



Course Outline

Code: ENS305

Title: Environmental Chemistry

School of:	Science & Engineering
Teaching Session:	Semester 2
Year:	2020
Course Coordinator:	Assoc. Prof Neil Tindale Email: ntindale@usc.edu.au
Course Moderator:	Dr Aaron Wiegand Email: awiegand@usc.edu.au

Please go to the USC website for up to date information on the teaching sessions and campuses where this course is usually offered.

1. What is this course about?

1.1 Description

[This course focuses on chemical processes in the Earth's pedosphere (soil surface), hydrosphere and atmosphere. It covers chemical, together with some physical, interactions between air, water and soil, with relevant links to biogeochemical cycles and ecology. It is a knowledge-based course that includes conceptual understanding together with a range of field and laboratory skills. It will allow students to examine and analyse soil, sediment, water, and air samples to determine key environmental parameters, and how to evaluate and present their results in a scientific manner.]

1.2 Course topics

[Chemical interactions related to our environment, including natural processes, biogeochemical cycles, and pollution.]

2. What level is this course?

300 level Graduate - Independent application of graduate knowledge and skills. Meets AQF and professional requirements. May require pre-requisites and developing level knowledge/skills. Normally taken in the 3rd or 4th year of an undergraduate program

3. What is the unit value of this course?

[12 units]

4. How does this course contribute to my learning?

Specific Learning Outcomes On successful completion of this course you should be able to:	Assessment Tasks You will be assessed on the learning outcome in task/s:	Graduate Qualities or Professional Standards mapping Completing these tasks successfully will contribute to you becoming:
Propose and justify ethical, sustainability-focused solutions to current and potential environmental chemistry problems	1, Field excursion and laboratory report 2, Experimental design, optimisation and demonstration with reference to a report 3, Final exam	Ethical. Sustainability-focussed.
Demonstrate and apply knowledge of environmental chemistry incorporating regional and global perspectives	3, Final exam	Knowledgeable.
Design, optimise and demonstrate environmental chemistry experiments	2, Experimental design, optimisation and demonstration with reference to a report	Empowered. Engaged.
Communicate in scientific writing and orally (to post graduate students and staff)	1, Field excursion and laboratory report 2, Experimental design, optimisation and demonstration with reference to a report	Empowered.

5. Am I eligible to enrol in this course?

Refer to the [USC Glossary of terms](#) for definitions of “pre-requisites, co-requisites and anti-requisites”.

5.1 Enrolment restrictions

| Nil |

5.2 Pre-requisites

| SCH105 Chemistry |

5.3 Co-requisites

| Nil |

5.4 Anti-requisites

| Nil |

5.5 Specific assumed prior knowledge and skills (where applicable)

| Nil |

6. How am I going to be assessed?

6.1 Grading scale

| Standard – High Distinction (HD), Distinction (DN), Credit (CR), Pass (PS), Fail (FL) |

6.2 Details of early feedback on progress

Task 1 is the field trip and occurs during weeks 3 and 4. While the final report for the field trip is not due until the end of week 11, draft reports are completed during week 4 and feedback is provided.

6.3 Assessment tasks

Task No.	Assessment Tasks	Individual or Group	Weighting %	What is the duration / length?	When should I submit?	Where should I submit it?
1	Field excursion and laboratory report	Individual	40%	1 x 2000 words	End of week 11	Blackboard SafeAssign
2	Quizzes	Individual	20%	<1000 words	At end of quiz.	Blackboard
3	Final exam	Individual	40%	2 hours < 1500 words	Central exam period	Online
			100%			

Assessment Task 1: Field excursion and laboratory report

Goal:	Produce environmental chemistry data (from field excursion and laboratory experiments) and compare this with the literature to write an individual report
Product:	2000 word written report
Format:	Title, abstract, introduction, methods, results, discussion, conclusion, references. Report submitted through Safe Assign.
Criteria:	Analyse environmental chemistry information in formal contexts; Communicate in scientific writing.

Assessment Task 2: Quizzes

Goal:	Monitor student understanding of course material
Product:	1 hour, <1000 words
Format:	Short answer, problem solving, calculations based on material from lectures, laboratory and field activities to date.
Criteria:	Demonstrate knowledge of environmental chemistry material; Communicate in scientific writing.

Assessment Task 3: Final Exam

Goal:	Demonstrate and apply knowledge of environmental chemistry and propose and justify solutions to problems
Product:	2 hours < 1500 words
Format:	Short and extended answer, problem solving, calculations based on material from lectures, laboratory and field activities.
Criteria:	Demonstrate and apply knowledge of environmental chemistry incorporating regional and global perspectives; Propose and justify ethical, sustainability-focused solutions to current and potential environmental chemistry problems. Communicate in scientific writing.

7. What are the course activities?

7.1 Directed study hours

The directed study hours listed here are a portion of the workload for this course. A 12 unit course it will have total of 150 learning hours which will include directed study hours (including online if required), self-directed learning and completion of assessable tasks. Directed study hours may vary by location. Student workload is calculated at 12.5 learning hours per one unit.

This course will be delivered via technology-enabled learning and teaching. All lectures will remain in this mode for Semester 2 2020. When government guidelines allow, students that elected on-campus study via the class selection process will be advised when on campus tutorials and practical sessions will resume.

Location: Specific Campus(es) or online:	Directed study hours for location:
USC Sunshine Coast	Lecture: 2 hours in weeks 1 - 13 Laboratory: 3 hours in weeks to be announced Field excursion 5 hours in weeks to be announced

7.2 Course content

Week # / Module #	What key concepts/content will I learn?
1	Intro to Earth System Science and Environmental Chemistry
2	Intro atmospheric chemistry
3	Stratospheric chemistry and the Ozone Hole; Field excursion: on Sippy Downs campus – collecting samples and in-situ analyses of lake and stream water, and soil and sediment samples. Timing of field excursion to be announced.
4	Tropospheric Chemistry
5	Aerosol and Cloud Chemistry
6	Greenhouse Gases and Climate Change
7	Intro to Aquatic Chemistry
8	Heavy Metals and Organics
9	Biosensors
10	Water Pollution
11	Water Pollution and Radioactivity
12	Groundwater
13	Soil Chemistry

8. What resources do I need to undertake this course?

Please note that course information, including specific information of recommended readings, learning activities, resources, weekly readings, etc. are available on the course Blackboard site. Please log in as soon as possible.

8.1 Prescribed text(s)

NA

Recommended text: Environmental Chemistry, 5th Edition. Authors: Baird and Cann.

8.2 Specific requirements

Laboratory coat, safety glasses, closed in footwear for laboratory. |

9. Risk management

There is moderate health and safety risk in this course. Risk assessments have been performed for each experiment and Material Safety Data Sheets are available at each laboratory session.

It is your responsibility as a student to review course material, search online, discuss with lecturers and peers, and understand the health and safety risks associated with your specific course of study. It is also your responsibility to familiarise yourself with the University's general health and safety principles by reviewing the [online Health Safety and Wellbeing training module for students](#), and following the instructions of the University staff.

10. What administrative information is relevant to this course?

10.1 Assessment: Academic Integrity

Academic integrity is the ethical standard of university participation. It ensures that students graduate as a result of proving they are competent in their discipline. This is integral in maintaining the value of academic qualifications. Each industry has expectations and standards of the skills and knowledge within that discipline and these are reflected in assessment.

Academic integrity means that you do not engage in any activity that is considered to be academic fraud; including plagiarism, collusion or outsourcing any part of any assessment item to any other person. You are expected to be honest and ethical by completing all work yourself and indicating in your work which ideas and information were developed by you and which were taken from others. You cannot provide your assessment work to others. You are also expected to provide evidence of wide and critical reading, usually by using appropriate academic references.

In order to minimise incidents of academic fraud, this course may require that some of its assessment tasks, when submitted to Blackboard, are electronically checked through SafeAssign. This software allows for text comparisons to be made between your submitted assessment item and all other work that SafeAssign has access to.

10.2 Assessment: Additional requirements

Eligibility for Supplementary Assessment

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying:

- The final mark is in the percentage range 47% to 49.4%
- The course is graded using the Standard Grading scale
- You have not failed an assessment task in the course due to academic misconduct

10.3 Assessment: Submission penalties

Late submission of assessment tasks will be penalised at the following maximum rate:

- 5% (of the assessment task's identified value) per day for the first two days from the date identified as the due date for the assessment task.
- 10% (of the assessment task's identified value) for the third day
- 20% (of the assessment task's identified value) for the fourth day and subsequent days up to and including seven days from the date identified as the due date for the assessment task.
- A result of zero is awarded for an assessment task submitted after seven days from the date identified as the due date for the assessment task.

Weekdays and weekends are included in the calculation of days late.

To request an extension, you must contact your Course Coordinator and supply the required documentation to negotiate an outcome.

10.4 Study help

In the first instance, you should contact your tutor, then the Course Coordinator. Additional assistance is provided to all students through Academic Skills Advisers. To book an appointment or find a drop-in session go to [Student Hub](#).

Contact Student Central for further assistance: +61 7 5430 2890 or studentcentral@usc.edu.au

10.5 Links to relevant University policy and procedures

For more information on Academic Learning & Teaching categories including:

- Assessment: Courses and Coursework Programs
- Review of Assessment and Final Grades
- Supplementary Assessment
- Administration of Central Examinations
- Deferred Examinations
- Student Academic Misconduct
- Students with a Disability

Visit the USC website:

<http://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching>

10.6 General Enquiries

In person:

- **USC Sunshine Coast** - Student Central, Ground Floor, Building C, 90 Sippy Downs Drive, Sippy Downs
- **USC South Bank** - Student Central, Building A4 (SW1), 52 Merivale Street, South Brisbane
- **USC Gympie** - Student Central, 71 Cartwright Road, Gympie
- USC Moreton Bay - Service Centre, Building A – Ground Floor, 1 Moreton Bay Parade, Petrie
- **USC Fraser Coast** - Student Central, Student Central, Building A, 161 Old Maryborough Rd, Hervey Bay
- **USC Caboolture** - Student Central, Level 1 Building J, Cnr Manley and Tallon Street, Caboolture

Tel: +61 7 5430 2890

Email: studentcentral@usc.edu.au