Joint MU-MCW Master of Science Degree in Biomedical Engineering

Biomedical Engineering (BME) is an interdisciplinary field that is based on the application of engineering principles and experimental and analytical techniques to the development of biologics, materials, devices, implants, processes, and systems that advance biology and medicine and improve medical practice and health care.

The Master of Science (MS) degree in BME is awarded in recognition of marked scholarly attainment in a major area of specialization in BME. In addition to didactic coursework, students are required to complete a thesis and pass an oral comprehensive examination as part of their thesis defense.

a. Admission Requirements.

i. Educational Background.

Graduates of accredited colleges or universities that have earned a bachelor's degree in various engineering, physical science or life science disciplines, or equivalent are eligible for admission to the MS degree program in BME. To qualify for admission, applicants must have, as a minimum, a "B" average (GPA of 3.0 out 4.0) in their total post-secondary school education. Students admitted into the MS degree program who do not have an engineering degree must complete pre-requisite engineering coursework (see *section D.ii*).

ii. Application for Admission.

All applicants, regardless of status sought, must submit the following documents with the MU Graduate School.

https://graduate.admissions.marquette.edu/apply/

Priority deadlines for completed applications for fall and spring admission are June 1st and December 15th, respectively. Normally, no application is considered for admission until it is complete. The required documents are:

- Completed graduate school "Application for Admission"
- Official transcripts of undergraduate and graduate records, sent directly to the MU Graduate School by the issued institution. If a transcript or mark sheet is not in English, the applicant must supply a translation.
- Three letters of recommendation.
- A "Statement of Purpose" in which the student indicates their reasons for seeking the MS degree in BME, declares their area of interest (one of the six Specifications/Tracks listed below), and identify BME faculty he/she would be interested in working with for thesis research.
- Results of the Graduate Record Examination (GRE), sent directly to the MU Graduate School by the Educational Testing Service (www.ets.org). **Optional for fall 2023 and spring 2024.**
- International students must submit results of the TOEFL examination, sent directly to the MU Graduate School by the Educational Testing Service (www.ets.org). International students who are in the process of completing or have completed their undergraduate degree in the United States, United Kingdom, Australia, New Zealand or Canada (excluding Quebec) are not required to take the TOEFL examination.
- Application fee (non-refundable).

Admission is not official until the student is notified of acceptance by the MU Graduate School. Admission cannot be made final until an official transcript has been received indicating the conferral of an undergraduate degree. If a student fails to register for courses within two years after the date of application for admission, the student's file will be discarded.

b. Areas of Specialization.

Upon enrolling in the joint MU-MCW MS degree program in BME, a student should select one of the following specializations/tracks.

1. *Bioinstrumentation*
2. *Biomechanics*
3. *Biomedical Imaging*
4. *Cellular and Molecular Engineering*
5. *Computational Biology and Bioinformatics*
6. *Rehabilitation Bioengineering*

The student's Academic Advisor and Thesis Director then work with the student to design the appropriate curriculum and research program. This will include courses in engineering, biology, mathematics, and medicine, all of which are integrated with research laboratory experience.

c. Transfer of Graduate Credit.

A maximum of 6 semester hours of approved graduate coursework in a Graduate Program from other institutions may be transferred into a student's MS degree Program with the consent of the MU Graduate School Dean and the BME Department Chairperson. Under special circumstances, when courses from other institutions are directly comparable in content to those at MU, up to 12 semester hours may be transferred. A course will be considered for transfer credit only if the grade is "B" or better and completed for graduate credit at the institution at which it was taken no more than five years before the start of the MU-MCW MS degree program in BME. Students applying for transfer credit must complete the appropriate form available from the MU Graduate School after completion of at least 6 semester hours at Marquette (9 semester hours if on probation).

d. Course Work

i. Program Requirements.

A total of 30 graduate credit hours are required. A thesis is mandatory, and a student must register for 6 hours of thesis credit. The remaining 24 graduate credits didactic coursework should include formal courses as defined at the end of this Handbook, and consist of:

- ***Core course requirements (12 credits):*** All MS students must complete courses that satisfy the following competencies:

  - **Biomedical Science** (3 credits) (e.g., cellular and systems physiology, neurophysiology, intra- and inter-cellular signaling, genetics and developmental biology, pharmacology, cellular pathology, microbiology and immunology, molecular biology, biochemistry, etc.) *(e.g., MU BIEN 5700, MU BIEN 5720, MU BIOL 5102, MU BIOL 5703, MCW IDP 16215, 16216, 16217 and 16218, MCW IDP 16271, MCW NDP 12206, 12210, 12221, and 12237, MCW Physiol 08204)*

- **Biostatistical methods** (3 credits) *(e.g., MU MSCS 5720, MU MSCS 5740, MCW courses: BioStat 04224, BioStat 04231, BioStat 04232, BioStat 04233, BioStat 04363, BioStat 04365)*
- **Applied mathematics** (3 credits) (e.g., applied mathematical methods, fluid mechanics, finite element methods, biomedical signal processing, signals and systems, etc.) *(e.g., MU BIEN 5400, MU BIEN 5410, MU BIEN 5510, MU BIEN 6120, MU BIEN 6121, MU BIEN 6200, MU BIEN 6210, MU BIEN 6220, MU BIEN 6400, MU BIEN 6410, MU BIEN 6420, MU BIEN 6500, MU EECE 6010, MU MEEN 5265, MU MEEN 6101, MU MEEN 6102, MU MEEN 6360, MU MEEN 6365, MCW Biophys 03240)*
- **Computational and modeling methods** (3 credits) (e.g., numerical methods for solving mathematical models of physical and biological phenomena, regression analysis, data science and machine learning, biological network analysis, computer simulations of physiological systems, etc.) *(e.g., MU BIEN 5410, BIEN 5710, MU BIEN 6120, MU BIEN 6121, MU BIEN 6620, MU COSC 5610, MU COSC 5610, MU EECE 6820, MU EECE 6822, MU EECE 6840, MU MEEN 5270, MCW BIOM 35284, MCW BIOM 35285)*

- ***Specialization-specific courses (12 credits):*** Selected in consultation with the student's Thesis Director. See the end of this document for a non-exhaustive list of pertinent graduate courses offered at MU and MCW.

- MS students are required to register for the BME Department seminar series for the duration of their study (**BIEN 6953**, 0 credit). For a given semester, students are expected to attend at least two thirds of the seminars.

For the 24 graduate credits didactic coursework, the following also applies:

- A minimum of 12 credits of Engineering courses must be taken (exclusive of BIEN 6995).
- The remaining courses must be selected from among those that are eligible for graduate credit in science and engineering programs.
- Courses numbered 6xxx and above are strictly graduate level courses. Specifically designated "upper division" courses at the 5xxx level may also be taken for graduate credit. For these 5xxx level courses to count toward a graduate degree, a grade of "B" or better is required. Furthermore, it is expected that graduate students in these courses will do extra work beyond that required for undergraduate credit.

ii. Pre-requisite Coursework for Students Enrolling Without Engineering Degree.

Students who have a non-engineering undergraduate degree in the sciences (biology, chemistry, computer science, mathematics, physics, etc.) may be admitted into the joint MU-MCW MS degree program in BME on a conditional status contingent on successful completion (grade of B or better) of a sequence of leveling courses. These courses are intended to allow the student to successfully complete their MS research and to prepare them for technical challenges they will encounter during their careers.

The following is a list of pre-requisite leveling courses:

- ***Mathematics:*** Calculus through Differential Equations
- ***Programming:*** Knowledge of a high-level computer programming language (e.g.,

C, C++, Java, Python, R, MATLAB)

- ***Basic Sciences:*** A minimum of 3 courses from: Calculus-based Physics, Biology (for scientists/engineers), Physiology, or Biochemistry subject to at least one in Physics and one in Biology.
- ***Engineering Sciences:*** A minimum of 4 technical engineering courses relating to one of the research tracks within the BME Department (https://mcw.marquette.edu/biomedical-engineering/research.php). The selection of these engineering courses should fill gaps in the student's engineering knowledge. Emphasis may be placed on courses related to the student's intended research focus. Documentation of the course selection and the knowledge gap it is intended to fill must be submitted to and approved by the student's research advisor *and* by the Director/Co-Director of BME Graduate Studies. See "*MS leveling plan*" form to be completed by student and their research advisor.

Equivalent courses completed prior to application to the MS degree program can be used to satisfy these pre-requisite courses.

To gain regular status, a student must complete these pre-requisite courses with grade of B or better. Cost effective online courses could be used to satisfy these pre-requisite courses. Approval from the Director/Co-Director of BME Graduate Studies is needed prior to enrolling in online courses. Graduate tuition waiver does not cover these pre-requisite courses.

iii. Academic Load.

The maximum load for a semester is 13 credits of coursework. However, for an MS student serving as a TA, the maximum load for a semester is 9 credits of coursework. For summer session and inter-session courses, the maximum load is the number of credit hours equal to the number of weeks in the session. The Dean of the MU Graduate School must approve all credit overloads.

iv. Independent Study Course (BIEN 6995).

Independent study courses (BIEN 6995) are offered for capable and highly motivated students. They are not intended as substitute courses for those offered through the joint BME Department. Rather, they are intended to provide a unique tutorial experience in which topics not covered in the existing curriculum may be explored in detail. Normally only one such course can be used for the MS degree requirements.

A maximum of 3 credits of BIEN 6995 course work can be credited toward the 24 non-thesis credit hours.

- **Approval and Contract**

  Students taking a BIEN 6995 course must complete, at registration, both an "Approval Form for BIEN 6995" and a "BIEN 6995 Course Contract." Please note that more details on required forms is included on page 7 of this Handbook. The first form must be signed by the Course Director and the BME Department Chairperson. The second form must be signed by the student, the Course Director, and the BME Department Chairperson. Both forms must be turned in to the MU BME office at least two weeks before the start of classes.

- **Summary Report**

  The Graduate Committee of the joint BME Department reviews all BIEN 6995 courses. A summary report, including a list of references, must be submitted by the student to the Graduate Committee no later than two weeks after the end of

classes in the semester in which the course is taken.

v. Grades.

Satisfactory academic work is not solely determined by course grades. However, grades are an important factor in the evaluation process. A minimum GPA of 3.0 is required to graduate, and students with a GPA under 3.0 are placed on probationary status. An "I" grade will be regarded as a "C" grade in evaluating academic progress in the BME MS Program. Incomplete grades must be cleared by the date specified in the academic calendar or they will automatically become the grade of IP (permanent incomplete).

e. Academic Progress.

The Thesis Director and/or Academic Advisor will submit an annual academic progress report to the Department regarding each graduate student. The Chairperson of the BME Department evaluates the academic progress of all graduate students at the end of each academic semester. If a student is not performing satisfactory work, the student and the Dean of the MU Graduate School will be notified in writing and copied to the MCW Graduate School. The student may be counseled to withdraw or placed on warning. The Dean of the MU Graduate School will be asked to drop the student counseled to withdraw.

f. Thesis Requirements.

Each MS degree student must submit an outline of the proposed thesis on an "*Outline for Dissertation, Thesis, Professional Project or Essay*" form for approval by the Thesis Director, the Chairperson of BME Department, and the Dean of the MU Graduate School. An acceptable MS degree thesis must meet each of the following four conditions:

- The thesis must represent an original research contribution as determined by the student's Thesis Director and Committee members.
- The thesis must demonstrate the student's research ability. This includes (a) a critical analysis of the relevant literature and (b) an engineering contribution to the state of the art or originality in problem solving.
- The thesis must be well written and professionally presented.
- The format of the thesis must follow the "*Thesis Directives*" issued by the MU Graduate School.

g. Thesis Committee.

The Thesis Committee is comprised of at least three members approved by the BME Department Chairperson. The Chairperson/Director of the Thesis Committee must have a primary or secondary/adjunct faculty appointment in the joint BME Department. In addition, the Chairperson/Director of the Thesis Committee must have competence in the proposed area of research, hold a terminal degree in their discipline, be an active scholar, and have an MCW Graduate School Faculty Member Appointment at the PhD level. At least one person on the Thesis Committee must be a primary faculty member in the joint BME Department. At least two of the committee members must have a regular (primary/secondary) appointment in the joint BME Department.

h. Thesis Defense and Oral Comprehensive Examination.

All candidates for the MS degree must defend their thesis work to the satisfaction of the Thesis Committee. Additionally, they must successfully pass an Oral Comprehensive Examination on the total MS program of studies. The Oral Comprehensive Examination is administered at the time of the Thesis Defense. If a student fails the examination, the Department will review the student's entire record, and, if warranted, a second (final) examination will be given.

Copies of the thesis must be submitted by the student to the Thesis Committee **at least two weeks in advance of the thesis defense** and oral comprehensive examination.

The Thesis Committee Director will inform the Chairperson of the joint BME Department of the outcome of the examination, who in turn files this information with the MU Graduate School in a "*Master's Comprehensive Examination Report*" form. It is the obligation of the student to arrange a time and place on campus for their Thesis Defense and Oral Comprehensive Examination that are suitable for all Thesis Committee members, and to meet all appropriate deadlines indicated in the MU Graduate School "Academic Calendar."

When the student prepares for their defense, it must be noted that the academic timeline and terms between the two institutions throughout the school year do not perfectly align. here are a few points in time during the year where Marquette's calendar may be in one term, while MCW's calendar is in another. When applying for graduation, the student would apply under (Current Term) Graduation at Marquette while also applying under (Current Term) Graduation at MCW. The student should work with the department administration as well as the graduate school to confirm dates and ensure that the correct applications for graduation have been submitted.

i. Application for Degree.

Prior to the deadline posted in the MU Graduate Bulletin, each student planning to graduate must file an "*Application for Degree*" with the MU Graduate School Office.

j. Time Limitations.

A student must complete all of the requirements for a MS degree within **six years**. If courses from other universities are transferred into the BME MS degree program and if those courses were taken prior to work at MU and MCW, the beginning date of the first course will be used to establish the beginning of the student's time period.

k. Learning Objectives.

The Learning Objectives of the joint BME MS degree program and their assessment provide tools that ensure continuous quality improvement. Graduates earning the MS degree will be able to:

- **Demonstrate critical thinking skills:** This is measured via the thesis defense and a survey sheet that is completed by each of the thesis committee members. This requires: demonstration of the execution of a well-thought-out research project plan; completion of an independent research experience; ability to critically evaluate work of others in the thesis-related research area.

- **Communication of Technical Information Appropriately for Audience:** This is measured via the thesis defense and a survey sheet that is completed by each of the Thesis Committee members. This requires: a professional quality oral and graphic presentation; a professional quality written thesis.

- **Demonstrate Technical Proficiency in at least one area of BME:** This is measured via the thesis defense and a survey that is completed by each of the Thesis Committee members. This requires: demonstration of factual knowledge of engineering and life science; the ability to critically evaluate the work of others in thesis related research area.

- **Critical Evaluation of the Application of Scientific Methods in Addressing BME Problems:** This is measured via the thesis defense and a survey that is completed by each of the Thesis Committee members. This requires: effective use of library and electronic resources for literature research; defendable conclusions and main arguments supported by research; ability to solve interdisciplinary problems.

List of Appropriate Forms and Documents.

Students are required to obtain the forms from the Graduate School to ensure that they are the latest versions. Most are available from their Web site

https://www.marquette.edu/grad/forms.php

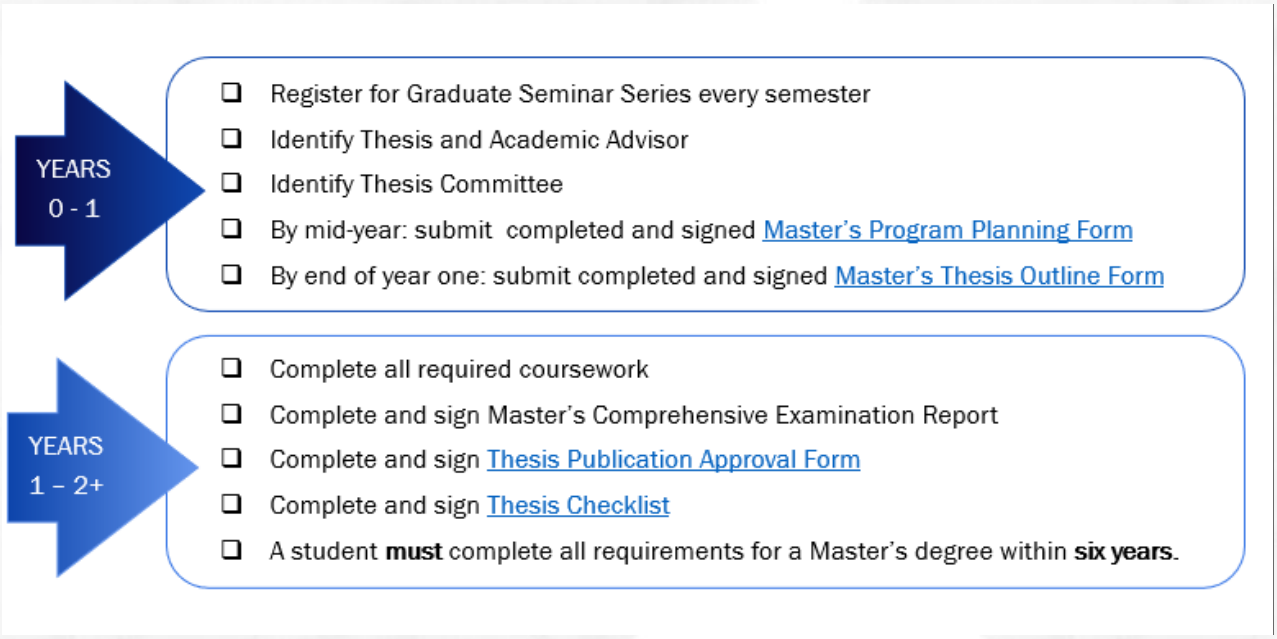
1. **Available from the Graduate School:**
   - *Application for Degree*
   - *Application for Financial Aid*
   - *Continuous Enrollment Registration Form (pdf)*
   - *Drop, Add, Audit Form*
   - *Master's Degree Transfer Credit Request (pdf)*
   - *Master's Thesis Outline Form – Outline for Dissertation, Thesis or Professional Project*
   - *Thesis and Professional Project Directives*

2. **Available from the Department:**
   - *Approval Form for Independent Study Course BIEN 6995*
   - *Independent Study Course Contract*

If you have questions concerning dates and deadlines, refer to the Marquette University Graduate School Academic Calendar published annually.

It is each student's responsibility to satisfy all program requirements, ensure that all forms are completed and filed appropriately, and that all deadlines are met. All Graduate Students must notify the MU BME Department Office of their intent to graduate at the same time they notify the MU Graduate School.

Timeline of MS Student's Progress and Milestones



Forms:

https://www.marquette.edu/grad/forms.php

 # 1: Master's Program Planning Form

 # 2: Outline/Proposal for Dissertation, Thesis, Professional Project or Essay

 # 3: Master's Comprehensive Examination Report

 # 4: Master's Thesis Publication Approval Form

 # 5: Thesis Checklist

Student Classification, Advising System, Grading, Evaluation of Performance, and Financial Aid

a. Student Classification.

i. Full-Time.
A student who takes seven or more credits in a regular semester or is otherwise pursuing graduate work on a full-time basis is considered to be a full-time student.

ii. Part-Time.
A student who takes six or fewer credits in a regular semester is considered to be a part-time student.

iii. Degree Student.
A student is a degree student if enrolled in a program leading to a degree. A student cannot be classified as a degree student unless the department has agreed to accept him or her into a program of study.

- **Regular.**
  A Regular status student has been admitted to the MU Graduate School and is working toward a degree in a particular program of study. Such students are eligible for tuition scholarships and graduate assistantships.

- **Probationary.**
  A student may be admitted to a degree program with probationary status if their academic performance is below the MU Graduate School standards but if there is other evidence that he or she has the potential for successful graduate study. Upon completion of nine semester hours of work with an average grade of "B" (3.0) or better (with no grade lower than "C"), at least one-third of which must be at the 6000 course level, the probationary status is removed. A student who fails to remove their probationary status on completion of nine semester-hours work will not be permitted to remain in the MU Graduate School. A student on probation is not eligible to receive financial aid.

iv. Non-Degree Student.
A student who chooses this status does not work toward a degree, but credits earned are graduate credits and may be certified as such to school boards or other authorities. Those students seeking non-degree admission must meet the same admission standards as those seeking admission to a degree program. There is no guarantee that credits earned while a non-degree student will later count toward a degree if the student is admitted to a degree program. Non-degree students may register for any course for which they have met the prerequisites and for which they have department permission.

- **Regular.**
  A regular student is clearly admissible to the MU Graduate School but is not seeking a degree.

- **Probationary.**
  A student whose past academic performance falls below the MU Graduate School standards but shows other evidence of potential for successful graduate work may

be granted probationary status. This status is identical to the probationary degree status except that this person is not seeking a degree.

- **Temporary.**
  A student who seeks to register for graduate courses and who appears to meet MU Graduate School admission standards but who has not submitted all necessary documentation to the MU Graduate School that is required for regular admission. Admission to this status is valid for only one semester. A student admitted as a temporary student must apply for and be admitted into one of the other classifications before he/she will be allowed to register for courses in another semester.

Note: A change from non-degree status to degree status requires a new "Application for Admission" be submitted to the Graduate School.

b. Advising System.

The advising system is designed to assist and guide the graduate student from the first day of admission into graduate school. The process includes an orientation meeting, distribution of the Graduate Student Handbook and assignment of an academic advisor.

i. Orientation Meeting.

At the beginning of each academic year, all graduate students are required to attend an orientation meeting organized and held by the BME Department Chairperson. During this meeting, topics including financial aid, general policies, program requirements, special course offerings and areas of research will be presented and discussed.

ii. Academic Advisor.

When a student is admitted to the graduate program in BME, an advisor in the student's area of interest is assigned by the Director/Co-Director of Graduate Studies (DGS/Co-DGS) of BME to assist with any problems and in course selection. The Academic Advisor will assist the student in preparing a coursework plan, and for MS program the Academic Advisor will also help the student identify an appropriate Thesis Director.

A student may have more than one Academic Advisor, with access to student electronic records. A student may request an addition or change of Academic Advisor by requesting the change in writing to the DGS/Co-DGS and providing the names of the current and proposed Academic Advisors. The DGS/Co-DGS will review the request. If the change is allowed, electronic access to the student's records will be given to the new Academic Advisor(s).

iii. Thesis Director.

A student selects, with Department approval, their Thesis Director. This choice is reflected on the "*Master's Program Planning form*" as the 'Advisor'. The Thesis Director can be designated as the Academic Advisor. In instances in which Thesis Advisor is changed after submission of the *Thesis Outline Form*, the student is required to submit a new version or amendment indicating the new advisor.

c. Grading System.

The letter grades A, A-, B+, B, B-, C+, C, C-, D+, D, D-, F, W, SC/SNC, UC/UNC, I and X will

be assigned for graduate course work at the end of each semester. Detailed explanations of these grades are given in the MU Graduate School Bulletin.

See link below for MCW grading system:

https://www.mcw.edu/-/media/MCW/Education/Graduate-School/Documents/Graduate-School-Handbook.pdf

d. Appeal of Grades.

Any student may consult their instructor about the grades received for work done. The exercise of this right neither requires a fixed procedure nor is subject to procedural conditions. Final graduate course grades assigned in the BME Department may be appealed following the procedures given below, provided that this action is initiated before the first day of class of the next regular semester following the issuance of the grade.

1. The student must consult with the instructor to determine the reasons for the grade. When there are special circumstances, the Chairperson of the BME Department may waive the requirement of consultation with an instructor.
2. When the student is not satisfied with the reasons given by the instructor, he/she may present his/her case in writing to the BME Chairperson. The student should present all evidence of his/her performance and may request that all other pertinent material be supplied by the instructor.
3. When the BME Chairperson has examined the appeal and after consultation with the instructor the Chairperson will: (1) Inform the student that no further department action is to be taken; or (2) convene a committee to review the appeal.
4. The BME Chairperson will appoint a committee of three regular faculty members of the BME Department. The Chairperson may sit on the committee.
5. The committee may proceed from written evidence or may consult the instructor and/or the student according to its judgment.
6. The committee shall give one of three decisions: (1) That the grade given will remain; (2) That the instructor will reconsider the grade in light of what the committee discovered, and that the instructor's reconsidered grade will stand; or (3) That the committee recommends a change of grade to the Dean of MU Graduate School.
7. The decision of the committee should be the final action inside the BME Department and any appeal beyond the BME Department must be made to the Dean of MU Graduate School.

e. Evaluation of Performance.

The Academic Advisor will submit annual academic progress reports to the BME Department regarding each graduate student. The BME Chairperson evaluates the academic progress of all graduate students at the end of the semester. If a student is not performing satisfactory work, the student and the Dean of MU Graduate School will be notified in writing.

The student may be counseled to withdraw. The Dean of MU Graduate School may be asked to place the student on probation, register a voluntary withdrawal, or administratively withdraw students so counseled.

f. Academic Dishonesty and Research Misconduct.

Upon detection of academic dishonesty, the student involved will automatically receive an "F"

grade in the course. Beyond this, additional credit for graduation may be required or expulsion from the school may result depending on the nature of the offense and the MU Graduate School Dean's decision according to the University policy. Refer to the MU Graduate Bulletin for “Definitions of Academic Dishonesty” and its consequences and to the University statement regarding “Research Misconduct”.

g. Registering for Courses at MCW.

Once you have decided which courses you will be taking at MCW, you must inform the MU BME Department’s Administrative Assistant. Take for example the Human Physiology course at MCW – you would first contact the MU BME Department Administrative Assistant and provide her with the course number, professor, and number of credits. This procedure assures that you get MU credit for taking the class. The MU BME Department Administrative Assistant will grant consent for you to register. Next, you must register at MU for **BIEN 6947**. Choose the section that corresponds to the total number of credits you’re taking at MCW that semester. Furthermore, you **MUST** register at the MCW Graduate School. Your earned grade will show up on your MU transcript. **NOTE**: the MCW classes may start considerably earlier or later than the MU classes and the weekly meeting schedule may vary. It is your responsibility to register for BIEN 6947.

h. Continuous Enrollment.

You must request continuous enrollment when you are not registering for any specific course work at MU (when finished with coursework and thesis credits, but still doing your research work) or when you are not carrying sufficient course load so as to maintain full-time enrollment status. To request continuous enrollment, you must fill out the “Graduate School Continuous Enrollment Registration Form” and pay the appropriate fee. This completed form must be signed by your advisor and returned to the BME Department office, Olin Room 206. Consent will be provided for you to enroll. You must register for **BIEN 9xxx** according to the nature of your continuous enrollment. The details are explained on the form, which is included at the end of this handbook. The Bursar will bill you the appropriate fee for continuous enrollment.

i. Holiday and Leave Policy.

Teaching Assistant, Research Assistant and Research Fellow Holidays and Leave.

Nine-month (academic year) Teaching Assistants and Research Assistants are contracted to work from August to May. Full-time, twelve-month RA’s and Research Fellows work 12 months per year. For each week of the 9 or 12 month award, the TA or RA is expected to work a minimum of 20 hours per week beyond the work that pertains to the thesis or to the laboratory course TA assignment. Exceptions include the following holidays: New Year’s Day, Martin Luther King Day, Good Friday, Easter Monday, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas, and New Year’s Eve. These holidays are the University’s Administrative holidays, not the Academic (or student) holidays. Twelve month Research Fellows and 12 - month RA’s are allowed to take up to 2 weeks vacation per year.

You must discuss any deviations from the above with your thesis director.

j. Financial Aid.

Four major categories of financial aid are available to degree-status graduate students in BME: scholarships, teaching assistantships, research assistantships, and loans. Students admitted

on probation are not eligible for financial aid, but may be considered once probation has been removed. The term of financial aid is normally for one academic year (10 months), but in some instances may be for one semester (5 months). Limited amounts of financial aid are available during the summer.

Students seeking financial aid other than loans are normally required to submit an "Application for Financial Aid" to the MU Graduate School no later than February 15 of the academic year prior to the one for which aid is being sought. For more information see http://www.marquette.edu/grad/finaid_index.shtml.

1. **Scholarships.**
   Scholarships are available through the MU Graduate School. These cover tuition only and range from 1 to 12 credit hours per semester. No service is required of the student in return for a scholarship.

2. **Teaching Assistantships.**
   Teaching assistantships provide students with a stipend and 9 credit hours of tuition remission per semester. In return the students are expected to satisfactorily perform 20 hours of teaching-related assignments per week. Students with teaching assistantships are normally limited to a 9 credit-hour load per semester.

3. **Research Assistantships.**
   Research assistantships are available from individual faculty members with research grants. Research assistantships provide students with a stipend and up to 9 credit hours of tuition remission per semester. In return the students are expected to satisfactorily perform 20 hours of research-related assignments per week. Students with research assistantships are normally limited to a 9 credit-hour load per semester.

4. **Loans.**
   Loan assistance is available to assist qualified students who, without such aid, would be unable to attend the University. Students are eligible for student loans if they are attending the University on at least a half-time basis and are in good academic standing. No applicant will be considered for loan assistance until he/she has been formally admitted to the Graduate School. For specific information on loans and other resources available to graduate students attending Marquette, refer to the Marquette University Financial Aid brochure. This brochure is available from the Office of Student Financial Aid, Marquette University, Milwaukee, WI 53233. Telephone: (414) 288-7390.