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Data science handbook usyd

The applicant must have the right of access: a four-year Bachelor's degree in Australia, with a credit rating for a quantitative discipline* with a credit average of at least (65 per cent) or equivalent, or an equivalent degree with a research component or an Australian degree in quantitative science*, with a credit average of at least (65 per cent) or equivalent qualification, or a postgraduate degree in data science at the University of Sydney with a credit average of at least (65 per cent) or an equivalent or higher degree It is not possible to transfer credits between a graduate certificate in data science and a master's degree in data science. Graduate students in data science still need to complete 48 credits in a later Master's degree in Data Science. They will be released from COMP5310 and will thus be able to report to the third optional unit. *Quantitative discipline includes data science, computer science, mathematics, statistics, engineering, physics, economics, finance or other disciplines considered equivalent. As a guideline, the curriculum for quantitative discipline should include studying mathematics, including statistics at tertiary level. It is assumed that there is some background in computing (especially in programming and data management, such as a postgraduate degree in data science). Applicants with a three-year bachelor's degree without a degree quantitatively can apply for a Master's degree in data science on the basis of work experience if they can demonstrate at least two years of relevant industry experience in IT or data science/data analytics. This must be supported by a CV and proof of work experience (as an official letter from the employer containing details of your task, working days and job description). If you have completed an honorary degree in non-quantitative discipline, you may be entitled to a postgraduate degree in data science. Master of Data Science (MDS) provides quantitative background for future students on a path to specialized in smart data-driven systems. MDS includes a world-class curriculum that uses key research and teaching strengths from the University of Sydney to explore the boundaries of data management, machine analytics and visualisation. A postgraduate degree in data science (GCDS) is a separate 6-month degree that allows students from non-quantitative backgrounds to get acquainted with data science and access MDS. More information on the study and degree programme requirements can be found in the CUSP ( ). Studies in the field of science in data science are jointly offered by the School of Mathematics and Statistics of the Faculty of Engineering and Computer Science and the School of Computer Science. The study units of this major are: standard and advanced level. Information about large data is an essential asset in many organizations because it enables knowledge-based decision-making in many fields, such as market science and science. In a data science major, you will learn comical and analytical skills from statistics and computer science to manage, interpret, understand, analyze, and derive key data from data. You develop critical thinking about data and its use, an in-depth understanding of the necessary core technical skills, and an understanding of the context in which data was collected. In 3,000-level research and then, you develop the ability to understand the problems of many disciplines and put a data-driven problem in an analytical framework, solve the problem by calculation, interpret the results, and inform customers or partners about them. Completion requirements A data science major requires 48 credit score consisting of:(i) 6 credit points for 1000-level core units (ii) 6,1000-level unit credit score according to one of the following rules:(a) 6 selective unit credit score, or (b) 3 credit points for statistical units and 3 credit points for units of account, or (c) 3 credit points for advanced statistics and 3 credit points for calculation and linear algebra(iii) 12 2000 levels; (iv) 6 credit scores at 2000 level selective units v) 6 credit scores 3000 level interdisciplinary project units vi) 6 credits 3000 level in methodological units(vii), 6 credit points for the 3000 level methodology or application and discipline-oriented units The computer science subject is available and articulated this major. The Data Science Foundations of the first year are the basic unit of a data science major. The unit focuses on developing critical and statistical thinking skills for all students. DATA1002 Informatics: Data and Computation is a basic unit of a data science major. This unit covers computing and data processing by integrating the sophisticated use of existing productivity software, such as spreadsheets, and customized software with the help of universal Python language. Students are encouraged to take DATA1001 and DATA1002 to this major. However, there are some similar selective units for DATA1001 for students to choose from: ENVX1002, MATH1005, MATH1015, MATH1115, MATH1905, MATH1021, MATH1921, MATH1023, MATH1923, MATH1933, MATH1002, MATH1902. Students should refer to Table A for certain 1000 level requirements. Second year DATA2001 – Data Science: Scale and Data Diversity focuses on methods and techniques for effectively researching and analyzing large data collection;DATA2002 – Data analytics: Learning from data focuses on developing data analytics skills problems and data. Students also complete one single from: COMP2123, COMP2823, STAT2X11, QBUS2830. Third year DATA3001 – The interdisciplinary data science project is a capstone 3000-level unit of major and includes both a disciplinary and interdisciplinary project. The main component of the unit is a nine-week project that applies the skills and knowledge of applicants to analyse real, messy data from a field of expertise outside of data science and statistics. Students also select 6 credits from the methodological range of DATA and STAT units and 6 credits from the range of methods or applications, as well as to units focused on the field of science. Please note that the following units will also be available in 2019 at 3000 levels: COMP3308, COMP3027, COMP3608, COMP3927. Fourth year The fourth year is only offered in the combined bachelor's/deepening bachelor's course. Advanced coursework The advanced study option consists of 48 credits, which must include at least 24 credits in one subject area at the 4000 level, including a project unit with at least 12 credits. The space is given at 12 credit points towards another major (if it has not already been completed). The 2020 table includes 24 credits of postgraduate studies. Honours in the field of data science: 24 credits of project work and 24 credits of coursework. Honor units will be available in 2020. Contact information and additional information W www.maths.usyd.edu.au/E All inquiries phone: +61 2 9351 5804 or +61 2 9351 5787Address:School of Mathematics and Statistics Level 5, Carslaw Building F07Sexuality Sydney NSW 2006Professor Jean YangT +61 2 9351 3012E Students graduating from Data Science are able to demonstrate:Interdisciplinary skills The ability to contribute to problems across multiple application areas and understand the link between the issue provided and the data collected to address the problem. The ability to relate context-specific knowledge to data, understand how data can be used for context-specific knowledge, and know how this information can control data analytics. Understanding the importance of experimental design, its relationship to data output and how this data should be analyzed and evaluated, including potential pitfalls. the ability to identify in general terms the type of data analytical approach required for a particular problem; whether it's data analysis, simulation-based modelling, or equation-based modelling. Understanding the information context, organisational restrictions and quality issues affects the impact of the further stages of the analysis. Data science methods and tools Knowledge management skills and understanding of how data, metadata and derived data (including templates) are stored, used and managed. A set of computing skills, such as programming, selecting scientific data formats, creating and using databases (for storing and using metadata), and using graphical information systems (for mapping and sharing large-dimensional data). These skills also include understanding the principles of programming and the ability to convert this knowledge into a new computing code and create tools. Analytical data compensation, including the proper use of quantitative models or visualization methods for a number of data types: enabling the prediction of results to assess significant models and trends in erroay to assess the strengths and weaknesses of different analytical approaches. Communication skills Ability and experience reliably use data analytical expertise to communicate discipline-specific results in written and verbal form and decision-making. Problem awareness Awareness of data integrity issues, including respect for data protection and ethical issues. A general understanding of how data analysis tools can be automated and implemented efficiently and, if necessary, scaled using available technologies. Item Errata Date 1. Data Science An important requirement (ii) reads as follows: (ii) 6 1000 unit credit points according to the following rules*: (a) 6 credit points for selective units OR(b) 3 credit points for statistical units and 3 credit points for units of account TAI c) 3 credit points for advanced statistical units and 3 credit points for calculation and linear algebra units 10/1/2018 2. Data Science Minor requirement (ii) reads as follows: (ii) 6 1000 unit credit points according to the following rules*: (a) 6 credit points for selective units OR(b) 3 credit points for statistical units and 3 credit points for units of account TAI c) 3 credit points for advanced statistical units and 3 credit points for calculation and linear algebra units 10/1/2018 3. MATH1021 Calculation of one variable: A session for semester 2 has been added. 1/2/2018 4. ENVX1002 Introduction to statistical methods: Prohibitions have changed. They are now: N: ENVX1001, MATH1005, MATH1905, MATH1015, MATH1115, DATA1001, BUSS1020, STAT1021 and EMCT1010 1/2/2018 Course Credits A: Presumed Knowledge P: Prerequisites C: Corequisites N: Prohibition session Further course work and projects will be available in 2020 for students completing this major. The data science major requires 48 credit points from this table, including: (i) 6,1000 core unit credit points (ii) 6,1000-level unit credit points according to the following rules*:) 6 credit points for selective units (b) 3 credit points for statistical units and 3 credit points for units of account (c) 3 for advanced credit points and 3 credit points of the counting and linear algebra units 12 credit points for core 2000 units (iv) 6 credit points for 2000 level selective units v) 6 credit points for 3000-level multidisciplinary project units vi) 6 credit points 3000-level 6 credit points for 3000-level methodology or application and for science-focused units Additional application and discipline-oriented units in disciplines, including functional genomics, will be available in 2019, animal genetics/bioinformatics, geoscience/hydrology modelling. *Students who are not enrolled in BSc may replace ECMT1010 or BUSS1020 Data Science minor requires 36 credits from this table, including: (i) 6 1000 level core unit credit score (ii) 6 1000 unit credit score according to the following rules*: (a) 6 selective units points (b) 3 credit points for statistical units and 3 credit points for 3 units of account c) 3 credit score for advanced statistical units and 3 (iii) 12 credit points for units at 2000 level (iv) 6 credit points from 2000 levels selective units (v) 6 credit points in 3000-level methodology units Research units are listed below. DATA1002Informatics: Data and calculation 6 N INFO1903 Data for semester 2100Information 6 N MATH1005 or MATH1015 or MATH1115 or ENVX1 founders 002 or ECMT1010 or BUSS1020 or STAT1021 Semester 2 ENVX1002 Introduction to statistical methods 6 N ENVX1001 Available as a core unit of qualification only in agricultural, veterinary and veterinary life sciences, and Food and Agribusiness streams Semester 1 MATH1005 Statistical thinking with data 3 A HSC Mathematics. Students who have not completed HSC maths (or similar) are advised to take a math bridle course (offered in February). N MATH1015 or MATH1905 or STAT1021 or STAT1022 or ECMT1010 or ENVX1001 or ENVX1002 or BUSS1020 Semester 2Summer MainWinter Main MATH1015Biostatistics 3 A HSC Mathematics. Students who have not completed HSC maths (or similar) are advised to take a math bridle course (offered in February). N MATH1005 or MATH1905 or STAT1021 or STAT1022 or ECMT1010 or BIOM1003 or ENVX1001 or ENVX1002 or BUSS1020 Semester 1 MATH1115 Data 3 P MATH1005 or MATH1015 N DATA1001 or STAT1021 or ECMT1010 or ENVX1001 or BUSS1020 or ENVX1002 or MATH 1905 term1Semester 2Winter Main MATH1905Statistic thinking with data (advanced) 3 A (HSC Mathematics Extension 2) OR (90 or more in HSC Mathematics Extension 1) or equivalent N MATH1005 or MATH 1015 or STAT1021 or STAT1022 or ECMT1010 or ENVX1001 or ENVX1002 or BUSS1020 Note: Department permit required for enrolment Semester 2 MATH1021 calculation of variable 3A HSC Mathematics Extension 1. Students who have not completed HSC extension 1 1 (or equivalent) it is highly recommended to participate in the Extension 1 Mathematics Bridging course (offered in February). N MATH1011 or MATH1901 or MATH1906 or MATH1111 or ENVX1001 or MATH1001 or MATH1921 or MATH1931 Semester 1 MATH1921 Calculation of one variable (advanced) 3 A (HSC math extension 2) OR (band E4 in HSC math extension 1) or equivalent. N MATH1001 or MATH1011 or MATH1906 or MATH1111 or ENVX1001 or MATH1901 or MATH1021 or MATH1931 Note: Department permission is required for enrollment Semester 1 MATH1931 One variable (SSP) 3 A band E4C Mathematics Extension 2 or equivalent. N MATH1001 or MATH1011 or MATH1901 or MATH1111 or ENVX1001 or MATH1906 or MATH1021 or MATH1921 Note: Registration required for registration Is only at the invitation. Semester 1 MATH1023Multivariable Calculus and Modelling 3 A HSC Mathematics Extension 1. Students who have not completed HSC Extension I mathematics (or similar) are advised to take a follow-up course 1 math briding course (offered in February). N MATH1013 or MATH1903 or MATH1007 or MATH1003 or MATH1923 Semester 2 MATH1923Mute calculation and modelling (Adv) 3 A (HSC Mathematics Extension 2) OR (band E4 in HSC Mathematics Extension 1) or equivalent. N MATH1003 or MATH1013 or MATH1907 or MATH1023 or MATH1933 Note: Department permit required for enrollment Semester 2 MATH1933 Convertible calculation and modeling (SSP) 3 A-band E4 in HSC Mathematics Extension 2 or equivalent. N MATH1003 or MATH1903 or MATH1013 or MATH1907 or MATH1023 or MATH1923 Note: Registration required for registration permission Registration is only at the invitation. Semester 2 MATH1002Linear Algebra 3 A HSC Mathematics or MATH1111. Students who have not completed HSC maths (or similar) are advised to take a math bridle course (offered in February). N MATH1012 or MATH1014 or MATH1902 Semester 1Summer Main MATH1902Linear Algebra (Advanced) 3 A (HSC Mathematics Extension 2) OR (90 or above in HS)C Mathematics Extension 1) or equivalent N MATH1002 or MATH1012 or MATH1014 Note: Department permission required for enrolment Semester 1 *Students not enrolled in BSc – Substitute units DATA2001Data Science: Big Data and Data Diversity 6 P DATA1002 OR INFO1110 OR INFO1903 OR INFO1103 Semester 1 DATA2002Data Analytics: Learning from Data 6 A (Basic Linear Algebra and some coding) or QBUS1040 P [DATA1001 or ENVX1001 or ENVX1002] or [MATH10X5 and MATH1115] or [MATH10X5 and STAT2011] or [MATH1905 and MATH1XXX (except MATH1XX5)] or [BUSS1020 or ECMT1010 or STAT1021] N STAT2012 or STAT2912 Semester 2COMP2123Data Structures and Algorithms 6 P INFO1110 OR INFO1113 OR DATA1002 OR INFO1103 OR INFO1903 N INFO1105 OR INFO1905 OR COMP2823 Semester 1 Structures and Algorithms (Adv) 6 P P at least one INFO1110 OR INFO1113 OR DATA1002 OR INFO1103 OR INFO1903 N INFO1105 OR INFO1905 OR COMP2123 Note: Department permit required for registration Semester 1 ISYS2120 Information and information management 6 Programming skills P INFO1113 OR INFO1103 OR INFO1105 OR INFO1905 OR INFO1003 OR INFO1903 OR DECO1012 N INFO2120 OR INFO2820 OR COMP5138 Semester 2 STAT2011Probation and evaluation theory 6 P (MATH1X21 or MATH1931 or MATH1X01 or MATH1906 or MATH101 (1) and (MATH115XX or STAT1021 or ECMT1010 or BUSS1020) N STAT2901 or STAT2001 or STAT2911 Semester 1 STAT2911 Relation and statistical models (Adv) 6 P [[1 MATH19X3 or MATH1907 or (mark 65 in mathematics 1023 or IN MATHEMATICS) 1003]] and [MATH1905 or MATH1904 or (mark 65 IN MATHEMATICS1005 or EC MT1010 or BUSS1020)] N STAT2001 or STAT2901 or STAT2011 Semester 1 QBUS2830Actuarial Data Analytics 6 A BUSS1020 or ECMT1010 or ENVX10 1 or ENVX1002 or ((MATH1005 or MATH1015) and MATH1115) or 6 credits in MATH 1000-level units including MATH1905. P QBUS2810 or DATA2002 or ECMT2110 Semester 2 DATA3001 will be developed for supply in 2019. DATA3404Data Science Platforms 6 A This study unit assumes that students have prior knowledge of database structures and SQL. The prerequisite material is covered in data2001 or ISYS2120. Also in the programming language (e.g. Java or C) feeling is expected. P DATA2001 OR ISYS2120 OR INFO2120 OR INFO2820 N INFO3504 OR INFO3404 SEMESTER 1 ISYS3401INSENT OF INFORMATION TECHNOLOGY 6P (INFO2110 OR IS AND (INFO2120 OR ISYS2120) AND (ISYS2140 OR ISYS2160) SEMESTER 1 STAT3X23, STAT3X22, STAT3021, STAT3024 and DATA3406 have been developed for supply in 2019. ENVX3001End environment GIS 6 P 6cp from (ENVI1003, AGEN1002) or 6cp from GEOS1XXX or 6cp BIOL1XXX Semester 2 ENVX3002Statis in the Natural Sciences 6 - ENVX2001 or BIOM2001 or STAT2X12 or BIOL2X22 or DATA2002 or QBIO2001 Interdisciplinary Unit Semester 1 AMED3002Interrogation Biomedical and Health Data 6A Investigative Data Analysis, sampling, simple linear regression, t-tests, confidence intervals and chi-squared goodness of a suitable test , which is a familiar basic coding , linear algebra. Learn more about BMedSc degree students: You must have completed BMED2401 successfully and an additional 12cp from BMED240X before registering with this unit. BMedSc degree students: You must have completed BMED2401 and an extra 12cp from BMED240X before registering with this unit. Semester 1 QBUS3810Actuarial Risk Analytics 6 P QBUS2810 or DATA2002 or ECMT2110 N ECMT3180 Semester 1 1

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