Wollongong College Australia

A College of the University of Wollongong

Australia

Wollongong

Foundation Studies Program

(CRICOS course codes: 007732G, 023266F)

Subject Outline Spring 2009

FSP 023 Chemistry

ITC Education Ltd trading as
Wollongong College Australia
CRICOS 02723D
ABN 14105312329

WCA-FSP 023-S0/5

Chemistry

Subject description

Chemistry FSP 023 introduces students to fundamental principles of chemistry and provides practical experience with basic chemical apparatus and techniques. This subject is directed towards students with little or no background in chemistry, and covers aspects of introductory physical and inorganic chemistry.

Subject structure

Chemistry is a single session subject delivered as a face-to-face subject of 4 hours per week. The subject consists of a 1 x 2 hour lecture and 1 x 2 hour tutorial/laboratory session. Examinations will be held during the study and examination period in the final two weeks of each session.

In addition to scheduled class sessions, students are expected to spend additional time in individual study and research. A general guideline is to spend at least one hour in private study for every one hour of scheduled class time.

Teachers will be available for a consultation time each week. Students will be notified of the time and location of the consultation session during week 1 of session.

Learning resources

There is no set textbook for this subject. However, students are strongly encouraged to consider purchasing a textbook from the university bookshop or to regularly take home a copy of one of the many excellent first year textbooks available in the library such as the following:

Zumdahl. S, Chemical Principles, D.C. Heath and Company Lexington.(various editions available).

Jones L & P. Atkins, Chemistry: Molecules, Matter and Change, 4th Edition, by, W.H. Freeman and Company, New York.

Students will be able to access a comprehensive set of lecture notes (in PDF format) from the FSP 023 website:

Subject outcomes

Successful completion of this subject will enable students to:

- Balance and interpret chemical reaction equations
- Demonstrate a basic understanding of the properties of solutions
- Determine molecular weights of compounds
- Perform stoichiometric mole calculations based on chemical equations
- Calculate empirical & molecular formula using elemental analysis data
- Determine the molar concentration of solutions
- Determine the number of subatomic particles present in atoms and ions
- Understand what isotopes are
- Understand the basis of radioactivity, and be able to describe radioactive processes using balanced nuclear equations
- Be able to solve problems using isotope half-lives
- Determine electronic configurations for elements and ions using a simple model
- Demonstrate an understanding of the importance of electronic structure to chemical reactivity and bonding
- Explain the difference between ionic and covalent bonding in terms of changes in electronic configuration
- Use Lewis diagrams to show molecular electron arrangements around atoms
- Use VSEPR theory to determine the shape of simple inorganic compounds
- Determine the type of intermolecular forces present in a compound and understand the relationship between intermolecular forces and the melting and boiling points of a substance
- Name simple binary ionic compounds
- Write formula for simple chemical compounds
- Be able to perform basic thermodynamic and equilibrium calculations
- Demonstrate an understanding of the nature of acids and bases
- Understand the pH concept and calculate pH values for strong acids and bases
- Understand the idea of neutralisation
- Name and write formulae for simple organic compounds
- Be able to predict the number of isomers for hydrocharbons

Subject outline in weeks

The following guide to lessons and activities may be adjusted to suit the needs of the group as long as subject outcomes and assessment criteria are met.

Week 1

Atomic Theory and Radioactivity

Week 2

Electronic Structure and Nomenclature

Week 3

Moles and Molarity

Week 4

Stoichiometry

Week 5

Thermodynamics

Week 6

Equilibria

Week 7

Acids and Bases

Week 8

Lewis Structures and VSEPR Theory

Week 9

Molecular Polarity and Intermolecular Forces

Week 10

Organic Chemistry I

Week 11

Organic Chemistry II

Week 12

Revision

Assessment

Assessment and plagiarism policy

Please refer to the Wollongong College Australia Student Handbook, http://www.wca.uow.edu.au/handbook for information regarding assessment, plagiarism and acknowledging sources.

Assessment schedule

Task	Date	Weighting	Length/Time
WEB CT Assignment 1	Week 4	10%	2 hours
WEB CT Assignment 2	Week 8	10%	2 hours
WEB CT Assignment 3	Week 12	10%	2 hours
Experiment 1 **	Week 6	10%	2 hours
Experiment 2 **	Week 12	10%	2 hours
Final examination ***	Week 13/14	50%	FSP3 Session 1 students: 2 hours 12 mins All other students: 2 hours

** *Scheduling of tasks may vary due to lab availability. Students will be notified in advance of any changes*

*** In recognition of the early stages of development of the language skills of students enrolled in the **first session** of the Foundation Studies 3-session program, these students are allowed an additional 10% in time to complete all **in-class assessments** and **final exams**.
No additional time is given for tasks that are completed outside of class time.

In order to pass FSP 023 a student must meet the minimum laboratory requirements outlined below, and achieve a total mark in the course of ≥ 50 out of 100.

Marking Guidelines

WCA best practice is that students can normally expect to have assessment tasks handed back within two weeks, and before the next assessment task is due. On occasion there may be exceptions to this time frame due to, for example, the size of the task, the size of the class, teacher illness or teacher leave.

Where there are several teachers marking a major assessment task, tasks will be handed back by all the teachers within the same week.

Assessment criteria and explanation of components

WEB CT Assignment 1 — 10%

This computer-based assignment will be accessible to students at the beginning of week 4. Once the assignment has been downloaded, students will have a total of 2 hours to complete it, and submit their answers. If they wish, students can attempt a second quiz before the end of week 4. This assignment will assess material covered in **lectures** in weeks 1 and 2.

WEB CT Assignment 2 — 10%

This computer-based assignment will be accessible to students at the beginning of week 8. Once the assignment has been downloaded, students will have a total of 2 hours to complete it, and submit their answers. If they wish, students can attempt a second quiz before the end of week 8. This assignment will assess material covered in **lectures** in weeks 3 - 6.

WEB CT Assignment 3 — 10%

This computer-based assignment will be accessible to students at the beginning of week 12. Once the assignment has been downloaded, students will have a total of 2 hours to complete it, and submit their answers. If they wish, students can attempt a second quiz before the end of week 12. This assignment will assess material covered in **lectures** in weeks 7 - 9.

Experiment 1 — 10%

This laboratory class will be held in week 6 during the scheduled tutorial time at a venue to be announced during the semester. During this practical class you will prepare an example of a coordination compound and determine both the theoretical and percentage yield of the compound.

Experiment 2 — 10%

This laboratory class will be held in week 12 during the scheduled tutorial time at a venue to be announced during the semester. It will cover material described in the course guide. During this practical class you will use chromatographic methods to separate a mixture of amino acids and a mixture of food colouring agents.

Final examination — 50%

This examination will cover all topics studied throughout the session.