SAINT LOUIS UNIVERSITY
BAGUIO CITY, PHILIPPINES

CHEMICAL ENGINEERING
PROGRAM CATALOG

SCHOOL OF ENGINEERING AND ARCHITECTURE

SLU VISION-MISSION

We envision Saint Louis University as an excellent missionary and transformative educational institution zealous in developing locally responsive, globally competitive, and empowered human resources who are creative, competent, socially involved, and imbued with Christian spirit.

SCHOOL VISION-MISSION

The School of Engineering and Architecture (SEA) envisions herself as an exemplary educational institution for engineering and architecture dedicated to elevating instruction, research, and extension to a higher level of competence and creativity committed to shaping the socio-technical environment founded on Christian values.

PROGRAM EDUCATIONAL OBJECTIVES (PEO)

Three to five years after graduation, alumni of the Architecture and Engineering Programs are expected to:

1. demonstrate technical competence in the analysis of problems and design of systems, keeping in mind the technical, professional, societal, environmental, economic, and ethical dimensions of any solution;
2. apply their talents and full potentials in the practice of their profession guided by the Christian tenets of
3. honesty, service, dedication and a deep sense of moral responsibility;
4. pursue advanced education, research and development, and other creative efforts in science and technology; and;
5. participate actively to address social, technical and business challenges vital to national progress and development.

PROGRAM LEARNING OUTCOMES (PLO)

Graduates of the BS in Chemical Engineering program are expected to:

1. apply knowledge of mathematics, natural science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems;
2. conduct investigations of complex engineering problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions;
3. design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations;
4. function effectively as an individual and as a member or leader in diverse teams and in multi-disciplinary settings;
5. compose substantiated conclusions after the analysis of complex engineering problems using first principles of mathematics, natural sciences, and engineering sciences to identify, formulate, and research relevant literature;
6. apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice;
7. communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions;
8. evaluate the sustainability and impact of professional engineering work in the solution of complex engineering problems in societal and environmental context;
9. recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change;
10. apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problems;
11. create appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling, to complex engineering problems with an understanding of the limitations;
12. apply knowledge and understanding of engineering management principles and economic decision-making to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments; and
13. practice Christian values in their personal and professional endeavors as Louisians in the service of the CICM mission.

CURRICULUM

FIRST YEAR

1st Semester

Course No.	Course Descriptive Title	Units	Co/Pre-requisite
GMATH	Mathematics in the Modern World	3	
EnggChem	Chemistry for Engineers (LEC)	3	
EnggChem L	Chemistry for Engineers (LAB)	1	with/after EnggChem
EnggMath 1	Pre-Calculus	4	
CFE 101	God's Journey with His People	3	
FIT HW	Physical Activity Towards Health and Fitness (Health and Wellness)	2	
NSTP-CWTS 1	Foundations of Service	3	
GRVA	Reading Visual Art	3	
	TOTAL UNITS	22	

2nd Semester

Course No.	Course Descriptive Title	Units	Co/Pre-requisite
EnggMath 2	Differential Calculus	4	EnggMath 1
CHE 1211	Chemical Engineering Calculations 1 (LEC)	2	EnggChem, Engg Math 1
CHE 1211L	Chemical Engineering Calculations 1 (LAB)	1	with CHE 1211
Chem 1221	Analytical Chemistry (LEC)	4	EnggChem(Lec & Lab)
Chem 1221L	Analytical Chemistry (LAB)	2	with/after Chem 1221
CFE 102	Christian Morality in Our Times	3	
FIT CS	Physical Activity Towards Health and Fitness (Combative Sports)	2	
NSTP-CWTS 2	Social Awareness and Empowerment for Service	3	NSTP-CWTS 1
ComProg	Computer Fundamentals and Programming	2	
GCWORLD	The Contemporary World	3	
GIT	Living in the IT Era	3	
	TOTAL UNITS	29	

Short Term

Course No.	Course Descriptive Title	Units	Pre-requisite
EnggMath 4	Integral Calculus	4	EnggMath 2
EnggPhys	Physics for Engineers (LEC)	3	EnggMath 2
EnggPhysL	Physics for Engineers (LAB)	1	with/ after EnggPhys
	TOTAL UNITS	8	

SECOND YEAR

1st Semester

Course No.	Course Descriptive Title	Units	Pre-requisite
CHE 2111	Chemical Engineering Calculations 2 (LEC)	2	CHE 1211, EnggMath 4
CHE 2111L	Chemical Engineering Calculations 2 (LAB)	1	with CHE 2111
Chem 2121	Organic Chemistry (LEC)	4	Chem 1221(Lec & Lab)
Chem 2121L	Organic Chemistry(LAB)	2	with/after Chem 2121
CHE 2131	Physical Chemistry for Engineers 1 (LEC)	3	Chem 1221, EnggMath 4
CHE 2131L	Physical Chemistry for Engineers 1 (LAB)	1	with/after CHE 2131
GART	Art Appreciation	3	
EnggMath 5	Differential Equations	3	EnggMath 4
CFE 103	Catholic Foundation of Mission	3	
GHIST	Readings in Philippine History	3	
FIT AQ	Physical Activity Towards Health and Fitness (Aquatics)	2	
GSELF	Understanding the Self	3	
	TOTAL UNITS	30	

2nd Semester

Course No.	Course Descriptive Title	Units	Pre-requisite
CHE 2211	Momentum Transfer (LEC)	2	CHE 2111, EnggMath 5
CHE 2211L	Momentum Transfer (LAB)	1	with CHE 2211
CHE 2221	Physical Chemistry for Engineers 2 (LEC)	3	CHE 2131
CHE 2221L	Physical Chemistry for Engineers 2 (LAB)	1	with/after CHE 2221
CHE 2231	Chemical Engineering Thermodynamics (LEC)	4	CHE 2111, CHE 2131
CHE 2231L	Chemical Engineering Thermodynamics (LAB)	1	with CHE 2231
CHE 2241	Advanced Engineering Mathematics for CHE	3	EnggMath 5
CHE 2251	Engineering Mechanics	3	EnggPhys(Lec & Lab)
GPCOM	Purposive Communication	3	
CFE 104	CICM Missionary Identity	3	CFE 103
FIT OA	Physical Activity Towards Health and Fitness (Outdoor and Adventure Activities)	2	
	TOTAL UNITS	26	

Short Term

Course No.	Course Descriptive Title	Units	Co/Pre-requisite
EnggCAD	Computer Aided Drafting	1	ComProg
GETHICS	Ethics	3	
GSTS	Science, Technology, and Society	3	
	TOTAL UNITS	7	

CURRICULUM

THIRD YEAR

1st Semester

Course No.	Course Descriptive Title	Units	Pre-requisite
CHE 3111	Heat and Mass Transfer (LEC)	3	CHE 2211(Lec & Lab), CHE 2231
CHE 3111L	Heat and Mass Transfer (LAB)	1	with CHE 3111
CHE 3121	Particle Technology (LEC)	2	CHE 2211(Lec & Lab), CHE 2221
CHE 3121L	Particle Technology (LAB)	1	CHE 2211(Lec & Lab), CHE 2221
CHE 3131	Environmental Science and Engineering for CHE (LEC	3	with CHE 3121
CHE 3131L	Environmental Science and Engineering for CHE (LAB	1	with/after CHE 3131
CHE 3141	Fundamentals of Material Science and Engineering	3	Chem 2121
CHE 3151	Basic Electrical and Electronics Engineering (LEC)	2	EnggPhys(Lec & Lab)
CHE 3151L	Basic Electrical and Electronics Engineering (LAB)	1	with/after EE 3101
EnggMath 3	Engineering Data Analysis	3	EnggMath 2
GENTREP	The Entrepreneurial Mind	3	
CFE 105A	CICM in Action: Justice, Peace, and Integrity of Creation; Indigenous Peoples; and Interreligious Dialogue	1.5	CFE 103, CFE 104
GRIZAL	The Life and Works of Rizal	3	
	TOTAL UNITS	27.5	

Short Term

Course No.	Course Descriptive Title	Units	Pre-requisite
CHE 3281	Chemical Engineering Immersion	3	CHE 3211(Lec & Lab), CHE 3221, CHE 3251(Lec & Lab)
	TOTAL UNITS	3	

2nd Semester

Course No.	Course Descriptive Title	Units	Pre-requisite
CHE 3211	Separation Processes (LEC)	3	CHE 3111(Lec & Lab) CHE 3121
CHE 3211L	Separation Processes (LAB)	1	with CHE 3211
CHE 3221	Chemical Reaction Engineering	5	CHE 2241, CHE 3111(Lec & Lab)
CHE 3231	Solution Thermodynamics	3	CHE 3111(Lec & Lab), CHE 2221
CHE 3241	Methods of Research (LEC)	1	EnggMath 3, with/after CHE 3211
CHE 3241L	Methods of Research (LAB)	1	with CHE 3241
CHE 3251L	Chemical Engineering Lab 1	2	CHE 3111(Lec & Lab) , CHE 3121
CHE 3261	Process Safety	2	CHE 3121, CHE 3131
CHE 3271	Engineering Economics	3	EnggMath 3
CHE EL	CHE Elective 1	3	
CFE 105B	CICM in Action: Environmental Planning and Management and Disaster Risk Reduction Management	1.5	CFE 105 A
	TOTAL UNITS	25.5	

FOURTH YEAR

1st Semester

Course No.	Course Descriptive Title	Units	Pre-requisite
CHE 4111	Chemical Engineering Design 1	3	CHE 3211(Lec & Lab), CHE 3221
CHE 4131	Chemical Engineering Lab 2	2	CHE 3211(Lec & Lab) , CHE 3251L
CHE 4141	Chemical Process Industries (LEC)	3	CHE 3131/L
CHE 4151	Chemical Process (LAB)	2	with/after CHE 4141
CHE 4161	Process Dynamics and Control (LEC)	3	CHE 3221
CHE 4161L	Process Dynamics and Control (LAB)	1	with/after CHE 4161
CHE 4171	Chemical Engineering Research	1	CHE 3241(Lec & Lab), CHE 3211(Lec & Lab)
CHE 4181	Engineering Management	3	CHE 3271
Techno 101	Technopreneurship (LEC)	2	GENTREP, with/after CHE 4151
Techno 101L	Technopreneurship (LAB)	1	with/after Techno 101
CHE EL	CHE Elective 2	3	
CFE 106A	Embracing the CICM Mission	1.5	CFE 105B
	TOTAL UNITS	25.5	

2nd Semester

Course No.	Course Descriptive Title	Units	Pre-requisite
CHE 4211	Chemical Engineering Design 2 (LEC)	3	CHE 4111, EnggMan
CHE 4211L	Chemical Engineering Design 2 (LAB)	1	with CHE 4211
CHE 4221	Chemical Engineering Laws and Ethics	2	with/after CHE 4211
CHE 4231	Computer Applications in CHE (LEC)	2	ComProg, with/after CHE 4111
CHE 4231L	Computer Applications in CHE (LAB)	1	with CHE 4231
CHE 4241	Integration Course for ChE	2	with/after CHE 4211
CHE 4251	Plant Inspections and Seminars	1	with/after CHE 4211(Lec & Lab)
CHE 4261	Industrial Waste Management and Control	3	CHE 3131(Lec & Lab)
CHE 4271	Biochemical Engineering	3	CHE 3221, Chem 2121
CHE EL	CHE Elective 3	3	
CFE 106B	Embracing the CICM Mission	1.5	CFE 106 A
	TOTAL UNITS	22.5	

TOTAL PROGRAM UNITS	226

CURRICULUM

SUGGESTED TRACK SPECIALIZATION

TRACK 1	Environmental Management	Units	Co/Pre-requisite
CHE EL 11	Air Pollution Control	3	CHE 3131(Lec & Lab)
CHE EL 12	Solid Waste Management	3	CHE 3131(Lec & Lab)
CHE EL 13	Hazardous Waste Management	3	CHE 3131(Lec & Lab)

TRACK 2	Petrochemical Engineering	Units	Co/Pre-requisite
CHE EL 21	Introduction to Petroleum Engineering	3	with/after CHE 3211(Lec & Lab)
CHE EL 22	Polymer Technology	3	with/after CHE 3211(Lec & Lab)
CHE EL 23	Plastics Technology	3	with/after CHE 3211(Lec & Lab)

TRACK 3	Energy Engineering	Units	Co/Pre-requisite
CHE EL 31	Renewable Energy Technologies	3	CHE 2231(Lec & Lab)
CHE EL 32	Energy Management	3	CHE 2231(Lec & Lab)
CHE EL 33	Green Boiler Technology	3	CHE 2231(Lec & Lab)

TRACK 4	Food and Drug Manufacturing	Units	Co/Pre-requisite
CHE EL 41	Food Processing Technologies	3	Chem 2121(Lec & Lab)
CHE EL 42	Soaps and Detergents	3	Chem 2121(Lec & Lab)
CHE EL 43	Pharmaceuticals	3	Chem 2121(Lec & Lab)
CHE EL 44	Cosmeteuticals	3	Chem 2121(Lec & Lab)

TRACK 5	Packaging Technologies	Units	Co/Pre-requisite
CHE EL 51	Fundamental Principles of Packaging	3	Chem 2121(Lec & Lab)
CHE EL 52	Packaging Materials and Components 1	3	Chem 2121(Lec & Lab)
CHE EL 53	Packaging Materials and Components 2	3	CHE EL 52

TRACK 6	Biotechnology	Units	Co/Pre-requisite
CHE EL 61	Molecular Biology	3	CHE 2121 (Lec & Lab)
CHE EL 62	Enzyme Technologies	3	CHE 2121 (Lec & Lab)

TRACK 7	Paints and Coating Technologies	Units	Co/Pre-requisite
CHE EL 71	Paints and Coating	3	CHE 2121 (Lec & Lab)
CHE EL 72	Ink Technology	3	CHE 2121 (Lec & Lab)

TRACK 8	Materials Science and Engineering	Units	Co/Pre-requisite
CHE EL 81	Microelectronic Materials for CHE	3	with/after CHE 3211
CHE EL 82	Nanotechnology	3	with/after CHE 3211

TRACK 9	Emerging Technologies	Units	Co/Pre-requisite
CHE EL 91	Energy Resources and Technology	3	CHE 2231(Lec & Lab)
CHE EL 92	Nuclear Engineering	3	CHE 2221(Lec & Lab)
CHE EL 93	Instrumental Methods of Chemical Analysis Lec	2	Chem 1221(Lec & Lab)
CHE EL 94	Instrumental Methods of Chemical Analysis Lab	1	Chem 1221(Lec & Lab)

NOTES: 1. The maximum load a graduating student is allowed to enroll is regular load plus 6 units (Regular Semester); regular load plus 3 units (Short term).
2. The year level is based on the 70% of the subjects in the current term.
3. Regular students are those with no advanced and back subjects on the checklist.
4. Required Units: 226 units

ADMISSION POLICIES

Saint Louis University welcomes local and foreign students alike, subject to University admission Policies, requirements, and academic standards and pertinent laws of the Republic of the Philippines

Undergraduate Freshman Students

- All undergraduate freshman applicants must pass the SLU College Entrance Examination (SLU-CEE) and must qualify within the slots duly determined for their chosen course. The regular SLU-CEE is conducted during weekends from the middle of October up to the middle of December. Admission for the first semester starts at the middle of April.

Transfer Students

- SLU admits transferees in all courses except Bachelor in Medical Laboratory Science subject to their compliance with pertinent requirements and guidelines. They must undergo a Qualifying Examination (QE) and if qualified, will take the Personality Test and Interview. Foreign students applying as transferee are subject to the English Proficiency Test (EPT) rule.

Graduate Program Students

- The applicant must have finished the prerequisite degree/s prior to acceptance to the Graduate Program;
- For a Master's degree, the applicant must have a Baccalaureate degree from an institution of recognized standing
- For a Doctorate degree, the applicant must have a Master's degree in related fields from an institution of recognized standing.

Foreign Students

- Foreign students should apply not later than 6 months before the start of the academic term. Moreover, they should be in Baguio City at least 4 weeks before the start of classes of the academic term for them to take the EPT as well as SLU-CEE / QE / GPEE, and Personality Test.
- Foreign students applying for the first time either in the undergraduate or graduate program should initially possess satisfactory proficiency in English and have passed the EPT as well as the pertinent entrance examination and Personality Test. Before enrolling, they undergo Preadmission Processing at the Student Affairs Office.
- Foreign students must secure a valid Student Visa. There are two options in securing a Student Visa. For related information, consult Foreign Student section of the Registrar's Office.

SCHEDULE OF FEES

FIRST YEAR TUITION FEE AS OF AY 2022 - 2023		
COURSE	PARTIAL	FULL
BS CHEM Engg	P 9,400.00	P 25,069.00
FEES LISTED PER SEMESTER AND ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE		

JOB OPPORTUNITIES AND FUTURE PROSPECTS

- Chemical process engineer
- Colour technologist
- Energy engineer
- Nuclear engineer
- Petroleum engineer
- Product/process development scientist
- Energy manager
- Environmental engineer
- Manufacturing engineer
- Materials development engineer
- Production manager
- Quality manager
- Waste management officer
- Water engineer

CONTACT INFORMATION

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