

Department of Computer Science  
University of Pretoria

Operating Systems  
COS 222

Course Information

July 22, 2013

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# 1 Overview

## 1.1 Description

Fundamental concepts of modern operating systems in terms of their structure and the mechanisms they use are studied in this module. Real Time, Multimedia and Multiple Processor Systems are defined and analysed. This module also deals with modern design issues of process management, deadlock, memory management, input/output management, file systems and security.

## 1.2 Study units

The main study units are as follows.

1. Overview of operating systems.
2. Process management.
3. Memory management.
4. Input and output management.
5. Storage management.

# 2 Outcomes

The following exit-level outcomes are addressed in the module, i.e. at the conclusion of this module the student will be capable of:

- Problem solving: Students will be familiar with classical solutions to problems of scheduling, memory management, concurrency etc. and be able to solve simple problems in these areas themselves.
- Application of fundamental and specialist knowledge: Students will be able to bring their mathematical and programming knowledge to bear in the solution of operating systems related problems.
- Design and Synthesis: It will be required of students to design small programs to explore and measure aspects of operating systems behaviour.
- Lifelong learning: Students will be grounded in operating systems fundamentals. The knowledge of fundamentals should assist them in understanding the range of contemporary operating systems as well as future systems.

## 2.1 Course

After the successful completion of this module, the student will have had exposure to the learning objectives specified in the Operating Systems knowledge area of the ACM/IEEE Computing Curriculum.

- |                                 |                                  |
|---------------------------------|----------------------------------|
| – Overview of operating systems | – Scheduling and dispatch        |
| – Operating system principles   | – Memory management              |
| – Fault Tolerance               | – Device management              |
| – System performance evaluation | – File systems                   |
| – Scripting                     | – Security and protection        |
| – Concurrency                   | – Real-time and embedded systems |

## 3 Instructors

### 3.1 Contact details

The names and contact details of the lecturers responsible for the course are shown in the table below. Hours for consultation of lecturers will be announced on the course web site. Students may consult lecturers only during the consulting hours as indicated, or by appointment.

#### 3.1.1 Lecturers

Name	Room number	Contact details	Contact hours
Jan Kroeze	IT 5-40	jkroeze@cs.up.ac.za (012) 420 2156	By appointment
Christopher Cleghorn	TBA	ccleghorn@cs.up.ac.za TBA	By appointment

#### 3.1.2 Teaching assistants

The names and contact details of the teaching assistants are available on the course web site.

## 4 Study Material

Tanenbaum and Woodhull, *Operating Systems: Design and implementation, 3<sup>rd</sup> edition*, Pearson Prentice Hall, 2009.

Additional references will be made available on the course website as the need arises.

## 5 Assessment

### 5.1 Pass Requirement

In order to pass this module a student should obtain a final mark of at least 50% as well as an examination mark of at least 40%.

### 5.2 Calculation of final mark

The final mark is compiled as follows:

Semester mark: 50%

Exam mark: 50%

Note: A sub-minimum of 40% for the exam is required to pass the course, given that your final mark is 50% or higher.

## 5.3 Calculation of semester mark

The semester mark is compiled as follows:

Two semester tests: 65%

Practicals and class tests: 35%

Note: A minimum of 40% for the semester mark is needed to write the exam.

## 6 Lecture schedule

### 6.1 Timetable

The lecture and practical times/venues are listed below:

#### 6.1.1 Lecture times

Number	Day	Time	Venue
Afrikaans lectures			
Lecture 1	Monday	08:30 – 09:20	HSB 4-6
Lecture 2	Tuesday	08:30 – 09:20	IT 2-26
Lecture 3	Tuesday	09:30 – 10:20	IT 2-26
Lecture 4	Friday	10:30 – 11:30	HSB 4-15
English lectures			
Lecture 1	Monday	12:30 – 13:20	HSB 4-3
Lecture 2	Tuesday	08:30 – 09:20	IT 4-4
Lecture 3	Thursday	09:30 – 10:20	HSB 4-12
Lecture 4	Friday	08:30 – 09:20	HSB 4-12

#### 6.1.2 Practical times

All practicals will take place in the Informatorium, IT Building.

Day	Official time	Venue	Lab booked
Tuesday	13:30 – 15:00	BROWN	13:30 – 16:30
Wednesday	11:30 – 13:00	RED	11:30 – 14:30
Thursday	14:30 – 16:00	BROWN	14:30 – 17:30
Thursday	15:30 – 17:00	RED	15:30 – 18:30

You need to book a session in which you will attend practicals. You should then always attend the same session for each practical. Particulars on how to book for a session will be made available through the course web site. Details on how each practical will be marked will be communicated with each practical. Typically, you will be required to demonstrate your practical to a marker.

Note that, due to the vast administration it causes, we will not be able to accept practicals after the due date.

## 6.2 Contact time and learning hours

Number of lectures per week: 4.

Laboratory work: Practical sessions are scheduled weekly. A practical assignment will be published on the course web site, which you either have to complete in class or take home to complete and upload for marking later before the specified cut-off date. These assignments are compulsory and should be submitted. No late submissions will be accepted. Marking of assignments may take place in alternate weeks. During that time, you may have to come and demonstrate your practical solution to an assistant and you may have to write a small class test covering the previous week's work.

This module carries a weighting of 16 credits, indicating that on average a student should spend about 160 hours to master the required skills (including time for preparation for tests and examinations).

## 6.3 Semester Tests

Two semester tests will be written during the Engineering test weeks.

Day	Time	Venue
21 August	17:30—19:30	Centenary 2 & 3
12 October	9:30—11:30	IT 4-5 & 4-1

Any absence from semester tests must be supported by an official and valid medical certificate and must be submitted to the lecturer not later than three days after the date of the test.

## 6.4 Engineering Test Weeks

Neither lectures nor practiclas will take place during the scheduled Engineering test weeks. The first of these is the week 17—24 August. The second, 5—12 October.

## 6.5 Web

Announcements, lecture notes and other course materials will be distributed on the course web site. The course web site can be found at the following URL. <http://www.cs.up.ac.za/courses/COS222>

# 7 General

## 7.1 Absence from Formal Evaluation Opportunities

Sick tests for the semester tests will be announced later in the semester. NO opportunity will be made available if you missed a practical assignment during the semester, because the availability of multiple opportunities is considered adequate.

The procedure on special examinations (G.12.5) will be followed in the event of absence from the examination. An application to sit for a special examination, supported by applicable corroborative proof, should be submitted to the faculty (Eng I level 6) within three days of the date of the examination that was not written.

## 8 Plagiarism policy

This department considers plagiarism as a serious offense. Disciplinary action will be taken against student who commit plagiarism. For a formal definition of plagiarism, the student is referred to <http://www.ais.up.ac.za/plagiarism/index.htm>. (From the *UP Main* page follow the *Library* quick link and then the *Plagiarism* link).

Students are encouraged to discuss work with each other. However, each student should hand in his/her own work for assignments. Plagiarism, which also includes copying the work of another student during tests and exams and copying from the Internet, can lead to expulsion from the University.

Even if another student gives you permission to use his/her assignments or other research to hand in as your own, you are not allowed to do it. It is a form of plagiarism. You are also not allowed to let anybody copy your work with the intention of passing it off as his/her own work.