

## Chemical and Biological Engineering (2015)

		Course Code	Course Title	Credits (Hour)	Remarks				
General Education		GETE001	Thinking and Writing I	2(2)	Required	10 credits			
		GETE004	Thinking and Writing II	2(2)					
		IFLS003	Academic English I	2(4)					
		IFLS004	Academic English II	2(4)					
		GEKS001	Freshman Seminar	1(1)					
		GEKS002	Freshman Seminar	1(1)					
Core General Education	Ethics & Ideas	GECE	Courses whose course code starts with 'GECE'	3(3)	Choose 3	9 credits			
	Literature & Art	GELA	Courses whose course code starts with 'GELA'	3(3)					
	World Cultures	GEFC	Courses whose course code starts with 'GEFC'	3(3)					
	Historical Investigation	GEHI	Courses whose course code starts with 'GEHI'	3(3)					
	Quantitative Research	GEQR	Courses whose course code starts with 'GEQR'	3(3)					
	Sociological Studies	GESO	Courses whose course code starts with 'GESO'	3(3)					
	Science & Technology	GEST	Courses whose course code starts with 'GEST'	3(3)					
Major-Related General Education		MATH 161	Calculus with Lab I	3(4)	Required	25 credits			
		MATH 162	Calculus with Lab II	3(4)					
		PHYS 151	General Physics I	3(4)					
		PHYS 161	General Physics Laboratory I	1(3)					
		PHYS 152	General Physics II	3(4)					
		PHYS 162	General Physics Laboratory II	1(3)					
		CHEM 151	General Chemistry I	3(4)					
		CHEM 153	General Chemistry Laboratory I	1(3)					
		CHEM 152	General Chemistry II	3(4)					
		CHEM 154	General Chemistry Laboratory II	1(3)					
		EGRN 151	Computer Languages Lab	3(3)	Choose 1				
		LIBS 150	Life Sciences	3(3)					
		Elective General Education					3		3
		Designated in a relation to Business School Course		EGRN 111	Management of Technology and Business Strategy		3	Required	6 credits
EGRN 200	Economic Investment Decision Analysis			3					
IMEN 204	General Accounting and Cost Accounting			3					
BUSS 205	Marketing Management			3					
BUSS 207	Financial Management			3					
BUSS 211	Introduction to Operations Management			3					
BUSS 246	Management Science			3					
BUSS 255	Strategic Management of Technology and Innovation			3					
BUSS 311	Organizational Behavior			3					
BUSS 313	International Business			3					
BUSS 152	Principles of Accounting			3					
BUSS 215	Introduction to Management Information Systems			3					
BUSS 402	Management Strategy			3					
BUSS 333	International Production, Purchasing and R&D Management			3					
BUSS 407	New Product Development and Marketing			3					
SPCE 145	Management of Patent and Intellectual Property	3							
General Education		This remaining 3 credits can be fulfilled from any of the courses in General Education.				3			
Courses		This remaining 2 credits can be fulfilled from any courses regardless of whether it is General Education or Major.				2 credits			
Subtotal						58			

		Course Code	Course Title	Credits (Hour)	Prerequisite Course	
Required (30 credits)		CHBE222	Introduction to Chemical and Biological Engineering	2(3)		
		CHBE223	Organic Chemistry I	3(3)		
		CHBE224	Chemical Engineering Thermodynamics	3(3)		
		CHBE205	Biotechnology	3(3)		
		CHBE206	Fluid Mechanics	3(4)		
		CHBE207	Physical Chemistry	3(3)		
		CHBE209	Engineering Mathematics I	3(3)		
		CHBE228	Chemical and Biological Engineering Laboratory I	1(3)		
		CHBE301	Heat & Mass Transfer	3(4)		
		CHBE303	Reaction Engineering	3(4)		
		CHBE331	Chemical and Biological Engineering Laboratory II	1(3)		
		CHBE332	Chemical and Biological Engineering Laboratory III	1(3)		
		CHBE345	Methodology and Trends in Chemical and Biological Engineering	1(2)		
		Intensive Advanced (12 credits)	CHBE304	Separation Process	3(4)	Chemical Engineering Thermodynamics
			CHBE306	Process Control	3(4)	Chemical Engineering Thermodynamics
			CHBE321	Bioprocess Engineering	3(3)	Biotechnology
CHBE426	Process and Product Design		3(3)			

### ⦿ Credits Required in Major

Courses		First Major	Intensive Major	Double Major	Dual Major	Minor	General Transfer	Undergraduate Transfer
Basic Course	Required	30	30	30	30	30	Assinged Required Credits	30
Advanced Course	Intensive Advanced	12	12	12	15	12		12
	Elective		30			—		30
Total Credits in CHBE		42	72	42	57	42		72

### ⦿ Minimum Total Credits : 130