

**Birla Institute of Technology & Science, Pilani
Work-Integrated Learning Programmes Division**

**First Semester 2011-2012
Course Handout**

Course No. : IS ZC362
Course Title : Operating Systems
Instructor : Shubhangi Gowli

Course Description

Introductory concepts of Operating Systems; Process Management, Memory Management, File Systems- Security & Protection, Input- Output principles; Deadlocks detection and avoidance; Distributed computing; Examples of some widely used Operating Systems.

Scope and Objective of the course

- (a) To provide an understanding of the functions of operating systems.
- (b) To provide an insight into functional modules of operating systems.
- (c) To study the concepts underlying the design and implementation of operating systems.

Prescribed Textbook

T1. Silberschatz Abraham and others, Operating System Concepts, Wiley Student Edition, 8th Ed., 2008.

Reference Books:

- R1. William Stallings, "Operating Systems Internals and Design Principles", 6th edition, Pearson Edition, 2009.
- R2. Maurice J. Bach, "The Design of the Unix Operating System", PHI, 1993.
- R3. Andrew S. Tenenbaum, "Modern Operating Systems", 3rd Edition, PHI, 2008.
- R4. Gary Nutt, "Operating Systems- A Modern perspective", 3rd Edition, Pearson, 2000.
- R5. Daniel P. Bovet and others, "Understanding the Linux Kernel", 3rd Edition, O'Reilly, 2008.

Plan of Self-Study:

Week No.	Topic	Reference to Text Book
1.	Introduction	Chapter 1
2.	System Structures	Chapter 2
3 & 4.	Process-Concept	Chapter 3
5.	Multithreaded Programming	Chapter 4
6 & 7	Process Scheduling	Chapter 5
8.	Synchronization	Chapter 6
Syllabus for Mid Semester Test (Closed Book): Topics in Week No. 1 to 8		
9.	Deadlock	Chapter 7
10.	Memory-Management Strategies	Chapter 8
11 & 12.	Virtual-Memory Management	Chapter 9
13.	File System	Chapter 10
14 & 15.	Implementing File Systems	Chapter 11
16.	Secondary – Storage Structure	Chapter 12
Syllabus for Comprehensive Exam (Open Book): All topics given in Plan of Self Study		

Detailed Lecture Plan:

Lecture No.	Topic	Reference to Text Book & Reference Book
1.	Introduction, Types of Operating systems	Chapter 1 (T1)
2.	System calls, System programming, System design and Implementation	Chapter 2 (T1)
3, 4 & 5	Process overview, Process scheduling, Operations on process, Inter process communication	Chapter 3 (T1) Chapter 3 (R1)
Tut 1.	Tutorial – System calls, Process	Chapter 1, 2 & 3 (T1), Chapter 3 (R1)
6.	Multithreaded Programming	Chapter 4 (T1) Chapter 4 (R1)
7 and 8	Process Scheduling	Chapter 5 (T1) Chapter 9 (R1)
9 & 10	Synchronization	Chapter 6
Tut 2.	Tutorial – Multithreading, Process scheduling in Linux 2.6 case study & Synchronization.	Chapter 4, 5 & 6 (T1), Chapter 4 & 9(R1) Chapter 7 (R5)
11 & 12.	Deadlock	Chapter 7 (T1)
13 & 14.	Memory-Management Strategies	Chapter 8 (T1)
14 & 15.	Virtual-Memory Management	Chapter 9 (T1)
Tut 3.	Tutorial – Deadlock, Memory Management & Virtual Memory	Chapter 7, 8 and 9 (T1)
16 & 17.	File System, Buffer cache	Chapter 10 (T1) Chapter 3 (R2)
18 & 19.	Internal representation and Implementation of File Systems	Chapter 11 (T1) Chapter 4 (R2)
20.	Secondary – Storage Structure	Chapter 12 (T1)
Tut 4.	Tutorial – File System, Storage Structure	Chapter 10, 11 and 12 (T1) Chapter 3 and 4 (R2)

Evaluation Scheme:

EC No.	Evaluation Component & Type of Examination	Duration	Weightage	Day, Date, Session, Time
EC-1	Assignment/Quiz	TBA	10%	TBA
EC-2	Mid-Semester Test (Closed Book)*	2 Hours	30%	Sunday, 04/09/2011 (FN)* 10 AM – 12 Noon
EC-3	Comprehensive Exam (Open Book)*	3 Hours	60%	Sunday, 30/10/2011 (FN)* 9 AM – 12 Noon

*** Legend:**

AN: AfterNoon Session; **FN:** ForeNoon Session; **TBA :** To be announced

Closed Book Test: No reference material of any kind will be permitted inside the exam hall.

Open Book Exam: Use of any printed / written reference material (books and notebooks) will be permitted inside the exam hall. Loose sheets of paper will not be permitted. Computers of any kind will not be allowed inside the exam hall. Use of calculators will be allowed in all exams. No exchange of any material will be allowed.

Note:

It shall be the responsibility of the individual student to be regular in maintaining the self study schedule as given in the course handout, attend the online/on demand lectures as per details that would be put up in the BITS WILP website www.bits-pilani.ac.in/dlp-home and take all the prescribed components of the evaluation such as Mid Semester Test and Comprehensive Examination according to the Evaluation Scheme given in the respective Course Handout. If the student is unable to appear for the Regular Test/Examination due to genuine exigencies, the student must refer to the procedure for applying for Make-up Test/Examination, which will be available through the **Important Information** link on the BITS WILP website on the date of the Regular Test/Examination. The Make-up Tests/Exams will be conducted only at selected exam centres on the dates to be announced later.

Instructor-in-Charge