



# COMS3010A

## Operating Systems

### Course Outline

#### Instructors

**COMS3010A Lecturer:**

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**Head Tutor:**

Damion Harvey                      2303289@students.wits.ac.za

#### Consultation Times and Announcements

All announcements will be made on the Moodle course page or in class. Questions should be firstly posted on Moodle using the OS Overflow feature, for the Lecturer and the Tutors to answer. If further explanation is required consultation times can be organised.

### 1 Description

COMS3010A is a undergraduate-level introductory course into operating systems. This course teaches the basic operating system abstractions, mechanisms, and their implementations. The course is split into five sections:

- Introduction
- Abstraction
- Concurrency
- Scheduling
- Persistence

#### Hours Full Time Students:

Course	Activity	Day	Time	Venue
COMS3010A	Lab	Monday	14:15 – 17:00	LabMSL004/5
COMS3010A	Lecture	Thursday	10:15 – 12:00	SHB5

#### Textbook

In principle, any textbook on the fundamentals of Operating Systems will do. **There is no prescribed textbook**, although following books are recommended if you would like one.

- Remzi H. Arpaci-Dusseau and Andrea C. Arpaci-Dusseau. Operating systems: Three Easy Pieces
- K. N. King. C Programming: A Modern Approach (2nd edition)

## Resources

You are encouraged to use Google, YouTube, OpenCourseWare, StackOverflow and any other online resources. Links to online resources will be provided via Moodle when relevant, but you are encouraged to find your own as well.

<https://pages.cs.wisc.edu/~remzi/OSTEP/> has a number of good tutorials for OS.

<https://www.programiz.com/c-programming> is fantastic if you are trying to learn C.

## Course Objectives

The course aims to teach the main concepts and techniques involved in the design of modern operating systems. Since these concepts and techniques pervade the design of all non-trivial computer systems, the course is also meant to introduce the student to the main concepts and techniques involved in building non-trivial computing systems.

The topics covered include:

1. multiple-program systems (processes and inter-process communication);
2. multi-threaded programming;
3. memory allocation (address translation, segmentation, paging);
4. resource allocation and scheduling;
5. file systems and persistent storage;
6. protection and security

## Grading

Labs + Tutorials:	15%
Projects:	15%
Tests:	30%
Exam:	40%

## Notes on Lectures

1. Every Thursday we will have in person Lectures.
2. The slides related to each lecture will be made available beforehand on Moodle ([moodle.ms.wits.ac.za](https://moodle.ms.wits.ac.za)).

## Notes on Projects

1. There will be two projects to be completed during the course.
2. For all projects, the project descriptions as well as reference code will be distributed using Moodle ([moodle.ms.wits.ac.za](https://moodle.ms.wits.ac.za)).

3. Projects usually last two or three weeks. Do not leave submissions to the last minute; congestion on Moodle 5 minutes before the deadline is not an acceptable excuse.
4. Projects and tests will be submitted using Moodle (moodle.ms.wits.ac.za). If you are struggling please ask a tutor during a lab.
5. Each project description will come with a breakdown of the grading scheme and you will receive credit for different tasks of a project; however, no partial credit will be given for individual tasks or unit tests.
6. The projects are designed to help you learn and apply the material taught in lectures and laboratory sessions; but you will only learn and understand by doing the projects and implementing the lab assignments.
7. If you need help with any of the projects, then please ask for the appropriate help (teaching assistant or lecturer) and it will gladly be given. We will not solve the problems for you. You must show that you have attempted the problem from a number of different aspects before we will intervene.

## **Notes on Labs and Tutorials**

1. Labs will be conducted every week on Monday 14:15-17:00, although this will be a shared timeslot with COMS3005.
2. Due to the shared timeslot a new Lab will only be given every 2 weeks.
3. You will work on small programming problems during the laboratory sessions and you may ask the teaching assistants for help.
4. You are not expected to complete all programming problems during the laboratory sessions. You may complete the work sheets in your own time if necessary.
5. You should not expect sample solutions of work sheets and projects to be handed out. If you cannot solve a programming problem on your own, then please ask for help and help will gladly be given.
6. You will be given two weeks to complete the labs as well as complete the online quiz related to the lab which will be counting towards your final mark

## **Notes on Tests/Exam**

1. All tests/exams will be conducted in person unless otherwise mentioned.
2. All tests/exams will also test whether you have done the labs and projects.
3. Any queries regarding marking can be sent to the lecturer for review.

## **Academic Integrity**

There is a zero-tolerance policy regarding plagiarism in the School. Refer to the General Undergraduate Course Outline for Computer Science for more information. Failure to adhere to this policy will have severe repercussions.

During assessments:

- You may not use any materials that aren't explicitly allowed, including the Internet and your own/other people's source code.

- You may not access anyone else's Sakai, Moodle or MSL account.
- You may not use any device other than the lab machines.
- You may not edit your submissions using any other device either inside or outside the designated venue.

Offenders will receive 0 for that component, may receive FCM for the course, and/or may be taken to the legal office.