FORM**

Module Title: <b>Laboratory Chemical Analysis</b>	Level: 4	Credit Value: 20
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Module code: SCI416	Cost Centre: GAFS	JACS3 code: F100
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Semester(s) in which to be offered: 2	With effect from: September 2016
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<b>Office use only:</b> To be completed by AQSU:	Date approved: July 2013
	Date revised: July 2016 (updated to include BSc Chemistry with Education)
	Version no: 4

Existing/New: Existing	Title of module being replaced (if any):
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Originating School: Applied Science, Computing & Engineering	Module Leader: Dr Amiya Chaudhry
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Module duration (total hours): 200	Status: core/option/elective (identify programme where appropriate): Core
Scheduled learning & teaching hours: 70	
Independent study hours: 130	

Programme(s) in which to be offered: BSc (Hons) Forensic Science. BSc (Hons) Geography, Ecology and Environment. BSc (Hons) Chemistry with Green Nanotechnology. BSc (Hons) Chemistry with Education	Pre-requisites per programme (between levels): None
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**Module Aims:**

The module is intended to:

- Develop essential skills in laboratory procedures and techniques and carry these out with due regard to safety.
- Develop an understanding of the link between theory and experiment.
- Introduce key qualitative and quantitative analysis methods.
- Develop and improve report writing skills with weekly reports based on each experiment conducted.

**Expected Learning Outcomes:**

At the end of this module, students should be able to:

Knowledge and Understanding:

1. Follow instructions and perform laboratory tasks in an efficient and safe fashion.
2. Correctly set up and use basic laboratory equipment.
3. Identify and quantify chemical compounds through qualitative and quantitative analysis.
4. Prepare a report of scientific laboratory investigations, with due regard for the subject conventions.

Transferable/Key Skills and other attributes:

- Safe-working laboratory practices
- Observation and note taking
- Report writing
- Literacy
- Numeracy
- Time management
- Information management
- Team working

**Assessment:**

Assessment: Students will have to carry out an experiment and submit a written report on it. They will be assessed on both their practical work (50%) and written report (50%).

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting	Duration (eg, if exam or presentation)	Word count (or equivalent if appropriate)
1	2, 3	Examination	50%	1 hour	Report on practical approx. 1,000 words
1	1-4	Practical and report	50%	2 hours	

### **Learning and Teaching Strategies:**

Methods of delivery:  
Laboratory Experiments  
Student directed study

Students will be introduced to the theory of each practical at the start of each session and will be able to gain hands-on practical skills in the laboratory. Directed self-study will guide students through the development of report writing, data presentation and interpretation skills. Formative feedback on laboratory reports will be given weekly.

### **Syllabus outline:**

- Health and safety in a laboratory and COSHH regulations
- Introduction to basic laboratory equipments and their use
- Writing laboratory reports
- Data collection, presentation (including graphs) and analysis
- Qualitative analysis
- Gravimetric analysis
- Acid base titrations
- Titration with iodine
- Complexometric titrations
- Precipitation titrations
- Protein colour test

### **Bibliography:**

#### Essential reading:

Dean, J.R., Jones, A.M., Holmes, D., Read, R., Weyers, J. and Jones, A. (2011) *Practical Skills in Chemistry (2<sup>nd</sup> Edition)*, Pearson.

#### Other indicative reading:

Langford, R., Dean, J., Reed, R., Holmes, D., Weyers, J. and Jones, A. (2010) *Practical Skills in Forensic Science (2<sup>nd</sup> Edition)*, Pearson.