MODULE SYLLABUS

Foundations of Intelligent Decision-Making and Social Computing

(智能决策与社会计算)

Module: Finance Foundations

COURSE LEVEL	Graduate	FORMAT	Co-taught course; 3-part finance module
INSTRUCTOR	Dr. Yapei Zhang	INSTITUTION	ShanghaiTech University
EMAIL	zhangyp3@shanghaitech.edu.cn	ASSESSMENT SHARE	10% of the overall course grade

Overview

This module introduces the finance foundations needed to analyze decisions across time and under uncertainty. It links project evaluation and asset pricing with the operation of financial markets and the financing choices of firms, providing a financial lens for intelligent decision-making and social-computing applications.

Learning Outcomes

- Evaluate investment projects using present value, NPV, IRR, and related decision rules.
- Construct portfolios and explain diversification, efficient portfolios, the CAPM, and factor models.
- Interpret market efficiency and value stocks, bonds, forwards, futures, and options.
- Analyze payout policy, capital structure, venture financing, mergers and acquisitions, and IPOs.

Teaching and Learning Approach

Conceptual lectures are paired with worked examples and exercise-based individual homework. The module emphasizes how financial models organize decisions about timing, risk, information, incentives, and resource allocation.

Module Structure

PART	TOPIC	FOCUS
I	**Financial Economics**	Time value of money; capital budgeting; NPV, IRR, payback, and normalized NPV; portfolio return and variance; efficient and optimal portfolios; CAPM, the Security Market Line, and factor models.
II	**Financial Markets**	Efficient Market Hypothesis; stock rights and valuation; bond pricing, yields, term structure, default and interest-rate risk; forwards, futures, margins, hedging, speculation, options, and payoff strategies.
III	**Corporate Finance**	Dividends and repurchases; capital structure, leverage, WACC, taxes, and agency costs; startup finance and venture capital; staged financing and exits; M&A valuation and failure risks; IPO benefits and costs.

Assessment

Individual homework - 10% of overall course grade	Exercise-based problems assessing the application of finance concepts and models introduced in the module.

Teaching Materials and Cases

Instructor slides and exercises are the primary materials. Recommended supplementary references include Foundations of Financial Markets and Institutions by Frank Fabozzi and coauthors, and Investments by Zvi Bodie, Alex Kane, and Alan Marcus.

Academic Integrity

Students are expected to comply with ShanghaiTech University standards on academic integrity. All submitted work must be original, properly attributed, and completed in accordance with the stated collaboration rules.