

**Requirements for Computational Biology Programme  
(For Students Matriculated in AY2007/08 and Before)**

To be awarded a B.Sc. or B.Sc.(Hons.) with a major in Computational Biology, candidates must satisfy the following:

<b>MAJOR REQUIREMENTS</b>		<b>MCs</b>	
<b>University Requirements</b>			
2 x General Education Modules	8	<b>21 – 22</b>	
1 x Singapore Studies Module	4		
2 x Breadth Electives ^	9 – 10		
CS1101C or CS1101 or CS1101S Programming Methodology * CS1102C or CS1102 or CS1102S Data Structures And Algorithms *			
<b><u>Faculty Requirements</u></b>		<b>16</b>	
CM1121 Basic Organic Chemistry* LSM1101 Biochemistry Of Biomolecules* CZ2105 Numerical Methods I <b>OR</b> MA2213 Numerical Analysis 1 PC2267 Biophysics I			
<b><u>Major Requirements</u></b>			
<b>Level-1000 / 2000 Essential*</b>			
CS1231 Discrete Structures <b>OR</b> MA2214 Combinatorial Analysis	4	<b>50</b>	
LSM1102 Molecular Genetics	4		
MA1101R Linear Algebra I	4		
MA1102R Calculus	4		
PC1432 Physics IIE	4		
CS2102 Database Systems	4		
CS2220 Introduction To Computational Biology <b>OR</b> LSM2104 Essential Bioinformatics And Biocomputing or LSM2241 Introductory Bioinformatics	4		
LSM2101 Metabolism And Regulation	4		
LSM2102 Molecular Biology	4		
LSM2201 Experimental Biochemistry <b>OR</b> LSM2202 Experimental Molecular And Cell Biology	6		
ST2131 Probability	4		
ST2132 Mathematical Statistics	4		
<b><u>Level-3000 Essential</u></b>			<b>16</b>
CZ3252/LSM3241 Bioinformatics & Biocomputing	4		
LSM3231 Protein Structure And Function	4		
MA3259 Mathematical Methods In Genomics	4		
ST3236/MA3238 Stochastic Process 1	4		
<b>Level-3000 Electives - Choose any TWO from the following:</b> CS3225 Combinatorial Methods in Bioinformatics CZ3102 Scientific Modeling & Visualization CZ3105 Numerical Methods II <b>OR</b> MA3227 Numerical Analysis II CZ3253 Computer Aided Drug Design CZ3272 Monte Carlo And Molecular Dynamics LSM3211 Fundamental Pharmacology LSM3243 Molecular Biophysics MA3233 Algorithmic Graph Theory PC3267 Biophysics II ST3131 Regression Analysis		<b>8</b>	

ST3240 Multivariate Statistical Analysis ZB3288 UROPS in Computational Biology I		
<b><u>Level-4000 Essential</u></b>		
ZB4199 Honours Project in Computational Biology	12	<b>22</b>
CZ4225/CZ5225 Methods In Computational Biology/Modeling and Simulation in Biology	3	
CZ4226/CZ5226 Advanced Bioinformatics	3	
LSM4241 Functional Genomics	4	
<b>Level-4000 Electives - Choose any TWO from the following:</b> CS4220 Knowledge Discovery Methods in Bioinformatics CS4234 Combinatorial & Graph Algorithms CZ4102 High Performance Computing CZ4105 Computational Differential Equations <b>OR</b> MA4255 Numerical Partial Differential Equations LSM4231 Structural Biology MA4251/ST4238 Stochastic Processes II PC4267 Biophysics III ST4234 Bayesian Statistics ST4240 Data Mining ST4241 Design & Analysis Of Clinical Trials ST4243 Statistical Methods for DNA Microarray Analysis		<b>8</b>
<b>Unrestricted Elective Modules</b>		<b>18 – 19</b>
<b>TOTAL</b>		<b>160</b>

\* Modules are part of the lower division requirements for the Computational Biology Programme.

^ Science students will read CS1101C Programming Methodology (4 MCs) and CS1102C Data Structures and Algorithms (5 MCs) in fulfilment of their Breadth Requirements.