

# LEO Dr David P. Chan Bachelor of Science (Honours) Data Science

## Programme Structure for 2020-21 Intake (4-year curriculum)

The following description specifies the programme curriculum for students who pursue the programme on a **full-time four-year basis**. Flexibility is allowed for completing the programme within a longer or shorter period in accordance with the stipulations in the Regulations Governing Undergraduate Studies.

		Number of Credits			Total
		1 <sup>st</sup>	1 <sup>st</sup> /2 <sup>nd</sup>	2 <sup>nd</sup>	
<b>FIRST YEAR</b>		<u>Term</u>	<u>Term</u>	<u>Term</u>	
CCC8011	Critical Thinking: Analysis and Argumentation (R)		3		3
CCC8013	The Process of Science (R)		3		3
LCC1010	Chinese Communication I (R)		3		3
LUE1001	University English I (R) <sup>#</sup>	3			3
LUE1002	University English II (R) <sup>#</sup>		3		3
CDS1001	Introduction to Programming for Data Science (R)	3			3
CDS1002	Calculus (R)			3	3
CDS1003	Probability and Statistics 1 (R)			3	3
SSC2113	Linear Algebra (R)	3			3
	1 ELE Elective <sup>##</sup> or Free Elective <sup>@</sup> for Group B students		3		3
	^ 1 Cluster Course		3		3
					30
<b>SECOND YEAR</b>					
CCC8012	The Making of Hong Kong (R)		3		3
CCC8014	China in World History (R)		3		3
LCC2010	Chinese Communication II (R)		3		3
CDS2001	Probability and Statistics 2 (R)	3			3
CDS2002	Introduction to Artificial Intelligence (R)	3			3
CDS2003	Data Structures and Object-Oriented Programming (R)			3	3
CDS2004	Quantitative Decision Making (R)			3	3
	ELE Elective(s) <sup>##</sup> and/or Free Elective(s) <sup>@</sup> (2 courses)		6		6
	^ 1 Cluster Course		3		3
					30
<b>THIRD YEAR</b>					
CDS3001	Databases and Data Warehouses (R)	3			3
CDS3002	Simulation (R) (retitled to Operations Simulation with Decision Analysis from Term 2, 2022-23)			3	3
CDS3003	Machine Learning (R)		3		3
CDS3004	Data Mining (R)		3		3
	1 Major Discipline Elective		3		3
	ELE Elective(s) <sup>##</sup> and/or Free Elective(s) <sup>@</sup> (2-3 courses)		6-9		6-9
	^ 2 Cluster Courses		6		6
					27-30

(R) denotes required course(s).

# Under the revamped English Language Enhancement (ELE) programme, students will be grouped under two streams. Group A students are those who obtained level 3 in HKDSE English or equivalent while Group B students are those who obtained level 4 or above in HKDSE English or equivalent. Students are encouraged to take their first required ELE course, viz. LUE1001 for Group A and LUE1002 for Group B, in First Term of Year 1. However, they are given the flexibility to take the respective courses in Second Term of Year 1. For Group A students who take LUE1001 in Second Term of Year 1, they should take LUE1002 in First Term of Year 2. For details, please refer to <https://www.ln.edu.hk/reg/undergraduate-programmes/english-language-enhancement-ele-curriculum>.

## Group A students have to take 1 ELE elective while Group B students have to take 2 ELE electives. ELE electives could be taken from the term in which LUE1002 is taken. For more details, please click <https://www.ln.edu.hk/reg/undergraduate-programmes/english-language-enhancement-ele-curriculum>.

@ Students are required to take 27 credits of free electives.

^ Students are required to complete 5 Cluster courses in total. For details, please see the Core Curriculum Section.

	Number of Credits			Total
	1 <sup>st</sup> Term	1 <sup>st</sup> /2 <sup>nd</sup> Term	2 <sup>nd</sup> Term	
<b>THIRD TO FOURTH YEARS</b>				
LUE4002 Professional Communication in English for Business (R)		3		3
<b>FOURTH YEAR</b>				
CDS4001 Best Practices of Data Science (R)	3			3
2 Major Discipline Electives		6		6
ELE Elective(s) <sup>##</sup> and/or Free Electives <sup>@</sup> (5-6 courses)		15-18		15-18
^ 1 Cluster Course		3		3
				27-30

Minimum credits for Honours Degree: 120

## REQUIREMENTS IN DATA SCIENCE

### Required Courses (Total 13 courses, 39 credits)

Students need to complete six elementary required courses before taking six intermediate required courses.

#### Elementary Courses

CDS1001	Introduction to Programming for Data Science
CDS1002	Calculus
CDS1003	Probability and Statistics 1
CDS2001	Probability and Statistics 2
CDS2002	Introduction to Artificial Intelligence
SSC2113	Linear Algebra

#### Intermediate Courses

CDS2003	Data Structures and Object-Oriented Programming
CDS2004	Quantitative Decision Making
CDS3001	Databases and Data Warehouses
CDS3002	Simulation (retitled to Operations Simulation with Decision Analysis from Term 2, 2022-23)
CDS3003	Machine Learning
CDS3004	Data Mining

#### Capstone Course

CDS4001	Best Practices of Data Science
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### Elective Courses (Any 3 courses, 9 credits)

#### Application-Oriented Courses

CDS3005	Data Science Project Management
CDS4002	Data Management
CDS4003	Project
CDS4004	Web Technologies and Social Networks
CDS4010	Web Programming for e-Business (from 2022-23)

(R) denotes required course(s).

## Group A students have to take 1 ELE elective while Group B students have to take 2 ELE electives. ELE electives could be taken from the term in which LUE1002 is taken. For more details, please click <https://www.ln.edu.hk/reg/undergraduate-programmes/english-language-enhancement-ele-curriculum>.

@ Students are required to take 27 credits of free electives.

^ Students are required to complete 5 Cluster courses in total. For details, please see the Core Curriculum Section.

ECO4203	Applied Econometrics
MKT3006	Marketing Analytics
SCI3001	Location Intelligence

Advanced-Level Courses

CDS4005	Big Data Analytics
CDS4006	Deep Learning
CDS4007	Stochastic Process
CDS4008	Optimization

**Free Electives**

Students may select courses in any disciplines to obtain the total number of credits required for graduation, subject to timetable, course load and study scheme constraints.