BME M.S. Program Curriculum rev. Sept 2009

FALL Year 1

16:125:xxx	BME Core Course (3cr)
16:125:xxx	BME Core Course (3cr)*
16:148:514	Molecular Biology of Cells (3cr)
16:xxx:xxx	Advanced Engineering Math Course (3cr)
16:125:601	Journal Club and Seminar in BME (1cr)

SPRING Year 1

16:125:xxx	BME Core Course (3cr)
16:125:xxx	BME Core Course (3cr)*
16:125:xxx	Bioengineering Elective (3cr)
16:125:602	Survival Skills in BME (1cr) *or*
16:115:556	Ethical Sci Conduct (1cr)
BME Seminars	(attendance required)

FALL & SPRING Year 2 (As needed)

16:125:xxx	Bioengineering Electives
16:125:628	Clinical Practicum (1cr)
16:125:601/602	Journal Club/Survival Skills (1cr/1cr) or
16:115:556	Ethical Science Conduct (1cr)
16:125:701/702	Research (6cr)
16:125:699	Non-Thesis Study (3cr) (PLAN B MS ONLY)
BME Seminars	(attendance required)

BME Core Courses *__Must take 3 out of 4:__

1)	16:125:571	Biosignal Processing and Biomedical Imaging (3cr) Fall
2)	16:125:572	Biocontrol, Modeling and Computation (3cr) Spring
3)	16:125:573	Kinetics, Thermodynamics and Transport in Biomedicine (3cr) Fall
4)	16:125:574	Biomechanics Systems (3cr) Spring

Physiology

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

1)	14:125:355/6	BME Systems Physiology (undergraduate course-3cr) Fall/Spring
2)	Other Rutgers or UMDNJ Physiology Courses – Contact the Graduate Program for information	

Advanced Engineering Mathematics

1)	16:155:507	Analytical Methods Chem/Bioengineering (3cr) Fall
Or	16:642:527	Methods of Applied Math (3cr) Fall

Molecular Biology

1)	16:148:514	Molecular Biology of Cells (3cr) Fall
Or	16:115:511	Molecular Biology and Biochemistry (3cr) Fall

Developmental Courses Must take 1, 2 and 5…3&4 are optional

1)	16:125:601	Journal Club and Seminar (1cr) Fall
2)	16:125:602	Survival Skills and Seminar in BME (1cr) or 16:115:556 Ethical Sci Conduct (1cr)
3)	16:125:607	Preparing Future Faculty I (1cr) Fall
4)	16:125:608	Preparing Future Faculty II (1cr) Spring
5)	16:125:628	Clinical Practicum (1cr) Spring

Summary of Minimum M.S. Requirements

3 out of 4 BME Core Courses	**9 credits**
Advanced Engineering Math Course	**3 credits**
Molecular Biology Course	**3 credits**
3 Bioengineering Electives	**9 credits**
3 out of 5 Developmental Courses	**3 credits**
Research (Plan A ONLY)	**6 credits**
Non-Thesis Study (Plan B ONLY)	**3 credits (MUST take an additional 3 credit elective)**
Total	**33 credits**

BME Ph.D. Program Curriculum rev. Sept 2009

FALL Year 1

16:125:xxx	BME Core Course (3cr)
16:125:xxx	BME Core Course (3cr)*
16:148:514	Molecular Biology of Cells (3cr)
16:155:507	Analytical Methods Bioengineering (3cr), *or*
16:642:527	Methods of Applied Math
16:125:601	Journal Club in BME (1cr)
BME Seminars	(attendance required)

SPRING Year 1

16:125:xxx	BME Core Course (3cr)
16:125:xxx	BME Core Course (3cr)*
16:125:xxx	Bioengineering Elective (3cr)
16:125:628	Clinical Practicum (1cr)
16:125:702	Research (3+cr)
BME Seminars	(attendance required)

SUMMER Year 1

Qualifying Exam for Doctoral Studies (June)

FALL Year 2

16:125:xxx	Bioengineering Elective (3cr)
16:125:xxx	Bioengineering Elective (3cr)
16:125:607	Preparing Future Faculty I (1cr)
16:125:701	Research (3+cr)

BME Seminars (attendance required)

SPRING Year 2

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

SUMMER Year 2

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

16:125:602	Survival Skills in BME (1cr)
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)

Final Thesis/Dissertation and Defense (Year 5)

BME Core Courses * **Must take 3 out of 4:**

1)	16:125:571	Biosignal Processing and Biomedical Imaging (3cr) Fall
2)	16:125:572	Biocontrol, Modeling and Computation (3cr) Spring
3)	16:125:573	Kinetics, Thermodynamics and Transport in Biomedicine (3cr) Fall
4)	16:125:574	Biomechanics Systems (3cr) Spring

Physiology

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

1) 14:125:355/6 BME Systems Physiology (undergraduate course-3cr) Fall/Spring
2) Other Rutgers or UMDNJ Physiology Courses – Contact the Graduate Program for information

Advanced Engineering Mathematics

1) 16:155:507 Analytical Methods Chem/Bioengineering (3cr) Fall
Or 16:642:527 Methods of Applied Math (3cr) Fall

Life Science and Medical Foundational Course

1) 16:148:514 Molecular Biology of Cells (3cr) Fall
or
16:115:511 Molecular Biology and Biochemistry (3cr) Fall

And

2) At least one Life Science electives from the list in the Graduate Handbook

Developmental Courses

1) 16:125:601 Journal Club (1cr) Fall **(Required during 1st year)**
2) 16:125:602 Survival Skills (1cr) Spring **(Required after 2nd year)**
3) 16:125:607 Preparing Future Faculty I (1cr) Fall **(Required)**
4) 16:125:608 Preparing Future Faculty II (1cr) Spring **(Required)**
5) 16:125:628 Clinical Practicum (1cr) Spring **(Required)**

Summary of Minimum Ph.D. Requirements

3 out of 4 BME Core Courses	**9 credits**
Advanced Engineering Math Course	**3 credits**
Molecular Biology Course	**3 credits**
Life Science/Medical Elective	**3 credits**
4 Bioengineering Electives	**12 credits**
5 Developmental Courses	**5 credits**
Research (minimum)	**37 credits**
Total	**72 credits (35 course credits)**

Notes:

- **3 core courses must be taken during the first year to prepare for the written qualifying exam.**
- Prerequisite work, e.g., 14:125:356 BME Systems Physiology may not count as an elective.
- The core courses 571 and 573 are offered in the fall, and 572 and 574 in the spring semester. Since only 3 out of 4 core courses are required, this usually leaves room for an elective.