



Appendix D: Sample Executive Summary for a New Degree Program Proposal

The University of British Columbia is a comprehensive research-intensive university, consistently ranked among the 40 best universities in the world. Since 1915, it has created an exceptional learning environment that fosters global citizenship, advances a civil and sustainable society, and supports outstanding research.

UBC's Department of Computer Science and Department of Statistics propose to offer a new professional Master of Data Science (MDS) program. This program will be full-time, consisting of courses taken over 10 months. This program will build on the internationally recognized strengths of these departments in data management, data mining, and machine learning, visualization and software development, all of which are at the core of the emerging discipline known as Data Science. This program will educate students in the handling and analysis of data and the extraction of knowledge from the data for many different disciplines, including health care, commerce, social media and utilities.

The program consists of 30 credits: 24 credits of required coursework and a 6-credit capstone project. The courses will consist of face-to-face lectures, with some blended delivery, and required tutorials and laboratories. The 24 credits of coursework will consist of 24 1-credit courses to enable intensive focus on particular techniques and skills. This coursework will enable students to:

- Gain competency in a wide range of practical modelling methods,
- Transform data from its typically messy and often opaque form to a standard usable format,
- Tell a compelling story about the data that may be acted upon,
- Design experiments and appropriately acquire data according to privacy, ethics, and security standards,
- Apply fundamental statistical thinking, and
- Develop software.

A small number of selected data sets will be consistently used across courses, enabling different perspectives on the data. The capstone project will enable students to work together in groups and simulate the process of solving a domain problem on real-world data, including posing critical questions about data within a particular domain, making a plan based on data and available time, applying the data handling and analysis skills they have learned throughout the program, and reflecting on the strengths and weaknesses of chosen approaches.

The MDS program is expected to attract: 1) recent graduates from a wide range of undergraduate degree specializations, including the life sciences; earth, ocean and atmospheric sciences; linguistics; economics, and business; and 2) individuals engaged in a wide variety of careers who want to add data analysis skills to strengthen career prospects within their organization or embark on a new career trajectory.

A 2011 report from the McKinsey Global Institute cites a 50-60% gap in available highly skilled knowledge workers with deep analytical talent by 2018, numbering 140,000 to 190,000 in the US alone.



A 2013 report in the Globe and Mail noted that the unemployment rate among Data Scientists was less than 1% suggesting that the Canadian supply stream is already fully tapped. Canada's Big Data Talent Gap report estimates a need for "between 10,500 and 19,000 professionals with deep data and analytical skills, such as those required for roles like Chief Data Officer, Data Scientist, and Data Solutions Architect". The Master of Data Science will help provide graduates that can fill this gap. These programs will be ready to address the demand for skilled data science professionals across a wide number of sectors.