

## Course Syllabus (DRAFT 1.2)

Course Code	TEMG4940E
Semester	Fall 2024 (Sep 2 – Nov 10)
Course Title:	T&M Prototyping and Research Project: Web3 digital asset project with Wealth Management Cube Ltd
Course Credit:	3
Pre-requisites	NIL
Max Class size:	20 students
Course enrollment:	All students are welcome. <b>Instructor consent is required.</b>
Class schedule	Monday (12 noon to 2.50 pm) on campus
Classroom:	Room CYTG002
Instructor:	Dr. Daniel Chun Tel 3469-2950 Email <a href="mailto:djychun@ust.hk">djychun@ust.hk</a>

### Course Description

The goal of TEMG4940 series of experiential-learning courses is for T&M-DDP students to gain deep insight into an industry domain by working with corporate-sponsor(s) to understand a new trend in the industry, appreciate the business challenges behind the problem, and develop a working prototype incorporating innovative business strategies and advanced software tools.

### Course Description

This course offers a hands-on experience in the rapidly evolving field of Web3 and digital assets, in collaboration with the Hong Kong Digital Finance Association (HKDIFI). Participants will engage in a prototyping and research project focused on the business roadmap, development and application of an exchange using Web3 technologies in blockchain for digital asset management. The HKDIFI's member company is Wealth Management Cube Limited which is a Securities and Futures Commission (SFC) licensed corporation (CE No. BEC913), has a substantial portfolio comprising over 1,000 funds from more than 100 fund houses. WMCube has already been in business using a B2B platform and is exploring a new platform for matching Web3 products and tokenized asset classes or derivatives for their fund houses (e.g., PIMCO, Fidelity, Allianz) to business partners and clients (e.g., China Securities, Yue Tong). This course will provide participants with the opportunity to conduct business research on the roadmap on a digital exchange and to prototype a digital asset exchange (simulating the transactions of tokenized asset), addressing both business opportunities and technology challenges in the era of FinTech, with a particular emphasis on asset tokenization.

## Project Background

Hong Kong is poised to become a leading hub for Web3 technologies and asset tokenization, driven by proactive government support and regulatory clarity from the Securities and Futures Commission (SFC). The HKSAR Government's initiatives, such as Project Ensemble, aim to advance the tokenization market by exploring various use cases and establishing industry standards (HKMA, 2024). This regulatory environment facilitates the tokenization of traditionally illiquid assets like real estate and art collectibles, unlocking significant liquidity and making these assets accessible to a broader range of investors. With the global market for tokenized illiquid assets projected to reach \$16 trillion by 2030 (BCG, 2022), Hong Kong's strategic initiatives position it well to capture substantial market opportunities and to extend its financial hub's position with Web3 technologies.

This course, in collaboration with our partner Wealth Management Cube Limited, explores their current platform WMCube, which serves as an intermediary between fund houses and investors through retail partners. This project-based learning course will focus on identifying business opportunities and addressing technology challenges in the era of FinTech, particularly in the areas of Web3 and digital asset management, with an emphasis on asset tokenization. The project will require the prototyping of a digital asset exchange and its functions and features.

## Project Sponsor

Wealth Management Cube Limited formally established in July 2014 and was licensed for SFC Type 1 Dealing in Securities (CE No. BEC913) in 2015. The core businesses are B2B & B2B2C Fund Investment Dealing & Settlement services (1000+ funds from 100+ fund houses) and Insurance Admin & CRM solutions. In 2020, they formed an alliance with a well-known licensed insurance company in UK/HK and became the authorized custodian of its investment-linked policy. This new business will become a game changer in the Hong Kong platform industry. (Company Information on WMCube can be found here with [this link](#))

## Industry Contact:

Thomas Ng (Executive Director, Wealth Management Cube Ltd) [www.WMCubeHK.com](http://www.WMCubeHK.com)  
Emil Chan, Co-chairmen, Hong Kong Digital Finance Association [www.hkdifi.org](http://www.hkdifi.org)

## Project team

Each team will consist of 4 students which play the roles of consultant associate's role to help corporate sponsor as a client to conduct research on the selected problem statement use case. The engagement is 13 weeks and the deliverables will be in the form final research proposal and solution.

## Course Intended Learning Outcome (CILO)

### T&M Dual-degree Program's Intended Learning Outcomes

1. P-ILO1: Adopt an inter-disciplinary approach to tackle complex real-world problems
2. P-ILO2: Communicate effectively with people of different levels and work areas
3. P-ILO3: Transfer acquired knowledge to meet changes and challenges in different fields
4. P-ILO4: Engage in activities that lead to impact of social improvement
5. P-ILO5: Have the ability to create and innovate with divergent thinking

6. P-ILO6: Be able to apply technical and business skills in an integrated manner in problem-solving
7. P-ILO7: Be a leader in the field of technology management and innovation, and entrepreneurship

### TEMG4940 Course Intended Learning Outcomes

1. Acquire insight into project sponsor's organization and empathy with their challenges (P-ILO3)
2. Become familiar with technology trends and regulatory relevant to the Web3 sector and overall landscape (PILO1, P-ILO4)
3. Gain confidence to apply problem solving techniques covered in the course (P-ILO1, P-ILO5, PILO6)
4. Improve professional communication in writing and public speaking (P-ILO2, P-ILO7)
5. Improve teamwork across cultures, age and disciplines (PILO2, P-ILO5)

### Course Grading Policy

The course grade consists of both class discussions, mid-term assessment and final written assessment in the form of the business proposal. Participation will be judged based on the student's attendance, contribution to class discussions and group project work.

Assessment Method	Description	Weight (%)
Class participation	Attendance	5%
Discussion	Individual contribution to discussion (Group)	5%
Assignments	Homework assignments designed for background learning and online Canvas quizzes	30%
Final Proposal	Final Proposal / Final Solution prototype	40%
Peer Assessment	Anonymous performance feedback per team by teammates	10%
Professional Assessment	Project Sponsor Assessment	20%
<b>Total</b>		<b>100%</b>

### Course Schedule 13 weeks – 3 credits

**Fall Semester 2024: Sep 2<sup>nd</sup> to Nov 30<sup>th</sup> 12.00 - 2.50 pm Room CYTG002**

Week	Dates	Topics	Briefly outline what this topic will cover (including reading / assignments if available)	Indicate which course ILOs this topic is related to
1	Sep 2	Course Overview / Introduction of Corporate sponsor / Project	Kick off, housekeeping and project briefing by instructor. Introduction of SFC and HKMA position on asset management and Web3 digital finance policy, market overview, regulatory landscape in Hong Kong (HKDIFI's Prof. Emil Chan – Co-chairmen), Introduction of WMCube's portfolio of business and problem statements by Thomas Ng - Executive Director) and Eddie Chou – CTO DigiPlus	PILO1, PILO2, PILO3

2	Sep 9	Market Landscape / Opportunity	An overview of investment fund market, regulations, type of funds, why invests in funds, difference of tokenization of asset vis-à-vis traditional asset management fund, concepts of fractionalization and liquidity (WMCube's Thomas Ng - Executive Director and Marco Lim – First SFC regulated Crypto Hedge Fund – Mai Capital) <i>Quizzes on Canvas (5 pts)</i>	PILO2, PILO3, PILO4
3	Sep 16	Market Landscape / Opportunity	Hong Kong's stablecoin policy regime and business implications (e.g. e-HKD vs CBDC) delivered by HKDIFI An overview of HKMA and SFC in stablecoin implementation. <i>Quizzes on Canvas (5 pts)</i>	PILO4, PILO5
4	Sep 23	Investment funds operation	A workshop on current operations in funds, trading and settlement computer system (E.g. BSS), custodian practices, data and system requirement, Concepts of AML/KYC and RegTech (WMCube)	PILO2, PILO3
5	Sep 30	Web3 / Blockchain Overview	An overview of Blockchain-based applications, concepts of Ethereum Virtual Machine and successful Web3 case studies in financial institutions on asset tokenization projects in Asia and Europe. <i>Quizzes on Canvas (5 pts)</i>	PILO3, PILO6
6	Oct 7	Business / Policy Research	Lecture on regional policies in Web3 (e.g. Singapore, Malaysia and UK) vis-à-vis the SFC model of Virtual Asset Trading Platform (VATP) in Hong Kong with HK based SFC licensed exchange guest speaker.	PILO3, PILO6
7	Oct 14	Technology	Technology workshop by WMCube / HKDIFI tech lead on data flow requirement analysis / prototyping workshop system and API, setup IDE, establishing wallets within a secured environment.	PILO1, PILO3
8	Oct 21	Technology	Technology workshop by WMCube / HKDIFI tech lead for tokenization on blockchain and follow-up lab for IDE for programming solidity - smart contract and defining the UX/UI requirements for the exchange transactions.	PILO3, PILO4,
9	Oct 27	Technology / Case research	Workshop in assessing the technology roadmap for virtual asset trading platform (VATP) secured transaction, cybersecurity threats, compliance to authorities. Also project management review of team progress <i>Assignment / case research: 7.5 pts</i>	PILO1, PILO2, PILO3,
10	Nov 4	Business / Policy case research	Workshop in assessing business roadmap and strategy for a Hong Kong SFC VATP and its competitive landscape of stakeholders like Issuers, intermediaries, to custodian to professional and payment service providers) with guest speaker – Henry Yu, lawyer, the Secretary-General of the Hong Kong Licensed Virtual Asset Association (HKLVA). <i>Assignment / case research: 7.5 pts</i>	PILO4, PILO5, PILO6
11	Nov 11	Technology Lab Workshop	Review of and prototyping for the solution using Remix IDE, Sandbox, API. Also project management review of team progress.	PILO5, PILO6,
12	Nov 18	Review	Code review, presentation alignment (HKDIFI) Review of project team deliverables for technology case research and business case research.	PILO1, PILO5, PILO6
13	Nov 25	Presentation Day	Final presentation with live demo - Practice demo and Final Proposal Presentation HKDIFI and WMCube representatives.	PILO6, PILO7

## Rubrics for assessment

### Quizzes

There will be three quizzes posted on Canvas on Week 2, 3 and 5 (each representing 5 multiple choice questions). This assessment is for the students to demonstrate their understanding and recall of the background knowledge relating to the concepts presented by the instructor and speaker on the subject matter (e.g. concepts on policy regime, asset management, asset tokenization). Each correct multiple-choice answer will represent 1 point (1%) in final grade.

### Assignments – Case research

There will be 2 separate case research assignments – respectively on business strategy roadmap and technology roadmap (7.5 points to be awarded to each assignment). Students are given the opportunity to demonstrate their understanding, ability to conduct research and to apply their knowledge and to articulate their case research reports for the project sponsor. This is a form of formative assessment in which the instructor and project sponsor can provide critical feedback during the project stages to the students. The deliverable for the case research could be visualized as a presentation format of about 15-20 pages or a written report of around 1,200-1,500 words. The following marking criteria will be used.

Criteria	Excellent 1.0 point	Good 0.75 point	Basic 0.5 point	Poor (No point)
1. Understanding of Topic	Demonstrates a deep understanding of the topic	Shows good understanding	Demonstrates basic understanding	Shows little to no understanding
2. Analysis and insight	Provides comprehensive analysis and insightful conclusions	Provides good analysis and some insights	Provides basic analysis with limited insights	Provides little to no analysis or insights
3. Application of concepts	Effectively applies relevant concepts to the case	Applies relevant concepts with some effectiveness	Applies relevant concepts with limited effectiveness	Fails to apply relevant concepts
4. Use of sources	Uses a wide range of reliable sources effectively	Uses several reliable sources	Uses a few sources, some of which may not be reliable	Uses no or very few sources, or relies on unreliable sources
5. Organization and Structure	Report is well-organized with coherent <i>(extra 0.5 points are awarded here, max 1.5 point)</i>	Report is organized with a clear structure, but some sections may be hard to follow	Report has some organization, but structure is unclear in places	Report is poorly organized and difficult to follow
6. Visual representation	Visuals are highly effective, clear, and enhance understanding	Visuals are effective and clear, supporting the text	Visuals are present but may not be clear or effectively support the text	Visuals are absent or unclear, not supporting the text
7. Writing quality	Writing is clear, concise, and free of grammatical errors	Writing is mostly clear with few grammatical errors	Writing is somewhat clear but contains several grammatical errors	Writing is unclear with many grammatical errors

## Final Solution / Proposal

The final solution proposal will count 40 points (40%) of the total assessment. The following rubric will be applied.

Criteria	Excellent	Good	Basic	Poor
Understanding of Data Flow Requirements	Demonstrates a comprehensive understanding of data flow requirements (5 points)	Shows good understanding with minor gaps (4 points)	Demonstrates basic understanding with significant gaps (2-3 points)	Shows little to no understanding (0-1 points)
Input/Output Design	Effectively designs input/output processes with clear specifications (5 points)	Designs input/output processes with some clarity (4 points)	Designs input/output processes with limited clarity (2-3 points)	Fails to design clear input/output processes (0-1 points)
Blockchain Concepts	Demonstrates a deep understanding of blockchain concepts, including EVM and smart contracts (5 points)	Shows good understanding of blockchain concepts (4 points)	Demonstrates basic understanding of blockchain concepts (2-3 points)	Shows little to no understanding of blockchain concepts (0-1 points)
Smart Contract Implementation	Implements smart contracts effectively using Solidity or other languages (5 points)	Implements smart contracts with minor issues (4 points)	Implements smart contracts with significant issues (2-3 points)	Fails to implement smart contracts effectively (0-1 points)
Trading Transactions	Accurately models and implements trading transactions (5 points)	Models and implements trading transactions with minor issues (4 points)	Models and implements trading transactions with significant issues (2-3 points)	Fails to model and implement trading transactions (0-1 points)
Digital Wallet Integration	Effectively integrates digital wallets with robust security measures (5 points)	Integrates digital wallets with minor security issues (4 points)	Integrates digital wallets with significant security issues (2-3 points)	Fails to integrate digital wallets effectively (0-1 points)
UX/UI Design	Designs a user-friendly and aesthetically pleasing interface (5 points)	Designs a user-friendly interface with minor aesthetic issues (4 points)	Designs an interface with usability or aesthetic issues (2-3 points)	Designs a poor interface with major usability issues (0-1 points)
Functionality and Performance of an exchange	Delivers a fully functional and high-performing solution for completing a transaction (5 points)	Delivers a functional solution with minor performance issues for completing a transaction (4 points)	Delivers a solution with significant performance issues for completing a transaction (2-3 points)	Delivers a non-functional or poorly performing solution for completing a transaction (0-1 points)

## Recommended Reading / Reference:

HKMA (2024) HKMA unveils Project Ensemble to support the development of the Hong Kong tokenisation market

<https://www.hkma.gov.hk/eng/news-and-media/press-releases/2024/03/20240307-5/>

Kumar, S., Suresh, R., Liu, D., Kronfellner, B., & Kaul, A. (2022). Relevance of On-Chain Asset Tokenization in “Crypto Winter”. *ADDX, BCG*. <https://web-assets.bcg.com/1e/a2/5b5f2b7e42dfad2cb3113a291222/on-chain-asset-tokenization.pdf>

KWM (2023) Tokenisation of securities and other investment products – what, why and key considerations in Hong Kong and China Mainland

<https://www.kwm.com/hk/en/insights/latest-thinking/Tokenisation-of-securities-and-other-investment-products.html>

Ledger Insights (2023) Hong Kong plans regulations targeting tokenization. Retrieved from

<https://www.ledgerinsights.com/hong-kong-regulations-tokenization-rwa/>

Modi, R. (2018). *Solidity Programming Essentials: A beginner's guide to build smart contracts for Ethereum and blockchain*. Packt Publishing Ltd. (Available from HKUST Library)

SFC (2024). Overview of Virtual Assets

<https://www.sfc.hk/en/Welcome-to-the-Fintech-Contact-Point/Virtual-assets/Overview>

Zhang, Y., Gong, B., & Zhou, P. (2024). Centralized Use of Decentralized Technology: Tokenization of Currencies and Assets. *Structural Change and Economic Dynamics*.

Figure 1. A reference diagram from the BCG report (BCG, 2022)

Tokenization of global illiquid assets estimated to be a \$16 Trillion business opportunity by 2030

