

# ELEC 2009 MICROPROCESSOR SYSTEMS

**Credit Points** 10

**Legacy Code** 300076

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

**Description** This subject introduces students to the internal structure of microprocessors used in computing systems and their fundamental operations. Topics include assembly language programming, interrupt processing, CPU functions, memory organization, and peripheral programming. The microprocessor and embedded processors are discussed. Students write assembly language programs, debug and create executable files to control microprocessor systems.

**School** Eng, Design & Built Env

**Discipline** Computer Engineering

**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 2 subject

**Pre-requisite(s)** ELEC 1001

## Learning Outcomes

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

1. Write assembly language programs
2. Debug assembly programs and create executable files
3. Describe interrupt (exception) processing
4. Explain CPU hardware functions and address decoding (memory/IO)
5. Program peripherals

## Subject Content

Instruction format, instruction types and assembler directives  
Memory segmentation  
20-bit address formation and determination  
Addressing modes  
Types of instructions  
Stack operation and access  
Assembly programming  
Interrupt processing  
BIOS and DOS function calls  
CPU structure and pin functions  
Instruction execution cycles and system timing diagram  
Memory and memory address decoding  
Memory-mapped and interrupt-driven I/Os  
Peripheral Programming

## 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
Numerical Problem Solving	around 10 pages (each)	25	N	Individual
Multiple Choice	30 minutes (per quiz)	10	N	Individual
Practical	3 hours (per practical)	10	N	Individual
Final Exam	2 hours	55	N	Individual

Prescribed Texts

- Triebel, W. A., & Singh, A. J. (2014). The 8088 and 8086 microprocessors : programming, interfacing, software, hardware, and applications : including the 80286, 80386, 80486, and Pentium processor families (4th International ed.). Upper Saddle River, N.J.: Pearson.

Teaching Periods

## Sydney City Campus - Term 1 (2024)

### Sydney City

**On-site**

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

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=ELEC2009\\_24-SC1\\_SC\\_1#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC2009_24-SC1_SC_1#subjects))

## Spring (2024)

### Penrith (Kingswood)

**On-site**

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

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=ELEC2009\\_24-SPR\\_KW\\_1#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC2009_24-SPR_KW_1#subjects))

## Parramatta City - Macquarie St

**On-site**

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

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=ELEC2009\\_24-SPR\\_PC\\_1#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC2009_24-SPR_PC_1#subjects))

## Sydney City Campus - Term 3 (2024)

### Sydney City

**On-site**

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

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=ELEC2009\\_24-SC3\\_SC\\_1#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC2009_24-SC3_SC_1#subjects))