SYE6631: AI FOR FINANCIAL SERVICES

Effective Term
Semester A 2026/27

Part I Course Overview

Course Title
AI for Financial Services

Subject Code
SYE - Systems Engineering
Course Number
6631

Academic Unit
Systems Engineering (SYE)

College/School
College of Engineering (EG)

Course Duration
One Semester

Credit Units
3

Level
P5, P6 - Postgraduate Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
Nil

Precursors
Nil

Equivalent Courses
Nil

Exclusive Courses
Nil

Part II Course Details

Abstract
Financial institutions are at the forefront of technological innovation in the AI age.. This course equips students with fluency in the financial services domain. It covers the breadth of modern finance, ranging from corporate finance and

valuation to equities, fixed income, derivatives, banking, portfolio management, behavioural finance, blockchain, and ethics. Every session employs a four-step pedagogy: (1) Financial Theory, (2) Empirical Evidence, (3) AI and Technology, and (4) Business Model Innovation. Students will develop strong economic intuition before applying AI to drive financial service innovations.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Explain core financial theories across corporate finance, asset pricing, banking, portfolio management and other critical areas in finance.	20	x	x	
2	Identify how AI reshapes financial processes and articulate the theory behind them.	20	x	x	
3	Evaluate FinTech business models, distinguishing disruption from incremental improvement.	20	x	x	x
4	Design prototype AI solutions for business lines with domain understanding.	20		x	x
5	Assess ethical and regulatory dimensions of deploying technology in finance.	10	x	x	
6	Communicate fluently across finance and technology disciplines.	10		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	Lectures	Weekly sessions following the four-step pedagogy: Financial Theory, Empirical Evidence, AI and Technology, Business Model Innovation. Sessions combine exposition with case discussions and live demonstrations of AI tools applied to finance.	1, 2, 3, 4, 5, 6	2

2	Group Project Studios	Dedicated time for teams to develop their prototype AI solution for a financial services business line, with instructor and peer feedback.	3, 4, 5, 6	1

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks ("-" for nil entry)	Allow Use of GenAI?
1	Participation	1, 2, 5, 6	30	-	Yes
2	Group Project	2, 3, 4, 5, 6	40	-	Yes

Continuous Assessment (%)

70

Examination (%)

30

Examination Duration (Hours)

2

Minimum Continuous Assessment Passing Requirement (%)

0

Minimum Examination Passing Requirement (%)

30

Additional Information for ATs

Students are encouraged to use generative AI tools across all assessment tasks as an integral part of developing the AI fluency that the course teaches; proper attribution of AI-assisted work is required. Most critically students are required to demonstrate understanding of theories and concepts.

Assessment Rubrics (AR)

Assessment Task

Participation

Criterion

Engagement in class discussions, active contribution to group activities, and demonstration of critical thinking that bridges finance and AI concepts.

Excellent (A+, A, A-)

Actively participates in class discussions with insightful, well-considered contributions. Demonstrates a strong ability to engage with peers and the instructor through critical questions, constructive feedback, and leadership in group activities. Consistently shows deep understanding of both finance theory and its AI applications.

Good (B+, B, B-)

Regularly participates in class with thoughtful comments and questions. Shows a good understanding of the material and contributes positively to group activities, though with some room for deeper engagement or leadership.

Fair (C+, C, C-)

Participates occasionally in class discussions and group activities. Displays a basic understanding of the material, though contributions are limited in depth or frequency.

Marginal (D)

Rarely participates in discussions and group activities. Demonstrates minimal understanding of the course material and lacks engagement with peers or the instructor.

Failure (F)

Does not participate in class discussions or group activities. Fails to demonstrate any engagement with the course material or class dynamics.

Assessment Task

Group Project

Criterion

Quality of the prototype AI solution for a financial services business line, demonstrating mastery of both finance theory and technical architecture.

Excellent (A+, A, A-)

Produces a highly innovative and feasible prototype that demonstrates exceptional understanding of the relevant financial theory and creative application of AI. The solution addresses a genuine industry problem with a clear business model, rigorous technical design, and thoughtful consideration of ethical and regulatory dimensions. Presentation is compelling and professional.

Good (B+, B, B-)

Delivers a solid prototype with sound financial reasoning and competent technical design. The solution addresses a real problem with a viable business model, though it may lack full innovation or depth in certain areas. Presentation is clear and well-structured.

Fair (C+, C, C-)

Provides a basic prototype that demonstrates an adequate understanding of the financial theory and some application of AI. The business model and technical architecture are functional, though lacking in creativity or thoroughness.

Marginal (D)

Produces an underdeveloped prototype with weak financial reasoning, minimal AI application, and an unclear business model.

Failure (F)

Fails to produce a functional prototype or demonstrate understanding of finance theory, AI application, or business model design.

Assessment Task

Final Exam

Criterion

Understanding of core financial theories across all major topic areas and ability to reason about how AI reshapes financial processes.

Excellent (A+, A, A-)

Demonstrates exceptional understanding of financial theories with deep critical analysis, clear arguments, and original insights connecting finance and AI.

Good (B+, B, B-)

Shows a solid grasp of the material with well-structured arguments and reasonable analysis, though lacking in-depth innovation or originality.

Fair (C+, C, C-)

Demonstrates a basic understanding with some analysis, though lacking depth and clear connection between financial theory and AI applications.

Marginal (D)

Shows limited understanding, with minimal analysis and unclear connection to the course material.

Failure (F)

Fails to demonstrate understanding or application of core financial theories and their relation to AI.

Part III Other Information

Keyword Syllabus

- Corporate finance and valuation
- Mergers and acquisitions
- Equity markets and market microstructure
- Fixed income and credit risk
- Foreign exchange and macro finance
- Commodities and derivatives pricing
- Banking and financial intermediation
- Portfolio management and factor investing
- Behavioural finance
- Blockchain, DeFi, and crypto markets
- Ethics and responsible AI in finance
- FinTech and business model innovation

Reading List

Compulsory Readings

	Title
1	Slides from the instructor.
2	Selected academic papers and as assigned per lecture
3	Liebau, D. (2026). FinTech is Dead, Long Live Finance. Journal of Alternative Finance. https://journals.sagepub.com/doi/10.1177/27533743261431316

Additional Readings

	Title
1	3. To be confirmed at the end of the session prior to the one where the reading is required (this is to account for the fast-moving developments in this space)