



The University of Southern Queensland

## Course specification

### Description: Environmental Chemistry

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
CHE	2303	50803	1, 2006	ONC	1.00	Toowoomba

<b>Academic group:</b>	FOSCI
<b>Academic org:</b>	FOS002
<b>Student contribution band:</b>	2
<b>ASCED code:</b>	010599

### STAFFING

Examiner: Tania van den Ancker

Moderator: Ray Marshall

### REQUISITES

Pre-requisite: CHE2120

### RATIONALE

It is essential that chemists, biologists, ecologists and environmental scientists are aware of and understand the effects that chemicals, both natural and synthetic have on the environment. The course presents material relating to the presence of chemicals in the environment and the effect of these chemicals on environmental systems.

### SYNOPSIS

In this course, students will study water chemistry, water quality, water treatment, soil and atmospheric chemistry and chemical pollutants; air, heavy metal and toxic organics. In addition, students will learn sampling procedures for a range of chemical and environmental systems and analytical testing methods. Students will also be introduced to aspects of Green chemistry. The Course involves compulsory laboratory and fieldwork. **THIS COURSE IS OFFERED IN ODD-NUMBERED YEARS ONLY.**

### OBJECTIVES

On completion of this course students will be able to:

1. describe aspects of water quality;
2. describe aspects of wastewater and water treatment;
3. describe aspects of soil quality;
4. describe aspects of air, heavy metal and toxic organic pollutants ;
5. describe aspects of Green chemistry;
6. describe aspects of analytical testing and sampling procedures associated with environmental analysis including: understanding the need and principles of correct sampling procedures, be able to use appropriate sampling and laboratory techniques,

have mastered some basic laboratory skills, as provided by the above laboratory experiments, have used a range of standard analytical equipment.

## TOPICS

	Description	Weighting (%)
1.	Water Chemistry	16.00
2.	Atmospheric Chemistry	11.00
3.	Soil/Sediment Chemistry	6.00
4.	Pollutants/Toxicity	21.00
5.	Green Chemistry	11.00
6.	Field Trip	10.00
7.	Laboratory: The laboratory exercises are designed to illustrate the techniques required to develop manipulative skills and analytical techniques associated with the analysis of waters, soils and biota.	25.00

## TEXT and MATERIALS required to be PURCHASED or ACCESSED

ALL textbooks and materials are available for purchase from USQ BOOKSHOP (unless otherwise stated). Orders may be placed via secure internet, free fax 1800642453, phone 07 46312742 (within Australia), or mail. Overseas students should fax +61 7 46311743, or phone +61 7 46312742. For costs, further details, and internet ordering, use the 'Textbook Search' facility at <http://bookshop.usq.edu.au> click 'Semester', then enter your 'Course Code' (no spaces).

## REFERENCE MATERIALS

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.

Anatas, P & Warner, J 2000, *Green Chemistry Theory and Practice*, Oxford University Press, New York.

Baird, C 1999, *Environmental Chemistry*, 2nd edn, WH Freeman, New York.

Cann, M & Connelly, M 2000, *Real-World Cases in Green Chemistry*, American Chemical Society,

Spiro, T G and Stigliani, W M 1996, *Chemistry of the Environment*, Prentice Hall, New Jersey. (ISBN 0 02 415261 7)

## STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Examinations	2.00
Field Trips or Excursions	15.00
Laboratory or Practical Classes	32.00
Lectures	26.00
Private Study	60.00
Report Writing	32.00

## ASSESSMENT DETAILS

Description	Marks out of	Wtg(%)	Due date
LABORATORY REPORT	25.00	25.00	07 Mar 2006 (see note 1)
ASSIGNMENT/PRESENTATION	20.00	20.00	07 Mar 2006 (see note 2)
FIELDWORK POSTER	10.00	10.00	07 Mar 2006 (see note 3)
2HR RESTRICTED EXAMINATION	45.00	45.00	END S1 (see note 4)

### NOTES

1. Examiner to advise due date for laboratory report.
2. Examiner to advise due date for Assignment/Presentation.
3. Examiner to advise due date for fieldwork poster.
4. Examination dates will be available during the Semester. Please refer to the examination timetable when published.

## IMPORTANT ASSESSMENT INFORMATION

- 1 Attendance requirements:  
It is the students' responsibility to attend and participate appropriately in all activities (such as lectures, tutorials, laboratories and practical work) scheduled for them, and to study all material provided to them or required to be accessed by them to maximise their chance of meeting the objectives of the course and to be informed of course-related activities and administration. To maximize their chances of satisfying the objectives of the practical component of the course, students should attend and actively participate in the laboratory sessions in the course.
- 2 Requirements for students to complete each assessment item satisfactorily:  
To complete the assignment satisfactorily, students must obtain at least 50% of the marks available for the assignment and presentation. To complete the examination satisfactorily, students must obtain at least 50% of the marks available for the examination. To complete the laboratory report satisfactorily, students must obtain at least 50% of the marks available for the laboratory report. To complete the fieldwork/poster satisfactorily, students must obtain at least 50% of the marks available for the fieldwork/poster.

- 3 Penalties for late submission of required work:  
If students submit assignments after the due date without prior approval then a penalty of 10% of the total marks available for the assignment will apply for each working day late.
- 4 Requirements for student to be awarded a passing grade in the course:  
To be assured of a passing grade, students must demonstrate, via the summative assessment items, that they have achieved the required minimum standards in relation to the objectives of the course by satisfactorily completing all summative assessment items (the examination and assignments).
- 5 Method used to combine assessment results to attain final grade:  
The final grades for students will be assigned on the basis of the weighted aggregate of the marks (or grades) obtained for each of the summative assessment items in the course.
- 6 Examination information:  
In a Restricted Examination, candidates are allowed access to specific materials during the examination. The only materials that candidates may use in the restricted examination for this course are: writing materials (non-electronic and free from material which could give the student an unfair advantage in the examination); calculators which cannot hold textual information (students must indicate on their examination paper the make and model of any calculator(s) they use during the examination; English translation dictionaries (but not technical dictionaries); Translation dictionary. With the Examiner's approval, candidates may, take an appropriate non- electronic translation dictionary into the examination. This will be subject to perusal and, if it is found to contain annotations or markings that could give the candidate an unfair advantage, it may be removed from the candidate's possession until the appropriate disciplinary action is completed.
- 7 Examination period when Deferred/Supplementary examinations will be held:  
Any Deferred examination for this course will be held at a time to be negotiated between the students and the examiner but must occur not later than the following semester 2 exam period.
- 8 University Regulations:  
Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL <http://www.usq.edu.au/corporateservices/calendar/part5.htm> or in the current USQ Handbook.

## **ASSESSMENT NOTES**

- 9 Marks associated with the Seminar include student participation in question time.