

Second Year Chemistry

Your options in the Essential Science for 2017

Presented by

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THE UNIVERSITY OF
SYDNEY



Key Contacts

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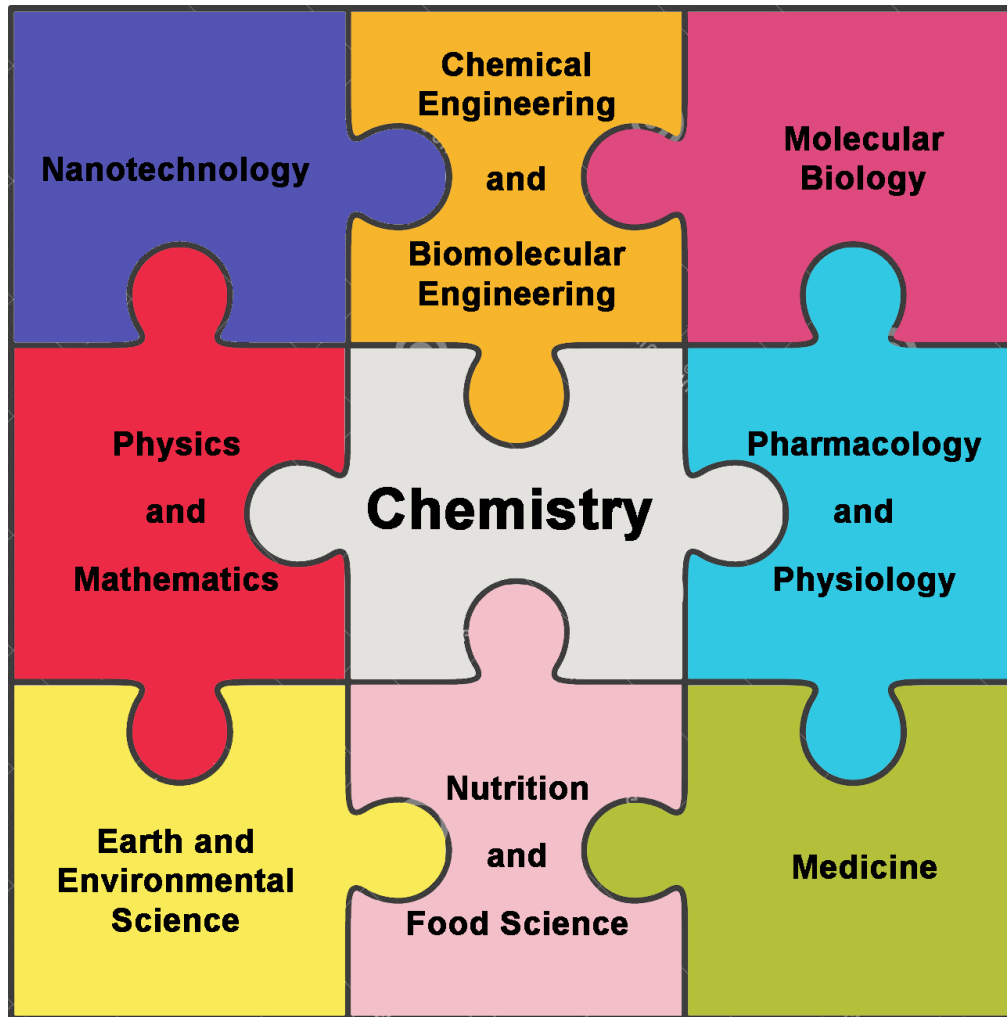
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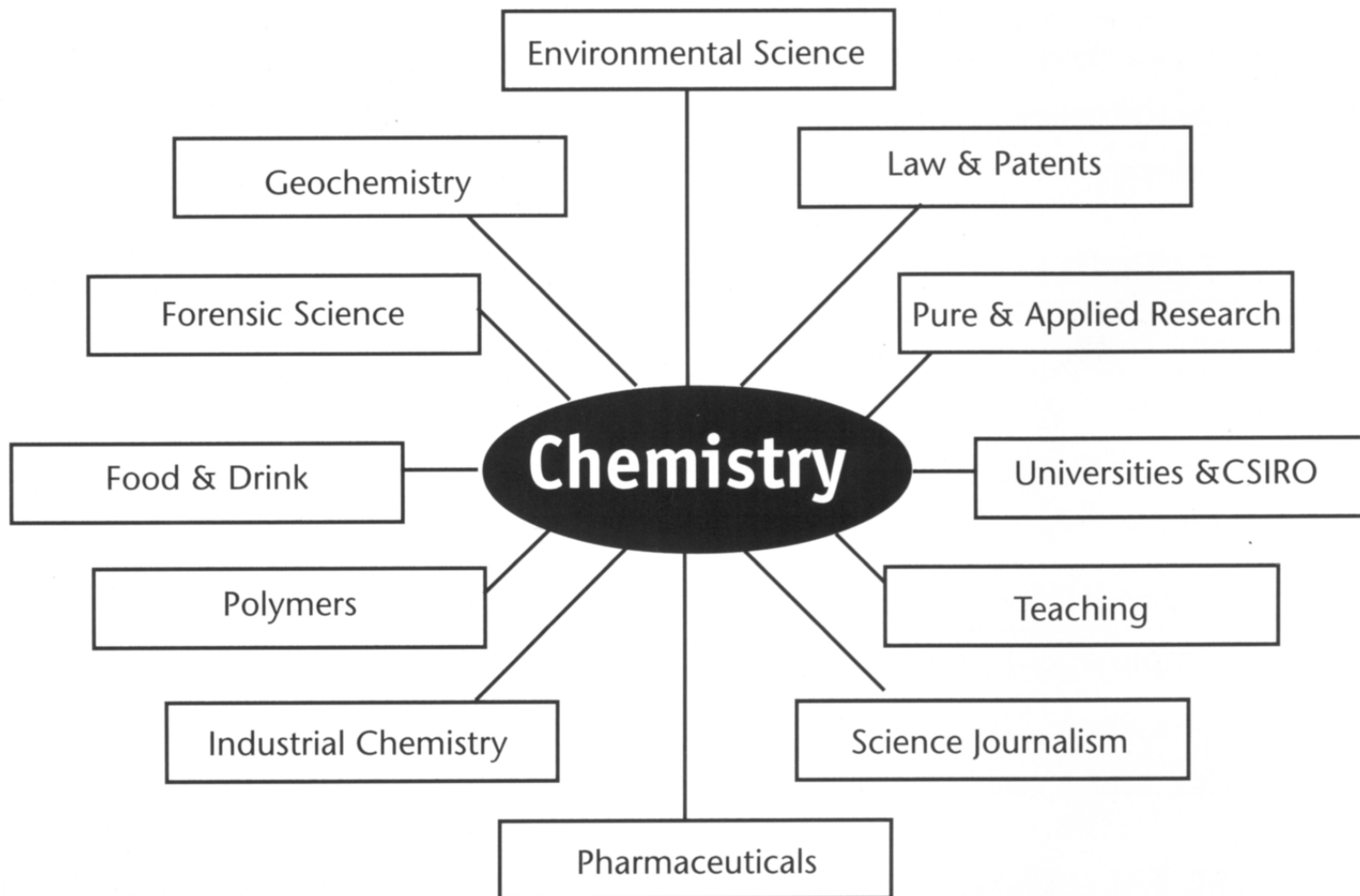
sydney.edu.au/science/chemistry/studying-chemistry



Chemistry – the Essential Science

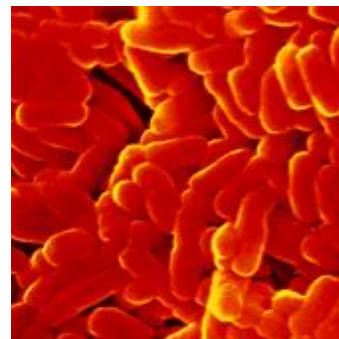
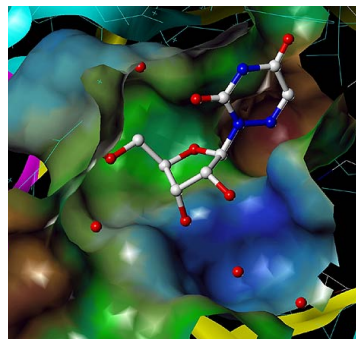
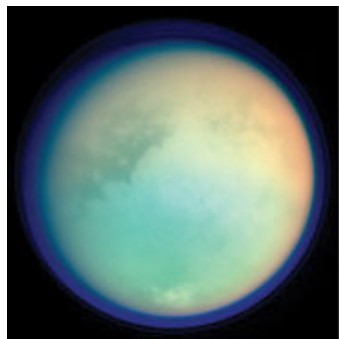


Chemistry – where can it take you?



Chemistry – solutions to 21st century challenges

1. How do we **feed the world**?
2. How do we make sure everybody has enough **water to drink**?
3. Can we find better ways to **harness solar energy**?
4. What are the **new fuels** when oil runs out?
5. How do we **treat malaria, TB, HIV/AIDS**, Alzheimer's ...?
6. How do we run cars on **hydrogen**?
7. How do we make **manufacturing processes cleaner**?
8. How can we **clean up polluted land** and waterways?



Second Year Course Structure

Semester 1

- CHEM2401 Molecular Reactivity & Spectroscopy
also available as CHEM2911 (Advanced) and CHEM2915 (SSP)
- CHEM2404 Forensic & Environmental Chemistry

Semester 2

- CHEM2402 Chemical Structure & Stability
also available as CHEM2912 (Advanced) and CHEM2916 (SSP)
- CHEM2403 Chemistry of Biological Molecules

Year in Industry Program

Spend 12 months outside the University

- Work for one of our program partners after completion of your 2nd year

Partners include:

- Australian Government Analytical Laboratories
- ANSTO, BHP, Caltex
- CSIRO, Defence Science & Technology
- Dulux, Dupont Australia
- National Industrial Chemicals Notification Scheme
- National Occupational Health & Safety Commission

For more information see [Dimetra Skondras \(Chemistry Front Office\)](#)

Course selection

Planning to major in chemistry or a related sciences?

Minimum entry requirement for 3rd Year Chemistry:

- Molecular Reactivity & Spectroscopy (2401 / 2911 / 2915)
- Chemical Structure & Stability (2402 / 2912 / 2916)

You are strongly encouraged to enrol in elective units in addition to the core to broaden your Chemistry experience.

Molecular Reactivity & Spectroscopy

Organic & Medicinal Chemistry

- Aromatic and carbonyl chemistry
- Molecular design of medicines

Quantum Theory & Molecular Spectroscopy

- Electronic and vibrational energy
- Molecular design of novel materials



CHEM2402, CHEM2912 and CHEM2916:

Chemical Structure & Stability

Coordination Chemistry

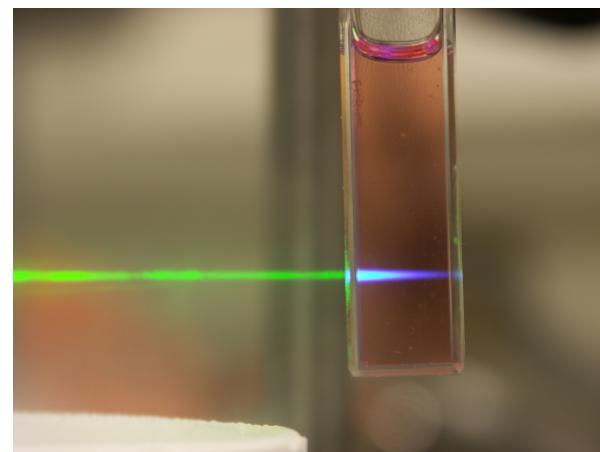
- Structure, colour and magnetism
- Reactivity of complexes

Predicting Reactivity

- Statistical thermodynamics
- Heat and entropy
- Transition states

Materials and Nanotechnology

- Atomic scale materials design



Forensic & Environmental Chemistry

- Atmospheric chemistry
- Bio-geochemical cycling (C, N, S)
- Water and air pollution
- Catalysis and green chemistry
- Drug and explosives screening
- Fingerprinting
- Forensic analyses
- Separation techniques (GC & HPLC)
- Analytical techniques (IR, UV, MS, XRD, XRF & SEM)



Chemistry of Biological Molecules

Bioorganic Chemistry

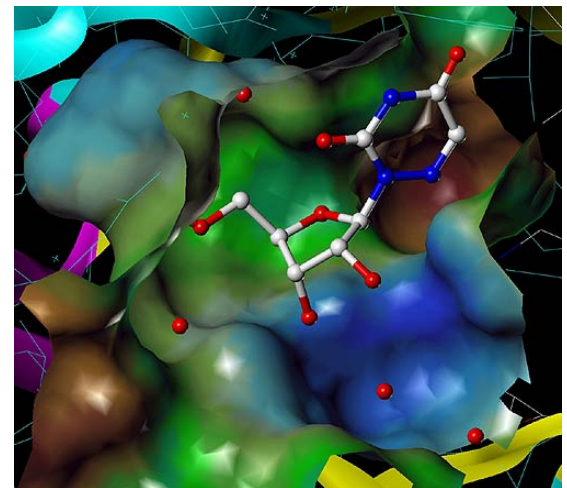
- Carbohydrates – sweeteners, blood groups & biopolymers
- Lipids – storage and signaling
- Steroids in sport and medicine
- Proteins as drug targets

Biophysical Chemistry

- Colloids and colloidal stability

Bioinorganic Chemistry

- Metalloproteins
- Biomineralisation



Advanced Units and Special Studies Program (SSP)

Advanced and SSP units have an advanced practical component. SSP units have additional 12 one-hour *Special Topics* seminars.

Entry requirements:

Advanced:

- Credit average in CHEM1101/1901/1903 and CHEM1102/1902/1904

Special Studies Program:

- By invitation only (numbers are limited)
- High WAM
- Distinction average in CHEM1101/1901/1903 and CHEM1102/1902/1904