

ACADEMIC MATTERS

New Bachelor's degree in Data Science (BDatSci) from 2021

The field of Data Science is experiencing rapid and unplanned growth, spurred by the proliferation of complex and rich data in science, business and industry. Fuelled in part by reports such as the widely cited McKinsey report (2016) that forecasts a need for hundreds of thousands of Data Science jobs in the next decade, Data Science programmes have exploded in academia as university managements around the world have rushed to meet the demand. The website <http://datascience.community/colleges> currently lists 530 programmes in Data Science, Analytics and related fields at over 200 universities globally. The vast majority of these are master's degrees and certificate programmes offered both traditionally and online. There has also been a rapid growth of undergraduate programmes at both research institutions and major universities.

The Department of Statistics and Actuarial Science was instrumental in developing a 4-year undergraduate programme in Data Science. The programme has been tabled for internal approval at Stellenbosch University and we are currently in the process of submitting it for approval and accreditation by HEQC, CHE and SAQA. If successful, the first intake of students will be in 2021. In the meantime, students can register for BCom (Mathematical Sciences), with the focal area Data Science in 2020.

The goal of the BDatSci programme is to engage students in the full data cycle and to develop graduates with the necessary skills of a data scientist (Annual Review of Statistics, 2016).

This necessitates interweaving and integrating traditionally siloed topics and tools into a cohesive programme. We believe that at Stellenbosch University, a programme in Data Science at undergraduate level will definitely contribute and fulfil the need of an ever-changing world spurred on by the fourth industrial revolution. There is a real need for such an undergraduate programme in South Africa. This was further supported during a fact-finding tour of high-ranked American universities in October 2018 by the management team of Stellenbosch University. The key learnings report highlighted the need and importance of offering undergraduate and postgraduate programmes in Data Science in the USA and across the world. The job market demonstrated that the demand for data scientists is extremely high with South Africa already falling behind in this regard.

The new BDatSci programme is truly multi-disciplinary and will be offered in the following faculties: Science, Economic and Management Sciences, AgriSciences and Arts and Social Sciences. A total of eight focal areas have been identified within appropriate data-rich environments: Statistical Learning; Computer Science; Analytics and Optimisation; Applied Mathematics; Behavioural Economics; Statistical Genetics; Geoinformatics; and Statistical Physics.

A number of new modules in Data Science have been developed and will be introduced in each of the four years, while the fourth year will also include a Data Science research assignment of 40 credits. Students will use and apply the content of the different core and elective modules in the programme to conduct a research project under supervision of established researchers and specialists from industry. The exit level of this programme is NQF 8, which means that students will be able to register for a related master's degree in Data Science on completion.

For further information please contact Prof Paul J Mostert, pjmos@sun.ac.za

- *Annual Review of Statistics (2016). Curriculum Guidelines for Undergraduate Programs in Data Science, AA:1-26. {<https://www.stat.berkeley.edu/~nolan/Papers/Data.Science.Guidelines.16.9.25.pdf>}*
- *McKinsey Global Institute (2016). The age of analytics: Competing in a data-driven world. (In collaboration with McKinsey Analytics; www.mckinsey.com)*