R05 RM Master of Science - Mathematics and Statistics

Year and Campus:	2009
Overview:	The Master of Science (Mathematics and Statistics program) allows students to focus on a specialist area of the discipline and broaden their experience by taking subjects from other specialisations. Students must complete a total of 200 points over the two year full-time (or four year part-time) program, comprising: **Discipline subjects** (137.5 points) Students must take 11 of the following subjects: **Statistics and Stochastic Processes** o 600-655 Business Forecasting o Mathematics of Risk (available semester 2, 2010) o 620-618 Probability for Inference o 620-620 Statistical Inference o 620-624 Stochastic Processes o 620-639 Data Mining o 620-638 Consulting and Applied Statistics **Operations Research and Discrete Mathematics** o 620-616 Optimisation for Industry o 620-615 Network Optimisation (not available in 2010) o Scheduling and Optimisation (available semester 2, 2010) o 620-646 Advanced Discrete Mathematics o 620-647 Enumerative Combinatorics (not available in 2010) o Experimental Mathematics (available semester 1, 2010) **Applied Mathematics** o 620-637 Computational Differential Equations o 620-617 Phase Transitions and Critical Phenomena o 620-635 Advanced Materials Modelling o 620-629 Integrable Models (not available in 2010) o 620-644 Mathematical Biology (not available in 2010) o Partial Differential Equations (available semester 1, 2010) o Random Walks and Random Structures (available semester 2, 2010) **Pure Mathematics** o 620-645 Measure theory o 620-636 Commutative Algebra o 620-619 Representation Theory o 620-634 Algebraic Topology o 620-630 Algebraic Geometry (not available in 2010) o 620-640 Differential Geometry (not available in 2010) o 620-628 Functional Analysis (not available in 2010) o Differential Topology (available semester 2, 2010) o Complex Analysis (available semester 2, 2010) o Geometric Group Theory (available semester 2, 2010) With the approval of the supervisor and departmental Master program Coordinator, a student will be allowed to substitute up to three of the Discipline Mathematics & Statistics subjects

with lower level subjects or subjects from contiguous areas. Of these substitute subjects, up to two can be 200 or 300 level subjects needed to obtain requisite knowledge for Master level Discipline Mathematics & Statistics subjects and up to two can be Master level subjects taught by other Departments of the University.

Professional tools (12.5 points)

Students undertaking the Master of Science (Mathematics and Statistics program) must take the Professional Tools subject 600-617 *Systems Modelling and Simulation*, unless they have completed 620-131 *Scientific Programming and Simulation* (2007) or equivalent. If students have previously completed 620-131 *Scientific Programming and Simulation* (2007) or equivalent, they must take one of the following Professional Tools subjects:

Science Tools

o eScience (available semester 2, 2010)

o 600-618 Ethics and Responsibility in Science

Communication Tools

o 600-616 Science in Context

o 600-619 Science and Communication

Research Project (50 points)

The Research Project is an integral part of the Master of Science (Mathematics and Statistics program) and a thesis is the main requirement for this component. Students must pass the Research Project to be awarded the Degree.

Students enrolled in the Master of Science (Mathematics and Statistics program) are required to complete a 50 point Research Project. Students may enrol in one or more Research Project subjects as indicated below to ensure they have completed a total of 50 points by the end of their course.

620-649 Research Project - 50 points
620-650 Research Project - 37.5 points
620-651 Research Project - 25.0 points
620-652 Research Project - 12.5 points

Objectives:

After completing this course students should have:

discovered the challenge of research in Mathematics and Statistics;
a deeper knowledge of Mathematics and Statistics;
completed a substantial piece of research; and
a sound preparation for future research in Mathematics or Statistics.

Subject Options:

Subject	Study Period Commencement:	Credit Points:
620-630 Algebraic Geometry	Semester 2	12.50
620-634 Algebraic Topology	Semester 1	12.50
600-655 Business Forecasting	Semester 2	12.50
620-636 Commutative Algebra	Semester 1	12.50
620-637 Computational Differential Equations	Semester 1	12.50
620-640 Differential Geometry	Semester 2	12.50
620-638 Consulting and Applied Statistics	Semester 1	12.50
620-646 Advanced Discrete Mathematics	Semester 2	12.50

620-647 Enumerative Combinatorics	Semester 1	12.50
620-628 Functional Analysis	Semester 2	12.50
620-629 Integrable Models	Semester 2	12.50
620-644 Mathematical Biology	Semester 1	12.50
620-615 Network Optimisation	Semester 2	12.50
620-616 Optimisation for Industry	Semester 1	12.50
620-617 Phase Transitions and Critical Phenomena	Semester 1	12.50
620-619 Representation Theory	Semester 1	12.50
620-624 Stochastic Processes	Semester 2	12.50
620-645 Measure Theory	Semester 1	12.50
620-618 Probability for Inference	Semester 1	12.50
620-620 Statistical Inference	Semester 1	12.50
620-639 Data Mining	Semester 2	12.50
620-635 Advanced Materials Modelling	Semester 2	12.50
620-649 Research Project	Semester 1, Semester 2	50.00
620-650 Research Project	Semester 1, Semester 2	37.50
620-651 Research Project	Semester 1, Semester 2	25.00
620-652 Research Project	Semester 1, Semester 2	12.50
600-618 Ethics and Responsibility in Science	Semester 2	12.50
600-619 Science and Communication	Semester 1	12.50
600-616 Science in Context	Semester 2	12.50
600-617 Systems Modelling and Simulation	Semester 1	12.50

Related Course(s): Master of Science