

Course Code and Title	BG7005 Advanced Mathematics for Bioengineering	
Details of Course	<p>Summary of course content <i>(please note that this information provided will also be uploaded to the web for viewing at large)</i></p> <p>The course covers the below topics:</p> <ul style="list-style-type: none"> • Tensor Analysis (vector and tensor, Cartesian tensor, tensor transformation, curvilinear tensor) • Modeling of dynamical systems • Introduction to variational methods • Probability and statistics (important probability distributions, Markov chains, maximum likelihood, confidence interval, goodness of fit, t-test, p-test, correlation) • Combinatorial Optimization (Lagrange multiplier, gradient descent, Monte Carlo method) • Special functions (Gamma function, Bessel Function, Green's function) • Selected topics in bioengineering modeling 	
	<p>Rationale for introducing this course</p> <p>To consolidate students' understanding on selected topics on applied mathematics and to expose them to advanced topics related to bioengineering / biomedical research. The course will also serve to prepare students in advanced research as well as providing further training in logical thinking.</p>	
	<p>Aims and objectives</p> <p>The objective of this course is to teach advanced mathematics related to bioengineering / biomedical research to post graduates.</p>	
Assessment	<p><i>Tutorials / Quiz/Home assignments</i></p> <p><i>Final Exam</i></p>	<p><i>45%</i></p> <p><i>55%</i></p>
	<p>Total:</p>	<p>100 %</p>
Hours of Contact/Academic Units	<p>Lecture hours per week: 2</p> <p>Tutorial hours per week: 1</p> <p><i>Total: 3 hours / week; 3 AU</i></p>	