# Instrumental Chemical Techniques 3027NSC - Tri 3 2020 - Nathan Campus - In Person

## 1. General Course Information

### 1.1 Course Details

| | |
|---|---|
| **Course code** | 3027NSC |
| **Course title** | Instrumental Chemical Techniques |
| **Academic organisation** | ESC School of Environment and Science |
| **Trimester** | Trimester 3 2020 |
| **Mode** | In Person |
| **Level** | Undergraduate |
| **Location** | Nathan, On Campus |
| **Credit point value** | 10 |

### Restrictions:

Restriction: Students must be enrolled in the following programs: 1264 B Forensic Science, 1433 B Forensic Sc/B Crim Crim Just

### Course Description:

This competency-based course will allow students to further develop their skills in experimental analytical chemistry. Students will analyse a variety of substances using traditional wet-chemistry techniques as well as utilising state of the art modern analytical instrumentation. This Trimester 3 course will be offered in intensive mode, two weeks full time, in Week 1 and Week 2 of Trimester 3. Pre-requisites: 1021SCG Chemistry 1A, 1022SCG Chemistry 1B, 2102NSC Spectroscopic and Molecular Analysis and 3102NSC Advanced Analytical Chemistry.

### Assumed Background:

Pre-requisites - 1021SCG Chemistry 1A and 1022SCG Chemistry 1B; 1011SCG Mathematics 1A; 2102NSC Spectroscopic and Molecular Analysis; 2101NSC Inorganic Chemistry; 2103NSC Organic Chemistry

### 1.2 Course Introduction

This course is designed to run as a work integrated learning activity at the university and will run in intensive mode. You will undertake several 1-day analytical experiments and two 2-day analytical experiments during the first two weeks of this course. During the first week you will attend a workshop at 9am followed by two 3-hour lab sessions either side of a midday break. In the second week your labs will run from 10am as two 3-hour sessions, with a break for lunch.

On Monday of week 3, you will make a presentation of the results of your experiments to your peers and staff from the course. This will form part of your course assessment.

You will be required to record your results as you progress through each experiment and these results will be monitored by the teaching team and technical staff. It will also be necessary for you to complete a proforma for each experiment you undertake and this will be assessed the day after you complete the experiment.

Two of the experiments (one 1-day and one 2-day experiment) will be assessed by means of a formal laboratory report which is due for submission three weeks after the end of the course.

### Previous Student Feedback

The course receives very positive comments from students in the SEC questionnaires - see below:

| **What did you find particularly good about this course?** |
|---|

| |
|---|
| The course work was very practical making it clear how this information will be used in the work force. The Student to demonstrator ratio was amazing! It made learning efficient and able to get an explanation from different perspectives made grasping concepts easier. |
| The range of experiments was excellent and the ability to be able to work with all the different instrumentation was a really good opportunity. All of the lab staff are lovely and easy to work in close proximity with. |
| All of the laboratory staff are awesome people which really added to my love for the course. They were all different but all great in their own way! The Work Integrated Learning definitely helped me get a feel for what it would actually be like to work in a lab and I really enjoyed the experience. Definitely makes me want to take on a 3rd year project and spend even more time in the lab wherever I can. The 3 hours of work time and 1 hour break was definitely a great way to run the course. |
| Being in the laboratory and learning to use the instruments, getting to do a lot of lab work in a row and not over numerous weeks. Having presentation workshops before the labs was really helpful! |
| The hands on work, having an amazing teacher to student ratio, and strong encouragement by staff to learn has been amazing. Not only was the opportunity to learn how to use the equipment great, but practising laboratory techniques and working as though a proper lab, not just a class has been a wonderful learning experience. |
| Morning presentation time worked really well. Choice of demonstrators was good, as they were knowledgeable, and also approachable |
| The structure of the course was fantastic and effectively engaged me in learning! The teaching staff were incredible and I had an excellent two weeks! |
| The experiments covered all instruments in the labs that we otherwise don't get to use ourselves; it was really useful to be able to tweak the software and see what changing the parameters did to our data and helped us to interpret it more clearly. The style of the course is unlike no other; it encourages us to be self directed and learn as we go with the guidance of the lab techs if we need it. They are there to teach rather than to ensure we are following a set of directions which increases our interactions with them and forms a good working relationship going into the final year of labs. I really enjoyed the scope of experiments performed as they were all different and taught us how to use different instruments and techniques within the laboratory. The assessment is fair and clear, and easily completed in a short period of time. |

## 1.3 Course Staff

Primary Convenor **Dr Sarah Cresswell**

| | |
|---|---|
| **Phone** | 57824 |
| **Email** | s.cresswell@griffith.edu.au |
| **Campus** | Nathan Campus |
| **Building** | Science 1 (N25) |
| **Room** | 2.22 |
| **Consultation** | I will be available during each of your laboratory sessions. Once trimester two has begun, please email me to arrange an appointment if you would like to meet with me. |

## 1.4 Timetable

Timetables are available on *the Programs and Courses website*.

NB: Details contained in this Section of the course profile and Section 4.1 Learning Activities are to be read in conjunction with the official class timetable. The published class timetable which is the authoritative source for timetabling information for all campuses can be located by clicking on the above link.

## 1.5 Lecture Capture

It is standard practice at Griffith University that lectures timetabled in lecture capture-enabled venues are recorded and made available to students on the relevant course site, in accordance with the University's Lecture Capture Policy.

The lecture series delivered as part of this course will be recorded and accessible via the Learning@Griffith course site.

# 2. Aims, Outcomes & Graduate Attributes

## 2.1 Course Aims

This laboratory based course aims to provide you with knowledge and skills in the chemical analysis of different samples. You will undertake experiments using a range of widely available experimental techniques found in analytical and forensic chemistry laboratories and will develop a range of skills in interpreting the results of these analyses. This course aims to train you in the skills of report writing and presentation, the identification of chemical hazards and in the critical analysis of experimental data.

## 2.2 Learning Outcomes

After successfully completing this course you should be able to:

**1** understand and perform analytical chemical analysis

**2** operate the scientific instrumentation required for these analysis

**3** understand the theory that underpins the techniques that are used in this practical course

**4** critically evaluate experimental protocols and scientific results

**5** solve experimental problems as they arise

**6** work effectively in a team

**7** discuss with demonstrators and peers the significance of your results

**8** communicate your results effectively in a written scientific report

**9** understand what is required to work safely and ethically in a laboratory setting

## 2.3. Graduate Attributes

For further details on the Griffith Graduate please click here

Griffith University prepares influential graduates to be:

- Knowledgeable and skilled, with critical judgement
- Effective communicators and collaborators
- Innovative, creative and entrepreneurial
- Socially responsible and engaged in their communities
- Culturally capable when working with First Australians
- Effective in culturally diverse and international environments

**This table demonstrates where each of the Griffith Graduate Attributes is taught, practised and assessed in this course.**

For further details on the Griffith Graduate Attributes please refer to The Griffith Graduate policy.

University wide attributes

| Graduate Attribute | Taught | Practised | Assessed |
|---|---|---|---|
| Knowledgeable and skilled, with critical judgement | • | • | • |
| Effective communicators and collaborators | • | • | • |

# 3. Learning Resources

## 3.1 Required Resources

Details of your Required Learning Resources are available from the Reading List.

## 3.2 Recommended Resources

Details of your Recommended Learning Resources are available from the Reading List.

## 3.3 University Learning Resources

The University provides many facilities and support services to assist students in their studies. Links to information about University support resources that are available to students are included below for easy reference.

Readings - New online service enabling students to access Required and Recommended Learning resources. It connects to the library catalogue to assist with quickly locating material held in Griffith libraries and enables students to manage and prioritise their readings, add personal study notes and export citations.

Learning@Griffith - there is a dedicated website for this course via the Learning@Griffith at myGriffith.

Academic Integrity Tutorial - this tutorial helps students to understand what academic integrity is and why it matters. You will be able to identify types of academic misconduct, understand what skills you will need in order to maintain academic integrity, and learn about the processes of referencing styles.

Student Support - provides a range of services to support students throughout their studies including personal support such as Counselling and Health Services; Academic support; and Financial and Welfare support.

Careers and Employment Service can assist all enrolled students and recent graduates with career direction, course uncertainty, interview preparation, job search tips, LinkedIn reviews and much more. Our Unitemps Recruitment Service can assist you with finding paid casual work while you study.

Library and Learning Services: Library and Learning Services provides a wide range of quality client-focused services and programs to students, researchers and staff of the University. Library and Learning Services works in collaboration with the academic community to achieve academic and research outcomes.

Support for learning - the University provides access to common use computing facilities for educational purposes.

Code of Practice - Griffith Information Technology Resources.

# 4. Teaching & Learning Activities

## 4.1 Learning Activities

| Week Commencing | Activity | Learning Outcomes |
|---|---|---|
| 2 Nov 20 10:00 - 2 Nov 20 12:00 | **Introduction to the Course Workshop (Workshop):** This workshop will introduce the course, how it will run, how it will be assessed and will provide you with a timetable for the remainder of the course. | 3, 9 |
| 3 Nov 20 09:00 - 6 Nov 20 09:50 | **Workshop (Workshop):** Morning workshops will run from Tuesday to Friday of week 1 starting at 9am and will cover aspects of laboratory chemical safety, report writing and handling errors. | 3, 4, 9 |
| 3 Nov 20 10:00 - 6 Nov 20 17:00 | **Laboratory (Laboratory):** Two laboratory sessions will run each day from Tuesday to Friday - from 10 am to 1 pm and from 2 pm to 5 pm. Attendance at all sessions is compulsory | 1, 2, 3, 4, 5, 6, 7, 8, 9 |
| 9 Nov 20 10:00 - 13 Nov 20 17:00 | **Laboratory (Laboratory):** There will be two laboratory sessions each day from Monday to Friday this week - 10 am to 1 pm and 2 pm to 5 pm. Attendance at all laboratory sessions is compulsory | 1, 2, 3, 4, 5, 6, 7, 8, 9 |
| 16 Nov 20 09:00 - 17 Nov 20 17:00 | **Presentation to Peers (Workshop):** You will, in your pairs, make a presentation to your peers of your results from one of the experiments you have completed. | 3, 4, 6, 7 |

## 4.2 Other Teaching and Learning Activities Information

**"If a lecture or tutorial class is scheduled on a public holiday (or is cancelled for any unexpected reason), this class will normally not be repeated."**