

# NATS 6001 INTRODUCTION TO NEUROSCIENCE

**Credit Points** 10

**Legacy Code** 401471

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

**Description** This unit is an introduction to the nervous system with a focus on its role and the function. It provides a strong foundation in modern neuroscience for those wishing to apply the principles of sensory and motor system function with the aim of mimicking human biology via neuromorphic implementations. Students will have access to expertise from a multidisciplinary team, guiding their learning in the areas of cellular, computational, behavioural and biomedical neuroscience. Topics covered in the unit will include introductory biology, structure and function of the nervous system, computational modelling, bio-signal acquisition and signal processing. This subject will be undertaken at Parramatta City - Hassall St campus.

**School** Medicine

**Discipline** Medical Science

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

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

**Restrictions** Students must be enrolled in 8124 Master of Applied Neuromorphic Engineering

## Learning Outcomes

On successful completion of this subject, students should be able to:

1. Examine key concepts underlying the basic systems and functions of the nervous system
2. Appraise the basic structure of neurons and synapses
3. Interpret the basis of the resting membrane potential, Nernst and Goldman equations
4. Simulate and explain the dynamics of the action potential, neural excitability, synaptic plasticity, integration and facilitation
5. Critically analyse the operation of various elements of the nervous systems at a functional level and in the context of their evolutionary history

## Subject Content

- Functional Anatomy of central Nervous system
- ionic basis of resting membrane potential
- action potential & neuronal excitability, The cable theory
- mechanisms of plasticity
- The evolutionary origin of The Nervous systems
- The Visual system
- The auditory system
- The somatosensory system
- Behavioural?neuroscience & neurodegeneration
- Bioamplifiers and filters

## 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.

Item	Length	Percent	Threshold	Individual/Group Task
Quiz	1-hour x 2 (15% each)	30	N	Individual
Essay	1000 Words	30	N	Individual
Report	1500 Words	40	N	Individual

Teaching Periods

## Autumn

### Parramatta City - Macquarie St

#### Day

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

View timetable ([https://clasregistration.westernsydney.edu.au/even/timetable/?subject\\_code=NATS6001\\_22-AUT\\_PC\\_D#subjects](https://clasregistration.westernsydney.edu.au/even/timetable/?subject_code=NATS6001_22-AUT_PC_D#subjects))