BS in Engineering Innovation and Leadership

The B.S. in Engineering Innovation and Leadership program (BSEIL) offers a rigorous and flexible major in Engineering with in-depth study of leadership and its effect upon engineering and society. The program includes concentrations in UTEP engineering fields. The Engineering Innovation and Leadership program and its associated concentrations meet the curricular accreditation requirements of the Engineering Accreditation Commission of ABET using the criteria for General Engineering.

Our graduates transition from UTEP to successful careers in the most cutting-edge, exciting engineering and technology companies in the U.S. and abroad, working to provide engineering combined with business acumen in innovative industries across the globe; in service science and engineering companies, such as Apple, AT&T, Halliburton, Google, IBM, and in aerospace, defense, energy, and manufacturing industries; product development; NASA; DOD laboratories; and academic positions.

Possible career paths for students in this degree are: Project Engineer, Engineering Manager, Systems Engineer, Sales Engineer, Design Engineer, Process Engineer, etc.

"We live in a technological age, and if our society is to flourish, many of our leaders should be engineers, and many of our engineers should be leaders" - Samuel Florman, The Interactive Engineer, 1997

Marketable Skills

1. Communication:#Reach mutual understanding through effective exchange of information, ideas, and feelings.
2. Critical thinking:#Analyze and evaluate issues#to#understand problems and develop innovative solutions.
3. Leadership: Enact the five practices of exemplary leadership: model the way, inspire a shared vision, challenge the process, enable others to act, and encourage the heart.
4. Problem-solving:#Find innovative solutions to difficult or complex issues.
5. Teamwork:#Contribute as an effective, efficient member of a group#to#meet a common goal.
6. Multidisciplinary Engineering: Apply knowledge and skills related to foundational engineering concepts, design, and analysis that align with students' passions and interests.
7. Innovation and Entrepreneurship: Identify, design, and deploy innovative socio-technical solutions that address issues of desirability, feasibility, and viability.
8. Business Acumen: Employ an understanding and ability to deal with business scenarios in a manner that leads to successful outcomes, with knowledge and experience in foundational business principles of Accounting, Economics, Finance, Management, and Marketing.
9. Adaptability: Readily adjust to changing and complex situations, acquiring necessary skills and knowledge along the way.
10. Presentation: Imparting information to an audience effectively and guiding listeners through new information, ensuring clarity and understanding.

Program Objectives

Graduates of this program will:

1. **Value the role of engineering and leadership for the betterment of community and society.**
   - Elaboration: Our graduates will value and will demonstrate ability to recognize leadership opportunities and to take initiative for beneficial change. They will understand the broader impacts of their endeavors both inside and outside of engineering, be they social, economic, environmental, or ethical. They will be cognizant of their professional, civic, and societal responsibilities.
2. **Inventively cultivate success in their field by demonstrating technical competence and problem-solving skills, which will foster success in a variety of postgraduate environments, including professional practice and graduate school.**
   - Elaboration: Our graduates will have a solid grounding in fundamental principles of engineering, mathematics, and science, and they will apply this knowledge to a variety of systems inside and outside of engineering. They will be able to develop inventive solutions that are responsive to technical, social, economic, and cultural considerations and constraints among others.
3. **Possess attributes for assuming increasing levels of professional responsibility within and beyond engineering.**
   - Elaboration: In accelerating their ability to innovate and lead, our graduates will develop their character, competency, and capacity. They will also develop a deep understanding of engineering, mathematics, science, business, and entrepreneurship. They will build on this foundation by engaging in independent and team learning to identify and to respond to emerging technical and societal developments.

Admission Requirements

Students admitted into the program begin to take Engineering, Innovation and Leadership courses, when they are pre-calculus-ready (can register for MATH 1508 OR HIGHER)..Each semester, students admitted into the BSEL program must meet prepare for their ensuring registration by completing a proposed course of study, when this is completed will meet with a BSEL advisor to approve their courses and electives.

Engineering Concentration Selection

Students will select a particular engineering Concentration or a specialized combination of discipline-specific courses. Students can choose from the following engineering Concentrations:

- Engineering Innovation
- Aerospace Engineering
- Biomedical Engineering
- Civil Engineering
- Computer Science
- Computer Engineering
- Electrical Engineering
- Mechanical Engineering
- Metallurgical and Materials Engineering

Students who choose these tracks will likely proceed into either conventional engineering employment or into graduate school to obtain an M.S. or a Ph.D. in Engineering.

Degree Plan

Required Credits: 125

Code	Title	Hours
Complete the University Core Curriculum		42
Complete the University Core Curriculum requirements. (p.)		
Designated Core		
CE 2326	Econ for Engrs & Scientists	
CS 1320	Computer Programming Sci/Engr (Exception CS Concentration take COMM 1302 Business/Professional Comm (C) 3.)	
EL 1301	Eng Innovation and Leadership	
MATH 1508	Precalculus (Listed if completed, but not required)	
or MATH 1310	Trigonometry and Conics	
or MATH 1411	Calculus I	
PHIL 2306	Ethics	
PHYS 2120	Laboratory for PHYS 2320	
PHYS 2320	Introductory Mechanics	
PHYS 2121	Laboratory for PHYS 2321	
PHYS 2321	Introductory Electromagnetism	
Foundation Math/Science		
Required:		
CHEM 1305	General Chemistry	3
MATH 1312	Calculus II	3
MATH 1411	Calculus I	4
MATH 2313	Calculus III	3
MATH 2326	Differential Equations	3
MATH 3323	Matrix Algebra	3
or BME Sequence must take upper-division BIOL, CHEM, CBCH course from approved BME minor list		
Engineering Leadership Coursework		
All EL courses require a grade of "C" or better		
Required:		
EL 1402	Fund of Lead, Design & Graph	4

EL 2301	Modeling and Simulation	3
EL 3003	Professional Practice I	0
EL 3005	Professional Practice II	0
EL 3302	Engineering Measurements	3
EL 3331	Engr Design:People to Products	3
EL 3332	Engr Entr: Products to People	3
EL 3373	Eng Prob. & Statistical Models	3
or IE 3373	Engr Probability & Stat Models	
or EE 3384	Intro to Prob. w/ App. in ECE	
EL 4395	CD I:Definition & Exploration	3
EL 4396	CD II: Develop & Evaluation	3

Concentrations

In the Concentrations below, a student must take fifteen (15) credit hours of Emphasis courses approved by the Department. These courses must constitute an approved plan of study and can be taken inside or outside of engineering. Exceptions include those students taking the CS or BME Concentration (see required Emphasis courses for CS or BME Concentration below). Emphasis courses for Engineering Innovation Concentration may include: EL 3320 Finance Mgmt for the Engineer, EL 3330 Eng Leadership Development, EL 4330 Innovation in Technology, EL 4332 Law and Commercialization, EL 4331 Intellectual Property Law, EL 4334 Eng Ethics & Professionalism, and EL 4393 Special Topics in Eng and Lead, or other course approved by the Department.

Engineering Innovation

Code	Title	Hours
Engineering Innovation Concentration Required Courses		
CE 2338	Mechanics II (Dynamics)	3
or MECH 2340	Mechanics II -Dynamics	
CE 2377	Electro Mechanical Systems	3
or IE 2377	Electro-Mechanical Systems	
or MECH 2342	Electro Mechanical Systems	
MECH 2311	Intro to Thermal-fluid Sci	3
MME 2303	Intro to Materials Sci & Engrg	3
MME 2434	Mechanics of Materials	4
Upper Division Engineering/Technical Electives		
9 credit hours approved by advisor		9
Emphasis Courses		
A student must take fifteen (15) credit hours of emphasis courses approved by the department.		15
Total Hours		**40**

Aerospace Engineering

Code	Title	Hours
Aerospace Engineering Required Courses		
MECH 1321	Mechanics I-Statics	3
MECH 2103	Engineering Computations	1
MECH 2311	Intro to Thermal-fluid Sci	3
MECH 2340	Mechanics II -Dynamics	3
AERO 2331	Aerospace Materials	3
Upper Division Aerospace Engineering Technical Electives		
AERO 3312	Aerodynamics 1	3
AERO 3323	Aerospace Structures I	3
AERO 4322	Aerospace Propulsion	3
Aerospace Engineering Elective		
Choose one of the following:		3
AERO 3343	Systems Modelling and Control	
AERO 4319	Special Topics in Aeronautics	

AERO 4331	Aerodynamics II	
AERO 4339	Special Topics in Hypersonics	
AERO 4351	Orbit and Attitude Dynamics	
AERO 4359	Special Topics in Astronautics	
EL 4393	Special Topics in Eng and Lead	
Emphasis Courses		
Students must take fifteen (15) credit hours of emphasis courses approved by the department.		15
Total Hours		**40**

Biomedical Engineering

Code	Title	Hours
Biomedical Engineering Concentration		
Biology Sequence		8
BIOL 1305 & BIOL 1107	General Biology and Topics in Study of Life I	
And		
BIOL 2313 & BIOL 2113	Human Anat/Physiology II and Human Anat/Physio Lab II	
or		
BIOL 2311 & BIOL 2111	Human Anat/Physiology I and Human Anat/Physio Lab I	
Additional Required Courses		
CE 2338	Mechanics II (Dynamics)	3
or MECH 2340	Mechanics II -Dynamics	
CE 2377	Electro Mechanical Systems	3
or IE 2377	Electro-Mechanical Systems	
or MECH 2342	Electro Mechanical Systems	
MECH 2311	Intro to Thermal-fluid Sci	3
MME 2303	Intro to Materials Sci & Engrg	3
MME 2434	Mechanics of Materials	4
Upper Division Engineering Technical Electives		
BME 3303	Fundamentals of BME I	3
BME 3305	Fundamentals of BME II	3
Upper Division Course from list approved for BME Minor		3
Emphasis Course		
A student must take seven (7) credit hours of emphasis courses approved by the department.		7
Total Hours		**40**

Computer Science

Code	Title	Hours
Computer Science Concentration Courses		
CS 1101	Intro to Computer Science Lab	1
CS 1301	Intro to Computer Science	3
CS 2101	Discrete Structures I	1
CS 2202	Discrete Structures II	2
CS 2302	Data Structures	3
CS 2401	Elem. Data Struct./Algorithms	4
EL 4171	Eng Ed and Lead Problems	1
Additional Required Courses		
CE 2338	Mechanics II (Dynamics)	3
or MECH 2340	Mechanics II -Dynamics	
CE 2377	Electro Mechanical Systems	3
or IE 2377	Electro-Mechanical Systems	

or MECH 2342	Electro Mechanical Systems	
MECH 2311	Intro to Thermal-fluid Sci	3
MME 2303	Intro to Materials Sci & Engrg	3
MME 2434	Mechanics of Materials	4
Upper Division Engineering / Technical Electives		
9 cr hrs from the following courses or as approved by the Department		9
CS 3331	Adv. Object-Oriented Programng	
CS 3350	Automata/Computabi/Formal Lang	
CS 3360	Programming Language Concepts	
CS 3432	Computer Organization	
CS 4310	Software Eng: Requirements Eng	
CS 4311	Software Eng: Design & Implmnt	
CS 4316	Computer Networks	
CS 4317	Human-Computer Interaction	
CS 4320	Artificial Intelligence	
CS 4330	Mobile Application Development	
CS 4339	Secure Web-Based Systems	
CS 4342	Database Systems	
CS 4351	Computer Security	
CS 4364	Topics in Data Science	
CS 4365	Topics in Soft Computing	
CS 4371	Computer Science Problems	
CS 4373	Computer Science Internship	
CS 4374	Software Construction	
CS 4375	Operating Systems Concepts	
CS 4376	Comp Dcsn-Mkng & Risk Analysis	
CS 4379	Software Reverse Engineering	
CS 4387	Software Integration and V&V	
CS 4390	Special Topics in Computer Sci	
Total Hours		**40**

Computer Engineering

Code	Title	Hours
Computer Engineering Required Courses		
ECE 2300	Software Design I	3
ECE 2301	Electric Circuits I	3
ECE 2303 & ECE 2103	Digital Systems Design I and Lab for ECE 2303	4
ECE 2304 & ECE 2104	Microprocessor Systems I and Lab for ECE 2304	4
Upper Division Computer Engineering Technical Electives		
ECE 4353 & ECE 4153	Digital Systems Design II and Lab for ECE 4353	4
ECE 4354 & ECE 4154	Microprocessor Systems II and Lab for ECE 4354	4
Computer Engineering Elective		
Choose one of the following:		3
ECE 3350	Software Design II	
ECE 3351	Computer Architecture	
Emphasis Courses		
A student must take five (15) credit hours of emphasis courses approved by the department.		15
Total Hours		**40**

Electrical Engineering

Code	Title	Hours
Electrical Engineering Concentration Courses		
ECE 2301	Electric Circuits I	3
ECE 2302 & ECE 2102	Electric Circuits II and Lab for ECE 2302	4
ECE 2331	Cont. Time Signals & Systems	3
ECE 2303 & ECE 2103	Digital Systems Design I and Lab for ECE 2303	4
Upper Division Engineering Technical Electives		
Choose one of the following:		3
ECE 2300	Software Design I	
ECE 3331	Discrete Time Signals & Sys	
ECE 3341	Electronics I	
ECE 3342	Electronics II	
ECE 3344	Fund. of Semiconductor Dev	
Upper Division Electrical Engineering Technical Electives		
Select two of the following:		8
ECE 2304 & ECE 2104	Microprocessor Systems I and Lab for ECE 2304	
ECE 3341 & ECE 3141	Electronics I and Lab for ECE 3341	
ECE 3370 & ECE 3170	Intro to Communication Netwks and Lab for ECE 3370	
Emphasis Courses		
A student must take fifteen (15) credit hours of emphasis courses approved by the department		15
Total Hours		**40**

Civil Engineering

Code	Title	Hours
Civil Engineering Concentration Required Courses		
CE 1301	Civil Engineering Fundamentals	3
CE 2315	Statics	3
CE 2334	Mechanics of Materials	3
CE 2338	Mechanics II (Dynamics)	3
or MECH 2340	Mechanics II -Dynamics	
CE 2343	Structural Analysis	3
or CE 3336	Civil Engineering Materials	
or CE 2385	Environmental Engr Fundamental	
CE 2375	Intro to Fluid Mechanics	3
EL 4171	Eng Ed and Lead Problems	1
Upper Division Civil Engineering/Technical Electives		
6 credit hours approved by the Department		6
Emphasis Courses		
A student must take fifteen (15) credit hours of emphasis courses approved by the department.		15
Total Hours		**40**

Mechanical Engineering

Code	Title	Hours
Mechanical Concentration Required Courses		
MECH 1321	Mechanics I-Statics	3
MECH 2103	Engineering Computations	1
MECH 2311	Intro to Thermal-fluid Sci	3

MECH 2322	Mechanics of Materials	3
MECH 2340	Mechanics II -Dynamics	3
Upper Division Engineering Technical Electives		
MECH 3312	Thermodynamics	3
MECH 3314	Fluid Mechanics	3
MECH 4315	Heat Transfer	3
Mechanical Concentration Elective (choose one) (3 SCH)		**3**
AERO 3312	Aerodynamics 1	
AERO 3323	Aerospace Structures I	
AERO 3343	Systems Modelling and Control	
EL 4393	Special Topics in Eng and Lead	
MECH 3334	Mechanical Design	
MECH 3345	System Dynamics	
Emphasis Courses		
A student must take fifteen (15) credit hours of emphasis courses approved by the department.		15
Total Hours		**40**

Metallurgical and Materials Engineering

Code	Title	Hours
Metallurgical and Materials Engineering Concentration Required Courses		
Upper Division MME/ Technical Electives		
12 cr hrs of MME courses approved by the EIL Department		12
CE 2377	Electro Mechanical Systems	3
or IE 2377	Electro-Mechanical Systems	
or MECH 2342	Electro Mechanical Systems	
MME 2303	Intro to Materials Sci & Engrg	3
MME 2434	Mechanics of Materials	4
MME 4316	Failure Analysis	3
Emphasis Courses		
A student must take fifteen (15) credit hours of courses approved by department.		15
Total Hours		**40**

University Core Curriculum (A program may recommend specific courses. All courses require a C or better.)

I. Communication (six hours)

Code	Title	Hours
Courses in this category focus on developing ideas and expressing them clearly, considering the effect of the message, fostering understanding, and building the skills needed to communicate persuasively. Courses involve the command of oral, aural, written, and visual literacy skills that enable people to exchange messages appropriate to the subject, occasion, and audience. Course objectives for this component are: Critical Thinking Skills, Communication Skills, Teamwork, and Personal Responsibility.		
Select six hours of the following:		6
For students whose secondary education was in English:		
COMM 1611	Written and Oral Communication	
ENGL 1313	Writing About Literature	
RWS 1301	Rhetoric & Composition I	
RWS 1302	Rhetoric & Composition 2	
RWS 1601	Rhetoric, Composition & Comm	
For students whose secondary education was not in English:		
ESOL 1311	Expos Engl Compos-Spkr Esl	
ESOL 1312	Res & Crit Writng Spkr Esl	
TOTAL HOURS		**6**

II. American History (six hours)

Code	Title	Hours
Courses in this category focus on the consideration of past events and ideas relative to the United States, with the option of including Texas History for a portion of this component area. Courses involve the interaction among individuals, communities, states, the nation, and the world, considering how these interactions have contributed to the development of the United States and its global role. Course objectives for this component are: Critical Thinking Skills, Communication Skills, Social Responsibility, and Personal Responsibility.		
HIST 1301	History of U.S. to 1865	3
HIST 1302	History of U.S. Since 1865	3
TOTAL HOURS		**6**

III. Language, Philosophy & Culture (three hours)

Code	Title	Hours
Courses in this category focus on how ideas, values, beliefs, and other aspects of culture express and affect human experience. Courses involve the exploration of ideas that foster aesthetic and intellectual creation in order to understand the human condition across cultures. Course objectives for this component are: Critical Thinking Skills, Communication Skills, Social Responsibility, and Personal Responsibility.		
Select one of the following:		3
AFST 2300	Intro-African Amer Studies	
CHIC 2302	Latina/o Presence in the U.S.	
ENGL 2311	English Literature	
ENGL 2312	English Literature	
ENGL 2313	Intro to American Fiction	
ENGL 2314	Intro to American Drama	
ENGL 2318	Intro to American Poetry	
FREN 2322	Making of the "Other" Americas	
HIST 2301	World History to 1500	
HIST 2302	World History Since 1500	
PHIL 1301	Introduction to Philosophy	
PHIL 2306	Ethics	
RS 1301	Introduct to Religious Studies	
SPAN 2340	Seeing & Naming: Conversations	
WS 2300	Introduction to Womens Studies	
WS 2350	Global Feminisms	
TOTAL HOURS		**3**

IV. Mathematics (three hours)

Code	Title	Hours
Courses in this category focus on quantitative literacy in logic, patterns, and relationships. Courses involve the understanding of key mathematical concepts and the application of appropriate quantitative tools to everyday experience. Course objectives for this component are: Critical Thinking Skills, Communication Skills, and Empirical & Quantitative Skills.		
Select one of the following:		3
MATH 1309	College Algebra	
MATH 1310	Trigonometry and Conics	
MATH 1319	Math in the Modern World	
MATH 1320	Math for Social Sciences I	
MATH 1411	Calculus I	
MATH 1508	Precalculus	
MATH 2301	Math for Social Sciences II	
STAT 1380	Statistical Literacy	
STAT 2480	Elementary Statistical Methods	
TOTAL HOURS		**3**

V. Life & Physical Sciences (six hours)

Code	Title	Hours
Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on experiences. Course objectives for this component are: Critical Thinking Skills, Communication Skills, Empirical & Quantitative Skills, and Teamwork.		
Select one of the following:		
ASTR 1107	Astronomy Lab I	
ASTR 1307	Elem Astronomy-Solar System	
ASTR 1308	Elem Astr Stars & Galaxies	
BIOL 1103	Introductory Biology Lab	
BIOL 1104	Human Biology Laboratory	
BIOL 1107	Topics in Study of Life I	
BIOL 1108	Organismal Biology Laboratory	
BIOL 1203	Introductory Biology	
BIOL 1304	Human Biology	
BIOL 1305	General Biology	
BIOL 1306	Organismal Biology	
BIOL 2111	Human Anat/Physio Lab I	
BIOL 2113	Human Anat/Physio Lab II	
BIOL 2311	Human Anat/Physiology I	
BIOL 2313	Human Anat/Physiology II	
CHEM 1105	Laboratory for CHEM 1305	
CHEM 1106	Laboratory for CHEM 1306	
CHEM 1107	Intro General Chemistry Lab	
CHEM 1108	Intro Organic & Biochem Lab	
CHEM 1305	General Chemistry	
CHEM 1306	General Chemistry	
CHEM 1307	Intro to General Chemistry	
CHEM 1308	Intro Organic & Biochemistry	
ESCI 1101	Environmental Sci. Lab	
ESCI 1102	Non-major Lab for ESCI 1301	
ESCI 1301	Intro to Environmental Sci	
GEOG 1106	Laboratory for GEOG 1306	
GEOG 1306	Physical Geography	
GEOL 1103	Lab for GEOL 1313	
GEOL 1104	Lab for GEOL 1314	
GEOL 1111	Principles of Earth Sci - Lab	
GEOL 1112	Laboratory for Geology 1212	
GEOL 1211	Principles of Earth Sciences	
GEOL 1212	Principles of Earth Science	
GEOL 1230	The Blue Planet	
GEOL 1231	Natural Hazards	
GEOL 1313	Intro to Physical Geology	
GEOL 1314	Intro to Historical Geol	
HSCI 2302	Fundamentals of Nutrition	
HSCI 2303	Wellness Dynamics	
MICR 2330	Microorganisms and Disease	
PHYS 1403	General Physics I	
PHYS 1404	General Physics II	
PHYS 2120	Laboratory for PHYS 2320	
PHYS 2121	Laboratory for PHYS 2321	
PHYS 2320	Introductory Mechanics	

PHYS 2321	Introductory Electromagnetism	
TOTAL HOURS		**6**

VI. Political Science (six hours)

Code	Title	Hours
Courses in this category focus on consideration of the Constitution of the United States and the constitutions of the states, with special emphasis on that of Texas. Courses involve the analysis of governmental institutions, political behavior, civic engagement, and their political and philosophical foundations. Course objectives for this component are: Critical Thinking Skills, Communication Skills, Social Responsibility and Personal Responsibility.		
Required Courses:		
POLS 2310	Introduction to Politics	3
POLS 2311	American Gover & Politics	3
TOTAL HOURS		**6**

VII. Social & Behavioral Sciences (three hours)

Code	Title	Hours
Courses in this category focus on the application of empirical and scientific methods that contribute to the understanding of what makes us human. Courses involve the exploration of behavior and interactions among individuals, groups, institutions, and events, examining their impact on the individual, society, and culture. Course objectives for this component are: Critical Thinking Skills, Communication Skills, Empirical & Quantitative Skills, and Social Responsibility.		
Select one of the following:		3
ANTH 1301	Intro-Phys Anth/Archeolog	
ANTH 1302	Intro-Cultural Anthropology	
ANTH 1310	Cultural Geography	
ANTH 2320	Intro to Linguistics	
ASIA 2300	Asian American Studies	
CE 2326	Econ for Engrs & Scientists	
CHIC 2311	Intro to Chicano Studies	
COMM 2350	Interpersonal Communication	
COMM 2372	Mass Media and Society	
ECON 2303	Principles of Macroeconomics	
ECON 2304	Principles of Microeconomics	
EDPC 1301	Introduction to Ed Psychology	
EDU 1342	Action Research in Classrooms	
ENGL 2320	Introduction to Linguistics	
GEOG 1310	Cultural Geography	
LEAD 2300	Leadership in Action	
LING 2320	Introduction to Linguistics	
LING 2340	Lang. Inside & Out: Sel Topics	
PSYC 1301	Introduction to Psychology	
SOCI 1301	Introduction to Sociology	
SOCI 1310	Cultural Geography	
TOTAL HOURS		**3**

VIII. Creative Arts

Code	Title	Hours
Courses in this category focus on the appreciation and analysis of creative artifacts and works of the human imagination. Courses involve the synthesis and interpretation of artistic expression and enable critical, creative, and innovative communication about works of art. Course objectives for this component are: Critical Thinking Skills, Communication Skills, Teamwork, and Social Responsibility.		
Select one of the following:		3
ART 1300	Art Appreciation	
ARTH 1305	History of Art I	
ARTH 1306	History of Art II	
CHIC 1311	Chicana/o Fine Arts Appreciat	

DANC 1304	Introduction to Dance	
FILM 1390	Intro-Art of Motion Pict.	
MUSL 1324	Music Appreciation	
MUSL 1327	Jazz to Rock	
MUSL 2321	Music, Culture, and Society	
THEA 1313	Introduction to Theatre	
TOTAL HOURS		**3**

IX. Component Area Option (six hours)

Code	Title	Hours
a. A minimum of 3 SCH must meet the definition and corresponding Core Objectives specified in one of the foundational component areas. b. As an option for up to 3 semester credit hours of the Component Area Option, an institution may select course(s) that: (i) Meet(s) the definition specified for one or more of the foundational component areas; and (ii) Include(s) a minimum of three Core Objectives, including Critical Thinking Skills, Communication Skills, and one of the remaining Core Objectives of the institution's choice.		
BUSN 1301	Intro to Global Business	
COMM 1301	Public Speaking	3
COMM 1302	Business/Profession Comm	
CS 1310	Intro-Computational Thinking	
CS 1320	Computer Programming Sci/Engr	
EL 1301	Eng Innovation and Leadership	
ENGR 1302	Engineering Design Experience	
ENGR 1303	Applied Engineering Analysis	
LEAD 1300	Introduction to Leadership	
SCI 1301	Inquiry in Math & Science	
SPLP 1312	Comm. Var. Across the Lifespan	
UNIV 1301	Seminar/Critical Inquiry	
TOTAL HOURS		**6**

4-Year Sample Degree Plan

BS Engineering Innovation and Leadership: Aerospace Engineering

Code	Title	Hours
BACHELOR OF SCIENCE IN ENGINEERING INNOVATION AND LEADERSHIP		
AEROSPACE ENGINEERING CONCENTRATION		
FRESHMAN		
Fall		
EL 1301	Eng Innovation and Leadership	3
MATH 1411	Calculus I	4
PHYS 2320 & PHYS 2120	Introductory Mechanics and Laboratory for PHYS 2320	4
RWS 1301	Rhetoric & Composition I	3
CS 1320	Computer Programming Sci/Engr	3
Spring		
EL 1402	Fund of Lead, Design & Graph	4
MATH 1312	Calculus II	3
RWS 1302	Rhetoric & Composition 2	3
MECH 1321	Mechanics I-Statics	3
CHEM 1305	General Chemistry	3
SOPHOMORE		
Fall		
EL 2301	Modeling and Simulation	3
MATH 2313	Calculus III	3
PHYS 2321 & PHYS 2121	Introductory Electromagnetism and Laboratory for PHYS 2321	4

MECH 2311	Intro to Thermal-fluid Sci	3
HIST 1301	History of U.S. to 1865	3
Spring		
EL 3302	Engineering Measurements	3
AERO 2331	Aerospace Materials	3
MATH 2326	Differential Equations	3
CE 2326	Econ for Engrs & Scientists	3
HIST 1302	History of U.S. Since 1865	3
Summer		
EL 3003	Professional Practice I	0
JUNIOR		
Fall		
EL 3331	Engr Design:People to Products	3
PHIL 2306	Ethics	3
MECH 2340	Mechanics II -Dynamics	3
AERO 3312	Aerodynamics 1	3
Emphasis Elective		3
Spring		
EL 3332	Engr Entr: Products to People	3
EL 3373	Eng Prob. & Statistical Models	3
MATH 3323	Matrix Algebra	3
Emphasis Elective		3
Emphasis Elective		3
MECH 2103	Engineering Computations	1
Summer		
EL 3005	Professional Practice II	0
SENIOR		
Fall		
EL 4395	CD I:Definition & Exploration	3
POLS 2310	Introduction to Politics	3
Creative Arts Core		3
AERO 3323	Aerospace Structures I	3
Emphasis Elective		3
Spring		
EL 4396	CD II: Develop & Evaluation	3
POLS 2311	American Gover & Politics	3
AERO 4322	Aerospace Propulsion	3
Aerospace Elective		3
Emphasis Elective		3
Total Hours		**125**

BS Engineering Innovation and Leadership: Biomedical Engineering

Code	Title	Hours
BACHELOR OF SCIENCE IN ENGINEERING INNOVATION AND LEADERSHIP		
BIOMEDICAL ENGINEERING CONCENTRATION (Starting with Calculus)		
FRESHMAN		
Fall		
RWS 1301	Rhetoric & Composition I [+1]	3
CS 1320	Computer Programming Sci/Engr [+]	3
EL 1301	Eng Innovation and Leadership	3
MATH 1411	Calculus I [+‡]	4

BIOL 1305 & BIOL 1107	General Biology and Topics in Study of Life I	4
Spring		
RWS 1302	Rhetoric & Composition 2 [+1]	3
PHYS 2320	Introductory Mechanics	3
PHYS 2120	Laboratory for PHYS 2320	1
EL 1402	Fund of Lead, Design & Graph	4
CHEM 1305	General Chemistry [+]	3
MATH 1312	Calculus II [+]	3
SOPHOMORE		
Fall		
HIST 1301	History of U.S. to 1865 [+1]	3
EL 2301	Modeling and Simulation [+]	3
MATH 2313	Calculus III [+]	3
MME 2303	Intro to Materials Sci & Engrg	3
PHYS 2321	Introductory Electromagnetism	3
PHYS 2121	Laboratory for PHYS 2321	1
Spring		
CE 2326	Econ for Engrs & Scientists [+1]	3
EL 3302	Engineering Measurements [+]	3
EL 3373	Eng Prob. & Statistical Models [+2]	3
MATH 2326	Differential Equations [+]	3
MME 2434	Mechanics of Materials	4
JUNIOR		
Summer		
EL 3003	Professional Practice I	0
Fall		
HIST 1302	History of U.S. Since 1865 [+1]	3
EL 3331	Engr Design:People to Products [+]	3
CE 2338	Mechanics II (Dynamics) [1,3]	3
CE 2377	Electro Mechanical Systems [1,4]	3
Emphasis Course		3
Spring		
Creative Arts Elective [+]		3
EL 3332	Engr Entr: Products to People [+]	3
MECH 2311	Intro to Thermal-fluid Sci [1,4]	3
BME 3303 & MME 4171	Fundamentals of BME I and Engineering Problems [1,6]	4
BIOL 2311 & BIOL 2111	Human Anat/Physiology I and Human Anat/Physio Lab I [1,5,6]	4
SENIOR		
Summer		
EL 3005	Professional Practice II	0
Fall		
POLS 2310	Introduction to Politics [+1]	3
PHIL 2306	Ethics [+1]	3
EL 4395	CD I:Definition & Exploration [+]	3
BME 3305	Fundamentals of BME II [1,6]	3
Emphasis Course		4
Spring		
POLS 2311	American Gover & Politics [+]	3
EL 4396	CD II: Develop & Evaluation [+]	3
BME Technical Elective [1,6]		3

Upper level BIOL, CHEM, or CBCH course from approved list for BME Minor [1,6]	3
Notes:	
+ Grade of C or better required	
‡ If taking Pre-Calculus first, it is recommended to take MATH 1411 (Calculus I) in the Spring semester, and MATH 1312 (Calculus II) over the summer, to be on track for Engineering courses.	
1 Prerequisites for non-Engineering Leadership courses can be found in the catalog.	
2 May substitute IE 3373 or EE 3384	
3 May substitute ME 2340	
4 May substitute IE 2377 or ME 2342	
5 May substitute for BIOL 2313 and BIOL 2113	
6 BME sequence may qualify for BME Minor. Approved electives for BME Minor are on BME Minor website. Students must register for these courses and lab sections after advising by BME Minor advisor	
Total Hours	**126**

BS Engineering Innovation and Leadership: Civil Engineering

Code	Title	Hours
BACHELOR OF SCIENCE IN ENGINEERING INNOVATION AND LEADERSHIP		
CIVIL ENGINEERING CONCENTRATION		
FRESHMAN		
Fall		
RWS 1301	Rhetoric & Composition I [+3]	3
EL 1301	Eng Innovation and Leadership	3
MATH 1411	Calculus I [+‡]	4
UNIV 1301	Seminar/Critical Inquiry [+]	3
CS 1320	Computer Programming Sci/Engr	3
Spring		
RWS 1302	Rhetoric & Composition 2 [+3]	3
PHYS 2320	Introductory Mechanics	3
PHYS 2120	Laboratory for PHYS 2320	1
EL 1402	Fund of Lead, Design & Graph	4
CHEM 1305	General Chemistry [+]	3
MATH 1312	Calculus II [+]	3
SOPHOMORE		
Fall		
HIST 1302	History of U.S. Since 1865 [+3]	3
PHYS 2321	Introductory Electromagnetism	3
PHYS 2121	Laboratory for PHYS 2321	1
CE 1301	Civil Engineering Fundamentals [3]	3
EL 2301	Modeling and Simulation [+]	3
MATH 2313	Calculus III [+]	3
Spring		
CE 2326	Econ for Engrs & Scientists [+3]	3
EL 3302	Engineering Measurements [+1]	3
EL 3373	Eng Prob. & Statistical Models [+2]	3
CE 2315	Statics [+]	3
MATH 2326	Differential Equations [+]	3
JUNIOR		
Summer		
EL 3003	Professional Practice I	0
Fall		
EL 3331	Engr Design:People to Products [1+]	3
CE 2338	Mechanics II (Dynamics)	3

or MECH 2340	Mechanics II -Dynamics	
CE 2375	Intro to Fluid Mechanics	3
CE 2334	Mechanics of Materials [+3]	3
Emphasis Elective #1		3
Spring		
EL 3332	Engr Entr: Products to People	3
Emphasis Elective #2		3
CE 2343	Structural Analysis	3
or CE 3336	Civil Engineering Materials	
or CE 2385	Environmental Engr Fundamental	
Emphasis Elective		3
MATH 3323	Matrix Algebra [+]	3
SENIOR		
Summer		
EL 3005	Professional Practice II	0
Fall		
POLS 2310	Introduction to Politics [+3]	3
PHIL 2306	Ethics [+3]	3
EL 4395	CD I:Definition & Exploration [+1]	3
EL 4171	Eng Ed and Lead Problems	1
Emphasis Elective #3		3
CE Upper Division Elective [3]		3
Spring		
POLS 2311	American Gover & Politics [+3]	3
Creative Arts [+]		3
EL 4396	CD II: Develop & Evaluation [+1]	3
CE Upper Division Elective [3]		3
Emphasis Elective #4		3
Notes:		
+ Grade of C or better required		
1 Engineering Leadership courses must be taken in order shown unless approved by department Chair.		
2 IE 3373 may be substituted with department approval		
3 Prerequisites for non-Engineering Leadership courses can be found in the catalog		
‡ If taking Pre-Calculus first, it is recommended to take MATH 1411 (Calculus I) in the Spring semester, and MATH 1312 (Calculus II) over the summer, to be on track for Engineering courses.		
Total Hours		**125**

BS Engineering Innovation and Leadership: Computer Science

Code	Title	Hours
BACHELOR OF SCIENCE IN ENGINEERING INNOVATION AND LEADERSHIP		
COMPUTER SCIENCE CONCENTRATION (Starting with Calculus)		
FRESHMAN		
Fall		
RWS 1301	Rhetoric & Composition I [+3]	3
HIST 1301	History of U.S. to 1865 [+3]	3
EL 1301	Eng Innovation and Leadership	3
MATH 1411	Calculus I [+‡]	4
COMM 1302	Business/Profession Comm	3
Spring		
RWS 1302	Rhetoric & Composition 2 [+3]	3
PHYS 2320 & PHYS 2120	Introductory Mechanics and Laboratory for PHYS 2320	4

EL 1402	Fund of Lead, Design & Graph	4
CS 1301 & CS 1101	Intro to Computer Science and Intro to Computer Science Lab	4
MATH 1312	Calculus II [+]	3
SOPHOMORE		
Fall		
HIST 1302	History of U.S. Since 1865 [+3]	3
PHYS 2321 & PHYS 2121	Introductory Electromagnetism and Laboratory for PHYS 2321	4
EL 2301	Modeling and Simulation [+]	3
CS 2401	Elem. Data Struct./Algorithms	4
MATH 2300	Discrete Mathematics	3
Spring		
CE 2326	Econ for Engrs & Scientists [+3]	3
EL 3302	Engineering Measurements	3
CS 2302	Data Structures	3
MME 2434	Mechanics of Materials	4
MATH 2326	Differential Equations [+]	3
JUNIOR		
Summer		
EL 3003	Professional Practice I	0
Fall		
EL 3331	Engr Design:People to Products [1+]	3
EL 3373	Eng Prob. & Statistical Models	3
CE 2338	Mechanics II (Dynamics) [4]	3
or MECH 2340	Mechanics II -Dynamics	
MECH 2311	Intro to Thermal-fluid Sci	3
CS 2101	Discrete Structures I	1
CHEM 1305	General Chemistry	3
Spring		
POLS 2310	Introduction to Politics [+3]	3
EL 3332	Engr Entr: Products to People	3
CS 2202	Discrete Structures II	2
MME 2303	Intro to Materials Sci & Engrg	3
MATH 3323	Matrix Algebra [+]	3
SENIOR		
Summer		
EL 3005	Professional Practice II	0
Fall		
POLS 2311	American Gover & Politics	3
PHIL 2306	Ethics [+3]	3
EL 4395	CD I:Definition & Exploration [+1]	3
CE 2377	Electro Mechanical Systems [3]	3
or IE 2377	Electro-Mechanical Systems	
or MECH 2342	Electro Mechanical Systems	
CS Upper Division Elective [3]		3
Spring		
Creative Arts [+]		3
EL 4396	CD II: Develop & Evaluation [+1]	3
EL 4171	Eng Ed and Lead Problems	1
CS Upper Division Elective [3]		3
CS Upper Division Elective [3]		3

Notes:	
+ Grade of C or better required	
1 Engineering Leadership courses must be taken in order shown unless approved by department Chair.	
2 IE 3373 may be substituted with department approval	
3 Prerequisites for non-Engineering Leadership courses can be found in the catalog	
‡ If taking Pre-Calculus first, it is recommended to take MATH 1411 (Calculus I) in the Spring semester, and MATH 1312 (Calculus II) over the summer, to be on track for Engineering courses.	
Total Hours	**125**

BS Engineering Innovation and Leadership: Computer Engineering

Code	Title	Hours
BACHELOR OF SCIENCE IN ENGINEERING INNOVATION AND LEADERSHIP		
COMPUTER ENGINEERING CONCENTRATION		
FRESHMAN		
Fall		
EL 1301	Eng Innovation and Leadership	3
MATH 1411	Calculus I	4
CHEM 1305	General Chemistry	3
RWS 1301	Rhetoric & Composition I	3
CS 1320	Computer Programming Sci/Engr	3
Spring		
EL 1402	Fund of Lead, Design & Graph	4
MATH 1312	Calculus II	3
RWS 1302	Rhetoric & Composition 2	3
HIST 1301	History of U.S. to 1865	3
PHYS 2320 & PHYS 2120	Introductory Mechanics and Laboratory for PHYS 2320	4
SOPHOMORE		
Fall		
EL 2301	Modeling and Simulation	3
MATH 2313	Calculus III	3
PHYS 2321 & PHYS 2121	Introductory Electromagnetism and Laboratory for PHYS 2321	4
HIST 1302	History of U.S. Since 1865	3
Creative Arts Core		3
Spring		
EL 3302	Engineering Measurements	3
ECE 2300	Software Design I	3
MATH 2326	Differential Equations	3
CE 2326	Econ for Engrs & Scientists	3
Emphasis Course		3
Summer		
EL 3003	Professional Practice I	0
JUNIOR		
Fall		
EL 3331	Engr Design:People to Products	3
ECE 2301	Electric Circuits I	3
ECE 2303 & ECE 2103	Digital Systems Design I and Lab for ECE 2303	4
MATH 3323	Matrix Algebra	3
Emphasis Course		3
Spring		
EL 3332	Engr Entr: Products to People	3

EL 3373	Eng Prob. & Statistical Models	3
PHIL 2306	Ethics	3
Emphasis Course		3
ECE 2304 & ECE 2104	Microprocessor Systems I and Lab for ECE 2304	4
Summer		
EL 3005	Professional Practice II	0
SENIOR		
Fall		
EL 4395	CD I:Definition & Exploration	3
POLS 2310	Introduction to Politics	3
ECE 4353 & ECE 4153	Digital Systems Design II and Lab for ECE 4353	4
ECE 3350	Software Design II	3
or ECE 3351	Computer Architecture	
Emphasis Course		3
Spring		
EL 4396	CD II: Develop & Evaluation	3
POLS 2311	American Gover & Politics	3
ECE 4354 & ECE 4154	Microprocessor Systems II and Lab for ECE 4354	4
Emphasis Course		3
Total Hours		**125**

BS Engineering Innovation and Leadership: Electrical Engineering

Code	Title	Hours
BACHELOR OF SCIENCE IN ENGINEERING INNOVATION AND LEADERSHIP		
ELECTRICAL ENGINEERING CONCENTRATION (Starting with Calculus)		
FRESHMAN		
Fall		
EL 1301	Eng Innovation and Leadership	3
MATH 1411	Calculus I [+‡]	4
CHEM 1305	General Chemistry [+]	3
RWS 1301	Rhetoric & Composition I [+3]	3
CS 1320	Computer Programming Sci/Engr	3
Spring		
EL 1402	Fund of Lead, Design & Graph	4
MATH 1312	Calculus II [+]	3
RWS 1302	Rhetoric & Composition 2 [+3]	3
HIST 1301	History of U.S. to 1865	3
PHYS 2320 & PHYS 2120	Introductory Mechanics and Laboratory for PHYS 2320	4
SOPHOMORE		
Fall		
EL 2301	Modeling and Simulation [+]	3
MATH 2326	Differential Equations [+]	3
PHYS 2321 & PHYS 2121	Introductory Electromagnetism and Laboratory for PHYS 2321	4
HIST 1302	History of U.S. Since 1865	3
Creative Arts		3
Spring		
EL 3302	Engineering Measurements [+1]	3
MATH 2313	Calculus III [+]	3

ECE 2301	Electric Circuits I	3
CE 2326	Econ for Engrs & Scientists [+3]	3
Emphasis Elective		3
JUNIOR		
Summer		
EL 3003	Professional Practice I	0
Fall		
EL 3331	Engr Design:People to Products [1+]	3
ECE 2302 & ECE 2102	Electric Circuits II and Lab for ECE 2302	4
PHIL 2306	Ethics [+3]	3
MATH 3323	Matrix Algebra [+]	3
Emphasis Elective		3
Spring		
EL 3332	Engr Entr: Products to People	3
EL 3373	Eng Prob. & Statistical Models	3
ECE 2303 & ECE 2103	Digital Systems Design I and Lab for ECE 2303	4
Emphasis Elective		3
ECE 2331	Cont. Time Signals & Systems	3
SENIOR		
Summer		
EL 3005	Professional Practice II	0
Fall		
EL 4395	CD I:Definition & Exploration [+1]	3
POLS 2310	Introduction to Politics [+3]	3
ECE 2300	Software Design I	3
or ECE 3341	Electronics I	
or ECE 3342	Electronics II	
or ECE 3344	Fund. of Semiconductor Dev	
Upper Tech Elective + Lab		4
Emphasis Elective		3
Spring		
EL 4396	CD II: Develop & Evaluation [+1]	3
POLS 2311	American Gover & Politics [+3]	3
Upper Tech Elective+ Lab		4
Emphasis Elective		3
Notes:		
+ Grade of C or better required		
1 Engineering Leadership courses must be taken in order shown unless approved by department Chair.		
2 IE 3373 may be substituted with department approval		
3 Prerequisites for non-Engineering Leadership courses can be found in the catalog		
4 Students must take 6 credit hours from the list (ECE 3320, ECE 3344, ECE 3341 & ECE 3141, ECE 3342, ECE 2304 & ECE 2104, ECE 3332, ECE 3331)		
‡ If taking Pre-Calculus first, it is recommended to take MATH 1411 (Calculus I) in the Spring semester, and MATH 1312 (Calculus II) over the summer, to be on track for Engineering courses.		
Total Hours		**125**

BS Engineering Innovation and Leadership: Engineering Innovation

Code	Title	Hours
BACHELOR OF SCIENCE IN ENGINEERING INNOVATION AND LEADERSHIP		
ENGINEERING INNOVATION CONCENTRATION (Starting with Calculus)		
FRESHMAN		

Fall		
RWS 1301	Rhetoric & Composition I [+1]	3
HIST 1301	History of U.S. to 1865 [+1]	3
EL 1301	Eng Innovation and Leadership	3
MATH 1411	Calculus I [+‡]	4
CS 1320	Computer Programming Sci/Engr	3
Spring		
RWS 1302	Rhetoric & Composition 2 [+1]	3
PHYS 2320	Introductory Mechanics	3
PHYS 2120	Laboratory for PHYS 2320	1
EL 1402	Fund of Lead, Design & Graph	4
CHEM 1305	General Chemistry [+1]	3
MATH 1312	Calculus II [+]	3
SOPHOMORE		
Fall		
HIST 1302	History of U.S. Since 1865 [+1]	3
PHYS 2321	Introductory Electromagnetism	3
PHYS 2121	Laboratory for PHYS 2321	1
EL 2301	Modeling and Simulation [+]	3
MME 2303	Intro to Materials Sci & Engrg	3
MATH 2313	Calculus III [+]	3
Spring		
CE 2326	Econ for Engrs & Scientists [+1]	3
EL 3302	Engineering Measurements [+]	3
EL 3373	Eng Prob. & Statistical Models [+]	3
MME 2434	Mechanics of Materials	4
MATH 2326	Differential Equations [+]	3
JUNIOR		
Summer		
EL 3003	Professional Practice I	0
Fall		
EL 3331	Engr Design:People to Products [+]	3
CE 2338	Mechanics II (Dynamics)	3
or MECH 2340	Mechanics II -Dynamics	
CE 2377	Electro Mechanical Systems	3
or IE 2377	Electro-Mechanical Systems	
or MECH 2342	Electro Mechanical Systems	
Emphasis Elective		3
MATH 3323	Matrix Algebra [+]	3
Spring		
EL 3332	Engr Entr: Products to People [+]	3
MECH 2311	Intro to Thermal-fluid Sci	3
Eng. Technical Elective [1]		3
Emphasis Elective		3
SENIOR		
Summer		
EL 3005	Professional Practice II	0
Fall		
POLS 2310	Introduction to Politics [+1]	3
PHIL 2306	Ethics [+1]	3
EL 4395	CD I:Definition & Exploration [+]	3
Eng. Technical Elective [1]		3

Emphasis Elective		3
Spring		
POLS 2311	American Gover & Politics [+1]	3
Creative Arts Elective [+]		3
EL 4396	CD II: Develop & Evaluation [+]	3
Eng. Technical Elective [1]		3
Emphasis Elective		3
Notes:		
+ Grade of C or better required		
‡ If taking Pre-Calculus first, it is recommended to take MATH 1411 (Calculus I) in the Spring semester, and MATH 1312 (Calculus II) over the summer, to be on track for Engineering courses.		
1 Prerequisites for non-Engineering Leadership courses can be found in the catalog.		
Total Hours		**122**

BS Engineering Innovation and Leadership: Mechanical Engineering

Code	Title	Hours
BACHELOR OF SCIENCE IN ENGINEERING INNOVATION AND LEADERSHIP		
MECHANICAL ENGINEERING CONCENTRATION (Starting with Calculus)		
FRESHMAN		
Fall		
RWS 1301	Rhetoric & Composition I [+3]	3
EL 1301	Eng Innovation and Leadership	3
PHYS 2320	Introductory Mechanics	3
PHYS 2120	Laboratory for PHYS 2320	1
MATH 1411	Calculus I [+]	4
CS 1320	Computer Programming Sci/Engr	3
Spring		
RWS 1302	Rhetoric & Composition 2 [+3]	3
EL 1402	Fund of Lead, Design & Graph	4
MECH 1321	Mechanics I-Statics [+]	3
MATH 1312	Calculus II [+]	3
CHEM 1305	General Chemistry	3
SOPHOMORE		
Fall		
HIST 1301	History of U.S. to 1865 [+3]	3
PHYS 2321	Introductory Electromagnetism	3
PHYS 2121	Laboratory for PHYS 2321	1
EL 2301	Modeling and Simulation [+]	3
MECH 2311	Intro to Thermal-fluid Sci [+]	3
MATH 2313	Calculus III [+]	3
Spring		
HIST 1302	History of U.S. Since 1865 [+3]	3
CE 2326	Econ for Engrs & Scientists [+3]	3
EL 3302	Engineering Measurements [+1]	3
MECH 2322	Mechanics of Materials [+]	3
MATH 2326	Differential Equations [+]	3
JUNIOR		
Summer		
EL 3003	Professional Practice I	0
Fall		
EL 3331	Engr Design:People to Products [1+]	3
EL 3373	Eng Prob. & Statistical Models [2]	3

MECH 2340	Mechanics II -Dynamics	3
MECH 2103	Engineering Computations	1
Emphasis Elective		3
MATH 3323	Matrix Algebra [+]	3
Spring		
PHIL 2306	Ethics [+2]	3
Emphasis Elective		3
MECH 3312	Thermodynamics [+]	3
EL 3332	Engr Entr: Products to People	3
Emphasis Elective		3
SENIOR		
Summer		
EL 3005	Professional Practice II	0
Fall		
POLS 2310	Introduction to Politics [+3]	3
Creative Arts Elective [+]		3
EL 4395	CD I:Definition & Exploration [+1]	3
MECH 3314	Fluid Mechanics	3
Emphasis Elective		3
Spring		
POLS 2311	American Gover & Politics [+3]	3
EL 4396	CD II: Develop & Evaluation [+1]	3
MECH 4315	Heat Transfer	3
MECH Concentration Elective [3,4]		3
Emphasis Elective		3
Notes:		
+ Grade of C or better required		
1 Engineering Leadership courses must be taken in order shown unless approved by department Chair.		
2 IE 3373 may be substituted with department approval		
3 Prerequisites for non-Engineering Leadership courses can be found in the catalog		
4 Choose one from: MECH 3345; MECH 3334; AERO 3312; AERO 3343; AERO 3323, or EL 4393		
‡ If taking Pre-Calculus first, it is recommended to take MATH 1411 (Calculus I) in the Spring semester, and MATH 1312 (Calculus II) over the summer, to be on track for Engineering courses.		
Total Hours		**125**

BS Engineering Innovation and Leadership: Metallurgical and Materials Engineering

Code	Title	Hours
BACHELOR OF SCIENCE IN ENGINEERING INNOVATION AND LEADERSHIP		
METALLURGICAL AND MATERIALS ENGINEERING CONCENTRATION (Starting with Calculus)		
FRESHMAN		
Fall		
RWS 1301	Rhetoric & Composition I [+3]	3
HIST 1301	History of U.S. to 1865 [+3]	3
EL 1301	Eng Innovation and Leadership	3
CS 1320	Computer Programming Sci/Engr	3
MATH 1411	Calculus I [+‡]	4
Spring		
RWS 1302	Rhetoric & Composition 2 [+3]	3
PHYS 2320	Introductory Mechanics	3
PHYS 2120	Laboratory for PHYS 2320	1
EL 1402	Fund of Lead, Design & Graph	4
CHEM 1305	General Chemistry [+]	3

MATH 1312	Calculus II [+]	3
SOPHOMORE		
Fall		
HIST 1302	History of U.S. Since 1865 [+3]	3
PHYS 2321	Introductory Electromagnetism	3
PHYS 2121	Laboratory for PHYS 2321	1
EL 2301	Modeling and Simulation	3
MME 2303	Intro to Materials Sci & Engrg	3
MATH 2313	Calculus III [+]	3
Spring		
CE 2326	Econ for Engrs & Scientists [+3]	3
EL 3302	Engineering Measurements [+1]	3
EL 3373	Eng Prob. & Statistical Models [+2]	3
or IE 3373	Engr Probability & Stat Models	
or EE 3384	Intro to Prob. w/ App. in ECE	
MME 2434	Mechanics of Materials	4
MATH 2326	Differential Equations [+]	3
JUNIOR		
Summer		
EL 3003	Professional Practice I	0
Fall		
EL 3331	Engr Design:People to Products [+1]	3
CE 2377	Electro Mechanical Systems [3]	3
or IE 2377	Electro-Mechanical Systems	
or MECH 2342	Electro Mechanical Systems	
Emphasis Elective		3
MME Elective		3
MATH 3323	Matrix Algebra [+]	3
Spring		
EL 3332	Engr Entr: Products to People [+1]	3
Emphasis Elective		3
Emphasis Elective		3
MME Elective		3
MME Elective		3
SENIOR		
Summer		
EL 3005	Professional Practice II	0
Fall		
POLS 2310	Introduction to Politics [+]	3
PHIL 2306	Ethics [+3]	3
EL 4395	CD I:Definition & Exploration [+1]	3
Emphasis Elective		3
MME Elective		3
Spring		
POLS 2311	American Gover & Politics [+]	3
Creative Arts [+]		3
EL 4396	CD II: Develop & Evaluation [+1]	3
Emphasis Elective		3
MME 4316	Failure Analysis	3
Notes:		
+ Grade of C or better required		

‡ If taking Pre-Calculus first, it is recommended to take MATH 1411 (Calculus I) in the Spring semester, and MATH 1312 (Calculus II) over the summer, to be on track for Engineering courses.

1 Engineering Leadership courses must be taken in order shown unless approved by department Chair

2 IE 3373 may be substituted with department approval

3 Prerequisites for non-Engineering Leadership courses can be found in the catalog

Total Hours	**125**