The Hong Kong University of Science and Technology
School of Science
For UG Students in 2022/23 intake or after

<< Declaration of major

School:		School of Science			Student's Pathways (i.e. Study Pattern)										
Department:		Department of Mathematics			Pathway 1										
Program:		BSc in Data Science and Technology			Background: HKDSE 4 Core + 1 Elec + MATH M1/M2										
					Profile: Normative										

Course Offering Dept (course code prefix)	Course Code	Course Title / Courses List	Credits	Major Pre-requisite	Year 1 Fall	Year 1 Spring	Year 2 Fall	Year 2 Spring	Year 3 Fall	Year 3 Spring	Year 4 Fall	Year 4 Spring	Sub-total	Remarks
Major Pre-requisite Requirements														
MATH		Note: [(MATH 1012 OR MATH 1013 OR MATH 1023) AND (MATH 1014 OR MATH 1024)] OR [MATH 1020]	4-7											
MATH	1012	Calculus IA	4											
MATH	1013	Calculus IB	3	@	3	3							6	
MATH	1014	Calculus II	3											
MATH	1020	Accelerated Calculus	4											
MATH	1023	Honors Calculus I	3											
MATH	1024	Honors Calculus II	3											
COMP		Note: COMP 1021 OR COMP 1022P	3											
COMP	1021	Introduction to Computer Science	3	@		3							3	
COMP	1022P	Introduction to Computing with Java	3											
		Required credits for School / Major Pre-requisite Requirements	7-10										9	
Major Requirements														
Major Required Courses and Electives														
DSCT	4900	Academic and Professional Development Multivariable Calculus	0				0	0	0	0	0	0	0	
MATH	2023	Multivariable Calculus	4				4						4	
MATH		Note: MATH 2121 OR MATH 2131	4											
MATH	2121	Linear Algebra	4				4						4	
MATH	2131	Honors in Linear and Abstract Algebra I	4											
MATH	2411	Applied Statistics	4				4						4	
MATH		Note: MATH 2421 OR MATH 2431	4											
MATH	2421	Probability	4					4					4	
MATH	2431	Honors Probability	4											
MATH	3322	Matrix Computation	3					3					3	
MATH	3332	Data Analytic Tools	3						3				3	
MATH	3423	Statistical Inference	3						3				3	
MATH	3424	Regression Analysis	3							3			3	
MATH/COMP		Note: MATH 4432 OR COMP 4211	3											
MATH	4432	Statistical Machine Learning	3							3			3	
COMP	4211	Machine Learning	3											
MATH/COMP		Note: MATH 4995 OR COMP 4981 OR COMP 4981H	3-6											
MATH	4995	Capstone Project for Data Science	3								3		3	
COMP	4981	Final Year Project	6											
COMP	4981H	Final Year Thesis	6											
COMP		Note: (COMP 2011 AND COMP 2012) OR COMP 2012H	5-8											
COMP	2011	Programming with C++	4				4		4				8	
COMP	2012	Object-Oriented Programming and Data Structures	4											
COMP	2012H	Honors Object-Oriented Programming and Data Structures	5											
COMP		Note: COMP 2711 OR COMP 2711H	4											
COMP	2711	Discrete Mathematical Tools for Computer Science	4					4					4	
COMP	2711H	Honors Discrete Mathematical Tools for Computer Science	4											
COMP		Note: COMP 3711 OR COMP 3711H	3-4											
COMP	3711	Design and Analysis of Algorithms	3						3				3	
COMP	3711H	Honors Design and Analysis of Algorithms	4											
LANG		Note: [(LANG 2010 OR LANG 2010H) OR (LANG 2030 OR LANG 2030H)] AND (LANG 3021 OR LANG 4030)	6											
LANG	2010	English for Science I	3											
LANG	2010H	English for Science I	3											
LANG	2030	Technical Communication I	3					3		3			6	
LANG	2030H	Technical Communication I	3											
LANG	3021	Science Communication in English (Mathematics)	3											
LANG	4030	Technical Communication II for CSE, CPEG & DSCT	3											
MATH/COMP		Data Science Electives [Students opting for MATH 4995 should take a minimum of 4 courses (12 credits) from the specified elective list, of which at least 2 courses should be taken from COMP; those opting for COMP 4981 or COMP 4981H should take a minimum of 3 courses (9 credits), of which at least 1 course should be taken from COMP. Out of the total 4 (or 3) elective courses taken, at least 1 course but no more than 2 courses should be from MATH]	9-12							3	3	6	12	
		Required credits for Major Required Courses and Electives	61-71				16	14	13	9	9	6	67	
AI Requirements														
Recommended Background Courses														
COMP/ISOM		Note: COMP 1021 OR COMP 1022P	3											
COMP	1021	Introduction to Computer Science	3			(3)							0	
COMP	1022P	Introduction to Computing with Java	3											
MATH		Note: MATH 1014 OR MATH 1020 OR MATH 1024	3-4											
MATH	1014	Calculus II	3			(3)							0	
MATH	1020	Accelerated Calculus	4											
MATH	1024	Honors Calculus II	3											
ISOM/MATH		Note: ISOM 2500 OR MATH 2411	3-4											
ISOM	2500	Business Statistics	3				(4)						0	
MATH	2411	Applied Statistics	4											
		Required credits for AI Recommended Background Courses	9-11										0	
Major Required Courses and Electives														
EMIA	2010A	Cross-disciplinary Seminar in Artificial Intelligence	0				0						0	
EMIA	2020	Cross-disciplinary Design Thinking	3					3					3	
COMP		Note: COMP 2011 OR COMP 2012 OR COMP 2012H	4-5											
COMP	2011	Programming with C++	4				(4)						0	
COMP	2012	Object-Oriented Programming and Data Structures	4											
COMP	2012H	Honors Object-Oriented Programming and Data Structures	5											
COMP		Note: COMP2211 OR COMP3211	3											
COMP	2211	Exploring Artificial Intelligence	3						3				3	
COMP	3211	Fundamentals of Artificial Intelligence	3											
COMP/EMIA/MATH		Note: COMP 4211 OR EMIA 4110 OR MATH 4432	3											
COMP	4211	Machine Learning	3							(3)			0	
EMIA	4110	Practical Machine Learning	3											
MATH	4432	Statistical Machine Learning	3											
EMIA		Note: EMIA 4990 OR EMIA 4991	0-3											
EMIA	4990	Interdisciplinary Capstone Design	0								0		0	
EMIA	4991	Interdisciplinary Capstone Project	3											
SBM/SENG/ SSCI/IPO		Note: Students taking EMIA4990 should take a minimum of 9 credits; students taking EMIA4991 should take a minimum of 6 credits AI Electives	6-9							7	3	6	16	
		Required credits for AI Required Courses and Electives	22-23										22	
University CORE														
CORE	C5 - C10	U CORE - Others	18				0	3	3	3	6	3	18	
CORE	C3-C4	U CORE - Cognitive and Behavioral Foundations of University Education	6		3	3							6	
CORE	C1 & C2	U CORE - English Language	6		3	3							6	
		Sub-total for University CORE	30		6	6	3	3	3	3	6	3	30	

			Term load (excl. free credits)							
9	12	16	20	19	19	18	15+			
				128#						

<< Declaration of major

Notes:
@ Course that students need to complete before enrolling into respective major/programs.
( ) indicates the reuse of the same course to fulfill more than one requirement.
To graduate, students should complete at least 120 credits in approved courses. They may need to take courses additional to the required and elective courses as specified above to meet this minimum credit requirement.
>> The content of this example is not necessarily equivalent to a complete list of graduation requirements of the program. Students should refer to the Program Catalog for updated graduation requirements. For up-to-date information on course offering and scheduling, students should check it out from respective School and Department.

The Hong Kong University of Science and Technology
School of Business and Management
An Example on Student's Pathway (For UG Students in 2022/23 intake or after)

School:		School of Business and Management						Student's Pathways (i.e. Study Pattern)					
Department:		Department of Information Systems, Business Statistics & Operations Management						Pathway 1					
Program:		BSc in Risk Management and Business Intelligence						Background: Admitted to RMBI in Year 1					
								Profile: Students to graduate in BSc RMBI with Financial Technology Option					

Course Offering Dept (course code prefix)	Course Code	Course Title / Courses List	Credits	Year 1 Fall	Year 1 Spring	Year 2 Fall	Year 2 Spring	Year 3 Fall	Year 3 Spring	Year 4 Fall	Year 4 Spring	Sub-total	Remarks
Major Requirements													
Major Required Courses and Electives													
RMBI	2001	Academic and Professional Development in Risk Management and Business Intelligence	0	0	0	0	0	0	0	0	0	0	
RMBI	3110	Introduction to Risk Management and Business Intelligence	3				3					3	
RMBI	4310	Advanced Data Mining for Risk Management and Business Intelligence	3						3			3	
RMBI	4980	Risk Management and Business Intelligence Capstone Project I	4							4		4	
RMBI	4990	Risk Management and Business Intelligence Capstone Project II	4								4	4	
ACCT	2010	Principles of Accounting I	3	3								3	
ECON		Note: ECON 2103 OR ECON 2113	3										
ECON	2103	Principles of Microeconomics	3	3								3	
ECON	2113	Microeconomics	3										
ECON	2123	Macroeconomics	3				3					3	
FINA	2303	Financial Management	3				3					3	
ISOM	2010	Introduction to Information Systems	3		3							3	
ISOM	2700	Operations Management	3			3						3	
ISOM/COMP		Note: ISOM 3360 OR COMP 4331	3										
ISOM	3360	Data Mining for Business Analytics	3					3				3	
COMP	4331	Data Mining	3										
ISOM/COMP		Note: ISOM 3370 OR COMP 4651	3										
ISOM	3370	Big Data Technologies	3						3			3	
COMP	4651	Cloud Computing and Big Data Systems	3										
ISOM	3540	Introduction to Probability Models	3					3				3	
ISOM	3710	Business Modeling and Optimization	4						4			4	
ISOM	4520	Statistics for Financial Risk Management	4								4	4	
MGMT	2010	Business Ethics and the Individual	2		2							2	
MGMT	2130	Business Ethics and Social Responsibility	2			2						2	
COMP		Note: COMP 1021 OR COMP 1022P	3	3								3	**AI Recommended Background Course**
COMP	1021	Introduction to Computer Science	3										
COMP	1022P	Introduction to Computing with Java	3										
LABU	2051	Business Case Analyses I	2			2						2	
LABU	2052	Business Case Analyses II	2				2					2	
MATH		Note: [(MATH 1012 OR MATH 1013 OR MATH 1023) AND (MATH 1014 OR MATH 1024)] OR [MATH 1020]	4-7										**AI Recommended Background Courses:**
MATH	1012	Calculus IA	4										
MATH	1013	Calculus IB	3	3	3							6	**MATH1012/1013/1023 and MATH1014/1024 (MATH1020 considered meeting the requirement if transferred)**
MATH	1014	Calculus II	3										
MATH	1020	Accelerated Calculus	4										
MATH	1023	Honors Calculus I	3										
MATH	1024	Honors Calculus II	3										
MATH	2011	Introduction to Multivariable Calculus	3					3				3	
MATH		Note: MATH 2111 OR MATH 2121	3-4										
MATH	2111	Matrix Algebra and Applications	3			3						3	
MATH	2121	Linear Algebra	4										
MATH	2411	Applied Statistics	4			4						4	**AI Recommended Background Course:** ISOM2500 (3 credits) is mutually exclusive with MATH2411 (3 credits) in which MATH2411 is RMBI required course in Year 2 Fall.
RMBI/FINA/ISOM/IEDA/MATH		Risk Management and Business Intelligence Electives (Courses from the specified electives list, of which at least 1 course should be taken from each area and at least 6 credits at 3000-level or above)	9					3		6		9	Student who wish to take COMP 4651 should take COMP 2011 in Area 2: BI. Student who wish to take IEDA 4500 should take FINA 3203 in Area 1: RM.
		Required credits for Major Required Courses and Electives	82-86									85	
Option Requirements													
Financial Technology Option													
ISOM/IEDA		Note: ISOM 3350 OR IEDA4500	3				3					3	Student who wish to take IEDA 4500 should take FINA 3203 in Area 1: RM.
RMBI/ISOM/COMP/MATH		Financial Technology Electives (Courses from the specified elective list. Courses taken as Major Electives may not be counted toward this requirement)	6					3		3		6	
		Required credits for Financial Technology Option	9									9	
AI Requirements													
Recommened Background Course - Please refer to the above orange highlights for information.													
		Required credits for AI Recommended Background Courses	9-11									0	
Major Required Courses and Electives													
EMIA	2010A	Cross-disciplinary Seminar in Artificial Intelligence	0				0					0	
EMIA	2020	Cross-disciplinary Design Thinking	3				3					3	
COMP		Note: COMP 2011 OR COMP 2012 OR COMP 2012H	4-5										**RMBI BI elective**
COMP	2011	Programming with C++	4			4						4	
COMP	2012	Object-Oriented Programming and Data Structures	4										
COMP	2012H	Honors Object-Oriented Programming and Data Structures	5										
COMP		Note: COMP2211 OR COMP3211	3										
COMP	2211	Exploring Artificial Intelligence	3					3				3	
COMP	3211	Fundamentals of Artificial Intelligence	3										
COMP/EMIA/MATH		Note: COMP 4211* OR EMIA 4110 OR MATH 4432	3										*COMP 4331 is mutually exclusive with COMP 4211. For RMBI students who plan to choose COMP 4331, they are recommended to take either EMIA 4110 or MATH 4432.
COMP	4211	Machine Learning	3							3		3	
EMIA	4110	Practical Machine Learning	3										
MATH	4432	Statistical Machine Learning	3										
EMIA		Note: EMIA 4990 OR EMIA 4991	0-3										**RMBI students who have declared Extended Major in AI would be considered to enroll EMIA 4990 (0 credit).**
EMIA	4990	Interdisciplinary Capstone Design	0										
EMIA	4991	Interdisciplinary Capstone Project	3										
RMBI	4980	For RMBI students: RMBI + AI will follow the capstone project arrangement for Extended Majors. RMBI program consists of RMBI4980 Risk Management and Business Intelligence Capstone Project I (4 credits) and RMBI4990 Risk Management and Business Intelligence Capstone Project II (4credits). RMBI students who have declared Extended Major in AI would be considered to enroll EMIA 4990 (0 credit) (for AI).	(4)							(4)	(4)	0	
RMBI	4990		(4)										
SBM/SENG/SSCI/IPO		Note: Students taking EMIA 4990 should take a minimum of 9 credits; students taking EMIA 4991 should take a minimum of 6 credits. AI Electives	6-9							3	6	9	
		Required credits for AI Required Courses and Electives	19-23									22	
University CORE													
CORE	C3 - C12	U CORE - Others	24	1	2	3	0	3	6	3	6	24	
CORE	C1 & C2	U CORE - English Language	6	3	3							6	
		Sub-total for University CORE	30	4	5	3	0	3	6	3	6	30	
		Term load (excl. free credits)											
		w/option		16	13	17	17	15	16	16	14		
		w/ extended major		16	13	21	17	15	16	19	20		
				**115 (w/o option)	124 (w/ option)	137 (extended major)#**							

Note:

To graduate, students should complete at least 120 credits in approved courses. They may need to take courses additional to the required and elective courses as specified above to meet this minimum credit requirement.

>> The content of this example is not necessarily equivalent to a complete list of graduation requirements of the program. Students should refer to the Program Catalog/UG Curriculum Handbook for updated graduation requirements. For up-to-date information on course offering and scheduling, students should check it out from respective School and Department.

2022-23 RMBI (4Y) (2022-23 Intake)