

**Study Scheme for the CUHK Financial Technology Students Pursuing the Dual Degree Programme with Peking University (PKU) Financial Mathematics**  
**Applicable to students admitted in 2023-24**

**Bachelor of Engineering in Financial Technology at CUHK**

**Major Programme Requirement**

Students are required to complete a minimum of 75 units of courses as follows:

	Units
1. Faculty Package: ENGG1110/ESTR1002, ENGG1120/ESTR1005, ENGG1130/ ESTR1006	9
2. Foundation Courses: CSCI1120/1130/ESTR1100/1102, ENGG2440/ESTR2004, ENGG2760/ESTR2018, ENGG2780/ESTR2020, MATH1510	13
3. Required Courses:	
(a) CSCI2100#/ESTR2102, CSCI4130#/IERG4130#/ESTR4306, ECON2011#, FINA2310#, FTEC2101/ESTR2520, FTEC3001, 3002, SEEM2520#, SEEM3550#/ESTR3506, SEEM3590#/ ESTR3509	30
(b) Research Component Courses[a]: FTEC4998, 4999	6
(c) Practicum Course: FTEC2602	1
(d) Legal Course: FTEC2001	2
4. Elective Courses (at least 6 units of FTEC courses, and from 3 other subject areas outside FTEC): ACCT2111#, AIST4010#/ESTR4140, CSCI2040#, 2120#, CSCI3150#/ESTR3102, CSCI3160#/ESTR3104, CSCI3320#, CSCI4160#/ESTR4104, CSCI4180#/ESTR4106, CSCI4430#/IERG3310#/ESTR3310/ESTR4120, ECON2021#, ENGG1820, FINA3020#, 3030#, 3070#, 3210#, 4010#, FTEC4001, 4002, 4003, FTEC4004/ESTR4312, FTEC4005, 4006, 4007, IERG4080#/ESTR4312, IERG4210#, MKTG4120#, SEEM3410#, SEEM3450#/ESTR3502, SEEM3570#/ESTR3508, SEEM3580#, SEEM4730#/ESTR4508	14
<b>Total:</b>	<b>75</b>

In addition to fulfilling the above Major Programme Requirement, students may also challenge themselves by taking the following stream offered by the Faculty:

**Engineering Leadership, Innovation, Technology and Entrepreneurship (ELITE) Stream[b]**

Elective Courses:

15 units of courses[c]:

- i) 12 units of ESTR courses of which at most 6 units of courses at 1000 or 2000 level and at least 6 units of courses at 3000 or 4000 level[d]
- ii) 3 units of BMEG/CENG/CSCI/ELEG/ENGG/IERG/MAEG/SEEM courses at 5000 level[e]

Explanatory Notes:

1. ENGG, ESTR and FTEC courses at 2000 and above level as well as those labeled as # will be included in the calculation of Major GPA for honours classification, excluding courses in the Faculty Package and Foundation Courses.
  - [a] Students who have declared to specialize in the ELITE Stream will be required to complete 6 units of ESTR4998 and 4999 to substitute for FTEC4998 and 4999. These 6 units cannot be used to fulfill the Elective Courses requirement of the ELITE Stream.
  - [b] Details of the entrance and coursework requirements, and declaration procedures for the ELITE Stream can be found at the ELITE website ([www.erg.cuhk.edu.hk/elite](http://www.erg.cuhk.edu.hk/elite)). Non-ELITE Engineering students may be allowed to take ESTR courses. Students are required to seek approval from their respective Major Programmes for using ESTR courses taken to fulfill the Major Programme Requirement. Details are available at the ELITE website.
  - [c] Students can use up to 9 units of courses which have been taken to fulfill the requirements of items 1 to 4 above to fulfill the elective requirements of the ELITE Stream. Item 3(b) Research Component Courses will not be included in these 9 units. A full list of ESTR courses is available at the ELITE website.
  - [d] Students can use BMEG/CENG/CSCI/ELEG/ENGG/IERG/MAEG/SEEM courses at 5000 level to substitute for ESTR courses at 3000 or 4000 level, subject to the approval of the Stream Director and the Associate Dean (Education).
  - [e] The requirement of at least 3 units of Engineering courses at 5000 level is a requirement for the ELITE Stream only. It should not be interpreted as a requirement of the Major Programme.

	<b>Recommended Course Pattern for CUHK Students in Fulfilment of CUHK Requirements</b>	<b>Units</b>	<b>Units per Term</b>
<b>First Year of Attendance (Study at PKU)</b>	<ul style="list-style-type: none"> <li>▪ Faculty Package: 2 courses</li> <li>▪ Major Required: MATH1510</li> <li>▪ University Core: 2 PHED courses</li> </ul>		At least 32 units including courses to be transferred to CUHK listed in Attachment 1.2
<b>Second Year of Attendance (Study at PKU)</b>	<ul style="list-style-type: none"> <li>▪ Faculty Package: 1 course</li> <li>▪ Major Required: CSCI2100/ESTR2102, ECON2011, ENGG2760/ESTR2018, FINA2310, SEEM2520</li> <li>▪ University Core: 2 University GE courses of 4 units (in Areas A, and C)[h]</li> </ul>		

<b>Third Year of Attendance (Study at CUHK)</b>	1 <sup>st</sup> term <ul style="list-style-type: none"> <li>Major Required: CSCI1120/1130/ESTR1100/1102, CSCI4130/IERG4130/ESTR4306[a], ENGG2440/ESTR2004</li> <li>University Core: CHLT1001, ELTU1001/1002, ENGG1004</li> </ul>	9  9	18[f]
	2 <sup>nd</sup> term <ul style="list-style-type: none"> <li>Major Required: ENGG2780/ESTR2020, FTEC2001[a], FTEC2101/ESTR2520[c], FTEC2602, FTEC3001/3002[a], SEEM3550/ESTR3506[a]</li> <li>University Core: CHLT1002, 0-1 College GE course [a][e], 0-2 courses from Understanding China and Hong Kong in the Wider Constitutional Order</li> </ul>	14  4	18
	Summer Session <ul style="list-style-type: none"> <li>University Core: 1 UGFH/UGFN course[a]</li> </ul>	3	3
<b>Fourth Year of Attendance (Study at CUHK)</b>	1 <sup>st</sup> term <ul style="list-style-type: none"> <li>Major Required: FTEC3001/3002[a], FTEC4998[d], SEEM3590/ ESTR3509</li> <li>Major Elective(s): 1 course(s)</li> <li>University Core: ELTU3xxx, 1 College GE course[a][e], 0-2 courses from Understanding China and Hong Kong in the Wider Constitutional Order</li> </ul>	9  3  5-6	17-18
	2 <sup>nd</sup> term <ul style="list-style-type: none"> <li>Major Required: FTEC4999[d]</li> <li>Major Elective(s): 4 courses[b]</li> <li>University Core: 1 UGFH1000/UGFN1000[a]</li> </ul>	3 12 3	18
<b>Total:</b>			<b>106-107[b][g]</b>

[a] Courses taken at CUHK can be transferred to fulfill 19 units of General Education and Free Elective Courses of the requirements of the Bachelor of Science in Financial Mathematics at Peking University.

[b] In addition to the 5 elective courses, students are required to take another 3 units of courses in order to fulfil 18 units of Selected Major Courses of the requirements of the Bachelor of Science in Financial Mathematics at Peking University. In this connection, students need to take a total of 109 to 110 units (instead of 106 to 107 units) at CUHK.

[c] FTEC2101/ESTR2520 Optimization Methods taken at CUHK can be transferred to fulfill 3 units of Major Core Course of the requirements of the Bachelor of Science in Financial Mathematics at Peking University.

[d] FTEC4998 and 4999 taken at CUHK can be transferred to fulfill 3 units of the Graduation Thesis of the requirements of the Bachelor of Science in Financial Mathematics at Peking University.

[e] The recommended course pattern of College GE courses varies slightly depending on students' College affiliation.

[f] Students taking a term load exceeding the maximum will need to seek approval from the Registrar.

[g] Students are required to complete at least 50 units of Major courses at CUHK.

[h] Refer to Attachment 1.3 for pre-approved GE courses offered by Peking University and unit exemption recommendation.

	<b>Recommended Course Pattern for PKU Students in Fulfilment of CUHK Requirements</b>	<b>Units</b>	<b>Units per Term</b>
<b>First Year of Attendance (Study at PKU)</b>	<ul style="list-style-type: none"> <li>▪ Faculty Package: 2 courses</li> <li>▪ Major Required: MATH1510</li> <li>▪ University Core: 1 PHED course</li> </ul>		At least 27 units including courses to be transferred to CUHK listed in
<b>Second Year of Attendance (Study at PKU)</b>	<ul style="list-style-type: none"> <li>▪ Faculty Package: 1 course</li> <li>▪ Major Required: CSCI2100/ESTR2102, ECON2011, ENGG2760/ESTR2018, FINA2310, SEEM2520</li> </ul>		Attachment 1.2
<b>Third Year of Attendance (Study at CUHK)</b>	1 <sup>st</sup> term <ul style="list-style-type: none"> <li>▪ Major Required: CSCI1120/1130/ESTR1100/1102, CSCI4130/IERG4130/ESTR4306[a], ENGG2440/ESTR2004</li> <li>▪ Major Elective(s): 2 courses[b]</li> </ul>	9	15
	2 <sup>nd</sup> term <ul style="list-style-type: none"> <li>▪ Major Required: ENGG2780/ESTR2020, FTEC2001[a], FTEC2101/ESTR2520[c], FTEC2602, FTEC3001/3002[a], SEEM3550/ESTR3506[a]</li> <li>▪ University Core: 1 UGFH1000/UGFN1000[a]</li> </ul>	14  3	17
<b>Fourth Year of Attendance (Study at CUHK)</b>	1 <sup>st</sup> term <ul style="list-style-type: none"> <li>▪ Major Required: FTEC3001/3002[a], FTEC4998[d], SEEM3590/ ESTR3509</li> <li>▪ University Core: ELTU3xxx, 1 College GE course[a][e], Understanding China or Hong Kong in the Wider Constitutional Order</li> </ul>	9  5-6	14-15
	2 <sup>nd</sup> term <ul style="list-style-type: none"> <li>▪ Major Required: FTEC4999[d]</li> <li>▪ Major Elective(s): 3 courses[b]</li> <li>▪ University Core: 1 University GE (Area A) course[a][g], Understanding China or Hong Kong in the Wider Constitutional Order</li> </ul>	3 9 3	15
<b>Total:</b>			<b>88-89[f]</b>

- [a] Courses taken at CUHK can be transferred to fulfill 19 units of General Education and Free Elective Courses of the requirements of the Bachelor of Science in Financial Mathematics at Peking University.
- [b] In addition to the 5 elective courses, students are required to take another 3 units of courses in order to fulfill 18 units of Selected Major Courses of the requirements of the Bachelor of Science in Financial Mathematics at Peking University. In this connection, students need to take a total of 90 to 91 units (instead of 87 to 88 units) at CUHK.
- [c] FTEC2101/ESTR2520 Optimization Methods taken at CUHK can be transferred to fulfill 3 units of Major Core Course of the requirements of the Bachelor of Science in Financial Mathematics at Peking University.
- [d] FTEC4998 and 4999 taken at CUHK can be transferred to fulfill 3 units of the Graduation Thesis of the requirements of the Bachelor of Science in Financial Mathematics at Peking University.
- [e] The recommended course pattern of College GE courses varies slightly depending on students' College affiliation.
- [f] Students are required to complete at least 50 units of Major courses at CUHK.
- [g] The 3 units of University GE Area A course can be replaced by an additional GE Foundation course (viz. completing BOTH of the GE Foundation courses) on the condition that the PKU students would have taken course(s) relevant to Area A in Peking University. Refer to Attachment 1.3 for pre-approved GE courses offered by Peking University relevant to Area A.

## **Bachelor of Science in Financial Mathematics at Peking University (CUHK Students)**

### **Programme Requirements**

Students are required to complete a minimum of 134 units of courses as follows:

	<u>Units</u>
1. Common and Foundation Courses (公共與基礎類課程)	46
2. Major Core Courses (專業核心課程)[a]	29
3. Selected Major Courses (專業限選課程)[b]	29
4. General Education and Free Elective Courses (通識與自主選修課)[c]	27
5. Graduation Thesis (畢業論文)[d]	3
<b>Total:</b>	<b>134[e]</b>

#### Explanatory Notes:

- [a] FTEC2101/ESTR2520 Optimization Methods taken at CUHK can be transferred to fulfill 3 units of item 2 of the Major Core Courses in PKU.
- [b] 18 units of courses taken at CUHK as follows can be transferred to fulfill 18 units of item 3 of the Major programme requirements:
- i) 6 units from FTEC4001, 4002, 4003, 4004, 4005, 4006, 4007
  - ii) 3 units from SEEM3570/ESTR3508/STAT3007
  - iii) 9 units from MATH4050, SEEM4730/ESTR4508, FINA3220/4210, STAT4005
- [c] General Education and some major related courses taken at CUHK can be transferred to fulfill 19 units of item 4 of the Major programme requirements.
- [d] FTEC4998 and 4999 taken at CUHK can be transferred to fulfill 3 units of the Major programme requirements.
- [e] Of the 134 units, a total of 43 units (comprising the courses taken to fulfill explanatory notes [a] to [d] above) will be transferred from CUHK to fulfill the Major programme requirements at PKU.

<b>Year</b>	<b>Recommended Course Pattern for CUHK Students in Fulfilment of PKU Requirements</b>	<b>PKU Units</b>	<b>PKU Units Per Term</b>
<b>First Year of Attendance (Study at PKU)</b>	1 <sup>st</sup> term <ul style="list-style-type: none"> <li>▪ Common and Foundation Courses (公共與基礎類課程)               <ul style="list-style-type: none"> <li>○ Courses related to China (與中國有關) 4</li> <li>○ University English (大學英語) 2</li> <li>○ Physical Education (體育) 1</li> <li>○ Foundation Course:                   <ul style="list-style-type: none"> <li>▪ Mathematical Analysis I (數學分析 I) 5</li> </ul> </li> </ul> </li> <li>▪ Major Core Courses (專業核心課程)               <ul style="list-style-type: none"> <li>○ Advanced Algebra I (高等代數 I) 5</li> <li>○ Geometry (幾何學) 5</li> </ul> </li> <li>▪ General Education and Free Elective Courses (通識與自主選修課) 2</li> </ul>		24

	<p>2<sup>nd</sup> term</p> <ul style="list-style-type: none"> <li>▪ Common and Foundation Courses (公共與基礎類課程) <ul style="list-style-type: none"> <li>○ Courses related to China (與中國有關) 4</li> <li>○ University English (大學英語) 2</li> <li>○ Physical Education (體育) 1</li> <li>○ Foundation Courses: <ul style="list-style-type: none"> <li>▪ Mathematical Analysis II (數學分析 II) 5</li> <li>▪ Intro to Computing (計算概論) 3</li> </ul> </li> </ul> </li> <li>▪ Major Core Courses (專業核心課程) <ul style="list-style-type: none"> <li>○ Advanced Algebra II (高等代數 II) 4</li> </ul> </li> <li>▪ Selected Major Courses (專業限選課程) <ul style="list-style-type: none"> <li>○ University Physics (大學物理) 2</li> </ul> </li> </ul> <p>General Education and Free Elective Courses (通識與自主選修課) 2</p>		23
<b>Second Year of Attendance (Study at PKU)</b>	<p>1<sup>st</sup> term</p> <ul style="list-style-type: none"> <li>▪ Common and Foundation Courses (公共與基礎類課程) <ul style="list-style-type: none"> <li>○ Courses related to China (與中國有關) 4</li> <li>○ Physical Education (體育) 1</li> <li>○ Foundation Courses: <ul style="list-style-type: none"> <li>▪ Mathematical Analysis III (數學分析 III) 4</li> <li>▪ Data Structures (數據結構) 3</li> </ul> </li> </ul> </li> <li>▪ Major Core Courses (專業核心課程) <ul style="list-style-type: none"> <li>○ Abstract Algebra (抽象代數) 3</li> </ul> </li> <li>▪ Selected Major Courses (專業限選課程) <ul style="list-style-type: none"> <li>○ Intro to Financial Math (金融數學引論) 3</li> <li>○ University Physics (大學物理) 2</li> </ul> </li> <li>▪ General Education and Free Elective Courses (通識與自主選修課) 2</li> </ul>		22
	<p>2<sup>nd</sup> term</p> <ul style="list-style-type: none"> <li>▪ Common and Foundation Courses (公共與基礎類課程) <ul style="list-style-type: none"> <li>○ Courses related to China (與中國有關) 6</li> <li>○ Physical Education (體育) 1</li> </ul> </li> <li>▪ Major Core Courses (專業核心課程) <ul style="list-style-type: none"> <li>○ Probability Theory (概率論) 3</li> <li>○ Complex Analysis (複變函數) 3</li> <li>○ ODE (常微分方程) 3</li> </ul> </li> <li>▪ Selected Major Courses (專業限選課程) <ul style="list-style-type: none"> <li>○ Courses from Management School/Economic School* 4</li> <li>○ General Education and Free Elective Courses (通識與自主選修課) 2</li> </ul> </li> </ul>		22

Third and Fourth Years of Attendance (Study at CUHK)	Study at CUHK ▪ To transfer 43 units from CUHK to PKU@	43	43
<b>Total:</b>		<b>134</b>	

\* Microeconomics and Corporate Finance are recommended.

@ The courses taken at CUHK to be transferred to fulfill PKU graduation requirements include:

1. Major Core Course (3 units): FTEC2101/ESTR2520 Optimization Methods
2. Selected Major Courses (18 units):
  - (a) 6 units from FTEC4001, 4002, 4003, 4004, 4005, 4006, 4007
  - (b) 3 units from SEEM3570/ESTR3508/STAT3007
  - (c) 9 units from MATH4050, SEEM4730/ESTR4508, FINA3220/4210, STAT4005
3. General Education and Free Elective Courses (19 units)
4. Graduation Thesis (3 units): FTEC4998, 4999



**Course Mapping: CUHK requirement to be fulfilled by PKU courses**

CUHK Courses	PKU Courses
ENGG1110 Problem Solving by Programming	Intro to Computing 計算概論
ENGG1120 Linear Algebra for Engineers	Advanced Algebra I, II 高等代數 I, II
ENGG1130 Multivariable Calculus for Engineers	Mathematical Analysis III 數學分析 III
ENGG2760 Probability for Engineers	Probability Theory 概率論
MATH1510 Calculus for Engineers	Mathematical Analysis I, II 數學分析 I, II
CSCI2100 Data Structures	Data Structures 數據結構
ECON2011 Basic Microeconomics	Microeconomics 微觀經濟學
FINA2310 Fundamentals of Business Finance	Corporate Finance 公司財務
SEEM2520 Fundamental in Financial Engineering	Introduction to Financial Math 金融數學引論

**Course Mapping: PKU requirement to be fulfilled by CUHK courses**

PKU Courses	CUHK Courses
Mathematical Modelling 數學建模	FTEC2101/ESTR2520 Optimization Methods
Mathematical Statistics 數理統計	ENGG2780 Statistics for Engineers
Applied Stochastic Processes 應用隨機過程	SEEM3570/ESTR3508 Stochastic Models
Real Analysis 實變函數	MATH4050 Real Analysis
Financial Economics 金融經濟學	ECON3420 Financial Economics
Financial Data Analysis 金融數據分析	SEEM4730/ESTR4508 Statistics Modeling and Analysis in Financial Engineering
Insurance and Actuary 壽險精算	FINA3220 Life Contingencies I / FINA3230 Life and Health Insurance / FINA4210 Life Contingencies II
Security Investment 證券投資學	SEEM3590/ESTR3509 Investment Science
Derivatives 衍生證券基礎	FTEC3001 Financial Innovation & Structured Products
金融時間序列分析	STAT4005 Time Series
Graduation Thesis 畢業論文	FTEC4998, 4999 Final Year Project I, II

CUHK students can take the following General Education Courses offered by Peking University and transfer up to 6 units to CUHK towards fulfillment of University General Education Requirements of CUHK in Areas A, C, D. Upon completion of any of the designated courses, students shall submit formal applications for course and unit exemption in accordance with the prevailing procedures and guidelines.

	<b>Designated courses offered by Peking University</b>	<b>Recommendations from OUGE</b>
1	2033530 Ancient Chinese Culture	The course can be considered as an equivalent course of UGEA2110 <i>An Introduction to Chinese Culture</i> (3 units), and exemption of 3 units in Area A can be granted.
2	3032360 History of Chinese Culture	The course can be considered as an equivalent course of UGEA2110 <i>An Introduction to Chinese Culture</i> (3 units), and exemption of 3 units in Area A can be granted.
3	2131110 Politics and Culture in Traditional China	The course can be considered for exempting 3 units in Area A.
4	1339320 The Historical Geography of China	The course can be considered for exempting 3 units in Area A.
5	2431560 American Culture and Society	The course can be considered for exempting 3 units in Area C.
6	3130280 Gender Studies	The course can be considered for exempting 3 units in Area C. Due to significant overlapping in course content with UGEC1209 <i>Thinking Gender: An Introduction to Women's and Gender Studies</i> , course restriction of UGEC1209 shall apply.
7	1339180 Global Cultural Geography	The course can be considered for exempting 3 units in Area C.
8	1831990 Inter-cultural Communication	The course can be considered for exempting 3 units in Area C.