Bioinstrumentation Track Form
Fall 2017 Catalog: 15 Hours

SCOPE: The Bioinstrumentation Track is designed to equip BMEN students for the medical device and imaging instrumentation field, which covers clinical and lab instrumentation from the nanoscale to the whole body. This track equips students with focus in either imaging or instrumentation, and provides guidance to select coursework in several application areas for each of the focus topics. Students will gain an understanding of medical device design, underlying physics and instrumentation for measuring physiological parameters and forming medical images, signal/image processing and control systems.

Schedule an appointment with a track coordinator for course selection discussion and career advising. Track coordinators can be selected from Drs. Applegate, Coté, Jafari, Jo, K. Maitland, McDougall, Yakovlev, and Yeh.

Name: __________________________   UIN: _________________ Phone #: __________________
TAMU Email: __________________________________________   Graduation Term: ___________________________

Required Track Courses (9 hours)
☐ BMEN 322 Biosignal Analysis (3)
☐ BMEN 401 Principles and Analysis of Biological Control Systems (3)
☐ BMEN 428 Microcontrollers & Communication in Medicine (3)

Track Courses (Select 3-6 hours)
☐ BMEN 2/491* Research w/ Bioinstrumentation Focus (subject to the track coordinator approval) (1-3)
☐ BMEN 402 Biomedical Optics Laboratory (3)
☐ BMEN 422 Biomedical Electromagnetics (3)
☐ BMEN 425 Biophotonics I (3)
☐ BMEN 427 or ECEN 463 Magnetic Resonance Engineering Lab (3)
☐ BMEN 448 Healthcare Technology in the Developing World (Study Abroad) (3)
☐ ECEN 411 Introduction to Magnetic Resonance Imaging and Magnetic Resonance Spectroscopy (3)
☐ ECEN 412 Ultrasound Imaging (3)
☐ ECEN 414 Biosensors (3)
☐ ECEN 447 Digital Image Processing (3)

Other Courses (Select 0-3 hours)
☐ BMEN 4XX BMEN Elective (subject to track coordinator approval) (3) _____________
☐ BMEN 404 FDA Good Laboratory and Clinical Practices (3)
☐ or BMEN 406 Path to Market (3)
☐ or BMEN 469 Entrepreneurial Issues in Biomedical Engineering (3)
☐ CHEM 228 Organic Chemistry II (3)
☐ ENGR 181 ESP Seminar I (1)
☐ ENGR 281 ESP Seminar II (1)
☐ ENGR 381 ESP Seminar III (1)
☐ ENGR 385 Co-Op (one semester credit hour per term up to three credit hours)
☐ VTPP 401 History of Medicine in Europe (3)
☐ VTPB 410 Cell Mechanisms of Disease (3)

If requesting a course not listed above, list here:

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The approval of a deviation is made by the Director of Undergrad Programs who will take into consideration the recommendation of the advisor and a track coordinator. If applicable, why are you requesting a deviation from the approved list of courses? 

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__________________________________________________________________________________________________
Career Advising

What are your current plans after graduation?  
Industry  Medical School  Graduate School  Military  Other

Please elaborate: _____________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

Have you participated in any of the following?  
Undergraduate Research  Study Abroad  Volunteering
Internship  Co-op  Student Organizations (member or leader?)
Shadowing  Other __________________________

The following items will help you be successful in obtaining your goals upon graduation:

☐ Craft a profile on Texas A&M Career Center’s website HireAggies.com
☐ Attend the SEC Career Fairs
☐ Attend BMES weekly meetings
☐ Create a resume and have it reviewed by the Career Center staff
☐ Draft a cover letter and have it reviewed by the Writing Center staff
☐ Build a LinkedIn account
☐ If continuing education, study for and take the appropriate entry exams
☐ If attending medical school, meet with an advisor in the Texas A&M Office of Professional School Advising

Any item not checked above should be completed prior to the start of your senior year.

Comments from Track Coordinator (required): _____________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

Approved and discussed by:

_____________________________________________  ________________________________
Student signature and date  Director of Undergraduate Programs signature and date
(if deviating)

_____________________________________________
Track Coordinator printed name

Once this form is complete, call 979-845-5532 to schedule an appointment with an Academic Advisor.

ADVISING OFFICE USE ONLY: Date received _________  Degree planner _________  Adjustments _________
Entered into Database _________  Signature and date ____________________________________________

Updated October 2016
Biomaterials Track Form
Fall 2017 Catalog: 15 Hours

SCOPE: The Biomaterials and Tissue Engineering Track is designed to equip BMEN students for the rapidly developing field at the multidisciplinary interface of engineering, material science, biology, chemistry, and medicine. This track will provide students with a broad educational foundation with an emphasis on the principles and applications of biomaterials, particularly tissue engineering. Students will gain an understanding of biomaterial preparation and characterization, structure/property relationships, as well as cellular, blood, and tissue interactions with biomaterials. Selection and design of biomaterials for tissue engineering, artificial organs, drug delivery, and medical devices is presented.

Schedule an appointment with a track coordinator for course selection discussion and career advising. Track coordinators can be selected from Drs. Alge, Cosgriff-Hernandez, Gaharwar, Grunlan, D. Maitland, and McShane.

Name: __________________________________________   UIN: _______________   Phone #: __________________
TAMU Email: ____________________________________________   Graduation Term: _______________________

Required Track Courses (Select 6-15 hours)

□ BMEN 480 Biomedical Engineering of Tissues (3)  □ BMEN 486 Biomedical Nanotechnology (3)
□ BMEN 482 Polymeric Biomaterials (3)           □ BMEN 487 Drug Delivery (3)
□ BMEN 483 Polymeric Biomaterial Synthesis (3)

Track Courses (Select 0-9 hours)

□ BMEN 2/491* Research w/ Biomaterials Focus (subject to track coordinator approval) (1-3)  □ MEEN 458 Processing & Characterization of Polymers (3)
□ CHEM 466 Polymer Chemistry (3)  □ MSEN 410 Materials Processing (3)
□ CHEN 451 Introduction to Polymer Engineering (3)  □ MSEN 420 Polymer Science (3)

Other Courses (Select 0-3 hours)

□ BMEN 4XX BMEN Elective (subject to track coordinator approval) (3)  □ ENGR 181 ESP Seminar I (1)
□ BMEN 404 FDA Good Laboratory and Clinical Practices (3)  □ ENGR 281 ESP Seminar II (1)
□ or BMEN 406 Path to Market (3)  □ ENGR 381 ESP Seminar III (1)
□ or BMEN 469 Entrepreneurial Issues in Biomedical Engineering (3)  □ ENGR 385 Co-Op (one semester credit hour per term up to three credit hours)
□ CHEM 228 Organic Chemistry II (3)  □ VTPP 401 History of Medicine in Europe (3)
□ or BMEN 469 Entrepreneurial Issues in Biomedical Engineering (3)  □ VTPB 410 Cell Mechanisms of Disease (3)

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Career Advising

What are your current plans after graduation?  
Industry  
Medical School  
Graduate School  
Military  
Other

Please elaborate: ___________________________________________________________________________________
____________________________________________________________________________________________
________________________________________________________________________________________________

Have you participated in any of the following?  
Undergraduate Research  
Study Abroad  
Volunteering  
Internship  
Co-op  
Student Organizations (member or leader?)  
Shadowing  
Other _________________________

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Any item not checked above should be completed prior to the start of your senior year.

Comments from Track Coordinator (required): ___________________________________________________________
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________________________________________________________________________________________________

Approved and discussed by:

________________________________________  __________________________________________
Student signature and date  Director of Undergraduate Programs signature and date
(if deviating)

________________________________________  ________________________________
Track Coordinator printed name  Track Coordinator signature and date

Once this form is complete, call 979-845-5532 to schedule an appointment with an Academic Advisor.

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Updated October 2016
Biomechanics Track Form
Fall 2017 Catalog: 15 Hours

SCOPE: The Biomechanics Track is designed to educate BMEN students in the field of biomechanics that spans from small-scale applications in molecular and cellular mechanics, tissue-scale applications such as cardiac and orthopedic implants, and whole body-scale applications for studying injury prevention and developing assistive devices. This track will provide students the opportunity to gain greater depth of knowledge in their particular interests related to biomechanics. Through these courses, students will gain experience applying mechanics principles to biomedical systems to aid in understanding the function of the human body and various medical conditions, and in the development of medical devices.

Schedule an appointment with a track coordinator for course selection discussion and career advising. Track coordinators can be selected from Professors Biswas, Brewer, Criscione, Jain, and Madigan.

Name: ________________________________  UIN: __________________ Phone #: __________________

TAMU Email: ____________________________________________  Graduation Term: ____________________________

Track Courses (Select 12-15 hours)
☐ BMEN 2/491* Research w/ Biomechanics Focus (subject to the track coordinator approval) (1-3)
☐ BMEN 432 Molecular and Cellular Biomechanics (3)
☐ BMEN 457 Orthopedic Biomechanics (3)
☐ BMEN 458 Motion Biomechanics (3)
☐ BMEN 461 Cardiac Mechanics (3)
☐ BMEN 468 Advanced Biomechanics (3)
☐ BMEN 471 Numerical Methods for Biomedical Engineers (3)
☐ MEEN 363 Dynamics and Vibrations† (3)
☐ MEEN 368 Solid Mechanics of Mechanical Design† (3)
☐ MEEN 4xx Comparative Biomechanics (3)
☐ MEEN 440 Bioinspired Engineering Design (3)
☐ MEEN 441 Design of Mechanical Components and Systems† (3)
☐ MEEN 442 Computer Aided Engineering† (3)
☐ MEEN 444 Finite Element Analysis in Mechanical Engineering† (3)

† MEEN courses have prerequisites, but some BMEN courses may substitute. Discuss with scheduled instructor.

Other Courses (Select 0-3 hours)
☐ BMEN 4XX BMEN Elective (subject to track coordinator approval) (3) ____________
☐ BMEN 404 FDA Good Laboratory and Clinical Practices (3)
  ☐ or BMEN 406 Path to Market (3)
  ☐ or BMEN 469 Entrepreneurial Issues in Biomedical Engineering (3)
☐ CHEM 228 Organic Chemistry II (3)
☐ ENGR 181 ESP Seminar I (1)
☐ ENGR 281 ESP Seminar II (1)
☐ ENGR 381 ESP Seminar III (1)
☐ ENGR 385 Co-Op (one semester credit hour per term up to three credit hours)
☐ VTPP 401 History of Medicine in Europe (3)
☐ VTPB 410 Cell Mechanisms of Disease (3)

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Career Advising

What are your current plans after graduation?  Industry  Medical School  Graduate School  Military  Other

Please elaborate:
___________________________________________________________________________________
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Have you participated in any of the following?  Undergraduate Research  Study Abroad  Volunteering

Internship  Co-op  Student Organizations (member or leader?)

Shadowing  Other _________________________

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Comments from Track Coordinator (required):
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Approved and discussed by:

_________________________________________  __________________________________________
Student signature and date                      Director of Undergraduate Programs signature and date (if deviating)

_________________________________________  __________________________________________
Track Coordinator printed name                  Track Coordinator signature and date

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Updated October 2016
Biomolecular and Cellular Engineering Track Form
Fall 2017 Catalog: 15 Hours

SCOPE: Modern medicine and biotechnology deal with processes at the molecular and cellular levels. The Biomolecular and Cellular Engineering Track provides biological, physical, and quantitative foundations for understanding and manipulating biomolecules and cells. The background knowledge, skills, and creative/critical thinking achieved through this track will prepare students to work in diverse areas including nano-medicine, biotechnology, pharmaceuticals, regenerative engineering, as well as basic research in quantitative life sciences.

Schedule an appointment with a track coordinator for course selection discussion and career advising. Track coordinators can be selected from Drs. Bishop, Guiseppi-Elie, Hwang, Kaunas and Ober.

Name: ____________________________________________ UIN: __________________ Phone #: __________________

TAMU Email: ____________________________________________ Graduation Term: __________________________

Required Track Courses (6 hours)
☐ BMEN 431 Biomolecular Engineering (3)
☐ BMEN 433 Biomolecular and Cellular Engineering Laboratory (3) (BMEN 431 is a pre- or co-requisite)

Track Courses (Select 6-9 hours)
☐ BMEN 2/491* Research w/ Biomolecular and Cellular Engineering Focus (subject to track coordinator approval) (1-3)
☐ BMEN 4xx Cellular Engineering (3)
☐ BMEN 471 Numerical Methods for Biomedical Engineers (3)
☐ OR BIOL 350 Computational Genomics (3)
☐ BMEN 432 Molecular and Cellular Biomechanics (3)
☐ BMEN 486 Biomedical Nanotechnology (3)
☐ OR BMEN 480 Biomedical Engineering of Tissues (3)
☐ OR BMEN 487 Drug Delivery (3)

Other Courses (Select 0-3 hours)
☐ BMEN 4XX BMEN Elective (subject to track coordinator approval) (3) __________
☐ BMEN 404 FDA Good Laboratory and Clinical Practices (3)
☐ or BMEN 406 Path to Market (3)
☐ or BMEN 469 Entrepreneurial Issues in Biomedical Engineering (3)
☐ CHEM 228 Organic Chemistry II (3)
☐ ENGR 181 ESP Seminar I (1)
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Please elaborate: ______________________________________________________________

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Approved and discussed by:

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Student signature and date  Director of Undergraduate Programs signature and date
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Track Coordinator printed name  Track Coordinator signature and date

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Updated October 2016