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Course Design
Name of the Academic Program: B.Tech. in CSE
Course Code: CS3.301 Title of the Course: Operating Systems and Networks
L-T-P: 3-1-1. Credits: 4
(L= Lecture hours, T=Tutorial hours, P=Practical hours)

1.Prerequisite Course / Knowledge
Digital Logic Design, Computer Organization, Knowledge of a programming languate

2. Course Outcomes (COs)
Objective: Man is a tool making animal. For every tool, there is a "machine part" and
"operating part". The operating part abstracts the machine part in terms of simple services by
hiding the details of the machine. A computer is also a tool that contains "machine part" and
"operating part". The operating part of a computer is called as "operating system". The
operating system abstracts the machine part of computer system in terms of simple services
by hiding the details of the machine (hardware). The objectives of this course is to learn the
important concepts, which have been evolved for building modern operating systems and
networking protocols.

The course Outcomes (COs) are as follows.

After completion of this course successfully, the students will be able to,

CO-1. Explain the concepts of several modern computer operating systems (SOLARIS,
LINUX, WINDOWS, MAC, Adroid,…) and network based services (Skype, Google
Hangouts,..)
CO-2: Implement the task on the top of given operating system in an efficient manner based
on process and thread framework available in the given operating system.
CO-2. Prescribe the appropriate scheduling/synchronization/memory management/virtual
memory/protection module for a given application.
CO-4. Architect the new application by selecting the appropriate system calls of the given
operating system services.
CO-5. Develop a network-based application by exploiting networking related system calls.

3.Mapping of Course Outcomes (COs) with Program Outcomes (POs) and Program Specific
Outcomes (PSOs) – Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	3	2	1	1	2	-	-	-	3	2	2	3	3	2	1	2
CO2	3	3	3	2	2	-	1	-	2	2	2	3	2	1	2	2
CO3	3	3	3	2	2	2	1	-	3	2	2	3	3	2	1	2

CO4	2	2	3	2	2	3	2	-	3	2	2	2	3	3	2	3
CO5	3	2	1	1	2	-	-	-	3	2	2	3	3	2	1	2

Note '3' in the box for 'High-level' mapping, 2 for 'Medium-level' mapping, 1 for 'Low'-level' mapping

4.Detailed Syllabus
Unit 1: Introduction, Process and thread management (9 hours);
Unit 2: CPU scheduling, Process Synchronization, Deadlocks (9 hours);
Unit 3: Memory management, Virtual memory (9 hours);
Unit 4: File systems, Protection and Security (3 hours);
Unit 5: Networking (9 hours);

- Five mini projects related to the above syllabus will be done by students in the laboratory

References:

1. Silberschatz, A, Galvin, P, Gagne, G. Operating system concepts, Addison-Wesley, 2018
2. Computer Networks (5th Edition) Andrew S. Tanenbaum, David J. Wetherall Prentice Hall, 2013
3. Wlliam Stallings, Operating Systems, Prentice-Hall, 2018.
4. Charles Crowley, Operating systems: A design oriented approach, Tata McGraw-Hill, 2017.
5. Tanenbaum, A., Modern Operating Systems, Prentice-Hall, Second Edition (latest edition, 2015.
6. Key research papers related to UNIX

5. Teaching-Learning Strategies in brief
Lectures by integrating ICT into classroom teaching, weekly tutorials involving problem solving and active learning by students and Project-based Learning by doing 5 mini-projects in laboratory by the students

6.Assessment methods and weightages in brief
Two Class Room tests: 10 marks; Mid Semester Examination in theory: 20 marks , End Semester Examination in Theory: 40 marks, Assessment of 5 mini projects in Laboratory: 30 marks
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