

Subject Description Form

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| Subject Code | AMA571 |
| Subject Title | Financial Technology |
| Credit Value | 3 |
| Level | 5 |
| Pre-requisite/ Co-requisite/ Exclusion | Nil |
| Objectives | To introduce students some fundamental building blocks in blockchain technology as well as its application in cryptocurrencies, stablecoins, and decentralized finance. Help students to develop practical programming, statistics and mathematical skills that are valued in the FinTech industry. |
| Intended Learning Outcomes | Upon completion of the subject, students will be able to: <ul style="list-style-type: none"> (a) Acquire knowledge of the core ideas in FinTech as well as develop hands-on programming skills in the Fintech area. (b) Analyze financial problems, and identify and define the computing technologies appropriate to its solution. (c) Gain experience in designing and implementing smart contracts and decentralized applications. (d) Understand the blockchain technology and cryptocurrencies. (e) Reflect the quantitative skills to solve other financial applications. |
| Subject Synopsis/ Indicative Syllabus | <p><u>Solidity for smart contract</u></p> <p><u>Reinforcement learning in investment</u></p> <p><u>Blockchain Technology</u> Cryptographic hash function, public-key cryptography and digital signature, block building, mining and PoW</p> <p><u>Smart Contract</u> Basics, solidity essentials, solidity dive</p> <p><u>Cryptocurrency</u> Transactions and wallets, protocols</p> <p><u>Decentralized finance</u> Smart contract (ETH), AMM (uniswap), perpetual contracts</p> <p><u>Deep learning for high dimensional problem and stochastic control problems</u></p> <p><u>Robo-advising</u></p> |
| Teaching/Learning Methodology | The subject will mainly be delivered through lectures and exercise-based tutorials. The teaching and learning approach is mainly problem-solving oriented. The approach aims at the development of financial modeling and quantitative skills and how the techniques can be applied |

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| | to applications in financial technology. Students are encouraged to adopt a deep study approach by employing high level cognitive strategies, such as critical and evaluative thinking, relating, integrating and applying theories to practice. | | | | | |
| Assessment Methods in Alignment with Intended Learning Outcomes | Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | |
| | | | a | b | c | d |
| | 1. Assignments/Project | 20% | ✓ | ✓ | ✓ | ✓ |
| | 2. Midterm Test | 20% | ✓ | ✓ | ✓ | |
| | 3. Examination | 60% | ✓ | ✓ | ✓ | ✓ |
| | Total | 100% | | | | |
| Continuous Assessment comprises of assignments/project and one midterm test. A written examination is held at the end of the semester. | | | | | | |
| Student Study Effort Required | Class contact: | | | | | |
| | ▪ Lecture | | 26 Hrs. | | | |
| | ▪ Tutorial | | 13 Hrs. | | | |
| | Other student study effort: | | | | | |
| | ▪ Assignments/Projects | | 58 Hrs. | | | |
| | ▪ Self-study | | 40 Hrs. | | | |
| | Total student study effort | | 137 Hrs. | | | |
| Reading List and References | <u>References:</u> | | | | | |
| | D.L.K. Cheun | Handbook of digital currency, Bitcoin, innovation, financial instruments, and big data. | Elsevier, 2015 | | | |
| S. Chishti and J. Barberis | The fintech book: the financial technology handbook for investors, entrepreneurs, and visionaries. | John Wiley & Sons, 2016 | | | | |
| M. King and R. Nesbitt | The technological revolution in financial services | University of Toronto Press, 2020 | | | | |