

2nd CMDF Certificate in Quantitative Finance (CQF) Scholarship Program

Introduction

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Thailand Capital Market Development Fund (CMDf)

As a grant-giving organization, CMDf aims to promote the development of the Thailand capital market, with 4 statutory objectives:



1

To promote the development of organizations and infrastructures related to the Thai capital market, as well as to increase the capital market's competitiveness on national and international scales.



2

To promote the development of human resources for the capital market industry or the capital market supervision.



3

To provide knowledge regarding the Thai financial market, investment, capital market development, and financial literacy to the public, investors, citizens, and related agencies or organizations.



4

To support higher education, research, and training in the fields beneficial to the Thai capital market.

About the CMDF Scholarship Program



Objective:

Enhancing Quantitative Finance skills to strengthen the Thai Capital Markets.



Pilot Programs:

We have given scholarships to fundamental finance & Sustainability certification programs

Finance



Sustainability



Previously...



1st CMDF CQF Scholarship Program

- Prioritizing AM & Securities Co. Professionals
- 40 Candidates for Math and Programming Review (Class & Exam)
- 20 Scholarships

Now...

2nd CMDF CQF Scholarship Program

- Open For All
- 100 Candidates for Math & Python Examination
- 20 Scholarships

20 CQF Scholarships

Applicants



Selection Criteria

Interest applicants need to register for the program at (www.cmdf.or.th)

Limit only 100 applicants

Eligible candidates:

1. Thai Nationality

Approach:

1. Open to all and limit only 100 applicants on a first-come-first-served basis

Application Fee: THB 400

AIMC (assigned by CMDF) will manage all process (registration, fee collection and examination)*

100



20 CQF Scholarships

- 100 Applicants for Scholarship Exam
- Awarded to Top 20 candidates with Examination minimum score of 60% by ranking**

20



Condition for 20 CQF Scholarship Recipients

- Must participate in CMDF's survey for research purposes.



* AIMC = Association of Investment Management Companies

** In case of a tie, the scholarship will be awarded by Lucky draw.

Application Process and Timeline

TIMELINE



* Registration will be closed once the 100 candidate quota is filled.

** Mathematic and Python Programming

**Information regarding Terms & Conditions and exam contents are
available at www.cmdf.or.th**



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CQF Executive Summary for Thailand Capital Market Development Fund

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10th of August 2022

Delivered By

FitchLearning



Executive Summary



The Thailand Capital Market Development Fund (CMDf) is looking to develop & promote quant finance expertise across Thailand's Capital Market industry. Through a comprehensive syllabus and a unique balance of theory and practice, the CQF have been helping many organizations develop incoming talent and upskill existing employees in order to bring current, essential quantitative finance, data science and machine learning techniques within their teams.

The unparalleled flexibility of the program ensures that employees gain cutting-edge skills while being able to continue to work and allows up to three years to complete the qualification.



The world's largest quantitative finance certification program. Over 19 years of experience in training finance professionals.

TRUSTED



Learn practical techniques from a globally renowned faculty and apply them the moment you return to your desk.

IMPACT



Over 8,000 professionals in 90+ countries have chosen the CQF. CQF alumni lead the industry at the forefront of quant finance.

EXPERTISE

About the CQF

- World's largest professional qualification for quantitative finance
- 8,000+ Alumni globally in over 90 countries
- Masters-level education delivered online, over 6 months
- 2 Cohorts every year - January and June
- Full flexibility, allowing up to 3 years to complete (6 cohorts)
- Cutting-edge, practical quant finance and data science skills
- Practical exams and final project to ensure mastery can be applied
- Flexible learning, with unparalleled faculty support
- Delivered by world-renowned practitioners, led by Dr. Paul Wilmott
- Awarded by the CQF Institute, part of Fitch Learning
- Trusted by hundreds of repeat sponsoring clients



Some of our Clients & Sponsoring Institutions



CMDF
Thailand Capital Market
Development Fund

Bloomberg

Deloitte.

BLACKROCK

NOMURA



BNP PARIBAS



Morgan Stanley



HSBC

Deutsche Bank



standard
chartered



UBS



**Bank of America
Merrill Lynch**



**BARCLAYS
CAPITAL**



**SOCIETE
GENERALE**



Some of the CQF Alumni in the Financial Sector, in APAC



The CQF program has been used throughout the financial sector and the APAC region to help upskill employees from a number of organisations. Many CQF alumni progress to take up significant leadership positions.

Below shows a **small** selection of current positions taken by CQF alumni within the Financial Sector, in APAC

Name	Position	Location
Siam East Solutions	Chief Financial Officer	Thailand
TMBThanachart Bank	Head of Integrated Risk Management	Thailand
Morgan Stanley	Executive Director, Global Lead Surveillance Tuning Analytics	Japan
UBS	Chief Risk Officer	Japan
Nikko Asset Management	Vice President, Market Risk Team	Japan
RBS	Vice President, Currencies	Australia
Citi	Vice President, Valuation Control & Analytics	Australia
National Australia Bank	Head of FX e-Trading	Australia
Manulife	Vice President & Chief Product Officer	Hong Kong
DBS Bank	SVP of Wealth Management Solutions	Hong Kong

Name	Position	Location
Crédit Agricole CIB	Managing Director	Hong Kong
ING Wholesale Banking	Director, Market Risk Management & Product Control	Singapore
HSBC	Managing Director - Chief Compliance Officer	Singapore
GE Capital	Risk Strategy Leader	Singapore
UOB Bank	Head of Quantitative Analytics, Global Markets	Singapore
Julius Baer	Head Markets Risk and Product Control Asia	Singapore
Standard Chartered	Head, Financial Engineering Credit Risk	Singapore
Barclays	Senior Vice President, Internal Audit	India
Credit Suisse	Director, Head of EMEA & Swiss Product Control Analytics, India	India
JP Morgan	VP, Model Governance Group Equities	India

CQF Program Overview: Three Phases



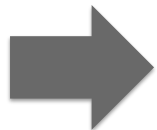
The CQF program can be split into the following three phases:

Preparation



Optional primers:

- Mathematics
- Python Programming
- Finance



CQF Qualification



The core program consists of:

- Six core modules
- Two advanced electives
- Three exams
- One final project



Lifelong Learning



The Library consists of:

- 900+ hours of lectures
- 100+ hours of masterclasses
- 70+ hours of C++ tuition
- The latest CQF curriculum

Delegates prepare for their first lectures through our unique Python Programming, Mathematics and Finance Primers.

Made up of six modules, two chosen advanced electives, three exams and a final project. Each exam is a practical assessment of knowledge and skills.

Available at no extra cost to alumni can keep pace with the latest quant finance skills with permanent access to our Lifelong Learning library.

Preparation: Primers



Delegates can access primers as soon as their CQF enrolment has been processed.

Mathematics Primer



Covers the mathematical preliminaries needed for quant finance:

- Calculus
- Differential equations
- Linear algebra
- Probability
- Statistics

The Mathematics Primer has been carefully designed to refresh the core mathematical tools used within quantitative finance.

Python Programming Primer



Teaches you how to program in Python from the beginning:

- Python syntax
- Standard mathematical functions
- SciPy and NumPy libraries
- Good programming practices
- Documenting code and debugging

The Python Programming Primer is ideal if you're new to coding, it assumes no prior knowledge and will teach you Python from the beginning.

Finance Primer



Introduces key concepts and asset classes:

- Macroeconomics
- Capital markets fundamentals
- Introduction to money markets
- Time value of money
- Introduction to financial assets

The Finance primer introduces the key financial concepts and range of asset classes that will be discussed in the CQF.

The qualification is made up of six modules and advanced electives. Modules two, three, and four are examined. At the end of module six, all delegates complete a practical project and apply their theoretical knowledge to real-world problems.

Module One

Building Blocks of Quantitative Finance

In module one, we will introduce you to the rules of applied Itô calculus as a modeling framework. You will build tools using stochastic calculus and martingale theory and learn how to use simple stochastic differential equations and their associated Fokker-Planck and Kolmogorov equations.

- Random behavior of assets
- Important mathematical tools and results
- Taylor series
- Partial differential equations
- Transition density functions
- Fokker-Planck and Kolmogorov
- Stochastic calculus and Itô's Lemma
- Manipulating stochastic differential equations
- Martingales
- The binomial model for asset prices

Module Two

Quantitative Risk and Return

In module two, you will learn about the classical portfolio theory of Markowitz, the capital asset pricing model, and the recent developments of these theories. We will investigate quantitative risk and return, looking at econometric models such as the ARCH framework and risk management metrics such as VaR and how they are used in the industry.

- Modern portfolio theory
- Capital asset pricing model
- Portfolio optimization for portfolio selection
- Risk regulation and Basel III
- Value at risk and expected shortfall
- Collateral and margins
- Liquidity asset liability management
- Volatility filtering (GARCH Family)
- Asset returns: key, empirical stylized facts
- Volatility models: The ARCH Framework

Module Three

Equities and Currencies

In module three, we will explore the importance of the Black-Scholes theory as a theoretical and practical pricing model, which is built on the principles of delta hedging and no arbitrage. You will learn about the theory and results in the context of equities and currencies using different kinds of mathematics to make you familiar with techniques in current use.

- The Black-Scholes Model
- Hedging and the Greeks
- Options strategies
- Early exercise and American options
- Finite-difference and methods
- Monte Carlo simulations
- Exotic options
- Volatility arbitrage strategies
- Martingale theory for pricing
- Girsanov's theorem
- Advanced Greeks
- Derivatives market practice
- Advanced volatility modeling in complete markets
- Non-probabilistic volatility models

CQF: Modules (Cont.)



The qualification is made up of six modules and advanced electives. Modules two, three, and four are examined. At the end of module six, all delegates complete a practical project and apply their theoretical knowledge to real-world problems.

Module Four

Data Science and Machine Learning I

In module four, you will be introduced to the latest data science and machine learning techniques used in finance. Starting with a comprehensive overview of the topic, you will learn essential mathematical tools, followed by a deep dive into supervised learning, including regression methods, k-nearest neighbors, support vector machines, ensemble methods, and many more.

- What is mathematical modeling?
- Math toolbox for machine learning
- Principal component analysis
- Supervised learning techniques
- Linear regression
- Penalized regressions: lasso, ridge, and elastic net
- Logistic, SoftMax regression
- K-nearest neighbors
- Naïve bayes classifier
- Support vector machines
- Decision trees
- Ensemble models – bagging and boosting
- Python – Scikit learn

Module Five

Data Science and Machine Learning II

In module five, you will learn several more methods used for machine learning in finance. Starting with unsupervised learning, deep learning and neural networks, we will move into natural language processing and reinforcement learning. You will study the theoretical framework, but more importantly, analyze practical case studies exploring how these techniques are used within finance.

- Unsupervised learning techniques
- K-means clustering
- Self-organizing maps
- T-distributed stochastic neighbor embedding
- Uniform manifold approximation and projection
- Autoencoders
- Artificial neural networks
- Neural network architectures
- Natural language processing
- Deep learning and NLP tools
- Reinforcement learning
- Practical machine learning case studies for finance
- AI-based Algorithmic Trading strategies
- Quantum Computing

Module Six

Fixed Income and Credit

In the first part of module six, we will review the multitude of interest rate models used within the industry, focusing on the implementation and limitations of each model. In the second part, you will learn about credit and how credit risk models are used in quant finance, including structural, reduced form, as well as copula models.

- Fixed-income products and market practices
- Yield, duration, and convexity
- Stochastic interest rate models
- Probabilistic methods for interest rates
- Calibration and data analysis
- Heath, Jarrow, and Morton
- Libor market model
- Structural models
- Reduced-form model and the hazard rate
- Credit risk and credit derivatives
- X-valuation adjustment (CVA, DVA, FVA, MVA)
- CDS pricing, market approach
- Risk of default, structural and reduced form
- Implementation of copula models

Advanced Electives

Advanced electives are the final element in qualification. Delegates select two electives from the extensive choice below to complete the CQF.

- Advanced Machine Learning
- Advanced Portfolio Management
- Advanced Risk Management
- Advanced Volatility Modelling
- Algorithmic Trading I
- Algorithmic Trading II
- Behavioural Finance for Quants
- C++
- Counterparty Credit Risk Modelling
- Fintech
- Numerical Methods
- R for Quant Finance
- Risk Budgeting : Risk-Based Approaches to Asset Allocation



Assessment



Weekly

- Delegates receive problem sets and solutions, further reading and programming exercises which are recommended but are not compulsory

Exams

- At the end of modules 2, 3 and 4, delegates are given a compulsory take-home written examination
- Delegates have two weeks to complete each exam

Final Project

- Delegates must complete a project at the end of Module Six
- This is a practical programming project which is set during the second half of the course
- It is designed to ensure delegates apply their theoretical knowledge to real-life problems that they can then take back to the workplace

Final Examination for Distinction

- The final three-hour exam is optional and takes place in exam centers worldwide
- Delegates who score 80% or above receive a distinction

Extensions

- Two extensions are available for the exams in modules 2, 3 and 4
- Program deferral is also available, if required



Learning Methodology



Learn

- 2.5 hour interactive, live online lectures twice a week
- Lectures start at 6pm UK time (or 12AM BKK Time)
- Lectures are streamed live, recorded, and uploaded to the CQF portal within 24 hours

Review

- Review of annotated class notes after every lecture
- Pre- and post-lecture stimulating exercises
- Tutorials – Deeper exploration of key concepts covered in lectures in discussion-based tutorials

Implement

- Python Labs – Building the models covered in the lectures in problem-solving labs

Support

- Access to full program support every step of the way
- Faculty support via email, phone calls, 1-1 Zoom meetings
- Private CQF Discussion Forum to exchange ideas with fellow delegates



Online Learning Resources

- **CQF Portal** – Access to all study resources, including live extra help sessions, lecture notes, and exercises
- **CQF App** – Mobile access with lecture download for offline viewing available on iOS/Android

Faculty



CQF faculty are selected from among the world's most accomplished professionals and represent the world's best in quantitative finance and machine learning instruction.



Dr. Paul Wilmott
Quantitative Finance,
CQF Founder



Dr. Sebastien Lleo
Portfolio Management



Dr. Espen Haug
Option
Pricing/Derivatives



Dr. Richard Diamond
Volatility Modeling



Dr. Randeep Gug
CQF Program Director



Dr. Riaz Ahmad
Mathematical and Computational
Finance, Head of Faculty



Dr. Jon Gregory
Counterparty Risk



Dr. Siyi Zhou
Credit Risk



**Professor Stephen
Taylor**
Asset Pricing/Volatility
Models



Tony Guida
Machine Learning



Dr. Claus Huber
Machine Learning



Dr. Peter Jäckel
Quantitative Modeling



Delegates receive a
complete set of textbooks
written by our faculty.



Dr. Yves Hilpisch
Python



**Dr. Miquel Noguer
Alonso**
Machine Learning



Dr. Marc Henrard
Fixed Income



Dr. Steve Phelps
Machine Learning



Kannan Singaravelu
Python



Thijs van den Berg
Machine Learning

Lifelong Learning for Alumni



The Lifelong Learning Library contains over 900 hours of recorded lectures and educational content.

Alumni are given permanent access to the lifelong learning library allowing them to continue professional development for the rest of their career.

Alumni Lectures

- Frequent lectures are arranged for CQF Alumni which are recorded and placed on the portal. The portal also gives delegates access to a full online library of previous classes

Master Classes

- Continue to learn and delve deeper into specific subjects with the one or two day CQF's Masterclasses

C++ for Quant Finance

- Starting with elementary C++, the sessions cover both the principles and practicalities of producing robust code in a quant finance environment

Latest CQF Program

- Access to all the lectures and resources from the most recent completed CQF program

Key Benefits of the CQF

Immediate ROI

- Your employees will be taught by the world's leading experts
- Emphasis on practical application enables your people to apply their new skills immediately after each lecture

Increase employee retention and loyalty

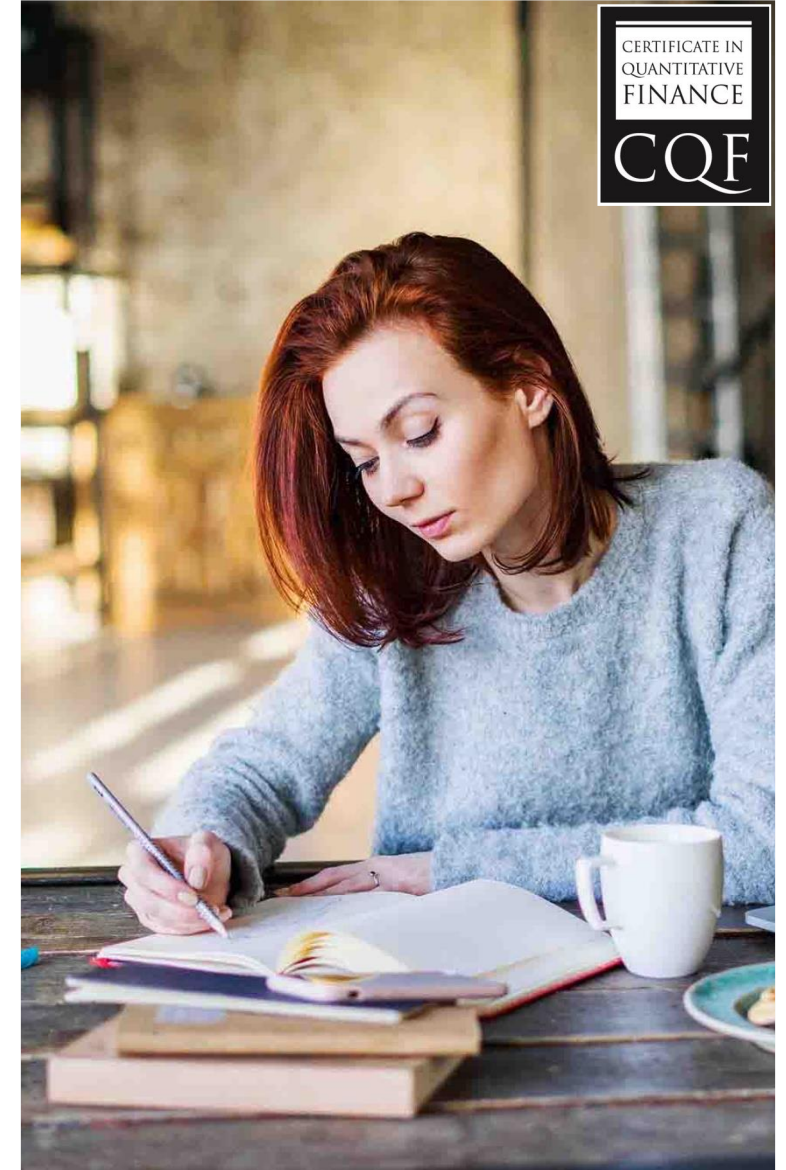
- Increase retention of your top and emerging talent by using the CQF as a rewarding professional development program
- The CQF is a resource proven to keep teams engaged and competitive, and to reduce recruitment costs

A proven, cost-effective solution

- Hundreds of sponsoring companies globally rely on the CQF to deliver desk-ready quant finance skills
- Lifelong Learning Library for alumni means no more expenditures on and time lost to “one-off” trainings

No downtime

- The part-time nature of the CQF means your people study in their own time, without an impact on work time



Enrolment

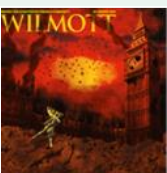
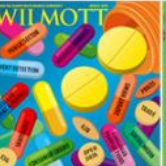


- The CMDF Scholars will be taking Level 1 in the upcoming January 2023 cohort; then take Level 2 in the June 2023 Cohort
- Level 1 includes the Primers + Module 1 – 3; while Level 2 includes Module 4 – 6 and Advance Electives
- There are only two (2) cohorts each year, one in January and the other is in June
- Each candidate has up to 3 years to complete the qualification, which is a total of 6 cohorts
- Upon enrollment, candidates will have access to all learning resources including live online lectures, tutorial, exercises, python labs, supplementary textbooks, exams (plus re-takes if required), faculty support and access to the portal/app
- There are no hidden additional fees once the enrollment fees are fully settled.





 Paul Wilmott President, CQF Institute	 Harry Markowitz President, Harry Markowitz Company	 John Guerd Director of Quant Research, McKinley Capital Management	 Nassim Taleb Professor of Risk Engineering, Tandon School of Engineering	 Emanuel Derman Financial Engineering Professor, Columbia University	 Jean-Philippe Bouchaud Chairman & Chief Scientist, CFM	 Aaron Brown Courant Institute for Mathematical Sciences	 Elie Ayache Co-Founder & CEO of ITO 33	 Jim Gatheral Presidential Professor, Baruch College, CUNY
 Agnes Werpachowska Mathematical Modeller & Researcher	 Bill Ziemba Alumni Professor, University of British Columbia	 Boris Borowski Head of Structured Products Technology, AG Bank Vontobel AG	 Carol Alexander Professor of Finance, University of Sussex & Co-Editor, Journal of Banking and Finance	 Helyette Geman Director, Commodity Finance Centre, Birkbeck, University of London	 John Ashley General Manager, Financial Services & Technology, NVIDIA	 Alireza Javaheri Global Head, Equity Derivatives Quant Strategies, Credit Suisse	 Mehdi Sonthonnax US Equity Derivatives Quant Strategies, Credit Suisse	 Michael Aichinger CEO, unisoftwareplus GmbH

Podcast	Wilmott Magazine		
			
			

The Institute is the awarding body for the CQF and a global membership organization dedicated to educating and connecting the worldwide quant finance community.

- Awarding body for the CQF with Dr. Paul Wilmott as President
- Steering committee includes Edward Thorp, Pat Hagan, Conrad Wolfram
- Over 20,000 members globally
- Annual conferences exploring the latest ideas in quant finance
- High-profile speakers: Harry Markowitz, Emanuel Derman, Helyette Geman, Nassim Taleb
- Regular talks from leading practitioners and academics
- Educational resources to provide members insights into industry practices
- Local Societies and networking opportunities

Questions & Answer



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