

CURRICULUM FOR ENGINEERING PHYSICS WITH MINOR IN BIOMEDICAL ENGINEERING

(129 Credits)

PROFESSIONAL ORIENTATION (1 Cr. Required) *Selected from the following*

Introduction to AE & ME	AENG/MENG 1001	1
Biomedical Engineering Orientation	BME 1000	1
Introduction to ECE	ECE 1001	1
Introduction to Physics	PHYS 1110	1

BASIC SCIENCE & MATHEMATICS (58 Cr.) (ABET Minimum = 32 Cr.)

Principles of Biology I/Lab	BIOL 1040	4
Principles of Biology II/Lab	BIOL 1060	4
Human Physiology	BIOL 2600	3
General Chemistry I/Lab	CHEM 1110/1115	4
General Chemistry II/Lab	CHEM 1120/1125	4
Calculus I	MATH 1510	4
Calculus II	MATH 1520	4
Calculus III	MATH 2530	4
Differential Equations I	MATH 3550	3
Advanced Math for Engineers	MATH 3270	3
Probability & Statistics for Engineers	MATH 4880	3
Numerical Analysis	MATH 3240	3
Engineering Physics I/Lab	PHYS 1610/1620	4
Engineering Physics II/Lab	PHYS 1630/1640	4
Modern Physics/Lab	PHYS 2610/2620	4
Quantum Mechanics	PHYS 4610	<u>3</u>
		58

ENGINEERING PHYSICS & ENGINEERING TOPICS (48Cr.) (ABET Minimum = 48 Cr.)

Biomedical Engineering Introduction	BME 1010	1
Biomedical Engineering Computing	BME 2000	3
Mechanics	BME 3200	3
Biomechanics	BME 4200	3
Intro. to Electrical Engineering/Lab	ECE 2001/2002	4
Optics/Lab	PHYS 3310/3320	4
Thermodynamics & Statistical Mechanics	PHYS 3410	3
Electricity & Magnetism I	PHYS 4210	3
2 Engineering Physics Electives	PHYS 4XXX	6

Complete two of the following two-course sequences

Transport (6cr)

Transport Fundamentals	BME 3300	3
Biotransport	BME 4300	3

	Materials Science (6cr)	
Materials Science	BME 3400	3
Biomaterials	BME 4400	3
	Signals & Systems (6cr)	
Signals	BME 3100	3
Biomedical Signals	BME 4100	3
	Measurements (6cr)	
Measurements	BME 3050	3
	<i>And one of the following two courses</i>	
Biomedical Instrumentation	BME 4050	3
Sensory Systems	BME 4600	3
	<i>Senior Capstone Experience</i>	
Senior Project I, II	BME 4950, 4960	<u>6</u>
		48
	GENERAL EDUCATION (22 Cr.)	
Written Communication	ENGL1900 or 1920	3
Small Group Presentation	CMM 2200	1
Theological Foundations	THEO 1000	3
Ethics	PHIL 2050	3
Ethics & Engineering	PHIL 3400	3
Humanities Elective		3
Social/Behavioral Sciences Elective		3
Cultural Diversity Elective		<u>3</u>
		22

Freshman Year:

Semester 1:	CR	Semester 2:	CR
Professional Orientation	1	PHYS 1610/1620 Engineering Physics I/Lab	4
CHEM 1110/1115 General Chemistry I/ Lab	4	BME 1010 Biomedical Engineering Introduction	1
ENGL 1900 or 1920 Adv. Strategies of Rhetoric & Research or Adv. Writing for Professionals	3	MATH 1520 Calculus II	4
MATH 1510 Calculus I	4	CHEM 1120/1125 General Chemistry II/Lab	4
BIOL 1040 Principles of Biology I/Lab	4	BIOL 1060 Principles of Biology II/Lab	4
Total Credit Hours	16	Total Credit Hours	17

Sophomore Year:

Semester 1:	CR	Semester 2:	CR
PHYS 1630 Engineering Physics II	3	PHYS 2610 Modern Physics	3
PHYS 1640 Engineering Physics II Laboratory	1	PHYS 2620 Modern Physics Laboratory	1
MATH 2530 Calculus III	4	Social Science Elective	3
BME 2000 Biomedical Engineering Computing	3	MATH 3550 Differential Equations I	3
BME 3200 Mechanics	3	BME 4200 Biomechanics	3
BIOL 2600 Human Physiology	3	ECE 2001/2002 Intro. to Electrical Engineering/Lab	4
Total Credit Hours	17	Total Credit Hours	17

Junior Year:

Semester 1:	CR	Semester 2:	CR
PHIL 2050 Ethics	3	PHYS 4210 Electricity & Magnetism I	3
BME 3000 or 4000 Level Course	3	PHYS 3410 Thermodynamics & Statistical Mech.	3
PHYS 4610 Quantum Mechanics	3	BME 3000 or 4000 Level Course	3
MATH 3270 Advanced Mathematics for Engineers	3	MATH 4880 Probability & Statistics for Engineers	3
THEO 1000 Theological Foundations	3	MATH 3240 Numerical Analysis	3
Total Credit Hours	15	Total Credit Hours	15

Senior Year:

Semester 1:	CR	Semester 2:	CR
BME 3000 or 4000 Level Course	3	BME 4960 Senior Project II	3
Humanities Elective	3	PHYS 3310 Optics	3
BME 4950 Senior Project I	3	PHYS 3320 Optics Laboratory	1
Engineering Physics Elective	3	Cultural Diversity Elective	3
PHIL 3400 Ethics & Engineering	3	BME 4000 Level Course	3
CMM 2200 Small Group Presentation	1	Engineering Physics Elective	3
Total Credit Hours	16	Total Credit Hours	16

Total Credit Hours: 129