m.socrative.com
room “acds2016”
Knowing your FY students:

- Diverse prior learning
- Diverse interests
- Diverse abilities

- Provision of feedback to students as a catalyst for self-regulated learning towards goals (*where am I going?*)

- Supporting iterative encounters with networked conceptions *plus additional feedback* (*how am I going?*)

- Enabling students to identify the relevance of their learning (*where to next?*)
Engaged learning in lectures

Transitions in lectures:
- Review & engage
- New concepts
- Apply (student centred)
- Elaborate & extend
Resourcing tensions

..... Laboratory Learning (Tutor marking)
..... Teaching Team (Sustained membership)
..... PASS (tutorials) (Attendance drops)
..... Exam marking (Short answer questions)

What ‘ballast’ is dropped first?
Keeping the teaching consistent across a large cohort of students (2000+)

- Multiple streams of lectures
- 20+ lecturers with varying styles, engagement and experience
Preparation encourages participation (including attendance)

- Pre-lecture videos made with screen capture software
- Mastery quizzes which students can repeat (& repeat & repeat)
Social and active face-to-face time

CHEM1001: Worksheet – Lecture 14

Model 1: Shells and sub-shells

The Bohr model of electron orbits (shells) is an over-simplification. In practice the shells are split into sub-shells, the number of sub-shells depending on the size of the shell. The Periodic Table reflects the sequential filling of sub-shells starting from the one closest to the nucleus.

Critical thinking questions

1. Complete the table by indicating the maximum number of electrons that can fit into each sub-shell and shell

<table>
<thead>
<tr>
<th>n</th>
<th>s-sub-shell</th>
<th>p-sub-shell</th>
<th>d-sub-shell</th>
<th>Total number of electrons in shell</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Which groups in the Periodic Table represent elements in which an s-sub-shell is being filled? This is the 's-block' of the Periodic Table.

3. Which groups in the Periodic Table represent elements in which a p-sub-shell is being filled? This is the 'p-block' of the Periodic Table.

4. Which groups in the Periodic Table represent elements in which a d-sub-shell is being filled? This is the 'd-block' of the Periodic Table.

Model 2: Electron configurations

We can label the sub-shells with a number which indicates the shell to which it belongs, a letter indicating the sub-shell and a superscript indicating the number of electrons present. So 2p³ indicates the second shell, the p-sub-shell and the presence of four electrons.

The sub-shells are filled from the most stable first, along the diagonals in the picture:

1s → 2s → 2p → 3s → 3p → 4s → 3d → 4p

Critical thinking questions

1. Write the electron configurations of the following atoms:

(a) B:  (b) C  (c) N
(d) O  (e) F  (f) Ne
Assessments designed to give personalised feedback

- ‘Fast and personal feedback’ on in class MCQ quizzes and assignments
- Students emailed individual report, feedback and feedforward advice

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The University of Sydney
Personalised learning online

Contributed Links and Resources

Resources selected for you

- Carboxylic Acids and Derivatives
  - Organic Acids and Bases
  - Reduction and Oxidation
- Strong Acids and Bases
  - Acids and bases - self learning questions (1)
  - pH of Strong Acids and Bases
- Weak Acids and Bases
  - Calculations with Weak Acids and Bases
  - Weak Acids and Bases
  - Acids and bases - self learning questions (2)
- Calculations Involving pK_a
  - Acid-Base Titrations
  - Acids and bases - self learning questions (3)
  - Acids and bases - self learning questions (4)
- Crystal Structures
  - Crystal Structures
- Solubility Equilibrium
  - Solubility equilibria
  - Solubility - Self Learning Questions

To access ChemCAL resources, use the username "1102" and the password "helium".

These resources have been selected for you based on your answers in tutorial quizzes.

Most Popular Resources This Week

How am I doing and how can I improve?
(updated with quiz 3 results)

Syllabus, learning outcomes and assessment information and dates.

Week 9
Adam Bridgeman's resources for this week

Tweets
First Year Chemistry @SydneyCHEM1102 Answers to Homework Problem Sheet 8 tinyurl.com/kzbf76
First Year Chemistry @SydneyCHEM1102 Homework Problem Sheet 9 tinyurl.com/kgrf50
Social learning online – switching from drop in support
Personalising support using data

subject
CHEM1001 lecture quiz 1

body

Dear $PREFERREDNAME$,

Thank you for completing the first lecture quiz ('A' you mark! The quizzes do get harder but I hope you're building the basics of each topic.

You can review your marks and go through any or quizzes again for practice as you go through the resources, including ChemCAL modules and via the 'This Week' tile or 'Course Resources'.

Don't forget that the CHEM1001 discussion forum is open on Monday and there is a tutor available from 1-2pm routine semester in the Learning Centre at the back of L203. Problems with the course. We welcome your feedback on learning experience.

Best wishes,

Adam

Colin - your CHEM1101 unit coordinator has just sent you an important email - please read and act.

What should I do?

thank you Colin. Please check your email for a reply.
The student response

“I actually genuinely looked forward to and was excited to attend (unlike most other classes I've taken this year).”

“…. so good I'm considering changing my degree to organic chemistry or biochemistry.”

“They're great at keeping the subject matter interesting and make understanding the concepts super easy”

“Keeps me on task throughout semester and means I come to lectures with a head start”

“Creative and interactive environment that is engaging to learn in.”

*from mid-semester survey, conducted September 2015*
CHEM1001 – results 2008 – 2014