

JOINT BIOMEDICAL ENGINEERING UNDERGRADUATE PROGRAM: SPECIALTY ELECTIVES

PHARMACOENGINEERING

BME 490¹ S Data Science + Machine Learning in Medicine
BMME 511 S Genetic Engineering
BMME 523 F Biomolecular Engineering
BMME 524 S Biomolecular Sensing Technologies
BMME 527 S Targeted Photomedicine
BME 570 S Immunoengineering
BMME 585 F Biotechnology
BME 590 S Microphysiological Systems for Drug Development
BMME 590 F Network Pharmacology
BMME 590 S Drug and Cell Delivery

REGENERATIVE MEDICINE

BME 429¹ F Cellular Engineering
BMME 435² F Biological Physics
BME 448¹ F Functional Tissue Engineering
BME 483^{1,2} Tis Engr + BIT/BEC 3**/4** Biotech F
BME 484¹ S Fund. of Tissue Engineering
BME 490¹ S Data Science + Machine Learning in Medicine
BMME 511 S Genetic Engineering
BMME 521 S Intro to Synthetic Biology
BMME 572 S Analysis of Tissue Engr. Tech.
TE 463 F Polymer Engineering
<i>Fluids:</i> F/S/U CE 282 Hydraulics or MAE 308 Fluid Mechanics or BMME 555 F Biofluid Mechanics
<i>Thermo:</i> F/S/U MAE 201 Thermal-Fluid Sciences or MSE 301 Intro to Thermo or BMME 441² F Thermal Physics

REHABILITATION ENG

BME 418^{1,2} F Wearable Biosensors
BME 425¹ S Bioelectricity
BME 438¹ S Bone Mechanobiology
BME 444¹ F Orthopedic Biomechanics
BME 456¹ F Rehabilitation Robotics
BME 490¹ S Data Science + Machine Learning in Medicine
BME 490¹ S Neural Engineering
BMME 543 F Biomechanics of Movement
BME 590 S Haptic Robotics and Human Motor Control
BMME 590 S Applied Instrumentation for Movement Analysis

BIO SIGNALS AND IMAGING

BME 412¹ F Biomedical Signal Processing
BME 418^{1,2} F Wearable Biosensors
BME 425¹ S Bioelectricity
BMME 461 F Intro to Medical Imaging
BME 463¹ even years S Biomedical Optics and Lasers
BME 464¹ odd years S Microscopy
BME 490¹ S Data Science + Machine Learning in Medicine
BMME 568 F Super Resolution Imaging
BMME 575 F Machine Learning
BMME 590 S Magnetic Resonance Image Acquisition and Processing
BMME 590 S Ultrasound Imaging and Therapy
ECE 455 F Industrial Robotic Systems
ECE 456 F Mechatronics
ECE 505 F Neural Interface Engineering
MA 501 F/S/U Adv Math. for Eng and Sci I or MATH 528 F/S Math. Methods for Physical Sci & Eng

MEDICAL MICRODEVICES

BME 412¹ F Biomedical Signal Processing
BME 418^{1,2} F Wearable Biosensors
BME 490¹ S Data Science + Machine Learning in Medicine
BME 522² F Medical Instrumentation
BMME 575 F Machine Learning
BMME 590 S Brain Machine Interfaces
BMME 590 S Electroceuticals and Bioelectronic Medicine
E 304 F/S Intro to Nano Science and Tech.
ECE 436 F/S Digital Control Systems
ECE 505 F Neural Interface Engineering
<i>Fluids:</i> F/S/U CE 282 Hydraulics or MAE 308 Fluid Mechanics or BMME 555 F Biofluid Mechanics
<i>Thermo:</i> F/S/U MAE 201 Thermal-Fluid Sciences or MSE 301 Intro to Thermo or BMME 441² F Thermal Physics

BME students complete FOUR Specialty Electives from 1 or 2 Specialization areas.

Offered at NCSU F = fall
S = spring
Offered at UNC U = summer

BME 495 **BMME 495**
Undergraduate Research in BME
Specialty Elective in any of the five Specialization Areas
application required

¹ Also offered at graduate level (5** at NC State). Additional restrictions apply.
² Crosslisted with another department