Subject Description Form

Subject Code	COMP5521
Subject Title	Distributed Ledger Technology, Cryptocurrency and E-Payment
Credit Value	3
Level	5
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	The objectives of this subject are to: 1. Introduce the concepts of distributed ledger technology, cryptocurrency and e-payment; 2. Enable students to understand the key techniques in distributed ledger technology and cryptocurrencies; 3. Introduce various applications of distributed ledger technology beyond cryptocurrencies; 4. Study various form of electronic payment.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a. Acquire a good knowledge of distributed ledger technology and cryptocurrencies, including technical and legal/social issues; b. Understand the key techniques that enable these new technologies; c. Be aware of the latest trend in electronic payment; d. Participate in team work, presentation and technical writing.
Subject Synopsis/ Indicative Syllabus	• Introduction to Cryptographic Primitives • Introduction to Distributed Ledger Technology • Consensus mechanisms and Decentralization • Introduction to Cryptocurrencies • Mechanics of Cryptocurrencies • the multi-disciplinary nature of distributed ledger technology a • Applications of Distributed Ledger Technology beyond Cryptocurrencies • Existing Electronic payment and the future of cryptocurrencies • Professional communication in the field of cryptography and cryptocurrency (e.g. study of white papers and technical specifications) • Professionalism and legal/social issues (e.g., regulatory authorities), case studies
Teaching/Learning Methodology	39 hours of class activities including lectures, tutorials, lab(s), workshop(s) and seminar(s) where applicable. Practitioners and industry partners shall be invited to deliver Guest lectures to discuss practical aspects of cryptocurrency and e-payment, including professional ethics, responsibilities, legal and social issues. There will be a mix of lectures, discussions and case study analysis. Recent research articles and white paper of distributed ledger technologies and cryptocurrencies will be reviewed and discussed in lectures.

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
Assignments, Labs & Projects	55	✓	✓	✓	✓
Final Examination	45	✓	✓	✓	
Total	100				

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

Assignments are traditional way for the instructor to measure students' ability in technical writing and understand the subject content. Labs give students a chance to practice and give ways to access students' practical capabilities. Projects allow the teamwork component to be measured, and at the same time provide a way to assess students' presentation skill and ability to put what have been learnt in a larger scale.

Student Study Effort Expected

Class contact:	
▪ Class activities	39 Hrs.
Other student study effort:	
▪ Self-study, assignment, project, exam	65 Hrs.
Total student study effort	**104 Hrs.**

Reading List and References

Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction
by Arvind Narayanan (Author), Joseph Bonneau (Author), Edward Felten (Author), Andrew Miller (Author), Steven Goldfeder (Author)
Princeton University Press 2016 ISBN 9780691171692

Ethereum: Blockchains, Digital Assets, Smart Contracts, Decentralized Autonomous Organizations
Henning Diedrich (Author)
Wildfire Publishing ISBN 9781523930470

Mastering Bitcoin: Programming the Open Blockchain 2nd Edition
Andreas M. Antonopoulos (Author)
O'reilly ISBN 9781491954386