LAMAR UNIVERSITY
Department of Chemical Engineering
2013

Name _____ ID# _____

FIRST YEAR

FALL		SPRING	
English 1301 Composition I		English 1302/1374 Composition II	
MATH 2413 Calculus & Analytic Geo. I		MATH 2414 Calculus & Analytic Geo. II	
CHEM 1411 Chemistry I		CHEM 1412 Chemistry II	
INEN 1101 Intro to Engineering		PHYS 2425 Physics I	
PHIL 1370 Philosophy of Knowledge		Fine Arts Elective[5]	
PEGA		*Programming* [6] _____	

SECOND YEAR

PHYS 2426 Physics II		CHEM 3401 Quantitative Analysis	
INEN 2373 Engineering Economics[+]		*CHEN 3340 **Process Analysis**	
CVEN 2301 Statics		ELEN 2310 Fund. of Electrical Engineering	
CHEN 2374 **Thermodynamics I**		MATH 3301 Ordinary Diff. Equations	
*CHEN 2140 Undergrad Seminar		English Literature	
MATH 3328 Linear Algebra		CHEN 2100 **CAMS**	

THIRD YEAR

MATH 3370 Intro to Theory of Statistical Inference		**CHEN 3320 Heat Transfer	
**CHEN 3330 Thermodynamics II		**CHEN 4410 Reaction Kinetics	
**CHEN / MEEN 3311 Momentum Transfer		POLS 2302 American Gov't. II	
POLS 2301 American Gov't. I		CHEM 4312 Physical Chem. II	
CHEM 3411 Organic I		CHEM 3412 Organic II	
Communications/Modern Language [3]			

FOURTH YEAR[+]

CHEN 4331 Process Control I[2]		CHEN 4332 Process Control II	
CHEN 4420 Mass Transfer		CHEN 4150 LAB	
CHEN 4310 Lab I		CHEN 4340 Plant Design II	
CHEN 4360 Design I		CHEN 4350 Advanced Analysis	
History 1[4]		History 2[4]	
CHEM Elective[1]			

pNotes (136 total hours):

(1) Must be approved by the department chair.
(2) Prerequisite for CHEN 4150 (Process Control Lab)
(3)Communication 1315, 1360, 2335, 2373, 3310, or 3340; or DSDE 1371; or an introductory modern language course.
(4) Two semesters of US or Texas history from HIST 1301, 1302, 2301, 2373, 2374, 1361, 1362, 2377.
(5) Fine Arts Electives are: ARTS 1301, DANC 2304, HUMA 1315, MUSI 1306, THEA 1310 or COMM 1375.
(6) Students entering the chemical engineering program must have a high school course in procedural and/or object-oriented programming. If not, they must take ELEN 1301 prior to admission to advanced status.
*Courses offered during both fall and spring semester; **Courses are also offered during the summer session
+ Completion of INEN 2373, CHEN & CHEM courses required before registration for fourth-year CHEN courses.

Updated 6/18/2013 ●

Chemical Engineering Courses (CHEN)

2100 Computer-Aided Modeling and Simulation
Introduction to mathematical and chemical process simulation software packages that will be useful to the students in their later chemical engineering courses.

2140 Seminar
Oral and written presentation of selected topics in chemical engineering from recent technical publications.
Prerequisite: *Sophomore standing in Chemical Engineering*

2374 Thermodynamics
The fundamental laws of thermodynamics, properties of systems solids, gases and liquids, and thermodynamic tables.
Prerequisite: *PHYS 2425, ELEN 1301 or HS equivalent, MATH 2414*

3311 Momentum Transfer
Fluid-flow concepts are presented through the derivation of the basic equations of continuity, energy and momentum. Engineering aspects of flow measurement, pressure – drop calculations and pumping requirements are considered. Same as MEEN 3311. CHEN 3311 and MEEN 3311 may not both be counted for credit.
Prerequisite: *CHEN 2374, CHEN 3340*

3320 Heat Transfer
Principles of conduction, convection and radiation, and their application to the design of heat transfer equipment and systems.
Prerequisite: *CHEN 3311, CHEN 3330*

3330 Thermodynamics II
Application of the First and Second Laws to chemical processes. Thermodynamic properties of pure fluids and mixtures. Physical equilibrium.
Prerequisites: *CHEN 3340, CHEN 2374, CHEM 3411 or concurrent*

3340 Process Analysis
Application of mathematics, physics and chemistry to the solution of problems in industrial chemistry. Material and energy balance calculations on processes undergoing physical and chemical changes.
Prerequisite: *CHEN 2374 or concurrent*

4150 Process Control Laboratory
Experiments in level, flow and temperature control, Computer-based adaptive control, PID tutorial program, control valve selection and sizing, interactive process control using the Honeywell TCD-3000 keyboard with a process control simulator.
Prerequisite: *CHEN 4331 or concurrent*

4310 Laboratory I

Experiments in heat transfer, mass transfer, fluid flow, reaction kinetics and thermodynamics.
Prerequisite: *CHEN 3311, CHEN 3320, CHEN 4420 or concurrent*

4331 Process Control

Basic hardware and instrumentation needed to implement process control, principles of feedback controllers design and tuning, and analysis of stability and performance of feedback loops using Laplace and frequency domain techniques. Introduction of advanced control strategies.
Prerequisite: *CHEN 4410, MATH 3301, CHEN 4420 or concurrent*

4332 Process Control II

This course covers enhanced PID Control, multivariable constrained control, and statistical process control. Control and simulation software will be used.
Prerequisite: *CHEN 4331*

4340 Plant Design II

A continuation of CHEN 4360 with emphasis on a major design project.
Prerequisite: *CHEN 4360*

4350 Advanced Analysis

Development of mathematical equations for chemical engineering applications. Implementation of computer aided modeling and simulation packages in chemical engineering applications.
Prerequisites: *CHEN 4331, CHEN 4420*

4360 Plant Design I

Application of chemical engineering principles to the design of chemical processes and plants. Equipments design and specifications. Economic evaluation of processes and equipment.
Prerequisite: *CHEN 4410, INEN 2373, CHEN 4420 or concurrent.*

4410 Reaction Kinetics

Chemical equilibrium. Analysis of experimental data to determine reaction rate parameters in homogeneous, heterogeneous, catalytic and non-catalytic reactions. Development of equations for batch, stirred-tank and tubular flow reactors. Application of differential equations to process and reactor design.
Prerequisite: *MATH 3301, CHEN 2100, CHEN 3330 or concurrent, CHEN 3320 or concurrent, CHEM 3411 or concurrent.*

4420 Mass Transfer

Principles of diffusion. Simultaneous mass, energy and momentum transfer. Analysis of absorption, extraction and distillation processes.
Prerequisite: *CHEN 3330, CHEN 3320, CHEM 3411*