

THE CHINESE UNIVERSITY OF HONG KONG
DEPARTMENT OF INFORMATION ENGINEERING

BSc in Mathematics and Information Engineering
Suggested Study Plans for MIEG Students Admitted in 2024-25

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A) Applicable for MIEG students admitted to the programme directly

1) An Overview

UNIVERSITY CORE SUBJECTS		Units
Chinese Language		5
English Language		8
General Education	University GE: Foundation Courses (6 units) University GE: Four Areas (7 units) College GE (6 units)	19
Understanding China		1
Hong Kong in the Wider Constitutional Order		1
Digital Literacy and Computational Thinking (ENGG1003)		3
Physical Education		2
Sub-Total		39
MIEG Major Requirements		
Faculty Package		9
Foundation Science		6
Foundation Math	(MATH1010/1018)	3
IE Required		30
MATH Required	(MATH2010/2018, 2020/2028, 2040/2048, 2050/2058, 2060/2068, 2070/2078, 2230)	21
Major Electives		12
Final Year Project		6
Sub-Total		87
Minimum Graduation Requirement		126

2) A Suggested Study Plan

		Recommended Course Pattern	Units
THE FIRST YEAR	Term 1	Faculty Package: ENGG1110/ESTR1002 Language: CHLT1001 Foundation Math: MATH1010/1018 Physical Education: 1 course College General Education: 1 course ENGG1003	3 3 3 1 3 3
			16
	Term 2	Faculty Package: MATH1030/1038, MATH1050/1058 Language: ELTU1001 Foundation Science: Any one from AIST1110, CSCI1120/ESTR1100, CSCI1130/ESTR1102, IERG1080 Physical Education: 1 course General Education: Foundation (1 course)	6 3 3 1 3
			16

		Recommended Course Pattern	Units
THE SECOND YEAR	Term 3	Language: CHLT1002 Major Required: IERG1810 IERG2060/ESTR2304 MATH2010/2018 MATH2040/2048 MIEG2051/ESTR2360 General Education: Foundation (1 course)	2 1 3 3 3 3 3
			18
	Term 4	Language: ELTU2014 Foundation Science: Any one from ENGG1310, PHYS1001 or 1002 or 1111, STAT1011 Major Required: CSCI2100/ESTR2102 IERG2080/ESTR2306 MATH2020/2028 MIEG2440/ESTR2362	3 3 3 3 3 3
			18
THE THIRD YEAR	Term 5	Major Required: IERG3310/ESTR3310 IERG3800 MATH2050/2058 MATH2230 (or 2070/2078) General Education: (2 courses) (Area A/C/D)	3 1 3 3 5-6
			15-16
	Term 6	Language: ELTU3014 Major Required: IERG2310/ESTR2300 IERG3820 MATH2060/2068 MATH2070/2078 (or 2230) Major Elective(s): 2 courses	2 3 1 3 3 6
			18
THE FOURTH YEAR	Term 7	Major Required: CSCI3160/ESTR3104 IERG3080/ESTR3308 IERG4998/ESTR4998 College General Education: 1 course General Education: Understanding China	3 3 3 3 1
			13
	Term 8	Major Required: IERG4999/ESTR4999 Major Elective(s): 2 courses General Education: (1 course) (Area A/C/D) General Education: Hong Kong in the Wider Constitutional Order	3 6 2-3 1
			12-13
		Total (including Faculty Package):	126

B) Applicable for MIEG students admitted via the Faculty of Science (under the Mathematics Enrichment Stream)

1) An Overview

UNIVERSITY CORE SUBJECTS		Units
Chinese Language		5
English Language		8
General Education	University GE: Foundation Courses (6 units) University GE: Four Areas (7 units) College GE (6 units)	19
Understanding China		1
Hong Kong in the Wider Constitutional Order		1
Digital Literacy and Computational Thinking (ENGG1003)		3
Physical Education		2
Sub-Total		39
MIEG Major Requirements		
Faculty Package		9
Foundation Science		6
Foundation Math	(MATH1030/1038, MATH1050/1058)	6
IE Required		30
MATH Required	(MATH2010/2018, 2020/2028, 2040/2048, 2050/2058, 2060/2068, 2070/2078, 2230)	21
Major Electives		9
Final Year Project		6
Sub-Total		87
Minimum Graduation Requirement		126

2) A Suggested Study Plan

		Recommended Course Pattern	Units
THE FIRST YEAR	Term 1	Faculty Package: MATH1010/1018	3
		A course from Science Faculty Package Group A, B or D	3
	Language: CHLT1001	3	
	Physical Education: 1 course	1	
	College General Education: 1 course	3	
	ENGG1003	3	
		16	
	Term 2	Faculty Package: STAT1011	3
		Foundation Math: MATH1030/1038, MATH1050/1058	6
	Language: ELTU1001	3	
	Physical Education: 1 course	1	
	General Education: Foundation (1 course)	3	
		16	

		Recommended Course Pattern	Units
THE SECOND YEAR	Term 3	Language: CHLT1002 Foundation Science: ENGG1110/ESTR1002 Major Required: IERG1810 IERG2060/ESTR2304 MATH2010/2018 MATH2040/2048 MIEG2051/ESTR2360	2 3 1 3 3 3 3
			18
	Term 4	Language: ELTU2014 Foundation Science: Any one from AIST1110, CSCI1120/ESTR1100, CSCI1130/ESTR1102, IERG1080 Major Required: CSCI2100/ESTR2102 IERG2080/ESTR2306 MATH2020/2028 MIEG2440/ESTR2362	3 3 3 3 3 3
			18
THE THIRD YEAR	Term 5	Major Required: IERG3310/ESTR3310 IERG3800 MATH2050/2058 MATH2230 (or 2070/2078) General Education: Foundation (1 course) General Education: (1 course) (Area A/C/D)	3 1 3 3 3 2-3
			15-16
	Term 6	Language: ELTU3014 Major Required: IERG2310/ESTR2300 IERG3820 MATH2060/2068 MATH2070/2078 (or 2230) Major Elective(s): 1 course	2 3 1 3 3 3
			15
THE FOURTH YEAR	Term 7	Major Required: CSCI3160/ESTR3104 IERG3080/ESTR3308 IERG4998/ESTR4998 College General Education: 1 course General Education: (1 course) (Area A/C/D) General Education: Understanding China	3 3 3 3 2-3 1
			15-16
	Term 8	Major Required: IERG4999/ESTR4999 Major Elective(s): 2 courses General Education: (1 course) (Area A/C/D) General Education: Hong Kong in the Wider Constitutional Order	3 6 2-3 1
			12-13
		Total (including Faculty Package):	126

Course List

*(Note: For quick reference of the courses appeared on the study plan(s).
Please refer to CUSIS for course information)*

<i>Course Code</i>	<i>Course Title</i>	<i>Unit(s)</i>
AIST1110	Introduction to Computing using Python	3
CHLT1001	University Chinese I	3
CHLT1002	University Chinese II	2
CSCI1120/ESTR1100	Introduction to Computing Using C++	3
CSCI1130/ESTR1102	Introduction to Computing Using Java	3
CSCI2100/ESTR2102	Data Structures	3
CSCI3130	Formal Languages and Automata Theory	3
CSCI3150/ESTR3102	Introduction to Operating Systems	3
CSCI3160/ESTR3104	Design and Analysis of Algorithms	3
CSCI3230/ESTR3108	Fundamentals of Artificial Intelligence	3
CSCI3320	Fundamentals of Machine Learning	3
ELTU1001	Foundation English for University Studies	3
ELTU2014	English for Engineering I	3
ELTU3014	English for Engineering II	2
ENGG1110/ESTR1002	Problem Solving by Programming	3
ENGG1120/ESTR1005	Linear Algebra for Engineers	3
ENGG1130/ESTR1006	Multivariable Calculus for Engineers	3
ENGG1310/ESTR1003	Engineering Physics: Electromagnetics, Optics and Modern Physics	3
ENGG1820	Engineering Internship	1
ENGG5301	Information Theory	3
ENGG5302	Random Processes	3
ENGG5303	Advanced Wireless Communications	3
ENGG5383	Applied Cryptography	3
ENGG5392	Lightwave System Technologies	3
ENGG5501	Foundations of Optimization	3
IERG1080	Introduction to Python for Engineering Applications	3
IERG1810	Electronic Circuit Design Laboratory	1
IERG2060/ESTR2304	Basic Analog and Digital Circuits	3
IERG2080/ESTR2306	Introduction to Systems Programming	3
IERG2310/ESTR2300	Principles of Communication Systems	3
IERG3010/ESTR3300	Digital Communications	3
IERG3050	Simulation and Statistical Analysis	3
IERG3060	Microcontrollers and Embedded Systems	3
IERG3080/ESTR3308	Information and Software Engineering Practice	3
IERG3280/ESTR3302	Networks: Technology, Economics, and Social Interactions	3
IERG3300/ESTR3304	Introduction to Stochastic Processes	3
IERG3310/ESTR3310	Computer Networks	3
IERG3320/ESTR3306	Social Media and Human Information Interaction	3
IERG3800	Information Infrastructure Design Lab	1
IERG3810	Microcontrollers and Embedded System Laboratory	1
IERG3820	Communications Laboratory	1
IERG3830	Product Design and Development	3

<i>Course Code</i>	<i>Course Title</i>	<i>Unit(s)</i>
IERG4004	E-payment Systems and Cryptocurrency Technologies	3
IERG4030/ESTR4320	Optical Communications	3
IERG4060	Real-time Embedded Systems	3
IERG4080/ESTR4312	Building Scalable Internet-based Services	3
IERG4090/ESTR4302	Networking Protocols and Systems	3
IERG4100/ESTR4304	Wireless Communication Systems	3
IERG4110/ESTR4314	Hands-on Wireless Communication	3
IERG4120/ESTR4328	Functional Programming	3
IERG4130/ESTR4306	Introduction to Cyber Security	3
IERG4150/ESTR4322	Introduction to Cryptography	3
IERG4160	Image Processing and Visual Understanding	3
IERG4180/ESTR4308	Network Software Design and Programming	3
IERG4190	Multimedia Coding and Processing	3
IERG4210	Web Programming and Security	3
IERG4220	Secure Software Engineering	3
IERG4230	Introduction to Internet of Things	3
IERG4300/ESTR4300	Web-scale Information Analytics	3
IERG4320/ESTR4324	Data Science in Practice	3
IERG4330/ESTR4316	Programming Big Data Systems	3
IERG4340	Emerging Technologies in Information Engineering	3
IERG4350	Cloud Computing Security	3
IERG4360/ESTR4326	Blockchain and Applications	3
IERG4831	Networking Laboratory I	2
IERG4841	Networking Laboratory II	2
IERG4851	Cyber Security Laboratory	1
IERG4998/ESTR4998	Final Year Project I	3
IERG4999/ESTR4999	Final Year Project II	3
IERG5020	Telecommunication Switching and Network Systems	3
IERG5040	Lightwave System Technologies	3
IERG5050	AI Foundation Models, Systems and Applications	3
IERG5090	Advanced Networking Protocols and Systems	3
IERG5100	Advanced Wireless Communications	3
IERG5110	Signal Processing in Wireless Communications and Sensing	3
IERG5130	Probabilistic Models and Inference Algorithms for Machine Learning	3
IERG5140	Lightwave Networks	3
IERG5154	Information Theory	3
IERG5200	Channel Coding and Modulation	3
IERG5230	Algorithms and Realization of Internet of Things Systems	3
IERG5240	Applied Cryptography	3
IERG5250	Edge AI and Applications	3
IERG5254	Network Information Theory	3
IERG5280	Mobile Networking	3
IERG5290	Network Coding Theory	3
IERG5300	Random Processes	3
IERG5310	Security and Privacy in Cyber Systems	3
IERG5320	Digital Forensics	3
IERG5330	Network Economics	3

<i>Course Code</i>	<i>Course Title</i>	<i>Unit(s)</i>
IERG5340	IT Innovation and Entrepreneurship	3
IERG5350	Reinforcement Learning	3
IERG5360	Program Representation, Modeling and Understanding for Software Security	3
IERG5380	Quantum Information Processing	3
IERG5400	Theory of Probability	3
IERG5590	Advanced Topics in Blockchain	3
IERG5670	Computational Imaging Systems and Algorithms	3
MATH1010	University Mathematics	3
MATH1018	Honours University Mathematics	3
MATH1020	General Mathematics	3
MATH1030	Linear Algebra I	3
MATH1038	Honours Linear Algebra I	3
MATH1050	Foundation of Modern Mathematics	3
MATH1058	Honours Foundation of Modern Mathematics	3
MATH1510	Calculus for Engineers	3
MATH2010	Advanced Calculus I	3
MATH2018	Honours Advanced Calculus I	3
MATH2020	Advanced Calculus II	3
MATH2028	Honours Advanced Calculus II	3
MATH2040	Linear Algebra II	3
MATH2048	Honours Linear Algebra II	3
MATH2050	Mathematical Analysis I	3
MATH2058	Honours Mathematical Analysis I	3
MATH2060	Mathematical Analysis II	3
MATH2068	Honours Mathematical Analysis II	3
MATH2070	Algebraic Structures	3
MATH2078	Honours Algebraic Structures	3
MATH2230	Complex Variables with Applications	3
MATH3010	Higher Geometry	3
MATH3030	Abstract Algebra	3
MATH3040	Fields and Galois Theory	3
MATH3070	Introduction to Topology	3
MATH3080	Number Theory	3
MATH3093	Fourier Analysis	3
MATH3215	Operations Research	3
MATH3230	Numerical Analysis	3
MATH3250	Discrete Mathematics	3
MATH3260	Graph Theory	3
MATH3270	Ordinary Differential Equations	3
MATH3290	Mathematical Modeling	3
MATH3310	Computational and Applied Math	3
MATH3320	Foundation of Data Analytics	3
MATH3330	Big Data Computing	3
MATH3360	Mathematical Imaging	3
MATH4010	Functional Analysis	3
MATH4020	Calculus of Variations	3
MATH4030	Differential Geometry	3
MATH4230	Optimization Theory	3

<i>Course Code</i>	<i>Course Title</i>	<i>Unit(s)</i>
MATH4240	Stochastic Processes	3
MATH4260	Coding Theory and Cryptography	3
MATH4280	Data Analytics in Design and Innovation	3
MIEG2051/ESTR2360	Fourier Analysis with Engineering Applications	3
MIEG2440/ESTR2362	Discrete Structures and Probability	3
PHYS1003	General Physics for Engineers	3
PHYS1110	Engineering Physics: Mechanics and Thermodynamics	3
STAT1011	Introduction to Statistics	3
UGFH1000/ UGFN1000	University General Education Foundation Course	3