



Xi'an Jiaotong-Liverpool University

西交利物浦大學

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# **Department of Communications and Networking**

## **MODULE HANDBOOK**

<h1><b>CAN304</b></h1> <h2><b>Computer Systems Security</b></h2>
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*Jie Zhang*

**Semester 2**

**2021-2022**

## **SECTION A: Basic Information**

### **□ Brief Introduction to the Module**

This module to present the goals of data confidentiality, integrity and availability in a comprehensive manner so as to reflect the state of the art, and study the principal methods and techniques involved in designing and implementing secure systems.

### **□ Key Module Information**

Module name: Computer Systems Security

Module code: CAN304

Credit value: 5

Semester in which the module is taught: 2

Programmes on which the module is shared:

BEng Computer Science and Technology

BSc Information and Computing Science

BSc Information Management and Information Systems

### **□ Module Leader and Contact Details**

Name: *Jie Zhang*

Email address: *Jie.Zhang01@xjtlu.edu.cn*

Office telephone number: 88167754

Room number and office hours: *EE522, 2:00-4:00PM, Thursday*

Preferred means of contact: *Email*

### **□ Additional Teaching Staff and Contact Details**

## **SECTION B: What you can expect from the module**

### **□ Educational Aims of the Module**

The aims of this module are to:

1. Present the goals of data confidentiality, integrity and availability in a comprehensive manner so as to reflect the state of the art.
2. Study the principal methods and techniques involved in designing and implementing secure systems.

### **□ Learning Outcomes**

A. Demonstrate understanding of a range of problems in computer security, and the available solutions and tradeoffs;

B. Effectively describe and analyse secure methods for the transmission and storage of data

### **□ Assessment Details**

Sequence	Method	Assessment Type (Exam or CW)	Learning outcomes assessed (use codes under Learning Outcomes)	Duration	Week	% of Final Mark	Resit (Y/N/S)
001	Assessment Task	CW	ALL		11	20%	N
002	Written Exam	Exam	ALL	2 hours		80%	N

### **□ Methods of Learning and Teaching**

This module consists of 24 hours of formal lectures and 8 hours of practical lab work. On average, the number of contact hours is 3 each week. In addition, students will be expected to devote unsupervised time to solving continuous assessment tasks and private study. Private study will provide time for reflection and consideration of lecture

material and background reading. Coursework assessment will be used to test to what extent practical skills have been learnt.

## ❑ Syllabus & Teaching Plan

Week Number and/or Date	Lecture/Seminar/Field Trip/Other	Topic/Theme/Title
Week 1	Lecture 1	Introduction
Week 2	Lecture 2	Fundamentals of cryptography 1: Symmetric Crypto
Week 3	Lecture 3, Lab 1	Fundamentals of cryptography 2: MAC
Week 4	Lecture 4, Lab 2	Fundamentals of cryptography 3: Asymmetric Crypto
Week 5	Lecture 5, Lab 3	Cryptography in practice: Security Protocols
Week 6	Lecture 6, Lab 4	User Authentication
Week 7	Midterm	No teaching
Week 8	Lecture 7, Lab 5	Access Control
Week 9	Lecture 8, Lab 6	Attacks and defences 1: Malicious Software
Week 10	Lecture 9, Lab 7	Attacks and defences 2: DoS Attacks
Week 11	Lecture 10, Lab 8	Attacks and defences 3: Intrusion Detection
Week 12	Lecture 11, Presentation	Attacks and defences 4: Firewall & Intrusion Prevention
Week 13	Lecture 12, Presentation	Advanced topics: Cloud, IoT, Edge Security
Week 14	Revision	Revision

## ❑ Reading Materials

### Reference textbook

Title	Author	ISBN/Publisher
INTRODUCTION TO MODERN CRYPTOGRAPHY	JONATHAN KATZ & YEHUDA LINDELL	9781466570269 /CRC PRESS
COMPUTER SECURITY: ART AND SCIENCE	MATT BISHOP	9780201440997 /ADDISON WESLEY
COMPUTER SECURITY: PRINCIPLES AND PRACTICE	WILLIAM STALLINGS & LAWRIE BROWN	978-0134794105 / PEARSON

## **SECTION C: Additional Information**

### ❑ Attendance

Students who are able to be on campus are reminded of the Academic Policy requiring no less than 80% attendance at classes. Failure to observe this requirement may lead to failure or exclusion from retake examinations in the following year.

❑ **Student Feedback**

The University is keen to elicit student feedback to make improvements for each module in every session. It is the University policy that the preferred way of achieving this is by means of an Online Module Evaluation Questionnaire Survey. Students will be invited to complete the questionnaire survey for this module at the end of the semester.

**You are strongly advised to read the policies mentioned below very carefully, which will help you better perform in your academic studies. All the policies and regulations related to your academic study can be found in 'Student Academic Services' section under the heading "Policies and Regulations" on [E-bridge](#).**

❑ **Plagiarism, Cheating, and Fabrication of Data.**

Offences of this type can result in attendance at a University-level committee and penalties being imposed. You need to be familiar with the rules. Please see the "Academic Integrity Policy" available on e-Bridge in the 'Student Academic Services' section under the heading 'Policies and Regulations'.

❑ **Rules of submission for assessed coursework**

The University has detailed rules and procedures governing the submission of assessed coursework. You need to be familiar with them. Details can be found in the "Code of Practice for Assessment" available on e-Bridge in the 'Student Academic Services' section under the heading 'Policies and Regulations'.

❑ **Late Submission of Assessed Coursework**

The University attaches penalties to the late submission of assessed coursework. You need to be familiar with the University's rules. Details can be found in the "Code of Practice for Assessment" available on e-Bridge in the 'Student Academic Services' section under the heading 'Policies and Regulations'.

❑ **Mitigating Circumstances**

The University is able to take into account mitigating circumstances, such as illness or personal circumstances which may have adversely affected student performance on a module. It is the student's responsibility to keep their Academic Advisor, Programme Director, or Head of Department informed of illness and other factors affecting their progress during the year and especially during the

examination period. Students who believe that their performance on an examination or assessed coursework may have been impaired by illness, or other exceptional circumstances should follow the procedures set out in the “Mitigating Circumstances Policy”, which can be found on e-Bridge in the ‘Student Academic Services’ section under the heading ‘Policies and Regulations’.

❑ **Learning Mall**

Copies of lecture notes and other materials are available electronically through Learning Mall, the University’s virtual learning environment.