

Operating Systems Security

CS466 : 3 (3, 0, 0)

Prerequisites:

- CS322 Operating Systems
- CS330 Computer Networks

Objectives:

1. Summary of the main learning outcomes for students enrolled in the course.
This course aims to provide students with an academic as well as practical understanding of operating-system security management to enable them to manage practical firm securely.

Upon successful completion of this course, students will be able to:

- (a) Gaining factual knowledge (terminology, classifications, methods, trends) about OS Security.
 - (b) Learning fundamental principles, generalizations, or theories the govern security in different Operating Systems.
 - (c) Developing specific skills, competencies, and points of view needed by professionals in the field most closely related to this course.
2. Briefly describe any plans for developing and improving the course that are being implemented. (eg increased use of IT or web based reference material, changes in content as a result of new research in the field)
Yes, I figured out our students do not have deep enough knowledge of UNIX. I have modified the plan to give them more training on such topics.

Course Description:

- General description in to be used for the Bulletin or Handbook

This course deals with security concepts and procedures applied in operating systems. Students will examine security concepts that are uniquely implemented into operating systems. Also, this course will enable practical hands-on approach when testing operating system security techniques.

In this course, we teach students to protect computer operating systems by demonstrating server support skills and designing and implementing OS security systems, identify security threats, vulnerabilities, and monitor network security implementations. Such a course should give skills to the students to implement industry standard secure servers side managed operations as well as clients.

Syllabus:

1. Introduction to Operating System and Network Security
2. Access Control
3. Confidentiality
4. Integrity
5. Availability
6. Viruses, Worms, and Malicious Software
7. Security Policies (Including Practical Unix OS)
8. Security Models
9. Windows Security
10. Special Topics: Malicious Logic
11. Special Topics: Vulnerability Analysis
12. Special Topics: Auditing

References:

- 1- Required Textbox :
 - Computer Security: Art and Science, Matt Bishop, Addison-Wesley, 2002
 - Guide to Operating Systems Security, Michael Palmer, THOMPSON/Course Technology. ISBN: 0-619-16040-3 © 2004
- 2- Essential References
 - Computer Security Written by: Dieter Gollma ISBN: 978-1-119-95877-2 Publisher: John Wiley&Sons, Incorporated.
 - Cryptography and Network Security Principles and Practices, By William Stallings
 - Understanding Cryptography Written by: Christof Paar; Jan Pelzl ISBN: 978-3-642-04100-6 Publisher: Springer.