EE4017: INTERNET FINANCE

Effective Term
Semester A 2022/23

Part I Course Overview

Course Title
Internet Finance

Subject Code
EE - Electrical Engineering
Course Number
4017

Academic Unit
Electrical Engineering (EE)

College/School
College of Engineering (EG)

Course Duration
One Semester

Credit Units
3

Level
B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
EE3009 Data Communications and Networking

Precursors
Nil

Equivalent Courses
Nil

Exclusive Courses
Nil

Part II Course Details

Abstract

This course is about Internet finance. The course discusses internet based technologies that are applied to financial activities. The discussion includes mobile payments, cryptocurrencies, blockchain based systems, and the use of Python for processing big financial data. The course also briefly discusses on the current trends on FinTech and cybersecurity.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Understand the importance of Internet technologies in traditional financial services and markets		x	x	
2	Explain the principles and technologies of Internet Finance		x	x	
3	Apply programming techniques to solve problems of Internet finance		x	x	
4	Realize the importance of cybersecurity in Internet finance		x	x	

A1: Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Teaching and Learning Activities (TLAs)

	TLAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lecture	Key concepts are applied and practice in solving real time network problems. Key concepts are applied and practice in solving real time network problems.	1, 2, 3, 4	3 hrs/wk

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Test (min: 2)	1, 2, 3, 4	36	
2	Assignments (min: 3)	1, 2, 3, 4	24	

Continuous Assessment (%)
60

Examination (%)
40

Examination Duration (Hours)
2

Additional Information for ATs
Remark:
To pass the course, student are required to achieve at least 30% in the coursework and 30% of the examination.

#may include homework, tutorial/laboratory exercise, project/mini-project, presentation

Assessment Rubrics (AR)

Assessment Task
Examination

Criterion
Achievements in CILOs

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Assessment Task
Coursework

Criterion
Achievements in CILOs

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Part III Other Information

Keyword Syllabus

Introduction to Financial Services and Markets
Banking; Money Market; Stock Market; Bond Market; Other Financial Markets

Blockchain and Distributed Ledger
Basic Theory: Hashing, Hashing Reference, Nonce; Types of Blockchain; Blockchain implementations; Blockchain Use Cases

Cryptocurrencies
Blockchain and Cryptocurrencies; Bitcoin; Ethereum; Ripple

Mobile Payment
Mobile Payment Systems; Mobile Device Security; Architectures and Models for Mobile Payment Systems; Security in Mobile Payment Systems

Python for Big Financial Data
Python for Finance; Hadoop for Finance; Running MapReduce for Stock Prices; Algorithmic Trading

Current Trends on Cybersecurity and FinTech
FinTech and Cybersecurity; Current trends on FinTech: AI, Big Data Analytics, and Threat Intelligence

Reading List

Compulsory Readings

	Title
1	Nil

Additional Readings

	Title
1	Blockchain: A Practical Guide to Developing Business, Law, and Technology Solutions, Joseph J. Bambara et. al., McGraw-Hill Education, 2018.
2	Blockchain Basics, Daniel Drescher, Apress, 2017.
3	Mobile Payment Systems: Secure Network Architectures and Protocols, Jesus Tellez and Sherali Zeadally, Springer, 2017.
4	Mastering Python for Finance, James Ma Weiming, Packt Publishing, 2015. Internet Finance in China, Ping Xie, Chuanwei Zou, and Haier Liu, Routledge, 2016.