

# MASTERS BY COURSEWORK AND RESEARCH REPORT IN THE FIELD OF **e-SCIENCE**

Are you interested in big data, data analytics, data science, e-science, e-research?

This Masters programme aims to train postgraduate students in the use of a variety of methods to conduct data-driven research in either the sciences (MSc), or the social sciences and humanities (MA). The programme will create opportunities for students to develop an interdisciplinary perspective on the emerging fields of Data Science.

The programme forms part of the DST-funded National e-Science Postgraduate Teaching and Training Platform (NEPTTP). This Platform is a Consortium of Universities working together to deliver joint curricula in e-Science.

## ENTRY REQUIREMENTS

Applicants are required to have a Bachelor's degree with Honours (NQF level 8 qualification) from a relevant discipline in science for the MSc, or a relevant discipline in the social sciences or humanities for the MA. Students must have a strong substantive knowledge in their relevant discipline or field, but they need not have a previous specialization in statistics or statistical computing.

Applicants require a minimum of 65 percent in their NQF level 8 qualification to be considered, and they must fulfil any additional application requirements of the institution through which they are applying, and must be co-approved by the Consortium.

## DEGREE INFORMATION

The Masters programme extends over eighteen months of full-time study. The programme comprises compulsory and elective modules. Cross-disciplinary data-driven projects are offered both within the University and from a wide range of industry partners. A candidate must undertake modules to the value of 180 credits and must successfully complete the required course modules to obtain the degree.

## FUNDING

Competitive DST-CSIR Masters bursaries (covering tuition, accommodation and stipend) are made available by the Department of Science and Technology (DST) to qualifying offer holders with a record of excellent academic achievement. Priority for bursaries will be given to South African Citizens and Permanent Residents.

## CAREERS

Graduates of the programme can find data-oriented roles within academic institutions, social and policy research organisations (governmental and non-governmental), and the private sector (technology, engineering, healthcare companies and the finance sector).

## APPLICATIONS

Students are advised to apply as early as possible due to competition for places. For more information, see our Wits applications webpage: [www.wits.ac.za/applications/](http://www.wits.ac.za/applications/). For any additional queries, please refer to the contact details below.

## THE CURRICULUM

This Masters course in e-Science has two streams:

- Master of Science (MSc) offered through the School of Computer Science and Applied Mathematics (Degree: SCA00), or
- Master of Arts (MA) offered through the School of Social Sciences (Degree: ACA00).

## COURSEWORK MODULES

The Coursework Modules will take place in the first 9 months of this 18 month degree programme.

### 2 COMPULSORY COURSES FOR ALL STREAMS

- Research Methods and Capstone Project in Data Science (15 credits; COMS7060A)
- Data Privacy and Ethics (15 credits; COMS7055A)

### ANY 4 ELECTIVE COURSES IN THE MSc STREAM

- Adaptive Computation and Machine Learning (15 credits; COMS7047A)
- Data Visualisation and Exploration (15 credits; COMS7056A)
- Large Scale Computing Systems and Scientific Programming (15 credits; COMS7057A)
- Large Scale Optimisation for Data Science (15 credits; COMS7059A)
- Mathematical Foundations of Data Science (15 credits; COMS7058A)
- Statistical Foundations of Data Science (15 credits; COMS7063A)
- Special Topics in Data Science (15 credits; COMS7062A)

### ANY 2 ELECTIVE COURSES IN THE MA STREAM

- Principles of Quantitative Social Research (30 credits; SOSS7091A)
- Advanced Topics in Quantitative Social Research (30 credits; SOSS7092A)\*
- Alternative MSc elective courses are available with special permission from the Director and the Deans to students who meet the prerequisites.

\* Not all electives will be available in all years. Modules are offered based on lecturer availability.

## RESEARCH REPORT

The Research Report will take place in the last 9 months of this 18 month degree programme. Domain specific research project will be conducted and will be supervised by a domain expert. This study period will also be supported by regularised seminars and/or workshops, and/or boot camps, as required.

- Research Report: Data Science (90 credits; COMS7061A)

## CONTACT US

**DST-CSIR National e-Science Postgraduate Teaching and Training Platform (NEPTTP)**

**Tel: 011 717 6161 (Office) | Tel: 011 717 6194 (Director)**

**Email: [e-science.research@wits.ac.za](mailto:e-science.research@wits.ac.za) | Website: [www.escience.ac.za](http://www.escience.ac.za)**