Second Year Chemistry

Your options in the central science for 2016

Associate Professor Siggi Schmid
Second Year Coordinator
School of Chemistry

THE UNIVERSITY OF SYDNEY

Key Contacts

Siggi Schmid, Second Year Coordinator

Room 315, e-mail: siegbert.schmid@sydney.edu.au

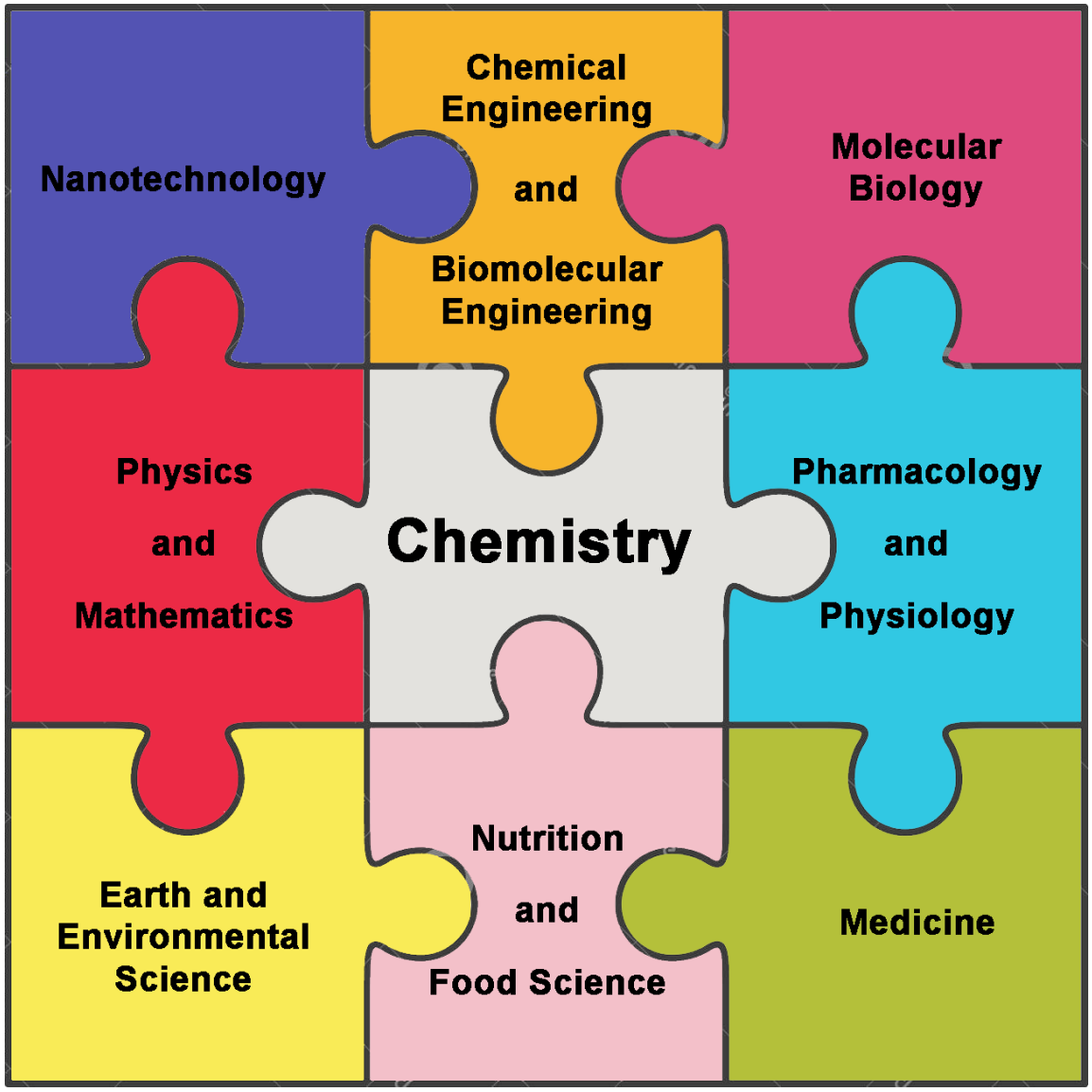
Suzanne Kania, Chemistry Student Administration Manager

Front Office, e-mail: suzanne.kania@sydney.edu.au

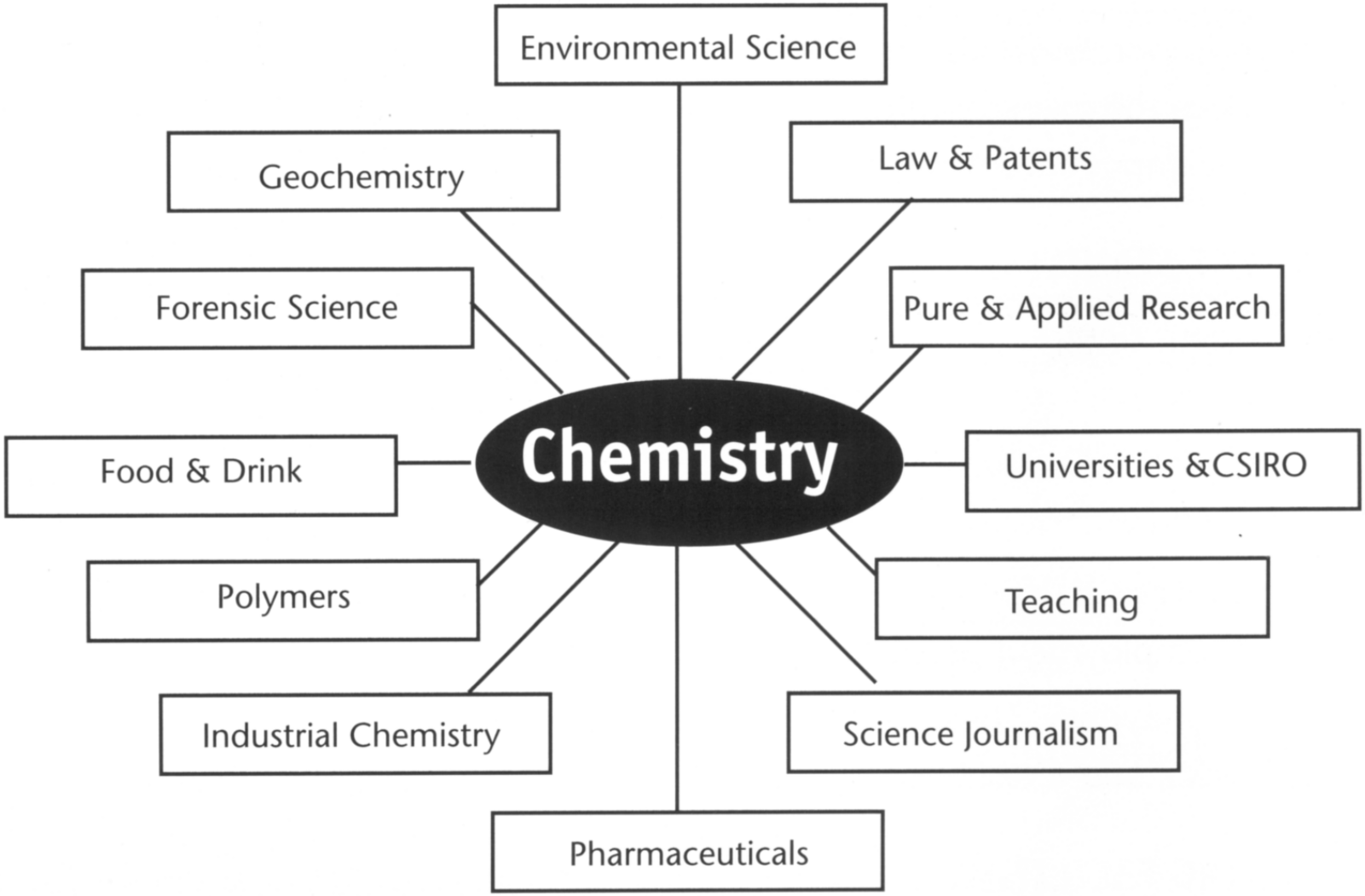
---

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

Chemistry – the central science

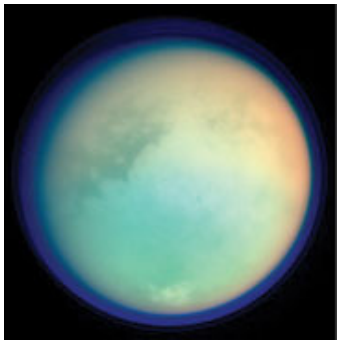


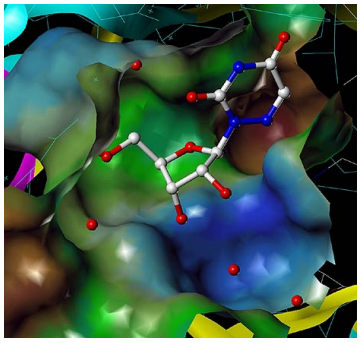
Chemistry – where can it take you?

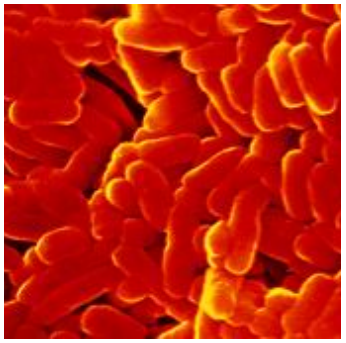


Chemistry – solutions to 21st century challenges

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 at 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

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 their Chemistry experience.

CHEM2401, CHEM2911 and CHEM2915

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

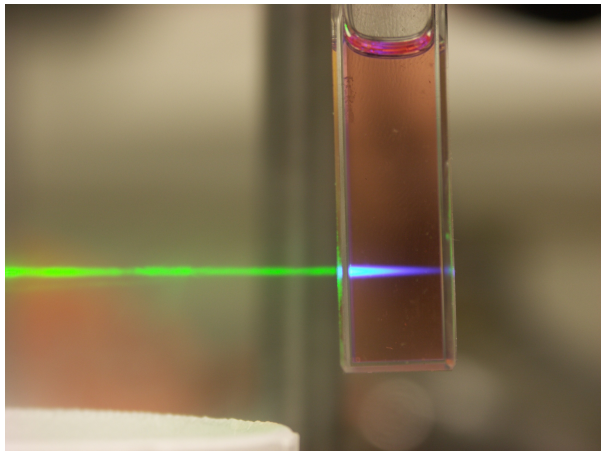
- Structure, colour and magnetism
- Reactivity of complexes

Predicting Reactivity

- Statistical thermodynamics
- Heat and entropy
- Transition states

Materials and Nanotechnology

- Atom scale material design



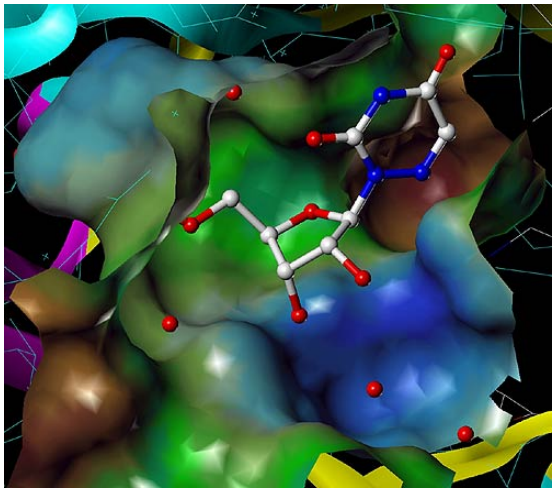
Forensic & Environmental Chemistry

- Atmospheric chemistry
- Bio-geochemical cycling (C, N, S)
- Water and air pollution
- Catalysis and green chemistry
- Drug and explosive 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

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)