



The BMEN Booklet

DEPARTMENT OF
BIOMEDICAL ENGINEERING
College of Engineering



UNT[®]

B.S. in Biomedical Engineering

The College of Engineering at UNT offers a unique undergraduate program in Biomedical Engineering that allows a student of the program to major in Biomedical Engineering, minor in mathematics and in an additional area of engineering. Thus, a student graduating from the 120 SCH program will be well rounded and have the engineering skills and expertise to work in industry, hospitals, research institutions or become a motivated entrepreneur.

Areas of Interest

Students interested in pursuing a Bachelor's Degree in Biomedical Engineering will be able to choose from one of the following four tracks:

- Bioinformatics
- Biomaterials
- Biomedical Instrumentation
- Biomechanics
- Biotechnology (Pre-Medical)

Minors

All Biomedical Students will automatically be awarded a minor in mathematics upon completion of their degree. Additional engineering minors may be pursued through selecting electives from the following disciplines.

- Mechanical and Energy Engineering
- Electrical Engineering
- Material Science and Engineering
- Computer Science and Engineering

Faculty

The College of Engineering at the University of North Texas has several faculty members currently employed who have a background in Biomedical Engineering, including the Associate Dean for Undergraduate Studies, Dr. Vijay Vaidyanathan. Faculty members of the Department of Biology will also assist in the education of Biomedical students. Additionally partnerships for research are being developed with the UNT Health Sciences Center in Fort Worth. Students will have an opportunity to learn from a variety of experienced faculty members who will prepare them to be successful candidates in the field of Biomedical Engineering.

Job Opportunities

CNNMoney.com listed Biomedical Engineering as one of the Best Jobs in America on their CNNMoney/PayScale's *Top 100 careers with big growth, great pay and satisfying work*, with a median pay of \$87,000. Biomedical is also listed as a career of great satisfaction and low stress that will benefit society.

The U.S. Bureau of Labor Statistics also predicts that Biomedical Engineering there will have a 27% growth spurt between 2012-2022 for employment in the field, which is rated as "much faster than average".

Visit www.eng.unt.edu for more information.



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Admission to the Program

The priority deadline for the University of North Texas is March 1 . Students must apply to the university and once they have been admitted their application is forwarded to the College of Engineering for review. The College of Engineering is now accepting first time in college freshmen for the Fall 2014 Semester. Transfer students will begin to be admitted in 2015.

Steps to Apply

1. Fill out the online application (www.applytexas.org)
2. Pay application fee of \$75
3. Have official transcripts and SAT or ACT Scores submitted to the office of Admissions at UNT.

College of Engineering Admissions

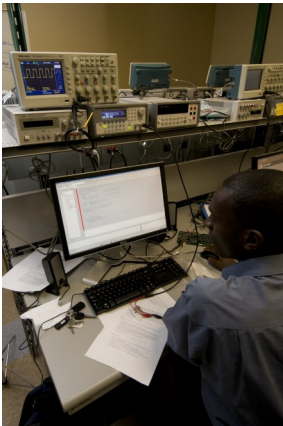
Students with a score of a 540 on the Math Section of the SAT or a 22 on the Math Section of the ACT will automatically be admitted as a major within the College of Engineering. Students who do not meet this criteria must pass pre-calculus with a C or better and will then be admitted as an Engineering Major.

How to Pay for College

The University of North Texas is a comprehensive university that offers many scholarships to help you finance your education. Many students compete for scholarships, which are awarded on merit and on a first-come, first-served basis to students enrolling in the fall. Students must apply by the priority deadline and submit their Federal Student Aid Application (FASFA) by **March 15th** to be eligible for fall scholarships. For students seeking financial aid it is recommended to submit their FASFA as soon as possible.

International Applicants

International applicants will need to supply proof of English proficiency as well as other additional documents. Read more about these requirements by visiting <http://international.unt.edu>.



Learn more about UNT:

Application Process	apply.unt.edu/admissions
UNT-International	international.unt.edu
Research	unt.edu/untresearch
Research Facilities	vpaa.unt.edu/centers-institutes.htm
Financial Assistance	financialaid.unt.edu
Catalog	unt.edu/catalog
Libraries	library.unt.edu
Campus Visits	tours.unt.edu
Student Services	www.unt.edu/campus-life.htm

About UNT

UNT is home to nearly 36,000 students, almost 7,500 of whom are graduate students. The University of North Texas is a major public research university where students are the central focus. UNT has created new facilities, renovated existing space and boosted computing power to give faculty and students the latest tools to carry out innovative research, art and scholarship. Our 882-acre, 163-building campus is full of activities and expansion.

About Discovery Park

The College of Engineering is housed at Discovery Park, a 290-acre research park located 5 miles north of the UNT main campus. Discovery Park is the only university affiliated research park in the Dallas-Fort Worth area that offers rentable space; wet and dry labs; a 10,000 class, 3000 sq. ft. clean room/nanofabrication facility and a new \$2,200,000 high performance computing facility that is the largest such system among academic institutions in the north Texas region.

About Denton and Dallas-Fort Worth

The university is located in Denton, a city of more than 122,000 people about 40 miles north of Dallas-Fort Worth, TX. The DFW area, the country's fourth-largest metropolitan area and sixth-largest economy, is home to over 6.6 million people. A central hub for national and global industries, DFW is home to 18 Fortune 500 companies. The strategic location of the university and regional partnerships allow graduate students to work with top corporations and government agencies through internships and after graduation.

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M.S. in Biomedical Engineering

MS with a major in Biomedical Engineering requires a minimum of 30 semester hours for the thesis option and 33 semester hours for the non-thesis option, beyond the bachelor's degree.

Courses:

Required, core BMEN courses for MS with a major in Biomedical Engineering:

BMEN 5210—Biomedical Engineering Laboratory

BMEN—5310—Clinical Instrumentation

Seminar:

BMEN 5940—Biomedical Engineering Seminar

Other BMEN Courses Maybe Be Chosen from the Following:

BMEN 5312—Advanced Signal Processing in Biomedical Engineering

BMEN 5005—Neuroengineering

BMEN 5323—Advanced Biomedical Optics

BMEN 5322—Medical Imaging

BMEN 5320—Advanced Biomechanics

BMEN 5321—Biomaterials Compatibility

BMEN 5315—Computational Methods in Biomedical Engineering

BMEN 5800—Topics in Biomedical Engineering

BMEN 5810—Topics in Biomedical Engineering

BMEN 5890—Directed Study in Biomedical Engineering

BMEN 5900—Special Problems in Biomedical Engineering

BMEN 5910—Special Problems in Biomedical Engineering

BMEN 5920—Cooperative Education in Biomedical Engineering

BMEN 5950—Master's Thesis

Certificate in Health Services Management:

Option To Get a Certificate in Health Services Management from the Department of Health Management and Policy at the UNT Health Science Center.

These Four Following Courses Constitute a Certificate in Health Services Management, offered ONLINE by the UNT HSC in Fort Worth, Texas:

- HMAP 5320, HMAP 5321, HMAP 5330, BIOS 5300

*For non-thesis option students, obtaining a certificate in Health Management does not require any additional courses beyond the 33 hours. For thesis option students, obtaining a certificate in Health Services Management would require an extra course to their degree plan, thus resulting in a total of 33 credit hours.

Faculty

The College of Engineering at the University of North Texas has several faculty members currently employed who have a background in Biomedical Engineering, including the Associate Dean for Undergraduate Studies, Dr. Vijay Vaidyanathan. Faculty members of the Department of Biology will also assist in the education of Biomedical students. Additionally partnerships for research are being developed with the UNT Health Sciences Center in Fort Worth. Students will have an opportunity to learn from a variety of experienced faculty members who will prepare them to be successful candidates in the field of Biomedical Engineering.

Visit www.eng.unt.edu for more information.

Minors & Track Options



Minors in Biomedical Engineering

Computer Science and Engineering Minor

A minor in Computer Science and Engineering consists of a minimum of 19 semester hours of computer science and engineering courses, including 6 advanced hours.

Six hours of advanced courses must be taken at UNT.

Required Courses

- ◆ CSCE 1030 - Computer Science I
- ◆ CSCE 1040 - Computer Science II
- ◆ CSCE 2100 - Computing Foundations I
- ◆ CSCE 2110 - Computing Foundations II

With a Bioinformatics Track

- ◆ CSCE 1040 - Computer Science II
- ◆ CSCE 2100 - Computing Foundations I
- ◆ CSCE 2110 - Computing Foundations II
- ◆ CSCE 3850 - Introduction to Computational Life Science
- ◆ CSCE 4810 - Biocomputing
- ◆ CSCE 4820 - Computational Epidemiology

Electrical Engineering Minor

A minor in Electrical Engineering requires a total of 18 semester hours of electrical engineering courses, including 6 hours of advanced courses.

Six hours of advanced courses must be taken at UNT.

Required courses

- ◆ EENG 2610 - Circuit Analysis
- ◆ EENG 2620 - Signals and Systems
- ◆ EENG 2710 - Digital Logic Design
- ◆ EENG 2910 - Project III: Digital System Design
- or
- ◆ EENG 2920 - Project IV: Analog Circuit Design
- ◆ EENG 3510 - Electronics I (Devices and Materials)
- ◆ One EE elective. (EE electives are defined as 4000-level organized EE courses, including EENG 4010 and EENG 4900 but excluding EENG 4910, EENG 4920, EENG 4951 and EENG 4990.)



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Materials Science and Engineering Minor

The minor in Material Science and Engineering requires a total of 18 semester credit hours.

Required Courses

- ◆ ENGR 3450—Engineering Materials
- ◆ Plus 15 hours in materials science and engineering courses, at least 6 of which should be chosen from the four core courses.

Core Courses:

- ◆ MTSE 3010 - Bonding and Structure
- ◆ MTSE 3030 - Thermodynamics and Phase Diagrams
- ◆ MTSE 3050 - Mechanical Properties of Materials
- ◆ MTSE 3070 - Electrical, Optical and Magnetic Properties of Materials

Additional Requirements:

The remaining hours can be from any other 3000 or 4000 level materials science engineering courses.

Mechanical Engineering Minor

The minor in Mechanical Engineering requires a total of 19 semester credit hours.

Required Courses

- ◆ ENGR 2332 – Mechanics of Materials
- ◆ MEEN 2210 – Thermodynamics I
- ◆ ENGR 2302 – Dynamics

Choice of the three from the following:

- ◆ MEEN 3120 – Fluid Mechanics
- ◆ MEEN 3230 – System Dynamics and Control
- ◆ MEEN 3100 – Manufacturing Processes
- ◆ MEEN 3130 – Machine Elements
- ◆ MEEN 3210 – Heat Transfer
- ◆ MEEN 3110 – Thermodynamics II
- ◆ MEEN 3240 – Mechanical and Energy Engineering Laboratory I
- ◆ MEEN 3242 – Mechanical and Energy Engineering Laboratory II
- ◆ MEEN 4110 – Alternative Energy Sources
- ◆ MEEN 4140 – Finite Element Analysis
- ◆ MEEN 4150 – Mechanical and Energy Engineering Systems Design I
- ◆ MEEN 4160 – Mechanical Vibrations
- ◆ MEEN 4320 – Mechanical Systems for Buildings

Additional Requirements:

The remaining hours can be from any other 3000 or 4000 level Mechanical Engineering courses [PLUS ENGR 2301 - Statics \(pre-requisite for MEEN 2302\)](#) course to complete minor requirements.

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Biotechnology/Premed Track

The Biotechnology track requires a total of 18 semester credit hours.

Required Courses

- ◆ BIOL 1710 - Principles of Biology I
- ◆ BIOL 1720 - Principles of Biology II OR
BIOL 2041 & 2042 - Microbiology and Microbiology Lab
- ◆ BIOL 1760 - Biology Laboratory
- ◆ BIOC 3621 - Elementary Biochemistry
- ◆ BIOL 3451 - Genetics
- ◆ BIOL 3452 - Genetics Laboratory
- ◆ BIOL 4580 - Molecular Biology and Biotechnology Laboratory
- ◆ BIOL 4770 - Biotechnology

Options:

- ◆ Must consult BMEN and Biological Sciences Departments for additional course options.

Additional Requirements:

Must be a Pre-Med student to qualify for the Biotechnology Track



Find us on Facebook!

Contact Us

University of North Texas

Biomedical Engineering

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Denton, TX 76203-5017

(940)565-3338

Maria.puig@unt.edu

BMEN Minors Course Guide



BACHELOR OF SCIENCE DEGREE IN BIOMEDICAL ENGINEERING

BMEN

Pre-Med, Biotechnology Track

Recommended Course of Study

Freshman Year

<u>Fall</u>			<u>Spring</u>		
CHEM 1410	General Chemistry	3	PHYS 1710	Mechanics	3
CHEM 1430	General Chemistry Laboratory	1	PHYS 1730	Laboratory in Mechanics	1
ENGL 1310	College Writing I	3	CSCE 1030	Computer Science I	4
BMEN 1300	Discover BMEN	3	TECM 2700	Technical Writing	3
MATH 1710	Calculus I	4	MATH 1720	Calculus II	3
PSCI 1040	American Government	<u>3</u>	PSCI 1050	American Government	3
		17			17

Sophomore Year

<u>Fall</u>			<u>Spring</u>		
BIOL 1710	Principles of Biology I	3	BMEN 2320	Biomedical Instrumentation I	4
MATH 2730	Multivariate calculus	3	MATH 2700	Linear Algebra	3
EENG 2610	Circuit Analysis	3	BIOL 1720	Biology II	3
PHYS 2220	Electricity & Magnetism	3	EENG 2710	Digital Logic	3
PHYS 2240	Lab in WM, Elec, Mag & Optics	1			
BMEN 2210	Biomed DAQ Practices	<u>2</u>			
		15			13

Junior Year

<u>Fall</u>			<u>Spring</u>		
MATH 3410	Differential Equations	3	BMEN 3312	Introduction to Biomechanics	<u>3</u>
BMEN 3311	Biomedical Signal Analysis	3	MATH3680	Statistics and Probability	3
BMEN3310	Human Systems	3	BMEN 3321	Biomaterials	3
XXXX	Language Philosophy and Culture	3	HIST 2610	History I	3
BIOC 3621	Elementary Biochemistry	3	BIOL 3451	Genetics	3
			BIOL 3452	Genetics Lab	1
		15			16

Senior Year

<u>Fall</u>			<u>Spring</u>		
BMEN 4310	Biomedical Modeling	3	HIST 2620	History II	3
BIOL 4770	Biotechnology	3	BMEN 4321	Advanced Topic in BMEN	3
BMEN 4212	Senior Design I	<u>1</u>	BMEN 4222	Senior Design II	3
BMEN 4311	Advanced Topic in BMEN	3	XXXX	Visual and Performing Arts	<u>3</u>
XXXX	Social and Behavioral Sciences	3	BIOL 4580	Molecular Biology & Biotechnology Laboraborty	2
		13			14

Additional Pre-Med Requirements:

1) CHEM 1420 & CHEM 1440 lab to be taken concurrently with BIOL 2041/2042	4
2) Organic Chemistry [CHEM 2370 & CHEM 3210; CHEM 2380 & CHEM 3220]	8
3) BIOL 1760 - Biology Lab	2
Total Hours	14

BACHELOR OF SCIENCE DEGREE IN BIOMEDICAL ENGINEERING

BMEN

Biomedical Instrumentation: Electrical Engineering (EENG) Minor

2016-17

Recommended Course of Study

Freshman Year

Fall

CHEM 1410	General Chemistry	3
CHEM 1430	General Chemistry Laboratory	1
ENGL 1310	College Writing I	3
BMEN 1300	Discover BMEN	3
MATH 1710	Calculus I	4
PSCI 1040	American Government	3

Spring

PHYS 1710	Mechanics	3
PHYS 1730	Laboratory in Mechanics	1
CSCE 1030	Computer Science I	4
TECM 2700	Technical Writing	3
MATH 1720	Calculus II	3
PSCI 1050	American Government	3

17

17

Sophomore Year

Fall

XXXX	Free Elective	3
MATH 2730	Multivariate calculus	3
EENG 2610	Circuit Analysis	3
PHYS 2220	Electricity & Magnetism	3
PHYS 2240	Lab in WM, Elec, Mag & Optics	1
BMEN 2210	Biomed DAQ Practices	2

Spring

BMEN 2320	Biomedical Instrumentation I	4
MATH 2700	Linear Algebra	3
XXXX	Free Elective	3
EENG 2710	Digital Logic	3

15

13

Junior Year

Fall

MATH 3410	Differential Equations	3
BMEN 3311	Biomedical Signal Analysis	3
BMEN3310	Human Systems	3
XXXX	Language Philosophy and Culture	3
XXXX	Elective - EENG 2620	3

Spring

BMEN 3312	Introduction to Biomechanics	3
MATH3680	Statistics and Probability	3
BMEN 3321	Biomaterials	3
HIST 2610	History I	3
XXXX	Elective - EENG 2910 or EENG 292	3

15

15

Senior Year

Fall

BMEN 4310	Biomedical Modeling	3
XXXX	Elective - EENG 3510	3
BMEN 4212	Senior Design I	1
BMEN 4311	Advanced Topic in BMEN	3
XXXX	Social and Behavioral Sciences	3

Spring

HIST 2620	History II	3
BMEN 4321	Advanced Topic in BMEN	3
BMEN 4222	Senior Design II	3
XXXX	Visual and Performing Arts	3
XXXX	Elective - EENG 4000 level course	3

13

15

***Free elective - any course from EENG or CSCE and/or ENGR 2750

University Core Courses in Green; Required courses in black; Prescribed electives in red; Free Electives in blue

BACHELOR OF SCIENCE DEGREE IN BIOMEDICAL ENGINEERING

BMEN

Biomechanics Track: Minor in Mechanical and Energy Engineering (MEEN)

2016-17

Recommended Course of Study

Freshman Year

Fall

CHEM 1410	General Chemistry	3
CHEM 1430	General Chemistry Laboratory	1
ENGL 1310	College Writing I	3
BMEN 1300	Discover BMEN	3
MATH 1710	Calculus I	4
PSCI 1040	American Government	<u>3</u>

Spring

PHYS 1710	Mechanics	3
PHYS 1730	Laboratory in Mechanics	1
CSCE 1030	Computer Science I	4
TECM 2700	Technical Writing	3
MATH 1720	Calculus II	3
PSCI 1050	American Government	3

17

17

Sophomore Year

Fall

XXXX	Elective - MEEN 2301	3
MATH 2730	Multivariate calculus	3
EENG 2610	Circuit Analysis	3
PHYS 2220	Electricity & Magnetism	3
PHYS 2240	Lab in WM, Elec, Mag & Optics	1
BMEN 2210	Biomed DAQ Practices	<u>2</u>

Spring

BMEN 2320	Biomedical Instrumentation I	4
MATH 2700	Linear Algebra	3
XXXX	Elective - MEEN 2302	3
EENG 2710	Digital Logic	3

15

13

Junior Year

Fall

MATH 3410	Differential Equations	3
BMEN 3311	Biomedical Signal Analysis	3
BMEN3310	Human Systems	3
XXXX	Language Philosophy and Culture	3
XXXX	Elective - MEEN 2332	3

Spring

BMEN 3312	Introduction to Biomechanics	<u>3</u>
MATH3680	Statistics and Probability	3
BMEN 3321	Biomaterials	3
HIST 2610	History I	3
XXXX	Elective - Meen 2210	3

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Senior Year

Fall

BMEN 4310	Biomedical Modeling	3
XXXX	Elective - MEEN 3000/4000 Level Course	3
BMEN 4212	Senior Design I	<u>1</u>
BMEN 4311	Advanced Topic in BMEN	3
XXXX	Social and Behavioral Sciences	3

Spring

HIST 2620	History II	3
BMEN 4321	Advanced Topic in BMEN	3
BMEN 4222	Senior Design II	3
XXXX	Visual and Performing Arts	<u>3</u>
XXXX	Elective - MEEN 3000/4000 Level Course	3

13

15

***Plus one more MEEN 3000/4000 Level Course

***If you do not want a minor in MEEN, you can omit this course from degree plan

University Core Courses in Green; Required courses in black; Prescribed electives in red; Free Electives in blue

BACHELOR OF SCIENCE DEGREE IN BIOMEDICAL ENGINEERING

BMEN

Biomaterials Track: Minor in Material Science and Engineering (MTSE)

2016-17

Recommended Course of Study

Freshman Year

Fall

Spring

CHEM 1410	General Chemistry	3	PHYS 1710	Mechanics	3
CHEM 1430	General Chemistry Laboratory	1	PHYS 1730	Laboratory in Mechanics	1
ENGL 1310	College Writing I	3	CSCE 1030	Computer Science I	4
BMEN 1300	Discover BMEN	3	TECM 2700	Technical Writing	3
MATH 1710	Calculus I	4	MATH 1720	Calculus II	3
PSCI 1040	American Government	<u>3</u>	PSCI 1050	American Government	3

17

17

Sophomore Year

Fall

Spring

XXXX	Elective - ENGR 3450	3	BMEN 2320	Biomedical Instrumentation I	4
MATH 2730	Multivariate calculus	3	MATH 2700	Linear Algebra	3
EENG 2610	Circuit Analysis	3	XXXX	Elective - MTSE 3010	3
PHYS 2220	Electricity & Magnetism	3	EENG 2710	Digital Logic	3
PHYS 2240	Lab in WM, Elec, Mag & Optics	1			
BMEN 2210	Biomed DAQ Practices	<u>2</u>			

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13

Junior Year

Fall

Spring

MATH 3410	Differential Equations	3	BMEN 3312	Introduction to Biomechanics	<u>3</u>
BMEN 3311	Biomedical Signal Analysis	3	MATH3680	Statistics and Probability	3
BMEN3310	Human Systems	3	BMEN 3321	Biomaterials	3
XXXX	Language Philosophy and Culture	3	HIST 2610	History I	3
XXXX	Elective - MTSE 3030 or MTSE 3050 or MTSE 3070	3	XXXX	Elective - MTSE 3000 Level Course	3

15

15

Senior Year

Fall

Spring

BMEN 4310	Biomedical Modeling	3	HIST 2620	History II	3
XXXX	Elective	3	BMEN 4321	Advanced Topic in BMEN	3
BMEN 4212	Senior Design I	<u>1</u>	BMEN 4222	Senior Design II	3
BMEN 4311	Advanced Topic in BMEN	3	XXXX	Visual and Performing Arts	<u>3</u>
XXXX	Social and Behavioral Sciences	3	XXXX	Elective	3

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University Core Courses in Green; Required courses in black; Prescribed electives in red; Free Electives in blue

BACHELOR OF SCIENCE DEGREE IN BIOMEDICAL ENGINEERING

BMEN

Bioinformatics Track: Minor in Computer Science and Engineering (CSCE)

2016-17

Recommended Course of Study

Freshman Year

<u>Fall</u>			<u>Spring</u>		
CHEM 1410	General Chemistry	3	PHYS 1710	Mechanics	3
CHEM 1430	General Chemistry Laboratory	1	PHYS 1730	Laboratory in Mechanics	1
ENGL 1310	College Writing I	3	CSCE 1030	Computer Science I	4
BMEN 1300	Discover BMEN	3	TECM 2700	Technical Writing	3
MATH 1710	Calculus I	4	MATH 1720	Calculus II	3
PSCI 1040	American Government	3	PSCI 1050	American Government	3
17			17		

Sophomore Year

<u>Fall</u>			<u>Spring</u>		
XXXX	Elective - CSCE 1040	3	BMEN 2320	Biomedical Instrumentation I	4
MATH 2730	Multivariate calculus	3	MATH 2700	Linear Algebra	3
EENG 2610	Circuit Analysis	3	XXXX	Elective - CSCE 2100	3
PHYS 2220	Electricity & Magnetism	3	EENG 2710	Digital Logic	3
PHYS 2240	Lab in WM, Elec, Mag & Optics	1			
BMEN 2210	Biomed DAQ Practices	2			
15			13		

Junior Year

<u>Fall</u>			<u>Spring</u>		
MATH 3410	Differential Equations	3	BMEN 3312	Introduction to Biomechanics	3
BMEN 3311	Biomedical Signal Analysis	3	MATH3680	Statistics and Probability	3
BMEN3310	Human Systems	3	BMEN 3321	Biomaterials	3
XXXX	Language Philosophy and Culture	3	HIST 2610	History I	3
XXXX	Elective - CSCE 2110	3	XXXX	Elective - CSCE 3850	3
15			15		

Senior Year

<u>Fall</u>			<u>Spring</u>		
BMEN 4310	Biomedical Modeling	3	HIST 2620	History II	3
XXXX	Elective - CSCE 4810	3	BMEN 4321	Advanced Topic in BMEN	3
BMEN 4212	Senior Design I	1	BMEN 4222	Senior Design II	3
BMEN 4311	Advanced Topic in BMEN	3	XXXX	Visual and Performing Arts	3
XXXX	Social and Behavioral Sciences	3	XXXX	Elective - CSCE 4820	3
13			15		

University Core Courses in Green; Required courses in black; Prescribed electives in red; Free Electives in blue

Eagle Express Tuition Plans



BACHELOR OF SCIENCE DEGREE IN BIOMEDICAL ENGINEERING
STUDENTS ENTERING WITH COLLEGE ALGEBRA

2016-17

Recommended Course of Study

Freshman Year

<u>Fall</u>			<u>Spring</u>		
MATH 1100	College Algebra	3	MATH 1650	Pre-Calculus	5
XXXX	Communication Core	3	CHEM 1410	General Chemistry	3
BMEN 1300	Discover BMEN	3	CHEM 1430	General Chemistry Lab	1
HIST 2610	History I	3	TECM 2700	Technical Writing	3
PSCI 1040	American Government	<u>3</u>	PSCI 1050	American Government	3
		15			15

SUMMER

MATH 1710	Calculus I	4	MATH 1720	Calculus II	3
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Sophomore Year

<u>Fall</u>			<u>Spring</u>		
XXXX	Elective	3	CSCE 1030	Computer Science I	4
EENG 2710	Digital Logic	3	EENG 2610	Circuit Analysis	3
PHYS 1710	Mechanics	3	XXXX	Elective	3
PHYS 1730	Laboratory in Mechanics	1	PHYS 2220	Electricity & Magnetism	3
ENGR 2210	Biomed DAQ Practices	<u>2</u>	PHYS 2240	Lab in WM, Elec, Mag & Optics	1
		12			<u>14</u>

SUMMER

BMEN 2320	Biomedical Instrumentation I	4
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Junior Year

<u>Fall</u>			<u>Spring</u>		
MATH 2700	Linear Algebra	3	BMEN 3312	Introduction to Biomechanics	<u>3</u>
BMEN 3311	Biomedical Signal Analysis	3	MATH3680	Statistics and Probability	3
BMEN3310	Human Systems	3	BMEN 3321	Biomaterials	3
XXXX	Elective	3	MATH 2730	Multivariate Calculus	3
XXXX	Language Philosophy and Culture	3	XXXX	Elective	3
		15			15

SUMMER

MATH 3410	Differential Equations	3
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Senior Year

<u>Fall</u>			<u>Spring</u>		
BMEN 4310	Biomedical Modeling	3	HIST 2620	History II	3
XXXX	Elective	3	BMEN 4321	Advanced Topic in BMEN	3
BMEN 4212	Senior Design I	<u>1</u>	BMEN 4222	Senior Design II	3
BMEN 4311	Advanced Topic in BMEN	3	XXXX	Visual and Performing Arts	<u>3</u>
XXXX	Social and Behavioral Sciences	3	XXXX	Elective	3
		13			15

University Core Courses in Green; Required courses in black; Prescribed electives in red; Free Electives in blue

BACHELOR OF SCIENCE DEGREE IN BIOMEDICAL ENGINEERING
STUDENTS ENTERING WITH PRE-CALCULUS

2016-17

Recommended Course of Study

Freshman Year

<u>Fall</u>			<u>Spring</u>		
MATH 1650	Pre-calculus	5	HIST 2610	History I	3
XXXX	Communication Core	3	MATH 1710	Calculus I	4
BMEN 1300	Discover BMEN	3	PSCI 1040	American Government	3
CHEM 1410	General Chemistry	3	TECM 2700	Technical Writing	3
CHEM 1430	General Chemistry Lab	1	XXXX	Language Philosophy and Culture	3
		15			16
<u>Summer</u>					
MATH 1720	Calculus II	3	PHYS 1710	Mechanics	3
			PHYS 1730	Laboratory in Mechanics	1

Sophomore Year

<u>Fall</u>			<u>Spring</u>		
XXXX	Elective	3	BMEN 2320	Biomedical Instrumentation I	4
CSCE 1030	Computer Science I	4	MATH 2700	Linear Algebra	3
EENG 2610	Circuit Analysis	3	XXXX	Elective	3
PHYS 2220	Electricity & Magnetism	3	EENG 2710	Digital Logic	3
PHYS 2240	Lab in WM, Elec, Mag & Optics	1			
BMEN 2210	Biomed DAQ Practices	2			
		16			13

Junior Year

<u>Fall</u>			<u>Spring</u>		
MATH 2730	Multivariate Calculus	3	BMEN 3312	Introduction to Biomechanics	3
BMEN 3311	Biomedical Signal Analysis	3	MATH3680	Statistics and Probability	3
BMEN3310	Human Measurements	3	BMEN 3321	Biomaterials	3
XXXX	Elective	3	MATH 3410	Differential Equations	3
PSCI 1050	American Government	3	XXXX	Elective	3
		15			15

Senior Year

<u>Fall</u>			<u>Spring</u>		
BMEN 4310	Biomedical Modeling	3	HIST 2620	History II	3
XXXX	Elective	3	BMEN 4321	Advanced Topic in BMEN	3
BMEN 4212	Senior Design I	1	BMEN 4222	Senior Design II	3
BMEN 4311	Advanced Topic in BMEN	3	XXXX	Visual and Performing Arts	3
XXXX	Social and Behavioral Sciences	3	XXXX	Elective	3
		13			15

University Core Courses in Green; Required courses in black; Prescribed electives in red; Free Electives in blue

BACHELOR OF SCIENCE DEGREE IN BIOMEDICAL ENGINEERING

BMEN

2016-17

Recommended Course of Study

Freshman Year

<u>Fall</u>			<u>Spring</u>		
CHEM 1410	General Chemistry	3	PHYS 1710	Mechanics	3
CHEM 1430	General Chemistry Laboratory	1	PHYS 1730	Laboratory in Mechanics	1
ENGL 1310	College Writing I	3	CSCE 1030	Computer Science I	4
BMEN 1300	Discover BMEN	3	TECM 2700	Technical Writing	3
MATH 1710	Calculus I	4	MATH 1720	Calculus II	3
PSCI 1040	American Government	<u>3</u>	PSCI 1050	American Government	3
			17		

Sophomore Year

<u>Fall</u>			<u>Spring</u>		
XXXX	Elective	3	BMEN 2320	Biomedical Instrumentation I	4
MATH 2730	Multivariate calculus	3	MATH 2700	Linear Algebra	3
EENG 2610	Circuit Analysis	3	XXXX	Elective	3
PHYS 2220	Electricity & Magnetism	3	EENG 2710	Digital Logic	3
PHYS 2240	Lab in WM, Elec, Mag & Optics	1			
BMEN 2210	Biomed DAQ Practices	<u>2</u>			
			15		

Junior Year

<u>Fall</u>			<u>Spring</u>		
MATH 3410	Differential Equations	3	BMEN 3312	Introduction to Biomechanics	<u>3</u>
BMEN 3311	Biomedical Signal Analysis	3	MATH3680	Statistics and Probability	3
BMEN3310	Human Systems	3	BMEN 3321	Biomaterials	3
XXXX	Language Philosophy and Culture	3	HIST 2610	History I	3
XXXX	Elective	3	XXXX	Elective	3
			15		

Senior Year

<u>Fall</u>			<u>Spring</u>		
BMEN 4310	Biomedical Modeling	3	HIST 2620	History II	3
XXXX	Elective	3	BMEN 4321	Advanced Topic in BMEN	3
BMEN 4212	Senior Design I	<u>1</u>	BMEN 4222	Senior Design II	3
BMEN 4311	Advanced Topic in BMEN	3	XXXX	Visual and Performing Arts	<u>3</u>
XXXX	Social and Behavioral Sciences	3	XXXX	Elective	3
			13		

University Core Courses in Green; Required courses in black; Prescribed electives in red; Free Electives in blue