NUS National University of Singapore | Faculty of Science

DATA SCIENCE AND ANALYTICS FAQs
NUS e-OPEN HOUSE 2020

B.Sc. (Hons.) Degree Programme in Data Science and Analytics

1. What is this programme?

The Data Science and Analytics (DSA) programme is a *multidisciplinary* undergraduate degree offered by the Department of Mathematics and the Department of Statistics and Applied Probability in the Faculty of Science, in conjunction with the Department of Computer Science in the School of Computing (SoC). This four-year direct Honours programme is the first of its kind in Singapore and was launched in Academic Year (AY) 2016/2017 with an initial intake of about 30 students. In AY2019/2020, the intake was about 180 students.

2. What are the admission requirements for the programme?

Applicants should have a very good pass in H2 Mathematics or H2 Further Mathematics, and a good pass in H2 Biology or H2 Chemistry or H2 Physics or H2 Computing.

3. What is Data Science?

Data science is a rapidly developing field that involves computational principles, methods and systems for extracting and structuring knowledge from data. On a daily basis, large datasets (Big Data) are generated by activities in the sciences, society and commerce. Data scientists are constantly seeking patterns and predicting outcomes from these vast collections of data. This enables them to extract insights from Big Data to facilitate business decision-making.

4. What are the features of the programme?

The programme is designed with sufficient technical depth to equip graduates with the ability to develop novel analytical tools for new scientific applications and industry problems that will emerge in future.

- Multidisciplinary curriculum. A key facet is the interdisciplinary nature of the programme. Students will read modules in mathematics, statistics and computer science, and be exposed to the interplay among these three key areas in the practice of data science.
- Deep domain knowledge. In their third and fourth years of study, students will gain in-depth exposure to artificial intelligence, computation and optimisation, computer algorithms, database and data processing, data mining and machine learning and high-dimensional statistics.
- Experiential learning. Students will undertake a capstone module that is industry-driven, where they will have the opportunity to work on research and projects that are related to real-life data and workplace challenges.

5. What is co-operative education and how is it conducted in the DSA programme?

The Co-operative (Co-op) Education Programme at NUS formally integrates academic studies with relevant work experience, where students complete multiple internship stints alternating with regular academic semesters over their four-year candidature at NUS. Co-operative education is optional.

DSA students who choose to undertake the Co-op pathway will spend five semesters/terms (18 months) at the workplace with reputable employers. This will equip them with the skills, knowledge and expertise that enhance their employability after graduation.

The study/internship sequence for DSA students opting for the Co-op pathway is:

	Semester 1	**Semester 2**	**Special Term**
Year 1	Study	Study	Study
Year 2	Study	Study	Full-time internship (4 MCs)
Year 3	Study (4 MCs) + full-time internship (12 MCs)	Full-time internship (12 MCs)	Full-time internship (4 MCs)

Year 4	Study (4 MCs) + full-time internship (16 MCs)	Study	Graduate

Please refer to the DSA curriculum (including DSA module descriptions and information on the Co-operative Pathway) at www.stat.nus.edu.sg/index.php/prospective-students/undergraduate-programme/data-science-and-analytics.

We have entered into partnerships with several companies and organisations to offer 18-month internships for the DSA Co-op programme. These companies and organisations include government agencies, telecommunications companies, management consulting, defence science agencies, banking/financial institutions, port operators, multi-sector corporations, etc.

6. Do students learn about Artificial Intelligence (AI) in the programme?

Students in the DSA programme may choose to read elective modules in the area of AI to fulfil the Major requirements. These modules are offered by the School of Computing and address the use of AI in computer vision, pattern recognition, and natural language processing.

7. What are the career prospects for graduates from this programme?

Graduates of this programme will have career opportunities as data science professionals in the public sector which includes Smart Nation work, as well as in diverse industries where there is a growing need for extensive data collection, processing and analysis. These include biomedical sciences, business intelligence, clean technology, consumer businesses, data science and analytics, e-commerce, finance, healthcare, infocommunications, manufacturing, marketing, re/insurance, safety and security, technology, telecommunications, transportation etc.

8. How does this programme compare with the Business Analytics programme offered by the School of Computing (SoC)?

The DSA programme will help in producing much needed data science experts as Singapore makes its push in the Smart Nation initiative. SoC offers a Business Analytics programme, which has the objective of producing graduates who are able to apply existing analytical tools to a range of business problems. In comparison, the DSA programme has been designed with sufficient *technical* depth to equip its graduates with the ability to develop *novel* analytical tools for new scientific applications and industry problems that will emerge in future. This is achieved by (i) integrating statistics, mathematics and computing (via the capstone coursework modules) and (ii) being industry-driven (via the capstone project module and several datathon-style modules).

Information about one such datathon-style module can be found at nusmods.com/modules/DSA4261/sense-making-case-analysis-logistics-and-transport.

Information on a specific datathon project can be found at rise-x.io/latestnewsblog/tackling-the-illegal-bunker-market-using-data and www.manifoldtimes.com/news/rise-x-io-dnv-gl-nus-embark-on-project-to-predict-illegal-bunker-activity.