

IT103T

Operating Systems

[Onsite]

Course Description:

This course serves as a survey on typical internal functions of a generic computer operating system. The computer's ability to manage such resources as memory, device, I/O, files and user interfaces, etc., is discussed to rationalize how a computer takes a user's command and accomplishes the task. Some typical user interface of popular operating systems will be introduced.

Prerequisite(s) and/or Corequisite(s):

Prerequisites: TB143T Introduction to Personal Computers or TB145T Introduction to Computing

Credit hours: 4

Contact hours: 60 (36 Theory Hours, 24 Lab Hours)

SYLLABUS

Instructor: _____

Office hours: _____

Class hours: _____

MAJOR INSTRUCTIONAL AREAS

1. Operating System and Its Functions
2. Hardware Resources
3. Numerical Operations and Gating Technology
4. Application Software and Operating Systems
5. Computer Architectures
6. Basic Operations of Operating Systems
7. Working with Different Operating Systems
8. Processes and Management of Data
9. Operating System Internals
10. Operating Systems Beyond Personal Computers
11. Operating Systems and Networking
12. Microsoft Windows Network Operating Systems
13. Linux and Other Network Operating Systems

COURSE OBJECTIVES

1. Explain in general terms the major purposes and functions of a typical operating system.
2. Explain how an operating system manages the various types of memory in a computer.
3. Explain how an operating system manages application software and data.

4. Explain how an operating system manages the interactions between a user and a computer.
5. Demonstrate simple computer operations by using MS-DOS commands.
6. Demonstrate the specific functions of Microsoft Windows and Linux operating systems.
7. Compare and contrast the internal functions of MS-DOS, Windows XP, Linux, and Macintosh operating systems environments.
8. Explain the major components of contemporary Microsoft Windows and the Linux operating systems' user interfaces.
9. Explain the major functions of the Microsoft Windows and Linux network operating systems.
10. Discuss distributed operating systems and the software that controls inter-computer communication.
11. Apply mathematical operations to analyzing computer functions.

Related SCANS Objectives

1. Acquire data to make the best use of it.
2. Process information using computers.
3. Learn about trends in the technological changes in systems.
4. Troubleshoot the problems of a system in an organization.
5. Solve system-related issues as a member of a team.
6. Allocate time for activities, and prepare schedules for various processes.

TEACHING STRATEGIES

The curriculum is designed to promote a variety of teaching strategies that support the outcomes described in the course objectives and to foster high cognitive skills. This course makes use of various media and delivery tools in the classroom.

The teaching strategies include lectures with a demonstration of procedures and an illustration of concepts. The course also employs student-centered lab exercises in a lab environment.

Instructors may provide you extra reading material obtained from the ITT Tech Virtual Library and other sources. You are encouraged to take advantage of the technical references provided by the ITT Tech Virtual Library.

The lectures are based on the content in the course textbook. Each chapter includes exercises to demonstrate concepts and procedures during class and review questions for in-class or homework assignments to test your understanding of the concepts learned.

The lab assignments are based on the content in the course lab textbook. They are designed to test your knowledge on the concepts and procedures covered during the lectures.

COURSE RESOURCES

Student Textbook Package

- Davis, William S., T. M. Rajkumar, Todd Meadors, and Cheryl A. Schmidt.
Operating Systems. U.S.A.: Pearson Custom Solutions, 2007

References and Resources

ITT Tech Virtual Library

Log on to the ITT Tech Virtual Library (<http://www.library.itt-tech.edu/>) to access online books, journals, and other reference resources selected to support ITT Tech curriculums.

■ General References

- Program Links> ITCNS>Professional Organizations>
- Books

The following books are related to this course and are available through the ITT Tech virtual Library> Main Menu> Books> Ebrary>

- Gilster, Ron. *PC Hardware: A Beginner's Guide*. Blacklick, OH, USA: McGraw-Hill Professional, 2002.
- Groth, David. *CompTIA A+ Complete Fast Pass*. Alameda, CA, USA: Sybex, Incorporated, 2006.
- IBM Redbooks. *Using IBM Application Development Tools for z/OS and OS/390*. Durham, NC, USA: IBM, 2004.
- McElhearn, Kirk. *Mac OS X Command Line: Unix Under the Hood*. Alameda, CA, USA: Sybex, Incorporated, 2004.
- Sarkar, Nurul. *Tools for Teaching Computer Networking and Hardware Concepts*. Hershey, PA, USA: Information Science Publishing, 2006.
- Shiva, Sajjan G. *Computer Design Architecture*. 3rd ed. New York, NY, USA: Marcel Dekker Incorporated, 2000.

■ Other Resources

- <http://www.microsoft.com/>
- <http://www.pcguide.com/>
- <http://www.pccomputernotes.com/>
- <http://www.kids-online.net/>
- <http://www.webopedia.com/>
- <http://bwrc.eecs.berkeley.edu/>
- <http://www.robelle.com/>
- <http://cse.stanford.edu/>
- <http://www.ccs.neu.edu/>
- <http://x86.ddj.com/>
- <http://whatis.techtarget.com/>

- <http://www.boohoo.net/>
- <http://www.informit.com/>
- <http://www.osdata.com/>
- <http://www.novell.com/>
- <http://people.msoe.edu/>
- <http://www.cisco.com>
- <http://www.usbyte.com>
- <http://www.windowstlibrary.com/>
- <http://www.linux.org>
- <http://www.redhat.com>

All links to Web references outside the ITT Tech Virtual library are always subject to change without prior notice.

EVALUATION & GRADING

COURSE REQUIREMENTS

1. Attendance and Participation

Regular attendance and participation are essential for satisfactory progress in this course.

2. Completed Assignments

Each student is responsible for completing all assignments on time.

3. Team Participation (if applicable)

Each student is responsible for participating in team assignments and for completing the delegated task. Each team member must honestly evaluate the contributions by all members of their respective teams.

Evaluation Criteria Table

The final grade will be based on the following weighted categories:

CATEGORY	WEIGHT
Assignments	30%
Quiz 1	10%
Quiz 2	10%
Final Exam	20%
Labs	30%
Total	100%

Grade Conversion Table

Final grades will be calculated from the percentages earned in class as follows:

Grade	Percentage	Credit
A	90-100%	4.0
B+	85-89%	3.5
B	80-84%	3.0
C+	75-79%	2.5
C	70-74%	2.0
D+	65-69%	1.5

Grade	Percentage	Credit
D	60-64%	1.0
F	<60%	0.0

COURSE OUTLINE

Notes

- **Unit 1:** All the concepts will be covered in the class; therefore, the specified readings are merely for your reference.
- **For all units, except Unit 1:** It is recommended that you complete the readings before attending the class.

Unit #	Activities for the Unit
1–Introduction to Operating Systems and Computer Hardware	<ul style="list-style-type: none"> • Content Covered: <ul style="list-style-type: none"> ○ <i>Operating Systems</i> <ul style="list-style-type: none"> ▪ Part 1, Chapter 1, “What Is an Operating System?” pp. 1-10 ▪ Part 1, Chapter 2, “Hardware,” pp. 15-39 ▪ Part 1, Appendix A, “Number Systems, Data Types, and Codes, ” pp. 573-578 ▪ Part 2, Chapter 1, “The Operating System Environment,” pp. 633-652 • Lab: 1 • Assignments: 1 and 2
2–Operating System Software, Data, and Hardware	<ul style="list-style-type: none"> • Content Covered: <ul style="list-style-type: none"> ○ <i>Operating Systems</i> <ul style="list-style-type: none"> ▪ Part 1, Chapter 3, “Application Software and Data,” pp. 43-66 ▪ Part 1, Chapter 4, “Linking the Hardware

Unit #	Activities for the Unit
	<p>Components,” pp. 69-88</p> <ul style="list-style-type: none"> ▪ Part 2, Chapter 2, “Basic Operating System Theory,” pp. 668-691 <ul style="list-style-type: none"> • Lab: 1 • Assignment: 1
<p>3–The User Interface and Resources</p>	<ul style="list-style-type: none"> • Content Covered: <ul style="list-style-type: none"> ○ <i>Operating Systems</i> <ul style="list-style-type: none"> ▪ Part 1, Chapter 5, “The User Interfaces, the File System, and the IOCS,” pp. 94-111 ▪ Part 1, Chapter 6, “Resource Management,” pp. 116-141 ▪ Part 2, Chapter 2, “Basic Operating System Theory,” pp. 692-704 • Lab: 1 • Assignment: 1
<p>4–Basic MS-DOS, Windows, and Linux Commands</p>	<ul style="list-style-type: none"> • Content Covered: <ul style="list-style-type: none"> ○ <i>Operating Systems</i> <ul style="list-style-type: none"> ▪ Part 1, Chapter 7, “MS-DOS Commands,” pp. 147-175 ▪ Part 1, Chapter 8, “The Microsoft Windows User Interface,” pp. 177 -207 ▪ Part 1, Chapter 9, “The UNIX/Linux User Interface,” pp. 211-246 ▪ Part 2, Chapter 3, “DOS and the DOS Command Line Interface,” pp. 725-751 • Quiz: 1 • Lab: 1

Unit #	Activities for the Unit
	<ul style="list-style-type: none"> • Assignment: 1
<p>5–The Intel Architecture and MS-DOS Internals</p>	<ul style="list-style-type: none"> • Content Covered: <ul style="list-style-type: none"> ○ <i>Operating Systems</i> <ul style="list-style-type: none"> ▪ Part 1, Chapter 10, “The Intel Architecture,” pp. 251-266 ▪ Part 1, Chapter 11, “MS-DOS Internals,” pp. 269-285 ▪ Part 2, Chapter 3, “DOS and the DOS Command Line Interface,” pp. 752-767 • Lab: 1 • Assignment: 1
<p>6–Internals of Microsoft Windows XP and UNIX/Linux</p>	<ul style="list-style-type: none"> • Content Covered: <ul style="list-style-type: none"> ○ <i>Operating Systems</i> <ul style="list-style-type: none"> ▪ Part 1, Chapter 12, “Windows XP Internals,” pp. 289-311 ▪ Part 1, Chapter 13, “Unix and Linux Internals,” pp. 315- 341 ▪ Part 2, Chapter 7, “Introduction to Microsoft Windows XP,” pp. 1023-1062 • Lab: 1 • Assignment: 1
<p>7–Internals of Macintosh and MVS</p>	<ul style="list-style-type: none"> • Content Covered: <ul style="list-style-type: none"> ○ <i>Operating Systems</i> <ul style="list-style-type: none"> ▪ Part 1, Chapter 14, “Macintosh OS X Internals,” pp. 343-363 ▪ Part 1, Chapter 15, “MVS Internals,” pp. 365-387

Unit #	Activities for the Unit
	<ul style="list-style-type: none"> ▪ Part 2, Chapter 8, "Introduction to UNIX/Linux," pp. 1090-1121 • Quiz: 1 • Lab: 1 • Assignment: 1
<p>8—Networking the Operating System</p>	<ul style="list-style-type: none"> • Content Covered: <ul style="list-style-type: none"> ○ <i>Operating Systems</i> <ul style="list-style-type: none"> ▪ Part 1, Chapter 16, "Data Communication and Networks," pp. 393-413 ▪ Part 1, Chapter 17, "The Internet and the World Wide Web," pp. 417- 450 ▪ Part 2, Chapter 9, "Introduction to Networking," pp. 1159-1176 • Lab: 1 • Assignment: 1
<p>9—Client/Server Operating Systems</p>	<ul style="list-style-type: none"> • Content Covered: <ul style="list-style-type: none"> ○ <i>Operating Systems</i> <ul style="list-style-type: none"> ▪ Part 1, Chapter 18, "Client/Server Information Systems," pp. 455-474 ▪ Part 1, Chapter 19, "Windows 2003 Server," pp. 477-510 ▪ Part 2, Chapter 9, "Introduction to Networking," pp. 1177-1199 • Lab: 1 • Assignment: 1
<p>10—Networking Linux and Novell</p>	<ul style="list-style-type: none"> • Content Covered:

Unit #	Activities for the Unit
NetWare	<ul style="list-style-type: none">○ <i>Operating Systems</i><ul style="list-style-type: none">▪ Part 1, Chapter 20, "Linux Networking," pp. 513-537▪ Part 1, Chapter 21, "Novell NetWare," pp. 541-570▪ Part 2, Chapter 5, "Introduction to Microsoft Windows NT," pp. 871-905• Lab: 1• Assignment: 1
11-Final Exam	<ul style="list-style-type: none">• Review and Final Exam