Course Title: Security Technology

Course Code: EE4215

Units: 3

Level: B4

Course Aims & Objectives:
This elective course is aimed at providing students with the knowledge in computer security technologies. Principles of cryptography will be discussed and techniques for computer data, communications and card technologies will be covered in depth. Representative methods used in magnetic card and smart card will be described as examples.

Intended Learning Outcomes:
On completion of this course, the students will be able to:

1. Identify the conceptual difference between threats, vulnerabilities and attack.
2. Recognize techniques and mechanisms for safeguarding an attack and the problem solving skill of a system security engineer.
3. Identify the use preventive and logistic techniques for safeguarding a computer system.
4. Describe the current techniques and anticipated trends in Internet security development.
5. Analyse various security issues in different card technologies, and explain the security techniques used in smart card and flow of the security assessment of a computer system and smart card.

Syllabus:
Threats to Computer Systems
Threats, Vulnerabilities and Attacks, System security Engineering, Threat trees, Categorisation of Attacks, Trojan Horse and Viruses, Common Attack Methods.

Preventive Security Approaches
Auditing and Intrusion Detection, Identification and Authentication and Encryption.

Logistic Security Approaches

Computer Security Applications
Network Security Methods, Data Base Security Methods, Trusted Network Interpretations.

Card Security Applications
Smart Card ISO standards, Security Methods – encryption, key management and access control.

Laboratory Experiment:
- Use of CASE tools for digital design
- Design of Combinational Circuit
- Design of Synchronous Sequential Circuit
- Logic Synthesis using FPGA

**Teaching pattern:**

*Duration of course:* 1 semester

*Suggested lecture/tutorial/laboratory mix:*

*Lecture Hour:* 26 hours

*Tutorial Hour*:* 13 hours

*may be substituted with lectures/laboratories

**Assessment pattern:**

*Examination duration:* 2 hours, at the end of the semester

*Percentage of coursework, examination, etc.:* 30 % CW; 70 % Exam

For a student to pass the course, at least 30% of the maximum mark for the examination must be obtained, and a laboratory attendance of at least 75% recorded.

**Pre-requisites: (please quote course code & title)**

MA2149 Mathematical Analysis

or

MA2170 Linear Algebra and Multi-variable Calculus

**Pre-cursor: (please quote course code & title)**

Nil

**Exclusive Course: (please quote course code & title)**

Nil

**Equivalent Courses: (please quote course code & title)**

Nil

**Equivalent to the Old Course Code and Title: (please quote course code & title)**

IT4703 Security Technology

**Textbooks:**


**Reference Books:**


