

BME Ph.D. Program Curriculum

Fall Year 1

| | |
|--------------|--|
| 16:125:xxx | BME Core Course (3cr) (<i>Register for one, possibly two core courses</i>) |
| 16:125:xxx | BME Core Course (3cr) |
| 16:155:501 | Mathematical Modeling for BME (3cr) |
| 16:125:699 | Non-Thesis Rotation (3cr) |
| 16:125:601 | Engineering Ethics/Seminar (1cr) |
| BME Seminars | (attendance required) |

Advisor Selection Forms (December through May)

SPRING Year 1

| | |
|--------------|---|
| 16:125:xxx | BME Core Course (3cr) (<i>Register for one or two core courses</i>) |
| 16:125:xxx | Bioengineering Elective (3cr) |
| 16:125:586 | Structure and Dynamics in Adult and Stem Cell Biology (3cr) |
| 16:125:602 | Engineering Writing/Seminar (1cr) |
| 16:125:702 | Research (3+cr) |
| BME Seminars | (attendance required) |

SUMMER Year 1

Research Based Qualifying Exam for Doctoral Studies tied in with “Engineering Writing 602” (May/June)

FALL Year 2

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|--------------|---|
| 16:125:xxx | BME Core Course (3cr) (<i>Register for one remaining core course, if any – see note*</i>) |
| 16:125:xxx | Bioengineering Elective (3cr) (<i>Register for one or two core courses</i>) |
| 16:125:607 | Preparing Future Faculty I (1cr) |
| 16:125:701 | Research (3+cr) |
| BME Seminars | (attendance required) |

SPRING Year 2

| | |
|--------------|--------------------------------------|
| 16:125:xxx | Bioengineering Elective (3cr) |
| 16:125:xxx | Life/Medical Sciences Elective (3cr) |
| 16:125:608 | Preparing Future Faculty II (1cr) |
| 16:125:628 | Clinical Practicum (1cr) |
| 16:125:702 | Research (3+cr) |
| BME Seminars | (attendance required) |

SUMMER Year 2

Annual Research Verification Meeting IDP Meeting Prepare Thesis/Dissertation Proposal

FALL Year 3

| | |
|--------------|-----------------------|
| BME Seminars | (Attendance required) |
| 16:125:701 | Research (3+cr) |
| Electives | (As required) |

Deadline for Defense of Thesis/Dissertation Proposal

SPRING Year 3

| | |
|------------|-----------------|
| 16:125:702 | Research (3+cr) |
| Electives | (As required) |

Years 4-6

| | |
|--------------|-----------------------|
| 16:125:701/2 | Research (3+cr) |
| BME Seminars | (Attendance required) |
| Electives | (Optional) |

Annual Research Verification Meetings (Summers of years 4-6) IDP Meetings (Summers of years 4-6) Final Thesis/Dissertation and Defense (Year 5 or 6)

*Students are required to complete a total of 3 core BME courses, in addition to Math and Cell Biology within the first three academic semesters.

BME Core Courses **Must take 3 out of 5:**

- 1) 16:125:561 BioImaging Methods (3cr)
- 2) 16:125:571 Biosignal Processing and Biomedical Imaging (3cr)
- 3) 16:125:572 Biocontrol, Modeling and Computation (3cr)
- 4) 16:125:573 Kinetics, Thermodynamics and Transport in Biomedicine (3cr)
- 5) 16:125:574 Biomechanics and Biomaterials (3cr)

Physiology

Students **must** have taken an UG level Physiology course previously or the following course must be taken.

- 1) 16:125:581 Mammalian Physiology (online course-3cr)
- OR Other Rutgers or RWJMS Physiology Courses – Contact the Graduate Program for information

Advanced Engineering Mathematics[^]

- 1) 16:125:501 Mathematical Modeling for BME (3cr)

[^]Students may be asked to complete an alternate graduate-level math course based on need or availability. Students wishing to take an alternate math class should petition the graduate program director.

Advanced Cell Biology

- 1) 16:125:586 Structure and Dynamics in Adult and Stem Cell Biology (3cr)

Medical/Life Science Elective

- 1) Life Science elective from the list in the Graduate Handbook or recommendation from Program Director
- Or 16:148:514 Molecular Biology of Cells (3cr)
- Or 16:115:511 Molecular Biology and Biochemistry (3cr)

Developmental Courses

- 1) 16:125:601 Engineering Ethics (1cr) **(Required during 1st year)**
- 2) 16:125:602 Engineering Writing (1cr) **(Required during 1st year)**
- 3) 16:125:607 Preparing Future Faculty I (1cr) **(Required)**
- 4) 16:125:608 Preparing Future Faculty II (1cr) **(Required)**
- 5) 16:125:628 Clinical Practicum (1cr) **(Required)**

Summary of Minimum Ph.D. Requirements

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|--|---------------------------------------|
| 3 out of 5 BME Core Courses | 9 credits |
| Advanced Engineering Math Course | 3 credits |
| Advanced Cell Biology Course | 3 credits |
| Life Science/Medical Elective | 3 credits |
| 4 Bioengineering Electives | 12 credits |
| 5 Developmental Courses | 5 credits |
| Non-Thesis Study (1st year Rotation) | 3 credits |
| Research (minimum) | 34 credits |
| Total | 72 credits (35 course credits) |

Note:

- Prerequisite work may not count as an elective. Please check with the program first.