



THE UNIVERSITY OF  
**NEWCASTLE**  
AUSTRALIA

FACULTY OF  
ENGINEERING AND  
BUILT ENVIRONMENT



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# **Operating Systems**

**COMP2240/6240**

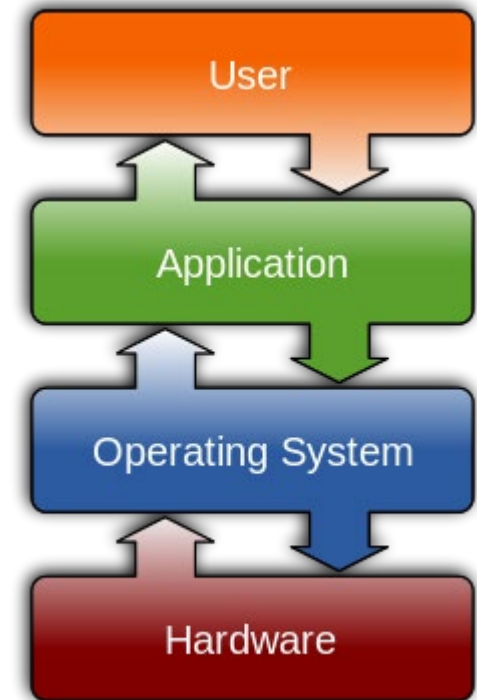
**Course Overview**



WIKIPEDIA  
The Free Encyclopedia

# OPERATING SYSTEMS

- An operating system (OS) is **system software** that **manages** computer hardware and software resources and provides common **services** for computer programs.
- Common components
  - Program execution
  - Interrupts
  - Memory management
  - Disk access & File systems
  - Device drivers
  - Networking
  - Security
  - User Interface



# COURSE SUMMARY

<b>Subject Code</b>	COMP2240/COMP6240
<b>Subject Title</b>	Operating Systems
<b>Homepage</b>	<a href="https://uonline.newcastle.edu.au/">https://uonline.newcastle.edu.au/</a>
<b>Unit Value</b>	10
<b>Assumed knowledge</b>	SENG1120/SENG6120

This is a second year course and the assumed knowledge will be needed to be fully prepared for it

# Contact Information

## Course Coordinator

Dr. Nan Li

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## Lecturer

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## Tutors

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# TIMETABLE

- Lectures
  - 11:00 -13:00 Tuesday (LSTH100)
- Tutorials/Workshops
  - 19:00 – 21:00 Monday (RW203)
  - 16:00 – 18:00 Tuesday (HPE202)
  - 11:00 -13:00 Thursday (HA142)
  - 12:00 -14:00 Thursday (HE28)

# COURSE CONTENT

## MAIN TOPICS

1. Hardware overview.
2. Processes and process scheduling including multi-processors.
3. Concurrency control using hardware and software techniques.
4. Memory Management.
5. Virtual memory.
6. I/O and disk management.
7. File systems and file manipulation.
8. Security mechanisms.
9. Networking
10. Process migration

# Detailed content

## Weekly program

- ☐ Week 1 – Operating System Overview
- ☐ Week 2 – Processes and Threads
- ☐ Week 3 – Scheduling
- ☐ Week 4 – Real-time System Scheduling and Multiprocessor Scheduling
- ☐ Week 5 – Concurrency: Mutual Exclusion and Synchronization
- ☐ Week 6 – Concurrency: Deadlock and Starvation
- ☐ Week 7 – Memory Management
- ☐ Week 8 – Memory Management II
- ☐ Week 9 – Disk and I/O Scheduling
- ☐ Week 10 – File Management
- ☐ Week 11 – Security and Protection
- ☐ Week 12 – Revision of the course
- ☐ Week 13 – Extra revision (if needed)

# Semi-flip delivery

- **PPP Mode of teaching**
- **Prepare:**
  - Watch roughly 20 minutes of videos before the lecture
  - Learn some terminology / basic concept
- **Participate:**
  - Engage in the lecture
  - Participate/discuss/ask questions
- **Practice:**
  - Work with some problems
  - Know some concepts of real OS



# ASSESSMENT

- Assignments:
  - 3 programming assignments – worth 10%+15%+15%
  - Coding (preferably in Java) and written report
- Midterm – In week 8 – worth 15%
- Exams
  - Final exam – worth 45%

# ASSESSMENT SCHEDULE

Assessment Item and Description	Method of submission	Due date	Weighting	Item Returnable (Y/N)
<b>Assign 1</b>	Electronically through Blackboard	<b>Week 6</b>	10%	<b>Y</b>
<b>Midterm</b>	In Lecture	<b>Week 8</b>	15%	<b>Y</b>
<b>Assign 2</b>	Electronically through Blackboard	<b>Week 9</b>	15%	<b>Y</b>
<b>Assign 3</b>	Electronically through Blackboard	<b>Week 12</b>	15%	<b>Y</b>
<b>Final exam</b>	<b>Formal Examination process</b>	<b>Exam Period</b>	<b>45%</b>	<b>N</b>

# REFERENCES

11

- Suggested textbook
  - “Operating Systems - Internals and Design Principals”, 9<sup>th</sup>/8<sup>th</sup>/7<sup>th</sup> Edition, William Stallings
  - Copies in library

