

Handbook for Graduate Studies in the Department of Physiology



Administered by

**Colleges of Natural Science, Veterinary Medicine, Human
Medicine, Osteopathic Medicine, and the Michigan
Agricultural Experiment Station.**

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I. PROGRAM OVERVIEW

A. Mission, Diversity, and Organization

Michigan State University, founded in 1855 as the first land grant college, has awarded diplomas in undergraduate and graduate physiology since 1949. The Department serves the university in several capacities including: 1) offering degree programs at the undergraduate and graduate level; 2) teaching of "service courses" designed to meet the specific needs of other degree programs such as Biological Sciences, Nursing, Medical Technology, Human Medicine, Osteopathic Medicine, and Veterinary Medicine; and 3) conducting basic and applied physiological research.

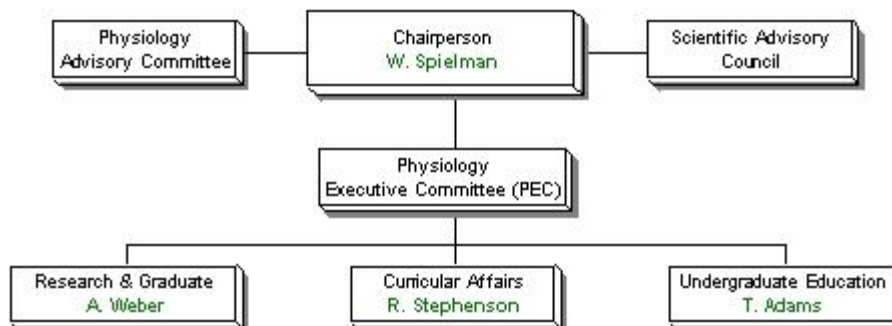
In 1982, the University's biophysics program was blended into the Department of Physiology. The Department presently has collaborative and administrative ties to the Colleges of Natural Science Veterinary Medicine, Human Medicine, Osteopathic Medicine, and the Michigan Agricultural Experiment Station.

Most physiology students are enrolled in the College of Natural Science while working on either the B.S., M.S., or Ph.D. degree. There are approximately 15 graduate and 500 undergraduate students in the program. An additional 15 students are enrolled in one of the interdisciplinary Departments and Programs with which the Physiology associates (Biochemistry, Neuroscience, Cell and Molecular Biology, Genetics, Microbiology and Molecular Genetics, Pharmacology/Toxicology), but are mentored by Physiology faculty. Students in the program represent the USA, Korea, Taiwan, Mainland China, and Easter Europe.

The Ph.D. and M.S. programs place heavy emphasis on original research which culminates in the preparation of a thesis. Most research is done in faculty laboratories, but the student is encouraged to make maximum use of the Department's close cooperation with other science Departments, thereby enhancing greatly the technological facilities available. In addition, the University Library, Computer Center, Cyclotron, Center for Electron Optics, Magnetic Resonance Imaging Center, Center for Integrated Microscopy, and Instructional Media Center are available to the student.

The Department is housed in the new Biomedical and Physical Sciences Facility, a seven-story 200,000 square foot structure. The facility includes the Departments of Physiology, Microbiology and Molecular Genetics, Physics, Astrophysics, Graduate Programs in Genetics and Cell and Molecular Biology, and is connected to the Chemistry and Biochemistry buildings. Its central location also places it in close proximity to MSU's National Superconducting Cyclotron Laboratory and National Center for Food Safety and Toxicology, and the Colleges of Human, Osteopathic, and Veterinary Medicine. A transgenic mouse facility will be the next major addition to the Department's research resources.

Department Organization



The discipline of physiology today is uniquely positioned among the biomedical sciences to span the gulf between scientists investigating the most fundamental aspects of biology and those interested in the most practical and applied problems of human and animal health. Because of this unique perspective, physiologists find themselves in demand as university, pharmaceutical

and government researchers; professors and teachers; and consultants in an increasingly health-conscious world. As symbolized by the Departmental logo, "From Molecules to Man," modern physiologists investigate the entire array of biological processes, from the biochemical organization of the genome to the processing of complex information into memory engrams by the brain. Physiologists examine the means by which the vast array of molecular and cellular events successfully integrate to define the phenomenon of human existence. In addition, physiologists examine how dysfunctions in molecular and cellular events lead to diseases such as chronic pain, glaucoma, diabetes, asthma, cancer, hypertension, and cardiovascular disease.

As an instrumental component of the MSU Chronic Disease Initiative, the Department of Physiology has inaugurated efforts to examine the hypothesis that a cause of the increased chronic disease burden comes from a shift in the gene expression in response to stress and diet of industrialized societies. Using a wide variety of technologies, including cell and organ culture techniques, magnetic resonance imaging, laser scanning confocal microscopy, and transgenic animals, students and faculty in the Department are undaunted in accepting the challenges of contemporary biomedical research.

In support of these research efforts, faculty and graduate students have received significant levels of extramural funding from the National Institutes of Health, National Science Foundation, National Aeronautic and Space Administration, American Heart Association, American Diabetes Foundation, Juvenile Diabetes Foundation-International, Arthritis Foundation, and Department of Defense-Army, as well as NIH Fogarty Foundation Sr. International Fellowships.

B. Expectations of the Department: Meeting and Committee Participation

1. Seminars and Meetings

Seminars are held regularly in the Department of Physiology. All graduate students and faculty are expected to attend and participate.

Seminars are presented by faculty members from our Department, by faculty from other Departments and by postdoctoral fellows. Physiologists who visit our campus are frequently invited to present special seminars and to have conferences with staff and students. Opportunities are also available for graduate students to present research-in-progress seminars and they are encouraged to do so.

2. Professional Meetings

Graduate students in physiology are encouraged to participate in state, national, and international meetings whenever possible, and to present talks at these meetings. Our graduate students have presented papers at meetings of the Society for Neuroscience, Federation of American Societies for Experimental Biology, the American Physiological Society, and many others.

3. Committee Participation

Graduate students in physiology have the option of participating in the following committees:

a. Physiology Graduate Student Committee

This committee is composed of five physiology graduate students. Its function is:

- i. To encourage student assemblies for open discussion of university, college and Departmental regulations and policies.
- ii. To communicate information queries and opinions between the faculty and student body.
- iii. To appoint representatives to fill vacancies on various university, college and Department committees.
- iv. To supervise graduate student elections.
- v. To sponsor social functions.

b. Council of Graduate Students (COGS)

This committee represents graduate students at the university level and is composed of one representative from each Department who attends bimonthly meetings. The objectives of COGS are:

- i. To promote the academic, social and economic aims of graduate students at MSU.
- ii. To establish effective communication among graduate students and create channels of communication with other student organizations and with the academic administrative units of the university.

c. Graduate Affairs Committee

This Departmental faculty committee has one graduate student member, who is elected each fall semester. The responsibilities of this committee are:

- i. To advise the Departmental chairperson in the admission of new graduate students,
- ii. To award graduate stipends,
- iii. To assign graduate student teaching duties,
- iv. To give final approval of individual graduate programs (i.e., approve Guidance Committee Report Forms).

d. Physiology Departmental Faculty Meeting

The graduate students have one representative to these meetings, elected each fall semester, whose duties are:

- i. To attend faculty meetings to provide student input,
- ii. To report to the Graduate Student Committee any business that transpired that may affect graduate students,
- iii. To keep a copy of the minutes of the meetings available for graduate students on request.

e. Physiology Curriculum Committee

This Departmental faculty committee has one graduate student member who is elected each fall semester. The objectives of this committee are:

- i. To review and evaluate the curriculum for physiology graduate, undergraduate, and professional students,
- ii. To review and evaluate graduate, undergraduate, and professional courses offered by the Physiology Department,
- iii. To administer the Departmental Comprehensive Examination.

f. Diversity Committee

This Departmental committee has one graduate student member.

- i. To promote diversity of Departmental composition and programs by following up on and facilitating the implementation of the recommendations in the Physiology Department MSU-IDEA Document.

g. Other Committees

There are many committees in two of the colleges, to which the Physiology Department belongs, which have graduate student representatives. These positions are elected each fall semester. A list of these committees is presented below.

- i. College of Veterinary Medicine (2 year term) (Contact the Assistant Dean for Research)

- Graduate Studies and Research Committee, graduate student representative.

ii. College of Natural Science (Contact the Associate Dean for Graduate Programs)

- Dean's Student Advisory Committee, one graduate student representative from each Department. This committee provides representatives to other College of Natural Science Committees.

4. Graduate Student Elections

Nominations for representatives to the committees listed above will be accepted beginning the first day of classes fall semester, and ending at 5:00 p.m. on the third day of classes. Names of nominees will be posted as received.

Voting will begin the next day and continue for three class days ending at 5:00 p.m. the third day. The Graduate Student Committee, which is responsible for supervision of the elections and counting the ballots, will announce the results within three class days. A student may run for no more than two positions. Single nominations for any position will be filled by default. No write-in votes will be accepted. The first meeting of the newly elected Graduate Student Committee will be held during the third week of classes fall semester. At this time the Graduate Student Committee will elect a chairperson who will be responsible for reporting the election results to the Departmental chairperson.

C. Expectations of the Department: Academics

1. Standards

- Three (3) grades below 3.0 in the entire graduate program will remove the student from degree candidacy.
- The student must have at least a 3.0 grade point average over the entire graduate program.
- The student must adhere to all other university and college regulations for his/her graduate program as outlined in the Michigan State University Academic Programs.

2. Curriculum and Coursework

- A course grade of 3.0 is considered the minimum satisfactory academic performance for a graduate student enrolled in any graduate level course offered by the Department of Physiology.
- Students in the **Ph.D. Program** must have at least a 3.0 grade in all core courses required for the comprehensive exam (PSL 827, 828, 910, 950; BMB 801, 802). If the student obtains less than 3.0 grade in any of these courses, he/she has 12 calendar months in which to remediate by retaking the course, or he/she will be dismissed from the Doctoral Program. Note: This may require override permission from the Dean's office if the grade is 2.0-2.5.
- Students in the **Master's Program** also must maintain a 3.0 cumulative grade-point average for all courses counting toward the Master's degree (University regulation). In addition, a student must not accumulate more than 2 grades below 3.0 in courses earning credit toward the Master's degree (Department regulation). If either of these criterion is not met, the student will be dis-enrolled from the Program. MS students are not required to remediate a course in which they receive a grade below 3.0, if their overall GPA remains at 3.0 or above.
- The minimum cumulative grade-point average required for graduation is 3.0. The minimum level at which course credit is awarded is 2.0, but within particular graduate programs such levels as 2.5 and 3.0 may be established as the minimum for earning course credit. Also, the number of 2.0 grades acceptable for course credit is expressly restricted to two.

3. Grading Policies for Graduate Level Courses

Department of Physiology Graduate Policy for 400-900 Level Courses: The following grading policies for graduate level courses will be used by the Department:

- a. Each instructor in any course is considered to be the only authority for evaluating and/or assigning grades for his/her own examination(s).
- b. For courses involving more than one instructor, the designated course coordinator is responsible for formulating and announcing policies and reaching decisions associated with the assignment of course grades which represent a consensus among all instructors in that course.
- c. The course instructor, or, if the course involves more than one instructor, the course coordinator, is responsible for informing all enrolled students in the course in writing on the first day of regularly scheduled instruction, the:
 - i. dates and locations for all examinations in the course,
 - ii. methods and policies for makeup examinations and/or remedial work in the event a student does not complete a regularly scheduled examination
 - iii. methods and policies he/she will use in assigning grades for individual examinations and for the course itself.
- d. The person(s) involved in assigning grades will be aware of the university policies in "Grading Systems," General Procedures and Regulations, Academic Programs, Michigan State University, page 48, 1995-97.

The minimum cumulative grade-point average required for graduation is 3.0. The minimum level at which course credit is awarded is 2.0, but within particular graduate programs such levels as 2.5 and 3.0 may be established as the minimum for earning course credit. Also, the number of 2.0 grades acceptable for course credit is expressly restricted to two (2).

4. Assessment of Progress

- a. Each student's academic performance will be evaluated at the end of each academic year. For first year students, this evaluation will be carried out by the Director of Research and Graduate Studies and will consist of a review of rotation experience, progress in selecting a major Advisor, and progress in completing required courses.
- b. The progress of upper level graduate students will be reviewed by the student's major Advisor. When both the major professor and student have reviewed and signed the progress report form (**see Appendix**), copies of the report should be given to the student and the major professor. The original progress report should be placed in the student's file in the department/unit office. Students who wish to appeal any part of the major professor's evaluation may do so in writing to the Director of Research and Graduate Studies within 2 weeks of receiving the report. If this does not resolve the issue, a meeting will be arranged between the student, his/her mentor, and the Director of Research and Graduate Studies at the earliest time convenient for all parties. Failure to reach a consensus at this level, the matter will be taken under consideration by the Graduate Affairs Committee for final resolution.
- c. Mastery of the materials at different stages of the student's graduate program are assessed by successful completion of:
 - i. the required coursework, and any additional (collateral) coursework requested by the student's Guidance Committee.
 - ii. the Comprehensive Exam at the end of year 2 (Doctoral)
 - iii. the annual Guidance Committee meeting
 - iv. presentation and defense of their thesis

D. Summary

Students are urged to make maximum use of the consultation available through their major Advisor, Guidance Committee, and the Director of Research and Graduate Studies.

In general, the program of study leading to a Master's degree has fairly rigid university requirements. The student in consultation with his/her major Advisor must design a program of study to fall within

these requirements. Some flexibility remains, though, in regard to selection of academic courses. While the M.S. degree requirements are largely determined by the university (total number of credits=30; minimum of research credits=4; credits at the 800 level or above= 51%), the Ph.D. program requirements (with exception of the core curriculum) are determined almost exclusively by the student's Guidance Committee. Each Ph.D. program, therefore, is tailored to meet the needs of the individual student.

Under either degree program, the major Advisor or Guidance Committee has the authority to interpret the Departmental guidelines, as set forth in Sections III to best suit the needs of the individual student. However, final certification for the M.S. or Ph.D. degree or any radical departure from the suggested program of study as outlined in the Department manual will need the approval of the Department chairperson or a faculty standing committee designated by him/her. In addition to the Departmental regulations, the student must satisfactorily complete all college and university requirements for a given degree and in general these requirements are fixed and are not subject to modification. A student is referred to the [Michigan State University Academic Programs](http://www.reg.msu.edu/UCC/AcademicPrograms.asp) for a complete description of the requirements (<http://www.reg.msu.edu/UCC/AcademicPrograms.asp>).

II. PROGRAM COMPONENTS/PLAN OPTIONS

A. Programs of Study

The Department of Physiology offers graduate studies at 3 different levels, the BS/MS, MS, and PhD. Each of these plans is described briefly below, and in detail in Section III.

1. Bachelor's/Master's (MS/BS) Program

The BS/MS degree in Physiology offers a unique opportunity to MSU students for advanced training in Physiology. Students beginning in their junior year can enter a research laboratory and begin either a bench-based or library-based research project. The required graduate courses can begin after the student successfully completes PSL 431/432 and BCH 461/462. The student is advised to visit the Physiology Department web page (www.psl.msu.edu) [Graduate Program] to review the Physiology faculty and their research interests.

A copy of the "MS Plan of Study" (see Appendix) must be submitted to the Registrar's Office & the Dean's Office by the first semester in which the student enrolls in graduate applicable credits. The Registrar keeps a separate record of the student's BS and MS Programs. The purpose of this is based on the fact that students are held to different academic standards for their BS and MS Programs. The course/thesis requirements for the MS component of the BS/MS degree are described in Section III along with the Master's Program

2. Master's Program: Plan A (thesis-based)

The MS Degree typically can be completed in a minimum of 2 years, following one of two available thesis options. Students can engage in either a bench-based (option 1) or library-based (option 2) research project. The lab-based route requires a written thesis and oral defense of the research project identified by the student and mentor, and approved by the Guidance Committee, while the library-based route requires a written summary and oral defense of the topic area selected by the mentor and student and approved by his/her Guidance Committee. Both plans require prescribed course work that consists of a core set of courses, as well as any additional courses requested by the student's Guidance Committee (see Section III).

3. Plan B (non-thesis) Master's Program

The Plan B (non-thesis) Master's degree is not available from the Physiology Department; students in the MS Program must successfully complete and defend either a lab-based or library-based thesis.

4. Doctoral Program

The primary objective of the doctoral program is to provide the student with a thorough knowledge of integrative, systemic, cell, and molecular physiology, to prepare him/her for independent research and to provide scholarly experience in one of the specialized areas of physiology. The Program typically can be completed in about 5 years, includes prescribed coursework, a teaching requirement, completion of the Comprehensive Exam, a written thesis, and the oral presentation (see Section III).

5. Dual Major

The Department recognizes that for certain students there is a distinct, professional advantage in earning a Ph.D. degree which is awarded jointly with another Department or program. Implementation of such a program requires the prior approval of the Graduate Affairs Committee of the Physiology Department, the corresponding committee or program in the other Department, and the Dean of the Graduate School. However, such students must satisfy all the requirements for a Ph.D. degree in physiology.

III. DEGREE REQUIREMENTS

A. Graduate Program Requirements, Application and Grading Processes

1. General Entrance Requirements

An undergraduate major in physiology is not required as a prerequisite to graduate study. However, a broad background in the basic sciences, including biology, chemistry, physics and mathematics is essential. Students from undergraduate curricula in the animal, biological or physical sciences, medical technology, veterinary medicine, human medicine, and similar fields are qualified for admission provided they meet the minimum requirements. These include:

- a. 1 yr. of either physiology, biology, or zoology
- b. 1 yr. one year of physics, including laboratory experience
- c. chemistry, including quantitative analysis and organic chemistry
- d. mathematics through integral calculus
- e. 1 yr. introductory biochemistry
- f. courses in physical chemistry and computer science are recommended, but not required
- g. If the student has entrance requirement deficiencies, which when made up qualify for graduate credit, a maximum of 8 semester hours of those credits will be applicable toward the M.S. or Ph.D. degree.

2. Application Process

All application materials/forms are available via the Department of Physiology website (www.psl.msu.edu; [Graduate Program])

- a. Submit Graduate School Application, Statement of Purpose, and required fee
- b. Submit Department Questionnaire
- c. Submit 3 Letters of Reference
- d. Submit Official Transcripts
- e. Provide current TOEFL scores (if applicable):
 - i. Paper-based test: minimum score of 600, Section 1 score of 62 or above, and no other score less than 52)
 - ii. Computer-based test: minimum score of 250, Section 1 score of 26 or above, and no other score less than 19
- f. GRE scores: minimum = 492 Verbal; 664 Quantitative; 647 Analytical
 - i. Starting in Fall of 2003, the Analytical section was replaced with a Writing Assessment Exam; See <http://www.gre.org/descriptor.html> for details; 1=poor; 6=excellent)
 - ii. Subject tests are not required)
 - iii. Professional degree scores (MCAT, VCAT etc.) are not accepted in lieu of GRE's, unless a medical degree (MD, D.O., etc.) is awarded in the USA.

- g. GRE/TOEFL Codes:
 - i. MSU Institutional Code = 1465
 - ii. Physiology Departmental Code = 0217
- h. Graduate School Application-codes:
 - i. BS/MS Program: use 3860 and note BS/MS
 - ii. Masters Program (CNS: 3860; CHM: 2804; CVM: 4804)
 - iii. Doctoral Program (CNS: 3861; CHM: 2805; CVM: 4805)
- i. Academic requirements
 - i. undergraduate and/or graduate GPA of 3.0 or above

Students not meeting all of the pre-requisites for admission to the MS Program may be admitted on a provisional basis, as determined by the Graduate Affairs Committee (see B.2 below).

3. Transferring Credits (updated summer 2009)

- a. Students are able to transfer a maximum of 9 approved credits from the Undergraduate Level to a linked Bachelor's-Master's degree program.
<http://www.reg.msu.edu/Read/UCC/unlinkedtransfer.pdf>
- b. Students are able to transfer a maximum of 9 approved credits to a Master's Degree Program from transfer courses, Lifelong Education enrollment status, and the Graduate Certificate level with no more than 9 credits from each category, except for 12 graduate certificate credits permitted in the College of Education.
<http://www.reg.msu.edu/Read/UCC/combinedmax.pdf>

B. Admission Process

Upon receipt of the completed application for admission to graduate school, the members of the Graduate Affairs Committee (GAC) will review the application and recommend one of the following actions: (1) further consideration for admission, or (2) refuse admission. If further consideration is recommended, the applicant may be invited for an interview, and/or the application will be evaluated by the faculty members in the sub disciplinary area(s) in which the applicant expresses an interest. The GAC then makes a final decision to (1) admit on a regular basis, (2) admit on a provisional basis, or (3) refuse admission. The Department complies with the federal mandate, Section 504 of the Rehabilitation Act of 1973, D.H.E.W., which prohibits discrimination.

At the time of admission the student is assigned to a college (College of Natural Science, College of Human Medicine, College of Osteopathic Medicine or College of Veterinary Medicine) on the basis of background and professional goals. A student or the Advisor may later request that the student be transferred to one of the other colleges if the degree program and career aspirations would be better served by such a change.

1. Regular Admission

Students admitted to the program on a regular basis are deemed by the Graduate Affairs Committee to have an adequate background to pursue graduate study in the Department of Physiology. Typically, students are admitted in the fall. Attainment of an MS degree is not a prerequisite for entrance into the PhD program. In general, the student's academic background should be equivalent to the requirements for the BS degree in physiology as outlined above. Students admitted to the PhD program will be supplied with laboratory space and facilities, and are also eligible to apply to the Department for financial support.

Occasionally, students may be required upon admission to take courses to strengthen their background. Such courses will be listed at the time of admission as '**Required Collaterals**'. The students will be advised in the Department's acceptance letter of such requirements. They will also be advised to complete those required collateral courses within their first year. These courses, which are not part of the formal Graduate Program curriculum (see below), do not count toward the MS or PhD degrees.

At the time a student in the PhD program completes a Guidance Committee Report, the Required collaterals will be listed in addition to any recommended collaterals that the

Guidance Committee sets forth. The required collaterals must be satisfied before the Guidance Committee Report can be approved by the Graduate Affairs Committee. The inclusion of required collaterals does not change the student's status.

2. Provisional Admission

Students whose available records are incomplete or who have an inadequate background to pursue graduate study in physiology but whose academic performance warrants their admission to the graduate program will be admitted on a provisional basis. The Graduate Affairs Committee will set forth provisions in the form of additional course work. At the time of satisfactory completion of the collateral courses, the student may petition the Graduate Affairs Committee for transfer to regular status. A student may not receive a degree while on provisional admission status. Admission to the Department on a provisional basis gives the student all the rights and responsibilities given to a student on a regular basis.

C. Specific Program Requirements and Detailed Descriptions

1. Bachelor/Masters Program

The BS/MS degree in Physiology offers a unique opportunity to MSU students for advanced training in Physiology. Students beginning in their junior year can enter a research laboratory and begin either a bench-based or library-based research project. The required graduate courses can begin after the student successfully completes PSL 431/432 and BCH 461/462.

a. Prerequisites

- i. GPA of 3.0 or higher in all undergraduate course work
- ii. GPA of 3.0 or higher in all courses in the College of Natural Science
- ii. Letter of support from the Department of Physiology stating that they are accepting the student as a BS/MS candidate

b. Application Process

Interested applicants should read the "Guidelines For Students Interested in a BS/MS Program in CNS" in the Appendix)

- i. Submit Graduate School Application (w/ application fee)
- ii. Complete Departmental Questionnaire
- iii. TOEFL scores for international students from non-English speaking countries
- iv. The GRE is **NOT** required for the BS/MS program
- v. Official transcript of grades from all schools attended after high school
- vi. Submit Three letters of recommendation
- vii. Complete and submit "BS/MS Program Student Information Form" (see Appendix)
- viii. Submit the application along with the letter from the Department and the appropriate application fee to the Associate Dean of the College of Natural Science
- ix. A letter of support from the College of Natural Science is attached along with a tracking code. The whole packet is submitted to the Registrar's Office. Soon a list of courses that will apply to the graduate degree are submitted to the Department/ College/University.

c. Credit Information

- i. The student must complete a total of 150 credits, 120 credits for the B.S. degree and 30 credits for the MS degree. Courses can't be double-counted. A minimum grade of 3.0 is required in all graduate courses.
- ii. The student pays undergraduate tuition for all credits (graduate or undergraduate) until the semester in which they reach their 121st credit. At that point the student will begin to pay graduate tuition.
- iii. Students are not eligible for graduate assistantships until the semester in which they enroll for their 121st credit. However, students involved in research in their mentor's laboratory can negotiate an hourly wage.

- iv. **Transferring Credits:** (updated summer 2009) Students are able to transfer a maximum of 9 approved credits from the Undergraduate Level to a linked Bachelor's-Master's degree program.
<http://www.reg.msu.edu/Read/UCC/unlinkedtransfer.pdf>

e. Curriculum

The course/thesis requirements for the MS component of the BS/MS degree are listed below as part of the Master's Program.

2. Master's Program

a. Duration of the Program

- i. The nominal duration of the program is four semesters (see schedule below)
- ii. The actual time needed to complete all program requirements will vary from one student to another, however, the MS degree can be completed in two years.

b. University Requirements and Time Limits

- i. Thirty (30) credits beyond the Bachelor's degree; minimum 21 credits of coursework and 9 credits of thesis research.
- ii. Sixteen (16) credits minimum at the 800-900 level.
- iii. Time limit: Six (6) years from the date of enrollment in first course applied toward degree requirements in the Master's Degree program.
- iv. **Transferring Credits:** (updated summer 2009) Students are able to transfer a maximum of 9 credits to a Master's Degree Program from transfer courses, Lifelong Education enrollment status, and the Graduate Certificate level with no more than 9 credits from each category, except for 12 graduate certificate credits permitted in the College of Education.
<http://www.reg.msu.edu/Read/UCC/combinedmax.pdf>

c. Formal Course Work

Physiology (PSL) 827: Physiology/Pharmacology of Excitable Cells	4 credits
Physiology (PSL) 828: Cellular/Integrative Physiology	4
Biochemistry (BMB) 801: Molecular Biology and Protein Structure	3
Biochemistry (BMB) 802: Metabolic Regulation and Molecular Endocrinology	3
Physiology (PSL) 910: Cell and Molecular Physiology	4
Physiology (PSL) 950: Topics in Physiology (3 semesters; 1 cr/sem)	3
Physiology (PSL) 899: Master's Thesis Research	<u>9</u>
	30 total

- i. Required courses (to be taken for credit, not as a visitor):
- ii. Students entering the PSL Master's program who already have successfully completed any of these required courses must select additional, advanced courses, with approval of the Guidance Committee and Director of Research and Graduate Studies.
- iii. The Guidance Committee will require the student to demonstrate computer competencies pertinent to the student's area of research. Successful completion of PSL 410: Computational Problem Solving in Physiology (with a minimum grade of 3.0) is one way to fulfill this requirement.
- iv. A statistics course may be required by the Guidance Committee.
- v. Additional courses the student might choose to take: for more information about other courses, consult the university's *Description of Courses* and check with the Department offering the course.
- vi. A student must maintain a 3.0 cumulative grade-point average for all courses counting

toward the Master's degree (university regulation). In addition, a student must not accumulate more than 2 grades below 3.0 in courses earning credit toward the Master's degree (Department regulation). If either of these criteria is not met, the student will be dismissed from the Program. See Section I for a description of the Department grading policy for graduate level courses.

d. Selecting a Thesis Advisor and Thesis Options

- i. It is the student's responsibility to secure a commitment from a member of the regular faculty to serve as the Thesis Advisor. The prospective student is strongly encouraged to identify a Thesis Advisor prior to entering the program. As part of the application process, the student is encouraged to contact the Director of Research and Graduate studies for assistance. Resources available in this search are the detailed descriptions of faculty Research Interests provided on the Department website (www.psl.msu.edu), the MSU Community of Science (COS) database (<http://expertise.cos.com>), and the Joint Graduate Student Orientation program presented by the Biomedical Sciences Departments each Fall prior to the start of the school year. Information concerning the identification of a potential Advisor/ student's area of interest is required as part of the application process (Departmental Questionnaire), and in conjunction of discussions with the potential advisor, is used by the GAC as part of the admissions process.
- ii. Students who begin the program without having identified a Thesis Advisor will have a temporary Academic Advisor assigned to them by the Department. Typically, this is the Director of Research and Graduate Studies, who will assist the student and intervene with the faculty in finding a regular Thesis Advisor. If a thesis advisor cannot be identified by the end of the first semester, he/she will be directed to investigate additional opportunities within the Department or to withdraw from graduate training in the program. The Director of Research and Graduate Studies will assist with this decision.
- iii. Faculty members that qualify to serve as Thesis Advisors include regular and adjunct physiology faculty members. A faculty member outside the physiology Department can serve as a proxy Thesis Advisor when approved by the Director of Research and Graduate Studies. If a student chooses a Thesis Advisor who is not a regular or adjunct physiology faculty member, a regular physiology faculty member will be selected by the Director of Research and Graduate Studies to oversee and officiate the student's progress towards their degree; adjuncts that are not regular MSU faculty must be approved by the Dean of the Graduate School.
- iv. After identifying a Thesis Advisor, the student must complete a minimum of 4 credits of PSL 899: Master's Thesis Research (university requirement). Although only four hours of research credit are required, students will typically complete about 9 credits of PSL 899. A maximum of 10 credits of Master's thesis research may be applied toward the 30 credits required for an MS program.
- v. Thesis research can be laboratory-based (Thesis Option I) or library-based (Thesis Option II).
- vi. The thesis research must be based on work done by the student after entering the Master's program.
- vii. Thesis is to be written under the guidance of the Thesis Advisor, in consultation with the Guidance Committee, and in accordance with: *The Graduate School Guide to the Preparation of Master's Theses and Doctoral Dissertations*.

e. Role and responsibilities of the Thesis Advisor

- i. The role of the Thesis Advisor is to oversee the student's academic progress and research project.
- ii. The Thesis Advisor and student are responsible for establishing a Guidance Committee.
- iii. The student, not the Thesis Advisor, is responsible for writing and editing the student's thesis.

f. Guidance Committee

- i. The Guidance Committee consists of the Thesis Advisor and at least two other regular faculty from the Physiology Department. Additional faculty from other university Departments may be included on the Guidance Committee, at the discretion of the student and Thesis Advisor. The student and major Advisor will arrange for the selection and first meeting of the student's Guidance Committee whose central role is to guide the conception, completion, and reporting of the student's research. The Guidance Committee and the student shall jointly design the student's course of academic study. The Guidance Committee shall administer the Certifying Examination after the completion of the research. The committee will outline at their first meeting at least a tentative program and establish target dates for each phase of training. Any member of the committee or any other member of the faculty in the Department is available to any student for counsel or guidance throughout his/her graduate career. It is strongly suggested that the Guidance Committee be formed by the end of the second semester of the first year. Following the first meeting, the student must file a 'Report of the Guidance Committee'. The report form is available at the Graduate School website: (<http://www.msu.edu/user/gradschl/forms.htm>). This report, which includes a statement of the student's proposed program, with a timetable and tentative thesis topic, must be filed in the office of the dean of the student's college and with the Graduate School by the end of the second semester of the first year for Masters Candidates.

The student then is required to meet annually with their Guidance Committee. The student will need to provide the thesis Guidance Committee with a written progress report of their research, and the student's Advisor will need to file an annual report (see Appendix).

g. Annual Progress Report by the Student

The student's progress report should have the following format:

- i. Brief introduction; include in this section the specific aims in the original thesis proposal.
- ii. Results and discussion: This section should include an update on all progress toward the completion of the specific aims. If there has been a change in the aims or direction of investigation, this change should be well described. This section should also include a statement of the percentage of progress on the aims (original/revised).
- iii. Future studies/timetable. This section should briefly indicate the studies that are left to be done and the anticipated timetable for their completion.
- iv. List all manuscripts submitted, papers in press/published; abstracts submitted/presented.
- v. Have this written progress report to the thesis guidance committee seven days before the annual committee meeting.
- vi. At the meeting, the student should plan to give a brief (~30 mins.) oral summation of their written report. The major advisor is required to provide a written summary of the yearly meeting using the form in the Appendix. The written summary is to be signed by the committee members and the student. Copies are to be distributed to the student, mentor, committee members and the student's file. Students who wish to appeal any part of the summary may do so in writing to the Director of Research and Graduate Studies within 2 weeks of receiving the report. If this does not resolve the issue, a meeting will be arranged between the student, his/her mentor, and the Director of Research and Graduate Studies at the earliest time convenient for all parties. Failure to reach a consensus at this level, the matter will be taken under consideration by the Graduate Affairs Committee for final resolution.

h. Certifying Examination

- i. The certifying exam consists of an oral examination in defense of the student's written thesis.

- ii. Passing this exam will require approval of the written thesis, in addition to the satisfactory, oral defense of the thesis. (Pass/Fail will be determined by majority vote of the student's Guidance Committee)
- iii. A student who fails the exam will be given one opportunity to retake the exam. If the student fails the second exam, the student will be dismissed from the Program.

i. Financial Support

- i. The Department does not provide graduate assistantships or other stipends for students in the Master's program. This does not preclude a student from obtaining support from the Thesis Advisor or other sources.

TABLE 1: Master's Program Deadlines

REQUIREMENT	DUE DATE/TIME LINE
Identify/secure a Thesis Advisor	Before acceptance into program <u>OR</u> within the first semester
Secure a Guidance Committee	After selecting Thesis Advisor
Complete 4 Credits (minimum) of PSL 899	After selecting Thesis Advisor
File Guidance Committee Report	After 1 st Committee meeting; then each semester
Certifying Exam	At completion of written Thesis
Complete Remedial work	In the 1 st year

TABLE 2: Master's Program Time Schedule

SEMESTER	REQUIRED COURSES
1 st semester – FALL	BMB 801, PSL 827, PSL 950* or PSL 899
2 nd semester – SPRING	BMB 802, PSL 828, PSL 950, PSL 899
3 rd semester – FALL	PSL 910, PSL 950, PSL 899
4 th semester – SPRING	PSL 950, PSL 899

* Not required first semester, 3 semesters required

j. Criteria for Dismissal-Remediation

- i. Accumulation of 2 or more grades at/below 3.0.
- ii. Unable to maintain a 3.0 cumulative GPA.
- iii. Receive a Fail on the Certifying Exam twice.
- iv. Scientific misconduct (see Section V)

3. Doctoral Program

During the doctoral program, each student must demonstrate a breadth of knowledge of physiology, depth of knowledge in the student's chosen field of physiology, and must demonstrate that he/she can conceive, execute, and report an original piece of research. To these ends, each Ph.D. candidate must successfully meet four criteria:

- a. Complete the required coursework
- b. Pass the Comprehensive Examination, which measures breadth of physiological knowledge
- c. Have a yearly guidance committee meeting
- d. Present a written and oral Dissertation and pass the Final Oral Examination.

The primary objective of the doctoral program is to provide the student with a thorough knowledge of integrative, systemic, cell, and molecular physiology, to prepare him/her for independent research and to provide scholarly experience in one of the specialized areas of physiology.

a. Formulation of the Doctoral Program

Students are considered by the Department to be Doctoral 'candidates' until they

have:

- i. selected a major Advisor, and earned 30 semester graduate credits or
- ii. earned a Master's degree or a professional degree (D.V.M., D.O., M.D., etc.) or
- iii. passed the Departmental Comprehensive Examination.

b. Selection of the Thesis Advisor

Students are strongly urged to select a major Advisor by the end of their second semester of study. If a major Advisor has not been selected by the end of the first year, he/she will be directed to investigate additional opportunities within the Department or to withdraw from graduate training in the program. The Director of Research and Graduate Studies will assist with this decision. Resources available to the student are the detailed descriptions of faculty Research Interests provided on the Department website (www.psl.msu.edu), the MSU Community of Science (COS) database (<http://expertise.cos.com>), and the Joint Graduate Student Orientation program presented by the Biomedical Sciences Departments each Fall prior to the start of the school year.

Faculty members that qualify to serve as Thesis Advisors include regular and adjunct physiology faculty members. A faculty member outside the physiology Department can serve as a proxy Thesis Advisor when approved by the Director of Research and Graduate Studies. If a student chooses a Thesis Advisor who is not a regular or adjunct physiology faculty member, a regular physiology faculty member will be selected by the Director of Research and Graduate Studies to oversee and officiate the student's progress towards their degree; adjuncts that are not regular MSU faculty must be approved by the Dean of the Graduate School.

c. Role and responsibilities of the Thesis Advisor

- i. The role of the Thesis Advisor is to oversee the student's academic progress and research project.
- ii. The Thesis Advisor and student are responsible for establishing a Guidance Committee
- iii. The student, not Thesis Advisor, is responsible for writing/editing the student's thesis.

d. Guidance Committee

The student and major Advisor will arrange for the selection and first meeting of the student's Guidance Committee whose central role is to guide the conception, completion, and reporting of the student's research. The Guidance Committee and the student shall jointly design the student's course of academic study. The Guidance Committee shall administer the Comprehensive Examination. The Ph.D. Guidance Committee will consist of the major Advisor and at least four other regular faculty. At least one member of the Guidance Committee shall be chosen from outside the Department of Physiology and represent a discipline closely related to the student's field of specialization. The Ph.D. committee will outline at their first meeting at least a tentative program and establish target dates for each phase of training. Any member of the committee or any other member of the faculty in the Department is available to any student for counsel or guidance throughout his/her graduate career. It is strongly suggested that the Guidance Committee be formed by the end of the second semester of the second year. Following the first meeting, the student must file a 'Report of the Guidance Committee'. The report form is available at the Graduate School website: (<http://www.msu.edu/user/gradschl/forms.htm>). This report, which includes a statement of the student's proposed program, with a timetable and tentative thesis topic, must be filed in the office of the dean of the student's college and with the Graduate School by the end of the second semester of the second year for Doctoral Candidates.

The student then is required to meet annually with their Guidance Committee. The student will need to provide the thesis Guidance Committee with a written progress report of their research, and the student's Advisor will need to file an annual report (see Appendix).

The student's yearly progress report should consist of the following format:

- i. Brief introduction; include in this section the specific aims in the original thesis proposal.
- ii. Results and discussion: This section should include an update on all progress toward the completion of the specific aims. If there has been a change in the aims or direction of investigation, this change should be well described. This section should also include a statement of the percentage of progress on the aims (original/revised).
- iii. Future studies/timetable. This section should briefly indicate the studies that are left to be done and the anticipated timetable for their completion.
- iv. List all manuscripts submitted, papers in press/published; abstracts submitted/presented.

The progress report should be presented to the thesis guidance committee at least seven days before the annual committee meeting.

At the meeting, the student should plan to give a brief (~30 mins) oral summation of their written report. The major advisor is required to provide a written summary of the yearly meeting using the form in the Appendix. The written summary is to be signed by the committee members and the student. Copies are to be distributed to the student, mentor, committee members and the student's file. Students who wish to appeal any part of the summary may do so in writing to the Director of Research and Graduate Studies within 2 weeks of receiving the report. If this does not resolve the issue, a meeting will be arranged between the student, his/her mentor, and the Director of Research and Graduate Studies at the earliest time convenient for all parties. Failure to reach a consensus at this level, the matter will be taken under consideration by the Graduate Affairs Committee for final resolution.

Principles of Biological Experimentation. The faculty recognizes a body of knowledge fundamental to all biological experimentation and essential to the academic development of the candidate. The Guidance Committee should make some provision for the student's acquisition of these principles. Such training, which may be formal course work or other experiences, should be devoted to:

- i. The design of the experiments which contain proper controls, isolation of variables and appropriate statistical tests
- ii. The collection of data as limited by methodology
- iii. Physiology and physiological description of the total environment of experiments (i.e., the relationship of the phenomenon under study to the whole organism). This is often achieved through the use of appropriate diagrams ("models") of the experiment as it relates to other organ systems. The attainment of a satisfactory understanding of factors which influence compensated versus uncompensated deviations from normality, of stable versus unstable systems, and the factors which limit physiological functions is implied by this statement.
- iv. The use of drugs or other agents as valid tools for investigation of a physiological problem.

e. Guidance Committee Report

Although a student may be admitted to the graduate program, a binding program of courses and examinations between the student and the university which could lead to the Ph.D. is not established until the Guidance Committee Report is approved by the student's Guidance Committee, reviewed by the Graduate Affairs Committee to assure that all requirements are met, signed by Department chairperson and filed with the Graduate School. This report, which includes a statement of the student's proposed program, with a timetable and tentative dissertation topic, must be filed in the office of the dean of the student's college and with the Graduate School by the end of the second semester of the second year.

f. Degree Requirements

- i. Course Credit Requirements

No specific number of course credits is required by the university. Approximately 22 semester academic credits (excluding 24 semester PSL 999 research credits) is considered to be the average amount necessary to proceed from a Baccalaureate to a Ph.D. degree. Course requirements are determined by the Guidance Committee in consultation with the student. The program of study will be based upon the needs of the individual student, taking into account previous academic background, research interests, and professional goals. Selection of courses should reflect the student's need for breadth of knowledge in physiology and depth of knowledge in the field of specialization. See Section III-C for a description of the Department grading policy for graduate level courses.

ii. Curriculum Requirements

Basic curriculum: PSL 827, 828, and 910; BMB 801 and 802; four semesters of Topics in Physiology (PSL 950) at one credit per semester; and a minimum of 24 semester credits of PSL 999 research.

TABLE 3: Doctoral Program Time Schedule

SEMESTER	REQUIRED COURSES
1 st semester – FALL	BMB 801, PSL 827, PSL 950* or PSL 999
2 nd semester – SPRING	BMB 802, PSL 828, PSL 950, PSL 999
3 rd semester – FALL	PSL 910, PSL 950, PSL 999
4 th semester – SPRING	PSL 950, PSL 999
5 th semester - FALL	PSL 950, PSL 999

* Not required first semester, 4 semesters required

iii. Language Requirement

No language skill, other than English, is required in the Ph.D. program. However, a reading knowledge in a foreign language that is deemed appropriate to the student's professional interests may be required by the Guidance Committee in consultation with the student.

iv. Laboratory Rotations

Students who have not selected a Thesis Advisor at the time of admission are required to enroll in laboratory rotations (PSL 980). Lab rotations enable the student to gain direct experience in the methods and approaches of different laboratories. It also allows students to make an informed choice with regard to the thesis topic and the appropriate Thesis Advisor. Laboratory rotations are not required for students who have selected a Thesis Advisor at the time of admission.

v. Research and Thesis Requirements

For details regarding the recommended style for dissertations, see "The Graduate School Guide to the Preparation of Graduate Master's Thesis and/or Doctoral Dissertation." This manual is available from the Graduate School.

g. The Comprehensive Exam

Prior to the beginning of the third year in the program the student must successfully complete the Comprehensive Exam. The Comprehensive Exam will be administered by the student's Guidance Committee plus a member of the Physiology Curriculum Committee who will serve as chair of the Comprehensive Exam Committee. The student's Major Advisor will not participate on the Comprehensive Exam Committee.

The comprehensive exam will involve 3 parts:

- i. The preparation of a written thesis proposal under the guidelines described below.
- ii. An oral presentation of the proposed research in an open seminar.

- iii. A closed session meeting with the preliminary exam committee

g-1. Part 1: The written proposal

The format described below will be used for the preparation of the written thesis proposal for the comprehensive exam. This proposal is patterned after an NIH R01/NRSA grant application. We are aware that some physiology graduate students are in research programs where the major professor might submit an application to USDA, NSF, DOE or other agencies. Unfortunately, the various governmental and private agencies do not use a uniform set of guidelines for the preparation of a research proposal. In an effort to establish some uniformity to our comprehensive exam we have given specific guidelines that will aid the student in the preparation of their proposal. Moreover, we have given some criteria as to how the student's proposal will be evaluated by the comprehensive exam committee. While we do not expect our 2nd year graduate students to write a proposal that would be competitive for funding from a national agency, we do expect our students to put forth a scholarly effort. This effort should not be just a compilation of technical accomplishments, but demonstrate the breadth and depth of the student's knowledge in their chosen field of research and the broader field of physiology. This document should provide the comprehensive exam committee with sufficient evidence to judge the student's potential (both intellectual and technical) to develop a first rate dissertation research project.

At least seven (7) days prior to the seminar date, the student shall submit a written Dissertation Proposal to the members of the comprehensive exam committee.

Specific instructions to the preparation of the research proposal:

Double spaced; page limitations are for double spaced format.

Font size: 10, 11 or 12.

Margins: 3/4 in on all sides.

Figures/Tables should be formatted into the text, if possible.

- i. **Specific Aims**: Not exceed 2 pages. List the broad, long-term objectives and what the specific research proposed in this application is intended to accomplish. State the hypotheses to be tested.
- ii. **Background and Significance**: Not to exceed 6 pages. Briefly sketch the background leading to the present application, critically evaluate existing knowledge, and specifically identify the gaps, which the project is intended to fill. State concisely the importance and physiological relevance of the research described in this application by relating the specific aims to the broad, long-term objectives.
- iii. **Preliminary Studies/Progress Report**: Not to exceed eight pages. Use this section to provide an account of the your preliminary studies pertinent to the research proposal that will help to establish your experience and competence to pursue the proposed project.
- iv. **Research Design and Methods**: Not to exceed 12 pages. Describe the research design and the procedures to be used to accomplish the specific aims of the project. Include how the data will be collected, analyzed, and interpreted. Describe any new methodology and its advantage over existing methodologies. Discuss the potential difficulties and limitations of the proposed procedures and alternative approaches to achieve the aims. As part of this section, provide a tentative sequence or timetable for the project. Point out any procedures, situations, or materials that may be hazardous to personnel and the precautions to be exercised.
- v. **Literature Cited**: List all references. Each reference must include the title, names of all authors, book or journal, volume number, page numbers, and year of publication. The reference should be limited to relevant and current literature. While there is no page limitation, it is important to be concise and to select only those literature references pertinent to the proposed research.

As the candidate prepares their proposal, they should be aware of how the written proposal will be evaluated by the Comprehensive Exam Committee. Accordingly, the candidate should be sure their proposal contains information to address the following issues:

- i. Does this research advance our understanding of biological systems, improve the control of disease or enhance health?
- ii. Under significance: Does this study address an important problem? If the aims of this project are achieved, how will scientific knowledge be advanced? What will be the effect of these studies on the concepts or methods that drive this field?
- iii. Under Approach: Are the conceptual framework, design, methods and analyses adequately developed, well-integrated and appropriate to the aims of the project? Does the applicant acknowledge potential problem areas and consider alternative tactics?
- iv. Under Innovation: Does the project employ novel concepts, approaches or methods? Are the aims original and innovative? Does the project challenge existing paradigms or develop new methodologies or technologies?
- v. Under Investigator: Is the investigator appropriately trained and well suited to carry out this work? Is the work proposed appropriate to the experience level of the investigator?

g-2. Part 2: The oral presentation.

The oral presentation of the research proposal in an open seminar. The oral presentation of the research proposal should be ~50 minutes in length (40 mins. presentation + 10 mins. of a question/answer period from the audience). Do not attempt to include all of the information in the written thesis proposal in the oral seminar. The key to success in this portion of the exam is to give a clear and coherent presentation. A very nice paperback book that provides guidance in the preparation for and presentation of a scientific talk is: "Dazzle 'em with style: The art of oral scientific presentation" by Robert R.H. Anholt. (1994) W.H. Freeman and Company, ISBN: 0-7167-2583-5. Rehearse your presentation with your mentor, lab colleagues and/or fellow graduate students.

g-3. Part 3: The private session with comprehensive exam committee

This session will include a comprehensive discussion of:

- i. the studies the student has already conducted in the laboratory of his/her Major Advisor
- ii. the proposal of future research that will serve as the basis for the doctoral dissertation
- iii. the student's knowledge and understanding of the facts and fundamental concepts that are pertinent to the dissertation research.

h. Dissertation Proposal Expectations

The student must demonstrate defensible logic in the formulation of questions/hypotheses and in the proposed approaches to answer these questions (or test these hypotheses) experimentally. The student must also demonstrate a knowledge and understanding of fundamental physiological principles that are relevant to his/her research area.

All faculty are encouraged to attend the Dissertation Proposal Seminar and to submit written evaluations of the student's performance (comment forms are provided). The Comprehensive Exam Committee will use these written comments plus the results of their own meeting with the student to reach a judgment regarding the adequacy of the student's seminar presentation, dissertation proposal, and command of relevant knowledge in physiology. The private session meeting with the Comprehensive Exam Committee. The private session with the preliminary exam committee should follow the seminar and is expected to take at least two hours.

i. Comprehensive Exam Outcome

Following their meeting with the student, the Comprehensive Exam Committee will decide by

simple majority vote on one of the following dispositions:

- a) Pass,
- b) Pass with condition, or
- c) Fail.

In the case of “pass with condition,” the student will be expected to fulfill the conditions set by the Comprehensive Exam Committee within three (3) months of the exam. If the student fails the exam, the student will be dismissed from the Ph.D. program, but may be allowed to complete a MS program.

A “Report on Doctoral Comprehensive Examination (Department of Physiology)” will need to be signed by the Committee members and Chair and filed with the Graduate Program Director, the student, and the student’s Major Advisor.

Failure on the part of the student to fulfill the requirements for the Departmental Comprehensive Exam within the prescribed time limits will result in dismissal from the Ph.D. program. A student dismissed for this reason shall have the right to apply to the Graduate Affairs Committee for readmission.

j. Dissertation Defense

The final oral examination in defense of the dissertation will be conducted and evaluated by the Guidance Committee, supplemented at the discretion of the dean of the college by two appointed faculty members. Other interested staff members may attend. The examination will be scheduled for a date not earlier than two weeks after the dissertation and abstract have been submitted to the major professor and Guidance Committee but not later than the sixth Friday of the semester. This will allow time for the members of the Committee to review and evaluate the dissertation before the examination, and also allow sufficient time after the examination for the student to submit the unbound dissertation to the Office of the Graduate School before the specified deadline date. The student must be registered during the semester in which the final oral examination is taken. Simple majority rule is in effect for all guidance committee decisions.

k. Teaching Responsibilities

International graduate students must have a minimum score of 50 on the University’s SPEAK test to qualify for teaching. For more information about the SPEAK test, contact the English Language Center at MSU, A714 Wells Hall or on the web at <http://elc.msu.edu>.

i. Experience

As part of their academic requirement, each student (irrespective of their source of support), is required to participate in the teaching of at least one section of PSL 475, or equivalent as approved by the Graduate Affairs Committee, provided their involvement in PSL 475 is not needed. Typically, the teaching experience, which requires about 6 student contact hours per week, is fulfilled during the second year in the program.

The importance of this classroom experience as part of their professional development is noted during the student’s orientation to the doctoral program. The course coordinator provides a pre-course orientation, regular observation and feedback during the course, and a written evaluation for each student at the conclusion of the course.

Students are encouraged also to seek other opportunities for gaining teaching experience, including the presentation of formal lectures, construction and evaluation of examinations, tutoring of students, and leading discussion sections. All of these opportunities are considered important aspects of professional development in preparation for future employment.

I. Summary of Doctoral Program of Study Requirements

- i. Filing a Guidance Committee Report by the end of the second semester of the second year. Following the filing of the Guidance Committee Report, each student's Guidance Committee is expected to meet and file a report annually, on the progress of the student.
- ii. Completing courses in the major and related fields as prescribed by the Guidance Committee Report (IV.B.3).
- iii. Passing the Comprehensive Examination before the third year in the program.
- iv. Acquiring teaching experience by providing teaching assistance as prescribed by the Graduate Affairs Committee.
- v. Preparing a dissertation based on original research that makes a significant contribution to knowledge.
- vi. Passing a Final Oral Examination in defense of the dissertation within eight years of entry into the Ph.D. program.

m. Modification of Program and Final Certification

Final certification of the Ph.D. degree or any radical departure from the suggested program of study as outlined in this manual requires the approval of the Director of Research and Graduate Studies and the Graduate Affairs Committee. In addition to the Department regulations, the student must satisfactorily complete all college and university requirements for a given degree. A student is referred to the University Catalog for a complete description of such requirements.

TABLE 4: Doctoral Program Deadlines

REQUIREMENT	DUE DATE/TIME LINE
Select a Major Advisor	By end of 2 nd semester*
Complete Remedial Work	In the 1 st year
Secure a Guidance Committee	After selecting Major Advisor
File Guidance Committee Report	By the end of 2 nd semester of 2 nd year, then annually
Comprehensive Exam	Prior to start of 3 rd year
Teaching Assignments (PSL 475)	2 nd year of study
Oral Defense of Original Thesis	Within 8 years from entry into the Ph.D. program

* If a Major Advisor is not found by end of the 1st year the student will be asked to look within the Department for other options or to withdraw from the program.

n. Check List to Complete Ph.D. Program

- ___ Filing a Guidance Committee Report by end of the second semester of the second year.
- ___ Meet and file Guidance Committee Report annually.
- ___ Complete courses in the major and related fields as prescribed by the Guidance Committee Report.
- ___ Passing Comprehensive Exam before third year in the program.
- ___ Acquire teaching experience by providing teaching assistance as prescribed by the Graduate Affairs Committee.
- ___ Prepare a dissertation based in original research that makes a significant contribution to knowledge.
- ___ Pass a Final Oral Examination in defense of the dissertation within eight years of entry into the Ph.D. program.

4. Guide to the Preparation of Master's Thesis and/or Doctoral Dissertation

Early in the graduate program every graduate student should become familiar with the requirements for the preparation of a thesis or dissertation in physiology. By paying close attention to such items as the required format, the preferred method of setting up a reference list, citing of reference in the text, statistical procedures and presentation of data, much time and trouble will be saved in the final writing.

The requirements of the Graduate School are outlined in a booklet entitled, *The Graduate School Guide to the Preparation of Master's Theses and Doctoral Dissertations* which is available from the Graduate Office. All of the requirements outlined in this booklet must be fulfilled. In addition,

there are preferred methods for organizing a thesis in physiology that are not outlined in the regulations cited above.

Before starting to write the thesis the student should prepare a comprehensive outline of the material he/she plans to present and then, in consultation with their major Advisor, and in some cases, his/her Guidance Committee, decide on the thesis format. The following are intended as guidelines for both the student and major Advisor in preparing a thesis for presentation to the guidance committee and/or thesis readers.

If the results to be presented cover a closely unified area, the thesis should consist of the following parts:

Abstract

A concise statement of the problems, methods used, the major findings and/or conclusions of the research.

Introduction

A statement of the problems; why the work was done; how it relates to other work; its importance to the particular field or fields of physiology involved.

Literature Review

An historical survey of previous work which relates directly to the thesis--differences in methodology; findings in different species; development of method; physiological concepts and their development. In research areas where the literature is too extensive for a complete review to be presented, at least original key papers laying the groundwork for the research should be cited in this section. Additional papers can be cited in the discussion.

Materials and Methods

This should begin with a clear description of the experimental design and be followed by a description of methods, animals and environmental conditions that may have a bearing on the research. It should be much more complete than ordinarily found in a published paper. Some methods, such as long, involved techniques, may be given in appendices. Also include calculations and (when critical) the derivation of equations and formulas, statistical methods, analytical techniques, detailed modification of techniques and/or equipment, equipment suppliers and model numbers, source and grade of critical drugs and reagents.

Results

Present data, including tables and figures with coordinates properly labeled. Each figure and table should have a descriptive caption. Results are presented here and may be discussed briefly. If data are presented in figures and statistical summaries in the text, it may be necessary to present tabulations of at least the key data in appendices.

Discussion

Present a brief overview of your significant findings. This should be followed by a fuller interpretation of your data and its relation to the work of others. Also in order are the implications of the results and any hypotheses you have formed that are based on the results.

Summary and Conclusions

Summarize the results and list your conclusions.

Reference List

JOURNAL ARTICLES--

Complete references should be given with journal titles abbreviated as listed in Index Medicus. List only those references actually read by the author.

Example:

Emerson, T.E., J.B. Scott and F.J. Haddy. Effects of acute multiple changes in plasma electrolyte levels on dog blood pressure. Am. J. Physiol. 218:234-240, 1970.

RESEARCH MONOGRAPHS--

Example:

Meites, J., C.S. Nicoll and P.K. Talwalker. The central nervous system and the secretion and release of prolactin. *In*: *Advances in Neuroendocrinology*, edited by A.V. Nalbandoc, University of Illinois Press, Urbana, 1963.

BOOKS--

Example:

Kleiber, Max. *The Fire of Life*. John Wiley & Sons, Inc., New York, 1963.

UNPUBLISHED OBSERVATIONS AND PERSONAL COMMUNICATIONS—

These may be cited in footnotes or parenthetically in the text. References should be arranged in alphabetical order of first author's last name. References should be cited in the text by author and date. If there are two authors, name them both; if three or more, cite the first author, et al.

Appendices

Include procedures, data, equations, etc. that are too lengthy to be covered in the text.

In some cases the research may lead into two or more divergent parts that are more easily written up in two or more separate sections. One way that this can be handled is to give an abstract and general introduction to the entire thesis, introduce Part I and then proceed according to guidelines for Literature Review through Summary and Conclusions for this part. Then introduce Part II and again follow these same guidelines. This should be followed by a general discussion, integrating the findings of both parts and the completed bibliography and appendices.

Concluding Remarks and Submission Options

It is the student's responsibility to cross check all citations against the bibliography and also to check the bibliography against original sources.

The student should submit his/ her thesis in a complete and polished form with a minimum of typographical, grammatical, tabular, bibliographical or other errors. The documents may be submitted in hardcopy or electronic format.

As early as possible, but not later than eleven weeks before the end of his/her last semester, the student with the counsel of the major Advisor will have prepared the final rough draft of the thesis. With the concurrence of his/ her major Advisor the student may submit a copy of the thesis to each member of the committee as a "reading" copy on which the committee members will make suggestions for changes. At this time each committee member should indicate whether the thesis is generally acceptable or is so deficient in format or content that the deadlines for receiving the degree cannot be met that term. If the thesis is generally acceptable to the committee, a final copy (unbound) incorporating the suggestions of the committee is then made. This final copy must be available for inspection at the final oral examination and defense of the thesis. The thesis should be submitted to the committee members at least seven days before the day of the oral examination. Published manuscripts may be used as part of the dissertation to the extent that they represent original research by the student. Prior to including in the dissertation, the student should request formal approval by his/her Guidance Committee.

5. Criteria for Dismissal-Remediation

- a. Accumulation of 2 or more grades at/below 2.0.
- b. GPA below 3.0 in any core course (PSL 827, 828, 910, 950; BMB 801, 802).
In case of GPA lower than 3.0, the student has 12 months to retake the course.
- c. Failure to fulfill the requirements for the Comprehensive Exam within the time limits
Comprehensive Exam is administered prior to or within first semester of 3rd year of study.
- d. Receive a Fail on the Comprehensive Exam
Student may be allowed to continue in the Master's Program
- e. Scientific misconduct (see Section V).

IV. CHANGING THESIS ADVISOR

There may be circumstances in which the student may voluntarily or involuntarily choose to change Thesis Advisors. These circumstances may include, but are not limited to, irreconcilable differences between Thesis Advisor and student, change in research interest, or departure of the Thesis Advisor from his/her Department. Under such circumstances the Director of Research and Graduate Studies will work with the student to identify a new Thesis Advisor. If a major Advisor has not been selected by the end of the next full semester, he/she will be directed to investigate additional opportunities within the Department or to withdraw from graduate training in the program.

If a student changes Thesis Advisors, all data books and research materials remain the property of the original Thesis Advisor. Data books and research materials may only be removed from the original Thesis Advisor's laboratory or offices after student has received written permission from original Thesis Advisor.

There also may be circumstances in which a student voluntarily or involuntarily leaves MSU before completing all of the degree requirements. If a student leaves MSU, the student can be readmitted to the program within 3 consecutive semesters; readmission to the University is required after an absence of three consecutive semesters, including summer. The original Thesis Advisor, however, is under no obligation to remain the student's Thesis Advisor. Under such circumstances the Director of Research and Graduate Studies will work with the student to identify a new Thesis Advisor. If a major Advisor has not been selected by the end of the next full semester, he/she will be directed to investigate additional opportunities within the Department or to withdraw from graduate training in the program.

Should a student leave MSU before completing all of the degree requirements, all data books and research materials remain the property of the Thesis Advisor. Data books and research materials may not be removed from the Thesis Advisor's laboratory or offices without written permission from the Thesis Advisor.

V. DEPARTMENTAL POLICIES: INTEGRITY AND SAFETY IN RESEARCH AND CREATIVE ACTIVITIES

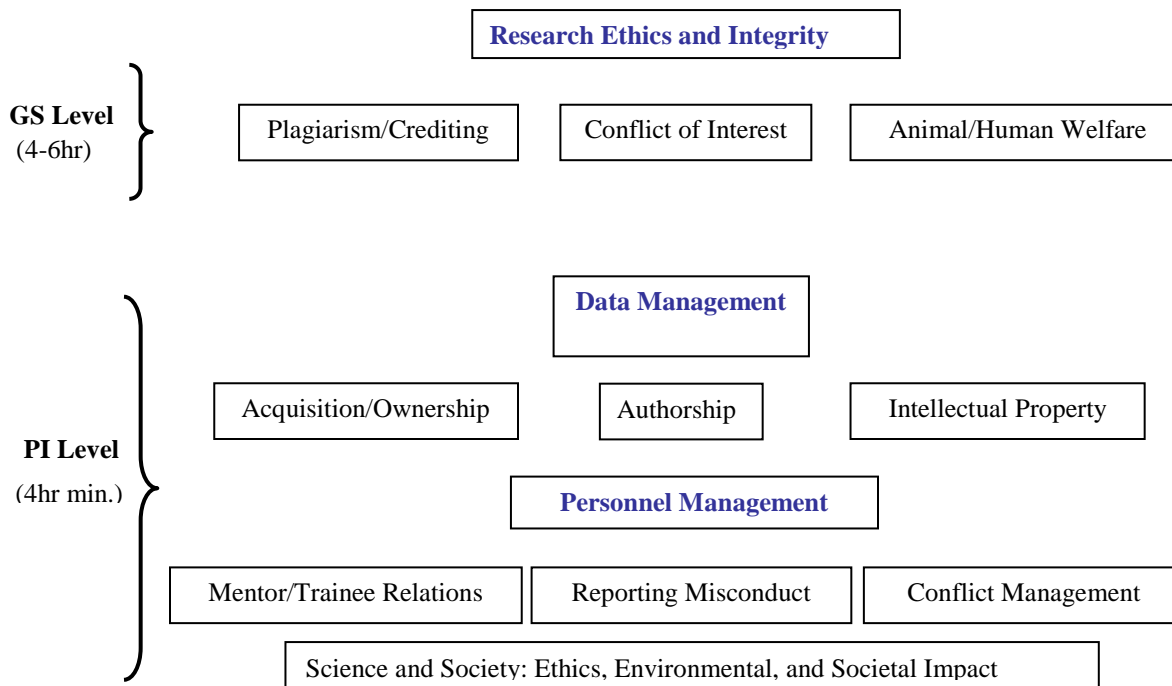
A. Graduate Student Responsibilities

1. Integrity and Safety in Research and Creative Activities

- a. All incoming graduate students are expected to read the document *Guidelines for Integrity in Research and Creative Activities* (<http://grad.msu.edu/staff/mentoreport.pdf>).
- b. All incoming graduate students are expected to attend the seminar series offered by the Graduate School and the MSU Office of Research Ethics and Standards, entitled "Responsible Conduct of Research", available online at: www.msu.edu/user/gradscl/all/respconduct.htm.
- c. All graduate students are expected to follow all applicable guidelines for Integrity and Safety in Research and Creative Activities; criteria for dismissal from the program include, but are not limited to:
 - i. plagiarism;
 - ii. fabrication or falsification of data;
 - iii. failure to disclose Conflicts of Interest;
 - iv. inappropriate or unauthorized use of university property, including computers;
 - v. destruction and/or theft of university property, including reagents;
 - vi. failure to comply with the guidelines set forth in this manual;
 - vii. violation of University personnel policy guidelines for acceptable behavior (**see www.hr.msu.edu/TermSep/**).

2. Department Plan for Responsible Conduct of Research and Scholarship

Pursuant to Michigan State University's recently implemented Institutional Policy for Training and Oversight in the Responsible and Ethical Conduct of Research, the Department of Physiology has developed the following plan:



Recertification (3hr min.) Discussion of selected GS documents concerning professional development combined with actual cases of Research Misconduct obtained from the NIH website, along with materials obtained from the NIH Office of Research Integrity website.

Program Resources:

- GS Workshops
- GS Research Integrity website (Documents and PowerPoint presentations)

Undergraduates, Graduates, and Post-doctoral trainees working on projects supported by extramural and/or intramural funding are required to attend at least 4 hours of workshops provided by the Graduate School that cover the core topics of Plagiarism, Crediting of Work, Conflicts of Interest, and Human and/or Animal Welfare. In addition, through independent and/or joint lab meetings, either within the Department or across Biomedical Departments, each also will be required to participate in at least 4 hours of discussion on topics concerning Data Acquisition/Ownership, Identification of Authorship, Intellectual Property, Mentor/Trainee Rights and Responsibilities, Reporting Scientific Misconduct, Resolution of Conflicts, and the Scientist's Role in Society.

The materials for these discussions will be derived from the Graduate School Office of Research Integrity, as well as from the NIH Reports of Scientific Misconduct, the NIH Office of Research Integrity website (<http://ori.dhhs.gov/>), *On Being a Scientist* (3rd ed.), published online by the National Academy Press, and any additional sources the mentor and/or workshop leader deems relevant.

In all cases, the PI will be responsible for determining that the trainee has fulfilled their responsibility toward this requirement. Following completion, the trainee will be presented with a Certificate of Completion indicating the Title and Dates of participation.

Re-certification in subsequent years will require the trainee to participate in a minimum of 3 hours of group discussion concerning revised regulations, additional cases of scientific misconduct, and professionalism. Topic areas and materials will be selected from the Graduate School Research Integrity Resources website (<http://grad.msu.edu/researchintegrity/resources>), and NIH resources.

Required training and annual recertification, as it pertains to the use of specific animals in research, and the handling of different biological and/or radioactive materials, is provided by the Institutional Animal

Care and Use Committee (www.iacuc.msu.edu) and Office of Radiation, Chemical, and Biological Safety (www.orcbs.msu.edu) at MSU via both classroom and online mechanisms.

B. Animal and Human Use Approval

1. All graduate students seeking approval to use animals for research purposes must first contact the All-University Committee on Animal Use and Care (www.animalresearch.msu.edu) and register for required training in Animal Use and Care.
2. All graduate students seeking approval to perform research with human subjects must first contact the University Committee on Research Human Subjects (www.humanresearch.msu.edu) and register for required training and application information.

C. ORCBS Training and Compliance

All students working with or intending to work with chemicals, radioactivity, recombinant DNA and/or hazardous materials must first contact and register with ORCBS (Office of Radiation, Chemical and Biological Safety) for required training and certification at: www.orcbs.msu.edu/training/training_toc.htm. This training needs to be completed before they can begin work in the laboratory.

D. Graduate Student Rights

Specifics on students' rights are contained in the Bylaws of the Faculty of the Department of Physiology, the Academic Freedom Report (AFR), Students Handbook, and the document entitled Graduate Student Rights and Responsibilities (GSRR). Copies of the latter are obtainable from the Office of the Dean of the Graduate School. All students are urged to acquaint themselves with these documents.

VI. STUDENT CONDUCT AND CONFLICT RESOLUTION

A. Expectations for Graduate Student Professional Behavior

The university is a community of scholars and all graduate students are expected to conduct themselves in a professional and scholarly manner. All students are expected to conduct themselves in a manner consistent with the goals discussed in the Graduate School seminar series on Research Integrity and Safety. Specifics on students' rights and responsibilities are contained in the Bylaws of the Faculty of the Department of Physiology, the Academic Freedom Report (AFR), Students Handbook, and the document entitled Graduate Student Rights and Responsibilities (GSRR). Copies of the latter are obtainable from the Office of the Dean of the Graduate School. All students are urged to acquaint themselves with these documents.

1. Integrity of Scholarship and Grades Policy

(https://www.msu.edu/~acadgov/documents/ISGACapproved2_24_09final_polished_editedversion3_3_09.pdf)

2. Graduate Student Rights and Responsibilities

(<https://www.msu.edu/unit/ombud/GSRRfinal.html>)

B. General Procedures for Conflict Resolution

In the event that interpersonal or professional conflicts arise, the first avenue taken by students should be consultation with their immediate advisor, or if unavailable, the Departmental Director for Research and Graduate Studies for advice. The Graduate School offers formal seminars and workshops on Conflict Resolution strategies that all students are encouraged to attend (www.msu.edu/user/gradschl/conflict.htm). It is strongly suggested that these avenues be

exhaustively explored before the formal step of Grievance is pursued.

C. Grievances

1. Student Violations and Grievances

- a. Introduction: The fundamentals of fair play in the adjudication of student violations and student grievances shall prevail. This is in keeping with Article 6 of the *Bylaws for Academic Governance, 1992*.
- b. Student allegations may be classed as either grievances or complaints.
- c. A **complaint** is a general allegation which does not propose or permit a specific remedy, or which proposes a remedy beyond the authority of the hearing committee to recommend. A complaint cannot be acted upon by a hearing committee. Where appropriate, students may seek redress through informal resolution by first discussing the matter with the instructor; then, if necessary, with the chief administrator of the unit and/or the ombudsman.
- d. A **grievance** is a specific allegation of a violation of a student's academic rights or of the *Code of Teaching Responsibility* for which a remedy, specific to the situation being challenged and within the authority of the hearing committee to recommend, is sought. Details of the allegation and of the proposed remedy must be in writing before redress is sought.

2. Grievance Procedures for BS/MS Students

- a. Grievances must normally be initiated no later than midterm of the semester following the one wherein the alleged violation occurred. Exceptions shall be made in cases where the involved instructor or student is absent from the university during that semester.
- b. Students must first seek to resolve any grievance informally by discussion with the instructor; if unresolved, then the chief administrator of the unit and/or the Ombudsman may be consulted.
- c. Grievances unresolved by the Ombudsman which seem to the Ombudsman to warrant a hearing will be reported in writing to the chief administrators of the teaching unit involved.
- d. The chief administrators of the teaching units or their designees are obligated to refer written grievances unresolved at the unit level or by the Ombudsman to the student-faculty committees. The Judicial Committee shall be composed of the Department chairperson or designated deputy (to act as chairperson) and an equal number of faculty and undergraduate Physiology majors selected by the Advisory Committee. A copy of any grievance transmitted shall be sent to the instructor.
- e. A unit may, at its option, create an advisory subcommittee composed of undergraduate members of the unit hearing committee. A summary of the grievance may first be presented orally to this subcommittee, which would decide by majority vote whether the grievance warrants a hearing. Should the subcommittee decide against a hearing, the student may appeal the decision to the full committee.
- f. Units shall establish their own hearing procedures according to their governance processes and shall file a copy of the procedures with the Office of the Ombudsman. Parties to the grievance shall be given timely notice of the hearing and copies of the written grievance; and opportunities to state their cases, present evidence, designate witnesses, ask questions and rebut contrary positions. A collegial atmosphere shall be maintained throughout the proceedings and, though parties to the grievance may solicit advice prior to hearing, normally the purpose of the hearings will be better served by proceeding without counsel. If counsel is to be involved, counsel shall be limited to a member of the student body, faculty, or staff of the University. To further the

development and maintenance of this collegial atmosphere, each unit is encouraged to have student participation in all Judiciary committees.

- g. A written report of the action or recommendation of the unit hearing committees will be forwarded to the student, the instructor, and to the Ombudsman in cases forwarded by that office, normally within **ten (10) class days** of the hearing of the grievance. All parties involved are expected to respect the confidentiality of this report.
- h. Either party may appeal the action or recommendation of a Departmental committee to the college committee charged with hearing such appeals.
- i. All appeals must be filed within **ten (10) class days** following notification of all parties of a hearing committee disposition. Dispositions are held in abeyance while the action of recommendation is being appealed.
- j. Except in cases involving a charge of academic dishonesty, there shall be no appeal beyond the college committee except to the dean of the college, who may ask, upon a showing, that a given case be reconsidered.

3. Grievance Procedures for Graduate and Medical Students

- a. Judicial Structure: An appropriate judicial structure shall be established for hearing and adjudicating all cases brought by and against students in the following areas:
 - i. Academic Rights and Responsibilities
 - ii. Professional Rights and Duties of Assistants
 - iii. Professional Rights and Duties of Other Graduate Students
- b. Departmental level: Adjudication necessitated on the Departmental level should be handled informally if possible or, if a party or parties insist, formally through a Departmental Judicial Committee. The Judiciary shall comprise the Department chairperson or designated deputy (to act as chairperson) and an equal number of faculty selected by the Advisory Committee, and students selected by the Physiology Graduate Student Committee (in the case of a graduate student grievance) or from the relevant medical college (in the case of a medical student grievance) so as to reflect the composition of their groups.
- c. The Judiciary shall provide for a suitable number of alternate members, chosen in accordance with the procedures established above.
- d. Term of office: Judiciary members and alternates at all levels shall be selected in the Fall of the year, by the Department Advisory Committee and shall serve one year. The one-year term shall not preclude reappointment of any member the following year.
- e. Conflict of interest. Members of a Judiciary involved in a case at issue shall be disqualified from sitting on the Judiciary for that specific case.

D. Judicial Process

1. Any member of the academic community of Michigan State University may initiate a case involving the rights and responsibilities of graduate students. All such grievances must be initiated no later than the next academic semester exclusive of summer semester, following the term of the alleged violation.
2. Any of the parties may appeal a decision or the penalty to the next higher level within 10 class days after receipt of the decision or penalty.
3. The appellate body shall limit its jurisdiction to review of the prior adjudication.
4. A Judiciary hearing a case may decide as follows:

- a. NOT PROVEN.
 - i. There has been no proven infringement of the rights of the graduate student.
 - ii. There has been no proven neglect of the graduate student's responsibilities.
 - b. PROVEN.
 - i. There has been a violation of the graduate student's rights.
 - ii. The graduate student has neglected the responsibilities of a graduate student.
5. In cases of proven violation of a student's rights, the Judiciary handing down the decision shall direct appropriate and expeditious redress.
6. In cases of proven neglect by the graduate student, the Judiciary may select from the following penalties:
- a. Warning: an official written reprimand.
 - b. Probation: a period of probation with specific stipulations.
 - c. Dismissal from the academic program in which enrolled.

E. Due Process

1. Once a grievance has been filed with a Judiciary, it shall be the responsibility of the chairperson to notify, in writing, all parties involved within a period of **five (5) class days**.
2. If the party charged in the grievance chooses not to contest it, the Judiciary may be requested to take appropriate action. The penalty or redress may be appealed to the next higher Judiciary.
3. If the party charged in the grievance chooses to contest it, the Judiciary shall conduct a hearing according to the procedures outlined herein, based on the Ombudsman's **Model Grievance Procedures**, Developed October 2003:
 - a. The Chair of the Judicial Committee shall promptly negotiate a hearing date with the parties and schedule an additional meeting only for the Judicial Committee in the event that additional deliberations on the findings become necessary.
 - b. At least **3 class days** before a scheduled hearing involving an undergraduate student, the Chair of the Judicial Committee shall notify the respondent and the complainant in writing of (1) the time, date and place of the hearing; (2) the names of the parties to the grievance; (3) the names of the Judicial Committee members, including alternates; (4) the names of the witnesses and counsel, if any; and (5) the right to challenge Judicial Committee members because of a conflict of interest. (See AFR 4.2.7; 4.4.3.)
 - c. At least **6 days** before a scheduled hearing involving a graduate student, the Chair of the Judicial Committee shall notify the respondent and the complainant in writing of (1) the time, date and place of the hearing; (2) the names of the parties to the grievance; (3) the names of the Judicial Committee members, including alternates; and (4) the names of the witnesses and advisors, if any. (See GSRR 5.4.7.) This notification should also remind the parties to the grievance of their right to challenge the membership of the Judicial Committee, both for and without cause, under the rules prescribed in GSRR 5.1.7.

At its discretion, the Judicial Committee may set a reasonable time limit for each party to present its case and must inform the parties of the time limit in the written notification of the hearing.
4. Should the respondent fail to acknowledge the notice of a hearing, the Judicial Committee may either postpone or proceed with the hearing. (See AFR 4.4.5.)

If the complainant fails to appear at the hearing, the Department/School Judicial Committee may either postpone the hearing or dismiss the case. (See AFR 4.4.7a; GSRR 5.4.9a.)

If the respondent fails to appear at the hearing, the Judicial Committee may either postpone the hearing or hear the case in the respondent's absence. (See AFR 4.4.7b; GSRR 5.4.9b.)

In unusual circumstances, the Judicial Committee may accept written statements from either party to a hearing in lieu of a personal appearance. These written statements must be submitted to the Judicial Committee at least 1 day before the scheduled hearing. (See AFR 4.4.7c; GSRR 5.4.9c.)

Either party to the grievance hearing may request a postponement of the hearing. The Judicial Committee may either grant or deny the request. (See AFR 4.4.6; GSRR 5.4.8.)

Members of the Judicial Committee must not talk about the hearing with either party before the scheduled hearing.

F. Grievance Hearing Procedures

1. General Procedures

- a. The Chair of the Department/School Judicial Committee shall convene the hearing at the designated time, date and place. The Chair will ensure that a collegial atmosphere prevails. (See AFR 2.4.4, 2.4.4.2; GSRR 5.4.10.) During the hearing, parties to a grievance shall have an opportunity to state their cases, present evidence, designate witnesses, ask questions and present a rebuttal. (See AFR 2.4.4; GSRR 5.4.10.1.) The procedures may be taped.
- b. To protect the confidentiality of the information, the Chair of the Judicial Committee may limit attendance at the hearing to the Judicial Committee members, the complainant, the respondent, the witnesses for either party, if any, and the counsel/advisor for each party, if any. (See AFR 4.2.3 and 8.1.6; GSRR 8.1.4.)
- c. All witnesses shall be excluded from the proceedings except when testifying. Witnesses must confine their testimony to their own independent recollection and may not speak for others. The Judicial Committee may limit the number of witnesses. Unless otherwise approved by the Judicial Committee, counsel/advisors and witnesses shall be limited to members of the MSU community (faculty, students or staff). See AFR 4.3.5 and 8.1.6; GSRR 5.4.10 and 8.1.4.)
- d. Involvement of counsel/advisor normally should not be required. Each party must present her/his own case, and counsel/advisors may have a voice in the hearing. (See AFR 2.4.4.2, 4.3.5 and 4.4.8d)
- e. To assure orderly questioning, the Chair of the Judicial Committee shall recognize individuals before they speak. All parties have the right to speak without interruption. Each party has the right to question the other party and to rebut any oral or written statements submitted to the Judicial Committee. The Chair of the Judicial Committee will enforce any announced time limits on each party to present its case and, if necessary, extend equal time to each party.

2. Hearing Procedures

- a. Introductory remarks by the Chair of the Judicial Committee: The Chair introduces hearing panel members, the complainant, the respondent and counsel/advisors, if any. The Chair reviews the hearing procedures, including time restraints, if any, for presentations by each party and witnesses. The Chair explains that the burden of proof rests with the complainant, with the exception of cases involving allegations of academic dishonesty, in which case the instructor bears the burden of proof, which must be met by a "preponderance of the evidence." If the proceedings are to be taped, the Chair must inform the parties. (See AFR 2.4.9 and 8.1.16; GSRR 5.5.1 and 8.1.16.)
- b. Presentation by the Complainant: The Chair recognizes the complainant to present without interruption any statements relevant to the complainant's case, including the

redress sought. The Chair then recognizes questions directed at the complainant by the Judicial Committee, the respondent and the respondent's counsel/advisor, if any.

- c. Presentation by the Complainant's Witnesses: The Chair recognizes the complainant's witnesses, if any, to present, without interruption, any statement relevant to the complainant's case. The Chair then recognizes questions directed at the witnesses by the Judicial Committee, the respondent and the respondent's counsel/advisor, if any.
- d. Presentation by the Respondent: The Chair recognizes the respondent to present without interruption any statements relevant to the respondent's case. The Chair then recognizes questions directed at the respondent by the Judicial Committee, the complainant and the complainant's counsel/advisor, if any.
- e. Presentation by the Respondent's Witnesses: The Chair recognizes the respondent's witnesses, if any, to present, without interruption, any statement relevant to the respondent's case. The Chair then recognizes questions directed at the witnesses by the Judicial Committee, the complainant and the complainant's counsel/advisor, if any.
- f. Rebuttal and Closing Statement by Complainant: The complainant may refute statements by the respondent and the respondent's witnesses and counsel/advisor, if any, and present a summary statement.
- g. Rebuttal and Closing Statement by Respondent: The respondent may refute statements by the complainant and the complainant's witnesses and counsel/advisor, if any, and present a summary statement.
- h. Final Questions by the Judicial Committee: The Judicial Committee may ask questions of all parties to the grievance.

3. Deliberations by the Judicial Committee

After all evidence has been presented, with full opportunity for explanations, questions and rebuttal, the Chair will excuse all parties to the grievance and meet in executive session to determine its findings. When possible, deliberations should take place immediately following the hearing. If the Judicial Committee is unable to complete its deliberations and reach a decision at the meeting, the Judicial Committee should reconvene at the previously scheduled follow-up meeting.

4. Outcome

If a majority of the Judicial Committee finds, based on a "preponderance of the evidence," that a violation of the complainant's academic rights has occurred and that redress is possible, it shall direct the Chair/Director of the Department/School to implement an appropriate remedy, in consultation with the Judicial Committee. If the Judicial Committee finds that no violation of academic rights has occurred, it shall so inform the Dean. (See AFR 2.4.5; GSRR 5.4.11.)

In cases in which the Judicial Committee is asked to resolve an allegation of academic dishonesty and finds for the student, the Judicial Committee may recommend to the Chair/Director that the penalty grade be removed, the written record of the allegation, if any, be removed from the student's records and a good faith evaluation of the student's academic performance in the course take place. If the Judicial Committee finds for the instructor, the penalty grade shall stand and any written records of the allegation may remain on file. (See AFR 8.1.15 and GSRR 8.1.15.)

5. Written Report

The Chair of the Judicial Committee shall promptly prepare a written report of the Judicial Committee's findings, including redress for the complainant, if applicable. The report shall indicate the rationale for the decision and the major elements of evidence, or lack thereof, that support the Judicial Committee's decision. (See AFR 2.4.5; GSRR 5.4.11.)

The report also should inform the parties of the right to appeal within **10** class days following notice of a decision. (See AFR 2.4.7, 2.4.7.2, 2.4.7.3; GSRR 5.4.12 through 5.4.12.3.) The Chair shall forward copies to the parties involved, the Chair/Director of the Department/School, the Dean of the College, the Ombudsman and, in cases involving graduate students, the Dean of The Graduate School. All recipients must respect the confidentiality of the report. (See AFR 2.4.5; GSRR 5.4.11.)

G. Appeals

1. Either party to a grievance may appeal the decision of the Department/School Judicial Committee to the College Judicial Committee. The request for a hearing on appeal must be in writing, signed and submitted to the Dean of the College within **10** class days following notification of the Judicial Committee's decision. While under appeal, the decision of the initial Judicial Committee will be held in abeyance. (See AFR 2.4.7 and 2.4.7.3; GSRR 5.4.12, 5.4.12.2 and 5.4.12.3.) [5]
2. A request for an appeal must allege, in sufficient particularity to justify a hearing, that the initial Department/School Judicial Committee had failed to follow applicable procedures for adjudicating the hearing or that findings of the initial Judicial Committee were not supported by a "preponderance of the evidence." The request also must include the redress sought. Presentation of new evidence normally is inappropriate. (See AFR 2.4.7.2 and 8.1.16; GSRR 5.4.12.1 through 5.4.12.2.)

H. Reconsideration

If new evidence should arise, either party to a hearing may request the Judicial Committee reconsider the case within 60 days upon receipt of the hearing outcome. The written request for reconsideration is to be sent to the Chair of the Judicial Committee, who shall promptly convene the Judicial Committee to review the new material and render a decision on a new hearing. (See AFR 4.2.6; GSRR 5.4.13.)

Explanatory Notes from the Ombudsman

[1] A student who believes an instructor, including a graduate teaching assistant, has violated her or his academic rights, or a student who wishes to contest an allegation of academic misconduct should first attempt to resolve the dispute in an informal discussion with the instructor. (See AFR 2.4.2 and 2.4.9; GSRR 5.3.1, 5.3.2 and 5.5.1.)

Students may not seek redress through a grievance hearing regarding alleged incompetence of instruction. (See AFR 2.2.1 and 2.2.2; GSRR 2.2.1 and 2.2.2.)

If the dispute remains unresolved after discussion with the instructor, the student should consult the Chair/Director of the Department/School and/or the University Ombudsman for assistance. (See AFR 2.4.2; GSRR 5.3.2.)

If the dispute remains unresolved after discussion with the Chair/Director or Ombudsman, the student may submit to the Chair/Director a written, signed statement requesting a grievance hearing. The statement must (1) specify the alleged violation(s) of academic rights to justify the hearing, (2) identify the individual(s) against whom the complaint is filed and (3) state the redress the student seeks that could be implemented by the Chair/Director. (See AFR 2.4.2 and 2.4.2.2; GSRR 5.3.2, 5.3.5 and 5.3.6.)

A request for a grievance hearing must normally be initiated no later than mid-semester following the semester in which the alleged violation of academic rights occurred (excluding of summer semester). If either the student (the complainant) or the instructor (the respondent) is absent from the University during that semester, or if other appropriate reasons exist, the Judicial Committee may grant an extension to this deadline. If the University no longer employs the respondent before the formal grievance procedures are completed, the grievance may still proceed. (See AFR 2.4.2.1; GSRR 5.3.6.1.)

[2] *Disciplinary* hearings are initiated at the college level and are therefore included in college-level hearing procedures. (See AFR 2.4.6 and GSRR 5.5.2.) For hearings involving undergraduate students, follow the references below to the AFR; for graduate students, the GSRR. In some aspects of the process, the AFR and/or the GSRR make no specific reference to a particular recommended action. Units may decide to develop separate grievance hearing procedures for undergraduate and graduate students.]

[3] The references above to the AFR and GSRR documents are not exhaustive. Parties to the grievance hearing should consult the appropriate document. Use of the word "promptly" or the phrase "as

soon as possible" above, rather than a specific number of class days, occurs in situations when neither the AFR nor the GSRR cites a specific time reference.

Copies of Department/School grievance hearing procedures for hearings involving undergraduate students should be sent to the Office of the Ombudsman. Copies of Department/School grievance procedures for hearings involving graduate students should be sent to the Office of the Ombudsman and the Dean of The Graduate School. (See AFR 2.4.4.1; GSRR 5.4.1.)

[4] The Department/School should insert here: (1) how it will select faculty representatives, including alternates, to the Judicial Committee; (2) the manner in which the undergraduate and graduate students are selected, including alternates, to the Judicial Committee; (3) a statement on whether the Chair of the Judicial Committee will vote on all matters or only to break a deadlock; (4) the length of term for each Judicial Committee member for hearings involving undergraduate students; and (5) the manner in which the Chair of the Judicial Committee for hearings involving undergraduate students will be selected. If a unit elects to conduct hearings during the summer sessions, procedures for empanelling a Judicial Committee in the summer, if different from the academic year, should be included in the unit's grievance procedures.

[5] At this time, the Chair should also send the complainant and the respondent a copy of the approved Department/School's Grievance Procedures document.

[Further note on appeals: Undergraduate students may appeal an appellate decision by the College Judicial Committee to the University Integrity Review Board only in cases involving (1) a penalty grade for academic dishonesty; (2) cases involving alleged violations of regulations prohibiting academic dishonesty, violations of professional standards or falsification of admission or academic records that are referred for disciplinary action. Undergraduate students also may request a review by the Provost's Office of the University Integrity Review Board's decision. (See AFR 2.4.7.1.)

In hearings involving graduate students that began at the department/school level, graduate students may appeal only to the College Judicial Committee and then may request a Provost Office review of the College Judicial Committee's appellate decision. (See GSRR 5.4.12.)]

VII. WORK RELATED POLICIES

A. Rights & Responsibilities of Teaching Assistants under GEU contract

Rights and responsibilities of graduate teaching assistants are described under the current version of the contract between MSU and the Graduate Employees Union (GEU). This document is available on the web at <http://www.grad.msu.edu/geu/agree.pdf>. The contract does not cover graduate students who hold research assistantships.

B. Health Insurance Options for Graduate Students

(see MSU website: MSU Graduate School, "2004-2005 Graduate Assistantships")

Health insurance options for graduate assistants are described in a publication that can be accessed at <http://grad.msu.edu>. Briefly, domestic and international graduate assistants are automatically enrolled in a health insurance plan, the premium of which is paid by MSU. The plan provide the following coverage:

Fall appointment only: coverage from August 15 to February 14 of the following year.

Fall and Spring appointments: coverage from August 15 to August 14 of the following year

Spring appointment only: coverage from January 1 to August 14

Summer appointment only: coverage from May 15 to August 14

Enrolled students may also elect to insure their eligible spouse and/or dependent children. For general information concerning the health insurance plan contact the MSU Benefits Office at (517) 353-4434 or (800) 353-4434. The Benefits Office is located at 1407 S. Harrison Road, Suite 140 (Nisbet Building), East Lansing, MI 48823 and can also be reached on the web at <http://www.hr.msu.edu/depts/benefits>.

C. Graduate Assistant Leave, Vacations, and Professional Meetings

Graduate assistants appointed for 12 months are expected to be on campus and actively pursuing graduate education for at least 11 months. Breaks between semesters, if taken, are considered part

of annual vacation. Attendance at scientific or professional meetings, although not required, is encouraged, pending availability of adequate resources. Such attendance is not counted against annual vacation time. Students traveling on authorized University business must fill out a Travel Authorization form, available in the main office, prior to their trip.

A graduate student unable to fulfill the duties of his/her appointment because of illness, injury or pregnancy shall notify the major professor and Director of Graduate Studies as soon as circumstances permit. During the illness, injury or pregnancy the Department will adjust the graduate assistant's duties, in consultation with the student, as the individual's physical circumstances reasonably permit. If total absence from duties is necessary, the Department will maintain the stipend of the appointment, provided the graduate student is still enrolled, for a period of 2 months, or to the end of the appointment period, whichever is sooner. The graduate student will have the right to return to the assistantship, within the original semesters of appointment, at such time as he/she is able to reassume the duties of the position.

D. Outside Pay-for-Work

Graduate students in good academic standing who are engaged in full-time research and/or class work in pursuit of their degree are not encouraged to undertake outside pay-for-work as a means for supplementing their livelihood. Employed persons admitted to the Department's graduate program normally plan a leave of absence to devote full-time to academics and research. International graduate students receiving University support in the form of either a teaching or research assistantship may be under additional work restrictions depending on the conditions of their visa. International students should consult with MSU's Office of International Students and Scholars (OISS), 103 International Center or on the web at <http://www.isp.msu.edu/oiss/>, for more information.

E. English-language Proficiency for International Teaching Assistants

International graduate students must have a minimum score of 50 on the University's SPEAK test to qualify for a teaching assistantship. For more information about the SPEAK test, contact the English Language Center at MSU, A714 Wells Hall or on the web at <http://elc.msu.edu>.

VIII. DEPARTMENTAL AND UNIVERSITY RESOURCES

A. Animal Requisition, Care and Disposal

1. The use of any vertebrate animals in research and/or teaching without prior approval or the All-University Committee on Animal Use and Care (AUCAUC) is a violation of MSU policies. Contact the Office of Vice President for Research and Graduate Studies (OVPRGS) for details to be found in the Research Handbook. An application to use vertebrate animals for research and/or teaching (animal use form-AUF) must be submitted for every project. Contact the AUCAUC, C-103, Clinical Center Building, or the relevant University Laboratory Animal Resources (ULAR) supervisor, Department office, or Operations and Safety Coordinator (OSC) for forms and questions.
2. Treatment of animals must follow the Institute of Laboratory Animal Resources (ILAR) Guide, the Animal Welfare Act regulations and the "Guiding Principles for the Care and Use of Laboratory Animals" by the American Physiological Society. There are simple techniques used in handling different species of laboratory animals. Familiarize yourself with these techniques by calling the ULAR Training coordinator. Humane treatment of animals is expected at all times.
3. Veterinary care is also available through ULAR. Animals must receive veterinary care, for humane reasons, for professional and legal reasons, and to ensure that the research is not compromised by concurrent or inadvertent diseases.
4. Requisition of animals for research and/or teaching purposes is the responsibility of the principal investigator (PI) or assigned personnel for the particular research program or course. Animals for student research projects must be cleared through the student's Advisor. Contact the OSC for the animal purchase request form (APRF) from ULAR.

5. A freezer is located in the ULAR (University Laboratory Animal Resources) cage washing area (Room 130J) for disposal of non radioactive dead animals. Contact ULAR or the OSC to obtain waste tags.
6. Animals are to be destroyed in a humane manner following the American Veterinary Medical Association (AVMA) Guidelines. Seek advice from ULAR if you are uncertain. Make absolutely sure the animals are dead before you bag for disposal.
7. Compliance with the federal regulations and funding agency guidelines is an important part of conducting research in today's sociopolitical environment. Professional behavior and respect for the animals is also required.

B. Controlled Substances

Controlled substances are purchased through the Department's DEA license and must be stored in the Department drug closet or a locked cabinet in the laboratory. Contact the Department office or OSC to sign out the minimum amount of drugs needed for your experimentation. Only the substance in use is allowed to be kept in the laboratory at any given time and is the sole responsibility of the PI. Outdated and/or unused controlled substances must be surrendered to the DEA for disposal. Contact the OSC for a DEA surrender form.

C. Equipment and Supplies

The equipment and consumable supplies in the Department are for teaching purposes. Use for research is allowed only in emergencies and must be replaced by the user. Also, the Department has a limited number of basic shop tools for use.

D. Analytical Core Facilities

The University maintains a number of analytical core facilities that are available for use by Department graduate students conducting their dissertation research. General information about these facilities is available from the Office of the Vice President for Research and Graduate Studies or on the web at <http://www.msu.edu/unit/vprgs/analyticalcorelinks.htm> .

E. Freight

Freight is delivered daily around 2:00 p.m. to the OSC office. Occasionally, a single large item or order is delivered midmorning. Large items over 150 pounds or one cubic yard in size should be delivered directly to the lab. Make sure the paperwork is routed to the OSC (pink copy and packing slip). Otherwise, a service request to custodial services is needed to relocate the item to its final destination at a significant hourly rate and delay. This can be avoided by correctly noting the lab number on the order. Also, orders of equipment items costing more than \$500 (\$5,000 in the future) must be inventoried. Be sure to note the "inventory tag" on the order. All freight is processed daily and delivered directly to labs except perishable items. Make sure you notify the OSC if you have a designated place for lab delivery. The lab and/or PI is contacted to pick up the perishable material from the OSC office. This is done to avoid any question about the handling of the perishable item(s). If no one is available in the lab, the PI or designated personnel must make special arrangements to receive the perishable material on order.

F. Gas Cylinders

Gas cylinder requests are routed through the Department office. There are two ways to order cylinders. The most common is through Stores (open orders from an off-campus vendor) and the other is through Purchasing (PO/POD; the PI owns the tank). The tank(s) will be delivered by the vendor directly to the lab. If no one is available in the lab, the driver may deliver another day or leave the tank(s) chained in the building drop area located by the first floor freight elevator. This is done to conform with safety regulations. Stores keeps a few common gas cylinders on hand for emergencies, however, if one is needed, the PI will pay a premium. The PI or lab can notify the vendor, Stores, OSC, or Department office when they have an empty cylinder(s). Cylinder(s) are picked up directly from the lab. Cylinder rental is several dollars/month/tank so return empty cylinder(s) promptly.

Specialty gases from off campus (i.e. AGA, Airco, Matheson, etc.) need a PO/POD and have a prorated tank deposit. If the cylinder is returned before the deposit is depleted a prorated refund is received. If the tank is not returned, the account is billed several times a year for tank rental. These charges are difficult to track, so return tanks not in use.

Gas cylinders must be secured by bench clamps (see Stores Catalog, Cylinder Gas Accessories section) or by chain and clip to a secure wall. Tanks must be capped when not in use (connected to an apparatus), or when they are being moved. Contact the OSC, ORCBS (Office of Radiation Chemical and Biological Safety) or Stores if there are any questions. Cylinders that have tipped over, resulting in a broken valve, have rocketed through walls and ceilings.

G. Keys

Keys are available from the Department office or OSC with proper ID and authorization. To obtain keys for students, the PI or faculty should make a written request that includes the name and title of the person (i.e. graduate student, technician, summer help, etc.) room number(s) and number of keys. There is a \$5 deposit for each key checked out. Keys must be returned to the Department office or OSC when the person leaves in order to refund the deposit.

H. Laundry

The research laboratory furnishes laboratory coats, etc. Dirty laundry, in a labeled laundry bag, should be deposited before 8:30 a.m., Wednesdays, in the small orange hamper marked "Physiology" located on the ground floor next to the freight elevator. Each lab should have two labeled laundry bags with the PI's name, Physiology Department, and account number on it. Also, lab coats, etc., should be labeled with PI's name and Department. Bags and labels may be obtained through the Laundry Department. Laundry will automatically bill the PI's account monthly for the volume of laundry handled. Clean laundry will be delivered to the same location the following Wednesday afternoon in the PI's laundry bag.

I. Mail

Mail is delivered twice daily. U.S. and campus mail are delivered at approximately 10:00 a.m. and afternoon campus mail is delivered around 2:00 p.m. Mailboxes are located in Biomedical & Physical Science Building, room 2209.

J. Material Returns

MR's are handled through the OSC. There are two kinds of MR's depending upon how the item was purchased. If the item was purchased on a PO/POD, then the MR must be processed through Purchasing. If the item was purchased through Stores on an open order or as a non-stock item, then the MR must be processed through Stores. Contact the OSC when there is an item to be returned: repairs, wrong item ordered/sent, defective material, overshipment, etc. There are some packing materials available.

K. Office Supplies and Orders

Supplies and special apparatus that must be purchased or fabricated are processed through the Department office. The most common orders are for Stores (regular or fax, non-stock and open orders), Bookstore, Computer Store, Food Stores and Purchasing (purchase order-PO/purchase order draft-POD).

L. Recycling

The Department provides a small secondary recycling center for white, mixed, newspaper, glossy magazine, and cardboard in the hallway outside the mailroom on the first floor. The square white plastic containers are on wheels with a label on the lid describing what is acceptable material. A large brown 4 cubic yard container for cardboard is located just outside the building near the freight elevator on the ground floor. The primary recycling center containers for the main building are located on the first floor in front of the freight elevator. Contact the Office of Recycling or OSC if you have

large amounts of recyclable material.

M. Salvage

All obsolete, old, and/or unwanted inventoried and non-inventoried equipment must be transferred to the MSU recycling/salvage Department for disposal or resale. Contact the OSC for an equipment transfer notice (ETN). Also, the ETN form is necessary for inter-Departmental and off campus transfer of equipment.

N. Secretarial Service

1. Secretarial service for graduate students is limited to the preparation of teaching material.
2. Students are expected to provide their own office supplies unless the supplies are used for teaching purposes.
3. Graduate student records are kept by the Graduate Student Administrative Assistant. This person has much of the information and any forms graduate students require during their study.

O. Service Requests

Services for operational needs may be handled through the Department office.

Stores and Services

University General Stores and Biochemistry/Microbiology Stores have many scientific supplies available including chemicals (Chemistry Stock room also has some chemicals available). Electronic shops are located in Biochemistry, Chemistry, and Physics. Machine shops are located in Chemistry, Engineering, Physical Plant, and Physics. The Glass Blowing Laboratory in Chemistry is available for glass fabrication or repairs. The Center for Electron Optics in Pesticide Research is available for electron microscopy services. The Macromolecular Structure Facility in Biochemistry is available for synthesis services.

P. Time Sheets

Time sheets for labor and student payroll are due every other Monday afternoon on a staggered schedule. Paychecks are available early Friday afternoons in the Department accounting office.

Q. Care and Use of Equipment

1. All personnel are expected to maintain a reasonable standard of neatness in the conduct of their work and housekeeping in the research and teaching laboratory areas assigned. It is the graduate student's responsibility to become familiar with the equipment available for both teaching and research and to use such equipment appropriately.
2. In general, equipment should not be moved from one laboratory to another without permission or documentation.
3. The practice of hoarding equipment or supplies against possible future use is discouraged, including old or obsolete equipment.

R. Emergencies/Spills

1. Call MSU fire/police emergency at 911. For serious radioactive, chemical and mercury spills, call ORCBS at 353-0153. ORCBS will advise on how to proceed. All labs should have a chemical spill kit on hand. Also, a Department crash cart is located in the OSC office for minor non-radioactive chemical spills. The spill kits are only intended to be a stopgap measure. Contact the OSC if there are any questions at 355-6475 x1206.
2. ORCBS will furnish MSDS (Material Safety Data Sheets) upon request, on any hazardous chemicals. The "Michigan Right to Know Law" mandates that these be on file at the work site.
3. ORCBS will handle the disposal of all chemicals. Identify the substance if at all possible. Unlabeled materials cost to be tested, identified, and disposed. Contact the OSC if there are any questions.
4. Required annual refresher training sessions for Department personnel are held throughout the year. Watch for the ORCBS announcements for date, place and time.

5. Injuries on the job should be reported to the Department office for proper written authorization for non-emergency treatment and documentation. The Center for Occupational Health (COHS), 1115 S. Pennsylvania, Lansing, Michigan, is MSU's designated primary medical provider for work related injuries or illnesses. Primary facility hours are 8:00 a.m. to 5:00 p.m. Redi Care-East, Haslett, is the secondary facility. Hours are 9:00 a.m. to 9:00 p.m. Michigan Capital Medical Center (MCMC) is the after-hours facility, open 24 hours.
6. Contact the OSC (e-mail, mailbox, phone) to report building repairs needed, lights out, unsafe conditions, etc.
7. No protective gloves are to be worn outside of the laboratory.

Appendix

Guidelines For Students Interested in a BS/MS Program in CNS

1. Students should be interested in pursuing a dual degree within Departments in the College of Natural Science (CNS).
2. The BS and the MS do not have to be from the same Department although in most cases they are.
3. Students who are being considered for a dual degree program should have approval for admission from the Department to the respective graduate program and a minimum GPA (overall and in CNS courses) of 3.0 (**Students must have completed a minimum of 60 undergraduate credits.**). The Department/program should submit the following packet to the Office of the Associate Dean for Student and Academic Affairs:
 - A memorandum indicating that the Department/program is willing to accept the student into the dual degree program
 - A completed MSU graduate application
 - A check for the application fee
 - A completed and signed "Student Information Form for the BS/MS Program."
4. Upon approval of the packet, the Assoc. Dean's office will enter the BS/MS tracking code and forward the completed application packet to the Office of Admissions. This will authorize Admissions to process the application even if the student is only entering his/her junior year.
5. Students must submit their MS Plan of Study to the Registrar's Office and the Dean's office for Student and Academic Affairs by the first semester in which they enroll for graduate applicable credits. The Registrar keeps a separate record of the student's BS and MS Programs. The purpose of this is based on the fact that students are held to different academic standards for their BS and MS Programs.
6. Credits cannot be used to count toward both degrees.
7. For financial purposes, students in the BS/MS program are considered undergraduates and therefore pay undergraduate tuition rates even for graduate credits up to, and including, the first 120 credits.
8. Following the semester in which the student completes the 120th credit, the primary level is changed from UN to GR to allow the student to be eligible for a Graduate Assistantship. During a semester in which a student has a "mixed" enrollment of credits (some below 120 and some above) for the bachelor's degree and the master's degree, the student will be coded as an **undergraduate**.

This coding arrangement is for purposes of qualification for federal financial aid and qualification for a graduate assistantship. Students will be billed for the difference between undergraduate and graduate credits in the "mixed" semester.
9. For students receiving graduate assistantships, the tuition waiver will only apply to credits greater than 120.
10. Students in the BS/MS program cannot receive a graduate assistantship until the semester in which they are coded GR.
11. Students enrolled for two undergraduate degrees are considered undergraduate until they have reached 150 credits. They will need an additional 30 credits for the MS and courses cannot be double counted. Students pursuing a second major are considered undergraduate until they reach 120 credits plus additional credits, if any, that would reasonable be required for them to complete the second major. Documentation of the additional credits should be on file in the Dean's office.
12. Students may not receive their MS until all requirements for the BS have been completed.

BS/MS Program Student Information Form

Please select the option that applies to your academic status and provide the requested information. Sign & date this form and return it along with your letter of acceptance, Graduate School application and check for the graduate application fees to 103 Natural Science.

1. Students pursuing a single undergraduate degree:

Students in the BS/MS program are considered undergraduates and therefore pay under-graduate tuition rates even for graduate credits up to, and including, the first 120 credits.

How many remaining credits are required for your bachelor's degree? _____

Financial Responsibilities:

During the semester in which the student has a "mixed" enrollment of credits (some below 120 and some above), the student will be coded as an undergraduate. This coding arrangement is for purposes of qualification for federal financial aid. For those credits over 120, you will be billed for the difference between undergraduate and graduate tuition.

Following the semester in which the student completes the 120th credit, the primary level is changed to graduate to allow the student to be eligible for a Graduate Assistantship in units that grant them to BS/MS students. For students receiving graduate assistantships, the tuition waiver will apply only to credits greater than 120.

Do you understand & accept the financial responsibilities listed above? Yes_____ No_____

2. Students pursuing two undergraduate degrees:

Students in the BS/MS program who are enrolled for two undergraduate degrees are considered undergraduate until they have reached 150 credits. They will need an additional 30 credits for the MS and courses cannot be double counted.

Are you officially pursuing a second bachelor's degree? Yes_____ No_____

Financial Responsibilities:

During the semester in which the student has a "mixed" enrollment of credits (some below 150 and some above), the student will be coded as an undergraduate. This coding arrangement is for purposes of qualification for federal financial aid. For those credits over 150, you will be billed for the difference between undergraduate and graduate tuition.

Following the semester in which the student completes the 150th credit, the primary level is changed to graduate to allow the student to be eligible for a Graduate Assistantship in units that grant them to BS/MS students. For students receiving graduate assistantships, the tuition waiver will apply only to credits greater than 150.

Do you understand & accept the financial responsibilities listed above? Yes_____ No_____

3. Students pursuing an additional undergraduate major:

Students in the BS/MS program who are pursuing an additional undergraduate major may require credits beyond 120 to complete that major.

Are you officially pursuing an additional major? Yes_____ No_____

How many credits beyond 120, if any, would be required to complete your additional major? _____

Financial Responsibilities:

During the semester in which the student has a "mixed" enrollment of credits (some below 120 plus the variable amount required for an additional major, and some above), the student will be coded as an undergraduate. This coding arrangement is for purposes of qualification for federal financial aid. For

those credits over 120 plus the variable amount required for an additional major, you will be billed for the difference between undergraduate and graduate tuition.

Following the semester in which the student completes the 120 plus the variable amount required for an additional major, their primary level is changed to graduate to allow the student to be eligible for a Graduate Assistantship. For students receiving graduate assistantships, the tuition waiver will only apply to credits greater than 120 plus the variable amount required for an additional major.

Do you understand & accept the financial responsibilities listed above? Yes _____ No _____

A copy of your MS Plan of Study must be submitted to the Registrar's Office & the Dean's Office by the first semester in which you enroll in graduate applicable credits. The Registrar keeps a separate record of the student's BS and MS Programs. The purpose of this is based on the fact that students are held to different academic standards for their BS and MS Programs.

Name _____ Date _____

Master's Plan of Study

Date:

MEMORANDUM

To: Registrar

From: Arthur Weber, Ph.D.
Director, Research and Graduate Studies

Subject: Master's Plan of Study for:

Listed below are the courses required for the Master's degree in Physiology.

		# of credits
PSL 827	Physiology/Pharmacology of Excitable Cells	4
PSL 828	Cellular/Integrative Physiology	4
BMB 801	Molecular Biology and Protein Structure	3
BMB 802	Metabolic Regulation and Molecular Endocrinology	3
PSL 910	Cell and Molecular Physiology	4
PSL 950	Topics in Physiology	1
PSL 950	Topics in Physiology	1
PSL 950	Topics in Physiology	1
PSL 980	Problems in Physiology	1
PSL 899	Master's Thesis Research	8
		Total 30 credits

Approved:

Student

Major Advisor

Arthur Weber, Ph.D.
Director, Research & Graduate Studies

cc: Dr. Douglas Estry, Associate Dean, College of Natural Science

Guidance Committee Report on Annual Evaluation of Physiology Graduate Student

Candidate:

Date of Meeting:

Ph.D. M.S.

Major Professor:

Committee Members:

1. Major Advisor:
- 2.
- 3.
- 4.
- 5.

Is this the first committee meeting?

Date of Thesis Proposal:

Progress in Research:

(Include the following information on the student's progress in thesis research: 1) the specific aims of the project; 2) percent completion of these aims; 3) anticipated completion of the research; 4) has there been any change in the aims since the last meeting?; 5) has the student developed a mastery of techniques for their research?; 6) has the student done a literature survey, published manuscripts from their research or initiated thesis writing?)

Major Advisor's summary of overall progress:

Student's comments:

Signatures of Guidance Committee Members:

1. Major Advisor:
- 2.
- 3.
- 4.
- 5.

Signature of Student:

Laboratory Rotation Evaluation Form

Date:

TO: Dr.

FROM: Arthur J. Weber, PhD

SUBJECT: Lab Rotation Report for:

Please provide a brief summary of the above graduate student's rotation in your lab, and return to Angie Zell (2215D Biomedical Physical Sciences).

NOTES: This evaluation must be discussed personally with the rotation student.

Grade _____

Signature, Rotation Mentor _____ Date _____

Signature, Student _____ Date _____

Annual Evaluation and Support Notice

Please return by _____ to Dr. Weber

TO:

FROM: Art Weber, Director of Research and Graduate Studies

At this time we are required by the University to provide each graduate student with a statement regarding the financial support (s)he can expect during the next academic year. We must also provide an annual evaluation of each student's overall progress.

Please provide the information requested below.

Candidate's Name:

Major Professor:

- A. A statement describing the adequacy of the candidate's progress in research and coursework during the past year.
- B. Does the candidate have deficiencies that could hinder normal progress toward obtaining her/his degree? If so, describe them as well as the suggested remedial action.
- C. What is the likelihood for financial support during the next academic year (beginning August 16, 20__): _____ If the student is currently on an assistantship, regardless of the current and future source of funds, answer one of the following. (This is a University requirement.)
- 1. The assistantship will be renewed.
 - 2. The assistantship will be renewed provided the conditions specified below are met.

 - 3. The assistantship will not be renewed for the following reason(s):

Note: A copy of this statement may be given to the student as part of an annual written evaluation.

Signature of Major Professor: _____ Date: _____