

**B.Sc. (Hons.) in Computational Biology  
Summary of Module Requirements and Credits**

Summary of module requirements and credits for cohort matriculated in AY 2004/2005 & after

Modular Requirements		MCs
<b>University Requirements</b>		
2 x General Education Modules	8	<b>28</b>
1 x Singapore Studies Module	4	
4 x Breadth Electives <sup>†</sup> ^ CS1101S or CS1101C PROGRAMMING METHODOLOGY (5 MC)* ^ CS1102S or CS1102C DATA STRUCTURES AND ALGORITHMS (5 MC)* ^ CS2102 DATABASE SYSTEMS*	16	
<b>Faculty Requirements</b>		<b>16</b>
CM1121 BASIC ORGANIC CHEMISTRY* LSM1101 BIOCHEMISTRY OF BIOMOLECULES* CZ2105 NUMERICAL METHODS I <u>OR</u> MA2213 NUMERICAL ANALYSIS 1 PC2267 BIOPHYSICS I		
<b>Major Requirements</b>		
<b>Level 1000 / 2000 Essential*</b>		
CS1231 DISCRETE STRUCTURES <u>OR</u> MA2214 COMBINATORIAL ANALYSIS	4	<b>46</b>
LSM1102 MOLECULAR GENETICS	4	
MA1101R LINEAR ALGEBRA I	4	
MA1102R CALCULUS	4	
PC1432 PHYSICS IIE	4	
CS2220 INTRODUCTION TO COMPUTATIONAL BIOLOGY# <u>OR</u> LSM2104 ESSENTIAL BIOINFORMATICS AND BIOCOMPUTING#	4	
LSM2101 METABOLISM AND REGULATION	4	
LSM2102 MOLECULAR BIOLOGY	4	
LSM2201 EXPERIMENTAL BIOCHEMISTRY <u>OR</u> LSM2202 EXPERIMENTAL MOLECULAR AND CELL BIOLOGY	6	
ST2131 PROBABILITY	4	
ST2132 MATHEMATICAL STATISTICS	4	
<b>Level 3000 Essential</b>		
CZ3252/LSM3241 BIOINFORMATICS & BIOCOMPUTING#	4	<b>16</b>
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 POST-GENOME INFORMATICS# (New module) CZ3102 SCIENTIFIC MODELING & VISUALIZATION CZ3105 NUMERICAL METHODS II <u>OR</u> 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 ST3240 MULTIVARIATE STATISTICAL ANALYSIS		<b>8</b>

<b>Level 4000 Essential</b>		<b>22</b>
CB4xxx HONOURS PROJECT#	12	
CZ4225 METHODS IN COMPUTATIONAL BIOLOGY#	3	
CZ4226 ADVANCED BIOINFORMATICS#	3	
LSM4241 FUNCTIONAL GENOMICS	4	
<b>Level 4000 Electives - Choose any <u>TWO</u> from the following:</b>		<b>8</b>
CS4220 COMPUTATIONAL ANALYSIS OF BIOLOGICAL DATA# (New module)		
CS4234 COMBINATORIAL & GRAPH ALGORITHMS		
CZ4102 HIGH PERFORMANCE COMPUTING		
CZ4105 COMPUTATIONAL DIFFERENTIAL EQUATIONS <u>OR</u> 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>Unrestricted Electives</b>		<b>16</b>
<b>Total</b>		<b>160 MCs</b>

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

^ Students are required to read these modules to fulfil part of their Breadth Requirements.

† Students are required to read another 2MC from any module outside the Science Faculty to fulfill their Breadth Requirements.

# Integrated modules.