CYB 5285 Secure Operating Systems

Catalog Description: (3 credits) This course studies security within operating systems. Students will obtain an understanding of design challenges, software mechanisms, and issues affecting operating system security. Students will be able to compare operating systems on their security merits, tell how to design and build secure operating systems. Case studies will be used throughout the course.

Prerequisites by Topic: CYB 5272 and CSE 4001

Textbook and References (not required):

Course Outcomes:
1. Identify secure and unsecure operating system features
2. Comparatively evaluate operating system security mechanisms
3. Analyze threats to operating system security
4. Evaluate trust in operating systems
5. Describe access control mechanisms
6. Compare key security features in systems such as Unix, Linux, and Windows
7. Describe the concept of covert channels
8. Describe information flow processes
9. Evaluate issues related to operating systems within virtual machines
10. Be aware of system-level assurance procedures and guidelines

Topics Covered:
1. Operating system fundamentals
2. Objectives of secure operating systems
3. Trust in operating systems
4. Threats to operating systems
5. Access control
6. Security in Unix/Linux
7. Security in Windows
8. Information flow
9. Covert channels
10. Virtual machines
11. Operating system assurance
12. Case studies

Format and Teaching Methods
Lectures, readings, projects, assignments, and examinations