Module Outline

Professional Qualification:	Certified Fintech Professional (Specialist - Open Banking and API Stream (CPFinT(S-OBAPI)) (QF Level 6)
Programme Title:	Postgraduate Certificate for ECF on Fintech (Specialist – Open Banking and API Stream) - Completion of M5 & M8
Module Title:	Open Banking and Application Programming Interface (API) (M8)*
Credit:	30 (21 contact hours, 3 examination hours and about 276 self-study hours)
Teaching/Training Activities:	Training Class
Pre-requisite:	• Professional Certificate for ECF on Fintech awarded by HKIB; OR • Grandfathered for ECF on Fintech (Core Level) by HKIB • Grandfathered for at least one stream or track under ECF on Fintech (Professional Level) by HKIB
Remarks:	* Pitched at QF Level 6

Professional Qualification Objective

The Professional Qualification of Specialist Track is developed to nurture a sustainable talent pool of more experienced and specialised expert level Fintech practitioners for the banking industry. Learners will achieve mastery within a specific Fintech domain on technology principles and applications in the banking industry to advise on Fintech use cases, solution architecture, and implementation management.

Professional Qualification Intended Outcomes (PQIOs) for Specialist Track (M5, M6, M7, M8, M11)

Upon completion of the Professional Qualification, candidates should be able to:

PQIO 1:	Drive practical Fintech adoption in a range of applicable business contexts.
PQIO 2:	Acquire in-depth knowledge and design rationale of Fintech solutions and applications in banks.
PQIO 3:	Evaluate new technologies and vendors in the market and supervise the application of technology concepts of relevant Fintech disciplines in solution design for addressing specific business scenarios and user pain points.
PQIO 4:	Formulate policies for the design, development, and implementation of Fintech solutions.
PQIO 5:	Formulate the implementation approach and guidelines in Fintech projects after reviewing the solution architecture
PQIO 6:	Establish and enforce policies and standards on Fintech software engineering across different coding practices, design patterns, production processes, and system operations.

Module Objective

The module aims to make learners understand Open Banking Strategy and APIs Operations, and Design Innovative Banking Solutions and API Applications for Future Banking .

Module Intended Outcomes (MIOs) & Units of Competencies (UoCs)

Upon completion of the Module 8, candidates should be able to:

MIOs	Intended Outcome / Competence	Unit of Competencies (UoCs)
MIO 1:	Demonstrate proficiency in the advanced technical concepts, principles, and practical demonstrations of the emerging API domains to execute problem framing and strategy analytics in conducting	109358L6 109364L5

		109376L6
	framework and gateway management, API programming, and Fintech solution development.	109577L6 / 107590L6
MIO 2:	Interpret and leverage current and emerging Fintech use cases, project management techniques, and solution implementation, operation, and maintenance methodologies.	109360L5 109577L6 /107590L6

Assessment Activity

Type of Assessment Activity	PQIO/MIO	Weighting (%)
Examination	MIO 1 - 2	100%

Examination Format and Duration

Time allowed: 3 hours

Format: Essay Type Questions (open-book; choose 4 out of 5 - each 25 marks)

Examination pass mark: 50%

CPFinT(S-OBAPI) Certification Requirement

- Completion of ECF on Fintech (Professional Level) Training and Pass examination in Module 5 and Module 8, and

- Having at least 3 year of relevant work experience in Fintech projects and / or any of the Professional Level functions in Fintech Solution Development, Fintech Product Design, Fintech Strategy and Management or Regtech; and

- Currently as a Relevant Practitioner

Syllabus

Chapter 1: Hong Kong Open API Framework and Ecosystem	
1	- Open Banking and Open API
2	- Worldwide development - UK, EU, Singapore, Australia, Japan and China
3	- HKMA's Open API Framework
	• The HKMA's four phases and their timelines
	• The HKAB common baseline for TSPs + examples
	• The HKAB phase III standards (Technical, User experience, Customer authentication, Data, InfoSec and Operation) + expected examples
4	- Open API ecosystem
	• Repository - Science Park Data Studio
	• APIX Open API Exchange Platform
	• Sandbox arrangement

Chapter 2: Open Innovation, Open Source Intelligence, Open Architecture	
1	- Understanding the Glocal (Global and Local) Open Ecosystem
2	- Open Innovation, Open Collaboration, Open Competition – Crowdsourcing (talents)
3	- Open Source "Financial" Intelligence, IoT, Big Data Analytics
4	- Open Architecture, P2P, Distributed, Sharing Economy
5	- Open Source Software, CopyLeft, Open Algorithms
6	- "Open": the Disruptor; the Game Changer

Chapter 3: Open Government, Open Banking, Open API	
1	- Hong Kong SAR Government's FinTech Initiatives
2	- Open Government – Directives and Policies
3	- Open Government – Open Data Portal and APIs
4	- API Centric Financial Hub – Hong Kong? London?
5	- Planning the "Open" and "Open Innovation" Strategies in Banking and

		Finance
6	-	Digital Banking powered by an API led Architecture
	-	Planning the "Open" and "Open Innovation" Strategies as part of the Global Fintech Landscape

Chapter 4: API Management, DLT, DeFi and DAO

1	-	API – SOAP, REST, GraphQL
2	-	API Security Best Practices
3	-	API Management
4	-	Case Analysis – Transformation of Banking and Payments Through Open APIs
5	-	Case Study – Koho Financial Inc.: Facing a New Banking Era

Chapter 5: Case Analysis: Open Banking, APIs, DLT, FPS (Faster Payment System) and DCEP (Digital Currency Electronic Payment)

1	-	Case Study – JPMorgan Chase & Co: Open Banking
2	-	FPS (Faster Payment System)
3	-	DCEP (Digital Currency Electronic Payment), CBDC (Central Bank Digital Currency), eHKD
4	-	Can we integrate FPS, DCEP, CBDC, eHKD, Open Banking APIs and DLTs?
5	-	Case Analysis APIs – DLT Interoperability
6	-	Case Analysis – Nova Ecosystem Project 2019

Chapter 6: Potential API Applications for Future Banking

1	-	Quick review of the four phases in Hong Kong
2	-	API (hands on session)
3	-	Understand the Pros and Cons in different software / API development models
4	-	Monetization of Open Banking and APIs

Chapter 7: POC Presentations: Open Banking API Phase 3 and 4
1	-	After learning from Chapter 5 & 6, API Group Presentations on proposed Phase 3 and 4 innovative banking model(s) and implementations

Recommended Readings

Essential Readings:

1. HKMA's Open API Framework for the Hong Kong Banking Sector.

   https://www.hkma.gov.hk/media/eng/doc/key-information/press-release/2018/20180718e5a2.pdf

2. HKAB's Open API Framework for the Hong Kong Banking Sector Phase II Common Baseline.
   https://www.hkab.org.hk/download.jsp?isTemp=N&section_id=5&file_name=HKAB-Phase+II+Common+Baseline.pdf

3. HKAB's Phase III Banking Open API Standards.
   https://www.hkab.org.hk/download.jsp?isTemp=N&section_id=5&file_name=Phase+III+Banking+Open+API+Standards.pdf

4. Problem Framing.

   https://edtechbooks.org/id/problem_framing

   https://designsprint.academy/about-problem-framing/

   https://www.atlassian.com/team-playbook/plays/problem-framing

   https://itk.mitre.org/toolkit-tools/problem-framing/

5. Agility, SCRUM and other software development methodologies in Innovative Management.

   https://www.management-issues.com/opinion/7249/developing-agility/
   https://www.cprime.com/resources/what-is-agile-what-is-scrum/

6. Talent Crowdsourcing.

   https://blog.shrm.org/sasia/blog/how-crowdsourcing-can-enhance-the-quality-of-talent-

acquisition-strategy

7. Open Banking API use cases.

   https://subaio.com/the-5-best-use-cases-of-open-banking/

   https://nordigen.com/en/case-studies/

   https://www.openbankproject.com/

8. DLT Governance Whitepaper.

   https://www.dtcc.com/~/media/Files/Downloads/WhitePapers/DLT-Governance-Whitepaper.pdf

9. API Governance:

   https://www.digitalml.com/api-governance-best-practices/

10. DCEP/CBDC/eHKD

    https://boxmining.com/dcep/

    https://www.rieti.go.jp/en/china/19122701.html

    "e-HKD_A_Policy_and_Design_Perspective", HKMA

    https://www.hkma.gov.hk/eng/news-and-media/press-releases/2022/04/20220427-3/

    "eHKD: A Technical Perspective", HKMA

    https://www.hkma.gov.hk/eng/news-and-media/press-releases/2021/10/20211004-3/

11. Why Now is the time for "Open Innovation" by L. Dahlander and M. Wallin, HBR Jun 05, 2020.

    https://store.hbr.org/product/why-now-is-the-time-for-open-innovation/h05o0i?sku=H05O0I-PDF-ENG

12. Open Innovation.

    https://www.ennomotive.com/open-innovation

13. Open Innovation Success with Procter & Gamble.

    https://www.ideaconnection.com/open-innovation-success/An-Example-of-Open-Innovation-Success-with-Procter-Ga-00641.html

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14. Open Data, Open Government.

   https://open.canada.ca/en/open-data

   https://data.gov.sg/

15. OGCIO Open Data Plan.

   https://www.ogcio.gov.hk/en/about_us/annual_open_data_plans/

16. Open vs Closed Architecture Technology Systems.

   https://www.youtube.com/watch?v=A8Bp-WEndww

   https://www.youtube.com/watch?v=_7mMToRlAxs

17. Value Chain in Banking.

   https://ebrary.net/11786/business_finance/value_chain_banking

   https://notesmatic.com/value-chain-analysis-of-the-banking-industry/

18. Punyia, J., and Austin, R.D., "JP Morgan Chase & Co - Opening Banking", Harvard Business Review 2021.
   https://store.hbr.org/product/jpmorgan-chase-co-open-banking/W21252

19. Chen, L., Wang, X., Yau, E., and Ryoo, J.H., "Koho Financial Inc. - Facing a New Banking Era", Harvard Business Review 2021.
   https://store.hbr.org/product/koho-financial-inc-facing-a-new-banking-era/W21040

20. Open Banking Strategy.

   https://www.mulesoft.com/lp/whitepaper/api/open-banking-platform

21. API Management.

   https://www.oreilly.com/library/view/data-management-at/9781492054771/ch04.html

   https://docs.broadcom.com/doc/api-strategy-and-architecture-a-coordinated-approach

22. Managing API lifecycle.

   https://www.mulesoft.com/ty/ebook/api-lifecycle-management

23. API Authentication Methods.

   https://blog.cloud-elements.com/5-keys-building-integrations-2

https://apiacademy.co/2021/04/the-most-common-api-authentication-methods/

24. API Security Issues.

   https://frontegg.com/blog/api-security-checklist

   https://www.templarbit.com/blog/2018/01/10/api-security-checklist/

   https://salt.security/blog/api-security-checklist

25. Open Banking API Implementation.

   https://wso2.com/articles/2019/08/implementing-a-successful-open-banking-architecture/

26. HSBC, BEA, BoC, etc. API portal.

   https://developer.hsbc.com.hk/#/home

   https://www.hkbea.com/html/en/bea-open-api.html

   https://www.bochk.com/en/more/openbankingcollaboration.html

   https://sandboxportal.apix.com.hk/jetco/sb/

27. HKeX API.

   https://www.hkex.com.hk/Services/Trading/Derivatives/Infrastructure/HKATS?sc_lang=en

28. CME APIs.

   https://www.cmegroup.com/market-data/datamine-api.html

29. Binance API.

   https://www.binance.com/en/support/faq/360002502072

   https://github.com/binance/binance-spot-api-docs/blob/master/rest-api.md

30. Lab exercise materials. [To be distributed in Class 6]

31. How to monetize APIs in the emerging world of open banking?
   https://www.payveris.com/media/1210/api-monetization-webinar-final-05132020.pdf

32. Borysowich, C., "The Future of Open Banking: How to monetize your bank's APIs",
   CAPCO, 2017.
   https://www.capco.com/intelligence/capco-intelligence/the-future-of-open-banking-how-

to-monetize-your-banks-api

33. API monetization: making a success of Open Banking.

    https://thepaypers.com/expert-opinion/api-monetisation-making-a-success-of-open-banking--1245590

Supplementary Readings

1. HKMA's Open API thematic page

   https://www.hkma.gov.hk/eng/key-functions/international-financial-centre/fintech/open-application-programming-interface-api-for-the-banking-sector/

2. Consultancy study on The Next Phase of the Banking Open API Journey

   https://www.hkma.gov.hk/media/eng/doc/key-functions/ifc/fintech/The_Next_Phase_of_the_Banking_Open_API_Journey.pdf

3. Challenges of DLT enabled Scalable Governance and the Role of Standards" by G. Benedict, CIO Reserve Bank of Australia.

   https://www.riverpublishers.com/journal_read_html_article.php?j=JICTS/7/3/1

4. Blockchain Governance.

   https://www.tandfonline.com/doi/full/10.1080/10580530.2020.1720046

5. Managing Talents/Millennials in the Workplace.

   https://www.greatplacetowork.com/resources/blog/7-research-backed-ways-to-effectively-manage-millennials-in-the-workplace

6. API and Copyright issues.

   https://arstechnica.com/tech-policy/2021/04/how-the-supreme-court-saved-the-software-industry-from-api-copyrights/

   https://www.wired.com/insights/2014/05/non-apocalypse-apis-copyright-fair-use/

7. Copyleft.

   https://www.gnu.org/licenses/copyleft.en.html

8. Copyleft: The Rise of Open Source Software Licensing.

https://snyk.io/learn/what-is-copyleft-license/

9. Multi-tier Architecture.

   https://www.ibm.com/cloud/learn/three-tier-architecture

10. Open Banking Whitepaper.

    https://www.lntinfotech.com/wp-content/uploads/2020/06/Open-Banking.pdf

11. UK Open Banking API standards.

    https://standards.openbanking.org.uk/

Further Readings

1. Hong Kong Open API Exchange Platform (APIX).
   https://www.apix.com.hk/

2. Hong Kong Science and Technology Park's Data Studio.

   http://datastudio.hkstp.org/

3. Government of Canada Standards on APIs.

   https://www.canada.ca/en/government/system/digital-government/modern-emerging-technologies/government-canada-standards-apis.html

4. Open Source Community.

   https://github.com/open-source