HONG KONG BAPTIST UNIVERSITY
COURSE OUTLINE

1. COURSE TITLE

Data Security and Privacy

2. COURSE CODE

COMP7170

3. NO. OF UNITS

3 Units

4. OFFERING DEPARTMENT

Master of Science in Data Analytics and Artificial Intelligence

5. PREREQUISITES

Nil

6. MEDIUM OF INSTRUCTION

English

7. AIMS & OBJECTIVES

To provide students a solid understanding of data security and privacy concepts and their use cases. To explain basic data encryption, integrity protection, privacy protection techniques and advanced data security and privacy techniques. To discuss data security and privacy practice issues.

8. COURSE CONTENT

I. Overview of Data Security and Privacy
- Data Security Concepts
- Data Privacy Concepts
- Use Cases

II. Data Encryption Techniques
- Symmetric Encryption
- Asymmetric Encryption
- Key Distribution and Management

III. Integrity Protection Techniques
- Cryptographic Hash Functions and Message Authentication Codes
- Authentication
- Digital Signatures

IV. Privacy Protection Techniques
- Privacy Attacks and Disclosure Risks
- K-anonymity Model
- Privacy Models beyond K-anonymity
- Differential Privacy

V. Advanced Topics in Data Security and Privacy
- Access Control
- Database and Wed Data Security
- Privacy-Preserving Data Mining

VI. Data Security and Privacy Practice
- Cryptographic Tools for Data Security and Privacy Protection
- Policies and Regulations

9. COURSE INTENDED LEARNING OUTCOMES (CILOs)

CILO	By the end of the course, students should be able to:
CILO 1	Describe data security and privacy concepts
CILO 2	Explain basic data encryption, integrity protection, and privacy protection techniques
CILO 3	Explain advanced data security and privacy techniques such as access control and cloud data security
CILO 4	Describe data security and privacy policies and regulations
CILO 5	Identify security threats and suitable data protection techniques for different use cases
CILO 6	Apply cryptographic tools for data security and privacy protection

10. TEACHING & LEARNING ACTIVITIES (TLAs)

CILO alignment	Type of TLA
1-4	Students will acquire the knowledge on data security and privacy concepts and techniques through lectures and continuous assessment activities.
5-6	Students will acquire hands-on experience in applying security and privacy tools in different use cases via laboratories.

11. ASSESSMENT METHODS (AMs)

Type of Assessment Methods	Weighting	CILOs to be addressed	Description of Assessment Tasks
Continuous Assessment	40 %	1-6	Machine problems and assignment(s) are designed to evaluate students' mastery of data security and privacy concepts and techniques.
Examination	60 %	1-6	Final examination questions are designed to assess how well students understand and utilize the knowledge acquired.

Last Update: 2021-06-10
Published Date: 2021-06-30

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