

Operating Systems

OPERATING SYSTEMS			
Course Code:	21CS44	CIE Marks	50
Teaching Hours/Week (L:T:P:S)	2:2:0:0	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	03
Course Objectives:			
CLO 1. Demonstrate the need for OS and different types of OS CLO 2. Apply suitable techniques for management of different resources CLO 3. Use processor, memory, storage and file system commands CLO 4. Realize the different concepts of OS in platform of usage through case studies			
Teaching-Learning Process (General Instructions)			
These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.			
<ol style="list-style-type: none">1. Lecturer methods (L) need not to be only traditional lecture method, but alternative effective teaching methods could be adopted to attain the outcomes.2. Use of Video/Animation to explain functioning of various concepts.3. Encourage collaborative (Group Learning) Learning in the class.4. Ask at least three HOT (Higher order Thinking) questions in the class, which promotes critical thinking.5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop design thinking skills such as the ability to design, evaluate, generalize, and analyze information rather than simply recall it.6. Introduce Topics in manifold representations.7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.			
Introduction to operating systems, System structures: What operating systems do; Computer System organization; Computer System architecture; Operating System structure; Operating System operations; Process management; Memory management; Storage management; Protection and Security; Distributed system; Special-purpose systems; Computing environments.			
Operating System Services: User - Operating System interface; System calls; Types of system calls; System programs; Operating system design and implementation; Operating System structure; Virtual machines; Operating System generation; System boot			
Process Management: Process concept; Process scheduling; Operations on processes; Inter process communication			
Textbook 1: Chapter - 1,2,3			
Teaching-Learning Process		Active learning and problem solving <ol style="list-style-type: none">1. https://www.youtube.com/watch?v=vBURTt97EkA&list=PLBlNk6fEyqRiVhbXDGLXDk_OQAcuVcp2Q2. https://www.youtube.com/watch?v=a2B69vCtjOU&list=PL3-wYxht4yCjpcfUDz-TgD_ainZ2K3MUZ&index=2	
Module-2			
Multi-threaded Programming: Overview; Multithreading models; Thread Libraries; Threading issues Process Scheduling: Basic concepts; Scheduling Criteria; Scheduling Algorithms; Multiple-processors			

1. The question paper will have ten questions. Each question is set for 20 marks.
2. There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), **should have a mix of topics** under that module.
3. The students have to answer 5 full questions, selecting one full question from each module. Marks scored shall be proportionally reduced to 50 marks

Suggested Learning Resources:

Textbooks

1. Andrew N Sloss, Dominic Symes and Chris Wright, ARM system developers guide, Elsevier, Morgan Kaufman publishers, 2008.
2. Shibu K V, "Introduction to Embedded Systems", Tata McGraw Hill Education, Private Limited, 2nd Edition.

Reference Books

1. Raghunandan. G.H, Microcontroller (ARM) and Embedded System, Cengage learning Publication, 2019
2. The Insider's Guide to the ARM7 Based Microcontrollers, Hitex Ltd., 1st edition, 2005.
3. Steve Furber, ARM System-on-Chip Architecture, Second Edition, Pearson, 2015.
4. Raj Kamal, Embedded System, Tata McGraw-Hill Publishers, 2nd Edition, 2008.

Weblinks and Video Lectures (e-Resources):

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning


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