

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

**Credit Points** 10

**Coordinator** Janice Petherick (<https://directory.westernsydney.edu.au/search/name/Janice.Petherick/>)

**Description** In this subject, you will explore the science behind groundbreaking 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	B 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/>)

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))