

# NATS 1032 INTRODUCTION TO APPLIED SCIENCE AND TECHNOLOGY (WSTC)

**Credit Points** 10

**Coordinator** Janice Petherick ([https://directory.westernsydney.edu.au/search/name/Janice Petherick/](https://directory.westernsydney.edu.au/search/name/Janice%20Petherick/))

**Description** In this subject, you will explore the science behind ground-breaking inventions that have revolutionised contemporary society and made it what it is today. You will delve into historic innovations, such as the Haber Process, which played a pivotal role in urbanisation, as well as contemporary marvels like the lithium-ion battery, fundamental to our technology-driven lifestyle. Additionally, you will answer the “big philosophical questions” associated with these inventions. For example, ‘Why did the cheap replacement lithium battery that I brought off the internet for my mobile phone or laptop explode on recharging?’ and ‘Why are foods and drinks, including my morning coffee, acidic?’.

**School** Science

**Discipline** Natural and Physical Sciences, Not Elsewhere Classified.

**Student Contribution Band** HECS Band 2 10cp

Check your fees via the Fees ([https://www.westernsydney.edu.au/currentstudents/current\\_students/fees/](https://www.westernsydney.edu.au/currentstudents/current_students/fees/)) page.

**Level** Undergraduate Level 1 subject

## Restrictions

Students must be enrolled in an existing Destination College Diploma program listed below:

- 7188 Diploma in Culture, Society and Justice
- 7189 Diploma in Health Science
- 7190 Diploma in Business
- 7191 Diploma in Information and Communication Technologies
- 7192 Diploma in Building Design and Construction
- 7193 Diploma in Engineering Studies
- 7194 Diploma in Creative Industries and Communications
- 7195 Diploma in Arts
- 7196 Diploma in Science
- 7197 Diploma in Education Studies

## Learning Outcomes

After successful completion of this subject, students will be able to:

1. Identify the key concepts and principles in electrochemistry, biochemistry, physical and general chemistry.
2. Apply key concepts and principles of chemistry to explain and examine real-world chemical processes.
3. Understand and apply techniques for the safe handling and disposal of chemical substances in the environment.
4. Effectively communicate chemical concepts to a range of audiences using appropriate scientific language, symbols, and diagrams.

## Subject Content

- What powers my mobile phone, laptop, even e cigarettes? – Lithium-Ion batteries: the heart of my devices.

- Electron transfer reactions, Group 1 metals and atomic structure, and the periodic table.
- Chemical potential energy and reactivity.
- Flat batteries, equilibrium, reversible reactions, and recharging.
- What’s nitrogen got to do with it? – The Haber Process and feeding the world.
  - Biological molecules and fuelling the body, intermolecular forces.
  - Indigenous Australian peoples foods and bush medicine.
  - pH of foods and proton transfer reactions.
  - Buffers and Speciation and pharmaceuticals.
- Why does size matter? – From counting calories/energy to minimising waste.
  - Measuring in Chemistry.
  - Voltage and current in batteries.
  - Measuring Energy in food.
  - Efficiency in industry processes.

## Special Requirements

Essential equipment

Approved safety glasses, lab coat, enclosed shoes.

## Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/ Group Task	Mandatory
Quiz	2 x 60 minutes	30	N	Individual	N
Applied Project	300 words plus equations and diagrams	30	N	Individual	N
Professional Task	5 x 3 hour practicals including report. 5 reports - Max. 1000 words overall	40	N	Individual	Y

Teaching Periods

## Spring Block 2 (2025)

### Campbelltown

#### On-site

**Subject Contact** Janice Petherick ([https://directory.westernsydney.edu.au/search/name/Janice Petherick/](https://directory.westernsydney.edu.au/search/name/Janice%20Petherick/))

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=NATS1032\\_25-SB2\\_CA\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=NATS1032_25-SB2_CA_1#subjects))