



University Foundation Studies

CHEM0001

CHEMISTRY

2022

SUBJECT OUTLINE

Last amended:	February 2022
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Western Sydney University The College
Nirimba Education Precinct
Eastern Road
Quakers Hill NSW 2763

Postal address:

PO BOX 224
Quakers Hill NSW 2763

Phone: 1300 897 669

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Subject name	Chemistry
Subject number	CHEM0001
Coordinator	Phillip Newman
Term	2022.1
Handbook summary	This subject is a platform to introduce Chemistry to students. It introduces students to the basic concepts required to satisfy the needs of most first-year university science units in both skill and content areas. It is intended that students will gain a greater understanding of the theoretical concepts covered in the subject by completing the practical component of the subject. Students will also be introduced to professional pathways in science.
Credit point value	10
Prerequisite/s	None
Corequisite/s	None
Subject incompatible with and not to be counted for credit with	N/A
Assumed knowledge	
Subject level	Level Z
Attendance requirements	Students are expected to attend at least 80% of classes. Educational research consistently demonstrates that this attendance level is associated with a high likelihood of achieving a passing grade.
Enrolment restrictions	
Learning outcomes	<p>On successful completion of this subject, students should be able to:</p> <ol style="list-style-type: none"> 1. identify and describe professional pathways in science 2. use the periodic table to make predictions about the physical and chemical properties of elements and the compounds they form 3. use equations to calculate relative quantities of reactants and products 4. describe the factors that influence the type and rate of chemical reactions 5. apply simple stoichiometric relationships 6. gather and analyse first and second-hand data from scientific investigations and draw conclusions. This can be demonstrated by second-hand data analysis in the intra term exams and final exam

and by gathering first-hand data in the practicals and writing up the practical reports, and

7. use appropriate terminology and reporting styles to communicate information and understanding.
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Subject content

In this subject, students will learn about:

- an introduction to the science learning community
 - professional pathways in science and the importance of a knowledge of the key concepts in chemistry and the development of practical skills to all Science majors
 - redox — electron transfer, oxidation states, half-equations, balanced redox equations, reduction potentials
 - the periodic table — arrangement of elements, electronic configuration, physical and chemical properties, groups 1, 2, 7 and 8, metals/non-metals, solids, liquids and gasses, trends in periodic properties
 - chemical bonding and forces between molecules
 - chemical reactions — why substances react, the rate of reaction, chemical equations
 - quantities in chemical reactions — reacting quantities, the mole concept, and solids, gasses and solutions
 - acids and bases — properties and reactions of acids, pH, volumetric analysis, Lowry-Bronsted theory, and weak acids and bases
 - equilibrium — dynamic equilibrium, equilibrium constant, position and effect of temperature, K_a , pH and K .
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Mode of delivery

This subject consists of seven hours of tutorial classes each week, plus six hours of practicals during the term. In addition, there will be online activities via the subject's vUWS site.

Laboratory induction

Science, Engineering, Construction Management and Health Science students must complete an online Laboratory Induction and pass a quiz based on this activity.

This subject will require you to complete practical activities and/or workshop activities in Building U22, Nirimba campus, throughout this term. Students are required to complete the Laboratory Induction before they can undertake any laboratory/practical activities.

The Laboratory Induction video is available on vUWS, in the The College Laboratory site.

Students are required to view the video and complete the 13-question quiz and get all of the questions correct by 10.00 pm on the day prior to their first laboratory sessions.

It is the responsibility of the individual student to complete the Laboratory Induction and pass the quizzes before the first practical activity. Only students who complete their Laboratory Induction may complete the practical activities. Any student who misses a practical activity will receive a mark of zero for the task missed.

Online learning requirements

Essential requirements

Essential texts:

The College, *Chemistry student practical workbook*, Western Sydney University The College, Sydney.

Further resources

(The following texts are listed alphabetically, and not in order of importance.)

Deretic, G & Ware, G 2004, *Senior chemistry practical manual*, Heinemann, Port Melbourne.

Kotz, JC & Purcell, KF 1991, *Chemistry and chemical reactivity*, Saunders College Publishing, Fort Worth.

Sharwood, J (ed.) 2000, *Nelson chemistry: VCE units 1 & 2*, Nelson Thomson Learning, South Melbourne.

Sharwood, J (ed.) 2000, *Nelson chemistry: VCE units 3 & 4*, Nelson Thomson Learning, South Melbourne.

Thickett, G 1996, *Pathways to chemistry*, Macmillan Education, South Melbourne.

Essential equipment

- Safety glasses as prescribed by The College
 - Protective laboratory coat
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ASSESSMENT ITEMS AND WEIGHTING

Assessment for this subject will be based on the following components:

Task	Weighting	Learning outcomes assessed	Mandatory task
1. Log/workbook — practical report (400 words each for three practicals)	20%	3, 4, 5, 6 and 7	Yes
2. Report (500 – 700 words)	20%	1, 7	Yes
3. Short answer tests — 2 tests will be 1 hour each (each test is worth 15%)	30%	3, 4, 5, 6 and 7	Yes
4. End-of-term short answer exam (2 hours)	30%	2, 3, 4, 5, 6 and 7	Yes
TOTAL	100%		

For details of assessment due dates, please refer to the learning guide for this subject.

All marks will be determined in accordance with The College [Assessment Policy](#).

All assessment tasks are mandatory unless otherwise specified. Should a student fail to attempt/submit the first formal assessment task in a subject, they will be deemed to be at risk and will need to follow an intervention plan in order not to receive a Fail Non-Submission (FNS) grade. However, failure to attempt/submit all other mandatory assessment tasks will result in an immediate FNS grade for the subject.

Students must attain a mark of at least 50% overall in order to pass the subject.

Students must keep a copy of all work submitted.