UNIT OUTLINE
<table>
<thead>
<tr>
<th><strong>Unit name</strong></th>
<th>Chemistry</th>
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<tbody>
<tr>
<td><strong>Unit number</strong></td>
<td>700043/900024</td>
</tr>
<tr>
<td><strong>Coordinator</strong></td>
<td>Phillip Newman</td>
</tr>
<tr>
<td><strong>Session</strong></td>
<td>2018.3</td>
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**Handbook summary**
This unit 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 unit by completing the practical component of the unit.

**Credit point value**
10

**Prerequisite/s**
None

**Corequisite/s**
None

**Unit incompatible with and not to be counted for credit with**
N/A

**Assumed knowledge**

<table>
<thead>
<tr>
<th><strong>Unit level</strong></th>
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<tbody>
<tr>
<td>700043 Level Z</td>
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<tr>
<td>900024 Level Z</td>
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**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**
On successful completion of this unit, students should be able to:
1. explain the relationship between the physical and chemical properties of matter and the structure and bonding present
2. use the periodic table to make predictions about the physical and chemical properties of elements and the compounds they form
3. represent a wide variety of inorganic compounds by names and formulas as determined by IUPAC
4. write balanced chemical equations to describe a wide range of chemical reactions (both complete and reversible) and use these equations to calculate relative quantities of reactants and products
5. recognise the different categories of chemical compounds and the general reactions in which they take part
6. describe the factors that influence the type and rate of chemical reactions
7. apply simple stoichiometric relationships
8. describe the strengths and limitations of the models used in the study of chemistry
9. gather information from scientific investigations
10. draw conclusions and analyse information, and
11. use appropriate terminology and reporting styles to communicate information and understanding.

Unit content
In this unit students will learn about:

- elements and compounds — atoms and elements; and compounds and chemical formulas
- atomic structure — model of an atom; and sub-atomic particles and sub-shell configurations
- the periodic table — arrangements of elements and electronic configuration; physical and chemical properties; groups 1, 2, 7 and 8; metals/non-metals; solids, liquids and gases; and trends in periodic properties
- chemical bonding — types of bonds: metallic, covalent and ionic; properties of substances; polarity; and forces between molecules
- chemical reactions — why substances react; the rate of reaction; and chemical equations
- quantities in chemical reactions — reacting quantities, the mole concept; and solids, gases and solutions
- equilibrium — dynamic equilibrium; equilibrium constant, ie position and effect of temperature; K_e; and pH and K
- acids and bases — properties and reactions of acids; pH; volumetric analysis; Lowry-Bronsted theory; and weak acids and bases
- redox — electron transfer; oxidation states; half-equations; balanced redox equations; reduction potentials; and displacement of metals and halogens.

Mode of delivery
This unit consists of six hours of tutorial classes each week, plus six hours of practicals during the term. In addition there will be online activities via the unit’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 unit 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 2018, *Chemistry student workbook 1*, Western Sydney University The College, Sydney.
• The College 2018, *Chemistry student workbook 2*, Western Sydney University The College, Sydney.
• The College 2018, *Chemistry student practical workbook*, Western Sydney University The College, Sydney.

Recommended text:


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.

Essential equipment

• Scientific calculator
• Safety glasses as prescribed by The College
• Protective laboratory coat
• Correct fully enclosed shoes without any mesh in the upper
### ASSESSMENT ITEMS AND WEIGHTING

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

<table>
<thead>
<tr>
<th>Task</th>
<th>Weighting</th>
<th>Learning outcomes assessed</th>
<th>Mandatory task</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Intra-session exam 1 (1 hour)</td>
<td>15%</td>
<td>1, 2, 8, 10, 11</td>
<td>Yes</td>
</tr>
<tr>
<td>2. Intra-session exam 2 (1.5 hours)</td>
<td>15%</td>
<td>3, 4, 5, 6, 10, 11</td>
<td>Yes</td>
</tr>
<tr>
<td>3. Quizzes x 2 (1 hour each)</td>
<td>20%</td>
<td>1–7, 10, 11</td>
<td>Yes</td>
</tr>
<tr>
<td>4. Log/Workbook (400 words each for two of the three practicals)</td>
<td>15%</td>
<td>3, 4, 5, 7, 9, 10, 11</td>
<td>Yes</td>
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<tr>
<td>5. Final exam (2 hours)</td>
<td>35%</td>
<td>1–8, 10, 11</td>
<td>Yes</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100%</td>
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For details of assessment due dates, please refer to the learning guide for this unit. 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 unit, 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 unit.

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

Students must keep a copy of all work submitted.