

(For students admitted in 2025-26 under the 4-year degree)

BSc in Data Science and Technology

Students taking the BSc Program in Data Science and Technology as their first major are exempted from the School Requirements. However, they are still required to complete the University requirements in addition to the major requirements for graduation. For details please refer to the respective sections on this website.

Students may use no more than 9 credits earned from courses offered in self-paced online delivery mode to satisfy the graduation requirements of a degree program. This 9-credit limit does not apply to credits obtained through the credit transfer procedures of the University.

For students graduating with an additional major, they must take all the requirements specified for that major, within which they must complete at least 20 single-counted credits. These 20 credits cannot be used to fulfill any other requirements for graduation except for the 120-credit degree requirement.

Under the new 30-credit Common Core Program which is applicable to students admitted to the University in 2022-23 and thereafter, courses that have been counted towards Major Requirements are not allowed to be reused for fulfilment of the University Common Core Requirements. Students should look up the details of the Common Core Program including the general and School-/program-specific distributional requirements posted on the Common Core website where the link to it is available on this website.

Major Requirements

Students **MUST** take the following courses prior to enrollment into the major

Major Pre-requisite course(s)

| | | | Credit(s) attained |
|------|------|--|-----------------------|
| MATH | | Note: [(MATH 1013 <u>OR</u> MATH 1023) <u>AND</u> (MATH 1014 <u>OR</u> MATH 1024)] <u>OR</u> [MATH 1020] | 4-6 |
| MATH | 1013 | Calculus I | 3 |
| MATH | 1014 | Calculus II | 3 |
| MATH | 1020 | Accelerated Calculus | 4 |
| MATH | 1023 | Honors Calculus I | 3 |
| MATH | 1024 | Honors Calculus II | 3 |
| COMP | 1023 | Introduction to Python Programming | 3 |

Required Course(s)

| | | | Credit(s) attained |
|------|------|---|-----------------------|
| DSCT | 4900 | Academic and Professional Development | 0 |
| MATH | 2023 | Multivariable Calculus | 4 |
| MATH | | Note: MATH 2121 <u>OR</u> MATH 2131 | 4 |
| MATH | 2121 | Linear Algebra | 4 |
| MATH | 2131 | Honors in Linear and Abstract Algebra I | 4 |

| | | | |
|-----------|-------|--|-----|
| MATH | 2411 | Applied Statistics | 4 |
| MATH | | Note: MATH 2421 <u>OR</u> MATH 2431 | 4 |
| MATH | 2421 | Probability | 4 |
| MATH | 2431 | Honors Probability | 4 |
| MATH | 3322 | Matrix Computation | 3 |
| MATH | 3332 | Data Analytic Tools | 3 |
| MATH | 3423 | Statistical Inference | 3 |
| MATH | 3424 | Regression Analysis | 3 |
| MATH/COMP | | Note: MATH 4432 <u>OR</u> COMP 4211 | 3 |
| MATH | 4432 | Statistical Machine Learning | 3 |
| COMP | 4211 | Machine Learning | 3 |
| MATH/COMP | | Note: MATH 4995 <u>OR</u> COMP 4910 <u>OR</u> COMP 4981 <u>OR</u> COMP 4981H | 3-6 |
| MATH | 4995 | Capstone Project for Data Science | 3 |
| COMP | 4910 | Co-op Program | 6 |
| COMP | 4981 | Final Year Project | 6 |
| COMP | 4981H | Final Year Thesis | 6 |
| COMP | | Note: (COMP 2011 <u>AND</u> COMP 2012) <u>OR</u> COMP 2012H | 5-8 |
| COMP | 2011 | Programming with C++ | 4 |
| COMP | 2012 | Object-Oriented Programming and Data Structures | 4 |
| COMP | 2012H | Honors Object-Oriented Programming and Data Structures | 5 |
| COMP | | Note: COMP 2711 <u>OR</u> COMP 2711H | 4 |
| COMP | 2711 | Discrete Mathematical Tools for Computer Science | 4 |
| COMP | 2711H | Honors Discrete Mathematical Tools for Computer Science | 4 |
| COMP | | Note: COMP 3711 <u>OR</u> COMP 3711H | 3-4 |
| COMP | 3711 | Design and Analysis of Algorithms | 3 |
| COMP | 3711H | Honors Design and Analysis of Algorithms | 4 |

Elective(s)

| | | | |
|--------------------|------|---|---|
| MATH/COMP/ ELEC | | 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/ELEC; 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/ELEC. Out of the total 4 (or 3) elective courses taken, at least 1 course but no more than 2 courses should be from MATH] | Minimum credit(s) required 9-12 |
| COMP/ELEC courses | | | |
| COMP | 2211 | Introduction to Artificial Intelligence | 3 |
| COMP | 3211 | Learning, Reasoning, and Decision Making in AI | 3 |

| | | | |
|---------------------|------|---|---|
| COMP | 3311 | Database Management Systems | 3 |
| COMP | 3631 | Cryptography | 3 |
| COMP | 4021 | Internet Computing | 3 |
| COMP | 4221 | Introduction to Natural Language Processing | 3 |
| COMP | 4222 | Machine Learning with Structured Data | 3 |
| COMP | 4331 | Data Mining | 3 |
| COMP | 4332 | Big Data Mining and Management | 3 |
| COMP | 4421 | Image Processing | 3 |
| COMP | 4462 | Data Visualization | 3 |
| COMP | 4471 | Deep Learning in Computer Vision | 3 |
| COMP | 4541 | Blockchain, Cryptocurrencies and Smart Contracts | 3 |
| COMP | 4634 | Cybersecurity | 3 |
| COMP | 4641 | Social Information Network Analysis and Engineering | 3 |
| COMP | 4651 | Cloud Computing and Big Data Systems | 3 |
| ELEC | 4240 | Deep Learning in Computer Vision | 3 |
| MATH courses | | | |
| MATH | 2033 | Mathematical Analysis | 4 |
| MATH | 2043 | Honors Mathematical Analysis | 4 |
| MATH | 2351 | Introduction to Differential Equations | 3 |
| MATH | 2352 | Differential Equations | 4 |
| MATH | 3033 | Real Analysis | 4 |
| MATH | 3043 | Honors Real Analysis | 4 |
| MATH | 3312 | Numerical Analysis | 3 |
| MATH | 3425 | Stochastic Modeling | 3 |
| MATH | 3427 | Bayesian Statistics | 3 |
| MATH | 3428 | Statistical Computing | 3 |
| MATH | 4023 | Complex Analysis | 3 |
| MATH | 4052 | Partial Differential Equations | 3 |
| MATH | 4335 | Introduction to Optimization | 3 |
| MATH | 4336 | Introduction to Mathematics of Image Processing | 3 |
| MATH | 4343 | Introduction to Graph Theory | 4 |
| MATH | 4423 | Nonparametric Statistics | 3 |
| MATH | 4424 | Multivariate Analysis | 3 |
| MATH | 4425 | Introductory Time Series | 3 |
| MATH | 4433 | Spatial Data Analysis | 3 |
| MATH | 4434 | Deep Learning | 3 |