2025 CHEMISTRY BRIDGING COURSE

	9-10.30 am	11am-12.30pm	Lunch	1.30-2.45pm	3-5pm
Wednesday 29th January	Lecture 1 (BP)	Lecture 2 (BP)		Lecture 3 (BP)	Workshop on lectures 1-3
Thursday 30th January	Lecture 4 (CG)	Lecture 5 (CG)		Lecture 6 (CG)	Lab: Introduction **(3-5.30 pm)**
Friday 31st January	Workshop on Lectures 4-6	Lecture 7 (FA)		Lecture 8 (FA)	Lab: Acid-base titration **(3-5.30 pm)**
Monday 3rd February	Workshop on Lectures 7-8	Lecture 9 (FA)		Lecture 10 (ZA)	Lab: Precipitation Reactions **(3-5.30 pm)**
Tuesday 4th February	Workshop on Lectures 9-10	Lecture 11 (ZA)	Liquid nitrogen ice cream	Lecture 12 (ZA)	Lecture 12 continued if needed ZA) **Finish: 4.30 pm**
Wednesday 5th February	Workshop on Lectures 11-12	Lecture 13 (MT)		Lecture 14 (MT)	Lecture 14 continued if required (MT) **Finish: 4.30 pm**
Thursday 6th February	Workshop on Lectures 13-14	Lecture 15 (CG)		Lab: Electron Transfer Reactions	
Friday 7th February	Lecture 16 (CG)	Workshop on Lectures 16-17	Presentation of Certificates	FREE	FREE

Lecturers:

(ZA): Zach Avery, Zack.Avery@anu.edu.au
(FA): Flynn Attard, Flynn.Attard@anu.edu.au
(BP): Brett Pollard, Brett.Pollard@anu.edu.au
(MT): Moki Thanusing, Moki.Thanusing@anu.edu.au
(CG): Caitlin Gare, Caitlin.Gare@anu.edu.au

Lab demonstrators: Yolanda Yau, Caitlin Lindsay, Callum Hunter, Emily Nahon and Doug Toyne

A formal pre-lab will be given prior to each laboratory session.

Lecture	Topics	Learning Outcomes
1	*Classification of matter (BLB 1.2) *Chemical Foundation: elements, atoms and ions (BLB 2.6-2.7) *Atomic structure (BLB 2.1-2.3)	*To understand the properties of matter and the definitions of elements, atoms and ions. *To learn about the internal workings of an atom.
2	*Introduction to the periodic table (BLB 2.5)	*To be able to read the periodic table and understand the basis of the information presented. *To understand the features of the periodic table including the ability to predict the properties of elements in the table.
3	*Naming of (BLB 2.8) binary ionic compounds and binary compounds containing non-metals	*To be able to name binary compounds and compounds that contain polyatomic ions. *To be able to write formulas form names and vice versa
Lab 1	*Equipment *Glassware *Safety	*Identifying equipment and glassware in the laboratory *Safe handing procedures
4-6	*Information given by a chemical equation (BLB 3.6) *Chemical Composition *The mole and stoichiometry (BLB 3.4) *Molarity (BLB 4.5) *Chemical reactions *Chemical equations and the balancing act (BLB 3.1.3.2) *Dilution (BLB page 128)	*To understand these concepts and to apply them to the calculation of reaction yields and analytical measurements. *To learn to identify the characteristics of a chemical reaction and the information given by a chemical reaction. *To be able to write and balance a chemical equation.
7	*Limiting reagents in reactions (BLB 3.7) *Yields of reactions (BLB 3.7)	*To understand how to predict the products of chemical reactions
8-9	*Acids and bases (BLB 4.3 and 17.1-17.5)	*To understand the concepts of acids and bases. *To be able to calculate pH.
Lab 2	*Acid base titrations (BLB 4.6)	*To develop manipulations skills useful to chemistry *Practice balancing of equations and use of units

Lab 3	*Precipitation Reactions (A pre-lab will be given)	*To use the solubility rules to predict the products of reactions *To practice balancing equations
10-12	*Modern atomic theory (BLB 6.1, 6.2, 6.4-6.9) *Ionic and covalent bonds (BLB 8.2-8.3) *Electronegativity and bond dipoles (BLB 8.4) *Lewis structures (BLB 8.5)	*To be familiar with each model of the atom. *To understand electron configuration *To understand the different types of chemical bonds.
Lab 4	* Electron Transfer reactions	*To apply theory used to practical application
13-14	*Oxidation and reduction reactions (BLB 4.4, 19.1-19.4)	*To understand the concepts of oxidation and reduction
15-16	*Introductory organic chemistry (BLB 22.1-22.7)	*To be able to draw and name simple organic structures.

References refer to the prescribed textbook:
The Central Science in SI Units, Expanded Edition, Global Edition, edition 15, by Brown & LeMay & Bursten

You can purchase a hard copy of the text hardcopy: https://bit.ly/3Umce5b

This text forms the basis of both Chemistry 1 and 2, and many of the examples, illustrations, and exercises used will be taken directly from them. It should be used extensively and intelligently to support and enhance your understanding of the subject.

A lab manual will be issued at the first lecture.

Lectures: **STB S1 (Science Teaching Building, Building 136)**
Tutorials: Hancock Building 2.22, 2.23, 2.25, 2.27 and 2.28.
Labs: STB level 2 labs

STB: Science Teaching Building, 136 (Red Building)