



RICE UNIVERSITY

School of Engineering

*Department of Bioengineering*

**Graduate Student Handbook**  
**Effective August 16, 2019**

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## Purpose of Handbook

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This handbook outlines the policies and procedures of the Department of Bioengineering (BIOE) graduate programs. Topics covered include expectations, new and current student information, registration, finances, degree requirements, campus resources, institutional processes, and graduation information.

The policies outlined in this document are intended for those in all of the various academic programs supported by the department including the PhD, MD/PhD, MS, and MBE (Applied Bioengineering and Global Medical Innovation tracks). This handbook is intended as a supplement to the *General Announcements*, the policies and procedures of the Office of Graduate and Postdoctoral Studies and other Rice policies relevant to graduate students. It is the student's responsibility to be familiar with the rules, procedures, and requirements of the Bioengineering Department and the sources mentioned above. In cases where there is conflicting information, university-wide regulations take precedence over department-wide regulations, which take precedence over research group-wide regulations. It is ultimately the student's responsibility to know and follow all policies and timelines to allow for a timely graduation. When in doubt, the student should seek help first at the graduate program (department) level (academic program administrator, director/chair of their specific program, director of graduate studies, and/or department chair) and then at the central administration level (Office of Graduate and Postdoctoral Studies).

In case of error, omission, or conflict, policies of the Rice *General Announcements* supersede those stated within this handbook. If the policies of the program change during a student's tenure at Rice University, the student may elect to continue studies under the complete set of policies in place at the time of matriculation or may choose to follow the updated policies in full. A student may not combine or delete regulations from the two sets of policies. If a student elects to follow updated policies in lieu of the policies of the year he or she matriculated, the Academic Program Administrator should be notified so the student's record can be updated.

In rare cases, the faculty may apply a new regulation to all students who have not passed a specific milestone (e.g., candidacy) in their program if such a change will not materially affect the progress of the students. Students will be notified of such revisions. The Graduate Academic Affairs Committee reserves the right to correct grammatical or typographical errors in these policies at any time without notifying students.

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## Graduate Programs

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The department offers the following degrees:

Professional Masters in Bioengineering

Applied Bioengineering Track: Students are accepted for fall and spring admission

Global Medical Innovation Track: Students are accepted for fall admission only

Master of Science in Bioengineering

Students are only considered for and admitted to the doctoral level program. The Masters of Science degree in Bioengineering is offered only under special circumstances and when it is in the doctoral student's best interest to not continue in the doctoral program

PhD in Bioengineering

Student is accepted for fall admission only.

Doctor of Medicine/Doctor Philosophy (MD/PhD)

Students must be accepted into the MSTP program at Baylor College of Medicine prior to being accepted into the Bioengineering PhD program.

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## General Guidelines (Relevant to All Graduate Students)

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I) **Student Responsibilities**

Students are responsible for meeting all university and program requirements for their chosen program. In addition to being in agreement with the regulations stated in this handbook, students must be in agreement with the General Announcements (<http://ga.rice.edu/>)

II) **Standards of Conduct & Honor Code**

Students are expected to live up to the high standards Rice sets for its community members, as described in the Code of Student Conduct. Graduate students should be in compliance with the Code of Student Conduct at all times. Information on the Code of Conduct can be found at: <https://sjp.rice.edu/code-of-student-conduct>. Bioengineering graduate students are bound by the Honor Code. Information regarding the honor code can be found at <https://gradhonor.rice.edu/>.

III) **Deadlines**

Students must observe all deadlines listed in the Academic Calendar, General Announcements, and program guidelines. Although efforts will be made to alert students to deadlines, it is ultimately the student's responsibility to know pertinent deadlines.

IV) **Residency and Enrollment Requirements**

A) Residency

- 1) PhD Students: Must complete at least four full (fall and/or spring) semesters of full-time studies at Rice University.
- 2) Masters of Science: Must complete one fall or spring semester of full-time graduate study
- 3) Masters in Bioengineering (MBE): Must complete a minimum residence of one fall or spring semester of full-time or part-time graduate study.

B) Full- and Part-time Study

- 1) PhD and MS students are expected to enroll as full-time students. A semester course load for a full-time student is nine credit hours.
- 2) MBE students in the Global Medical Innovation track are expected to enroll as full-time students. A semester course load for a full-time student is nine credit hours. MBE-GMI students are expected to participate in a six credit hour summer internship prior to their first fall semester.
- 3) MBE Students in the Applied Bioengineering track may register as full- or part-time students. A semester course load for a full-time student is nine credit hours. A part-time student must enroll for at least three credit hours per semester. MBE-AB students are not required to register for summer semesters.

C) Continuous Enrollment

- 1) Students are expected to maintain continuous enrollment as required by their program unless an official leave of absence has been granted. Failure to register without a leave of absence granted by the Dean of Graduate and Postdoctoral Studies constitutes *de facto* withdrawal.
- 2) If a student withdraws and later wishes to resume study, reapplication is required. Readmission is given only on the recommendation of the department and with the approval of the Dean of Graduate and Postdoctoral Studies.

- D) International Students  
International students must consult with the Office of International Students and Scholars (OISS) about the possible impact on their visa status if dropping below a full-time status.

V) **Non-course Training**

- A) Graduate students are expected to complete specific non-course training courses required by the university. These training courses must be completed within the deadlines determined by the Office of Graduate and Postdoctoral Studies.
- B) Orientation – All students must attend all orientation events
- C) Preventing Sexual Harassment
- D) Responsible Conduct of Research (Students in both MBE tracks are exempt from this training.)
- E) Lab Safety Training: Lab safety training is mandatory for all new students in the School of Engineering. This training is typically offered during orientation. If a student misses this training, it can be provided through the Office of Environmental Health and Safety.

VI) **Transfer Credit**

- A) Students may apply for transfer credit for graduate-level courses taken at Rice or other institutions. There is no specific deadline for transferring credits, however, students are encouraged to request transfer credit at the beginning of their graduate program in order to determine their remaining requirements.
- B) Courses taken at another accredited college or university are not automatically approved for transfer credit. Transfer credit is only granted with the approval of the appropriate Committee. Students must submit a petition to the following:
  - 1) PhD students: Graduate Academic Affairs Committee
  - 2) MBE, Applied Bioengineering track: Master's Affairs Committee
  - 3) MBE, Global Medical Innovation track: Master's Admission and Affairs Committee
- C) **General Guidelines**
  - 1) Courses must be from a regionally accredited U.S. institution or an international Institution officially recognized by that country's Ministry of Education or equivalent.
  - 2) A student must have made a grade of B- or equivalent in the course to petition for it to transfer to their graduate program transcript.
  - 3) The number and type of credits that may be transferred differ from program to program. Refer to the section on transfer of credits in the program specific guidelines to determine how many and what type of credits an individual program allows. The following apply:
    - (a) No course can be used to satisfy both an undergraduate and graduate degree requirement.
    - (b) The courses to be transferred must be chosen from those that normally satisfy requirements for an advanced degree.
    - (c) Each case must be individually approved by the Graduate Academic Affairs Committee or the Master's Admission and Affairs Committee based on the work done.
    - (d) Students may not count a course if the course is substantially the same as one already counted toward the degree requirements. The decision as to

whether a course is “substantially the same” will be made by the appropriate committee. (Graduate Academic Affairs Committee or Masters Admission and Affairs Committee).

4) Students with Advanced Degree

If a student is entering Rice with a master’s degree he or she may petition, the appropriate committee to receive credit for graduate courses taken.

VII) **Prerequisite Requirements**

- A) If a student does not have evidence on their undergraduate transcript that they have received credit for the required prerequisite courses, the student must take these courses in addition to their program curricula. MBE students must take prerequisite courses prior to graduating with an MBE degree. PhD students are encouraged to take prerequisite courses during their first semester, and must do so within the first two years of study.
- B) Required Prerequisites include:
  - 1) Fundamentals of Systems Physiology (suggested: BIOE 322, BIOE 302 and BIOE 381)
  - 2) Cell or Physical Biology (suggested: BIOC 341 and Physical Biology 502)
  - 3) Statistics (any 400 level or above statistics course is acceptable. Students who take a 500 or above statistics course may use this course to satisfy both the prerequisite and degree requirement. PhD students are encouraged to take BIOE 539 to satisfy both the prerequisite and the degree requirement for a MATH/STAT/CAMM course.
- C) For the purposes of meeting a prerequisite requirement, prerequisite courses other than bioengineering courses may be taken for a standard letter grade or pass/fail. If a course is taken pass/fail the work is graded using the standard letter grading system during the course of the semester. Students will receive a grade of “pass” if they earn a grade of A, B, C, or D. If the student earns a grade of F, this appears on their transcript as an “F” and counts toward the semester and cumulative GPA. University policy does not allow graduate students to take a course offered by their home department on a pass/fail basis. All BIOE courses must be taken for a standard letter grade regardless of the reason for taking the course.

VIII) **Course Registration**

- A) University policy requires students to maintain student status throughout their career at Rice University.
- B) PhD students are expected to register for the fall, spring, and summer semesters. Students who have completed all class-room based courses should register for Graduate Research (BIOE 500) for a minimum of nine credit hours in the fall and spring semesters and a minimum of six credit hours during the summer semester. Students who are registered for fewer than nine hours in fall and spring or six hours in summer will not be eligible for a student stipend. Students who do not receive a stipend are responsible for payment of their tuition.
- C) Students in the MBE Applied Bioengineering track are not required to register during the summer.
- D) Students in the MBE Global Medical Innovation track are expected to register for BIOE 600 (internship) the summer prior to their first full (fall) semester.
- E) All students are responsible for registering for courses and reviewing and confirming course selection is correct based on their degree requirements. Registering for courses is done

through ESTHER. Instruction can be found at [https://registrar.rice.edu/students/reg\\_instructions/](https://registrar.rice.edu/students/reg_instructions/).

F) Courses Requiring Special Registration

There are instances when students are not allowed to register via ESTHER. Examples include:

- 1) closed courses that have reached their maximum enrollment,
- 2) closed courses requiring departmental or instructor permission,
- 3) prerequisite override,
- 4) audit,
- 5) late add
- 6) late dropping a course

In such instances, the student is required to submit a Special Registration Form. The Special Registration form can be found at [http://registrar.rice.edu/online\\_forms/](http://registrar.rice.edu/online_forms/).

G) Double-Booking/Overlapping Courses

Double booking or overlapping of courses is prohibited by the department. In the case of PhD students, if teaching assistant duties, another course, or other unavoidable circumstances conflict with colloquia (BIOE 699/698) the student should delay colloquia registration until the following semester.

H) Inter-institutional Courses

- 1) Under certain circumstances, inter-institutional courses may be taken at participating institutions including Baylor College of Medicine, University of Texas Health Science Center at Houston, University of Texas Medical Branch at Galveston, and the University of Houston. The inter-institutional graduate student registration form and instructions required for these courses can be found at [http://registrar.rice.edu/online\\_forms/](http://registrar.rice.edu/online_forms/).
- 2) Due to the requirement that students be full-time when taking inter-institutional courses, MBE students may only take inter-institutional courses during the fall and spring semesters and only when enrolled full time.
- 3) Students should avoid taking inter-institutional classes their last semester since semesters at other institutions may end on a later date than the class and course grade deadline for Rice. In such a case the student taking the course the last semester may not receive their grade in time for it to count towards their degree.
- 4) International students who wish to take inter-institutional courses must consult with the Office of International Students and Scholars (OISS) regarding additional paperwork required.

I) Dropping Courses after the Official Drop Deadline

- 1) Graduate and Postdoctoral Studies approves dropping a course after the published deadline only when a student can make a convincing case that he or she encountered insurmountable problems that they made a conscientious effort to resolve.
- 2) Requests to drop courses after the published deadline set by the Office of the Registrar must be submitted using a Special Registration Form.
- 3) The Special Registration Form must be signed by the course instructor.
- 4) Once signed by the course instructor and the student's advisor, the form must be submitted to the Office of Graduate and Postdoctoral Studies for final approval.
- 5) Because approval to "late drop" a course is rare and is not guaranteed, a student should continue to attend the course until a final ruling is made.

IX) **Academic Standing**

In order to remain eligible to continue in a degree program and/or receive various types of financial assistance, a student must maintain good academic standing and be making satisfactory progress toward their degree. The following are minimum requirements:

- A) Maintain the established grade point average (GPA) for the program in which the student is enrolled. If a student's GPA is below the established requirement, the student will be placed on academic probation. If a student's cumulative GPA falls below the minimum GPA for the program for two consecutive semesters, the student may be dismissed from the program.
- B) If the student's GPA falls below 2.33 for two consecutive semesters, excluding the summer semester, the student will be immediately dismissed without further warning in accordance with University policy.
- C) Courses for which a student receives a grade lower than B- (2.67) will not be counted toward degree requirements. The course can be retaken to achieve a higher grade and credit toward degree requirements; however, the original grade earned will also remain on the student's transcript and be counted toward the student's GPA.
- D) Incomplete grades must be completed in accordance with the University policy on incompletes as detailed in the *General Announcements* (<https://ga.rice.edu/>).
- E) The completion of all degree requirements must take place within the time limits established by the department and in accordance with University policy.
- F) Deviation from any of the above requirements constitutes evidence that the student is making inadequate degree progress and is no longer in good academic standing. The student will be officially notified of his or her status and program specific procedures will be followed regarding corrective action or dismissal.

X) **Grading Procedures**

Instructors are required to report a grade for all students whose names appear on the class roster. In most courses, conventional symbols (from A to F) are used. Some courses are offered as pass/fail or satisfactory/unsatisfactory. Information on grading standards is found at <https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/#text>. Detailed instructions on how to calculate GPA can be found at [https://registrar.rice.edu/students/gpa\\_calculation](https://registrar.rice.edu/students/gpa_calculation).

XI) **Interruption of Studies**

- A) There are two types of interruptions in study: short-term releases and separations. Both releases and separations may be either voluntary or involuntary. Separations are periods of no enrollment and require specific reinstatement or readmission processes.
- B) Voluntary leaves include short-term medical and parental release, leave of absence, non-medical withdrawal, and medical withdrawal. Involuntary student leaves includes non-voluntary medical withdrawal and disciplinary withdrawal. Details of each can be found at <https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/#text>.
- C) More information is available at <https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/>.

XII) **Petitions, Appeals & Grievances**

- A) Graduate students may petition for exceptions to academic requirements, regulations, and judgments. A course requirement is an example of an academic requirement. Allowed time to degree is an example of an academic regulation. Course grades and dismissals from programs are examples of academic judgments. If a petition is denied, one level of appeal is allowed.
- B) Petitions
- 1) Petitions for exceptions to academic requirements, regulations, and judgments should be viewed as unusual, rather than typical.
- C) Program Requirements
- 1) A petition regarding requirements, regulations, or judgments of a graduate program will be handled at the department level. If a student wishes to petition for a waiver or a change to a program requirement, he or she must petition the appropriate committee listed below:
    - (a) PhD students: Graduate Academic Affairs Committee
    - (b) MBE: Masters Admission and Affairs Committee.
  - 2) Petitions need to follow procedures established by these programs. Petitions are not automatically granted. Contact the BIOE academic program administrator for assistance in filing a petition.
- D) University Requirements
- 1) A petition regarding University requirements, regulations, or judgment must be submitted to the Office of Graduate and Postdoctoral Studies. Such a petition must be accompanied by a recommendation from the program. When the program's recommendation is negative, or when the petition requests a major exception—for example, an extension of allowed time to degree by more than 1/2 semester—the Office of Graduate and Postdoctoral Studies may also obtain the recommendation of the school overseeing the program (when relevant) and the Graduate Council with regard to such petitions.
  - 2) Extensions
    - (a) Extensions of various time limits, such as time to candidacy or time to defense, will not be granted routinely. Students requesting such extensions must document the unusual circumstances justifying their request, demonstrate their academic progress towards the goal, and provide a concrete plan for meeting the goal within the requested extension. Petitions must be filed electronically by the BIOE academic program administrator who will assist the student with this process.
  - 3) Additional information regarding petitions may be found at <https://ga.rice.edu/graduate-students/rights-responsibilities/dispute-resolution/>.
- E) Appeals
- 1) If a petition is denied, a student (or other parties affected by the decision) is allowed only one level of appeal. In general, the appeal process will be resolved at the lowest level possible.
  - 2) When the petition is decided at the graduate program or department level, the appeal must be submitted to the Office of Graduate and Postdoctoral Studies.
  - 3) When the petition is decided at a school level, the appeal must be handled by the Office of Graduate and Postdoctoral Studies.

- 4) When the petition is first decided by the Office of Graduate and Postdoctoral Studies, the appellant may submit an appeal to the Provost.
- 5) An appeal must be submitted within 15 days from receipt of the decision that is being appealed. Late appeals will be dismissed, except for unusual situations when a delay is justified. Appeals must be acknowledged in writing immediately upon their receipt by the receiving unit. Email communication is considered to be “in writing.”
- 6) Additional information on appeals can be found at <https://ga.rice.edu/graduate-students/rights-responsibilities/dispute-resolution/>.

F) Grievances

A grievance is a complaint regarding inappropriate conduct by other students, faculty members, or staff. Inappropriate conduct encompasses both inappropriate personal conduct, such as sexual harassment, as well as inappropriate official conduct, such as violation of University policies. Specific policies exist to address grievances based on discrimination or sexual harassment and these policies must be followed in situations involving these issues. Grievances against another student may be raised with the director of student judicial programs and addressed under the Code of Student Conduct. In other cases, a student may present a grievance in writing at the lowest appropriate level, typically the graduate program or school. If a satisfactory resolution is not obtained at that level, the student may appeal the outcome of the grievance by presenting the problem at the next administrative level: the Office of Graduate and Postdoctoral Studies, followed by the provost, or president. Grievances against non-faculty staff members may also be brought to the employee relations director in Rice’s Human Resources office.

XIII) Outside Employment

- A) MBE Students are not required to receive approval for outside employment. Students are cautioned to balance their employment and academic activities to assure they can meet academic responsibilities.
- B) PhD and Masters Thesis Students receiving a stipend may accept employment only with the approval of their graduate program. Due to the expectation that a student’s time will be focused on their graduate studies/responsibilities, outside employment is rarely approved. As student making a request to accept employment must have the written approval of their advisor and petition the Graduate Academic Affairs Committee for final approval.
- C) International Students wishing to accept employment must not only meet the requirements above must also consult the Office of International Students and Scholars about the possible impact working full or part-time will have on their visa status.

XIV) Transfer Between Programs

- A) Graduate students at Rice are admitted into a specific graduate program. Admissions criteria are program specific; therefore, students who wish to transfer graduate programs must follow the guidelines listed below.
- B) Transferring from Research/Thesis to a Professional/Non-Thesis Program  
Students who wish to change from a thesis program to a professional/non-thesis degree program must petition their department in writing. Upon recommendation of the department and approval by the dean’s office, the request is sent to the Office of Graduate and Postdoctoral Studies for consideration and final approval. If approved,

students who received tuition waivers while enrolled in the thesis program will be expected to repay the tuition before their professional degrees are awarded.

- C) Transferring from Non-Thesis to Research/Thesis Program Within the Department  
Non-Thesis degree programs terminate when the degree is awarded. Students who wish to continue graduate study after completing a non-thesis degree program must apply for admission into the research/thesis degree program. Upon recommendation of the department, the request for admission is sent to the Office of Graduate and Postdoctoral Studies for consideration and final approval. Some students may become eligible for tuition waivers in subsequent semesters. Tuition waivers will not be awarded retroactively.
- D) Transferring to Master's Program (Non-Thesis or Thesis) as a Result of Dismissal from Doctoral Program  
A graduate program may offer a non-thesis or thesis master's opportunity to students who are being dismissed from a doctoral program. If the student accepts the master's opportunity, the graduate program would follow internal procedures and notify the Office of Graduate and Postdoctoral Studies of the change in degree program. Tuition will not be charged retroactively for courses already completed. If the student declines the master's opportunity, the student will be dismissed without a degree awarded. Students who are dismissed from a doctoral program are not eligible for admission to other doctoral programs at Rice.

XV) **Transferring Departments**

Students who wish to change their graduate program to a graduate program in another department must apply for admission to the new department's degree program, stating that they are currently a graduate student in another program at Rice. The application must be vetted through the regular admissions process. In addition to admission to the new department, applications for a transfer must also be approved by the Dean of Graduate and Postdoctoral Studies.

XVI) **Second Degree Program**

Graduate students may enroll in a second degree program only with the approval of their home academic department.

XVII) **Equal Opportunity/Non-Discrimination/Affirmative Action Policy**

- A) Rice University is committed to equal opportunity in education and employment. It is the policy of the University to attract qualified individuals of diverse backgrounds to its faculty, staff and student body. Rice University does not discriminate against individuals on the basis of race, color, religion, sex, sexual orientation, gender identity, nationality or ethnic origin, ancestry, age, genetic information, disability, or veteran status in its admissions policies, educational programs, or employment.
- B) In employment the university seeks to recruit, hire, and advance qualified candidates including women, members of underrepresented minority groups, individuals with disabilities, and protected classes of military veterans specified by law.

XVIII) **Title IX/Policies/Prohibited Behaviors**

- A) Rice's Sexual Misconduct Policy prohibits a wide array of behaviors that fall under the umbrella of sexual misconduct. All forms of sexual misconduct are behaviors without a person's consent. These behaviors can be perpetrated by people of all genders, just as people of all genders can experience these behaviors.
- B) Sexual assault, harassment, stalking, or relationship violence are not the fault of the victim. If a student has experienced any of these behaviors, there are resources available at Rice to seek **support** or make a **report**. Additional information can be found at <https://safe.rice.edu/policies/prohibited-behaviors>.

XIX) **Quality of Life Student Resources**

- A) The Rice University campus-wide Graduate Student Association maintains an up-to-date and comprehensive list of resources supporting quality of life at their website <http://gsa/rice.edu>
- B) Additionally, there is a student life section of the Office of Graduate and Postdoctoral Studies website at <http://graduate.rice.edu/studentlife>.
- C) **The Wellbeing and Counseling Center** supports student development and success by providing a good first point of contact for students who want to talk to someone about solutions to their wellbeing and mental health concerns.
  - (a) The Wellbeing Center is available Monday – Friday, 9:00 am to 5:00 pm.
  - (b) Walk-in: Gibbs Wellness Center
  - (c) Phone: 713-348-3311 (24/7).
  - (d) In case of an emergency: 713-348-6000 (24/7).

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## Program Guidelines Doctor of Philosophy

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### I) **Introduction**

The Rice University Bioengineering PhD program is a comprehensive program providing a fundamental understanding of the life and medical sciences, advanced analytical and engineering capabilities, and translational research. With this educational background, the student will be well prepared to participate in independent or collaborative research and development endeavors in industry or academia.

### II) **Program Learning Outcomes for the PhD Degree Program in Bioengineering**

Upon completing the PhD degree in Bioengineering, the student will be able to:

- A) work as independent researchers,
- B) acquire a graduate-level understanding of foundations in Bioengineering and apply this material across a variety of sub-disciplines,
- C) integrate knowledge from different sources to solve a defined Bioengineering problem,
- D) acquire deep knowledge in a sub-discipline in which they will pursue their dissertation, and
- E) demonstrate professional skills in both oral and written communication.

### III) **Research and Scholarly Activities**

Research and other scholarly activities of all students must conform to Rice University policies. It is recommended that students familiarize themselves with the policies listed below before embarking on research or other scholarly activities. The student should become familiar with the following:

- A) Policy 324-00 (Research Misconduct),
- B) Policy 326-98 (Human Health and Safety in the Performance of Research),
- C) Policy 333 (Software Policies), and
- D) Policy 334 (Copyright Policy).

### IV) **PhD Curriculum Requirements**

Students pursuing the PhD degree in the field of Bioengineering must complete the following to satisfy degree requirements:

- A) A minimum of 90 credit hours,
- B) foundation courses,
- C) acquire additional required credit hours needed for graduation by registering for Graduate Research (BIOE 500), during the terms they are engaged in research,
- D) maintain a minimum GPA of 3.2.
- E) complete a minimum of 30 credit hours from foundation, supporting, and advanced courses with high standing (500 level or above). Of these 30 hours, a minimum of 15 must be designated as BIOE classes, and
- F) Completion of the following foundation courses. Courses graded for a standard letter grade are counted toward the 30 required semester hours.
  - 1) BIOE 516: Mechanics, Transport & Cellular Signaling
  - 2) BIOE 517: Instrumentation & Molecular Analysis
  - 3) BIOE 518: Introduction to Computational Biology
  - 4) BIOE 519: Biomaterials
  - 5) UNIV 594: Training in Responsible Conduct

- 6) BIOE 633: Life Sciences Entrepreneurship **or** BIOE 690 Professional Development for Bioengineering (Students should not take BIOE 690 during their first year of study. This course is intended to be taken by students in their 2<sup>nd</sup> year or above.)
  - 7) BIOE 539, Applied Statistics for Bioengineering and Biotechnology **or** a 400 level Mathematics, Statistics, or Computational & Applied Math course.
- G) In addition to the above requirements, the student must also
- 1) meet prerequisite requirements,
  - 2) fulfill teaching requirements,
  - 3) submit and successfully defend a thesis proposal that provides evidence of their ability to carry out original research in a specialized area of bioengineering before the beginning of their fifth semester in residence, and
  - 4) defend the thesis in a public oral examination.
- H) Advanced Topic Courses  
A large array of advanced specialty courses is available to BIOE graduate students. Each student should, in consultation with his or her advisor, select the courses most appropriate for his or her research. Advanced topic courses may be used to meet the 30 semester hours of graduate level courses.
- I) Specialization Track  
Student may elect a specialization track during their graduate studies. To fulfill the requirements of the track, students must take three (3) supporting courses in the area of interest. Students should consult with their advisor regarding appropriate courses to support their chosen track. Five major tracks that reflect interests within the Bioengineering Department are recognized:
- 1) Synthetic Biology and Genome Engineering
  - 2) Microfabrication, Microfluidics, and Design
  - 3) Quantitative, Computational, and Theoretical Bioengineering
  - 4) Biomedical Imaging, Optics, and Diagnostics
  - 5) Biomaterials, Tissue Engineering, Mechanobiology, and Biophysics
- V) Academic Requirements
- A) The university minimum requirement for the doctorate degree is 90 semester hours beyond the bachelor's degree.
  - B) The student is responsible for completing the various phases of the graduate program within the prescribed time limitations.
  - C) Student must earn a grade of B- (2.67) or above in all course work counted toward their coursework requirements. Courses in which the student receives a grade below a B- (2.67) may not be used to fulfill degree requirements.
  - D) The student's overall GPA must be 3.2.
  - E) A graduate student's thesis advisor or thesis committee may require further course work if it is considered essential to the student's thesis research.
  - F) During the first semester in residence, the student must take a minimum of twelve semester hours including three advanced courses (9 semester hours) for a standard letter grade. (Courses taken on a "pass/fail" or "satisfactory/unsatisfactory" basis do not count toward this 9 semester hour requirement.)
  - G) After the first semester, departmental policy requires that the student be registered for a minimum of 12 credit hours in fall and spring. If hours are needed in addition to course work, the student should register for 1 – 15 semester hours of BIOE 500 per semester during the terms he or she is engaged in research. Although it is recognized that hours in

the lab must be estimated, in general, a student should spend a total of three hours per week for each one hour of credit in which they registered.

- H) The student must register for a minimum of six semester hours of BIOE 500 during the summer semester to be eligible for a stipend.
- I) Students are expected to fulfill the research requirements defined by their advisor to earn a “satisfactory” grade in BIOE 500 (Graduate Research).
- J) Most formal courses should be completed in the first year of residence to allow the student to commence thesis research on a full-time basis by the end of the second semester.
- K) If the student received credit for graduate courses taken during prior studies or if they are a MD/PhD student he or she may petition the Graduate Academic Affairs Committee (GAAC) to relax the requirement for registering for nine hours of advanced courses during the first semester.
- L) MD/PhD students must register for one of the Rigor and Reproducibility Seminars offered by the Gulf Coast Consortia. Information can be found at <https://www.gulfcoastconsortia.org/home/research/research-and-reproducibility-resource-page/>.

#### **VI) Academic Waivers**

- 1) In specific instances, the Graduate Academic Affairs Committee may waive a course. If a course is waived, the equivalent number of hours will reduce the required 30 semester hours on an hour-by-hour basis. However, waived courses do not reduce the 15 hours of BIOE courses required. Students must still meet the minimum requirements of completing 18 hours at Rice including 15 hours of BIOE courses as part of their degree requirements.
- B) If a BIOE course is waived, another BIOE course must be taken to meet the 15 hour requirement. Waivers are considered on a case-by-case basis.

#### **VII) Specific Requirements for MD/PhD Students**

MD/PhD students must meet the following program-specific requirements:

- A) Minimum university requirement of 90 semester hours including research hours.
- B) Must meet with their advisor and committee at least once per year
- C) May waive 12 semester hours including research hours based on their work during their medical school training.
  - 1) Students must officially request this waiver by submitting a petition to the Graduate Academic Affairs Committee.
  - 2) Waived credit hours will reduce the required 30 semester hours on an hour-by-hour basis.
  - 3) MD/PhD student must still take 15 credit hours of 500 level or above BIOE courses

#### **VIII) First Semester Advisor**

During the first semester, students will be advised by the Director of Graduate Studies and the Graduate Academic Affairs Committee. Once a student officially joins a lab, his or her advisor will take over the primary advising role.

**IX) Lab Rotations and Choosing a Thesis Advisor**

**A) Student Rotation and Matching Process**

- 1) The key for successful PhD graduates is the relationship with their graduate research advisor. To facilitate learning about various research projects and lab environments, students are required to participate in lab rotations. The purpose of lab rotations is to
  - (a) assist first-year student, in choosing an advisor and a lab for conducting thesis research,
  - (b) provide an opportunity for the student to explore research options other than their declared areas of interest, and
  - (c) encourage cohesion within the department.

- B) To facilitate and optimize the rotation experience for both students and faculty, it is
- 1) important that the student and the potential advisor meet prior to the start of a rotation to discuss expectations, goals, requirements, and laboratory guidelines,
  - 2) the student's responsibility to arrange to meet with the advisor to discuss what is expected during the rotation period. During this meeting, the advisor should make clear his or her expectations for the rotation.
  - 3) expected that the student spend approximately ten (10) hours in the lab per week for each rotation.

- C) Students are expected to rotate with advisors within the department of Bioengineering; however, a student may choose to complete one rotation outside the Bioengineering department. The mentor for this rotation must be a faculty member whose primary appointment is in a department at Rice University or, if at an institution external to Rice, the faculty member must hold an adjunct faculty position with the department of Bioengineering.

- D) Students must actively engage in the lab during the rotation period. Suggested activities include attending lab meetings, interacting with graduate students and post-docs, and discussing research with the faculty member.

- E) Due to the time commitment for rotations, carrying out rotations concurrently is strongly discouraged.

- F) The following procedure should be followed. Exceptions to this policy will be made on a case-by-case basis and must be approved by the BIOE Director of Graduate Studies.

1) Attend Research Presentations

- (a) Research presentations will take place during orientation to introduce students to bioengineering research in the department.
- (b) Students may elect to rotate in a laboratory as a way to broaden their background in an areas of bioengineering or develop a new collaboration

2) Register for BIOE 504

3) Complete Lab Rotations

- (a) Lab rotations should last three (3) weeks each. Students shall spend enough time in the lab to understand the research projects and approaches and to interact with lab members and the advisor.
- (b) Specific rotation requirements will be determined by the advisor.
- (c) The deadline for completing all rotations will be published early in the semester.
- (d) Students who matriculate early and work in labs in the summer, may not count this work as one of their official rotations, however, the student may rotate in this same lab during rotations as one of their three requirements.

- 4) Submit Request for Advisor
  - (a) Student must submit the advisor selection form by the deadline.
  - (b) The student will list three advisors with whom the student would consider working. This list should be in rank order with No. 1 being the most desirable advisor.
  - (c) Students who request an advisor outside of Rice must have a Rice co-advisor whose primary appointment is in the Department of Bioengineering.
    - (1) The co-advisor's role is to provide financial support should student's external advisor decide to no longer support the student. The student must recognize that financial support by the BIOE co-advisor is contingent upon the pursuit of collaborative projects and available funding at the time the relationship with the non-Rice advisor.
    - (2) There are specific documents that must be completed if requesting an advisor outside of the BIOE department. Please see Gayle for assistance with this process.
- 5) In consultation with the faculty advisors, decisions regarding final matches will be made by the Director of Graduate Studies and the Graduate Academic Affairs Committee.

F) Waiver of Rotations

A student must complete three (3) rotations unless he or she is in one of the following categories:

- 1) The student was recruited on behalf of a specific faculty member with this stipulated in in the official admission offer letter
- 2) The student is a MD/PhD student who has selected a thesis advisor in the department of Bioengineering and started his or her thesis research.
- 3) The student is a MD/PhD student who has not selected a thesis advisor, in which case they are required to complete on two rotations.

A waiver form should be completed and submitted to the BIOE academic program administrator for processing.

Unofficial agreements made between a student and any advisor does not exempt the student from completing the three required rotations.

X) Financial Support

- A) Financial support is dependent upon satisfactory performance, reasonable progress towards degree requirements, and the availability of funds. Stipends are subject to all the usual federal taxes.
- B) For purpose of meeting guidelines for financial support, the students are considered a full time student when she or he is enrolled in 9 credit hours. The department will fund a student for the first semester (4.5 months) of study. In most cases this covers the period from August 16 to December 31. Advisors become responsible for a student's financial support the first day of the second semester of study. Advisors are expected to pay 100% of the student's stipend unless the stipend is funded by an external fellowship, scholarship, training grant, or other source of funding which covers all or a portion of the stipend.

- C) Students are required to notify the Department of Bioengineering of any external fellowships or scholarships they receive immediately upon receiving the award, including awards received prior to matriculation.
- D) Support Limitations
- 1) The normal limit of financial support for graduate students is ten semesters (excluding summers). If a student anticipates taking longer than 10 semesters for completion of the PhD degree he or she must consult with their advisor. The advisor may require the student to submit an additional progress report including a summary of work accomplished since the presentation of the thesis proposal, specific information on research work remaining to be done and estimated time to completion.
  - 2) The advisor, in consultation with the thesis committee, shall consider the student's progress, exceptional circumstances which justify continued funding, and the availability of funding when making a decision regarding whether the student's funding should be continued for a specific period. Continued support shall be reevaluated annually or more often as appropriate.
- E) External Fellowships/Awards
- 1) Students are encouraged to seek external fellowships and awards. The Office of Proposal Development (<http://opd.rice.edu>) offers an extensive array of proposal development services when developing and writing proposals for federal agencies and other entities to seek funding for research projects. Students are encouraged to take advantage of their services.
  - 2) If a student receives an external award, the following apply:
    - (a) If the total amount of the fellowship, including stipend, insurance, etc. is below the current stipend offered by the Department of Bioengineering, the student's fellowship is supplemented to equal the current Rice stipend level, and the student's is provided an additional \$4000 bonus stipend for the period of the fellowship.
    - (b) These bonuses are paid by the department during the first semester (4.5 months) of study. The advisor becomes responsible for the bonus payments beginning the second semester of study, or for students who receive awards after the first semester, on the date the fellowship/scholarship becomes effective. The fellowship/scholarship must be competitive, and designated for the graduate stipend.
  - 3) Bioengineering has an expectation that students will receive the \$4000 bonus from their advisor; however, since the annual bonus is paid by the student's advisor and not the Department of Bioengineering, the department cannot guarantee a student will receive the \$4000 bonus if the student's advisor's primary appointment is not in Bioengineering. Students should discuss this bonus with their advisor when applying for fellowships.
  - 4) If the total amount of the fellowship, including stipend, insurance, etc. is above the current stipend offered by the Department of Bioengineering, the student's fellowship is supplemented by an additional \$4000 annual bonus during the period of the fellowship.
  - 5) This \$4000 annual supplemental stipend is offered regardless of the amount of the stipend provided by the external funding.
  - 6) If a student's fellowship/scholarship ends or is revoked during the student's studies at Rice, assuming the student is achieving satisfactory performance, reasonably

progressing toward their degree, and funds are available, the student will receive financial support (department stipend and associate tuition waiver) at the level provided by the Department of Bioengineering at the time. The student will no longer receive the \$4000 bonus stipend. If after the first semester, the advisor will become responsible for the stipend immediately upon the termination of the fellowship.

F) Training Grants

- 1) If a student is awarded a training grant for an amount below the current level of support offered by the Department of Bioengineering, the student's grant is supplemented to equal the current stipend level. This supplement is paid by the department during the first semester of study. The advisor becomes responsible at the beginning of the second semester of study, or for students who receive training grants after the first semester, on the date the training grant becomes effective. Students with external advisors should make their advisors aware of this policy when joining the lab or applying for training grants.
- 2) If the student's training grant ends or is revoked during the student's studies at Rice, assuming the student is achieving satisfactory performance, reasonably progressing toward their degree, and funds are available, the student will receive financial support (department stipend and associate tuition waiver) at the level provided by the Department of Bioengineering at the time. The department will pay the stipend if the student is in the first 4.5 months of study; the advisor is responsible beginning the first day of the second semester of study, or if after the first semester, the date the training grant ends or is revoked.

G) Termination of financial support of a graduate student requires that the student be notified of the termination 15 days prior to the cancellation of support. Such a notice is distinct from any earlier warning, which lets the student know of the possibility of support termination. All termination of support notices, as well as warnings of possible termination, must be in writing, with a copy sent to the Office of Graduate and Postdoctoral Studies.

H) Non Scheduled Absences

- 1) Active participation in required academic activities, including laboratory work, is a basic condition of financial support. Absences, other than medical and family emergencies, must be approved by the student's advisor in advance. In the case of medical or family emergencies, notification is expected in as timely a manner as possible depending upon the specific situation. If a student is not present and carrying out required academic activities for more than one week, without approval of the absence, the student will receive an immediate written warning. If a student is absent from required academic activities for a contiguous two weeks without permission and without mitigating circumstances the student may be judged as making inadequate academic progress and are subject to termination of financial support.
- 2) Extenuating Circumstances  
There may be circumstances where a student's advisor may not have adequate funding to support his or her stipend or supplemental funding. In such situations, issues will be resolved on a case-by-case basis in consultation with the Chair of the Department of Bioengineering.

**X) Holiday and Vacation Time**

- A) During the first semester of study, all graduate students observe the holidays listed in the Academic Calendar.
- B) Beginning the first day of the second semester, PhD students engaged in research receive ten (10) working days of vacation time. (Working days are defined as Monday-Friday. Vacation time is based on the academic year calendar (August 16 to August 15).
- C) Students should adhere to their lab's specific policy for requesting and documenting vacation time. In general, students should request time off a minimum of two weeks prior to the requested days. Although all reasonable requests should be granted, it is at the discretion of the student's advisor to approve specific requests.
- D) In addition to vacation time, students are allowed designated staff holidays (found at <https://people.rice.edu/benefits-rewards/holidays/>), including winter break when the university is officially closed. Since Rice is not officially closed during spring break, students will not automatically receive spring break as time off. All requests for paid time off during spring break must be approved in advance by the student's advisor.
- E) In cases of extreme weather or other emergency, the University may officially close. During such emergency situations, students should follow the same instructions as those given to staff.
- F) Extraordinary circumstances that deviate from this vacation policy as noted above are considered on a case-by-case basis and approval is at the discretion of the student's advisor.

**XI) Teaching Requirement**

- A) Teaching is a graduate degree requirement. Students may be asked to spend the equivalent of eight (8) hours per week on teaching assignments. The following stipulations apply:
  - 1) Teaching assignments may involve tutoring, leading recitation sections, grading papers, or supervising work in an undergraduate laboratory.
  - 2) Students are required to fulfill three (3) teaching assignments. Students who have completed three TA assignments but wish to TA or have been required to TA by a faculty member for more than three assignments may do so only in exceptional circumstances and with the approval of the Bioengineering Director of Graduate Studies.
  - 3) Students will not have teaching responsibilities during their first semester in residence, and usually not during their second. However, students are expected to complete their teaching assignment during the third through fifth semesters.
  - 4) In cases where TA responsibilities conflict with a required course or the Bioengineering Colloquia (BIOE 698/699) the course or colloquia should be postponed for the semester.
  - 5) If the student is planning to pursue an academic career she or he is encouraged to request more involved teaching assignments. Such requests should be made to the Bioengineering Director of Graduate Studies prior to the end of the semester directly preceding the TA assignment.
- B) TA Best Practices
  - 1) Teaching assistant positions will be filled according to specific requirements of the course as defined by the instructor and qualifications of the student.

- 2) Registering for courses which conflict with a TA assignment after the assignment is finalized is not permissible.
  - 3) Students will generally not be assigned more than one TA assignment during a semester. Rare exceptions will be approved in advance by the Director of Graduate Studies.
  - 4) Students will not TA a course in which they are currently enrolled.
  - 5) TAs will meet with the course instructor prior to the beginning of the teaching assignment to discuss expectations and deadlines.
  - 6) TAs is expected to attend scheduled classes for the course in which they are serving as a TA unless specified otherwise by the instructor.
  - 7) The number of hours required for teaching assignments varies depending on the course. TAs should expect to devote approximately eight (8) hours per week to TA responsibilities.
  - 8) TA responsibilities vary depending upon the class. TAs is expected to fulfill all reasonable requests made by the instructor. Serious conflicts should be discussed with the Director of Graduate Studies.
  - 9) TAs is expected to work collaboratively with other TAs and graders as necessary.
  - 10) All TAs must attend the TA workshop organized by the Office of the Dean prior to their first TA assignment.
  - 11) All TAs must attend the department orientation for TAs.
  - 12) Instructors will provide TAs sufficient instructions at the beginning of the TA assignment to assure the TA is aware of the instructor's expectations. TAs are expected to commit to be on time for all TA-run sessions.
  - 13) The TA is responsible for grading and returning assignments to the students promptly
    - (a) Students should be given sufficient time to pick up assignments.
    - (b) Assignments must never be discarded during the semester.
    - (c) If a graded assignment is not picked up promptly, the TA should continue to make efforts to return the assignment to the student.
    - (d) Assignments not picked up by the end of the semester should be given to the instructor.
- C) TA Honor Code
- 1) TAs should follow the appropriate code of conduct. This includes acting in a trustworthy and responsible manner, treating others with respect, treating students fairly, and limiting their interactions and relationships with students in the class to a professional nature while serving as a TA.
  - 2) Teaching assistants are responsible for knowing the contents of the *Honor Code TA Handbook*. This publication can be found at <http://honor.rice.edu/ta-handbook/>. TAs should refer to the handbook in cases of suspected violations of the Honor Code and are expected to follow the appropriate procedures in such cases.
  - 3) It is the TA's responsibility to disclose any possible conflicts of interest to the instructor. This includes, but is not limited to, disclosure of personal relationships with members of the class. When in doubt about a possible conflict of interest, the TA should discuss the specific situation with the instructor.

## XII) Thesis Committee and Proposal

- A) The Department of Bioengineering does not require a qualifying exam. Successful presentation of a thesis proposal is required in lieu of such an exam. A student must have completed the following before the beginning of the fifth semester in residence (excluding summer semesters):
- 1) select a thesis committee
  - 2) prepare a thesis proposal, and
  - 3) Defend the thesis proposal to their thesis committee.
- B) Thesis Committee Members  
Requirements for the composition of the thesis committee can be found at <https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-doctoral-degrees/#text>
- C) Candidates are responsible for keeping the members of their committee informed about the nature and progress of their research. They also must establish a schedule for thesis completion and review. The members of the committee, in turn, should review the thesis in a timely manner, approving a preliminary form of the thesis before scheduling the oral examination.
- D) Written Thesis Proposal
- 1) Students must pass a thesis proposal prior to the beginning of their fifth semester (excluding summers). The thesis proposal is a written summary of research progress up to the point of the date of the proposal and future research plans. The proposal defense should be viewed as an opportunity for the student and his or her committee to assess the student's progress and knowledge of the research field, and to assure the student has developed a coherent research plan, and to provide the student with input from the members of the committee in time to incorporate useful suggestions in the thesis research.
  - 2) Thesis Proposal Format: The document should contain (at minimum) the following sections:

| Section  | Recommended Length         |
|--|----------------------------|
| Abstract <sup>a</sup>  | Not to exceed 250 words    |
| Overview of motivation, problem statements, and specific aims <sup>a</sup> | 3 pages                    |
| Background with literature survey  | 10-20 pages                |
| Research plans and methodology:  |                            |
| Specific Aims <sup>a,b</sup>   | 3-4 pages per specific aim |
| Methods <sup>c</sup>   | 5-10 pages                 |
| Preliminary Results <sup>c</sup>   | 2-10 pages                 |
| Summary and proposed time-line for completion of the research <sup>a</sup> | 1 page                     |

<sup>a</sup>These section lengths are generally consistent with the amount of text in an NIH F30/F31 predoctoral fellowship application.

<sup>b</sup>Each Specific Aim should ideally contain the motivation, hypotheses, overview of approach/study design, success criteria, and possible pitfalls/alternative approaches within the recommended 3-4 pages

<sup>c</sup>The methods and preliminary results can be sections separate from the Aims or worked into each aim as appropriate.

- 3) The above section lengths are just recommendations. On average, this will result in approximately 40-50 pages total (double spaced text with 1 inch margins), but students should discuss the envisioned length and breadth of the thesis proposal with their advisor. The advisor may, within reason, require additional information be included. Portions of manuscripts or reports to sponsors (if available) can be incorporated in the thesis proposal.
- 4) The thesis proposal must be distributed to the members of the thesis committee at least one week prior to the scheduled presentation. A copy of the thesis proposal should also be sent to the academic program administrator for inclusion in the student's record.

E) Oral Thesis Proposal Defense

- 1) All members of the thesis committee should be physically present at the oral defense. In rare circumstances, where a member cannot be physically present, he or she may participate via technologies such as videoconference or Skype. In such circumstances, the student must receive prior approval from his or her advisor. A student must indicate on her or his thesis proposal form any committee member who participated in a thesis defense via electronic means. The student must also obtain the signature of any members who participate via electronic means prior to submitting the completed thesis proposal form.
- 2) Thesis Proposal Committee Decision
  - (a) The Thesis Committee may make one of three decisions regarding the thesis proposal, “pass without reservations,” “pass with reservations.” or “fail.”
  - (b) Pass without Reservations: The student will continue research based upon their thesis proposal
  - (c) Pass with Reservations: Committee members must, within one week, provide the student an explanation of deficiencies and a written and reasonable time frame for the student to correct identified deficiencies. If the student to correct deficiencies within the established time frame, he or she will be required to redefend the entire proposal or be subject to dismissal from the program.
  - (d) Fail: If a student fails the thesis proposal, the committee may, by unanimous vote, allow the student to redefend within a reasonable time frame. Students are allowed to redefend only one. If a student fails the thesis proposal defense proposal a second time, he or she is subject to dismissal from the program.
  - (e) In extraordinary circumstances, exceptions to this rule may be appealed via petition. The advisor must be notified and the must be submitted to the Graduate Academic Affairs Committee for consideration within 15 days of the oral thesis proposal

XIII) Internship Opportunity

- A) In addition to course work for the PhD, students are encouraged to participate in an optional three to six month internship experience. Well received by bioengineering graduate students, the internship provides an opportunity to gain real-world exposure, grow their professional network, and learn new techniques and tools to apply to their research or gain substantial teaching experience.
- B) Students may choose to intern in industry, clinical labs, government national labs, international labs, or teaching institutions. The internship training is managed through collaborative interaction between the advisor, the host, and the bioengineering program. Students must notify their advisor of potential internship opportunities in a timely manner, preferably before the beginning of semester(s) in which the student plans to participate in an internship opportunity
- C) Generally, students will not receive a graduate student stipend while participating in the internship. Students should discuss details of financial arrangements with their advisor and have such details finalized prior to the internship. The student must also determine how the financial arrangement would impact the intellectual property that they generate while they are on internship.
- D) The BIOE Academic Program Administrator should be notified no less than three weeks prior to the beginning of the internship in order to assure time to make necessary revisions to payroll. If appropriate notice is not received in time to make adjustments to the student’s stipend, the student will be responsible for repaying any overpayment they may receive. The student should

provide documentation (offer letter, evaluation) of the internship so that the internship can be properly documented in their student record.

- E) Decisions regarding stipends from external fellowships during an internship are based upon the requirements of the fellowship/training grant and is made on a case-by-case basis. If the student has received an external fellowship or training grant, it is their responsibility to assure that the internship does not conflict with guidelines and requirements of the fellowship or grant. The student must register for BIOE 500 during the time period they are completing the internship in order to maintain continuous enrollment.
- F) It may not always possible for PhD students to perform an internship due to various factors beyond their control, such as timing of their research trajectory, research funding matters, external fellowship constraints, or other reasons. If a student is interested in an internship but it cannot be arranged for some reason, the student should reflect upon what they hope to gain through an internship, and discuss those goals with their advisor. If the student's goals are networking and learning new techniques, for example, their advisor may be able to arrange for other opportunities for those activities, such as a research collaboration or involvement with the most relevant professional society.

#### XIV) **Presentation of Research**

Students are expected to present their research in an official forum at least annually

- A) Presentation will ideally be in the form of a research talk at a local, national or international conference.
- B) Students will also have an opportunity to present during the BIOE GSA "Breakfast Club" or at the annual Graduate Student Symposium.
- C) Poster presentations do not fulfill this requirement.
- D) Other opportunities for students to present research may be approved on a case-by-case basis.
- E) Students should inform their advisor if they have not been given an opportunity to present their research so that additional opportunities can be arranged.
- F) Students should document presentations as part of their progress report.

#### XV) **Progress Review and Evaluation**

##### A) Advisor/Committee Meetings

- 1) First Two Years: A student must meet with their advisor as deemed necessary by the advisor.
- 2) After the Thesis Committee Chosen: Once a student has finalized the members of their thesis committee, the committee and advisor should meet with the student on an annual basis or more often as deemed appropriate by their advisor or thesis committee. Documentation of meetings must be included in the student's semi-annual progress report.
- 3) MD/PhD students must meet with their thesis committee a minimum of once per year. MD/PhD students who do not fulfill this requirement may put their status with the MSTP program in jeopardy. Documentation of all meetings must be included in the student's semi-annual progress report.

##### B) Semi-Annual Progress Reviews

- 1) Submission of progress reports is one criteria used to determine satisfactory performance. The purpose of the progress review is to ensure that the student and his or her advisor are communicating regularly regarding the progress on thesis research and the student's development. Students are required to submit semiannual progress reports during the entirety of their graduate studies.

- 2) Reports are submitted on a calendar year basis and cover the time frames, January-June and July-December.
  - 3) First year students are expected to complete a progress report for their first semester covering the time frame from August 15 to December 31.
  - 4) Students must submit their progress reports using a standardized review form. These forms must be completed and submitted by January 31 (July -December) and July 31 (January-June)
  - 5) It is the student's responsibility to coordinate with their advisor to assure the progress report is submitted by the deadline.
  - 6) The student must send each member of their committee a copy of the completed progress report.
  - 7) An advisor or the committee members may feel it is necessary to meet to with the student to further discuss a student's progress. The advisor should document recommendations and a time line to meet recommended milestones in the progress review form and discuss these requirements with the student.
- C) The Graduate Academic Affairs Committee (GAAC) or the BIOE Director of Graduate Studies will review the progress reports of individual students on a case-by-case basis as deemed necessary.
- D) **MD/PhD students** must provide their thesis committee with a copy of their progress review report. If an MD/PhD student fails to provide their committee with a copy of their progress review report they may put their standing in the MSTP MD/PhD program in jeopardy.
- E) Satisfactory Performance  
Students are expected to make continuous and satisfactory progress towards fulfilling their degree requirements. Satisfactory progress includes the following:
- 1) Minimum of nine (9) semester hours of graduate level courses, graded using a standard letter grading scale by the end of the first semester in residence,
  - 2) beginning with their second semester in resident, the student should work on their thesis research on a full time basis ,
  - 3) present an annual oral presentation of their research beginning the second academic year of residence and each year thereafter,
  - 4) submit progress review reports by the published deadlines,
  - 5) submit the written copy of the thesis proposal and successfully defend their thesis proposal in an oral presentation before the beginning of their fifth semester in residence (excluding summer semesters),
  - 6) petition for doctoral candidacy prior to the beginning of the ninth semester,
  - 7) maintain a grade point average (GPA) of 3.2 or better, and
  - 8) make continuous progress in research.

**XVI) Probationary Status/Possible Dismissal Due to Academic Grades**

- A) If a student's cumulative GPA falls below 3.2 the student will be placed on probationary status. The period of probation extends to the end of the next semester (excluding summer) in which the student is enrolled. Satisfactory/unsatisfactory grades cannot be used to end probationary status.
- B) Once a student is placed on probationary status he or she has one semester (excluding summer semester) to improve their grades. If their GPA remains below 3.2 for two consecutive semesters, their advisor has the prerogative to immediately dismiss the student from their lab or suspend the student's stipend until their GPA is once again at the 3.2 threshold. When a student's stipend is suspended, the student may become responsible for tuition costs until their cumulative GPA is once again above 3.2.

- C) If an advisor dismisses a student from their lab and the student cannot find a new advisor, the student will be dismissed from the program.
- D) Decisions to reduce or terminate a student's stipend or dismiss the student from the program will be made on a case-by-case basis.
- E) If a student is considered for dismissal from the program, the Graduate Academic Affairs Committee, the thesis advisor, and the Director of Graduate Study will consider all the factors that may have affected the student's performance before reaching such a decision. The Department Chair will be advised of all potential action prior to a final decision.
- F) If a student's GPA falls below 2.33 for two consecutive semesters, he or she will be immediately dismissed from the program without further warning in accordance with University Policy. (Students will be notified of their status once final grades have been received and posted in their record.)

**XVII) Probation/Dismissal for Inadequate Progress in Program**

- A) The graduate program consists of two parts:
  - 1) Stage 1: (Pre-Candidacy) Students should demonstrate adequate academic progress by complying with the requirements and milestones of the program (e.g. acceptable academic grades, thesis proposal, research progress, and achievement of candidacy on time.)
  - 2) Stage 2 (Post-Candidacy) Students have completed "all but dissertation" (ABD). Students should conduct research and write and defend their thesis.
- B) When a student is judged not to be making adequate progress, the following procedure is followed:
  - 1) The student will be given written notice of their lack of progress by their advisor. This notice will include:
    - (a) Notification the student is placed on probation,
    - (b) the probation period will be no less than 21 working days (three weeks),
    - (c) an explanation of the student's deficiencies and a clear explanation of what is must be accomplished within a specified time period to correct deficiencies and in order to return to good standing.
    - (d) Students are encouraged to explore the possibility of joining a different research group and seek out other potential advisors should corrective action not be successful and the student is dismissed from their current research group.
  - 2) The student will be reevaluated at the end of the initial probationary period. If the student's advisor determines the student has made adequate progress towards correcting deficiencies, the advisor will notify the student that he or she has returned to good standing and is no longer being considered for dismissal.
  - 3) If, at the time of the first reevaluation, the student is determined to not to have made adequate progress towards correcting deficiencies, the student will be given a second written notice stating deficiencies that must still be met and the probationary period extended for no less than 21 additional working days (3 weeks). This notification may include, at the discretion of the advisor, a statement that the student can be immediately dismissed and financial support terminated at the end of the second probationary period if deficiencies have not been resolved.
  - 4) If, at the time of the second reevaluation, the student is determined not to have made adequate progress towards correcting the stated deficiencies and the advisor is convinced that the study is unable to achieve adequate progress despite intervention or additional time, the advisor may dismiss the student from his or her research group.

- (a) If the student was not specifically told that financial support will be terminated effective the end of the second probationary period, the student must be notified that financial support will be terminated effective 15 days after the last day of the second probationary period.
  - (b) If the second notice of probation included a statement that financial support would end immediately upon dismissal from the research group, support may be ended the day after dismissal from the group.
  - (c) The student's prior advisor is not obligated to provide office space or supportive measures after dismissal from his or her group.
- 5) Advisors are ultimately responsible for determining a grade for BIOE 500 (Graduate Research) based on the student's performance. However, a student should anticipate she or he will receive a grade of unsatisfactory in BIOE 500 if the deficiencies in the warning letter that resulted in the student's probation are not met. If the student is dismissed from the research group, the student should also expect an unsatisfactory grade in BIOE 500.
- C) Opportunity to Join a Different Research Group:
- 1) When placed on probation, students are given an opportunity to find another advisor during the probationary period.
  - 2) The student may change advisors if accepted into another research group.
  - 3) If a student is unable to find another advisor, the student will be dismissed from the graduate program. It is preferable that a student be dismissed at the end of the semester; however, a student may be dismissed during the semester if appropriate.
  - 4) If a student is dismissed from a research group due to inadequate progress the student may not change advisors more than twice and may not have a total of more than three (3) advisors, including their initial advisor, during their career as a graduate student.
  - 5) The final decision to dismiss a student is officially determined by the BIOE Director of Graduate Studies and the Graduate Academic Affairs Committee.
- D) A student may petition for the dismissal to be revoked, therefore a dismissal will be held in abeyance until the petition and appeal process is concluded.
- 1) The advisor/department is not required to financially support the student during the appeal process.
  - 2) The student must appeal within 15 days of being advised of their dismissal. The appeal process takes approximately 30 days.
- E) A student is not eligible to return to Rice following a dismissal from a graduate program.

**XVIII) Change in Advisor for Reason Other than Inadequate Progress in Research**

- A) Since switching advisors will likely affect progress toward the degree and/or any financial support arranged by the previous advisor, a student should only consider switching advisors in exceptional circumstances. However, the department recognizes that in rare circumstances, a student may feel their interests could be better served by working with a different advisor.
- B) Requests to voluntarily switch advisors will be handled on a case-by-case basis. In such cases the department will make an effort to assist the student; however the student bears the ultimate responsibility of finding a new advisor.
- C) The student must petition GAAC for final approval when switching advisor.
- D) Procedure
  - 1) The student should first discuss relevant issue(s) with their current advisor in an attempt to resolve any concerns or problems.

- 2) If the student feels the issues are insurmountable, he or she is encouraged to request the guidance of the Graduate Academic Affairs Committee or the Bioengineering Director of Graduate Studies.
- 3) If the student still wishes to switch to a different advisor, he or she should speak with advisors whose research interests are in line with their own, who are willing to serve as the student's advisor, and who has funding to support the student.
- 4) If the student finds another faculty member willing to serve as their advisor, the student must submit a petition to the Graduate Academic Affairs Committee for approval to switch advisors. This petition must have the endorsement of the new advisor.
  - (a) If the Committee approves the switch, the Bioengineering Academic Program Administrator will process the paperwork required to switch advisors and revise stipend support.
  - (b) In a situation where the Committee does not approve the switch, the Committee will assist the student in resolving issues or, should issues be deemed unresolvable reconsider the petition.
- E) If a student changes advisors prior to achieving candidacy the student, with their new advisor's approval, may petition the Graduate Academic Affairs Committee to request a short delay in the timeline for presenting his or her thesis proposal. The student may need to also petition Graduate and Postdoctoral Studies to request a short delay in the timeline for achieving candidacy.
- F) A student may not change advisors more than twice nor have a total of more than three advisors, including their initial advisor, during their tenure as a student.

**XIX) Approval of Candidacy**

- A) Candidacy marks a midpoint in the course of graduate education. Achieving candidacy for the PhD signals that a graduate student has:
  - 1) completed required course work,
  - 2) passed required exams to demonstrate his/her comprehensive grasp of the subject area,
  - 3) demonstrated the ability for clear oral and written communication, and
  - 4) shown the ability to carry on scholarly work in his/her subject area.
- B) Requirements for achieving candidacy for the doctoral degree are determined at the departmental level.
- C) The department is authorized to grant waivers or substitutions of specific course requirements, but not to make exceptions to university requirements.
- D) Students enrolled in research degree programs submit their petitions for candidacy for a doctoral degree through the department.
  - 1) Complete sections 1, 3, and 4 of the "Petition for Approval of Candidacy for a Doctoral Degree (C-2) form.
  - 2) Students do not need to provide attachments requested in section 2. This will be completed by the department.
  - 3) Submit form to the academic program administrator who will complete sections 2 and 5 and electronically submit the document.
- E) Extension for Time to Candidacy
  - 1) Students who are unable to meet the university time boundary for candidacy may petition the dean of graduate and postdoctoral studies or his/her designee for an extension of time to candidacy.
  - 2) Students who exceed their time boundaries without an approved extension request will be charged a fee of \$125 for reinstatement to good standing.

- 3) Students who exceed their time boundaries and do not receive an extension to their time to candidacy are subject to immediate dismissal by the Office of Graduate and Postdoctoral Studies.

**XX) Oral Examination in Defense of Thesis**

- A) The public oral defense of a thesis is intended to be an examination of a completed body of work and should be scheduled only when the thesis is essentially completed. Students may take the final oral examination in defense of their thesis only after the dean of graduate and postdoctoral studies approves their candidacy.
- B) PhD students must defend their theses before the end of the 16th semester of their enrollment at Rice. Students who are unable to meet the university time boundary for thesis defense may petition the dean of graduate and postdoctoral studies or his/her designee for an extension of time to defense.
- C) Students who exceed their time boundaries without an approved extension request will be charged a fee of \$125 for reinstatement to good standing.
- D) Students who exceed their time boundaries and do not receive an extension to their time to defense are subject to dismissal by the Office of Graduate and Postdoctoral Studies.
- E) A candidate must be enrolled in the semester in which his or her oral examination is held. For the purpose of the oral defense only, enrollment in a semester is considered valid through the Friday of the first week of classes of the following semester. Students passing the oral examination on or before the end of the first week of classes of any semester do not have to register for that or any subsequent semester even though they may be continuing to make minor revisions to the final copy of their thesis.
- F) In addition to announcing the planned defense as described above, at least one copy of the thesis must be available in the departmental office not less than two calendar weeks prior to the date of the oral defense. Students should send an electronic copy of the thesis to [ges2@rice.edu](mailto:ges2@rice.edu).
- G) The length of the oral examination and the subject matter on which the candidate is questioned are left to the judgment of the thesis committee. The defense should be scheduled by the student after consultation with the thesis advisor, who agrees that the thesis is completed and ready to be defended.
- H) All oral thesis defenses must take place on the Rice University campus with the candidate and all thesis committee members in physical attendance. In exceptional cases, appeals to this requirement can be made in writing to the dean of graduate and postdoctoral studies. This request must come from the student's advisor.
- I) Should a candidate fail their oral defense, the committee chair may schedule a second examination. Students who fail a second time will be dismissed from the university.
- J) Following their defense, students must submit a copy of their approval of candidacy form, signed by the thesis committee signifying successful defense of the thesis, to the Office of Graduate and Postdoctoral Studies within one week after the oral examination. Instructions to submit this form are located online at [graduate.rice.edu/thesis](http://graduate.rice.edu/thesis). The original approval of candidacy form must be turned in when the thesis is submitted.

**XXI) Acceptance of Thesis**

- A) Candidates who successfully pass the oral examination in defense of the thesis must submit the thesis to the Office of Graduate and Postdoctoral Studies no later than six months from the date of the examination. If the thesis is not submitted by the end of the six-month period, the "pass" will be revoked and an additional oral defense will need to be scheduled.

- B) Applications for an extension without reexamination must be made by the candidate with the unanimous support of the thesis committee, endorsed by the department chair (or in the case of interdisciplinary programs, the graduate program director), and approved by the Office of Graduate and Postdoctoral Studies.
- C) Extensions of this six-month period for completion without reexamination will be granted only in rare circumstances. Approved petitions for extension without reexamination received after the 6 month time boundary expired will be charged a fee of \$125 for reinstatement to good standing.

**XXII) Graduation**

- A) Commencement occurs only once per year. If a student defended after the deadline for the commencement, they may participate in the next held commencement.
- B) Student degrees are conferred at the end of the semester in which the student defends their thesis, including the end-of-summer degree conferral if the student meets the deadline for submitting the final thesis. Specific deadlines for submitting the final thesis are listed in the academic calendar.
- C) All degree candidates are required to apply for degree conferral with the Office of the Registrar during the semester in which they wish to graduate. Additional information can be found at <http://registrar.ride.edu>.

## Suggested Timeline for PhD Students

| Semester 1           | Semester 2                                    | Semester 3             | Semester 4 | Semester 5        | Semester 6 | Semester 7    | Semester 8 | Semester 9 | Semester 10 |
|----------------------|---|------------------------|------------|-------------------|------------|---------------|------------|------------|-------------|
| Complete Course work |   |                        |            |                   |            |               |            |            |             |
| Attend Colloquia     |   |                        |            |                   |            |               |            |            |             |
| Choose Advisor       |   |                        |            |                   |            |               |            |            |             |
|                      | Present Oral Presentation (Once each year)    |                        |            |                   |            |               |            |            |             |
|                      | Carry Out Research                            |                        |            |                   |            |               |            |            |             |
|                      | Choose Thesis Committee                       |                        |            |                   |            |               |            |            |             |
|                      | Work on/Complete Thesis Proposal              |                        |            |                   |            |               |            |            |             |
|                      |   | Defend Thesis Proposal |            |                   |            |               |            |            |             |
|                      | Complete Three Teaching Assistant Assignments |                        |            |                   |            |               |            |            |             |
|                      |   |                        |            | Achieve Candidacy |            |               |            |            |             |
|                      |   |                        |            |                   |            | Defend Thesis |            |            |             |

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## Professional Master's Degree, Applied Bioengineering

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I) **Introduction**

The Master of Bioengineering Applied Bioengineering track is a non-thesis degree that provides a student with greater depth in bioengineering training to advance their career objectives. The Applied Bioengineering track gives the flexibility for students to craft their own curriculum depending on their interests and career goals. The Bioengineering Department offers graduate-level courses in the following:

- A) Synthetic Biology and Genome Engineering
- B) Microfabrication, Microfluidics, and Design
- C) Quantitative, Computational, and Theoretical Bioengineering
- D) Biomedical Imaging, Optics, and Diagnostics
- E) Biomaterials, Tissue Engineering, Mechanobiology, and Biophysics

II) **Curriculum**

- A) Students in the MBE-AB program must complete thirty (30) credit hours including 18 bioengineering credits at the 500 level or above (BIOE 5XX or BIOE 6XX). All courses must be taken for a standard letter grade. MBE students may not take BIOE 500.
- B) Classes in professional development, industry seminar series, quantitative analysis, and a general elective are also part of the curriculum.

III) **Requirements**

Requirements for the MBE Applied Bioengineering track include the successful completion of 30 credits at the graduate level as follows:

| credits | Courses   |
|---------|---|
| 18      | Bioengineering courses from approved list<br>(Approved list for each semester will be provided to students prior to registration)                   |
| 1.5     | BIOE 627 Medical Technology Design Seminar 1  |
| 1.5     | BIOE 628 – Medical Technology Design Seminar 2 or<br>BIOE 633 – Life Science Entrepreneurship   |
| 3       | BIOE 539<br>An alternative quantitative-based BIOE course, 400 level or above may be substituted with approval of the Director of Graduate Studies. |
| 3       | Elective – >500 level (may be non-BIOE, but must be relevant to Bioengineering degree)  |
| 3       | Professional Development elective(s) – 500 level or above chosen from approved courses listed below (Must have a total of 3.0 credits.)             |

| Approved Professional Development Electives |   |         |
|---|---|---------|
| Course No.                                  | Name                                    | Credits |
| ENGI 510                                    | Technical and Managerial Communications | 3       |
| ENGI 515                                    | Leading Teams and Innovation            | 3       |
| ENGI 529                                    | Ethics and Engineering Leadership       | 3       |
| ENGI 545/LEAD 545                           | Strategic Thinking                      | 3       |
| ENGI 610                                    | Management for Science and Engineer     | 3       |
| ENGI 615                                    | Leadership Coaching for Engineers       | 3       |
| MGMT 734                                    | Technology Entrepreneurship             | 3       |
| ENGI 542                                    | Communication for Engineers             | 3       |

#### BIOE 506 – Graduate Independent Study

- 1) Students may take BIOE 506 (Graduate Independent Study) for a maximum of six credit hours to count towards their MBE degree. Students interested in BIOE 506 typically take 1-3 credit hours per semester. When a student registers for this class it is their responsibility to locate a faculty member willing to mentor them through this independent study course. The following apply:
  - (a) Students must produce a final project in the form of a paper, design project, exam, or other project goals as defined by the instructor (mentor)
  - (b) BIOE 506 must be taken for a standard letter grade
  - (c) If the student is participating in an internship to fulfill the requirements of BIOE 506, they must submit written proof of the internship offer, including the name and contact information of their supervisor, prior to the first day of the internship.
  - (d) Students must submit “notification form” confirming they have an advisor willing to mentor them for this course prior to a special registration form (also required or this course) being submitted. Both forms should be submitted to the BIOE academic program administrator.

#### IV) **Transfer of Credits to Graduate Degree**

A minimum of 24 of the 30 credits must be taken at Rice. Students may transfer a maximum of six (6) credits from a different institution. The following apply:

- A) The course must be chosen from those that normally satisfy requirements for an advanced degree. No course can be used to satisfy both an undergraduate and graduate degree requirement.
- B) If a student completed their undergraduate degree at Rice within the last three years they may petition the Master’s Committee to allow up to 21 credits of graduate level courses taken as an undergraduate, which were not used to satisfy undergraduate degree requirements, to count toward their graduate degree. The courses must be chosen from those that normally satisfy requirements for an advanced degree. No course can be used to satisfy both an undergraduate and a graduate degree requirement.

#### V) **Time to Degree**

- A) Students may enroll on a full-time or part-time basis. It is expected that students will complete degree within two to four semesters. Students expecting to take more than four semesters to complete their degree should discuss their plans with the Director of the Masters Program.

- B) Students are required to complete the program within five years of initial enrollment. This time boundary includes any period in which a student is not enrolled or enrolled part-time for whatever reason.
- C) Students who are required to take prerequisites will likely require more than two semesters to complete the program.

VI) **Satisfactory Progress**

- A) Students must maintain a GPA of 3.0 or higher.
- B) The Office of Graduate and Postdoctoral Studies requires that students be provided a written assessment of their academic progress at the end of each semester. The student's transcript meets this requirement. Should a student wish a more detailed assessment they are encouraged to speak to their course instructors or the Director of the Masters Program. If a student's grade point average falls below 3.0 the student will be placed on probationary status. The department will notify the student of this status after final semester grades are posted.
- C) The period of probation extends to the end of the next semester in which the student is enrolled. Once a student is placed on probationary status, they have one semester to improve their grades. If the next semester again results in probationary status, (cumulative GPA of less than 3.0) the student may be dismissed from the program without further notice. Decisions regarding dismissal will be determined by the Director of Graduate Studies in consultation with the Director of the Masters Program and with the approval the Department Chair.
- D) If a student's GPA falls below 2.33 for two consecutive semesters the student will be immediately dismissed without further warning in accordance with University policy. Students will be notified of their status and/or dismissal once final grades have been received and posted to their records.

VII) **Academic Guidance**

Students may seek academic guidance from the Director of the Masters Program Committee or the Bioengineering Director of Graduate Studies.

VIII) **Graduation**

- A) All degree candidates are required to apply for degree conferral with the office of the Registrar during the semester in which they wish to graduate.
- B) Degree conferrals take place in May, August, and December.
- C) Commencement is held only once per year at the end of the spring semester in May. If a student completes their degree in the summer or fall, they may participate in the following commencement held in the spring.

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## Professional Master's Degree, Global Medical Innovation

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### I) Overview

The Masters in Bioengineering (MBE) Global Medical Innovation (GMI) program prepares engineers to develop cost-effective, sustainable, and accessible medical solutions through local and global clinical immersion, industry internships, real-world medical innovation projects, practical engineering training, and commercialization opportunities.

### II) Upon completing the MBE degree Global Medical Innovation track requirements students will be able to:

A) Apply knowledge of bioengineering topics in at least one of the following areas:

- 1) Synthetic Biology and Genome Engineering
- 2) Microfabrication, Microfluidics, and Design
- 3) Quantitative, Computational, and Theoretical Bioengineering
- 4) Biomedical Imaging, Optics, and Diagnostics
- 5) Biomaterials, Tissue Engineering, Mechanobiology, and Biophysics

A) Develop effective medical products, from concept to commercialization, within a team environment.

B) Comprehend and navigate the global medical technology industry by leveraging an internship experience.

### III) Curriculum

|  |  |
|--|--|
| The Global Medical Innovation track of the MBE program consists of:  |  |
| BIOE 600   | Summer Medical Innovation Bootcamp and Industry Internship (6) |
| BIOE 527   | Healthcare Innovation & Entrepreneurship 1 (3)                 |
| BIOE 529   | Healthcare Innovation & Entrepreneurship Lab (3)               |
| BIOE 528   | Medical Engineering and Design Lab (3)                         |
| BIOE 530   | Medical Engineering and Design Lab 2                           |
| BIOE 627   | Medical Technology Design Seminars (1.5)                       |
| BIOE 633   | Life Science Entrepreneurship Seminars (1.5)                   |
| Elective Graduate level (500 or 600 level) BIOE elective (3)         |  |
| Elective Professional Development from BIOE, ENGI, or MGMT (3)       |  |
| Elective Quantitative graduate level (500 or 600 level) elective (3) |  |

### IV) Satisfactory Progress

A) Students must meet the following requirements to maintain satisfactory progress in the MBE GMI program. Failure to meet these requirements may result in the student being dismissed from the program.

B) Students must maintain a GPA of 3.2 or higher.

- 1) If a student's grade point average falls below 3.2 the student will be placed on probationary status. The department will notify students of this status after final semester grades are posted.

- 2) The period of probation extends to the end of the next semester in which the student is enrolled. Once a student is placed on probationary status, they have one semester to improve their grades. If the next semester again results in probationary status, (cumulative GPA of less than 3.2) the student may be dismissed from the program without further notice. Decisions regarding dismissal will be determined by the Director of the Global Medical Innovation program, with the approval of the Chair of the Department.
- C) Additional Requirement of the Office of Graduate and Postdoctoral Studies
- 1) The Office of Graduate and Postdoctoral Studies requires that students be provided a written assessment of their academic progress at the end of each semester. In the case of MBE students their transcript meets this requirement. Should students wish a more detailed assessment they are encouraged to speak to their course instructors or the Director of the Global Medical Innovation program.
  - 2) If a student's GPA falls below 2.33 for two consecutive semesters the student will be immediately dismissed without further warning in accordance with university policy. The student will be notified of their status and/or dismissal by Graduate and Postdoctoral Studies once final grades have been received and posted to their record.
- V) **Academic Support**  
Students may seek academic guidance from the Director, Associate Director, or Academic Administrator of the Global Medical Innovation program.
- VI) **Time to Degree**  
Students are expected to enroll on a full-time basis and complete their degree within 12 months starting in June (summer internship plus two semesters). Any deviation from this timetable must be approved by the Director of the MBE Global Medical Innovation program.
- VII) **Graduation**  
All degree candidates are required to apply for degree conferral with the office of the Registrar during the semester in which they wish to graduate. Degree conferrals take place in May. Commencement is held only once per year at the end of the spring semester.

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## Master of Science (Thesis Based)

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### I) Introduction

- A) New students interested solely in the Master of Science (MS) degree are admitted only under special circumstances. MS students must satisfy the departmental and university course requirements, fulfill the teaching requirement, complete a research project, write a thesis and successfully defend their work in a public oral examination.

### II) Master of Science (MS) Curriculum

- A) The MS curriculum consists of two components, foundation and advanced topic courses. Collectively these courses afford the student broad exposure to his or her chosen field of research interests.
- B) Students must
  - 1) Complete a minimum of 30 semester hours of study (including thesis research hours).
  - 2) Complete a minimum of 18 semester hours of graduate level foundation and advanced topic courses (graded using a standard letter grade scale). Courses used to meet this requirement must be at the 500 level or above. Courses grades as “pass/fail” or “satisfactory/unsatisfactory” cannot be used to meet this requirement.
  - 3) A minimum of 24 of the 30 required credits must be taken at Rice.
  - 4) All courses must be relevant to the field of Bioengineering.
- C) Advanced Topic Courses:
  - 1) A large array of advanced specialty courses is available to BIOE graduate students. Each student should, in consultation with his or her advisor, select the courses most appropriate for his or her research. Advanced topic courses may be used to meet the 18 semester hours of graduate level courses (graded using a standard letter grade scale).
- D) The university minimum for the master’s degree is 30 semester hours beyond the Bachelor’s degree. MS student must earn the additional credit hours they need for graduation by registering for the thesis research course (BIOE 500). Students may register for between 1 and 12 credit hours per semester during the term they are engaged in research.
- E) Department policy requires that full-time students be registered for at least 9 credit hours each semester. If hours are needed in addition to course work, the student should register for BIOE 500. Students are expected to fulfill the research requirements as defined by their advisor to earn a grade of “satisfactory” in BIOE 500.
- F) All course work must be completed by the deadline for candidacy. Students should carefully consider their course choices to assure they meet the degree requirements for the MS program.
- G) The students thesis advisor or thesis committee may require further course work if it is considered essential to the thesis research.

### III) Transfer Credit

- A) A minimum of 24 of the 30 required credit hours must be taken at Rice. Students may transfer a maximum of six (6) credit hours from a different institution. If a student has taken graduate level courses as an undergraduate they may petition the Graduate

Academic Affairs Committee (GAAC) to receive credit for these courses. The following applies:

- B) No course can be used to satisfy both an undergraduate and graduate degree requirement.
  - 1) Students must still take at least 24 semester hours of advanced courses at Rice.
  - 2) No more than six (6) semester hours may be transferred.
  - 3) The courses to be transferred must be chosen from those that normally satisfy requirements for an advanced degree.
  - 4) Each case must be individually approved by the Graduate Academic Affairs Committee (GAAC) based on the work done.
  - 5) If a student has taken graduate level courses as an undergraduate they may petition the GAAC to receive credit for up to six (6) hours for the courses.
  - 6) A student may not count a course toward the MS requirements if the course is substantially the same as one already counted toward the MS degree requirements. The decision as to whether a course is “substantially the same” will be made by the Graduate Academic Affairs Committee.
  - 7) In specific instances, the Graduate Academic Affairs Committee may waive a course. Waived courses will count toward the required 30 semester hours; however, such courses do not count toward the required 18 semester hours required. If a BIOE course is waived, another BIOE course must be taken to meet the 18 semester hour requirement. All waivers will be considered on a case-by-case basis.

IV) **Policies for Choosing Advisor**

- A) In exceptional cases where a MS student is admitted directly to the MS program, an advisor will be chosen prior to admission.
- B) If a student transferred from the PhD program to the MS program will remain with the same advisor as for their PhD studies.
- C) In very rare circumstances where a student transferring from the PhD program to the MS program who do not wish to remain with the same advisor, the same rules that apply to PhD students who change advisors are followed.

V) **Financial Support**

Students are governed by the same general financial support rules as the PhD program.

VI) **Teaching Requirement**

- A) If a student receives departmental support during their MS studies they must fulfill the same teaching requirements as PhD students. If the student receives no departmental support (i.e. support from advisor only) the student is not required to fulfill a teaching requirement.

VII) **Thesis Committee Members**

- A) The composition of the thesis committee must comply with University policy. Rules regarding the members of the thesis committee are governed by the *General Announcements* and will not be waived. The thesis committee must have a minimum of three members.
- B) Two (2) members must be members, including the committee chair, must be members of the Bioengineering faculty with their primary appointment in the Bioengineering

Department, or who hold joint appointments with the Department of Bioengineering. (Adjunct faculty do not fulfill this requirement)

- C) One (1) member must be a faculty member whose primary appointment is in another department within the university. Faculty whose primary appointment is in another department within the university but who holds a joint appointment in the department of Bioengineering may NOT serve in the capacity of an outside member. However, such faculty may serve as additional members of the committee.
- D) Students must choose a Thesis Director and Committee Chair. In most cases, the advisor serves as both the Director and Chair. If a student's advisor does not hold a primary or joint appointment in the Department of Bioengineering, the student must request a faculty member of the Department of Bioengineering to serve as the Committee Chair.
- E) Additional members of the committee, who may or may not meet the above criteria, may be selected with the approval of the department chair. These members are in addition to the three required members.

VIII) **Progress Review and Evaluation**

A) Advisor/Committee Meetings

Students will meet with their advisor as deemed necessary. Once they pick the members of their thesis committee, the committee and advisor they should meet with their advisor on an annual basis or more often as deemed appropriate by the student's advisor or thesis committee.

B) Semi-Annual Progress Reviews

Master's student must follow the same requirements as PhD students.

IX) **Satisfactory Performance**

- A) Students are expected to make continuous and satisfactory progress towards fulfilling their degree requirements. Satisfactory progress is defined as and includes the following:
- B) Students must have a least 12 semester hours of graduate degree courses, using a standard letter grade scale and excluding courses taken on a "pass/fail" or "satisfactory/unsatisfactory" by the end of the first semester in residence.
- C) After the student's first semester in residence, they must work on their thesis research on a full-time basis.
- D) Students must maintain a grade point average (GPA) of 3.0 or better.
- E) Probationary Status/Possible Dismissal Due to Academic Grades
  - 1) If a student's cumulative GPA falls below 3.0 are placed on probationary status. The period of probation extends to the end of the next semester in which they are enrolled. Satisfactory/Unsatisfactory grades cannot be used to end probationary status.
  - 2) Once a student is placed on probation they have one semester (excluding summer semester) to improve their grades. If the student's GPA remains below 3.0 for two consecutive semesters, the advisor has the prerogative to immediately dismiss the student or suspend the student's stipend and the student may become responsible for tuition costs until their cumulative GPA is once again at or above 3.0.
  - 3) Decisions to reduce or terminate a student's stipend or dismiss a student from the program will be made on a case-by-case basis. The Graduate Academic Affairs Committee, the thesis advisor, and the Director of Graduate Study will consider all the factors that may have affected the student's performance before

reaching such a decision. The Department Chair will be advised of all potential action prior to final actions of the involved parties.

- F) If a student's GPA falls below 2.33 for two consecutive semesters, the student will be immediately dismissed without further warning in accordance with university Policy. (The student will be notified of their status once final grades have been received and posted to their record.)
  
- X) **Inadequate Progress in Research**
  - A) Students will earn research hours by registering for BIOE 500. If a student does not make adequate progress in research during a semester, he or she will receive a grade of "unsatisfactory" in BIOE 500 and placed on probation during the subsequent semester and subject to continuous evaluation. If a student makes a grade of "unsatisfactory" the student will receive a written warning with notice of potential dismissal from the lab/graduate program. If a student receives a grade of "unsatisfactory" in BIOE 500 for two semesters and has not met the milestones in the prior written warning, the student will be immediately dismissed from the graduate program.
  - B) Possible Dismissal Due to Inadequate Progress in Research  
The dismissal process due to inadequate progress in research is the same as for PhD
  
- XI) **Change in Advisor for Reason Other than Inadequate Progress in Research**
  - A) Since switching advisors will likely affect progress toward the degree and/or any financial support arranged by the previous advisor, a student should only consider switching advisors in exceptional circumstances. However, the department recognizes that in rare circumstances, a student may feel their interests could be better served by working with a different advisor. Requests to voluntarily switch advisors will be handled on a case-by-case basis. In such cases the department will make an effort to assist the student, however, the student bears the ultimate responsibility of finding a new advisor.
  - B) Master of Science students follows the same procedure for choosing a new advisor as PhD students.
  
- XII) **Approval of Candidacy**
  - A) The attainment of candidacy marks the completion of all requirements for the degree other than those related to research leading to the writing, submission, and defense of the thesis.
  - B) Students must submit a petition for approval of candidacy. Candidacy information may be found at <http://graduate.rice.edu>. The candidacy form can be found at <http://gpsdocs.rice.edu/forms/DoctoralCandidacyPetitionForm.pdf>. Students are responsible for completing sections 1 & 3. Sections 2 & 4 will be completed by the department. The Petition should be submitted to the BIOE Academic Program Administrator.
  
- XIII) **Time Boundary**
  - A) Students must be approved for candidacy before the beginning of the fifth semester of enrollment at Rice (excluding summer semesters). Students will not be allowed to enroll in a graduate program after their fourth semester unless they have been approved for candidacy.
  - B) A student's individualized time boundaries are available in ESTHER. If a student is approaching or have passed their deadline for candidacy, and has not met all

requirements for candidacy, must submit an extension of candidacy request. Extensions are approved on a case-by-case basis by the Office of graduate and Postdoctoral Studies.

- C) If a student has exceeded their time boundary but are allowed to remain in the program, the Office of Graduate and Postdoctoral Studies will impose a \$125 reinstatement fee.

#### XIV) **Oral Dissertation**

- A) After candidacy has been approved and upon completion of their research project, a student must schedule, in coordination with their research advisor, a public oral examination in the defense of their thesis. Oral examination of the master's degree must be announced at least one week in advance. Oral examination announcements are to be submitted to the Office of Graduate and Postdoctoral Studies by entering the information into the online "Graduate Student's Thesis Defense Announcement Form." This form can be found at <http://events.rice.edu/rgs>. (Refer to the GPS website: <http://graduate.rice.edu/thesis/> for specific information regarding scheduling requirements.) Exceptions to this policy are granted only in very rare circumstances and must be approved by GPS.
- B) A student must conclude an original investigation that is formalized in an approved thesis. The completed thesis must be submitted in either final or draft form to the members of the thesis committee at least one week before the oral examination. A copy of the final draft or completed thesis must also be submitted to the department at least one week before the oral examination. This copy may be submitted electronically to [ges2@rice.edu](mailto:ges2@rice.edu).
- C) All oral thesis defenses must take place at the Rice University campus. The candidate and all thesis committee members must be physically present. In exceptional cases, appeals to this requirement must be made by the student's advisor, to the Dean of Graduate and Postdoctoral Studies. Appeals should be submitted using the online form found at <https://graduate.rice.edu/videoconference>. This form must be submitted and the decision rendered prior to the date of the thesis defense.
- D) In the course of the examination, the thesis committee members may recommend revisions or additions, which must be incorporated in the final thesis, which is then signed by all committee members.
- E) Should a student fail, the committee chair may schedule a second examination. If a student fails a second time he or she will be dismissed from the university in accordance with university rules.
- F) A student who wishes to have their degree conferred in the same semester in which they defend, he or she must comply with the deadlines for filing their applications for degree conferral and thesis defense. These deadlines can be found at <http://registrar.rice.edu/calendars/>.

#### XV) **Acceptance of Thesis**

- A) A student must submit their completed thesis to the Office of Graduate and Postdoctoral Studies no later than six months from the date they successfully passed the oral examination in defense of their thesis. The student's thesis must be submitted electronically. Refer to the graduate and Postdoctoral Studies website <http://graduate.rice.edu/thesis/> for specific instructions regarding how to submit the thesis. Final approval of the thesis is by the Associate Provost.
- B) If the thesis is not ready for final signatures by the end of the six-month period, the "pass" may be revoked and an additional oral defense must be scheduled. Extensions of

this six-month period for completion without reexamination will be granted only in rare circumstances. Application for an extension without reexamination must be made by the candidate with the unanimous support of the thesis committee, endorsed by the school dean, and approved by the Office of Graduate and Postdoctoral Studies.

**XVI) Graduation**

- A) Degrees are conferred at the end of the semester in which the student defends his or her thesis, including the end-of-summer degree conferral. If the student defends their thesis in the summer by the deadline set by the Office of graduate and Postdoctoral Studies, the student may have their degrees conferred in August. Students are required to apply for degree conferral with the Office of the Registrar during the semester in which they wish to graduate, prior the deadline set by the registrar's Office. Students should refer to the Office of the Registrar at <http://registrar.ride.edu> for additional information regarding deadlines.
- B) Commencement occurs only once per year. If a student submitted their final thesis after the deadline for commencement, the student may participate in the following commencement.