



The University of Southern Queensland

Course specification

The current and official versions of the course specifications are available on the web at <http://www.usq.edu.au/coursespecification/current>.
Please consult the web for updates that may occur during the year.

Description: Operating Systems

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
CSC	2404	90211	2, 2009	ONC	1.00	Toowoomba

Academic group:	FOSCI
Academic org:	FOS003
Student contribution band:	2
ASCED code:	020117

STAFFING

Examiner: Leigh Brookshaw
Moderator: Richard Watson

REQUISITES

Pre-requisite: CSC1401 or USQIT16 or Students must be enrolled in the following Program: MPIT

RATIONALE

An operating system is the most fundamental software in computer systems. It not only serves as a resource manager for various kinds of resources such as the central processing unit, memory and disks, but also extends the functionality of the bare computer hardware to support application softwares such as compilers, database systems, window systems and networking. This course covers the design and implementation of all the major components of operating systems. It bridges the knowledge gap between computer architecture and all other software systems and prepares students for further courses on computer systems such as computer networks and distributed systems.

SYNOPSIS

This course covers the design and implementation of computer operating systems. The major components of operating systems: process management, memory management and file systems are covered in detail. This course uses NACHOS, an instructional operating system developed at the University of California at Berkeley, as the system for case study, laboratory exercises, and programming assignments. Students will have experience of design and implementation of a real operating system and a deep understanding of how operating systems work.

OBJECTIVES

On completion of this course students will be able to:

1. demonstrate an understanding of the basic concepts of operating system components: process and thread, synchronization, file system, memory management and system call implementation; (Exam)

2. demonstrate an understanding of the techniques of implementation of the operating system components described above; (Assignments, Exam)
3. demonstrate an understanding of the source code of NACHOS operating system; (Assignments, Exam)
4. program modules of basic operating system components. (Assignments)

TOPICS

	Description	Weighting (%)
1.	Introduction	2.50
2.	Computer System Structures	2.50
3.	Operating System Structures	5.00
4.	Processes and Threads	15.00
5.	Process Synchronization	15.00
6.	Memory Management	10.00
7.	Systems Calls Implementation	5.00
8.	Virtual Memory	15.00
9.	File System Interface	15.00
10.	File System Implementation	15.00

TEXT and MATERIALS required to be PURCHASED or ACCESSED

ALL textbooks and materials are available for purchase from USQ BOOKSHOP (unless otherwise stated). Orders may be placed via secure internet, free fax 1800642453, phone 07 46312742 (within Australia), or mail. Overseas students should fax +61 7 46311743, or phone +61 7 46312742. For costs, further details, and internet ordering, use the 'Textbook Search' facility at <http://bookshop.usq.edu.au> click 'Semester', then enter your 'Course Code' (no spaces).

Although subject to change, at this stage, it is expected students may require access to the Department of Mathematics and Computing DVDROM SET, 2009 (available from the USQ Bookshop). This DVD set contains Windows software and a complete Linux distribution necessary for this course

Introductory Book 2009, *Course CSC2404 Operating Systems*, USQ Distance and e-Learning Centre, Toowoomba.

Laboratory Book 2009, *Course CSC2404 Operating Systems*, USQ Distance and e-Learning Centre, Toowoomba.

Silberschatz, A, Galvin, P & Gagne, G 2009, *Operating system concepts*, 8th edn, John Wiley & Sons, Hoboken, NJ.

(ISBN: 978-0-470-12872-5)

Study Book 2009, *Course CSC2404 Operating Systems*, USQ Distance and e-Learning Centre, Toowoomba.

REFERENCE MATERIALS

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.

Stallings, W 2004, *Operating Systems: Internals and Design Principles*, 5th edn, Prentice-Hall, Upper Saddle River, NJ.

Tanenbaum, A S & Woodhull, A S 2006, *Operating Systems: Design and Implementation*, 3rd edn, Prentice-Hall, Upper Saddle River, NJ.

STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Examinations	2.00
Lectures	26.00
Private Study	140.00

ASSESSMENT DETAILS

Description	Marks out of	Wtg (%)	Due date
ASSIGNMENT 1	15.00	10.00	10 Aug 2009
ASSIGNMENT 2	15.00	15.00	24 Aug 2009
ASSIGNMENT 3	15.00	10.00	28 Sep 2009
ASSIGNMENT 4	15.00	15.00	19 Oct 2009
2 HR OPEN EXAMINATION	100.00	50.00	END S2 (see note 1)

NOTES

1. Examination dates will be available during the Semester. Please refer to the examination timetable when published.

IMPORTANT ASSESSMENT INFORMATION

- 1 Attendance requirements:
It is the students' responsibility to attend and participate appropriately in all activities (such as lectures, tutorials, laboratories and practical work) scheduled for them, and to study all material provided to them or required to be accessed by them to maximise their chance of meeting the objectives of the course and to be informed of course-related activities and administration.
- 2 Requirements for students to complete each assessment item satisfactorily:
To complete each of the assessment items satisfactorily, students must obtain at least 50% of the marks available for each assessment item.
- 3 Penalties for late submission of required work:
If students submit assignments after the due date without (prior) approval of the examiner then a penalty of 5% of the total marks gained by the student for the assignment may apply

- for each working day late up to ten working days at which time a mark of zero may be recorded. No assignments will be accepted after model answers have been posted.
- 4 Requirements for student to be awarded a passing grade in the course:
To be assured of receiving a passing grade a student must achieve at least 50% of the total weighted marks available for the course.
 - 5 Method used to combine assessment results to attain final grade:
The final grades for students will be assigned on the basis of the aggregate of the weighted marks obtained for each of the summative assessment items in the course.
 - 6 Examination information:
In an Open Examination, candidates may have access to any material during the examination except the following: electronic communication devices, bulky materials, devices requiring mains power and material likely to disturb other students.
 - 7 Examination period when Deferred/Supplementary examinations will be held:
Any Deferred or Supplementary examinations for this course will be held during the next examination period.
 - 8 University Regulations:
Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL <http://www.usq.edu.au/corporateservices/calendar/part5.htm> or in the current USQ Handbook.

ASSESSMENT NOTES

- 9 The due date for an assignment is the date by which a student must despatch the assignment to the USQ. The onus is on the student to provide proof of the despatch date, if requested by the Examiner.
- 10 Students must retain a copy of each item submitted for assessment. If requested, students will be required to provide a copy of assignments submitted for assessment purposes. Such copies should be despatched to USQ within 24 hours of receipt of a request being made.
- 11 In accordance with University policy, the Examiner may grant an extension of the due date of an assignment in extenuating circumstances.

OTHER REQUIREMENTS

- 1 Students will require access to e-mail and internet access to UConnect and the Course home page for this course.
 - 2 Students will be granted a deferred examination only if they perform satisfactorily in all other assessment items.
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