

# MAST90051 Mathematics of Risk

<b>Credit Points:</b>	12.5															
<b>Level:</b>	9 (Graduate/Postgraduate)															
<b>Dates &amp; Locations:</b>	2016, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.															
<b>Time Commitment:</b>	Contact Hours: 36 hours: One 2-hour lecture per week and one 1-hour practical class per week. Total Time Commitment: 170 hours															
<b>Prerequisites:</b>	<table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MAST20026 Real Analysis</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <p>and one of the following</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MAST20004 Probability</td> <td>Semester 1</td> <td>12.50</td> </tr> <tr> <td>MAST20006 Probability for Statistics</td> <td>Semester 1</td> <td>12.50</td> </tr> </tbody> </table> <p>or equivalent.</p>	Subject	Study Period Commencement:	Credit Points:	MAST20026 Real Analysis	Semester 1, Semester 2	12.50	Subject	Study Period Commencement:	Credit Points:	MAST20004 Probability	Semester 1	12.50	MAST20006 Probability for Statistics	Semester 1	12.50
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MAST20004 Probability	Semester 1	12.50														
MAST20006 Probability for Statistics	Semester 1	12.50														
<b>Corequisites:</b>	None															
<b>Recommended Background Knowledge:</b>	None															
<b>Non Allowed Subjects:</b>	None															
<b>Core Participation Requirements:</b>	For the purposes of considering requests for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements for this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website: <a href="http://www.services.unimelb.edu.au/disability/">http://www.services.unimelb.edu.au/disability/</a>															
<b>Coordinator:</b>	Prof Konstantin Borovkov															
<b>Contact:</b>	Prof Kostya Borokov Email: <a href="mailto:borovkov@unimelb.edu.au">borovkov@unimelb.edu.au</a> (mailto:borovkov@unimelb.edu.au)															
<b>Subject Overview:</b>	Mathematical modelling of various types of risk has become an important component of the modern financial industry. The subject discusses the key aspects of the mathematics of market risk. Main concepts include loss distributions, risk and dependence measures, copulas, risk aggregation and allocation principles, elements of extreme value theory. The main theme is the need to satisfactorily address extreme outcomes and the dependence of key risk drivers.															
<b>Learning Outcomes:</b>	After completing this subject students will: <ul style="list-style-type: none"> <li># understand the basic mathematical concepts used in the financial market risk analysis;</li> <li># know how these concepts can be applied in situations requiring quantitative risk management;</li> </ul>															

	# gain the ability to pursue further studies in this and related areas.
<b>Assessment:</b>	Up to 30 pages of written assignments (20%: two assignments worth 10% each, due mid and late in semester), a 3 hour written examination (80%, in the examination period).
<b>Prescribed Texts:</b>	None
<b>Recommended Texts:</b>	Alexander J McNeil, Rüdiger Frey, Paul Embrechts. Quantitative Risk Management: concepts, techniques and tools, Princeton Univ. Press (2005)
<b>Breadth Options:</b>	This subject is not available as a breadth subject.
<b>Fees Information:</b>	Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>
<b>Generic Skills:</b>	<p>In addition to learning specific skills that will assist students in their future careers in science, they will have the opportunity to develop generic skills that will assist them in any future career path. These include:</p> <ul style="list-style-type: none"> <li># problem-solving skills: the ability to engage with unfamiliar problems and identify relevant solution strategies;</li> <li># analytical skills: the ability to construct and express logical arguments and to work in abstract or general terms to increase the clarity and efficiency of analysis;</li> <li># collaborative skills: the ability to work in a team;</li> <li># time-management skills: the ability to meet regular deadlines while balancing competing commitments.</li> </ul>
<b>Related Course(s):</b>	<p>Doctor of Philosophy - Engineering  Master of Commerce (Finance)  Master of Operations Research and Management Science  Master of Philosophy - Engineering  Master of Science (Mathematics and Statistics)</p>
<b>Related Majors/Minors/ Specialisations:</b>	Mathematics and Statistics