Bachelor of Science in Engineering Physics

2014 - 2015 Catalog

The University of Texas at Brownsville and Texas Southmost College

This document provides a list of the UTB/TSC courses required for the major and their equivalent UTRGV courses.
A significant number of courses have changed their course prefix, number, and title.
For any additional information, please visit the Academic Advising Center.

UTB/TSC Courses		*Course Equivalents at UTRGV*	
GENERAL EDUCATION CORE COURSES REQUIRED FOR THE MAJOR			
020 – Mathematics (†)			
MATH 2413	Calculus I	MATH 2413	Calculus I
030 – Natural Science			
PHYS 2325/2125	University Physics I / Lab I	PHYS 2425	Physics for Scientists and Engineers I
PHYS 2326/2126	University Physics II / Lab II	PHYS 2426	Physics for Scientists and Engineers II
A – GENERAL EDUCATION CORE – 42 HOURS			
B – MAJOR REQUIREMENTS – 88 – 92 hours			
1 – Support Courses – 16 hours			
MATH 2413	Calculus I **	MATH 2413	Calculus I
MATH 2414	Calculus II (†)	MATH 2414	Calculus II
MATH 2321	Differential Equations and Linear Algebra	MATH 2321	Differential Equations and Linear Algebra
MATH 2415	Calculus III	MATH 2415	Calculus III
CHEM 1411	General Chemistry I	CHEM 1311/1111	General Chemistry I/Lab I
2 – Physics Core Courses – 11 hours			
PHYS 3400	Modern Physics	PHYS 3402	Modern Physics
PHYS 3490	Mathematics for Scientists and Engineers I	PHYS 3311	Math Methods in Physics I
Choose one of the following courses:			
PHYS 4390	Computational Methods for Engineers and Physicists	PHYS 4390	Computational Methods for Engineers and Physicists
COSC 4360	Numerical Methods	CSCI 3350	Numerical Methods
MATH 3366	Computer Algebra Systems	MATH 3343	Introduction to Mathematical Software
3 – Engineering Core Courses – 32 hours			
ENGR 1201	Introduction to Engineering	ENGR 1201	Introduction to Engineering
ENGR 1206	Introduction to Engineering Design	ENGR 1206	Introduction to Engineering Design
ENGR 2301	Engineering Mechanics I: Statics (†)	ENGR 2301	Engineering Mechanics I: Statics
ENGR 2302	Engineering Mechanics II: Dynamics	ENGR 2302	Engineering Mechanics II: Dynamics
ENGR 3303	Thermodynamics	ENGR 3303	Engineering Thermodynamics
ENGR 3304	Mechanics of Materials	ENGR 3304	Mechanics of Materials
ENGR 3320	Linear Circuits (†)	ENGR 2305	Linear Circuits
ENGR 3120	Linear Circuits Lab	ENGR 2105	Linear Circuits Lab
ENGR 3321	Electronics I	ENGR 3321	Electronics I
ENGR 3121	Electronics I Lab	ENGR 3121	Electronics I Lab
ENGR 4441	Control Systems	ENGR 4441	Control Systems
ENGR 4242	Senior Design Project I	ENGR 4242	Senior Design Project I
ENGR 4243	Senior Design Project II	ENGR 4243	Senior Design Project II
4 – Computer Science Core Courses – 3 hours			
COSC 1336	Programming Fundamentals I	CSCI 1370	Engineering Computer Science I
5 – Engineering Physics Track – 26 – 30 hours			
Upper Division Engineering Exam ***			

TOTAL CREDIT HOURS FOR GRADUATION – 130 - 134
TOTAL ADVANCED HOURS (minimum) – 36

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Admission requirement: Completion of ENGR-2301 with minimum grade of "C".

* Grade of "C" or better is required for a MATH course used to fulfill the General Education Core requirement (MATH-1314 College Algebra or higher).

** MATH 2413-3 sch for general education and 1 sch toward major requirement.

*** Engineering department will submit exam completion information to the Office of the Registrar.

† Grade of "C" or better is required for graduation.

BIOENGINEERING TRACK – 30 HOURS (BS.ENGR.PHYS.BIOE)

BIOL 1306/1106	Biology for Science Majors I/Lab I	BIOL 1406	General Biology I
BIOL 1307/1107	Biology for Science Majors II/Lab II	BIOL 1407	General Biology II
CHEM 1412	General Chemistry II	CHEM 1312/1112	General Chemistry II/Lab II
CHEM 2423	Organic Chemistry I	CHEM 2323/2123	Organic Chemistry I /Lab I
PHYS 3315	Physics of Biological Systems	PHYS 3315	Physics of Biological Systems
PHYS 4315	Analysis of Biomolecules by Physical Methods	PHYS 4315	Analysis of Biomolecules by Physical Methods
BENG 4320	Molecular Bioengineering	BENG 4320	Molecular Bioengineering
BENG 4120	Molecular Bioengineering Lab	BENG 4120	Molecular Bioengineering Lab
ENGR 4406	Engineering Mechanics III: Fluid Mechanics	ENGR 4406	Engineering Mechanics III: Fluid Mechanics

COMPUTER TRACK – 27 HOURS (BS.ENGR.PHYS.COMPE)

MATH 3381	Statistics	MATH 3331	Applied Statistics I
COSC 1337	Programming Fundamentals II	CSCI/CMPE 3326	Object Oriented Programming in JAVA
COSC 2312	Digital Logic	ENGR/ELEE 2330	Digital Systems Engineering I
COSC 2336	Programming Fundamentals III	CSCI/CMPE 2380	Computer Science II
COSC 2325	Machine Language and Computer Organization	CSCI/CMPE 2333	Computer Organization and Assembly Language
COSC 3325	Computer Architecture	CSCI 4335	Computer Architecture
COSC 4349	Advanced Computer Architecture	**CSCI 3333	Algorithms and Data Structures
Choose one course:			
COSC 2310	Discrete Structures	CSCI 3310	Discrete Data Structures
COSC 3310	Foundations of Information Technology		
Choose one course:			
PHYS 4330	Electromagnetic Theory	PHYS 3301	Electromagnetic Theory I
PHYS 4320	Quantum Mechanics	PHYS 4303	Quantum Mechanics I
PHYS 3310	Classical Mechanics	PHYS 3305	Classical Mechanics

ELECTRICAL TRACK – 26 HOURS (BS.ENGR.PHYS.ELET)

ENGR 4322	Electronics II	ENGR 4322	Electronics II
ENGR 4423	High Frequency Engineering	ENGR 4423	High Frequency Engineering
ENGR 3330	Linear Signals and Systems	ENGR 3330	Linear Signals and Systems
ENGR 4425	Analog and Digital Communications	ENGR 4425	Analog and Digital Communications
ENGR 4326	Power Electronics	ENGR 4326	Power Electronics
Engineering Advisor Approved Elective I		Engineering Advisor Approved Elective I	
Engineering Advisor Approved Elective II		Engineering Advisor Approved Elective II	
Choose one course:			
PHYS 4330	Electromagnetic Theory	PHYS 3301	Electromagnetic Theory I
ENGR 3327	Engineering Electromagnetics	ENGR 3327	Engineering Electromagnetics

MECHANICAL TRACK – 27 HOURS (BS.ENGR.PHYS.MECH)

ENGR 1304	Engineering Graphics I	ENGR 1304	Engineering Graphics I
ENGR 3405	Engineering Materials	ENGR 2340/2140	Engineering Materials/Lab
ENGR 4406	Engineering Mechanics III: Fluid Mechanics	ENGR 4406	Engineering Mechanics III: Fluid Mechanics
ENGR 4309	Mechanical Subsystem Design	ENGR 4309	Mechanical Subsystem Design
ENGR 4407	Manufacturing Process Technologies	ENGR 4407	Manufacturing Process Technologies
Engineering Advisor Approved Elective I		Engineering Advisor Approved Elective I	
Engineering Advisor Approved Elective II		Engineering Advisor Approved Elective II	
Choose one course:			
PHYS 3310	Classical Mechanics	PHYS 3305	Classical Mechanics
PHYS 4330	Electromagnetic Theory	PHYS 3301	Electromagnetic Theory I
ENGR 3327	Engineering Electromagnetics	ENGR 3327	Engineering Electromagnetics

***Course substitution will be granted if course is completed with minimum grade required.*

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