

EE4017: INTERNET FINANCE

Effective Term

Semester A 2024/25

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

Students will gain knowledge about internet-based technologies that are applied to financial activities, including mobile payments, cryptocurrencies, blockchain based systems, and the use of Python for processing big financial data. It also covers current trends in FinTech and cybersecurity.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if DEC-A1 app.)		DEC-A2	DEC-A3
1	Analyze and evaluate the impact of Internet technologies on traditional financial services and markets.		x	x	
2	Describe and explain the principles and technologies underpinning Internet Finance.		x	x	
3	Develop and implement programming solutions to address issues in Internet finance.		x	x	
4	Assess and demonstrate the significance 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.

Learning and Teaching Activities (LTAs)

LTAs		Brief Description	CILO No.	Hours/week (if applicable)
1	Lecture	Engage students in discussions and case studies to understand the impact of Internet technologies on financial services.	1, 2, 3, 4	2 hrs/wk
2	Hands-on Labs	Practical sessions where students apply programming techniques using Python to solve Internet finance problems.	1, 2, 3, 4	1 hr/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.