

# Master of Engineering in Bioengineering

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## KU Bioengineering Program

The University of Kansas (KU) Master of Engineering in Bioengineering degree program is a coursework only master's degree. It is very similar to the Master of Science in Bioengineering degree at the University of Kansas. The M.E. is offered by the KU Bioengineering Program within the School of Engineering. The primary difference is the elimination of research, the thesis and the thesis defense. The thesis credit hours are replaced with the same credit hours of coursework.

This degree will prepare students to be more effective in their careers in medicine, private commercial firms, and with entrepreneurship in a start-up company. The coursework-only Master of Engineering in Bioengineering degree is an efficient way for baccalaureate graduates to get more in-depth background and credentials in bioengineering prior to seeking employment. The program is rigorous, and places high demands on the student who must demonstrate that they understand interdisciplinary concepts. The Master of Engineering in Bioengineering degree program provides knowledge breadth in engineering and the biological sciences, and knowledge depth in a particular focused area of coursework.

Applicants for the Master of Engineering in Bioengineering will have a baccalaureate degree in engineering, biological science, or a related field. Successful applicants will have strong academic credentials and demonstrated potential for advanced study by performance at the baccalaureate level. The completed Master of Engineering in Bioengineering is evidence of an ability to work as an engineer who is capable of advanced analysis and design. The holder of this degree will have completed significant course work to advance their knowledge and abilities in the area of bioengineering.

Master of Engineering students will choose a concentration from the following list to determine their coursework requirements:

1. Bioimaging
2. Computational bioengineering
3. Biomaterials and tissue engineering
4. Biomechanics and neural engineering
5. Biomedical product design and development
6. Biomolecular engineering

The student, in consultation with their academic advisor, develops a Plan of Study to satisfy the degree requirements.

## Financial Aid

Once admitted, students become eligible for financial aid and are encouraged to file the FAFSA. Students pursuing the Master of Engineering in Bioengineering will not be considered for Graduate Assistantships within the Bioengineering Program and should plan to fund the ME degree through their own efforts or external funding.

## Standard Admission Requirements for all Graduate Programs

- All applicants must meet the requirements outlined in the Admission to Graduate Study (<https://policy.ku.edu/graduate-studies/admission-to-graduate-study/>) policy.
- Bachelor's degree: A copy of official transcripts showing proof of a bachelor's degree (and any post-bachelor's coursework or degrees) from a regionally accredited institution, or a foreign university with equivalent bachelor's degree requirements is required.
- English proficiency: Proof of English proficiency (<https://gradapply.ku.edu/english-requirements/>) for non-native or non-native-like English speakers is required. There are two bands of English proficiency, including Admission and Full proficiency. For applicants to online programs, Full proficiency is required.

## Admission to the Bioengineering Graduate Program

All applicants are expected to have an undergraduate grade point average of 3.0 or higher on a 4.0 scale. The appropriate academic preparation includes both general and concentration prerequisites. General prerequisites include calculus I and II, differential equations, linear algebra, general physics I and II, chemistry, and biology. Concentration prerequisites depend on the student's intended concentration. More complete details about academic preparation can be found on the program's website (<http://bio.engr.ku.edu/>).

Applicants normally have a baccalaureate degree in an engineering discipline, physical sciences, the life sciences, or a closely related field. Depending on their preparation, students may be required to take additional courses that may or may not count toward the graduate degree. A student may be admitted to the Bioengineering Program without meeting all the prerequisites if approved by the Admissions Committee. This student must plan to complete the prerequisites in addition to the graduate degree requirements and consultation with the program is required to determine which courses satisfy these requirements. Course credits from prerequisites generally do not apply toward the graduate degree and must be completed with a grade of B or higher.

Submit your graduate application online (<https://gradapply.ku.edu/apply/>).

## Application Information & Deadlines

A complete application package should be submitted by the following deadlines:

### DOMESTIC APPLICANTS:

**Fall:** July 1

**Spring:** December 1

**Summer:** April 15

### INTERNATIONAL APPLICANTS:

**Fall:** May 15

**Spring:** October 15

**Summer:** March 1

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**APPLICATION MATERIALS INCLUDE:****1. Official Transcripts**

- a. One official transcript from each degree granting institution that the student has attended is REQUIRED for admission. If courses from another university or junior college appear on the degree granting institution's transcript, we do not need transcripts from the other university or junior college. A scanned copy of the official transcript IS acceptable but it MUST be an official copy. Printouts from student portals or websites will NOT be accepted. A final degree conferred transcript sent directly from the degree granting university will be required before the second semester of enrollment should the applicant be admitted and enroll in a program at KU.

**2. A Statement of Your Academic Objectives**

- a. Your statement is a very important part of your application. Please write a 1-2 page essay describing your academic and career objectives as they relate to bioengineering. It should indicate how and why you have decided to pursue graduate studies in your chosen field. ***Please discuss the particular areas of focus within the track(s) you wish to study and why you feel KU specifically is a good fit for your particular interests and goals.*** You may also include relevant information about your academic background, research experience, leadership skills, related work and/or volunteer experiences that you feel have prepared you for graduate study. This statement of objectives will be read and used by faculty in the track to evaluate your academic and leadership potential. Please make sure that it is of high quality and demonstrates your readiness for graduate level study and research at KU.

**3. Your Curriculum Vitae (CV) or Resume****4. English Proficiency Scores (if English is NOT your native language)**

- a. TOEFL, iBT (or IELTS) Scores (sent to us directly from the testing agency).
- The institution code for the University of Kansas is 6871.**
  - The program/department code is 1603.**
  - The department code is 69 for iBT.**
- iv. **NOTES:**
- For REGULAR admission: All section scores must be at least 20 on the internet-based and computer based TOEFL.
  - Admission will NOT be granted if you do not meet the above standard of English Proficiency. Due to a change in policy, we are no longer able to issue an I-20 for these instances.
  - For more information regarding English Proficiency Requirements (<http://graduate.ku.edu/english-proficiency-requirements/>), see the graduate studies website.

**5. Proof of Financial Support (International Applicants ONLY)**

- a. Obtain the proper Financial Documentation. Scan the document and save it as a pdf file. **KEEP THE PAPER COPIES.** Be prepared to send the paper copies to the program office at the address below if requested! Although the financial statement is not required for making admission decisions, the U.S. Department of State mandates that evidence of financial resources, such as an official bank statement, be provided in order to issue an I-20 and student visa. It should have the name of the student on the account, not the parent's name or any other name. See

the International Support Services (<https://iss.ku.edu/proof-finances/>) website for more information.

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**Contact Information**

Please contact the KU Bioengineering Program at [bioe@ku.edu](mailto:bioe@ku.edu) or (785) 864-5258 to schedule a visit or with questions about the bioengineering application process.

**Master of Engineering in Bioengineering Degree Requirements**

Code	Title	Hours
<b>Bioengineering Core</b>		
BIOE 800	Bioengineering Colloquium (Complete 2 credits total of BIOE colloquium)	2
BIOE 801	Responsible Conduct of Research in Engineering	1
C&PE 756	Introduction to Biomedical Engineering	3
<b>Bioengineering Concentration Depth</b>		
The BIOE concentration is determined with the faculty advisor and based on the student's interest. Students complete a Plan of Study outlining coursework that meets their concentration requirements. Each M.E. concentration has minimum hours required.		9
<b>Bioengineering Concentration Breadth</b>		
The remaining 15 credits of Bioengineering Breadth are determined with the faculty advisor and selected from the Bioengineering Breadth Courses Master List below. Required courses in a student's concentration may not fulfill additional breadth requirements.		15
Each concentration requires the following, at a minimum:		
Math, Statistics, or Numerical Methods: 1 course minimum		
Advanced Sciences: 1 course minimum		
Advanced Engineering: 1 course minimum		
<b>Total Hours</b>		<b>30</b>

**Bioimaging Concentration**

Code	Title	Hours
<b>Concentration Depth</b>		
Select 9 credits from the following:		9
BIOL 943	Multivariate Data Analysis	
C&PE 778	Applied Optimization Methods	
EECS 639	Introduction to Scientific Computing	
EECS 644	Introduction to Digital Signal Processing	
EECS 721	Antennas	
EECS 739	Parallel Scientific Computing	
EECS 740	Digital Image Processing	
EECS 744	Digital Signal Processing Implementation in Programmable Logic Devices	
EECS 781	Numerical Analysis I	
EECS 782	Numerical Analysis II	
EECS 868	Mathematical Optimization with Applications	
EECS 869	Error Control Coding	
ME 752	Acoustics	

ME 754	Medical Imaging	
<b>Total Hours</b>		<b>9</b>

### Biomaterials & Tissue Engineering Concentration

Code	Title	Hours
<b>Concentration Depth</b>		
Select 9 credits from the following:		9
Advanced Engineering (2 courses minimum)		
C&PE 716	Drug Delivery	
C&PE 751	Basic Rheology	
C&PE 752	Tissue Engineering	
C&PE 757	Polymer Science and Technology	
ME 765	Biomaterials	
ME 767	Molecular Biomimetics	
ME 854	Continuum Mechanics for Soft Tissues	
ME 790	Special Topics: _____ (Biomedical Microdevices)	
ME 990	Special Topics: _____ (Advanced Biomaterials)	
Advanced Biological Sciences (1 course maximum)		
MICR 808	Immunology or BIOL 503 Immunology	
ANAT 845	Graduate Histology or BIOL 560 Histology	
BIOL 546	Mammalian Physiology	
BIOL 612	Fundamentals of Microbiology	
BIOL 752	Cell Biology	
MICR 810	Fundamentals of Immunology	
MICR 825	Virology or BIOL 512 General Virology	
PHCH 860	Principles and Practice of Chemical Biology	

<b>Total Hours</b>		<b>9</b>
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### Biomechanics & Neural Engineering Concentration

Code	Title	Hours
<b>Concentration Depth</b>		
Select 9 credits from the following:		9
Mechanics (2 courses minimum)		
C&PE 751	Basic Rheology	
ME 633	Basic Biomechanics	
ME 722	Modeling Dynamics of Mechanical Systems	
ME 750	Biomechanics of Human Motion	
ME 751	Experimental Methods in Biomechanics	
ME 753	Bone Biomechanics	
ME 755	Computer Simulation in Biomechanics	
ME 757	Biomechanical Systems	
ME 760	Biomedical Product Development	
ME 765	Biomaterials	
ME 854	Continuum Mechanics for Soft Tissues	
Physiology/Computing/Signal Processing (1 course maximum)		
EECS 639	Introduction to Scientific Computing	
EECS 644	Introduction to Digital Signal Processing	

EECS 739	Parallel Scientific Computing	
EECS 744	Digital Signal Processing Implementation in Programmable Logic Devices	
EECS 861	Random Signals and Noise	
EECS 868	Mathematical Optimization with Applications	
HSES 810	Advanced Exercise Science Seminar	

<b>Total Hours</b>		<b>9</b>
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### Biomedical Product Design & Development Concentration

Code	Title	Hours
<b>Concentration Depth</b>		
ME 760	Biomedical Product Development	3
ME 765	Biomaterials	3
<b>Bioengineering Design</b>		
Select one course from the following:		3
ADS 560	Topics in Design: _____ (Approved Biomedical Project)	
ADS 710	Advanced Human Factors in Interaction Design	
AE 709	Structural Composites	
C&PE 716	Drug Delivery	
C&PE 757	Polymer Science and Technology	
C&PE 752	Tissue Engineering	
CE 710	Structural Mechanics	
EECS 644	Introduction to Digital Signal Processing	
EECS 721	Antennas	
EECS 728	Fiber-optic Measurement and Sensors	
EECS 739	Parallel Scientific Computing	
ME 696	Design for Manufacturability	
ME 708	Mechatronics	
ME 767	Molecular Biomimetics	
ME 790	Special Topics: _____ (Biomedical Microdevices)	
ME 790	Special Topics: _____ (Bioadditive Manufacturing)	

<b>Total Hours</b>		<b>9</b>
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### Biomolecular Engineering Concentration

Code	Title	Hours
<b>Concentration Depth</b>		
Select 6 credits from the following:		6
Advanced Engineering/Pharmaceuticals (1 course minimum)		
C&PE 701	Methods of Chemical and Petroleum Calculations	
C&PE 716	Drug Delivery	
C&PE 731	Convective Heat and Momentum Transfer	
C&PE 732	Advanced Transport Phenomena II	
C&PE 751	Basic Rheology	
C&PE 757	Polymer Science and Technology	
ME 767	Molecular Biomimetics	
ME 790	Special Topics: _____ (Biomedical Microdevices)	
PHCH 730/731	Biopharmaceutics&Pharmacokinetics	
PHCH 862/863	Physical Chemistry of Solutions, Solids and Surfaces	

PHCH 870	Advanced Pharmaceutical Biotechnology	
Advanced Biological Sciences		
ANAT 845/ BIOL 560	Graduate Histology	
BIOL 752	Cell Biology	
C&PE/PHCH 725	Cellular and Molecular Pharmaceutics	
CHEM 760	Introduction to Chemistry in Biology	
MDCM 701	Advanced Medicinal Biochemistry I	
MICR 808	Immunology	
	or BIOL 503 Immunology	
MICR 810	Fundamentals of Immunology	
MICR 825	Virology	
	or BIOL 512 General Virology	
<b>Additional Bioengineering Breadth Course</b>		
Select one additional course from the Breadth Courses Master List.		3
<b>Total Hours</b>		<b>9</b>

## Computational Bioengineering Concentration

Code	Title	Hours
<b>Concentration Depth</b>		
Select 9 credits from the following:		9
Fundamentals Course (1 course minimum)		
BINF 701	Computational Biology I (Cannot count with EECS 730)	
EECS 639	Introduction to Scientific Computing	
EECS 730	Introduction to Bioinformatics	
Elective Courses (1 course minimum)		
AE 746	Computational Fluid Dynamics	
BINF 702	Computational Biology II	
BIOL 952	Introduction to Molecular Modeling	
BIOS 730	Applied Linear Regression	
BIOS 799	Introduction to Statistical Genomics	
BIOS/STAT 823	Introduction to Programming and Applied Statistics in R	
CE 861	Finite Element Methods for Solid Mechanics	
EECS 630	Advanced Data Structures and Algorithms	
EECS 738	Machine Learning	
EECS 739	Parallel Scientific Computing	
EECS 740	Digital Image Processing	
EECS 868	Mathematical Optimization with Applications	
	or C&PE 778 Applied Optimization Methods	
ME 751	Experimental Methods in Biomechanics	
ME 755	Computer Simulation in Biomechanics	
ME 854	Continuum Mechanics for Soft Tissues	
ME 861	Theory of the Finite Element Method	
PRVM 868	Biomedical Informatics Driven Clinical Research	
<b>Total Hours</b>		<b>9</b>

## Bioengineering Breadth Courses Master List

Code	Title	Hours
<b>Math, Statistics &amp; Numerical Methods</b>		
<b>Math</b>		
MATH 590	Linear Algebra	3
MATH 596	Special Topics: _____ (Math in Biomedical Research)	3
MATH 611	Time Series Analysis	3
MATH 646	Complex Variable and Applications	3
MATH 647	Applied Partial Differential Equations	3
MATH 648	Calculus of Variations and Integral Equations	3
MATH 724	Combinatorial Mathematics	3
MATH 725	Graph Theory	3
MATH 750	Stochastic Adaptive Control	3
MATH 765	Mathematical Analysis I	3
MATH 766	Mathematical Analysis II	3
MATH 790	Linear Algebra II	3
MATH 791	Modern Algebra	3
MATH 865	Stochastic Processes I	3
PHSX 718	Mathematical Methods in Physical Sciences	3
PHSX 721	Chaotic Dynamics	3
<b>Statistics</b>		
BIOL 841	Biometry I	5
BIOS 714	Fundamentals of Biostatistics I	3
BIOS 717	Fundamentals of Biostatistics II	3
BIOS 720	Analysis of Variance	3
BIOS 730	Applied Linear Regression	3
BIOS 740	Applied Multivariate Methods	3
BIOS 810	Clinical Trials	3
BIOS 835	Categorical Data Analysis	3
BIOS 840	Linear Regression	3
BIOS 871	Mathematical Statistics	3
BIOS 830	Experimental Design	3
BIOS 823	Introduction to Programming and Applied Statistics in R	3
MATH 605	Applied Regression Analysis	3
MATH 627	Probability	3
MATH 628	Mathematical Theory of Statistics	3
MATH 727	Probability Theory	3
MATH 728	Statistical Theory	3
STAT 823	Introduction to Programming and Applied Statistics in R	3
DATA 824	Data Visualization and Acquisition	3
<b>Numerical Methods</b>		
AE 725	Numerical Optimization and Structural Design	3
AE 746	Computational Fluid Dynamics	3
BINF 701	Computational Biology I	5
BINF 702	Computational Biology II	5
CE 861	Finite Element Methods for Solid Mechanics	3
C&PE 701	Methods of Chemical and Petroleum Calculations	3
C&PE 778	Applied Optimization Methods	3

EECS 639	Introduction to Scientific Computing	3	C&PE 752	Tissue Engineering	3
EECS 739	Parallel Scientific Computing	3	C&PE 778	Applied Optimization Methods	3
EECS 781	Numerical Analysis I	3	EECS 644	Introduction to Digital Signal Processing	3
EECS 782	Numerical Analysis II	3	EECS 730	Introduction to Bioinformatics	3
EECS 868	Mathematical Optimization with Applications	3	EECS 739	Parallel Scientific Computing	3
MATH 591	Applied Numerical Linear Algebra	3	EECS 836	Machine Learning	3
MATH 882	Topics in Advanced Numerical Differential Equations: _____	3	EECS 861	Random Signals and Noise	3
ME 702	Mechanical Engineering Analysis	3	ME 633	Basic Biomechanics	3
ME 861	Theory of the Finite Element Method	3	ME 708	Mechatronics	3
ME 862	Finite Element Method for Transient Analysis	3	ME 722	Modeling Dynamics of Mechanical Systems	3
<b>Biological Sciences</b>			ME 750	Biomechanics of Human Motion	3
ANAT 832	Electron Microscopy Techniques	3	ME 751	Experimental Methods in Biomechanics	3
ANAT 845	Graduate Histology	3	ME 753	Bone Biomechanics	3
BIOL 503	Immunology	3	ME 755	Computer Simulation in Biomechanics	3
BIOL 546	Mammalian Physiology	3	ME 757	Biomechanical Systems	3
BIOL 560	Histology	3	ME 760	Biomedical Product Development	3
BIOL 600	Introductory Biochemistry, Lectures	3	ME 765	Biomaterials	3
BIOL 636	Biochemistry I	4	ME 767	Molecular Biomimetics	3
BIOL 637	Introductory Biochemistry Laboratory	2	ME 790	Special Topics: _____	3
BIOL 638	Biochemistry II	4	ME 854	Continuum Mechanics for Soft Tissues	3
BIOL 639	Advanced Biochemistry Laboratory	3	ME 860	Advanced Mechanical Engineering Problems	3
BIOL 650	Advanced Neurobiology	3	ME 890	Special Topics: _____	3
BIOL 688	The Molecular Biology of Cancer	3	ME 990	Special Topics: _____	3
BIOL 750	Advanced Biochemistry	3	<b>Advanced Chemistry</b>		
BIOL 752	Cell Biology	3	CHEM 510	Biological Physical Chemistry	3
BIOL 755	Mechanisms of Development	3	CHEM 635	Instrumental Methods of Analysis	2
BIOL 757	Carcinogenesis and Cancer Biology	3	CHEM 718	Mathematical Methods in Physical Sciences	3
BIOL 772	Gene Expression	4	CHEM 720	Fundamentals and Methods of Analytical Chemistry	3
BIOL 841	Biometry I	5	CHEM 740	Principles of Organic Reactions	3
BIOL 918	Modern Biochemical and Biophysical Methods	4	CHEM 742	Spectroscopic Identification of Organic Compounds	3
BIOL 943	Multivariate Data Analysis	3	CHEM 750	Introduction to Quantum Mechanics	3
BIOL 952	Introduction to Molecular Modeling	3	CHEM 760	Introduction to Chemistry in Biology	3
MICR 808	Immunology	3	CHEM 820	Analytical Separations	3
MICR 809	Tumor Immunology	3	CHEM 824	Spectrochemical Methods of Analysis	3
MICR 810	Fundamentals of Immunology	2	CHEM 828	Bioanalysis	3
MICR 820	Bacterial Genetics and Pathogenesis	3	CHEM 840	Physical Organic Chemistry	3
MICR 825	Virology	3	CHEM 852	Statistical Thermodynamics	3
<b>Advanced Engineering</b>			CHEM 856	Molecular Spectroscopy	3
All 700-level or above ENGR courses may fulfill this requirement.			C&PE 725	Cellular and Molecular Pharmaceutics	3
Suggested courses include:			MDCM 701	Advanced Medicinal Biochemistry I	3
ADS 560	Topics in Design: _____ (Must be approved Biomedical Project)	3	MDCM 790	Chemistry of Drug Action II	3
ADS 710	Advanced Human Factors in Interaction Design	3	PHCH 718	Physical-Chemical Principles of Solution Dosage Forms	3
AE 709	Structural Composites	3	PHCH 725	Cellular and Molecular Pharmaceutics	3
BIOE 860	Advanced Bioengineering Problems	3	PHCH 730	Biopharmaceutics&Pharmacokinetics	3
BIOE 890	Special Topics: _____	3	PHCH 860	Principles and Practice of Chemical Biology	3
CE 710	Structural Mechanics	3	PHCH 862	Physical Chemistry of Solutions, Solids and Surfaces	3
CE 767	Introduction to Fracture Mechanics	3	PHCH 870	Advanced Pharmaceutical Biotechnology	4
C&PE 715	Topics in Chemical and Petroleum Engineering: _____	3	PHCH 920	Chemical Kinetics	2
C&PE 732	Advanced Transport Phenomena II	3	PHCH 972	Mechanisms of Drug Deterioration and Stabilization	3
C&PE 751	Basic Rheology	3			

PHCH 974	Advanced Special Topics in Pharmaceutical Chemistry (FTIR)	3
PHCH 974	Advanced Special Topics in Pharmaceutical Chemistry (Vaccines)	3
<b>Graduate Writing/Elective Courses</b>		
ENTR 701	Building Entrepreneurial Competency	3
ENTR 702	Entrepreneurial Finance	3
ENTR 703	Entrepreneurial Marketing	3
ENTR 704	Launching Your Own Business	3
ENTR 850	Advanced Entrepreneurship	3
ME 790	Special Topics: _____	3
PHCH 705	Writing and Communicating Science for Graduate Students	3
PRVM 868	Biomedical Informatics Driven Clinical Research	3
<b>Education/Pedagogy/Teaching Courses</b>		
EPSY 896	Seminar in: _____ (Research & Practice College Teaching)	3
CE 895	Advanced Special Topics: _____ (Engineering Education I)	3
CE 895	Advanced Special Topics: _____ (Engineering Education II)	3
JMC 806	College Teaching	3
<b>Life Sciences</b>		
GSMC 840	CLINICAL OBSERVATION IN HEALTH CARE FOR BIOENGINEERS	3
HSES 805	Laboratory Experiments and Analysis--Exercise Physiology	3
HSES 810	Advanced Exercise Science Seminar	3
HSES 825	Skeletal Muscle Physiology	3
HSES 872	Exercise and the Cardiovascular System	3
HSES 910	Biochemistry of Exercise	3
PHSL 835	Integrative Physiology of Exercise	3
PHSL 838	Advanced Topics	1-3
PHSL 844	Neurophysiology	3
PHSL 846	Advanced Neuroscience	4
PHSL 848	Molecular Mechanisms of Neurological Disorders	3
REHS 862	Cellular and Molecular Basis of Rehabilitation	2
REHS 887	Neurorehabilitation	3
REHS 970	Instrumented Analysis of Human Biomechanical Function	3

In addition to the rules and regulations set by KU Graduate Studies and the School of Engineering, the student must meet the program's M.E. requirements. Requirements include a Plan of Study and successful completion of graduate coursework. The KU Bioengineering Graduate Program Handbook is available here (<https://bioengr.ku.edu/graduate-program-handbook/>).

## Plan of Study

The Master's aspirant works with a faculty advisor familiar with their selected concentration to develop a formal Plan of Study (<https://engrgradplan.ku.edu/>). The different concentrations in Bioengineering are centered in major research and educational themes. Each concentration has a director and affiliated faculty. The student selects from among concentration courses to construct a comprehensive educational program that takes (a) advantage of the student's background, (b) builds and

demonstrates academic skills, and (c) capitalizes on the strengths of the affiliated faculty.

Students are expected to complete a Plan of Study before beginning the second semester of graduate study. To complete a Plan of Study, a student should have identified a concentration and faculty advisor. Students should work with the faculty advisor to identify an appropriate list of courses that fulfill degree requirements and support the student's educational and research objectives. A Plan of Study can be completed online. (<https://engrgradplan.ku.edu/>) The faculty advisor and Graduate Studies Director must approve the Plan of Study. The Plan of Study can be modified later, if needed, with approval of the advisor and Graduate Studies Director.

## Curriculum Notes

The Master of Engineering requires a minimum of 30 credit hours beyond the B.S. to meet degree requirements. Because of the varied nature of the concentrations, there are some minor variations in core, depth and breadth requirements between the concentrations.

- Core courses (6 hours)
- Students must complete the depth, breadth, and elective courses required in the chosen concentration. (24 hours)

**Note:** No more than 9 credits may be taken at the 500-600 level for this degree.

**Note:** No course graded CR or NC (credit/no-credit) can count toward the satisfaction of the degree requirements.

## Sample Degree Plan

Below is a sample completion plan for students in the M.E. program. The sample semester enrollment below is not reflective of all possible paths to the M.E. in Bioengineering degree.

Year 1		
Fall	Hours Spring	Hours
BIOE 800	0.5 BIOE 800	0.5
BIOE 801	1 BIOE Depth Area Course #2	3
C&PE 756	3 BIOE Depth Area Course #3 or Additional BIOE Breadth Area Course	3
BIOE Depth Area Course #1	3 BIOE Breadth Area Course #1	3
<b>7.5</b>		<b>9.5</b>

Year 2		
Fall	Hours Spring	Hours
BIOE 800	0.5 BIOE 800	0.5
BIOE Breadth Area Course #2	3 BIOE Breadth Area Course #4	3
BIOE Breadth Area Course #3	3 BIOE Breadth Area Course #5	3
<b>6.5</b>		<b>6.5</b>

### Total Hours 30

At the completion of this program, students will be able to:

- Assess critical needs in the bioengineering field and formulate a plan to address a critical need.

- Read, comprehend, process, and communicate scientific literature in the bioengineering field.
- Demonstrate a depth of knowledge of fundamental topics in the student's track of study (biomechanics and neural engineering, biomaterials and tissue engineering, bioimaging, bioinformatics, biomolecular, or biomedical product design and development). Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- Recognize ethical and professional responsibilities make decisions or take actions that are appropriate.