Unit Outline 2014  
Faculty of Education, Science, Technology and Mathematics  

Chemistry 1a (Winter Term)  
1516
This Unit Outline must be read in conjunction with:

a) *UC Student Guide to Policies*, which sets out University-wide policies and procedures, including information on matters such as plagiarism, grade descriptors, moderation, feedback and deferred exams, and is available at *(scroll to bottom of page)*

   http://www.canberra.edu.au/student-services

b) *UC Guide to Student Services*, and is available at *(scroll to bottom of page)*

   http://www.canberra.edu.au/student-services

c) Any additional information specified in section 6h.

1: General Information

1a Unit title
Chemistry 1a

1b Unit number
1516

1c Teaching Period and year offered
Winter Term, 2014

1d Credit point value
3

1e Unit level
1

1f Name of Unit Convener and contact details (including telephone and email)
Dr Tamsin Kelly, Room 7D9, (02) 6201 2590, Tamsin.Kelly@canberra.edu.au

1g Name of Unit Moderator
Dr Simon Foster

1h Administrative contact details (including name, location, telephone and email)
Academic Programs Office 6C38
ESTeM-courseadvice@canberra.edu.au
6201 2400

   All unit related enquiries should be emailed to Chem1A@canberra.edu.au using your university email account.

   Steve Ford, Lecturer
   Room 6B27D, (02) 6201 2173, Steve.Ford@canberra.edu.au

   Kim Taylor, Manager, Science Resource Centre
   Room 6B103, (02) 6201 2298, Kim.Taylor@canberra.edu.au
2: **Academic Content**

2a **Unit description and learning outcomes**
This unit provides a unified introductory course in chemistry as a framework for further studies in chemistry and biochemistry. This unit offering is specifically for repeating students who have passed the laboratory component of Chemistry 1a 1516 in Semester 1. Topics covered are atomic structure and chemical periodicity, measurement, bonding, oxidation and reduction, acids and bases, precipitation reactions, titrations, phase diagrams, solutions, and gas laws. These important basic principles and concepts are developed using pertinent examples and special topics that highlight the everyday applications of chemistry.

On completion of this unit, students will be able to:
1. demonstrate good laboratory practice when working with chemicals either individually or in cooperation with others (achieved in Semester 1 attempt of the unit 1516);
2. perform and set-up simple experiments that demonstrate their understanding of some of the important basic chemical principles (achieved in Semester 1 attempt of the unit 1516);
3. predict the chemical behaviour of a variety of elements and compounds from their understanding of the structure and reactivity of matter.

2b **Generic skills**
The University recognises that individuals entering its programs bring with them a diversity of personal and professional attributes that should be further developed by their experience as students and graduates of the University. These generic skills can be accessed at:

By the end of their course, graduates will have developed skills and attributes in:
1. **Communication**
The ability to present knowledge, ideas and opinions effectively and communicate within and across professional and cultural boundaries

2. **Analysis and inquiry**
The ability to gather information, and to analyse and evaluate information and situations in a systematic, creative and insightful way

3. **Problem solving**
The ability to apply problem-solving processes in novel situations; to identify and analyse problems then formulate and implement solutions

4. **Working independently and with others**
The ability to plan their own work, be self-directed, and use interpersonal skills and attitudes to work collaboratively

5. **Professionalism and social responsibility**
The capacity and intention to use professional knowledge and skills ethically and responsibly, for the benefit of others and the environment

**Personal attributes**
As students of the University they will develop the qualities of critical thinking, curiosity and reflective practice. They will use foresight, initiative and leadership, and be open to alternative perspectives. As graduates, they will continue to learn and thrive in environments of complexity, ambiguity and change.

Generic skills that are emphasised in this unit are referred to in the assessment overview (5a).
2c  **Prerequisites and/or co-requisites**
Students seeking to enrol in this unit in Winter Term must first contact the unit convener by emailing Chem1A@canberra.edu.au to confirm their eligibility for enrolment. The Winter Term offering of this unit is only available for repeating students who have passed the laboratory component in Semester 1.

2d  **Accreditation**
Not applicable to this unit.

### 3: Delivery of Unit and Timetable

3a  **Delivery mode**
The unit is delivered in an on-campus mode with regular on-campus attendance expected and online content support provided. There will be:
- 2 x one and a half hour lectures per week for 7 weeks (Lectures A and B, totalling 13 lectures)
- 2 x two hour tutorial sessions per week for 7 weeks (Tutorials A and B, totalling 14 tutorials)

47.5 hours total contact time

The lectures will revise, explain and illustrate basic chemical principles delivered in Chemistry 1a in Semester 1 in an intensive delivery format. These important principles are developed using pertinent examples and special topics to give students a clearer understanding of the concepts and their applications. The tutorial sessions provide the opportunity for students to become active, independent learners both as individuals and by cooperating with other students in small groups. These sessions reinforce basic chemical principles and provide an opportunity for students to master some of the unit material through conceptual understanding.

The lecture and tutorial timetable is as follows (this is subject to change and any timetable changes will be announced on Moodle):

**Lecture Timetable**

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Days</th>
<th>Time</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA/01</td>
<td>Mon</td>
<td>15.00 – 16.30</td>
<td>9A01 (Weeks 2 – 7)</td>
</tr>
<tr>
<td>LB/01</td>
<td>Tues</td>
<td>15.00 – 16.30</td>
<td>9A01 (Weeks 1 – 7)</td>
</tr>
</tbody>
</table>

**Tutorial Timetable**

<table>
<thead>
<tr>
<th>Tutorial</th>
<th>Days</th>
<th>Time</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA/01</td>
<td>Thurs</td>
<td>9.00 – 11.00</td>
<td>5C58 (Weeks 1 – 7)</td>
</tr>
<tr>
<td>TB/01</td>
<td>Thurs</td>
<td>12.00 – 14.00</td>
<td>5C58 (Weeks 1 – 7)</td>
</tr>
</tbody>
</table>

*all students must attend both of these tutorial sessions*

The Mathematic Pathways Mastery module involves online self-paced learning and assessment for basic Mathematical skills as required by this Unit. Time spent depends on entry level of mathematical expertise.
3b **Timetable of activities, such as lectures/ tutorials/ practicals/ field classes, showing key dates and topics**

<table>
<thead>
<tr>
<th>Wk</th>
<th>Week Starting Monday</th>
<th>Lecture No</th>
<th>Lecture Topic</th>
</tr>
</thead>
</table>
| 1  | 9 June               | 1          | *No lecture – Public Holiday (Queen’s Birthday)*  
                                         Atoms & Electromagnetic Theory |
| 2  | 16 June              | 2, 3       | Chemical Bonding & Intermolecular Forces  
                                         Moles, Empirical Formula & Stoichiometry |
| 3  | 23 June              | 4, 5       | Solution Stoichiometry & Concentration  
                                         Acids, Bases & Tittrations |
| 4  | 30 June              | 6, 7       | Gases & Condensed Phases  
                                         Qualitative Equilibrium |
| 5  | 7 July               | 8, 9       | Quantitative Equilibrium  
                                         Acid/Base Equilibrium |
| 6  | 14 July              | 10, 11     | Acid/Base Equilibrium/Solubility Rules  
                                         Solubility & Solubility Equilibrium |
| 7  | 21 July              | 12, 13     | Redox |
| 8  | 28 July              |            | EXAMINATION PERIOD |
| 9  | 4 Aug                |            | EXAMINATION PERIOD |

*Lecture schedule is provisional and subject to change*

Tutorials will cover the topics delivered in the lectures of the corresponding week; the tutorial test will be held during one of the tutorial sessions each week.

**Mathematics Pathways Mastery Module:**

**Only for students who have not already completed and passed the Mathematics Pathways Mastery module (i.e. because did not succeed at some aspect of it in Semester 1).**

If you have already completed and passed the Mathematics Pathways Mastery module as one of your Semester 1 unit requirements, no further action is required. Your marks for this module will be already present in the grade book.

- Week 1 - Diagnostic Evaluation of Entry Level Mathematics – Pearson’s Site available via Unit Moodle site.
- Weeks 1 – 3 - Progress through online Mathematics Pathways module in Pearson’s site.
- End Week 3 - Undertake the Mathematics Mastery Completion test (self test - online) ·
- Week 4 – Undertake the Mathematics Verification Test (invigilated/supervised)

**4: Unit Resources**

4a **Lists of required texts/readings**

This text is available for purchase through the Coop bookshop (either as hard copy or electronic copy) and for temporary loan (as hard copy) in the University of Canberra Library. The first edition of this textbook is also a suitable accompaniment to this unit if you wish to purchase a second hand copy; however, the page references provided in the unit material correspond to the second edition only.


This is a support textbook which you may find useful depending on your background in mathematics. This text is available for purchase through the Coop bookshop and for temporary loan in the University of Canberra Library.

For Unit readings and resources in the University of Canberra Library

Link to search page for Unit Readings (print materials)
Link to search page for eReserve (electronic materials)

4b **Materials and equipment**
The Chemistry 1a Winter Term Tutorial Materials will be provided free of charge during each tutorial session.

4c **Unit website**
To find your unit site online, login to LearnOnline(Moodle) using your student ID.

Note: Your unit site has a profiles page that displays your name and email address for the benefit of other students. If you prefer to hide your email address, click here for instructions.

You will have access to the Chemistry 1a Semester 1 2014 Moodle site which contains a collection of online tools, lecture notes (in pdf format), lecture recordings, practice quizzes, and additional learning resources. The Chemistry 1a Winter Term 2014 Moodle site will only contain unit materials related to the Winter Term unit. Students should regularly check the discussion forums, which will include any important announcements; student can also monitor their progress grades using the ‘Gradebook’ facility.

This Unit’s Moodle site contains links to the Mathematics Pathways Module that operates via the Pearson’s MyMathLab resources. Students must use this module to meet the requirements of the learning program and tests that are an essential part of this Unit.

The Mathematics Pathways module comprises the minimum capability in entry level Mathematics required for a successful attempt at the required Mathematics intrinsic to this Unit.

5: **Assessment**

All staff and students are required to read the document named ‘Assessment Responsibilities’ on the following link to ensure accurate understanding of the various perspectives surrounding assessment at UC. It can alleviate many misunderstandings.

### 5a. Assessment overview

<table>
<thead>
<tr>
<th>Assessment item (including exams held in the exam period)</th>
<th>Due date of assignments</th>
<th>Weighting (total to equal 100%)</th>
<th>Addresses learning outcome(s)</th>
<th>Related generic skill(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutorial Assessment – 7 tutorial tests</td>
<td>Weekly (7 in total)</td>
<td>10 % each</td>
<td>3</td>
<td>1, 2, 3, 4</td>
</tr>
<tr>
<td>Written examination (2 hr paper)</td>
<td>Exam period</td>
<td>30 %</td>
<td>3</td>
<td>1, 2, 3, 4</td>
</tr>
</tbody>
</table>

*Note: Learning outcomes 1 and 2 have already been achieved in the Semester 1 attempt of the unit 1516

Key for UC Generic Skills
1. Communication
2. Analysis and Inquiry
3. Problem Solving
4. Working independently and with others
5. Professionalism and Social Responsibility

### 5b. Details of each assessment item

**Tutorials**

The tutorial sessions are designed to actively engage students in the learning process and to assist students to master some of the unit material through conceptual understanding while developing essential learning skills. Most of the tutorial activities will be completed with students working in small groups within their tutorial session, with the tutor acting as a facilitator. Each week a tutorial test will be completed in one of the tutorial sessions, which will be submitted for marking; the tutorial test will cover the lecture topics covered during that week.

*If students miss a tutorial test in a particular week*, they may be allowed to complete a catch up test before the first tutorial of the following week. To be eligible for the catch up test, students will need to email Chem1A@canberra.edu.au as soon as possible outlining the reasons for missing the tutorial test and including documentation such as a medical certificate or some other evidence to justify their absence. In the event of prolonged illness students should consult with the Unit Convener as soon as possible.

**Final examination**

This is a 2 hour written examination, consisting of short answer questions. A scientific calculator is permitted, but graphics/programmable calculators and dictionaries are **not** allowed. This written exam will cover the lecture and tutorial topics covered throughout the Winter Term. The exam will be scheduled during the formal final examination period at the end of Winter Term.

Feedback on all assessment items will be provided in a timely and constructive manner.

### 5c. Submission of assessment items

All assessment items are written tests completed either in tutorial classes or in the examination period.

**Extensions: Extensions must be applied for before the due date**

Students can apply for an extension to the submission due date for an assessment item on the grounds of illness or other unavoidable and verifiable personal circumstances. Documentary evidence will be expected for an extension to be granted.
It should be noted that such documentation will be considered but will not guarantee that the application will be successful. The Unit Convener will decide whether to grant an extension and the length of the extension.

**Responsibility for understanding**
If there is any doubt with regard to the requirements of any particular assignments or assessment procedure, the onus for clarifying the issue rests with the student who should contact the unit Convener or tutor. Further, it is the responsibility of students to ensure that they are correctly enrolled in the unit and that the tutor and Student Administration have their correct contact details.

If you are unable to complete the weekly tutorial assessment and have supporting documentation (e.g. medical certificate), you should contact Chem1A@canberra.edu.au as soon as possible to arrange a catch up test before the first tutorial of the following week.

In the event a student misses the end of semester examination due to illness or other exceptional circumstances, the procedures outline on [http://www.canberra.edu.au/student-services/examinations/alternative-exams](http://www.canberra.edu.au/student-services/examinations/alternative-exams) must be followed. The online deferred application form must be submitted within 3 working days of the scheduled exam time.

5d **Special assessment requirements**
Normally an aggregate mark of 50% is required to pass the unit. The following criteria must also be satisfied to pass this unit:

1. Students must achieve at least 50% in the tutorial assessments (on average) and at least 50% on the written examination to pass the unit.
2. Completion of the tutorial assessment is a compulsory condition of this unit. Students must complete all tutorial tests (7 out of 7) in order to pass the unit.
3. Students must attempt all assessment items.
4. Students must achieve at least 80% in the Mathematics Pathways module (i.e. the Mastery Completion test) to meet the pass requirements in this Unit.

**In regards to the Mathematic Pathways Mastery module:**

1. Students may undertake the Mathematics Mastery Completion test any number of times to achieve Mathematical Pathways mastery. (Different values within the problems are generated each time you undertake the test)
2. Students must sit for the supervised Mathematics Verification test – which is a smaller version of the Mathematics Mastery Completion test.
3. Students for whom the Mathematics Verification test and Mathematics Mastery Completion test do not correlate will meet with Unit Convener to establish academic integrity.

5e **Supplementary assessment**
Supplementary assessment will usually only be offered to students who have failed a single unit in their final semester with a final mark between 45-49% and the unit is required for course completion. Refer to the UC [Supplementary Assessment Policy](#).

5f **Academic Integrity**
Students have a responsibility to uphold University standards on ethical scholarship. Good scholarship involves building on the work of others and use of others’ work must be acknowledged with proper attribution made. Cheating, plagiarism, and falsification of data are dishonest practices that contravene academic values. Please see UC’s [Academic Integrity Policy](#).

To enhance understanding of academic integrity, it is expected that all students will complete the LearnOnline Academic Integrity Module (AIM) at least once during their course of
study. The module is automatically available as a listed site when students log into LearnOnline.

5g **Use of text-matching software**
The University of Canberra has available, through LearnOnline (Moodle), text-matching software that helps students and staff reduce plagiarism and improve understandings of academic integrity. Known as URKUND, the software matches submitted text in student assignments against material from various sources: the internet, published books and journals, and previously submitted student texts. Click here for further information on the URKUND text-matching software.

### 6: Student Responsibility

6a **Workload**
The amount of time you will need to spend on study in this unit will depend on a number of factors including your prior knowledge, learning skill level and learning style. Nevertheless, in planning your time commitments you should note that for a 3cp unit the total notional workload over the semester or term is assumed to be 150 hours. These hours include time spent in classes. The total workload for units of different credit point value should vary proportionally. For example, for a 6cp unit the total notional workload over a semester or term is assumed to be 300 hours.

6b **Inclusion and Welfare**
Students who need assistance in undertaking the unit because of disability or other circumstances should inform their Unit Convener or Inclusion and Welfare as soon as possible so the necessary arrangements can be made.

6c **Participation requirements**
*Completion of the tutorial assessment is a compulsory condition of this unit. A student must complete all tutorial tests (7 out of 7) in order to pass the unit.*

Participation in all lectures and tutorials is highly recommended and will enhance your understanding of the unit content and therefore the quality of your assessment responses. Lack of participation may result in your inability to satisfactorily pass assessment items.

In all cases of absence, sickness or personal problems the onus is on you to ensure that the Unit Convener is informed. The minimum participation requirements must be met in order to pass the unit (regardless of supporting documentation). In the event of prolonged illness you should consult with the Unit Convener as soon as possible. If you feel that any problems are interfering with your studies please let the Unit Convener know. The University has extensive counselling services that are available free of charge to all students. These are found in the Medical and Counselling Centre (Building 1 Level B, phone: 6201 2351). The Centre offers help and advice in areas such as relaxation, financial and personal problems.

6d **Withdrawal**
If you are planning to withdraw please discuss with your unit convener. Please see Withdrawal of Units for further information on deadlines.

6e **Required IT skills**
It is the student’s responsibility to ensure that they have basic computer keyboard skills and access to a personal computer and the internet (to access Moodle and regularly check university email accounts for important announcements relating to this unit).

To access your university email account, follow the link from the University of Canberra homepage (http://www.canberra.edu.au/) to My UC Portal. Login using your UC student username and password. Select ‘Study Tools from the top menu and then click on ‘Email’.
6f **In-Unit Costs**
A scientific calculator is required in this unit. A scientific calculator is permitted in both the tutorial assessments and the written exam, but a graphics programmable calculator is prohibited.

**Note:** To calculate your unit fees see: How do I calculate my fees?. The online UC Co-op Textbook Search is available for purchasing text books.

6g **Work placements, internships or practicums**
Not applicable to this unit.

6h **Additional information**

**Theoretical Foundations of the Unit**
The learning and assessment modes associated with this unit are designed to develop the fundamental chemistry skills of the students undertaking the unit.

**Provision of Information to the Group**
Notifications through the Moodle Announcements Forum or the Moodle Discussion Forums are deemed to be made to the whole class. It is the responsibility of the student to ensure that they check for announcements on the Unit’s Moodle website (Moodle forum messages are also emailed to student email addresses only). Students should ensure they check their student email regularly. The Moodle discussion forums will be checked by staff regularly.

**Use of Student Email Account**
The University Email policy states that “students wishing to contact the University via email regarding administrative or academic matters need to send the email from the University account for identity verification purposes”. Therefore all unit enquiries should be emailed using a student university email account. Students should contact servicedesk@canberra.edu.au if they have any issues accessing their university email account.

**Student Consultation**
Unit Convener for this unit is Dr Tamsin Kelly (Room 7D9; Phone 6201 2590; Email: Tamsin.Kelly@canberra.edu.au). The lecturer for this unit is Steve Ford (Room 6B27D; Phone 6201 2173; Email: Steve.Ford@canberra.edu.au). The lecturer will be available for consultation on Tuesdays (12.00 – 3.00 pm). To arrange a consultation at another time, please email the Lecturer to arrange an appointment.

**Mathematics Pathways Mastery Module**
Students are expected to complete the Mathematics Pathways module in their own time via the provided links within the Moodle site. Students are required to undertake the various included self-tests, but importantly to undertake the Mathematics Mastery Completion Test in their own time by the end of week 3. The results of this test will be forwarded to Unit conveners.

During week 4 students will undertake a Mathematics Verification test that will be invigilated (supervised). The results of this test will be compared with the Mathematics Mastery Completion test.

Students will need access to the internet via a standard notebook or desktop computer to work online with the Pearson’s Mathematics Pathways module. Students with an Apple iPad or Android tablet may access the module only if they use the Puffin Web Browser.

**Feedback on Student Performance**
Students are able to monitor their performance in this unit by their achievements in tutorial tests (these marks will be available in the Moodle gradebook).
Science Resource Centre (SRC)
The Science Resource Centre (SRC) is a facility dedicated to enhancing the learning and university experience for science students with particular emphasis on first year students. The SRC is set up with internet access, printing facilities and has a comfortable study area. Extra tutorials are run for several first year units. Location: 6B103. Contact Number: 6201 2298.

In all cases of absence, sickness or personal problems it is the student’s responsibility to ensure that the unit Convener is informed. The minimum participation requirement must be met in order to pass the unit (regardless of supporting documentation).

7: Student Feedback

All students enrolled in this unit will have an opportunity to provide anonymous feedback on the unit at the end of the Semester via the Unit Satisfaction Survey (USS) which you can access by logging into MyUC via the UC homepage: http://www.canberra.edu.au/home/. Your lecturer or tutor may also invite you to provide more detailed feedback on their teaching through an anonymous questionnaire.

As a result of student feedback, the following changes have recently been made to the unit:
1. The timing of the tutorial tests was revised.

8: Authority of this Unit Outline

Any change to the information contained in Section 2 (Academic content), and Section 5 (Assessment) of this document, will only be made by the Unit Convener if the written agreement of the Program Director and a majority of students has been obtained; and if written advice of the change is then provided on the unit site in the learning management system. If this is not possible, written advice of the change must be then forwarded to each student enrolled in the unit at their registered term address. Any individual student who believes him/herself to be disadvantaged by a change is encouraged to discuss the matter with the Unit Convener.