

Honours BSc in Biochemistry/ BAsC in Chemical Engineering (Biotechnology) (208 credits)	Honours BSc in Biochemistry/ BAsC in Chemical Engineering (Biotechnology) (195 credits)
Requirements 2003-2005	New structure 2006
Compulsory credits in first year 38	Compulsory first year credits 30
Fall:	Fall:
BIO1120 Introduction to Organismal Biology 4	BIO1130 Introduction to Organismal Biology 3
CHM1310 Principles of Chemistry 4	CHM1311 Principles of Chemistry 3
MAT1320 Calculus I 3	MAT1320 Calculus I 3
MAT1341 Introduction to Linear Algebra 3	MAT1341 Introduction to Linear Algebra 3
PHY1201 Physics Laboratory 3	PHY1121 Fundamentals of Physics I 3
PHY1101 Fundamentals of Physics I 3	
Winter:	Winter:
BIO1110 Introduction to Cell Biology 4	BIO1140 Introduction to Cell Biology 3
CHG1120 Introduction to Chemical Engineering 4	CHG1125 Introduction to Chemical Engineering 3
CHM1320 Organic Chemistry I 4	CHM1321 Organic Chemistry I 3
MAT1322 Calculus II 3	MAT1322 Calculus II 3
PHY1102 Fundamentals of Physics II 3	PHY1122 Fundamentals of Physics II 3
Compulsory credits in second year 39	Compulsory second year credits 36
Fall:	Fall:
CHM2120 Organic Chemistry II 3	CHM2120 Organic Chemistry II 3
CHM2126 Laboratory of Organic Chemistry II -2	CHM2123 Laboratory of Organic Chemistry II 3
CHM2131 Chemical Thermodynamics of Gases and Solutions 3	CHM2131 Chemical Thermodynamics of Gases and Solutions 3
CHM2154 Analytical Chemistry 3	CHM2354 Analytical Chemistry 3
GNG1101 Fundamentals of Engineering Computation -4	GNG1105 Fundamentals of Engineering Computation 3
MAT2331 Ordinary Differential Equations and Numerical Methods 4	MAT2384 Ordinary Differential Equations and Numerical Methods 3
Winter:	Winter:
BCH2140 Introduction to Biochemistry 3	BCH2333 Introduction to Biochemistry 3
BCH2336 Biochemistry Laboratory I -2	BIO2133 Genetics 3
BIO2123 Genetics 4	
CHM2118 Laboratory of Analytical Chemistry -2	CHM2330 Physical Chemistry: Introduction to the molecular properties of matter 3
CHM2130 Physical Chemistry: Introduction to the molecular properties of matter 3	
ENG1112 Technical Report Writing 3	ENG1112 Technical Report Writing 3
MAT2377 Probability and Statistics for Engineers 3	MAT2377 Probability and Statistics for Engineers 3
Compulsory credits in third year 39	Compulsory third year credits 39
Fall:	Fall:
BCH3170 Molecular Biology 3	BCH3170 Molecular Biology 3
BCH3356 Molecular Biology Laboratory 3	BCH3356 Molecular Biology Laboratory 3

BIO3124 General Microbiology	3	BIO3124 General Microbiology	3
CHG2312 Fluid Flow	3	CHG2312 Fluid Flow	3
CHG2317 Introduction to Chemical Process Analysis and Design	3	CHG2317 Introduction to Chemical Process Analysis and Design	3
MAT2322 Calculus III for Engineers	3	MAT2322 Calculus III for Engineers	3
Three credits of complementary studies electives	3	Three credits of complementary studies electives	3
Winter:		Winter:	
BCH3120 General Intermediary Metabolism	3	BCH3120 General Intermediary Metabolism	3
BCH3125 Protein Structure and Function	3	BCH3125 Protein Structure and Function	3
BCH3346 Biochemistry Laboratory II	3	BCH3346 Biochemistry Laboratory II	3
CHG2314 Heat Transfer Operation	3	CHG2314 Heat Transfer Operation	3
ECO1192 Engineering Economics	3	ECO1192 Engineering Economics	3
HIS2129 Technology, Society and Environment since 1800	3	HIS2129 Technology, Society and Environment since 1800	3
or		or	
PHI2394 Scientific Thought and Social Values	3	PHI2394 Scientific Thought and Social Values	3
Compulsory credits in fourth year	35	Compulsory fourth year credits	33
Fall:		Fall:	
BCH4032 Biochemistry Seminar	2	BCH4932 Biochemistry Seminar	3
BCH4040 Honours Research – Biochemistry	9	BCH4040 Honours Research – Biochemistry	9
BCH4122 Macromolecules	3	BCH4122 Macromolecules	3
BCH4172 Topics in Biotechnology	3	BCH4172 Topics in Biotechnology	3
CHG3316 Transport Phenomena	3	CHG3316 Transport Phenomena	3
CHG3324 Fundamentals and Applications of Chemical Engineering Thermodynamics	3	CHG3324 Fundamentals and Applications of Chemical Engineering Thermodynamics	3
CHG3331 Application of Mathematical Methods to Chemical Engineering	3	CHG3331 Application of Mathematical Methods to Chemical Engineering	3
CHG3337 Data Collection and Interpretation	3	CHG3337 Data Collection and Interpretation	3
Winter:		Winter:	
BCH4125 Cellular Regulation and Control	3	BCH4125 Cellular Regulation and Control	3
BPS3101 Genomics	3	BPS3101 Genomics	3
or		or	
BPS4101 Human Genome Structure and Function	3	BPS4101 Human Genome Structure and Function	3
Spring/Summer	18	Spring/Summer	18
CHG3111 Unit Operations	3	CHG3111 Unit Operations	3
CHG3112 Process Synthesis, Design and Economics	3	CHG3112 Process Synthesis, Design and Economics	3
CHG3122 Chemical Engineering Practice	3	CHG3122 Chemical Engineering Practice	3
CHG3127 Chemical Reaction Engineering	3	CHG3127 Chemical Reaction Engineering	3
CHG3326 Principles of Phase Equilibria and Chemical Reaction Equilibria	3	CHG3326 Principles of Phase Equilibria and Chemical Reaction Equilibria	3
Complementary studies electives	3	Complementary studies electives	3
Compulsory credits in fifth year	39	Compulsory fifth year credits	39
Fall:		Fall:	
CHG3335 Process Control	3	CHG3335 Process Control	3
CHG4305 Advanced Materials in Chemical Engineering	3	CHG4305 Advanced Materials in Chemical Engineering	3
CHG4116 Chemical Engineering Laboratory	6	CHG4116 Chemical Engineering Laboratory	6
CHG4343 Computer-Aided Design in Chemical Engineering	3	CHG4343 Computer-Aided Design in Chemical Engineering	3
CHG4381 Introduction to Biochemical Engineering	3	CHG4381 Introduction to Biochemical Engineering	3
Technical electives	3	Technical electives	3

<p>Winter:</p> <p>CHG4300 Thesis and Seminar or six credits of technical electives 6</p> <p>CHG4306 Microelectronics Manufacturing Processes 3</p> <p>CHG4307 Clean Processes and Sustainable Development 3</p> <p>CHG4244 Plant Design Project 3</p> <p>GNG4170 Engineering Law 3</p> <p>During the fourth year, the student must either do a research project (BCH4040), or take nine additional credits among the 3000-or-4000-level courses in biochemistry, biology, biopharmaceutical sciences, cellular and molecular medicine, chemistry, pharmacology, physiology, or from the 5000-level courses in microbiology or immunology. The research project is highly recommended for students who intend to pursue a career in research, but a CGPA of 6.0 is required to be eligible to the project.</p> <p>Consult the list of technical electives shown in the regular Chemical Engineering program.</p>	<p>Winter:</p> <p>CHG4300 Thesis and Seminar or six credits of technical electives 6</p> <p>CHG4306 Microelectronics Manufacturing Processes 3</p> <p>CHG4307 Clean Processes and Sustainable Development 3</p> <p>CHG4244 Plant Design Project 3</p> <p>GNG4170 Engineering Law 3</p> <p>During the fourth year, the student must either do a research project (BCH4040), or take nine additional credits among the 3000-or-4000-level courses in biochemistry, biology, biopharmaceutical sciences, cellular and molecular medicine, chemistry, pharmacology, physiology, or from the 5000-level courses in microbiology or immunology. The research project is highly recommended for students who intend to pursue a career in research, but a CGPA of 6.0 is required to be eligible to the project.</p> <p>Consult the list of technical electives shown in the regular Chemical Engineering program.</p>
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