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Hello!

I am writing to you as the Chair of the Department of Biomedical Engineering (BME). Welcome to BME! We are very excited that you chose the University of Wisconsin to pursue your graduate studies, and we look forward to working with you.

In the BME Department, we are improving healthcare by integrating education, discovery, innovation and entrepreneurship. We are committed to providing our students with a dynamic and nurturing environment to learn, discover, innovate and make a difference. Because of our emphasis on improving patient care, the BME Department maintains close collaborative ties with many UW departments in the School of Medicine and Public Health including Surgery, Human Oncology, Medicine, Neurology, Neurological Surgery, Radiology, Orthopedics and Rehabilitation and Psychiatry. Many faculty members hold joint appointments. These cross-links broaden the scope of the research opportunities open to graduate students, and provide access to additional equipment and areas of research investigation.

If you have a question or concern, please contact me, a faculty member, or staff member. Use this handbook as a guide, and as a primary resource to answer your questions, but always feel free to seek assistance from BME faculty and staff.

I would like to encourage you to become an active member in the BME community by getting to know students, faculty and staff both within your academic specialty area, and in other areas of BME.

Sincerely,

Justin Williams, PhD
Professor and Chair
# BME Department Office Functions

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
<th>Contact Information</th>
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| **Department Chair**                           | Justin Williams Ph.D. – Professor | bmechair@engr.wisc.edu  
Office: 2128 Engineering Centers Building  
Phone: (608) 890-3458 |
| **Associate Chair of Graduate Advising**       | Paul Campagnola, Ph.D. – Professor | pcampagnola@wisc.edu  
Office: 2150 Engineering Centers Building  
Phone: (608) 890-3575 |
| **Associate Chair of Graduate Admissions**     | Christopher Brace – Associate Professor | clbrace@wisc.edu  
Office: 1111 Highland Avenue (WIMR)  
Phone: (608) 262-4151 |
| **Academic Department Supervisor**             | Kelly M Lyle                 | kelly.lyle@wisc.edu  
Office: 2126 Engineering Centers Building  
Phone: (608) 262-5056 |
| **Communications Specialist**                 | Matt Wornson                 | bmehelp@bme.wisc.edu  
Office: 2120 Engineering Centers Building  
Phone: (608) 263-4660 |
| **Accountant**                                 | Susan Sauer                  | susan.sauer@wisc.edu  
Office: 2124 Engineering Centers Building  
Phone: (608) 262-3036 |
| **Payroll & Benefits Specialist**             | Laurie Hammer                | bme_payroll@bme.wisc.edu  
Office: 2122 Engineering Centers Building  
Phone: (608) 890-3608 |
| **Student Services**                           | BME Graduate Student Services | prpeters@engr.wisc.edu  
Phone: (608) 263-4025 |
| **Lab Manager Coordinator**                   | John Puccinelli, Ph.D. – Associate Chair of the Undergraduate Program | puccinelli@bme.wisc.edu  
Office: 2132 Engineering Centers Building  
Phone: (608) 890-3573 |
| **Technical Support**                         | Tom Yen, Ph.D. – Instrumentation Innovator | yen@engr.wisc.edu  
Office: 2160 Engineering Center Building  
Phone: (608) 263-6803 |
## Important Websites

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<td><a href="http://www.wisc.edu/grad/">http://www.wisc.edu/grad/</a></td>
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<td>Engineering Career Services</td>
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## Important Dates

**FALL**  
[http://registrar.wisc.edu/fall_deadlines_at_a_glance.htm](http://registrar.wisc.edu/fall_deadlines_at_a_glance.htm)

**SPRING**  
[http://registrar.wisc.edu/spring_deadlines_at_a_glance.htm](http://registrar.wisc.edu/spring_deadlines_at_a_glance.htm)

**NOTE:** It is the responsibility of the student to be aware of and meet all requirement deadlines.
Student Life

Student ID/Wiscard
All students need a Student ID card. With this card, students can check out books and equipment from any of the Campus Libraries. The card can also be used as a multipurpose debit card called “Wiscard.” Wiscard can be used to purchase food, textbooks, and school supplies around campus. This ID is needed to obtain a bus pass (see below) and also acts as a Key Card after access is granted. [http://www.wiscard.wisc.edu/](http://www.wiscard.wisc.edu/)

Newly admitted students may obtain their initial card at no cost upon verification of enrollment by the card office staff. Continuing or returning students may obtain a card to replace a lost, stolen, or worn ID as needed. Replacement cards may be subject to a fee. In order to obtain your student ID you must present some form of personal photo identification such as a valid driver’s license, passport, or state ID. The Photo ID Office is located in Union South Room 149. Normal hours of operation are Monday through Friday: 8:30 AM – 5 PM.

Paying Your Tuition/Fees
Check your student account invoice for amount due and payment deadlines. Pay your fees and tuition, if applicable, at the Bursar’s office, 333 East Campus Mall #10501. Contact the Bursar’s Office at 608-262-3611 if you do not receive an invoice. Failure to receive an invoice will not be accepted as a reason for failure to comply with payment deadlines.

Verify your mailing address & phone number
To update your mailing address and phone number, go to my.wisc.edu/. To update your information, you must know your NetID and password. If you are unsure about your NetID and password, contact the DoIT Help Desk at 264-4357.

Bus Pass
The ASM bus pass is free (already included in your tuition and fees) and includes unlimited rides on Madison Metro, the local bus and paratransit agency. Bus passes will be available just prior to the start of the semester: [http://www.asm.wisc.edu/buspass.html](http://www.asm.wisc.edu/buspass.html)

NOTE: If you scroll to the bottom of that web page, you will see a list of five free UW-Campus routes that run on a frequent basis. These five buses do not require use of a bus pass.

Student Organizations
There are over 600 student organizations at UW-Madison. For a complete listing of student organizations go to [http://www.wisc.edu/studentLife/gettingInvolved.php](http://www.wisc.edu/studentLife/gettingInvolved.php). The following is a list of Student Organizations in which many Biomedical Engineering students are involved:

1. Biomedical Engineering Society (http://bmes.slc.engr.wisc.edu/)
2. BME Graduate Student Association (http://gsa.bme.wisc.edu/)
3. Engineers Without Borders (http://www.ewbuw.org/)
4. Engineering World Health (https://ewh.slc.engr.wisc.edu/)

International Students
International Students who are on a student scholar or visa must check in with International Student Services, 716 Langdon Street, **immediately upon arrival**.
The Biomedical Engineering Graduate Program

The Biomedical Engineering Program offers graduate sequences leading to the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in biomedical engineering. Biomedical Engineering also participates in the University of Wisconsin Medical Scientist Training Program, which leads to a combined MD/Ph.D. degree. The BME graduate program should be of interest to students who wish to practice engineering or engage in research in an engineering specialization in medicine and biology. Graduates find employment in industry, government labs, universities and industrial research establishments.

Advising

Every BME graduate student must have a faculty advisor. A faculty advisor provides the graduate student with academic guidance in their course program and research oversight in their thesis, project, or engineering report. Graduate students should always seek advice from their advisor and other faculty in their interest area prior to enrolling for courses.

Finding a Faculty Advisor

When graduate students are admitted to the BME department and provided financial support (RA/PA), the faculty person providing financial support is the student’s advisor. Students who are TAs or do not have financial support should discuss finding an advisor with the Associate Chair of Graduate Advising as soon as possible after arriving in order to find a faculty advisor within their first semester in the program.

Changing Faculty Advisors

Changing advisors during the graduate program may be necessary due to changes in a student’s interests or changes in the funding sources for their support. Students should discuss an advisor change with their current advisor and with the faculty in their new interest area and request a change in advisor with the BME Graduate Student Coordinator located in 3182 ME Bldg.

Changing Degree Levels

It may become necessary for some students to change their degree level. Some students who begin working toward a Ph.D., may switch to a M.S. degree. Conversely, some students, who plan to complete only a M.S. degree, may apply to the Ph.D. program to continue their studies. These decisions must be made with the support of their faculty advisor or Associate Chair of Graduate Advising. If you would like to change your degree please discuss this change with the contact the Grad Student Coordinator (3182 ME).

**International Students must also inform the International Student Services Office as soon as they decide to change their degree level. For more information on this visit: http://www.iss.wisc.edu/index.html

Master’s Program

The M.S. graduate program offers a 30-credit option. Students who have graduated with their BS from UW-Madison’s Biomedical Engineering Department can complete their MS with 24 additional credits.

Coursework Requirements

Specific course selection is very flexible and draws upon a variety of courses. The required course work is designed to complement each student's interests and background in biomedical engineering and meet the spirit of a BME degree; deviations from the requirements should be discussed with the Associate Chair of Graduate Advising and will be decided on a case-by-case basis. The MS program requirements include:

- at least 15 credits in one area of specialization, 400-level or above (any program)
- at least 12 credits of engineering courses, 400-level or above
- at least one course in bioscience (if not from a bioscience or BME background)
- Optional but recommended: 3-6 credits of independent study project experience or master's thesis research in the student's area of specialization (a maximum of 6 credits can be applied to the MS although students may take more). These credits may count towards your area of specialization.
- two semesters of Seminar in Biomedical Engineering (BME 701)
- At least 15 credits that are graduate level (700 or above or from the approved list)

Please have your course plan grid approved before the start of your first semester.
Completing Your Master’s Degree

In order to be eligible for graduation, an MS student must:

 Have a GPA of 3.0 or higher
 Meet all MS degree requirements listed in this document
 Have all grades entered, except for the current semester. No Is or NRs on the student’s transcript.
 Be enrolled in at least 2 credits the semester in which they graduate.
 Have their MS degree warrant signed and dated by the degree deadline: http://grad.wisc.edu/currentstudents/degree/#5

Each semester, the Graduate Coordinator will send out an e-mail asking for information from MS students who plan to complete their degree that semester. If you plan to graduate, please respond to this e-mail as soon as possible. MS students who plan to graduate must submit two documents to the BME Graduate Coordinator: a completed planning grid signed by their advisor and a completed MS Warrant Request Form (which can be found in the Student Services Office). Students need to submit these documents at least three weeks before the semester’s degree deadline.

Double Degrees: Students receiving a second master's degree from UW-Madison, and students receiving two master's degrees during the same semester, must submit official lists of courses used for each degree. Students can overlap up to 25% of credits from the program with the lower degree credit requirement.

The BME Graduate Coordinator will check the students GPA, grades and course requirements to ensure they have met all the MS degree requirements. They will then send the MS Warrant Request Form to the Graduate School. An email will be sent to the student from the Grad Coordinator when the warrant has arrived from the Graduate School and is ready to be picked up. Students must have their MS warrant signed, dated and returned to the Graduate Coordinator by the degree deadline. For information on Commencement, see p 15.

A Few Things to Remember When Finishing your MS Degree:

 Once a student submits their MS degree warrant, they will no longer be able to enroll in courses.
 All graduate students will retain student status through the end of the semester, until the official date of graduation and at that time are no longer eligible for financial support. If the student holds an assistantship or a fellowship, the student must consult with his or her advisor and the payroll coordinator to determine the end date of the appointment and its ramifications.
 Your diploma will be mailed 12-14 weeks after the degree deadline to the mailing address listed in the student’s Student Center. All international students are required to enter a diploma address into their Student Center to receive a diploma.
 An online survey will be e-mailed to all graduate students completing their degree. This survey is extremely helpful to the department in tracking where students go after graduation. We greatly appreciate your cooperation in completing this survey.
 Your e-mail account will be left active a few months after graduation. You will receive an e-mail notifying you when your account will be deactivated. Once a student has graduated, they can also apply for an UW alumni e-mail at http://www.uwalumni.com/home/marketplace/market_email/market_email.aspx
 Remember to keep in touch and feel free to contact the BME Department or Student Services Office if you have any questions or concerns after graduation.
PhD Program

The Doctor of Philosophy degree is the highest degree conferred by the University. It is a research degree and is never conferred solely as a result of any prescribed period of study. The degree is only granted on evidence of general proficiency, distinctive attainment in a special field, and the ability for independent investigation as demonstrated in a thesis presenting original research or creative scholarship with a high degree of literary skill.

The BME PhD program provides excellent opportunities for interdisciplinary research. To receive a PhD, a student must first complete a BME MS degree and then complete 30 additional credits, which are flexible and may be entirely research credits or can include some coursework. Students transferring with a MS from another program or university should discuss their individual situation with the Associate Chair of Graduate Advising to determine if any additional courses are required to prepare for qualifying exams, etc. Courses should be selected with the faculty advisor to prepare the student for the PhD qualifying exam, add depth of knowledge in the student's chosen area of specialization, and provide research experience. Because of the diverse technical requirements for various specialties, the PhD is administered on a degree-by-committee basis. Basic requirements for a Ph.D. degree with a major in Biomedical Engineering include:

1) Qualifying Examination
2) PhD Minor (or interdisciplinary training)
3) Forming the PhD Committee
4) Preliminary Examination
5) Dissertator Status/Thesis Research
6) Final Oral Examination

Qualifying Examination

The Ph.D. Qualifying Examination is a general examination that places emphasis on a student’s ability to reason, formulate and solve problems, and apply basic engineering and analytical skills. Special emphasis is placed on problem solving relative to the student’s Fundamental Track. The BME qualifying exam is offered twice a year, in November and April. The qualifying exam is usually taken during the second year of the PhD program. Very well-qualified students can consider taking it during their first year, and it must be attempted by the second year of the PhD program. Students who do not pass their qualifying exams may be given a second chance, based on the discretion of the program. Successful completion is expected by the end of the second year but case by case exception may be considered by the program. Students in the MS program are not eligible to take the qualifying exam, even if they have applied for admission to the PhD program. The student must consult with their advisor and the Grad Student Coordinator for the schedule and specific current procedures.

The BME Ph.D. Qualifying Examination consists of five oral examinations, each of which is approximately 30 minutes in duration, with five BME faculty.

All students are evaluated in their choice of Physiology OR Cellular Biology to assess their familiarity with basic bio-sciences at either a system or cellular level.

The remaining four oral exams must be chosen from at least three of the Fundamental Tracks listed below.

a. Two of those exams are termed Advanced Exams. Any two of the sub-specialties listed under the Fundamental Tracks can be chosen for the Advanced Exams (in one track or in two different tracks). Advanced exams will test depth of knowledge in a particular area that the student should describe in one or two sentences in the qualifying exam application materials.

b. The remaining two exams are known as Breadth Exams. Any two main Fundamental Track titles may be chosen for these exams outside of the area(s) selected for the Advanced Exams. Breadth Exams are meant to cover the learning outcomes for fundamental BME tracks in a broad sense, and are limited to coursework that has been taken.
Fundamental Tracks

1. Biomaterials
   - Natural materials
   - Synthetic materials
   - Nano-materials

2. Tissue Engineering
   - Tissue engineering
   - Extracellular matrix engineering

3. Cellular and Molecular Engineering
   - Stem cell bioengineering
   - Systems and synthetic biology

4. Biomechanics
   - Musculoskeletal/orthopedic biomechanics
   - Biofluids
   - Ergonomics

5. Bioinstrumentation
   - Clinical bioinstrumentation
   - Biosignal processing
   - BioMEMS and microfluidics

6. Biomedical Imaging
   - Biomedical optics
   - Multi-dimensional bio-signal processing
   - Clinical imaging modalities
   - Both signal processing exams cannot be selected together for the advanced exams

The possible examiners for both the advanced and breath exams (examiners may vary depending on availability) for each area are listed in parentheses next to the Advanced Exam areas

An online signature form, verifying that a student is ready to take the qualifying exam, must be approved by the student’s advisor. Students will receive an official letter from the chair notifying them if they passed the qualifying exam. For more information see: http://www.engr.wisc.edu/bme/bme-academics-graduate-phd-requirements.html.

PhD Minor

The Department has worked with the Graduate School and effective January 2013 allows BME students to be exempted from the Minor requirement based on the following principles. The central aim of biomedical engineers is to unravel gaps in biological knowledge through the use of engineering principles. Thus, the doctoral program in Biomedical Engineering is inherently interdisciplinary. We understand and appreciate the aim of the Graduate School to guarantee that interdisciplinary education is being provided if the Minor Requirement is removed. Interdisciplinary education and training in BME is provided in this manner.

Interdisciplinary training for graduate students on NIH T-32 Programs: our students who are supported by T-32 programs such as the Biotechnology Training Program (BTP), Clinical Neuroengineering (CNTP), Computational Informatics in Biology and Medicine (CIBM) would meet the level of our current Minor requirement. These programs develop interdisciplinary educational programs, in which our faculty assist in teaching, to partially meet the training goals of the program.

Bioscience Requirement: All students are required to take a bioscience course outside of BME and outside of courses offered by the College of Engineering.
Area of Specialization: All BME students are required to show how 15 hours of their coursework combines to fill an area of specialization. The areas of specialization are documented in a half page description provided by the student, approved by their adviser, and approved by the BME Graduate Committee. This requires an additional 1-2 course(s) outside of Biomedical Engineering.

Interdisciplinary Training: BME students traditionally go further than required to meet university requirements to have representation in their thesis committee outside the student’s department. For an example, a student working in a tissue engineering laboratory that develops cartilage will work with specialists in biomechanics and biomedical imaging to validate the advances of their work in tissue engineering. A student developing non-invasive diagnostic imaging methods to quantify blood flow will work side by side with scientists/engineers who specialize in fluid dynamics and physicians requesting the blood flow characterization in specific regions of the body. Journal papers authored by BME graduate students often are co-authored with individuals from this team.

Documenting the Education and Training to replaces the Minor Requirement: Prior to obtaining a PhD warrant, each student will prepare a summary of his or her effort in interdisciplinary coursework and training. The purpose of the summary will be to document the effort to meet the spirit of the Minor Requirement. The summary will need to be approved by the student’s thesis committee as well and will be maintained for possible audits by the Graduate School.

The requirement for the Minor policy is provided here for those wishing to obtain a Minor: Students must complete a cohesive body of work outside the BME major in order to add breadth to their Ph.D. work. This work is termed the Minor and consists of two options. Option A includes a minimum of nine credits of coursework in a single department and requires approval by that department. Option B includes a minimum of nine credits of coursework in two or more departments and may include BME courses that are not part of the student's major area. The student must consult the requirements for his or her Ph.D. minor with their advisor before deciding which option to pursue. For Option B, the minor proposal must be approved before or by the time six of the total credits required for the minor are completed.

Minor approval forms for either of the minor options can be obtained in the Student Services office at 3182 Mechanical Engineering Building. For more information see: http://www.engr.wisc.edu/bme/bme-phd-minor-requirements.html

PhD Committee Requirements
Attainment of a Ph.D. degree requires the preparation of a thesis on a research topic selected by the student and his or her advisor. Once a research project is selected, the student must choose his or her thesis committee. The thesis committee must be on file in the BME Office by the end of the student’s second year.

Committees (sometimes called "Graduate Advisory Committees" or "Degree Committees") advise and evaluate satisfactory progress, administer preliminary and final oral examinations, evaluate a thesis or dissertation, and/or sign a degree warrant. Students should consult their advisor and their program’s student handbook for the specific function of degree committees in their program.

The program/department chair must sign the "Ph.D. Final Oral Committee Approval Form," thus representing the approval of the program/department executive committee (or its equivalent), before the warrant request form is submitted to the Graduate School for final approval to obtain the final warrant.

Minimum Graduate School requirements for graduate committees are as follows:

- The chair or co-chair of the committee must be Graduate Faculty from the student's program. The UW-Madison Faculty Policies and Procedures 3.05A stipulates that “the faculty of the Graduate School includes all university faculty defined in 1.02 holding professional rank (professor, associate professor, assistant professor or instructor) in any department with graduate program authority, including those with zero-time appointments in such departments.” Committee members who have retired or resigned from the University automatically retain Graduate Faculty status for one year; after one year they are permitted to serve as co-chair or other non-Graduate Faculty committee member.
- Doctoral committees must have at least 5 members, 4 of whom must be UW-Madison graduate faculty or former UW-Madison graduate faculty up to one year after resignation or retirement. At least one of the 5 members must be from outside of the student's program.

- The required 5th member of a doctoral committee, as well as any additional members, all retain voting rights. They may be from any of the following categories, as approved by the program executive committee (or its equivalent): graduate faculty, faculty from a department without a graduate program, academic staff (including emeritus faculty), visiting faculty, faculty from other institutions, scientists, research associates, and other individuals deemed qualified by the executive committee (or its equivalent).

- BME Department Rules: The chair should be a faculty member in BME (primary or affiliate). At least one member must be from outside of the primary BME faculty. At least one member must be a primary BME faculty. The Ph.D. committee chair should approve the other members of the committee. Students must have a yearly committee meeting after passing the preliminary exam.

**Preliminary Examination**
The Preliminary Examination is an oral examination based upon a student’s written proposal and a detailed plan to carry out the Ph.D. thesis. Students must consult with their advisor for specific details of the requirements for the preliminary examination.

The preliminary exam warrant must be requested from the Graduate School at least three weeks before the proposed exam date. Preliminary exam warrants can be obtained from and should be turned into the Grad Student Coordinator in 3182 ME. Upon completion of 32 credits of graduate level coursework taken as a graduate student at UW-Madison, completion of the minor requirement, and passing the preliminary examination, a student is eligible to become a dissertator. Students must take their preliminary exam at least 18 months before their final defense. It is strongly recommended that the Preliminary Exam be taken within one year after passing the BME Qualifying Exam. It must be taken as soon as a student’s Ph.D. research activities and goals are sufficiently well defined that a formal proposal can be compiled. It is unacceptable to take the preliminary exam after the research is effectively complete.

- The Graduate Student Coordinator should be notified at least four weeks before the date of your Preliminary Exam so the appropriate paperwork can be processed. Students should take their Preliminary warrant to the exam.

- Students must prepare a written thesis proposal and seek approval of this proposal from all members of the Ph.D. Thesis Committee. Since this requires all of the Ph.D. Thesis Committee members to read the Thesis Proposal, it is strongly recommended that the main content be concise. A suggested model is similar to either an NSF or NIH grant proposal format (no more than 15 pages, including figures and equations, but not references or title page). The document must be given to the committee a minimum of 1 week before the scheduled prelim exam.

- The Thesis Proposal must be presented orally before all Thesis Committee members to judge the whether the proposed research is satisfactory. Formal approval will require the signature of every member of the Thesis Committee on the Preliminary warrant.

- The scope of the proposed work will be evaluated during the preliminary exam. The scope should require a period of 18 months to complete, at a minimum, prior to a final defense.

**Dissertator Status**
A dissertator is a unique reduced tuition fee status for students who have passed their preliminary exam and completed all requirements for a Ph.D. degree except for the dissertation. To be eligible for dissertator status you must:
1. Pass the Preliminary examinations
2. Satisfy the Ph.D. minimum credit requirement (32 credits as set by the Graduate School)
3. Complete all minor requirements (see above Discussion on the Minor)
4. Complete all major requirements except the dissertation
5. Clear all I or P grades in non-research courses
6. Return the signed preliminary exam warrant to the Graduate School

Students will receive an e-mail from the Grad School once their Preliminary warrant has been processed, notifying them of the Dissertator status.

As a dissertator, students enroll in only research credits and work towards completing their thesis project.

**Ph.D. Warrant and Oral Defense**
The Ph.D. Final Oral Defense committee consists of five faculty members. Usually, this committee is the same committee as for the preliminary exam. This examination requires a demonstration of the unique contributions of the research and a defense of the methods used and conclusions drawn. The Ph.D. Final Oral Committee Approval Form must be filled out and sent to the Graduate School at least four weeks in advance of the defense. This form is only available thru the Grad Student Coordinator in 3182 ME. This form must be signed by the student’s advisor and the department chair. The Graduate School reviews the composition of the committee (see Ph.D. Committee Requirements, page 15) and sends back the final warrant.

The thesis is submitted to the PhD committee for review 1-2 weeks before the scheduled defense. The PhD oral defense is open to the public. Following the defense, revisions are made to the thesis as required by the committee.

After the final defense, the student must follow all of the Graduate School procedures described at: http://www.grad.wisc.edu/education/completedegree/Dissertation_options.html. The student must contact the Graduate School at 608-262-2433 to arrange an appointment for the final review. The student is responsible for depositing the dissertation at the Graduate School. All graduate students will retain student status through the end of the semester, until the official date of graduation and at that time are no longer eligible for financial support. If the student holds an assistantship or a fellowship, the student must consult with his or her advisor and the payroll coordinator to determine the end date of the appointment and its ramifications. All international students are required to enter a diploma address into their Student Center to receive a diploma.

**MD/PhD Program**
The MD/PhD program requires 28 credits beyond the BME MS degree (see above); these credits are flexible and may be entirely research credits or may include some coursework. Additional requirements are similar to the BME PhD program (qualifying exams, preliminary exams, thesis defense). The bioscience course requirement from the MS will be waived using some of your MD coursework in your first or second year, please discuss with the Associate Chair of Graduate Advising as you plan your coursework.

**Registering for Classes**
Course registration is accessed on-line through the Student Center section of MyUW. To register for classes go to www.wisc.edu, click on the link to "MyUW," log in with your Net ID and password, and then click the link to "Student Center." For tutorials on how to navigate your Student Center please go to: http://helpdesk.doit.wisc.edu/search.php?q=student+center&cat=0

**Registering for Independent Study, Research or Thesis Credits**
Independent study credits (699 or 999) are graded with a letter grade (A-F) and are weighted with the student’s GPA. Research credits (790, 890, or 990) can only by graded as P (Progress), S (Satisfactory), U ( Unsatisfactory). Research credits are not weighted into a student’s GPA.

As a general guideline, MS students should register for Independent Study 699 or Master’s Research 790; PhD pre-dissertation should register for Independent Study 699 or Pre-dissertation Research 890; PhD
dissertator should register for Advanced Independent Study 999 or Dissertator Research 990. BME grad students should discuss planning with their advisor. Please include campus id# information for authorizations.

**Registering for a Closed BME Class**
If you would like to register for a closed course, please use the wait list system when enrolling. For courses outside of engineering, please contact that department’s student services office for their specific department procedure to enroll in a closed course.

**Credit Load**

**Fall & Spring**
The minimum credit load to be considered a graduate student is two graduate-level credits (300 or above). A student taking 2-6 credits during the Fall or Spring semester is considered a part-time graduate student. A student taking 8-15 credits during the Fall or Spring semester is considered a full-time graduate student. The maximum credit load for fall and spring semester is 15 graduate-level credits. (Note: more than 12 credits per semester is not recommended.) Students who are being paid as an RA, TA or PA must be enrolled as a full-time student.

**Summer**
Enrollment for summer is not required for Graduate Students. However, it is required for any student who is being paid as an RA. During the summer, students who are required to enroll must take at least 2 credits.

**Dissertators**
Dissertator status, which is granted once a student has passed their Preliminary Exam, allows a student to enroll for only 3 credits to be considered a full-time student. However, in order to maintain dissertator status, students must enroll for no more than and no less than 3 credits each semester. For more information on dissertator status, please see the Graduate School’s Academic Policies.

**PLEASE NOTE that courses taken pass/fail, for audit, or below 300 do not count towards these minimums or maximums. They are in essence counted as zero credits.**

**Full-time Credit Requirement**

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<tr>
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<th>Fall/Spring Load</th>
<th>Summer Load</th>
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<tr>
<td><strong>General Rule</strong></td>
<td>8-15 cr</td>
<td>4-8 cr</td>
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<tr>
<td><strong>Dissertators</strong></td>
<td>3 cr</td>
<td>3 cr</td>
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<tr>
<td><strong>Non-dissertator TAs and RAs with 33%&lt;</strong></td>
<td>8 cr</td>
<td>2 cr</td>
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<tr>
<td><strong>International Students</strong></td>
<td>8-15 cr</td>
<td>not required unless being paid</td>
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**Credit Overload**
In order to enroll in more than the maximum credit load (15 credits for Fall/Spring & 8 credits for Summer), students must submit a Credit Overload Request form [http://www.grad.wisc.edu/education/forms/overload.html](http://www.grad.wisc.edu/education/forms/overload.html). This form must be signed by your faculty advisor and turned into the Graduate School at 217 Bascom Hall. The Graduate School will look closely at the rationale for the request, and if the request is approved, the student is responsible to add the course. This form must be approved by the Add Deadline (see Important Dates p. 6) in order for a student to take more than the max credit load.

**Transferring Graduate Credits from other Institutions**
The Graduate School’s minimum credit requirement for graduation can ONLY be satisfied with graduate-level courses taken as a graduate student at UW-Madison. The minimum credit requirement is 16 credits for master’s degree students and 32 credits for Ph.D. students. Master’s degree students who have been absent for five or more years lose all degree credits earned before their absence. The BME Department will allow the student to use up to 6 credits of graduate course work from another institution toward his/her degree requirements. See the Grad Student Coordinator for more information.
**Requesting Transcripts**

Current students at UW-Madison can request transcripts online through their MyUW account under the Student Center tab. Former students can also request transcripts online at http://myinfo.wisc.edu. Students will need to know their Student ID number to access the transcript request system.

**Commencement**

Graduate students are encouraged to participate in the commencement ceremony. Commencement ceremonies are held in December and May. Because there is no ceremony offered during the summer, students can decide which ceremony they would like to participate in. Students should think of their degree completion and participation in the commencement ceremony as two separate events.

To participate in the commencement ceremony for any given semester, the student must simply notify the Graduate Coordinator at least 8 weeks before the ceremony if they wish for their name to be printed in the ceremony program. A student can decide to participate in the ceremony up until the day of the ceremony, but if they have not notified the Graduate Coordinator 8 weeks before the ceremony their name will not be printed in the commencement program.

Traditionally, Ph.D. students are escorted by their faculty advisor. Ph.D. students should discuss their commencement plans with their advisor. For more information on ordering the proper attire, dates and times, please see: http://www.secfac.wisc.edu/commence/index.htm.
Financial Support/Insurance Benefits

TA/RA/PA
The Biomedical Engineering Department offers several different types of financial support for graduate students. Three common types of financial support are Teaching Assistantships, Research Assistantships, and Project Assistantships (TA/RA/PA respectively). Teaching Assistants, Research Assistants, and Project Assistants with at least a 33.33% appointment are eligible to receive tuition remission. Please note, students who receive tuition remission, are still required to pay segregated fees by the tuition due date. The amount charged for segregated fees is based upon the number of credits the student has enrolled in. Tuition and Segregated fees can be viewed and paid through the student center section of a student's MyUW account.

Applying for Teaching Assistantships
Any graduate student in the College of Engineering may apply for a TA position in BME. First consideration will be given to BME Graduate Students. In selecting among applicants, the Department will consider applicants' preparation and achievement in relevant subjects and their potential as effective teachers for UW undergraduates. Professors in the courses seeking TAs will review applications and select TAs for their courses. Application materials can be found in: http://www.engr.wisc.edu/bme/bme-ta-application.html. Please contact bmehelp@bme.wisc.edu with application-related inquiries.

There are two classifications of Teaching Assistants based on experience training and education, Standard TA and Senior TA.

Standard TA
A TA who does not meet the qualifications of a Senior TA.

Senior TA
Has had one and two-thirds (1 ⅔) or more semester-units of experience and has completed all course-work and departmental requirements for candidacy for a Ph.D., or has already been awarded a Ph.D. and has completed one and two thirds (1 ⅔) or more semester units of experience prior to employment.

Note: TAs are included in a labor agreement between the State of Wisconsin and the Teaching Assistants Association. This agreement contains valuable information regarding Teaching Assistantships and it can be found at http://taa-madison.org/

Expectations of Teaching Assistants in Biomedical Engineering
First time TAs are required to attend the New Educators Orientation (NEO) or the Teaching Improvement Program (TIP) that occurs at beginning of every semester. In addition, first time non-native English speaking TAs are required to take a SPEAK test to prove they possess the required level of oral English proficiency to qualify for a TA appointment. For more information go to: http://www.english.wisc.edu/esl/speak-test.html. All Teaching Assistants must attend the College of Engineering Teaching Improvement workshops held in August and January.

Teaching Assistants will receive student evaluations using the College of Engineering Teaching Evaluation Form. The department recommends supervising faculty evaluate inexperienced (first two semesters) TAs during the fifth or sixth week of their first two semesters. The evaluation will usually involve a planned visit to a classroom/lab section and a subsequent conference with the TA.

Applying for Research Assistantships
Students should contact professors in their area of interest. Professors decide whom they will appoint on their research grants. Faculty reviews all graduate applicants when hiring new Research Assistants.
Applying for Project Assistantships
There are a few project assistant opportunities on campus. Announcements of openings are posted on the UW Job Center Web Page (www.jobcenter.wisc.edu). For Project Assistantships in the Department, please submit a resume to the main office. The process established for selecting TAs is also used for Project Assistants.

Credit Load Requirements for TA/RA/PA
Teaching Assistants must be full-time students (8-15 credits). Research Assistants must be full-time students in the fall and spring semesters, and must take at least two graduate-level credits during the eight-week summer session if they are being paid. Project Assistants must be enrolled for at least two graduate-level credits during the fall and spring semesters, however they are not required to enroll in summer classes. Please see page 11 for further information.

Health Insurance
TAs, RAs, PAs, and fellows holding a minimum 33.33% appointment are eligible for group health insurance through the university. The university will pay for most of the premium. Consult the booklet provided for details on costs and types of coverage. All UW-Madison students are eligible to receive health care at the University Health Service (UHS). Hospitalization and emergency room services are not included in UHS benefits. In order to activate your insurance benefits you must see the Payroll & Benefits Specialist in 2122 ECB. You are encouraged to take care of this as soon as possible, as the strict deadline of a 30-day enrollment period is observed.

Health Insurance for International Students
International students are required to purchase SHIP insurance unless they have other health insurance that meets certain minimum standards. International students with an RA or RA/TA appointment are eligible for UW health insurance; once you sign up for a UW health insurance plan you are automatically waived from the SHIP requirement. For more information see: http://www.uhs.wisc.edu/

Tax Information
All RA, TA and fellowship income is subject to federal and state income tax. However, only RAs and TAs have taxes withheld from their checks; fellows do not. Only TAs are subject to social security tax (but these can be waived if you submit a Student Enrollment Verification form). You may want to save receipts for school fees, books, and supplies in case you are able to claim tax deductions for them. Check with your tax advisor. Tax withholding (W4) forms can be easily accessed online. For questions regarding specific tax situations, students are encouraged to contact either the Internal Revenue Service or a tax advisor. The UW does not provide tax advice.

Tax Information for International Students
Non-US residents from countries with which the US has a tax treaty may be tax exempt. All international graduate students are required to attend a Tax Workshop for International Visitors sponsored by Employee Compensation and Benefits Services. More information about the workshop can be found at https://admin.engr.wisc.edu/

Payroll/ Timesheets
Student hourly packets can be picked up from the Payroll & Benefits Specialist in 2122 Engineering Centers Building. Fill out forms and return to 2122 ECB. Students are now using the online system called HRS, through MyUW, to submit their hours. MyUW, and the Student Timesheet, are accessible using your UW-Madison NetID and password. Supervisors are approving online for most students so it is not necessary to print a timesheet. Instructions for using the Student Timesheet in the HRS system can be found at https://helpdesk.wisc.edu/hrs/page.php?id=16896

Paper Graders
Paper graders are part of the TAA agreement. There are special timesheets for this appointment. Paper graders submit timesheets at the end of each month and are paid on the 12th of the following month.
Reimbursement for UW Related Travel and Purchases
You must complete an e-Reimbursement request in order to get reimbursed after expending personal funds for UW related travel or purchases. Log-in to “MyUW” (https://login.wisc.edu/?appurl=my.wisc.edu/portal) and go to the Services tab. Log-in to the e-Reimbursement application. Correct funding information will be required before you can complete this request. Please verify with your faculty advisor. Once the request is submitted, support staff will review your request. If you have any problems with the e-Reimbursement application contact the Department Financial Specialist, Room 2124 ECB.

You must submit all purchase and travel receipts to the Department Financial Specialist in order to be reimbursed. This includes forms of transportation (i.e. air fare, bus, taxi), lodging, parking, and registration. For a full explanation of reimbursable expenses, please go online to: http://bussvc.wisc.edu/acct/TEWeb/index.html.

IMPORTANT: Provide justification/explanation of all travel performed while conducting your research, as well as supplies purchased. If you are attending a meeting or conference, please provide any correspondence, flyer, on-line announcement of the meeting. Complete flight itineraries are also required.

Office/Building/Supplies

Building Hours
The Engineering Centers Building is open Monday through Friday from 7am to midnight, Saturday from 7am to 6pm (except for during football games), and Sunday from 10am to 9pm.

Keys and Key Card Access
For Biomedical Engineering Office Keys
To obtain a Physical Key Request form contact the Communications Specialist in 2120 ECB.

For Key Card Access to ECB Labs and/or Exterior Building Doors
Obtain a Keycard Request form from the Communications Specialist in 2120 ECB.

Lost Keys
Structures Lab: $75 fine for Lost High Security Keys (Deposit is forfeited and does not count towards payment of fee).

Key Rules
• Do not share this key with others.
• Do not duplicate.
• Please return keys "in person," (do not pass on to others).

Office/Desk Area
Desk Assignment
Students who are receiving financial support from the BME department will receive first priority for a desk assignment. BME students who have sources of funding from outside the department receive the next priority for desk assignment. Students not receiving financial support may inquire about possible desk availability. Incoming graduate students should see Communications Specialist for details.

Office Etiquette
Please be mindful of your office-mates and keep your office area clean and professional. (Do not bring in beds, pets, etc.) No new furniture is allowed in the offices and existing furniture may not be moved.

If you are a teaching assistant and share an office with other graduate students, let them know your office hours. Some TAs find it helpful to leave a destination indicator at their desk, so if someone is looking for them they know where they can find them. Out of respect for your officemates, holding office hours in your graduate
student office is often not ideal. The Innovation Room 2139 ECB can be used for office hours held in the evening, 3pm or later. This room must be reserved – see the Communications Specialist for reservations.

Upon completion of your degree or when your desk is no longer needed see the Communications Specialist for the desk check out procedures. At this time you are required to return your physical key to room 1032 and clean your desk area.

REMEMBER: When you graduate or no longer use your desk area, please thoroughly clean your desk!

Supplies
If you have access to funding through a research and/or teaching assistantship, you may be able to order certain UW-related supplies. See the Communications Specialist in 2130 Engineering Centers Building concerning options about any purchase. Graduate students are responsible for obtaining their own office supplies.

Telephones
Student access to university telephone services is limited to internal university and local calls. When making an internal university call it is only necessary to dial the last five digits of the phone number. When making a local call, first dial “9.”

Room Reservations
Scheduling of space in the ECB must be initiated by an academic department, Communications office, or SLC registered student organization. Visit: http://rooms.engr.wisc.edu/
The Wisconsin Union Central Reservations office can provide assistance in reserving space elsewhere on campus; call (608) 262-2511.

Photocopying
Photocopying on the department copy machines is NOT permitted for personal purposes, including for courses being taken by the student. If photocopying is required for your research project, see your major professor for an access code number. Teaching assistants will be given an access code number for the copier by the Communications Specialist. Copiers are available nearby at Wendt Library and Bob's Copy Shop for personal use. When using the Copy and Mail Center in 2135 ECB, please help keep the room clean by throwing out paper scraps, staples, etc. Report user-related problems to the Communications Specialist (2120 ECB). They will call for repair if necessary.

Check-out List
For check-out materials please see the Communications Specialist in room 2120 ECB.
Student Resources

Computers

Division of Information Technology (DoIT)

DoIT (Division of Information Technology) offers students the following services:
- Advice on software or hardware
- A network connection
- Help 7 days a week
- Warranties
- Repair & installation
- Software training for students
- Sales advice and great prices
- Tech help is free

For more information go to: http://www.doit.wisc.edu/students/

Computer-Aided Engineering (CAE)

CAE is a College of Engineering facility available to any student with an engineering major or any student enrolled in an engineering course, as well as faculty and staff of the College. CAE provides users access to facilities and resources which allows them to effectively compute on the engineering campus. Users have access to a broad range of resources and services which include:
- Windows XP and Linux computer lab access
- Networked file space.
- Laser and Color Printers.
- Hundreds of software titles
- Email and webpage access.
- CAE Consultants: Rm. 172 CAE Building, phone 262-5349, helpdesk@cae.wisc.edu, or online
- Access to account management features.
- AE file restoration.

For more information go to: http://www.cae.wisc.edu/newuserhelp

Computer Support by Department/Center

In-office computer support for College of Engineering faculty is provided by your Departmental Support Person (DSP). Services Provided by DSPs:
- Diagnose network problems
- Diagnose computer problems
- Install software and/or upgrades
- Report any problems that cannot be resolved to CAE for further assistance

For in-office support please contact Tom Yen (yen@engr.wisc.edu).

Counseling for Engineering Graduate Students

The College of Engineering's Counseling Service is available because it is easier to concentrate on your studies if you can deal effectively with personal, academic and career concerns. Talking with someone who is objective and empathetic can help you sort through these concerns.

Appointments can be made with the CoE counselor, David Lacocque by telephone (608/265-5600), email (lacocque@uhs.wisc.edu), or dropping by the office at 333 East Campus Mall, Madison, WI 53715, Phone: (608) 265-5480. Please see http://studentservices.engr.wisc.edu/counseling/ for more information.

Engineering Career Services (ECS), Office of Student Development

Engineering Career Services (https://ecs.engr.wisc.edu/public/index.php) provides lifetime tools for successful career development in a rapidly changing world. ECS helps students in preparing for internship/co-op as well as job searches (resume & cover letter writing, listing of potential employers, etc), practicing interviewing skills (mock interviews, sample interview questions), and other important career information such as negotiating job offers and salaries. Students can become lifetime members of ECS by registering & paying a one-time $20 fee.
The staff at ECS teaches a course called Career Orientation (listed as PRO OR 200 under Professional Orientation). The course generally meets one time per week and is worth one credit. Students gain exposure to the world of work and valuable knowledge and skills related to the job search.

**Contact Person:** John Archambault  
**Telephone:** (608) 262-3471

**Office for Equity and Diversity (OED)**  
The Office for Equity and Diversity (OED), promotes, integrates, and transfers equity and diversity principles to nurture human resources and advance the mission of the University of Wisconsin-Madison. The OED employs multiple approaches to attain its strategic objectives. These include:

- provide leadership and consultation to develop and implement equity and diversity strategies throughout the campus;
- promoting the use of standardized and proactive human resources processes;
- maximizing human resources through the effective use of continuous improvement principles;
- establishing collaborative partnerships with Schools/Colleges and Divisions; and
- coordinating campus compliance with affirmative action and equal opportunity requirements, referred to as AA/EEO compliance.

The UW-Madison is committed to providing equal opportunity and equal access, and to complying with all applicable federal and state laws and regulations, as well as University of Wisconsin non-discrimination policies and procedures. The OED has prepared an informative website (http://oed.wisc.edu/dishar.html) containing a series of questions and answers to describe how our discrimination/harassment complaint process works at the university. These questions and answers are meant to help employees, applicants for employment, students, applicants for admission, and anyone using the university’s programs or activities, including visitors to campus, understand how they can file a complaint of discrimination/harassment and how the investigative process works.

**International Student Services**  
International Student Services (ISS) offers a wide variety of services and programs to international students at the University of Wisconsin-Madison. The ISS staff provides information and programs to international students about the campus and community and provide support and assistance concerning visas and related immigration issues. ISS serves the more than 4,000 international students on the campus at any given time. For more information about ISS, please see their website at http://www.iss.wisc.edu/index.html

**Writing Center**  
The UW Writing Center (http://writing.wisc.edu/) provides free of charge face-to-face and online consultations which focus on a number of different writing scenarios (i.e. drafts of course papers, resumes, reports, application essays, cover letters, theses, etc). Writing Center instructors will not edit or proofread papers. Instead, their goal is to teach students to edit and proofread in order to become a better, more confident writer.

**McBurney Disability Resource Center**  
Students who have a documented disability, or suspect that they may have an undiagnosed disability are encouraged to contact the McBurney Disability Resource Center (http://www.mcburney.wisc.edu/) to inquire about obtaining academic accommodations. The McBurney Center provides academic accommodations such as: adaptive/assistive technology access, assistive listening devices, document conversion, elevator keys, ASL interpreting, notetaking support, testing accommodations, and reduced credit load recommendations to name a few. Students must provide documentation and be registered with the McBurney Center to receive at Verified Individualized Services & Accommodations (VISA) before they can obtain accommodations.

**Telephone:** (608) 263-2741  
**TTY:** (608) 263-6393  
**Location:** 1305 Linden Drive (1st floor)
Grievance Procedures

If a student feels unfairly treated or aggrieved by faculty, staff, or another student, the University offers several avenues to resolve the grievance. Students' concerns about unfair treatment are best handled directly with the person responsible for the objectionable action. If the student is uncomfortable making direct contact with the individual(s) involved, they should contact the advisor or the person in charge of the unit where the action occurred (program or department chair, section chair, lab manager, etc.). For more information see the College of Engineering Policies and Procedures:
https://www.engr.wisc.edu/academics/student-services/academic-advising/policies-and-procedures/

and the Graduate School Academic Policies & Procedures: Grievances & Appeals:
https://grad.wisc.edu/acadpolicy/#grievancesandappeals

Procedures for proper accounting of student grievances against BME faculty, staff, or students:

1. The student is encouraged to speak first with the person toward whom the grievance is directed to see if a situation can be resolved at this level.

2. Should a satisfactory resolution not be achieved, the student should contact the program’s Grievance Advisor, Professor Beth Meyerand, to discuss the grievance. The Grievance Advisor will facilitate problem resolution through informal channels and facilitate any complaints or issues of students. The first attempt is to help students informally address the grievance prior to any formal complaint. Students are also encouraged to talk with their faculty advisors regarding concerns or difficulties if necessary. University resources for sexual harassment, discrimination, disability accommodations, and other related concerns can be found on the UW Office of Equity and Diversity website: http://www.oed.wisc.edu/index.html

3. Other campus resources include
   • The Graduate School grad.wisc.edu
   • McBurney Disability Resource Center - mcburney.wisc.edu
   • Employee Assistance Office - eao.wisc.edu
   • Ombuds Office - ombuds.wisc.edu
   • University Health Services uhs.wisc.edu

4. If the issue is not resolved to the student’s satisfaction, the student can submit the grievance to the Grievance Advisor in writing, within 60 calendar days of the alleged unfair treatment.

5. On receipt of a written complaint, a faculty committee will be convened by the Grievance Advisor to manage the grievance. The program faculty committee will obtain a written response from the person toward whom the complaint is directed. This response will be shared with the person filing the grievance.

6. The faculty committee will determine a decision regarding the grievance. The Grievance Advisor will report on the action taken by the committee in writing to both the student and the party toward whom the complaint was directed within 15 working days from the date the complaint was received.

7. At this point, if either party (the student or the person toward whom the grievance is directed) is unsatisfied with the decision of the faculty committee, the party may file a written appeal. Either party has 10 working days to file a written appeal to the School/College.

8. Documentation of the grievance will be stored for at least 7 years. Significant grievances that set a precedent will be stored indefinitely.
The Graduate School has procedures for students wishing to appeal a grievance decision made at the school/college level. These policies are described in the Graduate School’s Academic Policies and Procedures: https://grad.wisc.edu/acad
Biomedical Engineering M.S. Program
Degree requirement form
(Submit this form before you register for your first semester of courses in the MS program)

Name ___________________________________         Student ID Number  _______________________
Area of Specialization  __________________________________________________________________
Advisor _____________________________________________________________________________
(Note: your advisor is the BME faculty member for whom you have selected to do research/independent study with. If you do not have one, then your advisor is Prof. Paul Campagnola)

This form must be accompanied by a paragraph explaining how these courses combine with previous training to provide the engineering depth and breadth and the bioscience associated with a MS in BME.
Note: All courses must meet the spirit of a BME Degree.

<table>
<thead>
<tr>
<th>Degree Requirement</th>
<th>Course Number</th>
<th>Semester (i.e. F 14)</th>
<th>No. Degree Credits</th>
<th>No. Area Credits</th>
<th>No. Grad level Credits*</th>
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</thead>
<tbody>
<tr>
<td>Engineering Courses at 400 Level or above (At least 12 Credits)</td>
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<td>Project/Independent Study</td>
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<td>BME 699 or 790 (3-6 Credits)</td>
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<td>Electives at 300 Level or above (0-9 credits)</td>
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<td>Physiology (335 or 435) or other Bioscience (3-5 credits)**</td>
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<td>UW BME BS students Only</td>
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<td>Two adv. courses from BS</td>
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<td>BME Seminar (Need 2 Semesters)</td>
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<td>BME 701</td>
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<td>Total No. Credits:</td>
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</table>

* Graduate level courses are 700 level or higher, Advanced BME courses listed in the handbook, or courses from Medical Physics.
** UW BME BS Degree students are not required to take an additional bioscience for the MS degree, but may.

DOES YOUR ADVISOR REQUIRE A THESIS? YES ___   NO ____
THESIS TITLE:  ________________________________________________________________________________
Advisor Signature ____________________________________                    Date  ___________________________
Graduate Committee Approval  __________________________________________________________________