Requirements for Major in Data Science and Analytics

Applicable to cohorts AY2021/2022 and after

Levels	Major Requirements	Cumulative Major Units
Level 1000 (4 Units)	Pass - DSA1101 Introduction to Data Science[1]	4
Level 2000 (32 Units)	Pass - CS2040 Data Structures and Algorithms[2] - DSA2101 Essential Data Analytics Tools: Data Visualisation - DSA2102 Essential Data Analytics Tools: Numerical Computation - MA2001 Linear Algebra I - MA2002 Calculus - MA2311 Techniques in Advanced Calculus *or* MA2104 Multivariable Calculus - ST2131/MA2116/MA2216 Probability - ST2132 Mathematical Statistics	36
Level 3000 (16 Units)	Pass - CS3244 Machine Learning - DSA3101 Data Science in Practice - DSA3102 Essential Data Analytics Tools: Convex Optimisation - ST3131 Regression Analysis	52
Level 4000 (8 Units)	Choose either Option A or Option B Option A – Pass two courses as follows: - One course from DSA42xx courses (except DSA4288 / DSA4288M / DSA4288S) *or* DSE4211 / QF4211 Digital Currencies *or* DSE4212 / QF4212 Data Science in FinTech - One other course from DSA426x courses Option B – Pass one of the following Honours Project (8 Units) variants: - DSA4288 Honours Project in Data Science and Analytics - DSA4288M Honours Project in DSA (Operations Research) - DSA4288S Honours Project in DSA (Statistical Methodology)	60

[1] DSA1101 will be read in fulfilment of the Data Literacy requirement under the College of Humanities and Sciences.

[2] CS1010S Programming Methodology, the pre-requisite of CS2040, will be read in fulfilment of the Digital Literacy requirement under the College of Humanities and Sciences.

To graduate with a Major in Data Science and Analytics, student must have read and passed at least one of the following:
(1) DSA3288 / DSA3288R
(2) DSA4288 / DSA4288x
(3) Any UPIP/FASSIP course
(4) Any NOC Internship course

*DSA4288x can be double-counted (up to maximum of 8 Units) towards major and specialisation requirements.

Students majoring in Data Science and Analytics have the option to pursue specialisations in (A) **Operations Research** or/and (B) **Statistical Methodology**.

(A) To be awarded a specialisation in **Operations Research**, pass (at least) 20 Units from the following, with not more than 8 Units in Level 3000 courses:

MA3252 Linear and Network Optimisation
MA3227 Numerical Analysis II
MA3238/ST3236 Stochastic Processes I
MA4230 Matrix Computation
MA4251/ST4238 Stochastic Processes II
MA4260 Stochastic Operations Research
MA4268 Mathematcis for Visual Data Processing
MA4270 Data Modelling and Computation
DSA4288M Honours Project in DSA (Operations Research) (8 Units)

(B) To be awarded a specialisation in **Statistical Methodology**, pass (at least) 20 Units from the following, with not more than 8 Units in Level 3000 courses:

ST3232 Design and Analysis of Experiments
ST3239 Survey Methodology
ST3247 Simulation
ST3248 Statistical Learning I
ST4231 Computer Intensive Statistical Methods
ST4234 Bayesian Statistics
ST4248 Statisical Learning II
ST4250 Multivariate Statistical Analysis
ST4253 Applied Time Series Analysis
DSA4288S Honours Project in DSA (Statistical Methodology) (8 Units)

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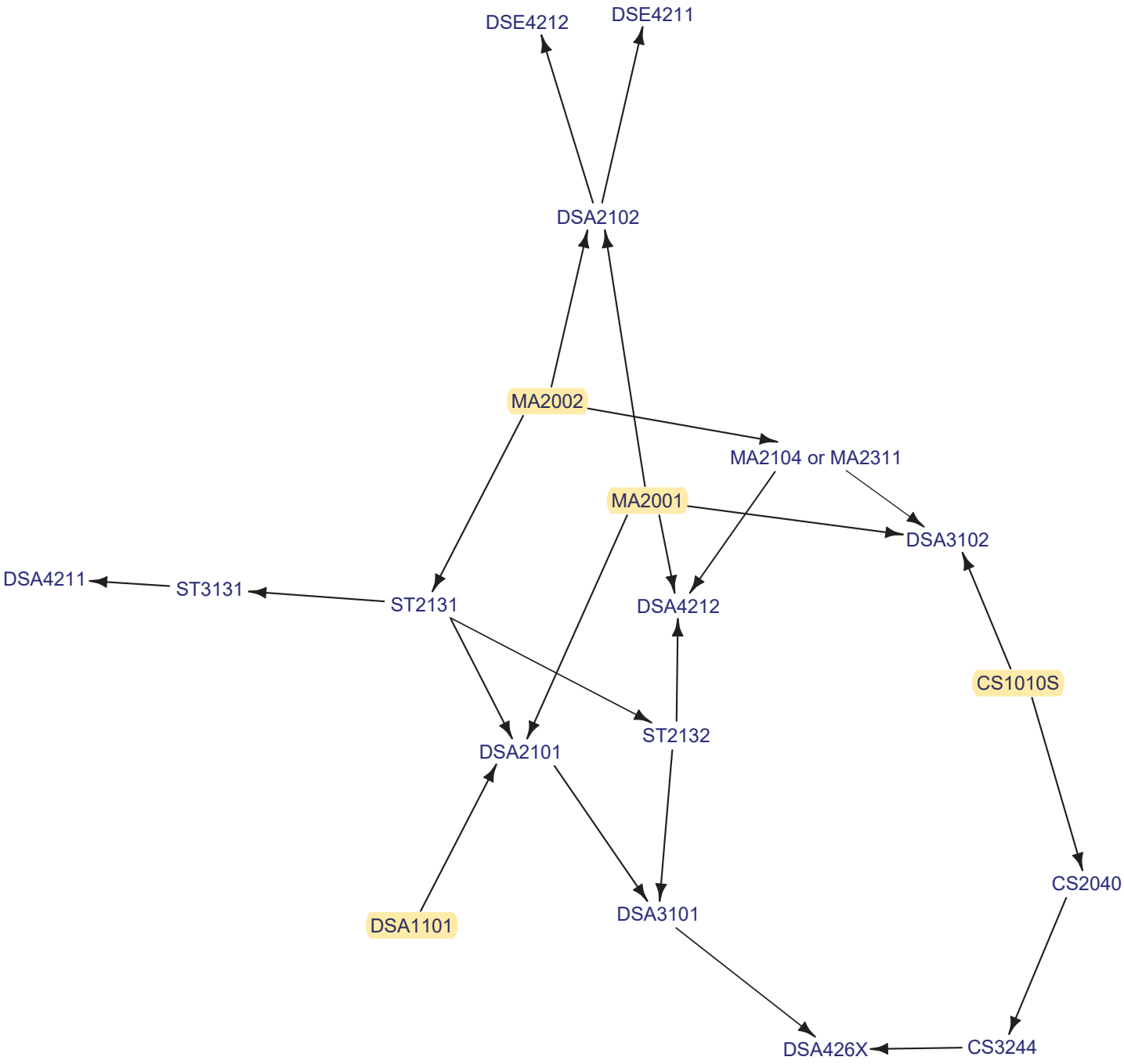
Sample Study Plan — Data Science and Analytics

Year 1		Year 2		Year 3		Year 4	
Sem 1	**Sem 2**	**Sem 1**	**Sem 2**	**Sem 1**	**Sem 2**	**Sem 1**	**Sem 2**
Pair 1: Humanities Pair 2: Social Sciences	Pair 1: Social Sciences Pair 2: Humanities	Writing	Communities and Engagement	Interdisciplinary I	Interdisciplinary II	Major 14	Major 15
Pair 1: Asian Studies Pair 2: Scientific Inquiry I	Pair 1: Scientific Inquiry I Pair 2: Asian Studies	Scientific Inquiry II	Artificial Intelligence	DSA3101 Data Science in Practice or DSA3102	DSA3102 Essential Data Analytics Tools: Convex Optimisation or DSA3101	UE 6	UE 10
Digital Literacy (CS1010S)	Design Thinking	MA2311 Techniques in Advanced Calculus/ MA2104 or CS2040	CS2040 Data Structures and Algorithms or MA2104 Multivariable Calculus	CS3244 Machine Learning	UE 3	UE 7	UE 11
Pair 1: MA2001 Linear Algebra I Pair 2: DSA1101*	Pair 1: DSA1101* Introduction to Data Science Pair 2: MA2001	DSA2101 Essential Data Analytics Tools: Data Visualisation or DSA2102	DSA2102 Essential Data Analytics Tools: Numerical Computation or DSA2101	UE 1	UE 4	UE 8	UE 12
MA2002 Calculus	ST2131 Probability	ST2132 Mathematical Statistics or ST3131	ST3131 Regression Analysis or ST2132	UE 2	UE 5	UE 9	UE 13

* DSA1101 fulfils the Data Literacy requirement.

Pre-requisite Graph for Major in Data Science and Analytics



Note on CHS Common Curriculum courses:

1) *Students are strongly encouraged to complete all CHS Common Curriculum courses in their first two years except for the following 3 courses:*

- *Communities and Engagement course – can be taken from Years 2 to 4*
- *Two Interdisciplinary courses – can be taken in Years 3 and 4*

2) *The actual pre-allocation may differ from the sample study plan. For the actual pre-allocation pairings, please click here.*