BACHELOR OF SCIENCE - CHEMICIAL ENGINEERING

Program Description

Bachelor of Science in Chemical Engineering is a profession that involves the conceptualization, development, design, improvement and application of safe, healthy, ethical and economic ways of utilizing materials and energy in unit processes and operations for the benefit of society and the environment through the knowledge of mathematics, chemistry, biology, information technology and other natural, applied and social sciences, gained by study, research and practice. Chemical Engineering is one of the broader fields of engineering disciplines both in terms of the range of problems that fall within its purview and in the range of knowledge required to solve those problems

Program Educational Objectives

Within three to five years after obtaining a bachelor's degree in Chemical Engineering at University of St. La Salle, a graduate is expected to have:

1. Successful career in chemical engineering and /or related fields, and be prepared to pursue a broad range of chemical engineering-related career and graduate school opportunities.
2. Utilize his/her knowledge in chemical engineering and effectively contribute to address contemporary chemical engineering issues for society as well as to the profession. Manifest ability to communicate effectively both in written, oral or visual forms through writing research report and presentation.
3. Sense of social responsibility through participating in community based activities and professional commitment by being actively involved in professional organizations in the field of Chemical Engineering as well as community-based organizations.

Program Learning Outcomes

By the time of graduation, the students of the program shall be able to:

a. apply thorough knowledge of mathematics and sciences in solving for material and energy balances with other pertinent equations involved in complex Chemical Engineering Subjects
b. design and conduct experiments to test hypothesis and verify assumptions, analyze and interpret data and to simulate Chemical Engineering processes;
c. design a physical or chemical system, component, or process to meet industry needs within realistic constraints, in accordance and compliance with standards set for sustainability;
d. function well in the industry where multidisciplinary and multi-cultural teams collaborate in the attainment of processed set goals;
e. identify, formulate and solve complex chemical engineering problems with the comprehensive application of the concepts on Unit Operations, Chemical Process Industries and Instrumentation and Process Control;
f. apply professional and ethical responsibility in the creation of innovations and become professionals who are morally and legally conscious in the practice of their professions;

g. communicate effectively complex chemical engineering activities with the engineering community and with the society at large and explain the role of each member of the community in the sustainability of such activity;
h. understand the impact of chemical engineering solutions in a global, economic, environmental and societal context and its significance in the improvement and preservation of life in general;
i. pursue life-long learning in the context of innovation, research, technological developments and environmental protection;
j. use inquiry skills to examine the chemical engineering issues that impact the contemporary world and engage in research and problem solving in order to better understand and assess the significance of the chemical engineering field in these issues;
k. use modern computational engineering tools, soft wares or instruments in processing problems involving chemical engineering
l. develop inter-personal, managerial and communication skills, and cultivate professional ethics and values needed to collaborate with other fields of study for the growth of oneself and that of the organization as a whole;
m. focus on at least one specialized field of practice in preparation for those who will pursue graduate work and those who will venture into the field of research and development

Admission Requirements

1. Students seeking admission to the program must have a GPA of at least 80%;
2. Students admitted on probation must comply with the terms and conditions set by the University.

Retention Policies (In addition to the University's standard retention policy)

Load limit of students with **FAILURES, SUBJECTS DROPPED or WITHDRAWN**:

1. A student with **one (1) subject failed, dropped or withdrawn** will carry a maximum load of **21 units** the following semester.
2. A student with **2 or 3 subjects failed, dropped or withdrawn** will carry a maximum load of **18 units** the following semester.

A student will be dismissed from the ChE program if:

1. He/she incurs failures in Chemistry for Engineers (lec/lab), Calculus 1, Calculus 2, Physics for Engineers, Analytical Chemistry, Chemical Engineering Calculations, Physical Chemistry for Engineers and Momentum Transfer.
2. He/she incurs an accumulated 18 units of failure.
3. He/she fails the Admissions Exam for Chemical Engineering Students administered on the summer of his/her First Year.

UNIVERSITY OF ST. LASALLE

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First Year

First Semester		**Lec**	**Lab**	**Units**	**Prerequisite**	**Co-requisite**
EMA101	Calculus 1 (Differential Calculus)	4		4	None	
CHM101E	Chemistry for Engineers	4		4	None	
CHM101EL	Chemistry for Engineers Lab		3	1	None	
MATHMW	Mathematics in the Modern World	3		3	None	
NSTP1	NSTP 1	3		3	None	
PED1	Physical Education 1 (Wellness and Fitness)	2		2	None	
RHIST	Readings in Philippine History	3		3	None	
USELF	Understanding the Self	3		3	None	
IRS1	Lasallian Spirituality	3		3	None	
IGG	GG 1	1.5		1.5	None	
	Total	**26.5**	**3**	**27.5**	**None**	

Second Semester		**Lec**	**Lab**	**Units**	**Prerequisite**	**Co-requisite**
ECHE101	Analytical Chemistry (lecture)	4	3	5	Chemistry for Engineers	
ARTAP	Art Appreciation	3		3	None	
EMA 102	Calculus 2 (Integral Calculus)	4		4	Calculus 1	
CFP101	Computer Fundamentals and Programming		3	1	None	
NSTP2	NSTP 2	3		3	NSTP 1	
PED2	Physical Education 2 (Team Sports and Rhythmic Activities)	2		2	PED 1	
PHY101E	Physics for Engineers (lecture)	4		4	Calculus 1	
PHY101EL	Physics for Engineers Laboratory		3	1		Physics for Engineers
GE 101	Engineering Drawing		3	1	None	
	Total	**20**	**12**	**24**		

Second Year

First Semester		**Lec**	**Lab**	**Units**	**Prerequisite**	**Co-requisite**
ECHE102	Chemical Engineering Calculations	2	3	3	Analytic Chemistry	
EMA103	Differential Equation	3		3	Calculus 2	
EMA104	Engineering Data Analysis	3		3	Calculus 1	
GE102	Engineering Mechanics	3		3	Physics for Engineers	
RIZAL	Life and Works of Rizal	3		3	None	
ECHE103	Organic Chemistry	4	3	5	Analytical Chemistry	
PED3	Physical Education 3 (Swimming and Recreation)	2		2	PED 2	
FILI1	Kontekstwalisadong Komunikasyon sa Filipino	3		3	None	
	Total	**24**	**3**	**25**		

Second Semester		**Lec**	**Lab**	**Units**	**Prerequisite**	**Co-requisite**
ECHE104	Advanced Engineering Mathematics for ChE	3		3	Differential Equation	
GE103	Computer-Aided Design		3	1	(Engineering Drawing)	
GE104	Fundamentals of Materials Science and Eng'g	3		3	Organic Chemistry	
ECHE105	Momentum Transfer	2	3	3	Chemical Engineering Calcuations,	

					Differential Equation
PED4	Physical Education 4 (Individual and Dual Sports)	2		2	PED 3
PCHEM101	Physical Chemistry for Engrs 1	2	3	3	Analytical Chemistry, Calculus 2
PCOM	Purposive Communication	3		3	None
STS	Science, Technology and Society	3		3	None
FILI2	Filipino sa Iba't Ibang Disiplina	3		3	Filipino 1
IRS2	Christian Morality	3		3	Lasallian Spirituality
	Total	**24**	**9**	**27**	

THIRD YEAR

First Semester		**Lec**	**Lab**	**Units**	**Prerequisite**	**Co-requisite**
BEE200	Basic Electrical and Electronics Engineering	2	3	3	Physics for Engrs	
ECHE106	Chemical Engineering Thermodynamics	2	3	3	Physical Chem for Engrs 1, Chemical Engg Calcuations	
CACHE	Computer Applications in ChE		3	1	Computer Fundamentals and Programming	
GE105	Environmental Science and Engineering	3		3	None	
ETHICS	Ethics	3		3	Third year standing	
ECHE107	Heat and Mass Transfer (HMT(	3	3	4	Momentum Transfer	
ECHE108	Methods of Research		3	1	Physical Chem for Engrs 1, Chemical Eng'g Calcuations, Purposive Com, Engg Data Analysis	
PCHEM102	Phyiscal Chemistry for Engineers 2	2	3	3	Physical Chem for Engrs 1	
EIA1C	Engineering Intensive Appraisal for ChE 1		3	1	3rd Year Standing	
	Total	**15**	**21**	**22**		

Second Semester		**Lec**	**Lab**	**Units**	**Prerequisite**	**Co-requisite**
ECHE109L	Chemical Engineering Lab 1		3	1	Momentum Transfer, HMT	
ECHE110	Chemical Process Industries (CPI)	3		3	Organic Chemistry, Chemical Engineering Calculations	
ECHE111	Chemical Reaction Engineering (CRE)	3	3	4	Phyiscal Chemistry for Engrs 2, Advanced Engg Math for ChE, HMT	
GE106	Engineering Economics	3		3	Engineering Data Analysis	

ECHE112	Particle Technology	2	3	3	Momentum Transfer
ECHE113	Separation Process	2	3	3	HMT, Chem Engg Thermodynamics
ECHE114	Solution Thermodynamics	2	3	3	Chemical Engg Thermo, Advanced Engg Math for ChE, Computer Appl in ChE
ECHE115	Food Processing Technologies	3		3	3rd Year Standing
EIA2C	Engineering Intensive Appraisal 2 for CHE		3	1	3rd Year Standing
	Total	**18**	**18**	**24**	

Summer or Third Term		**Hrs**	**Units**	**Prerequisite**	**Co-requisite**
CHEMIM	Chemical Engineering Immersion	240	2	4th Year Standing	

FOURTH YEAR

First Semester		**Lec**	**Lab**	**Units**	**Prerequisite**	**Co-requisite**
ECHE116	Biochemical Engineering	3		3	CRE, Org Chem	
CED101	Chemical Engineering Design 1	1	3	2	Separation Processes, CRE, Particle Tech	
CED101L	Chemical Engineering Lab 2		3	1	Chemical Engineering Lab 1	
CLE101	Chemical Engineering Laws and Ethics	1		1	Ethics	
CPL101L	Chemical Process Lab		3	1	Organic Chemistry (lec & lab)	
GE107	Engineering Management	2		2	Engineering Economics	
ECHE117	Process Safety	1		1	4th Year Standing	
CWRLD	The Contemporary World	3		3	None	
ECHE118	Environmental Impact Assessment	3		3	Environmental Science & Engg	
EIA3C	Engineering Intensive Appraisal for ChE 3		3	1	4th Year Standing	
PHLIT	Philippine Literature	3		3		
	Total	**17**	**12**	**21**		

Second Semester		**Lec**	**Lab**	**Units**	**Prerequisite**	**Co-requisite**
ECHE119	Chemical Engineering Design 2	2	3	3	Chemical Engg Design 1, Process Dynamics & Control, Engineering Economy	
PSPEAK	Public Speaking	3		3	None	
ECHE120	Industrial Waste Management and Control	3		3	Environmental Science and Engg, Particle Tech	
ECHE121	Plant Inspections and Seminars		3	1	CRE, HMT	
ECHE122	Process Dynamics and Control	2	3	3	Advanced Engg Math for ChE	

GE108	Technoprenuership	3		3	Engineering Management, Engineering Economics
ECHE123	Solid Waste Management	3		3	Environmental Impact Assessment
EIA4C	Engineering Intensive Appraisal for ChE 4		3	1	4th Year Standing
	Total	**16**	**12**	**20**	

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SUMMARY OF REQUIRED COURSES

	No. of Courses	Unit Equivalent	Total Units
Technical Courses			
Mathematics			
Calculus 1 – 2	2	8	
Differential Equation	1	3	11
Natural/Physical Sciences			
Chemistry for Engineers	2	5	
Physics for Engineers	2	5	10
Basic Engineering Sciences			
Computer Fundamentals and Programming	1	1	
Engineering Drawing	1	1	
Engineering Data Analysis	1	3	
Engineering Mechanics	1	3	
Computer-Aided Design	1	1	
Engineering Economics	1	3	
Engineering Management	1	2	
Technoprenuership	1	3	17
Allied Courses			
Fundamentals of Materials Science and Engineering	1	3	
Basic Electrical and Electronics Engineering	2	3	
Environmental Science and Engineering	1	3	
Analytical Chemistry	2	5	
Organic Chemistry	2	5	19
Professional Courses			
Advanced Engineering Mathematics for ChE	1	3	
Chemical Engineering Calculations	1	3	
Momentum Transfer	2	3	
Physical Chemistry for Engineers 1	2	3	
Physical Chemistry for Engineers 2	2	3	
Chemical Engineering Thermodynamics	1	3	
Computer Applications in ChE	1	1	
Heat and Mass Transfer Lecture	2	4	
Chemical Process Industries	1	3	
Chemical Reaction Engineering	2	4	
Particle Technology Lecture	2	3	
Separation Process Lecture	2	3	
Solution Thermodynamics	1	3	
Chemical Engineering Immersion	1	2	
Biochemical Engineering	1	3	
Chemical Engineering Laws and Ethics	1	1	
Process Safety	1	1	
Industrial Waste Management and Control	1	3	
Plant Inspections and Seminars	1	1	
Process Dynamics and Control	2	3	
Methods of Research	1	1	
Chemical Engineering Design 1– 2	4	5	
Chemical Engineering Lab 1– 2	2	2	
Chemical Process Lab	1	1	
Food Processing Technologies	1	3	
Environmental Impact Assessment	1	3	
Solid Waste Management	1	3	
Engineering Intensive Appraisal1-4 for CHE	4	4	75
General Education/Mandated			
Mathematics in the Modern World	1	3	
NSTP 1– 2	2	6	
Readings in Philippine History	1	3	

Understanding the Self	1	3	
Art Appreciation	1	3	
Life and Works of Rizal	1	3	
Purposive Communication	1	3	
Science, Technology and Society	1	3	
Ethics	1	3	
The Contemporary World	1	3	
GE Elective 2 (Great Books)	1	3	
Filipino1– 2	2	6	
Physical Education 1– 4	4	8	50
Institutional Courses			
GG 1	1	1.5	
LaSallian Spirituality	1	3	
Christian Morality		3	
Spirituality in the Workplace		3	10.5
	Total		**192.5**