

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

Week 1

Lecture 1 – 06/01/2017

- Introduction to the course
- Confidentiality, integrity and availability
- Evaluation Guidelines
- Term paper and Term project guidelines

Week 2

Lecture 2 – 11/01/2017

- Threats and attacks
- Policy and mechanism
- Assumptions and trust
- Assurance
- Goals of security
- Operational issues
- People issues

Lecture 3 – 12/01/2017

- Protection systems
- Access control matrix
- Access control by Boolean expression evaluation

Lecture 4 – 13/01/2017

- Own right, copy right
- HRU model

Week 3

Lecture 5 – 18/01/2017

- State transition in HRU model

Lecture 6 – 19/01/2017

- State transition in HRU model
- Leakage of right

- Safety in HRU model
- Undecidability result

Lecture 7 – 20/01/2017

- HRU Model - conclusions
- Take Grant protection model

Week 4

Lecture 8 – 25/01/2017

- Safety in TGP

Lecture 9 – 27/01/2017

- TGP – Summary
- Bell-LaPadula Model

Week 5

Lecture 10 – 01/02/2017

- Bell-LaPadula Model

Lecture 11 – 02/02/2017

- Biba's model
- Lipner's model

Lecture 12 – 03/02/2017

- Class test held

Week 6

Lecture 13 – 08/02/2017

- Lipner's model
- Clark-Wilson's model

Lecture 14 – 09/02/2017

- Chinese Wall security policy
- Class test scripts shown and feedback given

Week 7

- Mid sem exam held

Week 8

Lecture 15 – 22/02/2017

- Authentication
- Password based authentication
- Dictionary attacks

Lecture 16 – 23/02/2017

- CAPTCHAs
- One time passwords

Lecture 17 – 24/02/2017

- Kerberos

Week 9

Lecture 18 – 01/03/2017

- Kerberos realms and multiple kerberis
- Secure system design principles

Lecture 19 – 02/03/2017

- Secure system design principles
- Mid sem scripts shown and feedback given

Lecture 20 – 03/03/2017

- RBAC
- RBAC0, 1, 2, 3

Week 10

Lecture 21 – 06/03/2017

- ARBAC

- Introduction to role mining

Lecture 22 – 08/03/2017

- Role mining problems
- Basic RMP, Delta-approx. RMP, Min-noise RMP

Lecture 23 – 09/03/2017

- Database tiling for solving Basic RMP
- MBC approach for solving Basic RMP

Lecture 24 – 10/03/2017

- Temporal RBAC

Week 11

Lecture 25 – 15/03/2017

- TRBAC
- Other extensions of RBAC
- Research problems in RBAC and its variants

Lecture 26 – 16/03/2017

- Attribute based Access Control

Lecture 27 – 17/03/2017

- Assurance
- Informal, semi-formal and formal methods for assurance

Week 12

Lecture 28 – 22/03/2017

- Effort and cost estimate
- Productivity
- Fixed cost vs T&M basis projects

Lecture 29 – 23/03/2017

- Peer review
- Code walkthrough

- Other different types of metrics
- Configuration management
- Productivity
- Internal audit and external audit

Lecture 30 – 24/03/2017

- Requirements traceability
- Defect leakage

Week 13

Lecture 31 – 29/03/2017

- Formal methods of assurance

Lecture 32 – 30/03/2017

- Demo of RBAC security analysis using Alloy

Lecture 33 – 31/03/2017

- Evaluating systems
- General Methodology
- TCSEC

Week 14

Lecture 34 – 03/04/2017 (Extra class)

- Tutorial

Lecture 35 – 05/04/2017

- ITSEC
- CC

Lecture 36 – 06/04/2017

- Intrusion detection systems
- NIDS, HIDS, DIDS, AppIDS
- Misuse detection
- Anomaly based IDS

Lecture 37 – 07/04/2017

- Anomaly based IDS
- Base rate fallacy
- Course Summary

Week 15

Lecture 38 – 12/04/2017

- Tutorial

Lecture 39 – 13/04/2017

- Tutorial