Engineering (Bachelor of Science Engineering) Course Plan
Chemical/Pharmaceutical Concentration – Pre-Med Option
Math ACT of 25 or higher/Math RSAT of 590 or higher

Freshman Fall Semester			**Freshman Spring Semester**		
MATH 115	Precalculus	3	MATH 122	Calculus I	4
ENGR 100	**Freshman Seminar***	**1**	**ENGR 121**	**Foundations of Engineering Design II***	**3**
ENGR 120	**Foundations of Engineering Design I***	**3**	ENGL 102	Academic Writing & Literature	3
ENGL 101	Academic Writing	3	CHEM 113	General Chemistry II	4
CHEM 111	General Chemistry I	4	CUC 100	Connections	0.5
BIOL 111	Basic Biology & Lab	4	BIOL 201	Cellular & Molecular Biology	4
Semester Total:		**18.0**	**Semester Total:**		**18.5**

Sophomore Fall Semester			**Sophomore Spring Semester**		
MATH 223	Calculus II	4	MATH 224	Calculus III	4
PHYS 251	Fundamentals of Physics I	4	**ENGR 260**	**Electrical Circuits***	**4**
ENGR 220	**Statics & Strength of Materials**	**3**	BIOL 334	Microbiology and Immunology	4
CHPH 215	**Mass and Energy Balances**	**3**	CHEM 228	Organic Chemistry II	4
CHEM 227	Organic Chemistry I	4			
CUC 200	Connections	0.5			
Semester Total:		**18.5**	**Semester Total:**		**16.0**

Junior Fall Semester			**Junior Spring Semester**		
MATH 310	Differential Equations and Linear Algebra	4	**ENGR 320**	**Fluids***	**3**
ENGL 2xx	Literature	3	**ENGR 240**	**Engineering Materials and Processes***	**4**
ENGR 310	**Thermodynamics***	**3**	**CHPH 325**	**Heat Transport***	**2**
CHPH 325	**Mass Transport***	**3**	**CHPH 345**	**Bioprocess Engineering***	**2**
BIOL 430	Biochemistry	4	**CHPH 350**	**Reaction Engineering***	**3**
			ENGL 305	Technical Writing and Presentations	3
Semester Total:		**17.0**	**Semester Total:**		**17.0**

Senior Fall Semester			**Senior Spring Semester**		
ENGR 491	**Senior Design I**	**3**	**ENGR 492**	**Senior Design II**	**3**
ECON 201	Microeconomics	3	**ENGR 460**	**Statistical Methods for Engineers**	**3**
CHPH 440	**Process Control**	**3**	**CHPH 445**	**Unit Operations**	**4**
ART 131, MUSIC 131 or THEA 131	Fine Arts	3	**ENGR 300**	**Engineering Economics**	**3**
PSYC 222	General Psychology	3	BIOL 342	Genetics	4
Semester Total:		**15.0**	**Semester Total:**		**17.0**

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SuperSenior Fall Semester			**SuperSenior Spring Semester**		
HIST 111 or 112	Western Civilization I or II	3	HUM/FINE ARTS	Elective	3
BIOL 285	Human Anatomy and Physiology I	4	BIOL 335@ or BIOL 336@	Immunology or Medical Microbiology	3
SOC 225	Principles of Sociology	3	PSYC 260 or PSYC 369 or PSYC 461	Psychology Elective	3
CHRS 125	Introduction to Christianity	3	BIOL 286	Human Anatomy and Physiology II	4
			PE 185	Lifetime Wellness	2
Semester Total:		**12.0**	**Semester Total:**		**15.0**
				Degree Total&	**132**

Total Math and Science Hours: 27 additional science credits beyond the regular chemical concentration degree
Total Engineering Hours: Same engineering hours as the regular chemical concentration degree

<u>ABET Requirements</u>
Math and Basic Science: minimum of 30 semester credit hours
Engineering topics: minimum of 45 semester credit hours

BOLD-FACED FONT – designates a course taught by the School of Engineering

BLUE BOX – indicates a course taken by all engineering students

ORANGE BOX – indicates a course taken by pre-meds that is not taken by other CHPH concentration students

* - indicates class-lab

@ BIOL 335 is offered in spring semester of even numbered years. BIOL 336 is offered spring semester of odd numbered years. Note that BIOL 335 allows BIOL 342 to be taken concurrently.

&Degree total does not include courses taken to satisfy pre-med requirements/recommendations that are not already part of the engineering curriculum. Degree total reflects only courses required by the BS.ENGR.CHPH degree. This degree plan does include separate courses in biochemistry and microbiology

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(versus the combined course in the CHPH concentration), as pre-med requirements, but these two courses together will substitute for BIOL 280 in the CHPH concentration.

Medical School
Students should check the specific requirements for each medical school program. Some schools may have additional requirements. The MCAT is required for admission to medical school.

The following courses are required for most medical programs:

- CHEM 227 and 228 Organic Chemistry I and II
- BIOL 220 and 223 Human Anatomy and Physiology I and II
- BIOL 280 Biochemistry and Microbiology
- BIOL 342 Genetics
- BIOL 430 Biochemistry

The following courses are recommended for most medical programs:

- PSYC 222 General Psychology
- BIOL 335 Immunology or BIOL 336 Medical Microbiology
- SOCI 225 General Sociology
- an additional PSYC class (PSYC 260, 369, 461 are good options)

A student will significantly strengthen his/her application to medical school with the addition of work experience in a medical setting. This work may include volunteer, CNA, EMT, medical missions work, etc. Any work which includes patient contact is preferred.

THE BS.ENGR.CHPH track includes all of these required and recommended courses, as well as some pre-requisite courses necessary to complete the courses listed above.