1. **Course Number and Course Title:**
   CMP 310 – Operating Systems

2. **Credits hours**
   3-1-3

3. **Prerequisites and/or co-requisites**
   Prerequisites: CMP 305 (Data Structures and Algorithms), and COE 251 (Introduction to Computer Systems) or COE 241 (Microcontrollers: Programming and Interfacing)
   Prerequisite/concurrent: N/A
   Co-requisites: N/A

4. **Name and Contact Information of Instructor:**
   Dr. Gerassimos Barlas

5. **Course Description**
   Introduces operating systems, process management, process scheduling, interprocess communications, memory management techniques, virtual memory, I/O management, deadlock avoidance, file system design and security issues. Employs examples of commonly used operating systems (e.g., Windows and UNIX).

6. **Textbook, title, author, and year**
   Textbook:
   - Abraham Silberschatz, Peter B. Galvin and Greg Gagne, "Operating System Concepts", 9e, 2013, ISBN 13: 9781118093757, Wiley

   Other supplemental material:
   - None

7. **Course Learning Outcomes**
   Upon completion of the course, students will be able to:
   1. Describe objectives and characteristics of modern operating systems.
   2. Identify problems related with process management and programming of concurrent processes
   3. Apply various techniques to enforce mutual exclusion and avoid deadlock in concurrent processes
   4. Describe and analyze memory management concepts, including fetching, replacement and resident set management.
   5. Identify the different types of processor scheduling algorithms, and evaluate major short term scheduling algorithms.
   6. Explain the organization of I/O system, I/O buffering, and disk scheduling
   7. Evaluate techniques for file organization and file access.

8. **Teaching and Learning Methodologies:**
   Methods include lectures, lab, homework, quizzes, exams and class discussions.

9. Course Topics and Schedule:

Topics/Activity	Weeks
Introduction	Week 1
O.S Structure	Week 2
Processes and Process Management	Week 3
Threads	Week 4
Concurrency: semaphores	Week 5
Concurrency: semaphores	Week 6
Concurrency: monitors	Week 7
Concurrency: monitors	Week 8
Scheduling, Real-time scheduling	Week 9
Deadlocks: avoiding & detecting. Starvation	Week 10
Memory management, partitioning, paging, segmentation	Week 11
Virtual Memory	Week 12
Disk Scheduling & RAID	Week 13
File systems	Week 14
Protection and security	Week 15
Final Exam	Week 16