Advanced Organic Chemistry 3105NSC - Tri 1 2021 - Nathan Campus - Blended

1. General Course Information

1.1 Course Details

Course code	3105NSC
Course title	Advanced Organic Chemistry
Academic organisation	ESC School of Environment and Science
Trimester	Trimester 1 2021
Mode	Blended
Level	Undergraduate
Location	Nathan, On Campus
Credit point value	10

Course Description:

This course examines advanced concepts in organic chemistry, building on topics introduced in Second Year. Teaching material falls into three broad categories; how reactions occur (reaction mechanisms); the role of catalysis in chemistry (organometallics); and understanding the 3D shape of organic molecules (stereochemistry). Prerequisites: 2103NSC Organic Chemistry (Nathan) OR 2014MSC Organic Chemistry (Gold Coast). Incompatible: 3131SCE Advanced Organic Chemistry.

Assumed Background:

It is assumed students will have had a background equivalent to second year Organic Chemistry (2103NSC or 2014MSC).

All students are required to have successfully completed both the *General* and *Laboratory WH&S Induction* online modules prior to commencement of laboratory activities.

1.2 Course Introduction

Organic chemistry is the study of complex molecules of Carbon and Hydrogen. This course provides students with advanced concepts and skills in organic synthesis, reaction mechanisms and the shape (stereochemistry) of organic molecules. Knowledge and experimental skills in these areas are required for a career in the pharmaceutical or chemical industries, and are beneficial in many other industries.

Course practical activities are undertaken in a laboratory environment and involve interaction with *chemical* and *equipment* hazards. These activities have been assessed and controlled to an acceptable level of risk for learning and teaching.

Previous Student Feedback

Previous student feedback has been highly positive, scoring from 4.5-4.8 out of 5 for all survey questions for this subject. In 2020, overall satisfaction with the quality of the course was scored 4.5 out of 5. Students particularly appreciate the assessment being via a quiz at the end of each cycle, and adpations made for online learning.

1.3 Course Staff

Primary Convenor **Prof Wendy Loughlin**

Email	w.loughlin@griffith.edu.au
Campus	Nathan Campus
Building	Technology (N44)
Room	3.21

Consultation	Appointments for teaching team members may be made by arrangement. Email is the best form of contact to arrange meetings. Email is read regularly by the course convenor, and is the preferred means of contact to arrange meetings or for short questions. Electronic bulletin boards etc. will not be used in this course. Email will be used to circulate announcements and should be checked daily by the students. Announcements will also be posted on the Announcement page of the Learning@Griffith site. Details on lecture content, teaching team members, etc. will also be provided on the Learning@Griffith site. This site will be updated throughout the trimester and should be checked regularly

Campus Convenor **Dr Milton Kiefel**

Email	m.kiefel@griffith.edu.au
Campus	Gold Coast Campus
Building	Glycomics 2 (G25)
Room	4.57
Consultation	Appointments for teaching team members may be made by arrangement. Email is the best form of contact to arrange meetings.

Lecturer **A/Prof. Yun Feng**

Phone	3735 8367
Email	y.feng@griffith.edu.au
Homepage	https://www.griffith.edu.au/science-aviation/school-natural-sciences/staff/yun-jiang-feng
Campus	Nathan Campus
Building	Technology (N44)
Room	3.18
Consultation	Appointments for teaching team members may be made by arrangement. Email is the best form of contact to arrange meetings.

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.

Additional Timetable Information

- It is compulsory to attend and participate in the laboratory sessions and submit the laboratory reports.
- It is compulsory to attend the quiz for each cycle (5 quizzes in total).
- It is compulsory to participate in the assignment and submit the assignment presentation.

- Students will achieve best results if they attend lectures, tutorials and laboratory sessions.

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.

1.6 Technical Specifications

https://www.griffith.edu.au/about-griffith/campuses-facilities/digital/it-requirements

2. Aims, Outcomes & Graduate Attributes

2.1 Course Aims

The course builds upon the level 2 Organic Chemistry courses and is essential for further studies in organic chemistry at the postgraduate level. The course provides a good foundation for further studies in organic chemistry and biological and medicinal chemistry, and pharmaceutical chemistry. The purpose of the course is to develop a wider and deeper understanding of stereochemistry, reaction mechanisms, and modern organic synthesis.

2.2 Learning Outcomes

After successfully completing this course you should be able to:

1 Plan and execute the synthesis of simple, achiral organic molecules.

2 Analyse complex sterochemical relationships within and between organic molecules.

3 Propose a mechanism for simple homolytic and heterolytic organic chemical reactions.

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	•	•	•
Innovative, creative and entrepreneurial	•	•	•
Socially responsible and engaged in their communities	•	•	•

Additional Course Information on Graduate Attributes

Professional Skills	Taught	Practised	Assessed
A knowledge based in the chemical sciences	X	X	X
Selected experimental techniques in chemical science	X	X	X

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.

The Careers and Employment Team provides: Career Wellbeing, Career Planning and Decision Making, Finding Jobs, Skills Identification and Development, Graduate Employment Information, LinkedIn Profile Review, Interview Preparation, Online Psychometric and Aptitude Test Preparation, International Student Support, Disability Disclosure Strategies and Higher Degree Research (HDR) Career Consultations.

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.

3.5 Other Learning Resources & Information

There are numerous options for this text and students are advised to purchase the package best suited to their requirements either from Wiley direct or other retailers. Please be aware that we recently adopted using the 3rd edition of Organic Chemistry by Klein. This edition has a new chapter on metal-catalysed cross-coupling reactions, which was not present in previous editions of the textbook, and forms the basis of Cycle 4 of this course.

Wiley E-Text

Organic Chemistry, 3rd Edition (with Enhanced Student Solutions Manual and Study Guide)

by David Klein

ISBN : 978-1-119-35160-3

4. Teaching & Learning Activities

4.1 Learning Activities

Week Commencing	Activity	Learning Outcomes
8 Mar 21	**Weeks 1-3 (Lecture Series):** Cycle 1: Reaction mechanisms 1 Introduction lecture 4-5 lectures and 1-2 workshops for a total of 5-6 hours	1, 2, 3
22 Mar 21	**Weeks 3-6 (Lecture Series):** Cycle 2: Carbanion Chemistry 4-5 lectures and 1-2 workshops for a total of 5-6 hours April 2 is a Public Holiday	1, 2, 3
1 Apr 21 - 30 Apr 21 17:00	**Assignment (Assignment Schedule):** Assignment weeks 4-7	1, 2, 3
19 Apr 21	**Weeks 6-8 (Lecture Series):** Cycle 3: Pericyclic Reactions and Reactive Intermediates 4-5 lectures and 1-2 workshops for a total of 5-6 hours	1, 2, 3

Week Commencing	Activity	Learning Outcomes
26 Apr 21 - 4 Jun 21	**Laboratory (Laboratory):** Weeks 7-12 in N44 3.16B_1 or Live Collaborate Session (offshore students only) Supporting 1 hr theory of lab lecture April 26 is a Public Holiday May 3 is a Public Holiday May 4 deemed as a Monday Timetable	1, 2, 3
3 May 21	**Weeks 8-10 (Lecture Series):** Cycle 4: Organometallic reactions 4-5 lectures and 1-2 workshops for a total of 5-6 hours	1, 2, 3
17 May 21	**Weeks 10-12 (Lecture Series):** Cycle 5: Stereochemistry and asymmetric synthesis 4-5 lectures and 1-2 workshops for a total of 5-6 hours	1, 2, 3

4.2 Other Teaching and Learning Activities Information

Component 1: Cycles (lectures, tutorials and quizzes)

This course is based on self instruction. The semester is divided into five (5)cycles. The backbone of each cycle is a reading program taken from:

- Organic Chemistry, 3rd edition by David Klein, 2016
- Supplied Notes

Each ~2 week cycle consists of a reading program taken from the prescribed text or supplied notes, ~ 4-5 key-note lectures (Live Collaborate session; recorded using Collaborate), problem set and one quiz (50 minutes). The lectures will highlight the most important aspects of each cycle. The lectures will also will work through problems relevant to the topic for that cycle. Students are expected to answer all problem questions during the cycle. The quizzes will examine the material presented in the lectures, problems and from the readings for that cycle.

If a class is usually scheduled on a day that falls on a public holiday, or is cancelled for any reason, the content will be delivered online or integrated across other classes, as appropriate.

Component 2: Assignment Presentation (weeks 4-7)

The assignment component is designed to apply course material and provide training in molecule identification and understanding of 3D. Students learn 3D methodologies related to the material presented in the lecture course and team work with discussion of a named reaction mechanism. An individual presentation develops skills in written and visual communication of scientific concepts is due in week 7.

Component 3: Laboratory component (24 hours, weeks 7-12)

The laboratory component is designed to illustrate course material and provide training in fundamental, experimental techniques. In the laboratory classes students learn basic experimental methodologies related to the material presented in the lecture course as well as two lectures on laboratory theory and analysis. Written reports develop skills in scientific reporting.

- It is compulsory to attend and participate in the laboratory sessions and submit the laboratory reports.
- It is compulsory to attend the quiz for each cycle (5 quizzes in total).
- it is compulsory to particpate in the assignment and submit the assignment presentation.

Students will achieve best results if they attend lectures, tutorials and laboratory sessions.

Lab reschedule required- All students require to attend 6 x 4 hour lab sessions in person or attend Live Collaborate Lab experience session ONLY for offshore students enrolled in 1540 BBiomolec Sci. Due to the public holidays and deeming of days students in Monday AM Lab 03, Monday PM Lab 05, Tuesday AM Lab 07 and Tuesday PM Lab 08 will need to be allocated a replacement session – the convenor will contact these students to organize a rescheduled lab session for Anzac Day holiday (week 7) or Labor Day Deeming of day (Week 8).