

Mathematical Physics

Year and Campus:	2016																											
Coordinator:	A/Professor Harry Quiney (School of Physics) Professor Omar Foda (Department of Mathematics and Statistics)																											
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Overview:	This major combines the overviews of the Physics and the Mathematics and Statistics majors.																											
Learning Outcomes:	<p><i>Mathematical Physics Major Graduates should demonstrate:</i></p> <ul style="list-style-type: none"> # mastery of a broad spectrum of mathematical methods and ability to use these methods to solve diverse problems in the physical as well as the engineering sciences; # appreciation of the distinction between mathematics which is a science based on rigorous proofs and physics which is a science based on experimental results; # ability to move back and forth between abstract mathematical concepts and concrete physical results, transferring ideas from one subject to the other; # aptitude at modelling physical phenomena in mathematical terms, as well proposing physical realizations of mathematical results; # ability to communicate abstract mathematical ideas to an audience with a heterogeneous background in the physical and engineering sciences as well as communicating real-life experimental results to mathematicians; # intuition into applicability of mathematics in the real world and ability to extract a physical significance of mathematical facts; # facility in successfully joining groups of researchers from diverse backgrounds including mathematicians as well as physicists and engineers. 																											
Structure & Available Subjects:	Completion of 50 points of study at Level 3.																											
Subject Options:	<p>Both of</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>PHYC30018 Quantum Physics</td> <td>Semester 1</td> <td>12.50</td> </tr> <tr> <td>MAST30021 Complex Analysis</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <p>Plus one of</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>PHYC30017 Statistical Physics</td> <td>Semester 2</td> <td>12.50</td> </tr> <tr> <td>PHYC30016 Electrodynamics</td> <td>Semester 1</td> <td>12.50</td> </tr> </tbody> </table> <p>Plus one of</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MAST30026 Metric and Hilbert Spaces</td> <td>Semester 2</td> <td>12.50</td> </tr> <tr> <td>MAST30031 Methods of Mathematical Physics</td> <td>Semester 2</td> <td>12.50</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	PHYC30018 Quantum Physics	Semester 1	12.50	MAST30021 Complex Analysis	Semester 1, Semester 2	12.50	Subject	Study Period Commencement:	Credit Points:	PHYC30017 Statistical Physics	Semester 2	12.50	PHYC30016 Electrodynamics	Semester 1	12.50	Subject	Study Period Commencement:	Credit Points:	MAST30026 Metric and Hilbert Spaces	Semester 2	12.50	MAST30031 Methods of Mathematical Physics	Semester 2	12.50
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Notes:	PLEASE NOTE: This major will be undergoing a change to its third year Physics subjects in 2017. Students wishing to undertake this major who have only completed first year Physics subjects must complete PHYC20012 Thermal & Quantum Physics, PHYC20015 Special																											

	<p>Relativity & Electromagnetism and PHYC20013 Laboratory & Computational Physics 2 to be prepared for the major in 2017.</p> <p>PHYC20009, PHYC20010 and PHYC20009 should only be taken in 2016 by students who have already complete one or more of these subjects.</p>
Related Course(s):	Bachelor of Science