**Syllabus**

1. **Course Number and Name**

CPE 436/536 Internals of a Modern Operating System

1. **Credits and Contact Hours**

3 Credits, 2 x 1housr 20 minute lectures

1. **Instructor/Course Coordinator**

* ***Instructor:* J. Kulick, Professor, M. Milenkovic, Instructor, ECE Dept.**
* ***Course Coordinator*:** J. Kulick, Professor, ECE Dept

1. **Textbook(s) (title, author, publisher, year)**

* Linux Kernel Architecture, W. Maurer, WROX press, 2008
* Linux Kernel Development, 3rd Edition, R. Love, Pearson, 2010
* Understanding the Linux Kernel, D. Bovet, M Cesati, O’Reilley, 2005

*You will be expected to locate relevant material on the web as needed to complete your assignments.*

1. **Specific Course Information**
2. *Catalog Description*

In-depth study of the design of modern operating systems such as Unix, NT and Linux. Emphasis on the internals and implementation details of interrupt processing, real-time clocks, device independent I/O, process management, memory management, file management.

1. *Prerequisites or Co-requisites*

434/534

1. *Required, Elective or Selected Elective Course*

Elective

1. **Specific Course Goals**
   1. *Outcomes of Instruction*

to understand how modern operating systems are constructed,

to understand issues with security and safety related to operating system design,

to participate in lifelong learning and communications

* 1. *Criterion 3 Outcome Addressed by this Course*

C, an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

G, an ability to communicate effectively

I a recognition of the need for, and an ability to engage in life-long learning

1. **List of Topics Covered**

* Process Management and Scheduling
* Memory Management
* Virtual Process Memory
* Locking and Interprocess Communication
* Device Drivers
* Modules
* The Virtual File System
* Extended File Systems
* Security and Access Control Lists
* Networks
* Kernel Time Management
* Paging and Synchronization

1. **Grading**

**CPE 436 5 assignments/projects 10 points (50)**

**Two exams @20 points (40)**

**Essay/research paper (10)**

**CPE 536 5 assignments/projects 10 points (50)**

**Two exams @10 points (20)**

**Essay/research paper (10)**

**Research Project (securing linux) (20)**