Course Syllabus
College of Arts, Media and Technology
Software Engineering Department

Operating System and Computer Networks
Second Semester, Academic Year 2024

COURSE INFORMATION

Course Title : 953214 Operating System and Computer Networks

Section : 701,702

Course Type : Core course

Prerequisites : 953211 Computer Organization

Credits : 3 (3-0-6)

Learning Style : (✓) Lecture ( ) Laboratory

Lecturer : Asst. Prof. Dr. Phudinan Singkhamfu (701),
Asst. Prof. Dr. Parinya Suwansrikham (702)

Classroom Schedule : 701 Monday, Thursday, 13.00 -14.30, room ILC-B302
: 702 Monday, Thursday, 13.00 – 14.30 room ILC-B305

Exam Schedule : Mid-term To be arranged.
Final To be arranged

COURSE DESCRIPTION

Foundation of operating system, Concurrency, Process coordination and synchronization, Process scheduling, Temporary storage management. Deadlock, File systems. Virtual machine system, Ethernets, TCP/IP, DNS and DHCP, Parallel processing, Grid processing

COURSE OBJECTIVES

After studied this course students able to understand and explain concepts of operating system and computer networks.

TEXTBOOKS & REFERENCE MATERIALS

- Operating System Concepts, Abraham Silberschatz, Greg Gagne, Peter B. Galvin.
- Computer Networking: A Top-Down Approach, Jame F. Kurose, Keith W. Ross.
- Supplementary materials will be provided in class or uploaded on the course website.

COURSE OUTLINE

Chapter	Contents
Lecture 1 Introduction to Computer System	• Course introduction • Introduction to computer system • Computer system components
Lecture 2 Operating System	• Introduction to operating system • Operating systems - evolution, objectives, and functions • Operating system service • User and operating system interface • System calls • Operating system design and implementation • Operating system structure

Chapter	Contents
Lecture 3 Processes	• Process concept • Process scheduling • Inter-process communication • Threads overview • Multicore programming • Multithreading models
Lecture 4 Input/Output	• I/O hardware • Application I/O interface • Kernel I/O subsystem • Deadlocks
Lecture 5 Memory Management	• Main memory background • Memory allocation • Paging • Swapping • Virtual memory
Lecture 6 File System	• File concept • Access methods • Directory structure • Protection
Lecture 7 Virtual Machine	• Overview • Benefits and features • Types of VMs and implementations • Virtualization and operating-system components
Midterm Exam	
Lecture 8 Introduction of Computer Network	• Internet • Network edge and core • Delay, loss, and throughput in networks • Computer network history
Lecture 9 Application Layer	• Principle of network applications • Web and HTTP • Electronic mail • Peer to Peer file distribution • Video streaming • Socket programming
Lecture 10 Transport Layer	• Transport-layer services • Multiplexing and demultiplexing • UDP • TCP
Lecture 11 Network Layer	• Network layer overview • Router • Internet protocol • Routing algorithms

Chapter	Contents
Lecture 12 Wireless and Mobile Networks	• Wireless links and network characteristics • WiFi • Cellular Networks 4G and 5G
Lecture 13 Network Security	• Network Security overview • Cryptography principles • Message integrity and digital signatures • Securing TCP connections • Network-layer security
Lecture 14 Wrap up class	• Final review • Spare time
Final Exam	

Note: This table content is tentative. It may be changed in the future.

COURSE POLICIES & REGULATIONS

1. In-Class Policy
   - Students are required to attend all classes on-time. Being late for more than 15 minutes may be considered absence from class.
   - Frequent absences from class may disqualify students from their final examinations.
   - Students who have attendances less than 80%, they are not allowed to attend final exam.
   - Students who don't attend final exam will earn grade F.
   - Students are expected to have active participation in the classroom process.
2. Out-of-Class Policy
   - Students are expected to be good self-learner and highly responsible for doing course work in their own time (e.g. textbook reading and homework assignments).
   - Students are expected to be aware of all announcements made in class and posted on the course website.
3. Device Policy
   - All electronic devices, e.g., tablets, smartphones, and notebooks, are not to be used freely and for unrelated classroom activities.
   - When required by certain classroom activities, electronic devices may be used as and when stated by the instructor.
4. Academic Honesty
   - Students are expected to be highly ethical and professional in all their conducts in this course.
   - Plagiarism will not be tolerated.
5. Attendance and submission
   - Students must submit a leave letter before absenting from a class. The leave letter can be CAMT general request from. Students must describe the reason for absence and have their supervisor sign the form.
   - Students must submit the correct work and on time. If late student will get not over half of the maximum score.
6. Exam
   - Students must attend both midterm and final exam. Students, who don't take any exam, will be graded by score that already have.

GRADING SYSTEM

The student final grades will be made up of the following components:

- Class attendance and participation 10 %
- Assignments or homework 20 %
- Quiz 10 %
- Midterm Examination 30 %
- Final Examination 30 %

Total **100 %**

(/) Criteria Reference :

100-80 (A)

79-75 (B+)

74-70 (B)

69-65 (C+)

64-60 (C)

59-55 (D+)

54-50 (D)

0-49 (F)

REMARK

The preceding information may be revised as and when appropriate to adjust for the actual circumstances. All updates will become effective once announced in class or on the official course website.

☐ November, 2024
Phudinan S.
Parinya S.