



The University of Southern Queensland

Course specification

Description: Chemistry 1

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
CHE	1110	40284	1, 2005	ONC	1.00	Toowoomba

Academic group:	FOSCI
Academic org:	FOS002
Student contribution band:	2
ASCED code:	010599

STAFFING

Examiner: Tania van den Ancker

Moderator: Ray Marshall

RATIONALE

This course introduces the student to the fundamentals of Chemistry. It is designed to provide basic knowledge and understanding for students who are training in disciplines that require the support of Chemistry or its applications.

SYNOPSIS

Topics include atomic theory, formulae, valency, chemical equations, periodic table, chemical bonding and structure, chemical calculations, chemical reactions, acids and bases, pH buffers and redox reactions. This course involves compulsory laboratory work.

OBJECTIVES

On successful completion of this course students will be able to:

1. demonstrate an understanding of the chemical and physical principles involved in the application of chemistry in the laboratory, in the community and in industry;
2. demonstrate the basic knowledge of chemistry and associated calculations which are needed for higher level courses in chemistry as well as other related discipline areas;
3. demonstrate manipulative skills associated with the effective and safe use of chemical substances, associated chemical laboratory apparatus and equipment;
4. demonstrate ability to solve practical problems associated with the laboratory classes; and
5. be aware of aspects associated with safe laboratory procedures and activities.

TOPICS

Description	Weighting (%)
1. Calculations: SI units, significant figures: Moles, percentage composition, empirical formula; Concentration, density.	20.00

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| 2. | Atomic Structure: Electronic structure of the atom; shells; subshells; orbitals; Electronic configuration, Pauli exclusion principle, Hund's rule; The periodic table; properties and trends; Stoichiometry, valency, oxidation states and formulae; Bonding; ionic-, hydrogen-, covalent-, and metallic compounds, naming, properties and structure; Lewis dot structure and VSEPR theory. | 20.00 |
| 3. | Chemical change: Chemical reactions; ppt, acid/base, oxidation, reduction, redox; equilibria - acid/base dissociation, pH, buffers; electrochemistry; displacement of metals, electrode potential, cell notation, Nernst equation. | 40.00 |
| 4. | Laboratory: The practical exercises are designed to illustrate many of the above items associated with the lectures, and develop manipulative skills and safe work practices. At the conclusion of the practicals the students will: understand the need for safety in the laboratory and safe work habits; be able to use appropriate laboratory techniques; have mastered some basic laboratory skills, as provided by the above laboratory experiments; have used some common laboratory pieces of equipment. | 20.00 |

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).

Ebbing, DD & Gammon, SD 2005, *General Chemistry & Solution Manual*, 8th edn, Houghton Mifflin Company, Boston (ISBN 04 708 075 39).

van den Ancker, T 2005, *Chemistry 1 Practical Manual*, USQ Publication, Toowoomba.

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.

Aylward, G H and Findlay, T 2002, *SI Chemical Data*, 5th edn, John Wiley & Sons, Brisbane.

Becker, D 2000, *Jones & Atkin's Chemistry: Molecules, Matter and Change*, 4th edn, WH Freeman, New York.

Brown, TL, LeMay, HE (Jr), Bursten, BE & Burdge, JR 2003, *Chemistry - The Central Science & Solution to Exercises*, 9th edn, Prentice Hall, Pearson Education Inc, Upper Saddle River, New Jersey.

STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Examinations	3.50
Laboratory or Practical Classes	20.00
Lectures	24.00
Private Study	107.00
Tutorials	13.00

ASSESSMENT DETAILS

Description	Marks out of	Wtg(%)	Due date
45MIN MIDSEM RESTRICTED TEST	20.00	20.00	01 Mar 2005 (see note 1)
LABORATORY REPORTS	1.00	10.00	01 Mar 2005 (see note 2)
2.5 HOUR RESTRICTED EXAM	70.00	70.00	END S1 (see note 3)

NOTES

1. Examiner to advise date of 45min mid-semester restricted test.
2. Examiner to advise details for Laboratory Reports
3. 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 examination and test satisfactorily, students must obtain at least 50% of the marks available for the examination and test. To complete the practical component satisfactorily, students must submit all the nominated practical reports and obtain a passing grade (mark of 1) overall for the lab component..
- 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 receiving a passing grade a student must submit all of the summative assessment items, achieve at least 50% in the examination and test and overall achieve the 1 mark for the laboratory reports.

- 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 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).
- 7 Examination period when Deferred/Supplementary examinations will be held:
Any Supplementary work for this course must be submitted by the end of week 2 of the following semester. Deferred examinations will be held at a time suitable to both the student and the course examiner but must occur no later than the end of the next semester's 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 Students who do not perform satisfactorily in an examination, may, at the discretion of the examiner, be granted a supplementary examination. Students will be granted a deferred examination only if they perform satisfactorily in all other assessment items.
- 10 In order to attend laboratory classes, students must provide and wear appropriate personal protective equipment. This shall include a laboratory coat, closed in shoes, and safety glasses. Such equipment must be approved by supervising staff. Failure to provide and wear the appropriate safety equipment will result in students being excluded from classes.