

## **Lectures for the course: Information and System Security (IT 60112)**

### **Week 1**

#### **Lecture 1 – 03/01/2006**

- Introduction to the course
- Evaluation Criteria Explained
- Attendance Requirement Stated
- Text Books and Research Materials to form part of the syllabus
- Class Test dates announced

#### **Lecture 2 – 05/01/2006**

- Computer Security Fundamentals – Confidentiality, Integrity and Availability
- Threats and Attacks
- Policy and Mechanism
- Secure, Broad and Precise Mechanisms

### **Week 2**

#### **Lecture 3 – 09/01/2006**

- Introduction to Access Control Matrix

#### **Lecture 4 – 10/01/2006**

- Own, Control and Copy rights
- Transfer rights
- Access Control by Boolean Expression evaluation

#### **Lecture 5 – 12/01/2006**

- History of research in System Security
- Importance of Models in representing Protection States of a Systems
- HRU Model - Introduction

### **Week 3**

#### **Lecture 6 – 17/01/2006**

- HRU Model State Transitions
- Safety in HRU Model

**Lecture 7 – 17/01/2006 (afternoon)**

- Take Grant Protection Model

**Lecture 8 – 19/01/2006**

- Bell La Padula Model

**Week 4**

**Lecture 9 – 24/01/2006**

- Bell La Padula Model (Completed)

**Week 5**

**Lecture 10 – 30/01/2006**

- Integrity Policies
- Low Water Mark Policy of Biba

**Lecture 11 – 31/01/2006**

- Class Test 1 was conducted

**Lecture 12 – 02/02/2006**

- Ring Policy of Biba
- Biba's Strict Integrity Policy
- Class Test scripts were shown

**Week 6**

**Lecture 13 – 06/02/2006**

- Lipner's Integrity Policy
- Introduction to Clark Wilson's Policy

**Lecture 14 – 07/02/2006**

- Clark Wilson's Policy
- Chinese Wall Policy

**Week 7**

### **Lecture 15 – 13/02/2006**

- Authentication
- Components of an authentication system
- Types of attacks on a password based authentication system

### **Lecture 16 – 14/02/2006**

- System generated Passwords
- User selected passwords
- Password checking
- Challenge-Response
- One-time Passwords - SKeys

### **Week 8**

Mid Sem Exam

### **Week 9**

### **Lecture 17 – 27/02/2006**

- Introduction to Kerberos

### **Lecture 18 – 28/02/2006**

- Kerberos Ver. 4
- Realms and Multiple Kerber

### **Lecture 19 – 02/03/2006**

- Secure System Design Principles

### **Week 10**

### **Lecture 20 – 09/03/2006**

- Introduction to Assurance
- Assurance at different levels

### **Lecture 21 – 09/03/2006 Evening**

- Formal and Informal Verification
- Review
- Configuration Management

- Different Life Cycle Models and their impact on Assurance

## **Week 11**

### **Lecture 22 – 14/03/2006**

- Evaluating Systems
- TCSEC

### **Lecture 23 – 16/03/2006**

- Overview of other Evaluation Standards
- ITSEC
- CC
- SSE-CMM

### **Lecture 23 – 16/03/2006 (Evening)**

- Malicious Logic
- Trojan Horse
- Virus

## **Week 12**

### **Lecture 24 – 20/03/2006**

- Virus Prevention Methods
- Flow Metric

### **Lecture 25 – 21/03/2006**

- Methods for Limiting Spread of Virus
- Worms, Bacteria, Logic Bomb

### **Lecture 26 – 23/03/2006**

- Vulnerability Analysis – Introduction
- Levels of penetration studies
- Flaw hypothesis methodology

## **Week 13**

### **Lecture 27 – 30/03/2006**

- Penetration of a Burroughs System

**Class Test 2 was held here**

## **Week 14**

### **Lecture 28 – 03/04/2006**

- Class test 2 answer scripts were shown
- Social Engineering for penetration

### **Lecture 29 – 04/04/2006**

- Auditing
- Components of an auditing system
- State based and Action based logging

### **Lecture 30 – 06/04/2006**

- Logging Methods
- Log Sanitization
- Log Browsing

## **Week 15**

No Class

## **Week 16**

### **Lecture 31 – 17/04/2006**

- No Class

### **Lecture 32 – 18/04/2006**

- Intrusion Detection Systems
- Misuse Detection
- Anomaly Detection
- Base Rate Fallacy

### **Lecture 33 – 20/04/2006**

- Summary and Feedback