Bioengineering

The Phil and Penny Knight Campus for Accelerating Scientific Impact is a $1 billion initiative to fast-track scientific discoveries into innovations that improve the quality of life for people in Oregon, the nation, and the world. The campus creates the intellectual infrastructure to establish Oregon as a center for both research and development, making Oregon a place where companies can start-up, grow, and stay.

Minor in Bioengineering

Code	Title	Credits
Core Courses		
BIOE 251 & BIOE 252 & BIOE 253	Fundamentals of Bioengineering I and Fundamentals of Bioengineering II and Fundamentals of Bioengineering III	12

BIOE minor interdisciplinary electives

Up to eight credits from this list may be applied towards the upper-division bioengineering minor requirement. Courses used to complete a student's major core requirements may not be applied towards the bioengineering minor elective requirement.

Bioengineering resides at the interface of engineering and the natural sciences, and a thorough knowledge of both is essential for innovation and problem solving in the discipline. The courses below provide an opportunity for students to strengthen their knowledge within their primary discipline in several areas particularly relevant to bioengineering, including: genetics, microbiology, physiology, chemistry, neuroscience, physics and electronics.

Code	Title	Credits
Biology		
BI 320	Molecular Genetics	4
BI 322	Cell Biology	4
BI 326	Immunology and Infectious Disease	4
BI 328	Developmental Biology	4
BI 330	Microbiology	3
BI 331	Microbiology Laboratory	3
BI 353	Sensory Physiology	4
BI 358	Investigations in Medical Physiology	4
BI 360	Neurobiology	4
BI 423	Human Molecular Genetics	4
BI 424	Advanced Molecular Genetics	4
BI 426	Genetics of Cancer	4
BI 427	Molecular Genetics of Human Disease	4
BI 428	Developmental Genetics	4
BI 461	Systems Neuroscience	4
BI 466	Developmental Neurobiology	4
BI 485	Techniques in Computational Neuroscience	4
Chemistry and Biochemistry		
CH 360	Physiological Biochemistry	4
CH 461	Biochemistry	4
CH 462	Biochemistry	4
CH 463	Biochemistry	4
CH 464	RNA Biochemistry	4
CH 465	Physical Biochemistry	4
CH 466	Structural Biochemistry	4
CH 467	Biochemistry Laboratory	4
Physics		
PHYS 351	Foundations of Physics II	4
PHYS 352	Foundations of Physics II	4
PHYS 353	Foundations of Physics II	4
PHYS 362		4
PHYS 411	Mechanics, Electricity, and Magnetism	4
PHYS 412	Mechanics, Electricity, and Magnetism	4
PHYS 413	Mechanics, Electricity, and Magnetism	4
PHYS 421M	Partial Differential Equations: Fourier Analysis I	4
PHYS 431	Analog Electronics	4
PHYS 432	Digital Electronics	4
PHYS 481	Design of Experiments	4
Human Physiology		
HPHY 321	Human Anatomy I	5
HPHY 322	Human Physiology I	5
HPHY 323	Human Anatomy II	5
HPHY 324	Human Physiology II	5
HPHY 325	Human Anatomy and Physiology III	5
HPHY 362	Tissue Injury and Repair	4
HPHY 381	Biomechanics	4
HPHY 432	Neural Development	4
HPHY 436	Clinical Neuroscience	4

At least 12 upper-division credits must be completed in residence.

The joint OSU-UO PhD program combines an immersive curriculum, impactful research, and targeted professional development to advance science, society, and your career. Joint program students have full access to resources at both UO and OSU, including research facilities and collaborations, coursework, training workshops, and student groups.

Students may choose an advisor or co-advisors from the bioengineering faculty at either UO or OSU.

Doctor of Philosophy in Bioengineering

Code	Title	Credits
Core Course Requirements		
BIOE 611 (UO) or BIOE 511 (OSU)		3
BIOE 612 (UO) or BIOE 512 (OSU)		4
BIOE 613 (UO) or BIOE 513 (OSU)		3
BIOE 614 (UO)		3
BIOE 507 (OSU)		1
BIOE 617 (UO)		1
BIOE 618 (UO) or CBEE 507 (OSU)		1
Elective Course Requirements		15

Courses

BIOE 196. Field Studies: [Topic]. 1-12 Credits.
Repeatable.

BIOE 198. Laboratory Projects: [Topic]. 1-12 Credits.
Repeatable.

BIOE 199. Special Studies: [Topic]. 1-5 Credits.
Repeatable.

BIOE 251. Fundamentals of Bioengineering I. 4 Credits.
This is the first in a three-course series that introduces students to foundational principles in bioengineering. Topics include units, dimensional analysis, energy balances, conservation of mass, energy, and momentum, and introductory biomechanics.
Prereq: BIOE 111, BIOE 112, BIOE 113, MATH 251; Co-req: PHYS 251.

BIOE 252. Fundamentals of Bioengineering II. 4 Credits.
This is the second in a three-course series that introduces students to foundational principles in bioengineering. Topics include linear circuits, Fourier transforms, fluid pressure, the Bernoulli Equation, conservation principles in fluid control volumes, and laminar fluid flow.
Prereq: BIOE 251.

BIOE 253. Fundamentals of Bioengineering III. 4 Credits.
This is the third in a three-course sequence that introduces students to foundational principles in bioengineering. In this course, students will apply the engineering concepts acquired in the first two Fundamentals of Bioengineering courses to solve complex, real-world bioengineering problems.Sequence with BIOE 251, BIOE 252.
Prereq: BIOE 252.

BIOE 299. Special Studies: [Topic]. 1-5 Credits.
Repeatable.

BIOE 399. Special Studies: [Topic]. 1-5 Credits.
Repeatable.

BIOE 401. Research: [Topic]. 1-12 Credits.
Repeatable.

BIOE 402. Supervised College Teaching. 1-5 Credits.
Repeatable.

BIOE 403. Thesis. 1-12 Credits.
Repeatable.

BIOE 404. Internship: [Topic]. 1-12 Credits.
Repeatable.

BIOE 405. Reading and Conference: [Topic]. 1-5 Credits.
Repeatable.

BIOE 406. Field Studies: [Topic]. 1-12 Credits.
Repeatable.

BIOE 407. Seminar: [Topic]. 1-5 Credits.
Repeatable.

BIOE 408. Laboratory Projects: [Topic]. 1-12 Credits.
Repeatable.

BIOE 409. Terminal Project. 1-12 Credits.
Repeatable.

BIOE 410. Experimental Course: [Topic]. 1-5 Credits.
Repeatable.

BIOE 510. Experimental Course: [Topic]. 1-5 Credits.
Repeatable.

BIOE 601. Research: (Topic). 1-16 Credits.
Repeatable.

BIOE 603. Dissertation. 1-16 Credits.
Repeatable.

BIOE 610. Experimental Course: [Topic]. 1-5 Credits.
Repeatable.

BIOE 610L. Experimental Course: [Topic]. 4 Credits.
Repeatable.