



DEPARTMENT OF BIOLOGY

GRADUATE STUDENT HANDBOOK

2001 - 2002

The University of Akron

Department of Biology
www.uakron.edu/biology

GRADUATE STUDENT GUIDE

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FOREWORD

This manual is intended to provide Master's students in Biology with information to assist them in planning and completing their M.S. program. The manual is a supplement to the procedures specified for graduate students in all departments as stated in the University Graduate Bulletin. In preparing this departmental manual, the Department of Biology Faculty and Staff have tried to anticipate and answer the questions that occur to students as they pursue their graduate program. Student recommendations for revisions of this brochure are welcome. In individual cases, petition for waiver of a requirement stated herein (by reason of equivalence) may be made in writing to Jerry Stinner, Ph.D., Chair, Department of Biology.

Graduate Committee Members (2001-2002)

Amy Milsted (Chairman)

Martha Kory

Richard Londrville

Peter Niewiarowski

Monte Turner

THE UNIVERSITY OF AKRON

GRADUATE SCHOOL AND DEPARTMENT OF BIOLOGY REQUIREMENTS

The student assumes full responsibility for knowing the regulations and procedures of the Graduate School as set forth in the Graduate School Bulletin. Up-to-date copies of this bulletin may be obtained from the Graduate School office or requested online (<http://www.uakron.edu/gradsch/request.html>). The degree requirements in effect at the time a student is admitted to Graduate School will apply through graduation.

A. Admission Procedures

1. A formal application to the Graduate School must be filed with the Graduate School not less than four weeks before classes begin.
2. A non-refundable fee of \$25.00 (check) must accompany each application.
3. Official transcripts from each college or university attended must be forwarded to the Graduate School before the application can be processed.
4. Both the Graduate Record Exam (GRE) aptitude test and the Biology GRE Subject Test are required. A minimum score of 15th percentile on the Biology GRE Subject Test is required for full admission, regardless of the GPA or other factors. Scores of 50th percentile or greater exempt a student from additional specified course requirements. Scores of 35-49th percentile require that the student take one designated graduate course, and earn at least a B grade, from the Biology GRE Subject Test category with the lowest subscore. Scores of 15-34th percentile require a student to take three additional designated graduate courses and earn a minimum grade of B. All required, designated courses must be taken within the first year of graduate study.
5. Applications must be approved by the Department of Biology Graduate Committee and the Dean of the Graduate School.
6. Applicants may be classified for full admission, provisional admission, special non-degree admission or as a transient student.

a. Full admission -- For full admission the applicant must either:

(1) hold a baccalaureate degree from an accredited college or university with an overall grade point average (GPA) of 2.75 or better, or 3.0 (4.0 = A, etc.) for the last two years (64 semester credits or equivalent); a minimum of one semester of organic chemistry. The GPA for all biology courses taken must average at least 3.0. Normally a minimum of 32 semester hours must be taken in biological sciences. Exceptions to this requirement can be made with the approval of the Biology Graduate Committee, especially in the case of applicants with unusually strong backgrounds in physical sciences and mathematics; or

(2) hold an advanced degree from an accredited college or university in biology or related science; or

(3) hold a baccalaureate or master's degree in biology from a foreign college or university with first class standing or its equivalent and score at least 550 on the Test of English as a Foreign Language (TOEFL).

(4) have special admission status and have completed at least 12 semester credits in biology at The University of Akron at the graduate level with a GPA of 3.0 or better in biology.

b. Provisional admission may be granted to a person whose overall GPA is at least 2.70 and whose biology GPA is at least 2.75; or to persons who have not met other requirements for full admission. This admission status permits a student to take up to 15 semester credits of graduate coursework. Graduate courses taken under this admission status may be applied to a graduate degree program, but only when all requirements for full admission have been met.

c. Special non-degree admission may be granted to a person who has not met all of the requirements for full admission, or to a person who wishes to take particular courses but who is not working toward a graduate degree. This admission status permits a student to take up to 15 semester credits of graduate coursework. In some cases, it is limited to one semester. Graduate courses taken under this admission status may be applied later to a graduate degree program but only when the requirements for full admission have been met.

d. Transient status may be given to a person who is a regularly enrolled graduate student in good standing in a degree program at another accredited university and has written permission to enroll at The University of Akron. Such permission is valid only for the courses and semester specified with a maximum of 10 semester credits allowable, and is subject to the approval of the instructor, department head, and Graduate School. A transient student is subject to the same rules and regulations as a regularly enrolled student of the University.

B. Requirements for the Master of Science Degree in Biology: Thesis and Non-Thesis Options

The thesis option is designed for the students who will pursue a research career, including those who intend to enter a doctoral program in biological science. This program requires the student to perform an original research project under the supervision of an advisor and submission of a Master's thesis. The non-thesis option is exclusively for secondary school teachers for whom the M.S. degree probably will be a terminal degree and who do not need research experience. Two years of a full-time study usually are required to complete the degree.

1. Requirements for the thesis option.

a. The student must select a research advisor and at least two other members from the Biology Graduate Faculty to form the advisory committee before the end of the first academic year. (Required for teaching assistantship in the second year.)

b. Initiation and maintenance of the "Graduate Student Progress Form" (Appendix B) and/or web based form. <http://www.uakron.edu/biology/GRADFORM/grdfm.htm>.

c. Master's Thesis Proposal Form: Students must complete the Thesis Proposal Form found in Appendix E. A copy of the Proposal is then to be given to each member of the student's committee. This should be completed as soon as possible after selecting an advisor and research project. No supplies can be ordered without a signed proposal.

d. A minimum of 40 semester hours of graduate credit including 12 hours of Master's Research (3100:699) and four hours of 3100:697/698 Biology Colloquium (one hour per semester in

residence - maximum four hrs), and a writing course.

- up to 10 graduate credits may be transferred from other accredited colleges or universities with the approval of the student's advisory committee and the Dean of the Graduate School.

- at least 16 graduate credits must be taken in biology courses. Workshop credits will be limited by the student's advisory committee.

- the maximum number of credits of "Biological Problems" may not exceed four semester hours.

e. A minimum GPA of 3.0 (4.0 = A) must be maintained.

f. Exams: Students in the Master's program in the Biology Department must successfully pass the Thesis Proposal Defense and the Thesis Defense.

I. Research Thesis Proposal

The students will submit a written research proposal to their committee no later than the end of their second semester. This proposal will be defended orally to the committee one week after the committee members receive their printed copy. The format for the proposal is illustrated in appendix G. Appendix E must also be submitted at this time for approval of graduate student funding (max \$750). A simple majority of the committee must approve the proposal before the student can continue in the program. If the proposal is unsatisfactory, it must be rewritten and resubmitted to the committee within two weeks.

g. Oral or poster presentation of research at a scientific meeting, or oral presentation of a departmental seminar or colloquium.

II Thesis Defense

Satisfactory completion of an oral thesis defense administered by the advisory committee is required. All members of the defense committee must have a draft of the thesis at least one week prior to the defense. The Master's thesis must be approved by the advisor, the advisory committee, and the Department Chair; the thesis must be accepted by the Dean of the College of Arts and Sciences and the Dean of the Graduate School.

2. Requirements for the non-thesis option.

a. Applicant must possess a teaching certificate or co-register with the College of Education

and show normal progression towards qualifying for a certificate.

b. Instead of 12 Master's research hours the student is expected to take 12 academic course credit hours to reach the total of 40.

c. The student is not subject to oral thesis defense or oral presentation of thesis.

d. All other criteria and qualifications are the same as those listed for the thesis option above.

II. ACADEMIC POLICIES OF THE DEPARTMENT OF BIOLOGY

A. Selection of an Advisor and an Advisory Committee

1. Beginning graduate students must select an advisor no later than the end of the first semester after admission to graduate school. The advisor must be a full-time member of the Department of Biology with Graduate Faculty status. Students must obtain permission from the advisor before proceeding with a graduate program under the advisor's supervision. Appendix F must be completed listing the major advisor and submitted to the Graduate Committee before the end of the first semester.

2. Students who need assistance in selecting an advisor should contact the Chair of the Department of Biology or the Chair of the Biology Graduate Committee. The names of these persons may be obtained in the department office. Students are encouraged to discuss research interests and/or vocational interests before choosing an advisor.

3. The advisory committee consists of the student's advisor and at least two additional graduate faculty members (with graduate faculty status) agreed upon by the advisor and student from The University of Akron or consortium universities.

The advisory committee will assist the student in selection of courses and in meeting additional requirements for the Master's Degree. The advisory committee will assist in the planning and conduct of the thesis research.

4. Students desiring to change advisor or to change advisory committee should not be reluctant to do so. Change should not, however, be initiated after the end of the first year of graduate study. To make an advisory change a conference should be arranged between the original advisor, the prospective advisor, and the student. A written request to make the necessary changes must be initiated by the student, signed by the prospective advisor and forwarded to the Biology Graduate Committee and the Department Chair for approval. The request must explain adequately the student's reasons for desiring a change.

B. Plan of Study

Beginning students must complete the Master Study Plan form shown in Appendix A. Three copies of this form must be completed and approved by the student's advisory committee by the end of the student's first year. The student should retain a signed copy of this form for his/her personal file.

Student should select a major area of concentration from the following list of general study areas:

- | | |
|---------------------------------|--------------------------------|
| (a) Human and Animal Physiology | (d) Genetics/Molecular Biology |
| (b) Microbiology | (e) Ecology |
| (c) Plant Science | (f) Zoology |

Suggested curricula for the special areas of study within the Biology Department are shown in Appendix C. These curricula should be consulted when completing the Master Study Plan. Changes to the Master Study Plan can be made with the approval of the advisor and advisory committee.

C. Advancement to Candidacy

Students should apply for Advancement to Candidacy after completing one-half of the credits required for the Master's Degree in Biology but no later than September 15 for spring commencement. Fall commencement is in December, candidates planning to graduate at that time should apply for Advancement to Candidacy by May 15. There is also a summer commencement in August and the Advancement of Candidacy is due by February 15. Advancement to Candidacy forms are available in the Graduate School Office or from the Biology Department Office. Advancement to Candidacy will be granted only to students in good standing. Advancement to Candidacy forms are filled out by the advisor and forwarded to the Graduate School. Students must also fill out graduation forms at Spicer Hall.

D. Oral Defense of Thesis Proposal

See Page 5.

E. Oral Thesis Defense

1. The student will schedule an oral defense with the committee to be held within 1-2 weeks after submission of the near final draft (not final typing - there still will be corrections made) of the thesis to the advisory committee. The examination must be scheduled at least one week before it is to be taken.

2. The advisor will then circulate the time and place of the examination to the department faculty. Any interested faculty will be welcome to attend the examination.

3. The oral defense will cover any area of the thesis research. This oral defense is distinct from, and in addition to, the oral presentation requirement. The oral defense serves as a rigorous defense of the thesis before the candidate's advisory committee.

4. A written record of the vote of the committee will be prepared and signed by the committee members. One copy will become part of the student's permanent record; another copy will be transmitted to the student immediately following the examination and a copy sent to the Dean of Graduate Studies.

F. Animal Use in Research

1. All research protocols involving vertebrate animals must be approved by The University of Akron Institutional Animal Care and Use Committee (IACUC) before proceeding with any research. An approved IACUC form must be included in the thesis as an appendix.

2. Any student who anticipates the use of animals in his/her research must complete the Lab Animal Regulations Class.

G. Human Subjects

All research protocols (including surveys) that require the use of humans must first be approved by the Institutional Review Board for Protection of Human Subjects. Forms and more information can be obtained at the center for Research Services and Sponsored Programs. Students conducting research that involves animals or humans at area hospitals must have approval from both institutions (i.e., the hospital IACUC and UA IACUC).

H. Radioisotopes

Some research projects may involve the use of radioactive material. Before students use radioactive material in their research they must first pass the radiation safety training. After reviewing the material the student is required to pass a written exam administered by the Radiation Safety Officer, Jason McNicholas (phone X5712).

I. Procedures for Preparing and Submitting Thesis

1. Instruction for writing a Master's Thesis (Guidelines for Preparing a Thesis or Dissertation) are available in the Graduate School. Students also should consult the CBE Style Manual (4th edition) published by the American Institute of Biological Sciences, for directions in preparing the thesis.

2. Six weeks prior to graduation, typewritten copies of the final draft of the thesis must be submitted to the advisor and to the committee members. Their suggestions and corrections are to be incorporated into the thesis, and the revised version will be circulated for their approval.

3. After the thesis has been approved, a minimum of four copies of the thesis must be prepared. The Graduate School requires two copies on bond paper, the advisor receives one copy and the student should retain a personal copy.

4. It is the responsibility of the degree candidate to obtain the following signatures on the approval sheets of the final copies: Advisor, Faculty Reader, Department Head, Dean of the College, and Dean of the Graduate School. The final copies must be submitted to the Dean of the Graduate School for signing according to the published deadline of the Graduate School.

5. A Transmittal Sheet must accompany the thesis when submitted in final form to the Graduate School. A copy of the Transmittal sheet is attached to the Guidelines for Preparing a Thesis or Dissertation which can be obtained from the Graduate School.

J. Probation and Dismissal

Any student whose average falls below 3.0 is considered to be on probation by the Graduate School. In

computing cumulative averages, "D" grades are treated as "F" grades. The Dean of the Graduate School, with approval of the Head of the Department may dismiss any student who accumulates six hours of "C" or below. The accumulation of four hours of "F" will result in mandatory dismissal. Students dismissed from the Graduate School for academic reasons may not be readmitted for one calendar year, and then only if evidence to support reasons for expecting improved performance is submitted and found acceptable. If a course is repeated both grades are calculated into the grade point average.

K. Graduation

To be cleared for graduation, a candidate must have completed all graduate course work with a minimum average of 3.0; have been Advanced to Candidacy; filed an application for Graduation with the Graduation Office; paid all applicable fees; and met any other department and university requirements applicable.

L. Graduate Student Government

A graduate student representative and alternate will be elected by the graduate students (usually during the Fall graduate orientation meeting) to serve on the University Graduate Student Government committee for one year.

M. Grievance Procedures for Graduate Students

If a student has a grievance arising out of their academic and/or employment relationship with the University there is a formal grievance procedure described in the Graduate Bulletin (approved 3/15/94).

III. FINANCIAL ASSISTANCE

Several forms of financial assistance are available to graduate students. These include teaching assistantships, government fellowships, and hourly employment for technical and laboratory assistance.

A. Teaching Assistantships are available to qualified students for laboratory instruction and for assistance to faculty members with teaching responsibilities. Teaching assistantships are awarded on a competitive basis upon the recommendation of the Graduate Committee and approval of the Department of Biology Chair.

1. Applications for a Teaching Assistantship are available in the Biology Office ASEC 185 or from the Graduate School.

Three letters of reference must accompany the application. (Forms available in Biology Office and Appendix D.) Completed applications should be received in the Biology Office no later than four weeks before the start of classes, applications will continue to be accepted after that date if assistantships are still available.

2. Eligibility for a Teaching Assistantship is based on the following:

- admission to the Graduate School with removal of all contingencies.
- applicants must be full-time graduate students.
- satisfactory references indicating at least above-average capacity for academic work, and indication of excellent potential as a teacher, and a willingness to accept responsibility and to work harmoniously with others.
- applicants selecting either the thesis program or the non-thesis alternative are eligible for teaching assistantships.
- requirement of 9 hours of credit in both the Fall and Spring.
- foreign-born students must score at least 550 on the Test of English as a Foreign Language (TOEFL) and at least 50 on the test of Spoken English (TSE).

3. Renewal: Teaching assistantships may be held for a two-year period. Renewal of an

assistantship for a second year depends upon the assistant's satisfactory performance of assigned duties during the first year of his/her assistantship, satisfactory written evaluation of his/her performance, and satisfactory academic progress toward the Master's degree.

4. A renewal form is sent to each first year student in the spring of the first year. This form must be returned to the Graduate Committee indicating the student's desire to continue the TA the following year.

5. Stipend: The stipend for a teaching assistantship is determined by the Department. Remission of tuition and partial payment of a parking permit are included in the award.

B. External Fellowships and Scholarships are available from various governmental agencies and private foundations (i.e., American Heart Association). Eligibility requirements for fellowships may vary with each granting agency. For further details about fellowships and scholarships contact the Financial Aids Office (Spicer Hall), and/or the Graduate School Office.

C. Biology Department Summer Research Fellowships

Graduate research fellowships may be available during the summer depending on the financial status of the department. Research fellowships provide graduate students with financial support while they continue with their graduate thesis research. The stipend for the fellowship is approximately \$1500. Each award will be intended to cover a minimum of six weeks of research. Details of the awards will be announced Spring Semester of each year.

Application

1. For summer research fellowships: each applicant shall submit a detailed research proposal to the Biology Department Awards Committee by the announced deadline. The proposal must carry the endorsement of the student's advisor and must specify the portion of the research that the student expects to complete while being supported by the scholarship, including a list of expenses.

2. Selection will be made by the Biology Department Awards Committee and all awards will be

announced.

3. Selection will be made on a competitive basis according to the following priorities: quality of research proposal, preliminary data and grades.

Summary Report

A brief written report of the results of the research must be submitted to the Awards Committee by August 31.

D. Biology Department Scholarships (For further details on additional or new scholarships see Department Chair.)

E. Outside Work by Graduate Assistants

Under exceptional circumstances a student holding a graduate assistantship or obtaining other financial assistance from the Biology Department may need to have part-time outside employment simultaneously. When this is not specifically precluded by the terms of the award, permission to hold outside employment may be requested from the Graduate Committee and Advisor. Such employment must not interfere with the fulfillment of any duties or responsibilities incurred through acceptance of the award, nor should the ability of the student to make good academic progress be impaired, otherwise dismissal may occur.

IV. FACULTY RESEARCH INTERESTS

Dr. B.P. Bagatto** - Animal Physiology (bbagatt@uakron.edu)

Dr. J. Duff** - Plant Systematics (rjduff@uakron.edu)

1. Using molecular data to address the phylogenetic relationships of basal embryophytes
2. Molecular evolution of mitochondrial DNA genomes in Plants
3. Investigations of the phylogenetic relationships of parasitic plants and the molecular evolution of their chloroplast and mitochondrial genomes

Dr. D. Ely** - Human Physiology (ely1@uakron.edu)

1. Mechanisms of hypertension - neural and hormonal, using animal models
2. Human hypertensive studies - physiological, behavioral, epidemiological
3. Stress physiology

Dr. L. Fraser ** - Botany, Wetland Ecology (lfraser@uakron.edu)

1. Competitive interactions between wetland plants in plant community structure
2. Plant/animal interactions relating to productivity and plant community structure
3. Plant traits and community change to disturbance

Dr. M. Kory* - Microbiology (mmk1@uakron.edu)

1. Medical bacteriology - mechanisms of pathogenicity
2. Phenotypic and genotypic characterization of bacteriophages of medically significant bacteria

Dr. P. Lavrentyev** - Microbial Ecology (peter3@uakron.edu)

1. Marine and freshwater microbial food webs
2. Trophic cascades
3. Nutrient dynamics

Dr. Q. Liu** - Genetics/Molecular Biology (qliu@uakron.edu)

1. Molecular mechanisms of vertebrate neuronal development, using fish (goldfish and zebrafish) as animal models
2. Anatomy and development of the vertebrate visual system, using fish and frogs as animal models
3. Cell adhesion molecules (cadherins) and their functions in the development of the vertebrate central nervous system

Dr. R. Londrville** - Cell Physiology (londrville@uakron.edu)

1. Fat metabolism in lower vertebrates (fish)
2. Protein structure and function
3. Cellular responses to changes in body temperature
4. Comparative molecular biology and biochemistry
5. Calcium cycling in muscle

Dr. A. Milsted** - Molecular Biology (milsted@uakron.edu)

1. Genomic imprinting in females
2. Renal mechanisms in hypertension
3. Genetics of hypertension

Dr. R.J. Mitchell** - Evolutionary Ecology (rjm2@uakron.edu)

1. Plant reproductive, population, and mating ecology
2. Animal-plant interactions, especially pollinator-plant relationships
3. Plant population and quantitative genetics
4. Conservation biology

Dr. F. Moore** - Evolutionary Biology

Dr. P. Niewiarowski** - Vertebrate Zoology (r1phn@uakron.edu)

1. Ecology and Population biology of reptiles
2. Physiological ecology
3. Evolution of life histories
4. Individual-based computer simulation models

Dr. S. Orcutt* - Animal Behavior and Ornithology (forcutt@uakron.edu)

1. Vocalizations as reproductive isolating mechanisms in birds
2. Avian sociobiology

Dr. D. Ott* - Phycology and Electron Microscopy (dott@uakron.edu)

1. Cytological development of selected genera of algae using both the light and electron microscope
 - a. study of the reproductive structures
 - b. study of the mitotic systems
2. Cytoskeletal studies involving translocation of organelles

Dr. R. Salisbury* - Anatomy (rsalisbury@uakron.edu)

1. Reproductive endocrinology
2. Action of androgens on brain development
3. Developmental endocrinology
4. Morphological development of brain and reproductive systems

Dr. J. Stinner** - Comparative Physiology (jstinner@uakron.edu)

1. Comparative physiology
2. Respiratory physiology
3. Gas exchange and acid-base regulation in vertebrate ectotherms

Dr. M. Turner** - Genetics (meturner@uakron.edu)

1. Population and ecological genetics
2. Genetics of hypertension
3. Mammalian Y chromosome

Dr. S. Weeks** - Invertebrate Biology (scw@uakron.edu)

1. Aquatic ecology and evolutionary biology
2. Inbreeding depression in freshwater shrimp
3. Life-history evolution and the evolution of sexual reproduction in freshwater fish and shrimp
4. Population and quantitative genetics

Graduate Faculty Status

* = can teach and direct master's candidates.

** = can teach and direct doctoral candidates.

V. FACILITIES AND LABORATORY OPERATION

A. Service Laboratories and Major Equipment

Equipment is expensive and costly to repair. When using equipment you must get approval and instruction from the faculty member in charge.

B. Science and Technology Library

The Science and Technology Division of the University Library is located on the first floor of the North Tower, Auburn Science Center. Books are checked out by means of your zip card issued upon payment of general fees. This card is also used as a student identification card and for admission to several campus activities. Books and journals not contained in our library may be borrowed from other libraries through the Interlibrary Loan Service.

C. Chemicals, Glassware, Laboratory Equipment, and Services

Requests for equipment, supplies, and services, both within and outside the University, are handled through the Stockroom manager (ASEC 188). Catalogs of major scientific suppliers are available. Submitting requests and use of catalogs are limited to the hours of 9 a.m. - 5 p.m. Monday through Friday. Note that it usually takes 2-3 weeks to obtain materials not in stock. Chemicals and other laboratory materials may be removed from the Stockroom (ASEC 188) ONLY after obtaining permission. All such material must be signed out on the appropriate sheet indicating date, name of borrower, and new location of materials. Large quantities of materials should be requested at least three weeks before they are needed. When requisitioning laboratory supplies, provide information as shown on the Biology Department Order Form, which can be obtained from the Stockroom.

D. Animal Quarters

Animal facilities are available for approved research projects involving vertebrate animals. Any research

projects involving the use of animals must first be approved by the Institutional Animal Care and Use Committee (IACUC). All projects involving animals must be conducted in accordance with Federal guidelines. For assistance contact the manager of the animal facilities. SEVERAL WEEKS NOTICE IS OFTEN NEEDED TO OBTAIN CERTAIN STRAINS OF ANIMALS FOR EXPERIMENTAL WORK.

E. Safety and Emergency Procedures

Because the laboratory work in the Department of Biology is quite varied, it is difficult to write a detailed set of safety precautions. Accordingly, it is the responsibility of each person to know the hazards peculiar to his own research. There are, however, a few general rules and emergency procedures with which everyone should be familiar.

1. Every laboratory should have posted, so that it is visible from the hallway, a card with the names and telephone numbers of two persons who may be contacted in case of emergency when the laboratory is unoccupied. This is so that watchmen can telephone in case flooding, fire, electrical or mechanical malfunction, etc., arise overnight or on a holiday. Obtain cards from the Department Office.
2. Every laboratory should have posted inside in a prominent place the emergency procedure for fire and bodily injury. These procedures in abbreviated form and emergency telephone numbers are found following this section (page 21).
3. Each member of the Department has the responsibility to be familiar with and to employ safety procedures. If there is any question about the safe way to do something, consult a safety handbook in the Stockroom or your advisor. Waste, solvents and chemicals should be placed in suitable containers and disposed of properly. DO NOT rinse these materials down the sink.
4. Each member of the Department should be able to administer first aid correctly in cases of emergency. Learn the location of first aid supplies in your laboratory.
5. Each laboratory has a CO₂ fire extinguisher located near the door. Anytime a fire extinguisher is used, it should be reported to the Stockroom. The fire extinguishers provided are only for use on very minor fires. If you cannot deal with the problem quickly and safely, use the procedure described on the following page.

EMERGENCY PROCEDURES AND TELEPHONE NUMBERS

Post in Each Laboratory

Fire

- A. Trip fire alarm.
- B. Close doors and turn out lights.
- C. Meet City Firemen under ramp leading to main entrance.
- D. If it is more practical to call, rather than trip an alarm, call Akron City Fire Department - 375-2101.

Serious Injury

- A. Call ambulance
Emergency Medical Service 911
- B. Call emergency room at hospital to notify them of nature of accident so they will be prepared when the ambulance arrives.

Akron City Hospital Telephone 375-3361
525 E. Market Street

Minor Injury (small cuts, burns, etc.)

Visit Health Service Clinic (located at Robertson Residence Hall Dining Facility and Infirmary). There is no charge for services provided by the Clinic.

*Telephone 7808 for admittance after hours.

Campus Security

Because the offices and laboratories of the Department are fairly accessible to anyone entering the Auburn Science Center, security is a responsibility which must be shared by all members of the Department. Most important, all doors must be kept locked when a room is unoccupied. Desks and equipment cabinets should be locked at all times.

Some areas of the Department have no adjacent classrooms or heavily used corridors, and accordingly

most people having legitimate business in these areas will be familiar to laboratory occupants. Strangers entering Department laboratories or offices should be politely asked for whom they are looking, then sent to the proper office or to the Department Office if they have a question.

At night, strangers having legitimate business should be directed to the proper area. Others should be politely informed that they are in a research area where unescorted visitors are not permitted. In the case of loiterers, as well as groups of children, teenagers or undergraduates, Security (Ext. 7123) should be called and informed. Security officers do not know most occupants of research laboratories and, therefore, may occasionally question someone having legitimate business there.

VI. GENERAL INFORMATION AND DEPARTMENTAL POLICIES

A. Employment Opportunities for Graduates

The University Placement Service (Simmons Hall) offers assistance to prospective graduates seeking employment by keeping an up-to-date file of such students for the information of prospective employers. It also schedules periodic interviews (generally in the Fall) between students and employers' representatives who visit the campus for this purpose. Notices of such visits are posted well in advance to permit students to sign up.

In this connection students are urged to submit resumés to the Placement Service about one year before they expect to graduate, and to participate in any interviews scheduled from then on.

B. Identification Cards

Official I.D. cards are issued to all students during registration. These should be carried at all times so as to allow easy identification by security officers and other University personnel. I.D. cards are also required for full library privileges and to enter the Biology Dept. Computer Center.

C. Parking

All graduate assistants in the Department will be given parking permits which allow parking in any University lot or parking deck designated for student parking. The fee normally required for parking privileges will be partly paid by the University. Application forms may be obtained from the Department Office ASEC 185.

D. Keys

Students will be assigned keys to the room in which their desk is located, their assigned classroom and research laboratory. In most cases the forms will have been filled out in advance for incoming students, and it is only necessary to pick them up at the Physical Plant on S Forge Street, in back of the

Performing Arts Building.

When a student completes the M.S. degree (at the time of submission of thesis or oral defense for non-thesis students) or terminates the contract, all keys must be returned to the Physical Plant. Failure to comply with this procedure will hold up the granting of any degrees, final paychecks, or letters of reference. There is a substantial charge to replace lost keys.

E. Mail

Mailboxes are located in the Mail Room (ASEC 185B). Mail from both campus and outside sources is delivered to the Office.

The correct mailing address for correspondence is:

Department of Biology
The University of Akron
Akron, Ohio 44325-3908

F. Office Assistance

The word processor, Ms. Cheryl O'Dear, will type and copy any tests, quizzes or handouts necessary for your TA duties. The materials must be given to the office staff at least 72 hours in advance if typing is required and 24 hours prior to use if only copying is required.

Photocopying in the department office is available for research related materials through one's advisor. Under special circumstances and with the approval of the office staff, a limited number of copies for either research or TA use may be made by the graduate student. Office photocopiers may not be used for copying personal material.

G. Mailbox and Desk

All active graduate students (with or without a TA) will have a department mailbox and desk location (as long as there are sufficient desks). Those students with TAs will be given priority for desks if there are not enough available.

H. Research Budget

With an approved thesis proposal budget page, the department will pay up to \$750 in research costs for the thesis research, if funds are available. A budget page, signed by the student and advisor, with items required, cost and justifications, must be turned in to the graduate committee and Assistant Department Chair for approvals at least 30 days before any expenditures are to take place. Student travel to professional meetings may be included.

I. Thesis / Seminar Support

The department will pay for binding cost of four copies of the thesis; the student is responsible for all other costs of the thesis preparation.

If funds are available, the department will pay up to \$40 for slides to be used in the thesis seminar. This charge needs to be approved by the Assistant Department Chair prior to incurring the expense.

J. Computer Support

This service is available within the department in Room 282.

K. Darkroom

The department darkroom is available for student research use with permission from Dr. Ott. If photographic work is extensive, you will be asked to add sufficient costs to your thesis budget to pay for materials used.

L. Copy Cards

Library copy cards are available only for faculty members. They may give these to students for their use but the faculty member is responsible for obtaining and returning the card. The faculty member is also responsible for seeing that any copying done is appropriate. Personal copy cards can be purchased at machines located in the libraries.

VII. APPENDICES

- A. Master Study Plan
- B. Graduate Student Progress Form
- C. Suggested Curricula
 - 1. Human and Animal Physiology
 - 2. Ecology
 - 3. Zoology
 - 4. Microbiology
 - 5. Plant Science
 - 6. Genetics/Molecular Biology
- D. Teaching Assistant Letter of Recommendation Form
- E. Master's Thesis Proposal Form
- F. Advisor's Card
- G. Research Proposal Form

APPENDIX B

GRADUATE STUDENT PROGRESS FORM*
M.S. -- RESEARCH OPTION

Name _____ Social Security # _____

Date Entered _____ TOEFL score _____

Date Completed _____ GRE aptitude _____

GRE biology _____

Major Field _____ Advisor _____

Committee Members _____

Proposed Thesis Title _____

General Examination - Pass Fail _____ Advisor

Thesis Proposal Oral Defense Pass Fail _____ Committee Member

Pass Fail _____ Committee Member

Thesis Defense Approve Disapprove _____ Advisor

Approve Disapprove _____ Committee Member

Approve Disapprove _____ Committee Member

Thesis Draft

Advancement to Candidacy

Colloquium in Biology 697-698 - 2 credits each

Courses required as a condition of admission (specify credit or audit)

*Also on the web at <http://www.uakron.edu/biology/GRADFORM/grdfrm.htm>

(over)

Student-Committee Meetings (each semester). Advisor's comments on student's progress, action taken, changes in plans, etc.

DATE

APPENDIX C

SUGGESTED CURRICULA

Courses appropriate to the major areas are listed below. Individuals will choose most of their credits from their major area.

1. MASTER OF SCIENCE - Major Area Human and Animal Physiology

Advisors:	D. Ely	Q. Liu
	R. Londrville	R. Salisbury
	J. Stinner	B. Bagatto

Suggested Curriculum

<u>Course Title</u>	<u>Course Number</u>	<u>Credit Hours</u>
Biochemistry	3150:501,502	3 each x 2
Vertebrate Embryology	3100:466,566	4
Advanced Cardiovascular Physiology	3100:565	3
General and Comparative Physiology	3100:564	4
Reproductive Physiology	3100:568	3
Respiratory Physiology	3100:569	3
Pharmacology	3100:584	3
Advanced topics: Statistics for the Health Sciences	3470:689	3
Statistics for the Health Sciences	3470:664	4
Biology Colloquium	3100:697,698	1 each (2x2-total 4)
Master's Research	3100:699	12
Vertebrate Zoology	3100:558	4
Biological Mechanisms of Stress	3100:572	3
Cell Physiology	3100:585	4
Structure and Function of Proteins	3100:695	3
Neurobiology	3100:495,695	3
Selected courses from NEOUCOM	3110:	

2. MASTER OF SCIENCE -Major Area Ecology

Advisors: S. Weeks R. Mitchell L. Fraser
 S. Orcutt P. Niewiarowski P. Lavrentyev

Suggested Curriculum (Ecology)

<u>Course Title</u>	<u>Course Number</u>	<u>Credit Hours</u>
Statistics for the Health Sciences	3470:664	4
Advanced topics: Statistics for the Health Sciences	3470:689	3
Mycology and/or Phycology	3100:540	4
Invertebrate Zoology	3100:543	4
General and Comparative Physiology	3100:553	4
Vertebrate Zoology	3100:564	4
Freshwater Ecology	3100:558	4
Applied Aquatic Ecology	3100:524	3
Biology of Behavior	3100:526	3
Tropical Field Biology	3100:528	2
Biology Colloquium	3100:521	4
Masters Research	3100:697,698	1 ea (2x2-total 4)
Ichthyology	3100:699	12
	3100:555	4

3. MASTER OF SCIENCE Major Area Zoology

Advisors: S. Weeks R. Mitchell
 J. Stinner P. Niewiarowski
 S Orcutt R. Londrville

<u>Course Title</u>	<u>Course Number</u>	<u>Credit Hours</u>
Statistics for the Health Sciences	3470:664	4
Advanced topics: Statistics for the Health Sciences	3470:689	3
Biochemistry	3150:501,502	3 each x 2
Neurobiology	3100:495,695	3
Invertebrate Zoology	3100:553	4
General and Comparative Physiology	3100:564	4
Comparative Vertebrate Morphology	3100:567	4

Vertebrate Zoology	3100:558	4
Biology of Behavior	3100:528	2
Ichthyology	3100:555	4
Vertebrate Embryology	3100:566	4
Ornithology	3100:556	4
Tropical Field Biology	3100:521	4
Biology Colloquium	3100:697,698	1 ea (2x2-total 4)
Masters Research	3100:699	12

4. MASTER OF SCIENCE - Major Area Microbiology

Advisors: M. Kory P. Lavrentyev

Suggested Curriculum

<u>Course Title</u>	<u>Course Number</u>	<u>Credit Hours</u>
Cytology	3100:688	3
Mycology	3100:540	4
Phycology	3100:543	4
Pathogenic Bacteriology	3100:533	4
Biochemistry	3150:501,502	3 each x 2
Basic DNA Techniques	3100:625	3
Advanced Genetics	3100:581	3
Molecular Biology	3100:580	3
Cell Physiology	3100:585	4
Statistics for the Health Sciences	3470:664	4
Advanced topics: Statistics for the Health Sciences	3470:689	3
Biology Colloquium	3100:697,698	1 ea (2x2-total 4)
Masters Research	3100:699	12
Environmental Microbiology	3100:695	4
Structure & Function of Proteins	3100:695	3

5. MASTER OF SCIENCE - Major Area Plant Science

Advisors: D. Ott

R. Mitchell J. Duff

L. Fraser

Suggested Curriculum

<u>Course Title</u>	<u>Course Number</u>	<u>Credit Hours</u>
Plant Physiology	3100:547	3
Plant Anatomy	3100:542	3
Mycology	3100:540	4
Phycology	3100:543	4
Plant Morphology	3100:545	4
Plant Development	3100:541	4
Biology Colloquium	3100:697,698	1 ea (2x2-total 4)
Masters Research	3100:699	12

6. MASTER OF SCIENCE - Genetics / Molecular Biology

Advisors: M. Turner R. Londrville Q. Liu

A. Milsted J. Duff F. Moore

<u>Course Title</u>	<u>Course Number</u>	<u>Credit Hour</u>
Biochemistry	3150:501,502	3 each x 2
Neurobiology	3100:695	3
Molecular Biology	3100:580	3
Advanced Genetics	3100:581	3
Basic DNA Techniques	3100:625	3
Advanced Cardiovascular Physiology	3100:565	3
Biological Mechanisms of Stress	3100:572	3
Cell Physiology	3100:585	4
Structure and Function of Proteins	3100:695	3
Statistics for the Health Sciences	3470:664	4
Advanced topics: Statistics for the Health Sciences	3470:689	3
Biology Colloquium	3100:697,698	1 ea (2x2-total 4)
Masters Research	3100:699	
Physiological Genetics	3100:571	4

APPENDIX D
 RECOMMENDATION FOR GRADUATE STUDY OR TEACHING ASSISTANTSHIP
 Department of Biology
 The University of Akron
 Akron, Ohio 44325-3908

Name of Applicant _____ Date _____

Relationship with applicant (teacher, employer, other) _____

Length of time you have known the applicant _____

Please check only one option
 ___ 1. I expressly waive any rights I might have to access of this letter of recommendation under the Family Educational Rights and Privacy Act of 1974, or any other law, regulation or policy.
 Date _____ Signature of applicant _____

___ 2. I do not agree to the waiver above.
 Date _____ Signature of applicant _____

Please rate the applicant in comparison with students of his/her age and position whom you have known, check only one rating for each category which most nearly describes the applicant.

	No basis for judgement	Lower half	Upper half but not upper 25%	Upper 25% but not upper 10%	Upper 10%
Native intellectual ability					
Breadth of general knowledge					
Initiative and resourcefulness					
Interest in his field					
Ability to express himself orally					
Ability to express himself in writing					
Ability to work with others					
Emotional maturity					
Promise as a teacher					
Promise as a researcher					
Independence					

We strongly recommend you use the reverse side for any additional remarks you are to make regarding this applicant. A careful discrimination between weak and strong characteristics of the applicant is in the long run more helpful to him than routine praise. Comments on character, integrity and performance as a teaching and research assistant are especially useful.

Name (print or type) _____ Date _____

Position or title _____ Address _____

Signature _____

Submit this along with your thesis proposal (see Appendix G).

APPENDIX E
Master's Thesis Proposal Form

Name_____

Date_____

Each student selecting to conduct thesis research is required to complete this form and obtain appropriate signatures before initiating any research towards the Master's thesis.

I. Background

II. Hypothesis

III. Proposed Methodology (organism to be used, type of methods, time schedule, equipment and experimental design, use other side if needed).

IV. Expected Results

V. Proposed Budget (list current prices of organism, supplies, equipment, other. If item already exists in department put no charge - NC. For any item over \$100 include a brief justification of why you need it, include a total dollar amount).

VI. Source of Funding (check one or more) Amount_____

Department_____

Faculty Research Grant_____

Extramural Funding_____

Other_____

COMMITTEE APPROVAL

DEPT. CHAIR APPROVAL

APPENDIX F

Name:

Phone No.:

Address:

Soc. Sec. No.:

I agree to serve as MAJOR ADVISOR for the graduate student named above:

_____ Date: _____

Committee Members:

1. _____

2. _____

Limitations and Conditions of Admission:

APPENDIX G

Thesis Proposal Guidelines:

Proposals must include:

A survey of the literature in the field of intended study. Also included will be a purpose, why you are performing the experiments; hypothesis, state your hypothesis; methods, a brief description of the methodology your experiments will employ; expected results, what results would you expect if your hypothesis is correct. Proposals should also include a time table indicating when the experiments will be finished. Preliminary data may also be included if available. References must also be included.