National Institute of Technology Calicut
Department of Computer Science and Engineering

Monsoon Semester 2020
Course Plan for CS3003D: Operating Systems

Credits: 4 Class: B. Tech. (V) [Batches A & B] Slot: A

Lecture Hours: Mon. (8 – 9 am); Wed. (9 – 10 am); Fri. (10:15 – 11:15 am)

Instructor Name: Dr. Saidalavi Kalady
Office: CSE-203B
Telephone: 0495-2286809
Email: said@nitc.ac.in

Dr. Vasudevan A. R.
MB-209D
0495-2286819
vasudevanar@nitc.ac.in

Weekly Lesson Plan

1) Review of operating system strategies - resources - processes - threads - objects - operating system organization
2) OS design factors - functions and implementation considerations; devices - characteristics - controllers - drivers
3) Device management - approaches - buffering - device drivers - typical scenarios such as serial communications - storage devices
4) Process management - system view - process address space - process and resource abstraction - process hierarchy
5) Scheduling mechanisms - uniprocessor and multiprocessor scheduling-various strategies - synchronization - interacting & coordinating processes
6) Semaphores - deadlock - prevention - avoidance - detection and recovery
7) Memory management - issues - memory allocation - dynamic relocation - various management strategies
8) Virtual memory - paging - issues and algorithms
9) Segmentation - typical implementations of paging & segmentation system
10) File management - files - implementations - storage abstractions - memory mapped files - directories and their implementation
11) Protection and security - policy and mechanism - authentication - authorization - case study of Unix and Linux kernel.
12) Virtual machines – virtual machine monitors – issues in processor, memory and I/O virtualization, hardware support for virtualization.

Reference Books

- A. Silberschatz, P. B. Galvin, and G. Gagne, Operating System Principles, 9/e, John Wiley,2013.
- W. Stallings, Operating Systems: Internals and design Principles, 7/e, Pearson Education, 2012.
- A. S. Tanenbaum, Modern Operating Systems, 4/e, Pearson Education, 2017.
- Charles Crowley, Operating Systems: A Design-Oriented Approach, McGraw Hill Publication, 2017
- G. J. Nutt, Operating Systems - A Modern Perspective, 3/e, Pearson Education, 2009.

Evaluation Scheme

Assignment	: 10 (preparation of lecture notes by individual students in a group of five on a topic delivered by the faculty member)
Mid-Term	: 10 (online)
Programming Assignments & Quizzes	: 6 (10 marks each)
End semester	: 20

Grading Policy

- *Grading will be relative*
- Deadline for submission of assignment and quizzes should be adhered to
- Makeup examination for mid-term will be given only in genuine cases where written permission from the HoD is obtained
- All issues regarding valuation of mid-term exam, quizzes, and assignment must be resolved within two days after the marks are announced

Standard of Conduct

Each student is expected to adhere to high standards of ethical conduct, especially those related to cheating. Any academic dishonesty will result in zero marks in the corresponding exam or quiz and will be reported to the department council for record keeping and for permission to assign F grade in the course. CSE Department policy on academic integrity is available at: http://minerva.nitc.ac.in/cse/sites/default/files/attachments/news/Academic-Integrity.pdf

*****