

# COMP 3015 OPERATING SYSTEMS PROGRAMMING

**Credit Points** 10

**Legacy Code** 300698

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

**Description** This unit provides the knowledge of the internal structure and functionality of Operating Systems. An operating system defines an abstraction of hardware behavior and provides a range of services more suitable for ICT application development than what raw hardware could deliver, in terms of convenience, efficiency and security. It is important that ICT Professionals have some understanding of how these services are realized. For ICT Professionals whose role includes supporting the operating system this unit provides the introduction to the relevant theory and practice.

**School** Computer, Data & Math Sciences

**Discipline** Programming

**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.

**Level** Undergraduate Level 3 subject

**Pre-requisite(s)** COMP 2015 OR  
COMP 2016 OR  
COMP 2014

**Equivalent Subjects** INFS 3014 - Operating Systems

**Incompatible Subjects** COMP 3016 - Operating Systems Programming (Advanced)

**Assumed Knowledge**

Students are expected to have a general understanding on computer systems; computer fundamentals, and programming techniques.

## Learning Outcomes

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

1. identify the functions, services and basic structure of operating systems, and describe their role in a computer system;
2. discuss operating systems fundamental concepts: process, process synchronisation, process scheduling and dispatch, memory management, virtual memory, I/O system management, file systems, hierarchical directory systems;
3. identify some of the performance issues involved, and carry out elementary calculations in this regard;
4. identify the central role of concurrency in operating systems programming; and solve relatively simple problems requiring concurrency
5. write programs illustrating the application of the theoretical concepts, and explore these concepts in a simulated environment;
6. analyze and evaluate an operating systems suitability for a task based on requirement.

## Subject Content

- Interface with the operating system: general properties and style of system calls; operating system structures, and how they can be accessed;
- process and thread concept, management, synchronisation, scheduling and The realisation of these in modern Operating systems.
- Inter-process communication; vis. Synchronous and asynchronous message passing, shared memory, mutual exclusion, interrupts and signals
- functions, services, Basic structure and The role of An Operating system in A computer system.
- Memory management
- File systems, directories
- security and protection at The Operating system level, protection matrix.

## 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
Case Study	Five problem-based Case Studies. 600 words or equivalent per case study.	50	N	Individual
Final Exam	2 hours	50	Y	Individual

Teaching Periods

## Autumn Campbelltown

**Day**

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

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=COMP3015\\_22-AUT\\_CA\\_D#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=COMP3015_22-AUT_CA_D#subjects))

## Penrith (Kingswood)

**Day**

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

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=COMP3015\\_22-AUT\\_KW\\_D#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=COMP3015_22-AUT_KW_D#subjects))

## Parramatta - Victoria Rd

**Day**

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

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=COMP3015\\_22-AUT\\_PS\\_D#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=COMP3015_22-AUT_PS_D#subjects))

## Sydney City Campus - Term 2

### Sydney City

#### Day

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

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=COMP3015\\_22-SC2\\_SC\\_D#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=COMP3015_22-SC2_SC_D#subjects))