All policies described herein were approved by the faculty and are effective immediately.
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Welcome!

Congratulations on taking an important step towards achieving your career goals through the pursuit of graduate studies at The University of Tennessee in the Department of Animal Science! Because Animal Science is a diverse and fascinating blend of applied and basic life sciences, a strength of our program is the ability to tailor graduate degree programs to achieve your career goals. As proof, our MS and PhD programs have alumni located all over the world, enjoying careers as leaders in government, academia, and in animal and biomedical industries.

As a graduate student enrolled in our program, you will have the opportunity to engage in research related to animal physiology (e.g., ruminant and monogastric nutrition, reproduction or stress) or health and well-being (immunology, microbiology, pre-harvest food safety, or behavior). Our programs emphasize the importance of experiential “hands on” learning with different animal species, including beef and dairy cattle, poultry, swine, sheep, and to a lesser degree, companion animals or rodent models. Also, depending on your interests, a number of opportunities may be available to travel/study abroad.

Be assured that our graduate research faculty will challenge you to be the very best, even beyond what you think is possible, by providing an environment and opportunities to expand your knowledge and creative and scholastic abilities. This, along with personalized efforts to enhance your communication and presentation skills, will ensure your competitiveness for top-ranked positions after completion of your graduate program. A list of our graduate faculty is provided later in this handbook. See the departmental graduate website to get better informed of faculty specific research focus areas (https://ag.tennessee.edu/AnimalScience/Pages/GraduateProgram.aspx).

Because graduate students are the “lifeblood” of our research and teaching programs, your contributions to the department and your mentor’s program are not only appreciated but greatly valued.

Sincerely,

Dr. Lannett Edwards
Graduate Program Director
jedwards@utk.edu
INTRODUCTION

In order to serve the mission and vision of the Graduate School and preserve the integrity of Graduate Programs at the University of Tennessee, Knoxville, information related to the process of graduate education in each department is to be provided as a handbook. The purpose of this handbook is to clearly describe policies where departmental requirements exceed those of the Graduate School, and how policies will be implemented. It is written for YOU, the graduate student, but also serves as a record to the faculty of approved procedures and policies. You are required to read this handbook and follow stated requirements. Additionally, Graduate School policies that are of particular importance are copied here. You also have full responsibility for knowing/following the rules and regulations of the Graduate Council listed in the current online graduate catalog [http://catalog.utk.edu/index.php?catoid=21](http://catalog.utk.edu/index.php?catoid=21).

In short, graduate students are bound by policies and requirements in this handbook and the Graduate Catalog. It is important to note that course offerings and requirements of the institution and department are continually under examination and revision. Note that unlike undergraduate students, who follow the requirements in the catalog they entered under, **graduate students must follow current requirements in the Graduate Catalog and this handbook**. Adequate and reasonable notice will be given to students affected by any changes, and changes only become effective in the Fall semester of each year - your program requirements are not affected by mid-year changes.

The Animal Science Graduate Program is dedicated to training graduate students in the multiple disciplines associated with the animal sciences. Fundamental to your program will be 1) development of specific and comprehensive knowledge of animal physiology (e.g., ruminant and monogastric nutrition, reproduction or stress) or health and well-being (immunology, microbiology, pre-harvest food safety, or behavior), 2) use of the scientific method to investigate critical issues, and 3) enhancement of verbal and written communication skills.

The **goal** of our program is to enable you to successfully compete for the diverse job opportunities available within your primary interest area. This often requires a mixture of general and specific training adapted to your needs and desires. Because animal science involves a combination of many allied disciplines, including chemistry, biochemistry, biology, microbiology, genomics, and statistics, MS and PhD programs are flexible and of equally high quality regardless of your interest. Coursework in these subjects, together with the planning, conduct, interpretation and reporting of an original research project, constitutes the general design of your graduate program.

Understand that a high-quality graduate education is very much dependent upon YOUR strong commitment, resourcefulness and high standards of achievement. In a sense, your major professor, graduate advisory committee, coursework and research problem serve simply to facilitate graduate education. As such, you should set your own high standard of excellence, make as much use of the aforementioned available "facilitators" as is possible and, in so doing, make the most of your graduate education. To this end, you must be fully committed to your graduate program, and participate in departmental and professional activities.
The Department of Animal Science traces its beginning to 1920 with the formation of the Animal Husbandry “group” within the College of Agriculture. In 1949, the Animal Husbandry group changed to the Animal Husbandry-Veterinary Science group and in 1950, according to the UT Record of that year, became known as a department rather than a group. It remained Animal Husbandry-Veterinary Science until 1972 when the Dairy and Poultry departments merged with it to form the Animal Science Department. The Dairy group had similar history as the Animal Husbandry group, originating in 1920; whereas the Department of Poultry Husbandry was not formed until ~1948.

Although departmental origins trace back to 1920, a Masters program was approved in 1907. Animal science thesis-based graduate degrees were initially awarded as an MS majoring in Agriculture. The first on departmental record was awarded to Ben Prim Hazelwood in 1926 for the “Survey of the Knoxville Milk Supply”. Dr. C.E. Wylie, first of only two department heads of what was to become the Dairy Department, served as his major professor. The first thesis-based MS degree majoring in Animal Husbandry was awarded in 1933 to Thomas Luther Mayes for “A comparison between the income from flocks of barred Plymouth Rocks and single comb White Leghorn hens”. While the first thesis-based MS degree in Animal Science was awarded in 1971, MS degrees in Animal Husbandry were not granted until 1974. As of May 2013 a “collective” total of 650 MS degrees have been conferred. A PhD program in Animal Husbandry was approved in 1960 and was the first in the College of Agriculture. In 1965, three graduates received PhD’s (Robert Donald Waddell majored in Animal Husbandry under the tutelage of Dr. H.J. Smith; Ted Painter McDonald and John Newton Williams, II majored in Animal Science under the tutelage of Dr. C.S. Hobbs). As of August 2016 a “collective” total of 178 PhD degrees have been awarded.

The University of Tennessee is noted as the first coed institution of higher learning and the College of Agriculture had a special program for women before 1920. Even so, it was not until 1965 that a woman received a graduate degree in animal-science based disciplines. Emily Ann Davis majored in Poultry under the tutelage of Dr. J.K. Bletner; her MS thesis was titled “Supplementation of chick diets containing high levels of hydrolyzed feather mill”. In 1974, Carol Ann Clark of Lenoir City, Tennessee, was the first woman to receive the MS degree majoring in Animal Science under the tutelage of Dr. C.C. Chamberlain for “Observations on metabolism of selected minerals in the developing horse”. The first woman to receive a PhD majoring in Animal Science was Mrs. Harriet Corrick, PhD in 1973. She was the wife of Dr. Jim Corrick, who was a faculty member in the department.

There were several times during the history of this department that growth occurred in both the research program and student numbers. The first of these occurred in the late 1940’s, when, actually, two things happened. First, World War II ended which led to larger enrollments of students who had their college studies interrupted by the War and other students entering for the first time. Second, two research projects were established, one of which would eventually lead to a long and fruitful joint effort between the University of Tennessee and the Atomic Energy Commission at Oak Ridge. Dr. C.S. Hobbs, who
assumed the department head role in 1947, had learned of some cattle which had accidentally been exposed to atomic bomb tests in New Mexico. Supposedly, on the spur of the moment, he went to New Mexico and purchased these cattle along with an unexposed herd and had them sent back to Tennessee. Through his efforts, these cattle became the building block for the formation of the UT-AEC group at Oak Ridge, Tennessee. Studies concentrated on radiation effects on vitamins, minerals, and hormones as well as reproductive function and sperm physiology. The other project was the fluorine study in cooperation with Aluminum Company of America (ALCOA) and other companies, namely, Monsanto Chemical Company and Victor Chemical Company. Hooker Chemical Company and the Tennessee Valley Authority (TVA) also provided assistance. The research was supported primarily through grant monies from these companies.

Because animal science involves a combination of many allied disciplines, including chemistry, biochemistry, biology, microbiology, genomics, and statistics, the types of MS
and PhD programs available to students today are more flexible. Areas of research emphases now include various aspects of animal physiology (ruminant and monogastric nutrition, reproduction, stress and obesity) and health and well-being (behavior, immunology, genomics, microbiology, and pre-harvest food safety). In part, this transition of emphases for our graduate program reflects the changing employment opportunities for our MS and PhD students, which are focused on innovative technologies and the generation of new scientific knowledge to increase animal production and health, and the profitability of the animal industries. Industry-supported grants typically focus on new marketable technologies, taking our research into the realm of intellectual property and patent development. Additionally, emerging funding programs of the USDA and the National Institute of Health are also focused on using agricultural animals as models for human diseases and disorders. All of these opportunities are increasingly being sought to find needed funds to support a viable graduate program.

While no permanent records were kept on jobs taken by Animal Husbandry/Animal Science graduates, one would suspect that prior to the 1970’s, majority of graduates were employed in some aspect of production agriculture (e.g., herdsmen/managers, livestock grooming and fitting, as well as owner/operators of farming operations). In more recent times, our graduate alumni are finding careers in biotechnical, animal health, or nutrition-based companies, leading their research laboratories, providing technical support or marketing their products. Others are managing human in vitro fertility clinics, and others are leading the quality control programs for all of the above and other diverse industries. Additionally, some of our graduate alumni are entering other professional programs eventually leading to careers in human and veterinary medicine, dentistry, pharmacy, or law. And as in the past, our MS and PhD students continue to find careers in academia and Extension.
GRADUATE PROGRAM CONTACTS

The graduate program director within each department is responsible for monitoring all graduate student activities. Our director is listed below, along with other members of the graduate committee. Your primary University contact should be your graduate advisor, but any questions or concerns about Graduate School or Handbook policies can be directed to the people below. We are here to help (but can't unless asked😊).

Graduate Program Director
Dr. Lannett Edwards, Professor
250 Brehm Animal Science Bldg.
Phone: (865) 946-1011  Fax: (865) 946-1010  Email: jedwards@utk.edu

Graduate Program Assistant
Ms. Denice Milligan
149 Brehm Animal Science Bldg.
Phone: (865) 974-6389  Fax: (865) 974-7297  Email: dmilliga@utk.edu

Dr. Peter Krawczel  Graduate Committee Chair, Associate Professor
258 Brehm Animal Science Bldg., Knoxville, TN 37996
Phone: (865) 974-8741  Fax: (865) 974-7297  pkrawcze@utk.edu

Dr. Cheryl J. Kojima, Associate Professor
ex-officio Graduate Committee Member (Undergraduate Program Coordinator)
149A Brehm Animal Science Bldg.
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Dr. Phillip Myer  Graduate Committee Member, Assistant Professor
355 Brehm Animal Science Bldg
Phone: (865) 974-3184  Email: pmyer@utk.edu

Dr. Liesel Schneider  Graduate Committee Member, Assistant Professor
232 Brehm Animal Science Bldg
Phone: (865) 974-2887  Email: lschneider@utk.edu

Dr. Oudessa Kerro Dego  Graduate Committee Member, Assistant Professor
356 Brehm Animal Science Bldg
Phone: (865) 974-39740  Email: okerrode@utk.edu
Prospective graduate students should review this list of graduate research faculty to identify individuals engaged in research that is of interest to you. Contact faculty directly to determine their availability and willingness to serve as your graduate mentor and for opportunities for part-time employment as you pursue graduate studies. See the ANSC graduate program website to get better informed of specific faculty research focus areas.

Dr. J. Lannett Edwards  Graduate Program Director, Professor
Professional Interests: Reproductive Physiology and Embryology
2506 River Drive, 250 Brehm Animal Science Bldg., Knoxville, TN 37996
Phone: (865) 946-1011  Fax: (865) 946-1010  Email: jedwards@utk.edu

Dr. Marc Caldwell  Adjunct Assistant Professor,
Large Animal Clinical Sciences Department
Professional Interests: Animal Health and Well Being
2407 River Drive, C222 Veterinary Medical Center, Knoxville, TN 37996
Phone: (865) 974-5703  mcaldwell@utk.edu

Dr. Elizabeth Eckelkamp  Assistant Professor
Professional Interests: Dairy Extension Specialist
2506 River Drive, 244 Brehm Animal Science Bldg. Knoxville, TN 37996
Phone: (865) 974-8167  Fax: (865) 974-7297  eeckelkam@utk.edu

Dr. Jennie L. Ivey  Assistant Professor
Professional Interests: Equine Nutrition & Extension Specialist
2506 River Drive, 257 Brehm Animal Science Bldg. Knoxville, TN 37996
Phone: (865) 974-3157  Fax: (865) 974-7297  jzivey@utk.edu

Dr. Oudessa Kerro Dego  Assistant Professor
Professional Interests: Animal Health & Well Being
2506 River Drive, 356 Brehm Animal Science Bldg., Knoxville, TN 37996
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Dr. Cheryl J. Kojima  ex-officio  Graduate Committee Member
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Dr. Peter Krawczel  Graduate Committee Chair, Associate Professor
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2506 River Drive, 258 Brehm Animal Science Bldg., Knoxville, TN 37996
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Dr. Jun Lin  Professor
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Phone: (865) 974-5598  Fax: (865) 974-7297  Email: jlin6@utk.edu

Dr. Kyle McLean  Assistant Professor
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Phone: (865) 974-4203  Fax: (865) 974-7297  kmclea10@utk.edu

Dr. Phillip Myer  Graduate Committee Member, Assistant Professor
Professional Interests: Nutritional Physiology
2506 River Drive, 355 Brehm Animal Science Bldg., Knoxville, TN 37996
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Dr. Gina M. Pighetti  Associate Professor
Professional Interests: Immunology, Dairy cattle
2506 River Drive, 240 Brehm Animal Science Bldg., Knoxville, TN 37996
Phone: (865) 974-7225  Fax: (865) 974-7297  Email:pighetti@utk.edu

Dr. Tulio M. Prado  Adjunct Associate Professor, Large Animal Clinical Sciences Department
Professional Interests: Reproductive Physiology/Theriogenology
2407 River Drive, Veterinary Medical Center, Knoxville, TN 37996
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Dr. Justin Rhinehart  Associate Professor
Professional Interests: Reproduction, Beef cattle
5201 Marchant Drive, Nashville, TN 37211-5201
Phone: (615) 835-4561   Fax: (615) 832-0043   Email: rjrhineh3@utk.edu

Dr. Agustin Rius  Assistant Professor
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Dr. Michael O. Smith  Professor
Scholarship Coordinator
Professional Interests: Poultry Nutrition
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Dr. Lew Strickland  Assistant Professor
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Dr. Brynn H. Voy  Associate Professor  
Professional Interests: Adipose Tissue, Obesity, Adipokine, Genomics  
2506 River Drive, 238 Brehm Animal Science Bldg., Knoxville, TN 37996  
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Dr. Brian Whitlock  Adjunct Associate Professor, 
Large Animal Clinical Sciences Department  
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Phone: (865) 974-5701  bwhitloc@utk.edu
ADMINISTRATIVE ORGANIZATION

Dixie Thompson, Vice Provost & Dean of Graduate School

Assistant Dean of Graduate School

Associate Dean of Graduate School

Caula Beyl, Dean Herbert College of Agriculture

John Stier, Associate Dean Herbert College of Agriculture

F. Neal Schrick, Head Animal Science Department

Lannett Edwards, Graduate Director

Peter Krawczel, Graduate Committee Chair

Denice Milligan, Graduate Program Assistant

Cheryl Kojima (ex-officio)

Oudessa Kerro Dego

Liesel Schneider

Phillip Myer
Responsibilities of Faculty and Graduate Students

This section covers rights and responsibilities which are peculiar to graduate students and which may not be mentioned in the Graduate Catalog. Those rights and responsibilities which are viewed as more general and applying to all students, both graduate and undergraduate, are discussed in *Hilltopics* (http://hilltopics.utk.edu/). It is YOUR responsibility to satisfy all deadlines and requirements of the Graduate School as listed in the Graduate Catalog.

**Right to Learn.** The University of Tennessee has a three-fold purpose: Instruction, Research, and Public Service. All of these involve graduate students, as graduate students are necessary for carrying out each of the three purposes. No student may interfere with the learning process, another's research, or a public service program (as determined by the University).

**Code of Professional and Academic Standards.** You have the right to be informed concerning departmental, professional and academic policies and procedures that affect you. You should be informed of these during the initial semester in which you enrolled and this handbook is one component of that. It is your responsibility to be familiar with the departmental program, collegiate policies and procedures and to ask questions if the information is not clear or if it is not provided.

**Change of Degree Requirements.** Normally, you have the right to be evaluated according to the requirements of the program under which you entered. However, departments/colleges have the right to change program requirements and apply them to students already admitted provided adequate notice is given and the requirements are not made retroactive to parts of the program already completed by you. You should expect to receive periodic assessments of your progress reflecting current requirements - ask for this if you do not get it. Current requirements will be given in each Fall semester's edition of this Handbook.

**Academic Programs are Decided by the Faculty.** The rights for making policies about academic programs are vested with the faculty. Students may contribute in the decision through invited participation in committee efforts, or through contributions of their own initiative. The Graduate Committee and faculty always welcome your feedback.

**Confidentiality of Records.** Most of your academic records are confidential. The Animal Science department may not release grades, etc. to anyone without your permission, not even your parents! Only you and staff and faculty involved in your training may view your records. Information concerning confidentialities may be found in the current edition of *Hilltopics* http://hilltopics.utk.edu/.

**Grievance Procedure.** Normally grievances should be handled at the departmental level through the student's major professor, Graduate Director, or the department head. Further appeal may be made to the Dean of Herbert College of Agriculture, then to the Graduate Council and Dean of the Graduate School. Students should familiarize themselves with the [Graduate Council Appeal Procedure](http://hilltopics.utk.edu/). You can contact any member of the Animal Science Graduate Committee for advice on your circumstances. Appeals should be filed within 30 days of the event that created the grievance.

**Academic Standards of Conduct**
*As per Graduate Catalog and Hilltopics*
Academic integrity is a responsibility of all members of the academic community. An honor statement is included on the application for admission and readmission. The applicant’s signature acknowledges that adherence is confirmed. The honor statement declares the following:

An essential feature of the University of Tennessee, Knoxville, is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the university, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity.

Dismissal from the Animal Science Graduate Program, Graduate School and/or University or any lesser penalty may result from any of the following examples of misconduct or other forms of gross misconduct as defined by the Office of Equity and Diversity, Human Resources, Dean of Students Office, Hilltopics or Graduate Council as conveyed in the graduate catalog.

**Plagiarism**

Students shall not plagiarize. Plagiarism is using the intellectual property or product of someone else without giving proper credit. The undocumented use of someone else’s words or ideas in any medium of communication (unless such information is recognized as common knowledge) is a serious offense subject to disciplinary action that may include failure in a course and/or dismissal from the graduate program and university.

Plagiarism examples:

- Using without proper documentation (quotation marks and a citation) written or spoken words, ideas, phrases, or sentences from any source
- Summarizing without proper documentation (usually a citation) ideas from another source (unless such information is recognized as common knowledge)
- Borrowing facts, statistics, graphs, pictorial representations, or phrases without acknowledging the source (unless such information is recognized as common knowledge)
- Collaborating on a graded assignment without instructor’s approval
- Submitting work, either in whole or in part, created by a professional service or any individual for hire

Caution should be exercised by students involved in collaborative research to avoid questions of plagiarism. If in doubt, students should check with the major professor or the Graduate Committee. Plagiarism will be investigated when suspected and prosecuted to the fullest extent possible if established. The onus is on you, the student, to ensure graduate work is plagiarism free. The Graduate School now requires that all theses and dissertations be scanned Ithenticate, a plagiarism detection software, before uploading final version in Trace.
Academic Dishonesty

Academic dishonesty will also be prosecuted, and can lead to dismissal from the university. Dishonesty must not occur in academic coursework, and must not occur during the conduct of your research program.

Examples include, but not limited to

- Academic cheating
- Furnishing false information with the intent to deceive
- Eliminating data with no basis
- Misrepresenting sample population
- Falsification or fabrication of data

Expectations of Animal Science Graduate Students

Professionalism

The purpose of graduate training is to develop a considerably higher degree of professionalism. Whereas an undergraduate is trained as a generalist, the graduate student is trained as a specialist. The earning of a graduate degree carries with it an understanding that you have achieved a certain level of professional competence. Thus, the graduate program must be designed to accomplish this.

Time Required for Graduate Study

Time required for a graduate program varies with the nature of your research program, your previous preparation and your individual ambition or motivation. Normally, an MS degree requires 2 years while a PhD requires 3 years beyond the MS degree. Students willing to devote more hours per day to their tasks will generally finish earlier, have a more productive graduate experience, and greater opportunities when finished.

Ownership of Research

All graduate students must be cognizant of the fact that, although an individual student invests considerable amounts of talent, time and effort in an MS or PhD research project, the Institute of Agriculture also has a significant financial interest in any research conducted in the department. The costs of all materials and supplies, animals, salaries of farm and technical personnel, etc. are underwritten by the Institute of Agriculture and alternative sources procured by the project leader. In fact, legal ownership of any research in the department is vested in The University of Tennessee Institute of Agriculture and is under the control of the project leader (usually your major professor).

Given the above, the Graduate School suggestion that students copyright their thesis or dissertation may cause legal questions/issues. Therefore, you must obtain permission from your major professor before including a copyright page in your thesis or dissertation, and the department's legal interpretation is that this copyright applies only to the written expression, not to the data. Your major professor may continue to use the data and has the right to publish results from your research project without violating copyright.
Research Should Be Published in Peer-Reviewed Journal

Although it is difficult to set minimum research standards for the MS and PhD degrees, high quality should be maintained in all cases. It is incumbent upon your major professor and your advisory committee to ensure your selected research program is of high-quality and deserves awarding of credits for research and thesis/dissertation in fulfillment of the degree requirements. As a guideline, an MS thesis should result in the production of at least one peer-reviewed publication and a PhD dissertation should result in two or more publications. It is in your best interest, and the department's, to publish research results with minimal delay. Therefore, manuscripts emanating from thesis or dissertation research are expected to be submitted to your advisory committee before or at the time the completed thesis/dissertation is submitted.

Since the ultimate goal of any research is publication of results, the policy of the department requires that all research you conduct be published within a reasonable length of time after the research is completed. The length of time deemed reasonable will, of course, vary with the nature of the research, and any extenuating circumstances will be considered. If the project leader (usually your major professor) determines that you have failed to write up the research results in thesis or dissertation in a reasonable length of time (usually six months after obtaining the data), your major professor may proceed to prepare a scientific manuscript for publication. This would naturally preclude use of the data for a MS thesis or PhD dissertation, as it will no longer be your work; you may or may not be included as a coauthor.

Authorship of manuscripts

Authorship resulting from research programs is a measure of recognition for the individuals who made substantive contributions to the research effort. Responsibility for inclusion and establishing the order of authorship for any article rests with the project leader (typically, the PI of the project or your major professor). The subject of authorship should not be taken lightly by the project leader and should reflect as accurately as possible the relative contributions of those involved. Generally you will be first author on publications based on your research, but that assumes you have taken primary responsibility for writing the manuscript. Generally, you will not be first author if you have left the university and have not continued contributing to writing the manuscript(s).

Authorship should be established by determining the specific contribution each person made in the conduct of the research. Those who made significant inputs in the planning, execution, analysis and evaluation of the research should be considered for authorship. People who performed routine functions as a part of their position description aren’t always included as an author. Other types of recognition can be given to contributors who do not warrant author status, i.e. acknowledgements and footnotes. Of course, many people who may contribute to the success of the research effort and the completed manuscript are never recognized because of the nature of their work assignments. Since so many different people with different skills are usually associated with the conduct of any experiment, it becomes an impossible task to attempt to recognize all who made contributions through authorship.

Involvement in Departmental Functions

You should take advantage of every possible opportunity to improve your professional abilities, and in fact this is expected. This includes not only formal coursework, but all
department and institutional seminars, defense seminars, and journal clubs when available. Depending on the source of your part-time employment opportunity, assisting in the classroom is also an expectation. The greatest learning experiences may be through exercising an intensely inquisitive mind by reading current literature in the field, informal discussions with faculty, staff and other graduate students, attendance at scientific meetings and participation in many other functions of the department. Indeed, much can be learned in classic discussion with fellow graduate students. Students unwilling to participate in these will miss much in their program and may take longer to earn the degree.

**Membership in Professional Organizations**

Membership in professional organizations, including but not limited to American Society of Animal Science, American Dairy Science Association, Poultry Science Association, and the American Association of Veterinary Immunologists is highly encouraged. Many societies have "associate" or "student affiliate" memberships for graduate students at reduced cost. Remember you are training for a profession and should begin to direct your interests accordingly.

**Teaching Activity and Research Project Training and Approvals**

Teaching and research are likely to require the use of animals, which requires IACUC (**Institutional Animal Care and Use Committee**) approval. As a member of the Animal Science department, you are required to successfully complete IACUC training and participate in OHP. Similarly, there are safety regulations for laboratory work, and you must undergo all necessary training. Committees on Biosafety, Radiation Safety, IRB monitor research activities that use hazardous materials and use of human subjects. If your research involves human subjects in any way, the University IRB must approve the research plan. Details can be found in the Research Office.
Admission Requirements for MS and PhD Programs

To be considered for admission, a student must have at least a 3.0 grade point average (GPA) on a 4.0 scale in a completed undergraduate degree program in Animal Science or related field (or at least a 3.0 GPA each term during the junior and senior years). Prerequisite courses with grade of B or higher may be required if the applicant has insufficient background or low GPA.

Domestic students must satisfy the GPA above 3.0 requirement in any graduate work they have completed. International students that have taken graduate classes must have a 3.5 GPA for previous graduate classes (http://graduateadmissions.utk.edu/int-adm-guide.shtml).

In addition to the materials to be submitted to the Office of Graduate Admissions, applicants must request at least THREE Animal Science rating forms be submitted by professors familiar with the applicant’s scholastic ability and professional potential. At least two of the three individuals requested to provide a rating form must be from the applicant’s former academic institution(s). It is critical for the individuals providing references to hold similar academic credentials as the position the applicant is seeking to provide a meaningful assessment of the skills and abilities the applicant possesses relative to success in a research-based graduate program. If the applicant was previously enrolled in a graduate program, one rating form must be completed by the graduate mentor (major professor).

Admission will be contingent upon evaluation of the applicant’s undergraduate or graduate grade point average, Graduate Record Examination (GRE) scores, information provided by evaluators or others, educational and career goals, relevant experience, and scores from the TOEFL or IELTS, if applicable. Final admission is contingent upon the applicant obtaining a commitment from a graduate research faculty member to serve as their graduate mentor (major professor).

Applicants to the PhD program normally should have completed a MS degree with thesis before beginning the doctoral program. In exceptional cases where a student is admitted to PhD program having only a BS and/or DVM but no thesis-based MS degree, they would be expected to obtain a Concurrent MS degree. If on an assistantship, the student will start at MS pay rate (for departmental support – mentors can supplement as desired). Student is required to submit a manuscript containing their initial original research efforts to a scientific peer-reviewed journal. Submitted manuscript would then be formatted as a thesis and presented in an oral defense. Upon completion of MS degree requirements (24 graduate credit hours + 6 credit hours of ANSC 500), the student would then be paid at PhD rate and be expected to complete remainder of PhD requirements and milestones as stated in graduate catalog and herein.
Accelerated Five Year BS-MS Program, Animal Science Major

For qualified students, the Department of Animal Science offers an accelerated 5-year BS-MS degree program with a BS major in Animal Science and a thesis-based MS major in Animal Science. Central to this program is that a qualified student may take up to 9 hours of approved graduate courses for their senior undergraduate electives and have them count toward both the BS degree and the MS degree. Students are typically considered for conditional admission to the program during, or immediately following, their third year of undergraduate study at UT. Because the MS program requires that a student write a thesis based on original research, efforts related to developing and starting a research-based project in consultation with a graduate advisory committee (that meets MS committee requirements) is required immediately following their third year of undergraduate studies.

To be considered for conditional admission to the program:

1. A student must be a declared Animal Science major with a minimum GPA of 3.4, must have completed at least 15 hours of credit in Animal Science, and must have completed at least 90 hours of the 120 hours of coursework required for the BS degree with a major in Animal Science.
2. A student must provide three letters of recommendation and complete a personal interview with individuals comprising the Graduate and Undergraduate Committees in the Department of Animal Science.
3. A student must obtain a commitment from an Animal Science graduate research faculty member to serve as their graduate mentor-advisor (i.e., major professor) and at least two other graduate research faculty members to serve on their graduate advisory committee.

Applicants are required to have completed at least 6 credit hours from the following Animal Science core courses (i.e., ANSC 320, ANSC 330, ANSC 340, ANSC 380 or their Honors counterparts). The Department may consider other relevant factors such as an applicant's work experience and level of maturity before conditionally admitting a student to the BS-MS program. Conditional admission of a student into the 5-year BS-MS program must be approved by both the Department of Animal Science and the Graduate School. Students will be typically informed of the outcome of their application before the beginning of their fourth year of undergraduate study.

Any course taken for graduate credit before satisfying all requirements for the BS degree must be approved both by the Graduate Director and by the Graduate School. These courses must be identified in advance, in consultation with the graduate advisory committee members. The form "Senior Requesting Graduate Credit" is found on the Graduate School website and must be completed, signed, and submitted to the Graduate School for approval and processing.

UT’s Senior Privilege rule imposes a maximum limit of 9 hours on the number of graduate-level hours that an undergraduate student may complete before completing an undergraduate degree and being formally admitted to the Graduate School. A student that is conditionally admitted to the BS-MS program completes 9 hours of graduate credit during the student's fourth year of undergraduate study (by submitting
the "Senior Requesting Graduate Credit Form" to the Graduate School), and applies those 9 hours to satisfy BS degree requirements may also apply the 9 hours towards MS degree requirements.

Conditional admission into the BS-MS program does not guarantee acceptance into either the Graduate School or the MS program. Students in the BS-MS program must apply for admission to the Graduate School and to the MS program during their fourth year of undergraduate study, following the same procedures that all other student applicants follow. A GRE score must be submitted as part of the application for admission into any graduate program in the Department of Animal Science. Students will be fully admitted to the MS program after they have been accepted both by the Graduate School and by the Animal Science MS program. Students will not be eligible for graduate assistantships until they are enrolled as graduate students in the Graduate School.

**Accelerated MS-DVM Program, Animal Science Major**

For qualified students, the Department of Animal Science offers an accelerated MS degree program for individuals pursuing a doctor in veterinary medicine degree. Central to this program is that a qualified veterinary student may have up to 9 credit hours of veterinary medicine courses count toward both the doctor of veterinary medicine degree and the MS degree. To this end, a student may earn the DVM and MS in about five to five-and-a-half years rather than the six to six-and-a-half years that otherwise would be required.

Normally, students would be considered for conditional admission to the program during, or following, their first year of veterinary medicine study at the University of Tennessee, College of Veterinary Medicine. Because the MS program requires that a student write a thesis based on original research, efforts related to identifying a graduate mentor and starting a research-based project in consultation with a graduate advisory committee (that meets MS committee requirements) are appropriate in and around or following their first year of veterinary study.

To be considered for conditional admission to the program:

1. A student must be a declared Veterinary Medicine major with a minimum GPA of 3.0 and must have completed at least one semester of coursework required for the Veterinary Medicine degree.

2. A student must also coordinate the provision of three letters of recommendation and complete a personal interview with individuals comprising the Graduate Committee in the Department of Animal Science and College of Veterinary Medicine.

3. A student must obtain a written commitment from an Animal Science graduate research faculty member to serve as their graduate mentor-advisor (i.e., major professor) and at least two other graduate research faculty members to serve on their graduate advisory committee.
The Department may consider other relevant factors such as an applicant's work experience and level of maturity before conditionally admitting a student to the MS program. Conditional admission of a student must be approved by the Department of Animal Science, College of Veterinary Medicine, Herbert College of Agriculture, and the Graduate School.

The student must have earned a grade of at least a "B" in A - F graded courses in any of the eligible courses to be taken for graduate credit before satisfying all requirements for the DVM degree. Courses to be used for MS graduate credit must be approved by both the individual's graduate advisory committee and by the Graduate Director. These courses should be identified, in consultation with the student's graduate advisory committee members and be listed on the Animal Science Conditional Admission Form for the Five Year DVM/MS program. The Animal Science Conditional Admission Form is available from the Animal Science Graduate Program Director and must be completed, signed, and submitted to the College of Veterinary Medicine, Herbert College of Agriculture and the Graduate School for final approval and processing for conditional admission.

There is a maximum limit of 9 credit hours on the number of veterinary medicine-level hours that a student may complete before completing doctor of veterinary medicine and being formally admitted to MS program. A student that is conditionally admitted to the MS program completes 9 credit hours of veterinary credit approved by their graduate advisory committee, and applies those 9 credit hours to satisfy DVM degree requirements which would also be applied to the MS degree course requirements. In cases where veterinary medicine courses that are to be used for the Animal Science MS degree are completed before applicant requests consideration for conditional admission (e.g., animal physiology or other courses), this coursework may be used for MS degree if the individual obtains approval from their graduate advisory committee and the Graduate Director.

Conditional admission into this type of accelerated program does not guarantee acceptance into either the Graduate School or the MS program. Students would normally apply for admission to the Graduate School and to the MS program during their fourth year of study in the DVM program, following the same procedures that all other MS student applicants follow. At that time, GRE scores must be submitted as part of the application for admission into any graduate program in the Department of Animal Science. Students will be fully admitted to the MS program after they have been accepted both by the Graduate School and by the Animal Science MS program. Students will not be eligible for graduate assistantships until they are enrolled as graduate students in the Graduate School in the Department of Animal Science Graduate Program.
Application Procedures for MS and PhD Programs

Please review the following information carefully as success of your application will depend on submission of the following materials to the Office of Graduate Admissions. More detailed instructions are provided by the Office of Graduate Admissions. Individuals interested in applying for the MS or PhD program please provide items detailed in 1-5 appearing below. Individuals interested in applying for our accelerated five year BS-MS or MS-DVM Programs, contact Dr. Lannett Edwards by email (jedwards@utk.edu) to obtain application.

1. GRADUATE APPLICATION FORM
   APPLY ONLINE As part of the online application, you will identify at least THREE individuals able to assess your previous academic and/or research experience and ability to succeed in graduate studies. Two out of three of these individuals must be from your former academic institution(s). If you were previously enrolled in a graduate program, your graduate advisor should be chosen as one of your evaluators. A decision will not be made regarding admission without these materials - contact Denice Milligan below to monitor your application status.

As part of the application process, you are expected to identify potential major professors to mentor you. See the list of research faculty to assist with this, and email individual faculty for more information and to determine their willingness to mentor you.

2. APPLICATION FEE
   (Non-refundable and must accompany application)

3. TRANSCRIPTS
   (One transcript from all colleges and universities attended; do not send until you apply)

4. TOEFL SCORES
   (if your native language is not English)

5. GRE SCORES

Attention International Students: See also the Admission Guide for International Students:

   o Pay particular attention to deadlines
   o Note that additional forms are required

Please contact us if you have questions, or wish to schedule a visit.

Ms. Denice Milligan, dmilliga@utk.edu 865-974-6389
Department of Animal Science
University of Tennessee
2506 River Drive
149 Brehm Bldg
Knoxville, TN 37996-4574

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Part-time Employment Opportunities

A limited number of opportunities are available for students in the form of part-time employment while pursuing the MS or PhD degree. These opportunities are in the form of teaching assistantships, research assistantships, and biweekly payroll assignments. Reappointment is based on continued progress towards the degree. The expectation is that support will be terminated after 2 years for MS and 3 years for PhD students.

Assistantships are awarded only to students who have exhibited a high level of scholarly achievement. This is done to ensure that the student can complete a rigorous and high-quality graduate program while carrying out the responsibilities inherent to an assistantship. Assistantships are part-time employment, and differ from scholarships or fellowships awarded solely based on merit, allowing students to focus on their courses and research project. Students who receive assistantships or biweekly payroll assignments are expected to exhibit the same degree of commitment, responsibility, and accountability as any other staff member employed by the University. Continuation of part-time employment is contingent upon adequate progress in the degree program, as described in the Evaluation section.

The department assumes that any student on assistantship will have no other employment outside the University.

Graduate Research or Teaching Assistantships

In the department, both teaching and research assistantships are available to students and gives them the opportunity to work within the department to enhance their training. The number of assistantships available in a given year varies with funding available to the department and individual faculty members. Students are expected to provide 10 hours MINIMUM service for a ¼ time assistantship, 20 hours MINIMUM service for a ½ time assistantship, and 30 hours MINIMUM service for a ¾ time assistantship, per week. These duties can and often fall outside a student's thesis or dissertation research responsibilities.

Graduate Teaching Assistantships (GTA)

Graduate Teaching Assistants work under the direct supervision of a teaching faculty member in activities such as helping to prepare lectures, teaching discussion sections, conducting laboratory exercises, grading papers, keeping class records, etc. The GTA should not be considered as support for your research activities, and adequate progress in the research program is expected beyond the assistantship duties. During the summer semester, when classes normally are not held, GTAs should report to the department head for work assignments.

A GTA orientation provided by the Graduate School is required in the fall of your first year. All GTAs whose first language is not English must be registered with the ITA Testing Program (http://gradschool.utk.edu/graduate-student-life/ita-testing-program/) and pass the OPIc exam before assuming teaching responsibilities.
Graduate Research Assistantship (GRA)

GRAs at the MS and PhD levels will generally be defined as ¼ or ½ time employment. When GRAs are not in class, they should be available to assist their major professor and the department. GRAs may be assigned teaching duties, particularly if the GRA is funded from departmental sources. The purpose of graduate research assistantships is to further the major professor or department’s research goals. It is not payment for your time spent on a thesis or dissertation project.

Graduate Student Competitive Stipend

For applicants to the MS or PhD programs, after an affirmative vote by the Graduate Committee and department head approval, mentors may supplement the GRA/GTA stipend offer by a fixed amount (see Business Manager for this amount) using soft money sources. The supplement may be renewed on an annual basis given satisfactory degree progress.

Benefits

Graduate assistants are a special class of university employee. The IRS considers assistantship support taxable, as it is not a fellowship or scholarship. It is a type of employment with the following benefits.

- Annual stipend
- Costs associated with required coursework (i.e. for MS students the maintenance fees for 24 graduate credit hours plus 6 hours of ANSC 500). Note that you are responsible for other fees, including health, library, technology, facilities, transportation, special course fees, etc. (see Bursar’s website)
- Health insurance
- While you do not earn sick leave or vacation days, flexibility in scheduling can be obtained from your supervisor

It is important to note that maintenance fees are a real expense to the department or other funding source. Therefore enrolling in excessive hours not approved by your advisory committee or unnecessary to meet degree requirements is not permitted. Should you do so, or fail to complete a course (grades D, F or W), YOU may be personally responsible for maintenance fees for that course.

Bi-weekly Payroll Assignments

A number of graduate students have been hired on a part-time basis to assist in teaching and research operations. These students are paid on an hourly basis and generally have more flexibility as to the time for performing their duties.

Fellowships

A number of fellowships are available through the Graduate School. These awards are for full-time study at UT Knoxville, and awardees are selected on the basis of high achievement, broad intellectual ability, and potential for significant career contributions.
Registration Procedures and Requirements

Registration online procedures, information and requirements are available on Registrar’s website and in the Graduate Catalog. Be sure to pay your fees, or your registration will be cancelled!

Departmental recommendations and requirements are as follows:

- Graduate students must provide their major professor the opportunity to review and approve courses before registering for any given semester.
- Use of Student Health Services is dependent on registration/enrollment in at least 3 credit hours (Fall/Spring semesters) and payment of student health fee.
- Registration/completion of at least 3 credit hours of ANSC 500 or 600 is required the semester in which the thesis/dissertation is to be accepted by the Graduate School. Careful planning is needed to ensure that these credits are not taken excessively. Unnecessary course maintenance fees (excessive registration or withdrawal from a course without your advisory committee permission) may be your personal responsibility. To obtain approval from graduate director to register for ANSC 500 or 600, you must send an email to the graduate director (cc your graduate mentor and Denice Milligan) indicating the number of ANSC 500 or 600 completed to date, expected timeline for graduation consistent with Graduate School’s 1st or 2nd deadline for relevant semester, and the number of ANSC 500 or 600 hours you are requesting for registration. In this email, be sure to state that you have met with your mentor and that they agree that you are on track to graduate within stated timeframe.
- Because continuous enrollment is required for ANSC 600, please avoid beginning your registration in ANSC 600 in the spring semester (because this then requires registration in the summer).
- As per graduate catalog, continuous enrollment is required and maintained by registering for a minimum of one graduate credit hour per semester (excluding the summer). Graduate students who have started taking dissertation hours (course 600) must maintain a minimum of three credit hours per semester during all semesters, including the summer.
- If you do not register for any coursework in either Spring or Fall semesters, you will need to reapply for admission to the Graduate School.

Graduate Assistants (i.e., GRAs, GTAs or GAs) must register for at least 3 graduate credit hours during the Fall and Spring semesters to utilize the health insurance benefit.

- ANSC 500, 600 or 502 registration requires approval of the graduate director
- While it is possible to register up to the maximum allowable credit hours as per graduate catalog, be informed that the department covers only those costs associated with required coursework (e.g., 24 graduate credit hours plus 6 hours of ANSC 500 for MS program). Students may be required to reimburse department for costs associated with “excessive” coursework not central to program of study
• Do not withdraw from a class. You will be personally responsible for any resulting maintenance fees unless there are extenuating circumstances

• **F1 International Students** are responsible for maintaining legal status and valid documents. The [Center of International Education](#) (CIE) is the central office for providing advice for international students. Students must contact them directly and ahead of time when in need of advice for maintaining legal status. Details for international students can be found at maintaining status.
  - Graduate assistants (GA/GRA/GTA; 0.5 time appointment working a minimum of 20 hour per week) must register/enroll/complete at least 6 graduate credit hours each Fall and Spring semester
  - All others must register/enroll/complete 9 graduate credit hours each Fall and Spring semester
  - Students must obtain permission from CIE *before* registering for less than the number of credit hours required to achieve full-time status.
  - Some changes in registration are also subject to Graduate School approval.
  - Courses taken for audit credit do not count towards immigration requirement for maintaining full-time enrollment
    - In the final term a student may register for only the minimum credit hours required to graduate, however *written permission from CIE is required before registration* (contact a CIE advisor for additional information)
    - Students must always maintain a valid I-20 during program of study
Degree Requirements: Master of Science

The program requires that you write a thesis based on original research, completion of 24 hours of graduate coursework, plus 6 hours of ANSC 500. Coursework must include the following:

- **24 hours coursework**
  - Minimum of 14 hours 500+ courses (not including ANSC 500, ANSC 502)
  - 1 credit hour of teaching/extension experiential learning (eg. AGNR 512)
  - 3 credit hours statistics approved for use in the Intercollegiate Graduate Statistical Program (IGSP)
  - 1 credit hour of research ethics (eg. ANSC 525)
  - 3 hours of graduate-level multi-systems physiology coursework (approved by your advisory committee)
  - You are required to pass ANSC 696 each spring term of your first and second year.

- **6 credit hours thesis research (ANSC 500)**

**Minimum hours = 30**

See Appendix I for further descriptions of courses commonly taken by Animal Science graduate students. You will select the remainder of coursework based on your area of emphasis and professional objectives, in consultation with your major professor and advisory committee. Generally it is recommended that a 400 level animal production course be taken if your Animal Science background is limited, and a molecular biology course can be useful for all life science research. A majority of coursework must be completed at the University of Tennessee. A maximum of 10 hours may be transferred from institutions outside the University of Tennessee system with approval by your advisory committee and the UT Graduate School.

**Master’s Committee**

During the admission process, you identified and were assigned a major professor who will provide the training to help you attain the degree and career goals. Your major professor directs your research and thesis program.

A minimum of 3 faculty members at the rank of assistant professor or above, one of whom must be a non-adjunct Animal Science faculty member, will constitute your advisory committee. The major professor will chair the committee. You and your major professor select at least two additional committee members, one of whom may be outside the Animal Science Department. Take effort to select individuals that will be actively engaged research planning, conduct, analysis and/or interpretation thereafter. Expect enough from each such that their efforts may warrant coauthorship on resulting publications. The committee members should be chosen during your first semester. Your advisory committee will assist you in planning a course of study before the second term of your graduate program. Your advisory committee may require and/or recommend specific courses in addition to those required by the program.

Your advisory committee aids you in formulating and completing an appropriate research project and evaluates the achievement of degree requirements. Your advisory committee approves your coursework and written research proposal, and conducts the final examination which consists of a comprehensive oral examination and a thesis defense.

YOU are responsible for coordinating meetings of the advisory committee and obtaining and/or preparing required materials such as appropriate Graduate School forms, transcripts,
progress reports and research proposals for the meetings. Always check with your mentor to determine their availability before attempting to use Doodle to schedule meetings or defense.

Selection of Research Problem

You are responsible, in consultation with your major professor, to select an appropriate research problem early in your graduate program. The research problem should be selected **no later than the second semester** of your program. Although your research program usually relates to the overall research program of your major professor, the initiation and conduct of original research based on your ideas will be encouraged when possible. It should be remembered, however, that most funds which support graduate research programs are derived from UT AgResearch and extramural funds that impose certain responsibilities on the major professor and the department.

Research Proposal

You must submit a research project proposal to your advisory committee by the end of the **third semester** of matriculation. For example, if you started in the Fall semester, your proposal is due by the next summer. Research proposals usually consist of a literature review, statement of objectives, proposed procedures and methods (including experimental designs), proposed statistical analysis techniques, literature cited and budget. It is recommended that proposals be written in a format similar to the "Project Description" section of a federal Competitive Grant Application (eg. USDA or NIH), and that the proposal not exceed six pages. Your committee can provide more specific recommendations.

Timings for all of the above semester deadlines will be adjusted if you are working part-time towards the degree (for example you are employed full- or part-time in a position other than a GTA or GRA). However, all students must meet Graduate School time limits for degree completion.

Admission to Candidacy

Admission to candidacy reflects agreement between the graduate advisory committee and the Graduate School that you have the ability to do acceptable graduate work and that normal progress has been made towards a degree. This action usually connotes that all prerequisites to admission have been completed and a program of study has been approved. Application for admission to candidacy may be made after you have completed at least 9 hours of coursework and have a minimum GPA of 3.0. You must submit an Admission to Candidacy form ([http://gradschool.utk.edu/documents/2016/02/admission-to-candidacy-masters-or-specialist-degree.pdf](http://gradschool.utk.edu/documents/2016/02/admission-to-candidacy-masters-or-specialist-degree.pdf)) to the Graduate School **no later than the last day of classes** of the semester preceding the one in which you expect to graduate.

Thesis Registration

You must be registered for ANSC 500 for a **minimum of 3 credit hours the term in which the thesis is accepted** by the Graduate School. A total of 6 hours of ANSC 500 are required. More hours should not be taken, as only 6 hours are allowed on the candidacy form. After receiving the master's degree, you are no longer permitted to register for ANSC 500. Permission to enroll in ANSC 500 must be obtained by emailing Dr. Lannett Edwards (jedwards@utk.edu).
Thesis

The Master of Science degree requires you to conduct a research project and to write an approved thesis prior to the final examination. The general rules of the University of Tennessee Graduate School and the specific requirements of the Animal Science Department regarding format must be followed. Graduate School rules regarding margins, footnotes, paper, etc., can be found in the thesis guide (http://web.utk.edu/~thesis/thesisresources.shtml). You are required to write your thesis in scientific journal format. Typically this includes 1) a literature review with references, 2) chapters, each constituting a manuscript in a specified journal format (i.e., title, abstract, introduction, materials and methods, results, discussion, and references), 3) the final chapter containing a general discussion of ALL research and may contain results deemed unpublishable, 4) any appendices, and 5) the vitae.

The final draft of the thesis must be distributed to all committee members at least two weeks prior to the date of the final examination. Failure to compose research chapters in a journal article format may delay the scheduling of your thesis or dissertation defense. Note the manuscript(s) are not necessarily in final form for submission, but should be self-contained as described above.

To schedule your defense, copy(s) of your journal formatted research chapter(s) must be submitted electronically in pdf format to the Chair of the Graduate Committee (Dr. Peter Krawczel). On that correspondence be sure to cc your graduate advisor and other graduate advisory committee members. Upon “quick” review of effort to compose a manuscript “ready” document, Graduate Committee Chair will notify Renee Thomas and Dr. Neal Schrick that you have met this requirement and are approved to schedule your defense and announce to the department. When identifying dates and times, please be mindful that others may be defending on the same day as you. Because committee members may be serving on other graduate student committees that may be targeting the same day as you, be sure to schedule defense in the am, no later than 9 am or in the pm, no later than 1 to 2 pm. This will minimize potential for overlap and allow for maximal participation by any/all available to attend.

Some suggestions for thesis writing:
- Write the literature review early, for example in conjunction with writing your research proposal
- Write materials and methods as soon as research procedures are established
- Similarly, the results section can be written as results are obtained
- Allow at least 3-6 months for writing the research chapters. We recommend these manuscript chapters be the focus of your writing. Write these first, then bundle with other sections to form the thesis draft.
- Expect to submit multiple drafts to your major professor before being allowed to distribute the document to your advisory committee
- Writing always takes longer than you expect, particularly the discussion section

Final Examination (Thesis Defense)

You must pass an oral defense of your thesis, consisting of a public presentation and an oral exam. You will present a departmental seminar on your research immediately before the oral examination. This seminar is open to all faculty, staff and students and it is your responsibility, upon approval of your major professor, to schedule the seminar at least one week in advance by contacting the Animal Science graduate program assistant. Because of the importance every graduate committee member participating in the defense, making sure that all are available should be done much earlier in the process. The presentation typically lasts 45 minutes, followed by questions. Family visitors may be asked to leave the room during the
questioning. After the research presentation, an oral exam and thesis defense will be administered by your advisory committee - all committee members must participate in real-time, even if electronically. This defense is open to all faculty members with rank of assistant professor or higher. The oral exam may cover all coursework and the thesis research, plus any other topics related to the animal sciences. Suggested edits to the thesis document from committee members should be expected on the day of the exam, either electronically or hard-copy. If suggestions are extensive, committee members will request another review of the thesis before signing their approval.

Bring two copies of the pass/fail form to the defense. After passing and gathering all signatures, walk one copy to the graduate school. The other will be used to make departmental copies. [http://gradschool.utk.edu/documents/2016/02/report-of-final-examination-defense-of-thesis-project-capstone-masters-or-specialist-degree.pdf](http://gradschool.utk.edu/documents/2016/02/report-of-final-examination-defense-of-thesis-project-capstone-masters-or-specialist-degree.pdf).

If you find that you will not make the first deadline for thesis defense and electronic submission of the final thesis document, there is a second deadline date, usually 3 or 4 weeks later. If you can meet that deadline, you will officially graduate the following semester, but you do not have to register in that semester. To take advantage of this, you must submit an application, [http://gradschool.utk.edu/documents/2016/02/second-deadline-graduation-application.pdf](http://gradschool.utk.edu/documents/2016/02/second-deadline-graduation-application.pdf).

### Time Limits

Graduation deadlines and required forms are an unforgiving set of rules. The semester before you graduate, go to [http://gradschool.utk.edu/graduation.shtml](http://gradschool.utk.edu/graduation.shtml) and follow the instructions and deadlines. Master of Science candidates have six calendar years from time of enrollment in the Graduate School to complete the degree. Courses taken more than 6 years ago cannot be used to meet degree requirements.

### Concurrent Master’s Degree Program

In exceptional cases where an individual is admitted to PhD program having a BS and/or DVM only but no thesis-based MS degree, individual will be required to complete a MS degree in the continuum of PhD program efforts. If departmental stipend is awarded, individual would start at MS pay rate. Individual would work with their graduate advisor to submit a manuscript containing their initial original research efforts to a scientific peer-reviewed journal, normally after 2 years in the program. Submitted manuscript would then be formatted into a thesis for presentation at an oral defense. Upon completion of MS degree requirements (24 graduate credit hours + 6 credit hours of ANSC 500) individual would then be eligible for PhD stipend rate and complete PhD requirements as outlined in departmental graduate student handbook.
Degree Requirements: Doctor of Philosophy

The PhD program requires that you write a dissertation based on your original research, at least 24 hours graduate coursework at the 500 and 600 levels beyond the master's degree, plus 24 hours of ANSC 600. Coursework must include the following:

- Minimum of 8 credit hours in related fields outside animal science (any cross-listed course may be used)
- At least 6 credit hours must be at the 600-level
- 1 credit hour of teaching/experiential learning (eg. AGNR 512)
- 3 credit hours of statistics approved by the IGSP (or 6 credit hours if the MS program had no statistics coursework)
- 1 credit hour of research ethics if not taken for the MS degree (eg. ANSC 525)
- 3 credit hours of graduate-level multi-systems physiology coursework if not taken for the MS degree (as approved by your advisory committee)
- You are required to pass ANSC 696 each spring term in your first and second year

Transfer Credits

At the doctoral level, courses are not officially transferred although they may be used to meet degree requirements with approval of your advisory committee.

Doctoral Committee

You will have already been assigned, as part of the admission process, a major professor who will provide you with the training necessary to help attain your career goals. Your major professor will direct your research and dissertation program. You and your major professor will select your doctoral advisory committee, with the major professor serving as chair. At least 4 additional faculty members at the rank of assistant professor or above must be chosen. At least 1 member must be outside the Department of Animal Science, 2 members must be non-adjunct Animal Science faculty, and at least 3 members must be approved for directing doctoral research, which includes your major professor. Take effort to select individuals that will be actively engaged research planning, conduct, analysis and/or interpretation thereafter. Expect enough effort from majority such that their efforts may warrant coauthorship on resulting publications.

The advisory committee approves the program of study and dissertation research proposal, and conducts the comprehensive written and oral examination and final dissertation defense examination. The student’s doctoral committee should be officially appointed by the end of the first semester of matriculation (during summer if you entered in the spring). This requires submission of the Doctoral Committee Appointment form to the Graduate School (http://gradschool.utk.edu/documents/2016/02/doctoral-committee-form.pdf).

Committee Meetings

You are responsible for coordinating meetings of the doctoral advisory committee and obtaining and/or preparing required materials such as appropriate UT Graduate School forms, transcripts, progress reports and research proposals for the meetings. Always check with your
mentorto determine their availability before attempting to use Doodle to schedule meetings or defense.

Generally, a minimum of four committee meetings are necessary to monitor progress towards the PhD degree.

- You and your major professor select a program of study depending on your area of emphasis and professional goals. This program is amended and approved by your advisory committee before the end of your 2nd semester. Since coursework depends on the proposed research topic, a general statement of planned research is needed at this time.
- You are expected to present a written research proposal to your advisory committee no later than your 4th semester.
- After most of your coursework has been completed, you must meet with your advisory committee to take the comprehensive exam, and after passing this exam you submit the candidacy form.
- The fourth meeting is your dissertation defense.

Additional meetings may be requested by you, your major professor, or by members of your advisory committee in order to review progress in coursework and research. Timings for all of the above will be adjusted if you are working part-time towards the degree (for example you are employed full- or part-time in a position other than a GTA or GRA). However, all students must meet Graduate School time limits for degree completion.

PhD Research Proposal

You, in consultation with your major professor, are responsible for selecting an appropriate dissertation research problem. Although the research you conduct usually relates to the overall research program of your major professor, the initiation and conduct of research based on your original ideas will be encouraged when possible. It should be remembered, however, that most funds which support graduate research programs are derived from UT AgResearch and extramural funds that impose certain responsibilities on the major professor and the department.

You must submit to your major professor and advisory committee a research project proposal no later than the 4th semester of matriculation in the PhD program. The research proposal should consist of a literature review, statement of objectives, proposed procedures and methods (including experimental designs), proposed statistical analysis techniques, expected outcomes, literature cited and budget. It is recommended that your proposal be written in a format similar to the "Project Description" sections of federal Competitive Grant Applications (eg. USDA or NIH), and that the proposal not exceed 12 pages. Your committee can provide more specific recommendations.

Doctoral Comprehensive Examination

The comprehensive exam is administered by your advisory committee and consists of both written and oral examinations. Overall, this examination reflects all knowledge that you have been introduced to – including coursework, literature related to your research area, research problems and techniques. Generally, each member of the committee submits a series of written questions to you. The exact format can vary with each committee member and ranges from take-home, open book exams to closed book, timed exams. Once the written exams are completed and answers are evaluated as satisfactory, your committee administers an oral examination. The oral portion may include follow-up questions from the written exam, but
again covers all knowledge you should have acquired. **All** members of your advisory committee must agree that you have completed the exam successfully to pass. Depending upon your performance, additional courses or other activities may be required by the committee. The comprehensive exam generally is scheduled after most of the coursework has been taken, and must be completed before you can apply for candidacy to the PhD program. This MUST be submitted at least by the semester preceding the dissertation defense (see current Graduate Catalog). If you do not pass the comprehensive exam, the committee in consultation with the graduate program director and Animal Science department head has the option to re-administer the exam within 6 months or dismiss you from the graduate program. Two failures will result in your dismissal from the program.

Some tips for the comprehensive exam:

- Faculty generally expect some knowledge of agriculture and animal science. This background may possibly be obtained by learning from, not just attending, departmental seminars and journal clubs.
- Faculty generally expect you to have some awareness of the research other graduate students within the department are doing, particularly within your specialization.
- Faculty will expect knowledge of the current literature. Pay attention to discussions in journal club, and read relevant articles in journals such as Nature, Science, Journals of Animal/Dairy/Poultry Science, and other key specialized scientific journals. You should have been talking with your advisory committee from day one about what journals and articles they consider to be critically important.
- A common misunderstanding is for students to think of this as the usual exam, where faculty ask questions, you answer, and you are either right or wrong. Instead, you should take the approach of teaching the committee about what you know. An important goal of the exam is to see if you can communicate in a scientific manner. The exam should almost be a conversation, almost like colleagues discussing current scientific knowledge.
- It is a good idea to meet with each of your committee members to gain insight into their expectations.

Once you have passed the comprehensive exam, you should fill out the candidacy form (next section), and this is the only record of your passing the exam.

**Admission to Candidacy**

Admission to candidacy reflects agreement between your graduate advisory committee and the Graduate School that you have demonstrated the ability to do acceptable graduate work and that normal progress has been made toward a degree. This action usually connotes that all prerequisites to admission have been completed, a program of study has been approved, the comprehensive exam has been passed, and at least a 3.0 GPA has been maintained in all graduate coursework. You are responsible for filing the Admission to Candidacy form ([http://gradschool.utk.edu/documents/2016/02/admission-to-candidacy-doctoral-degree.pdf](http://gradschool.utk.edu/documents/2016/02/admission-to-candidacy-doctoral-degree.pdf)). On this form list only those courses to be used to satisfy degree requirements, including courses taken at UTK or another institution prior to admission to the doctoral program. Admission to candidacy must be applied for and approved by the Graduate School **no later** than the last day of class for the semester preceding your expected graduation.

**Continuous Dissertation Registration**

The PhD degree requires 24 hours of ANSC 600 and you must register continuously every semester including summer (minimum of 3 hours) once registration for ANSC 600 has begun. Normally registration for ANSC 600 does not begin until after admission to candidacy. Try to avoid starting registration in ANSC 600 the spring semester, as that requires you to register
in the summer (increasing costs). It is advised that registration for ANSC 600 not exceed the
24 hour requirement since costly fees are assessed per credit hour. If you will not be using
faculty services and/or university facilities for a period of time, you may request a leave of
absence from dissertation research up to a maximum of six terms (including summer terms).
The request, to be made in advance, will be considered by the Graduate School upon written
recommendation of the Graduate Director.

Dissertation

The Department of Animal Science requires that you conduct a research program and that
you write a dissertation prior to the final examination. The general rules of the University of
Tennessee Graduate School and the specific requirements of the Animal Science Department
pertaining to the format described below must be followed.

Graduate School rules regarding margins, footnotes, paper, etc., must be followed. In
addition, you are required to write your dissertation in scientific journal format. Typically, a
dissertation so written would consist of 1) a literature review with references, 2) chapters, each
constituting a manuscript (i.e., title, abstract, introduction, materials and methods, results,
discussion, and references), 3) the final chapter, a general discussion of ALL research and
may contain results deemed unpublishable, 4) any appendices, and 5) the vita. The final draft
of the dissertation must be distributed to all committee members at least two weeks prior
to the date of the final examination. You are required to electronically submit individual
manuscripts from item 2 above in a specified journal format to your graduate advisory
committee (with a copy to the Chair of the Graduate Committee) as a condition for scheduling
your defense. Note the manuscript(s) are not necessarily in final form for submission, but
should be self-contained as described above.

Some suggestions for dissertation writing:

- Write the literature review early, for example in conjunction with writing your research
  proposal. It will need to be updated as new publications appear, of course.
- Write materials and methods as soon as research procedures are established.
- Similarly, the results section can be written as results are obtained. A common
  strategy is to first produce Tables and Figures covering your results, then write text
  based on those.
- Allow at least 6-9 months for writing the research chapters. We recommend these
  manuscript chapters be the focus of your writing. Write these first, then bundle with
  other sections to form the dissertation draft.
- Expect to submit multiple drafts to your major professor before being allowed to
  distribute the document to your advisory committee.
- Writing always takes longer than you expect, particularly the discussion section.

Final Examination (Dissertation Defense)

You must pass an oral defense of your dissertation. The PhD defense must be scheduled
through the Graduate School (http://gradschool.utk.edu/documents/2016/02/schedule-of-
dissertation-defense.pdf) at least one week prior to the examination.

Relevant for scheduling defense in the Animal Science Department, copy(s) of your
journal formatted research chapter(s) must be submitted electronically in pdf format to the
Chair of the Graduate Committee (Dr. Peter Krawczel). On that correspondence be sure to
cc your graduate advisor and other graduate advisory committee members. Upon “quick"
review of effort to compose a manuscript “ready” document, Graduate Committee Chair will
notify Renee Thomas and Dr. Neal Schrick that you have met this requirement and are
approved to schedule your defense and announce to the department. When identifying dates and times, please be mindful that others may be defending on the same day as you. Because committee members may be serving on other graduate student committees that may be targeting the same day as you, be sure to schedule defense in the am, no later than 9 am or in the pm, no later than 1 to 2 pm. This will minimize potential for overlap and allow for maximal participation by any/all available to attend.

You must present a departmental seminar on your research immediately before the examination. This seminar is open to all faculty, staff and students and it is your responsibility to publicize and announce the seminar at least one week in advance by contacting the Animal Science graduate program assistant, and filling out the Graduate Student form. The defense will be administered by all members of your doctoral committee after the oral presentation - all committee members must participate in real-time, even if electronically. This defense is open to all faculty members with rank of assistant professor or higher. Suggested edits to the dissertation from committee members can be expected on the day of the exam, either electronically or hard-copy. If suggestions are extensive, committee members will request another review of the dissertation before signing the approval form.

The pass/fail form for the dissertation defense is sent directly to your major professor. The only other form to possibly be signed at this time is the approval sheet (electronic cover page) of your dissertation.

If you find that you will not make the first deadline for dissertation defense and electronic submission of the final dissertation document, there is a second deadline date, usually 3 or 4 weeks later. If you can meet that deadline, you will officially graduate the following semester, but you do not have to register in that semester. To take advantage of this, you must submit an application, http://gradschool.utk.edu/forms-central/second-deadline-graduation-application/

**Time Limits**

Graduation deadlines and required forms are an unforgiving set of rules. The semester before you graduate, go to http://gradschool.utk.edu/graduation.shtml and follow the instructions and deadlines.

Doctoral candidates must complete comprehensive examinations within five years, and all requirements must be completed within eight years from the time of your first enrollment in a doctoral program. The Graduate School sets a time limit of eight years on coursework, so courses taken eight years ago may not be used to satisfy degree requirements.
Graduate education requires continuous evaluation of your progress. This evaluation includes your academic and research progress, and assistantship performance if applicable. Continuation in the program is determined by consideration of all these factors.

Academic Review

The academic schedules and records of all graduate students are reviewed at the beginning and end of each semester, including the summer term.

**Academic Probation**: Upon completion of six hours of graduate coursework in your current degree program, you will be placed on academic probation when your cumulative GPA falls below 3.0. You will also be placed on academic probation if you earn a NP grade in ANSC 500 or 600. Note that coursework from a previous degree (e.g. MS) is not included in these GPA calculations. You will be allowed to continue graduate study in subsequent semesters if each semester's GPA is 3.0 or greater and you do not receive further NP grades in ANSC 500 or 600. Upon achieving a cumulative GPA of 3.0, you will be returned to good standing.

**ANSC 511 and AGNR 512 hours will not be used in probation GPA calculations.** You cannot graduate while on probation, so if on probation you must eventually earn enough A's to raise your GPA above 3.0.

**Grades**: It may be helpful to think of grades for graduate coursework as follows

- **A**: Superior performance
- **B+**: Better than satisfactory performance
- **B**: Satisfactory performance
- **C+**: Less than satisfactory performance
- **C**: Performance well below the standard expected of graduate students
- **D**: Clearly unsatisfactory performance and cannot be used for degree requirements

As a graduate student, you cannot repeat a course for the purpose of raising a grade already received. You may not do additional work nor repeat an examination to raise a final grade. A change of grade may occur only in cases of arithmetic or clerical error. An instructor may not initiate a change of grade as a result of a reevaluation of the quality of your performance nor as a result of additional work performed by you.

Degree Program Progress

In accordance with Graduate School guidelines, your degree progress will be evaluated yearly by the Animal Science Graduate Committee. Typically this will be after finals of the 2nd, 4th and 6th Fall or Spring semesters in your program. No evaluation is done after the semester of graduation, so a typical 2 year MS program will have one evaluation, while a 2.5 year MS program will have two evaluations, as will a typical 3 year PhD program.

You will be notified by the Animal Science Graduate Committee when your evaluation is scheduled, and you must turn in the Academic Progress forms (in Appendix III) to the Animal Science Graduate Program Office two weeks before that date. Fill out the forms using the included guidelines. The Degree Milestones form will be filled out by the Graduate Committee during the evaluation (sample included in Appendix II), and you should be prepared to provide dates for each milestone. Other planning tools are included in Appendix II for your personal use.
Evaluation by your major professor will also be solicited by the Graduate Committee, and used as part of the evaluation. Similar to the form you fill out, your major professor will be asked to evaluate strengths and weaknesses of your performance, and identify limitations in your program, such as courses or necessary research equipment being unavailable.

The purpose of the evaluation is to assure that you are making appropriate progress and to discover areas that need you and your major professor's attention. The evaluation is also your opportunity to identify factors limiting your progress that are outside your direct control. The Graduate Committee can serve as an advocate within the department to help address such roadblocks.

Evaluation will result in a "Satisfactory" or "Not Satisfactory" rating along with explanatory comments. Comments with "Not Satisfactory" ratings will detail expectations for the next semester that must be met or termination may occur (see below). The evaluation will be sent to you and your major professor, with copies to the department head and will be included in your academic file. You may appeal a "Not Satisfactory" rating by written communication with any supporting documents to the Graduate Committee. If the appeal is denied, it will be automatically forwarded to the department head for resolution.

**Assistantship Performance**

If you have the privilege to hold a GTA or GRA position, your performance in the work assigned to you may be evaluated each semester. Performance evaluation will be conducted as with any employee, considering the quantity and quality of work that you have performed.

**Termination and Dismissal Procedures**

**Academic Probation:** You will be placed on academic probation if your UT cumulative grade point average (GPA) falls below a 3.0 and at least 6 hours of graduate coursework have been completed. You will also be placed on academic probation if you earn less than a C in any course, or if you are given an NP grade in ANSC 500 or 600, or if you withdraw from a course without pre-approval of your advisory committee. For doctoral students, coursework for the MS degree, whether taken at UT or elsewhere, will not be included in cumulative GPA calculations. You will be allowed to continue graduate study in subsequent semesters if each semester's GPA is a 3.0 or greater. Upon achieving a cumulative GPA of at least 3.0, you will be removed from probationary status. ANSC 511 and AGNR 512 hours will not be used in probation GPA calculations.

**Dismissal from the degree program**

Dismissal from graduate program may result if you are on academic probation and earn less than a 3.0 semester grade point average, or less than a C in any course, or NP in ANSC 500 or 600, or if you withdraw from a course without pre-approval from your advisory committee. Even if not on academic probation, other reasons for dismissal include failure to make adequate progress towards other degree requirements (e.g., research project, thesis/dissertation preparation), academic dishonesty (e.g., plagiarism, falsification of data), or other forms of gross misconduct as defined by the Office of Equity and Diversity, Human Resources, Dean of Students' Office, Hilltopics or Graduate Council. Dismissal will be accomplished by written notice to the student with a copy to The Graduate School.
Termination of financial support can occur, and is done by the following process. If performance reviews find any of the following:

- a grade of NP in ANSC 500 or 600
- Grades of D or F, or a W without pre-approval of your advisory committee
- Academic probation
- Failure to complete degree requirements within the time frames specified in this Handbook
- Inadequate performance of assigned duties or research activities

this MAY result in termination of financial support. The Animal Science Graduate Committee has the flexibility to consider any additional factors (including source of financial support) in making a final recommendation. This recommendation is sent to the department head and major professor. If in agreement, the department head sends a written notice of termination of financial support to the student, with copies to the major professor and Graduate Director. In most cases 30 day notice is given, such that the student will receive a final monthly paycheck at least 30 days after written notice is sent. However, if performance is very inadequate, termination can be immediate, even within a semester. For example, this can occur if you are essentially absent from all duties, making no research progress or are not available for assistantship duties. It is strongly recommended that you meet frequently with your major professor to keep them informed of your activities.

A major professor may initiate this termination of financial support process without involving the Animal Science Graduate Committee by working directly with the Department Head. This will typically occur when the student is being funded by the major professor, as opposed to departmentally-funded assistantships.

**Resignation from GTA, GRA, or degree program** If circumstances lead you to withdraw from any of these commitments, provide a hard copy letter stating your resignation to the department head and the Graduate Director. Note that not registering for any coursework in a Fall or Spring semester leads to automatic termination from the degree program, and will require a readmission decision by the Department, and payment of any associated readmission fees.

Note that if you resign during the semester, as opposed to between semesters, you will be personally responsible for tuition costs for that semester, even if you have a tuition waiver. Essentially a tuition waiver is given after completion of the semester, not at the beginning.
Department Facilities & Resources

Animal Science Graduate Student Association
You are encouraged to participate in our graduate student association. They have fun activities that help build camaraderie among the students, and relieve the stresses of graduate student life. As stated elsewhere, the more you put into your years here, the more benefits you will gain, and the association is an example of this.

Office, Desks and Keys
Attempts will be made to provide students a desk when possible and office/desk assignments will be made according to the following priority:

1. Students on assistantship
2. Students not on assistantship, but working on research
3. Others

Assignments will be made to allow for maximum exposure to other graduate students, especially within disciplines. If you do not intend to utilize this desk space fully, you should notify the department head so the space may be assigned to another student.

You may be issued keys to Animal Science facilities deemed necessary by your major professor and approved by the department head. Requests may be submitted through the department head's administrative staff. Only keys obtained by this procedure are authorized to be in your possession. Students who have unauthorized keys in their possession run the risk of dismissal from the program.

Routine Office Supplies
The department will provide the normal supplies needed by GRA's or GTA's in the execution of their assistantship duties. These may include clerical support when the materials are channeled through the major professor or faculty member in charge of the course. Teaching internship activity will also be supported when processed through the faculty member in charge of the course.

The department does not provide supplies for students to use in academic coursework.

Professionalism & Wearing Apparel
As a graduate student in our program, you are expected to maintain a high degree of professionalism both in and outside classroom, office and as you fulfill work or degree related responsibilities. You are expected to wear professional attire (ask your major professor if in doubt) when representing the Department, for example at field days, when in front of a classroom, or at professional meetings. The department will provide appropriate specialized materials such as surgical wear or protective laboratory apparel required in the execution of GRA or GTA duties. The department will not, however, provide apparel for routine activities, e.g., coveralls. Related to office space, please assist with keeping it an organized and conduct yourself in a manner expected in a professional work space. Because this space is occupied by others, please be respectful of others by limiting meetings/discussions not necessarily related to work. Please also refrain from posting or sharing non-work related information that could be deemed offensive by others.
Thesis/Dissertation Materials

The department will provide materials needed in the execution of the research program approved by your graduate advisory committee and department head. The typing of theses or dissertations is your responsibility as are paper and duplication charges.

Materials for Presentation of Research at Professional Meetings

Posters utilized in presenting research data at professional meetings may be provided via the major professor's research program funding, with approval. Likewise, preparation of figures, publication page charges, etc. incurred as a result of publishing thesis research will be provided via the major professor's research program, with approval.

Travel Funding

As budgets allow, the Department strives to provide travel support to one scientific or academic meeting annually for our graduate students, with priority given to those students who will be presenting their research or academic achievements. The funding timeline is based on our fiscal year, which runs from July 1 through June 30. Typically, registration, lodging, and travel costs (including Motor Pool charges, personal vehicle reimbursement, or airfare), are provided for the travel. When possible, graduate students of the same gender attending a meeting are requested to share rooms to minimize lodging costs. Meal per diems are not typically provided by the Department; however, faculty mentors have the option of providing such from grant, contract, and/or gift funds, as the granting or gifting agencies allow.

The Department Head must pre-approve all requests for departmental travel support, and has the option of rejecting requests that are not justified, are overly extravagant, or where budget constraints prohibit such. Requests to the Department Head should be submitted or discussed no later than 45 days before anticipated travel and earlier requests are strongly encouraged.

Graduate students requesting funds in support of travel should be prepared to provide the following:

- Justification for the travel, including the relevance of the meeting to the student’s program with emphasis on how it enhances research efforts or the student’s portfolio.
- Potential benefits to Department of Animal Science, UT AgResearch, Herbert College of Agriculture and/or UT Extension
- Evidence of application for funding from additional sources
- A document indicating the Major Professor’s support
- A detailed budget

Students and mentors are expected to seek other financial support to fully fund or cost-share travel and provide for additional travel opportunities to broaden the development of and increase professional networking opportunities for the graduate student.

For all university-related travel, UT personnel, including graduate students, must submit a Travel Authorization request and receive approval from the Department Head prior to the initiation of the travel.

- The travel authorization process is initiated by securing the appropriate form(s) from the Department Head’s Administrative Assistant.
Graduate students are strongly encouraged to work with their major professors in completing the form, which is then submitted to the Administrative Assistant for consideration by the Department Head.

Authorization forms should be submitted no later than 2 weeks prior to the anticipated travel. Earlier submission is strongly encouraged. Late submissions may be denied.

International travel requires approval by the Chancellor of UTIA, and thus must be coordinated though the Major Professor and Department Head well in advance (minimum of 3 weeks) of the travel.

Failure to properly complete or submit a Travel Authorization request prior to the travel WILL DISALLOW any subsequent reimbursement for travel expenses and WILL NULLIFY all insurance coverage normally provided to UT employees while on university-related travel.

Note that if you do not participate in the intended purpose of the travel (eg. present your paper), reimbursement of travel costs may be withheld.

It is recommended that all University related travel NOT involve your personal vehicle, as liability then becomes your responsibility.

**Departmental Vehicles**

Animal Science pickup trucks are available to facilitate Departmental activities and were purchased primarily for transport and hauling of large items, research equipment, animals, and research samples. To keep the trucks available for such, their use for general travel of personnel will have the lowest priority. For general travel, Motor Pool vehicles or personal vehicles (submit travel reimbursement) should be considered. Under justifiable circumstances and with the approval of the Department Head, the trucks may be used for general travel of personnel that has direct relevance to our missions and activities.

Requests for departmental vehicles begin with the student and mentor considering the need for the vehicle, and if deemed justified, a request is made through the Department Head’s Office Supervisor. A sign out sheet is used to manage vehicle reservation and use, with allocation on a first-come-first-served basis (assuming the use is within the priorities indicated above).

In case of conflicting needs for a departmental vehicle, the Department Head will consider the needs of each program within the context of Departmental priorities and provide a timely decision regarding the allocation of the vehicle. Where possible, following such a resolution, the Department Head may consider using Departmental funds to provide a Motor Pool vehicle or other transportation option for the program that was not able to reserve the truck due to conflicting needs.

Students and faculty should be aware that, as with motor pool vehicles, there is a cost associated with the use of departmental vehicles, including fuel, depreciation, and repairs, which the Department has traditionally covered. However, in cases of extreme or extended use by an individual program or user, the Department Head may confer with the appropriate faculty member to determine if some cost sharing may be appropriate.

The following courtesies should be followed by all users of Departmental trucks:

- Treat the vehicle with respect.
- Report any damage, whether you are responsible or not.
- Do not return the truck with less than ½ tank of gas. If near Knoxville when the travel is completed, fill the tank at the Motor Pool.
• Ensure the vehicle, including the bed and cab, are free of trash, manure, feed, animal remains, feathers, hair etc.
• Failure to adhere to the above may result in loss of privileges for use of Departmental vehicles for that program or user.

The following are UT policies regarding operation of university-owned vehicles:

• Drivers of UT vehicles, including departmental vehicles, must be UT employees with a valid driver's license and must abide by TN laws (speed limit, no talking on cell phone or texting etc while driving). Passengers must be affiliated with the University.
• Use of seat belts is required at all times.
• Use of tobacco products in vehicles is prohibited, as are alcohol and drugs, of course.
• Fines or penalties resulting from traffic violations are the responsibility of the driver and may result in suspension of driving privileges.

Computers

The department has a number of laptop and desktop computers available for graduate students, but use must be in accordance with University regulations which prohibit use of unauthorized software, tampering with computer files/programs which belong to others, etc. The Department provides adequate software, and therefore reserves the right to check for and erase all unauthorized software. Office of Information Technology provides a secure wireless network, lots of supported software, a helpdesk (974-9900), and "life preserver" help at http://oit.utk.edu/lifep/. You are responsible for knowing acceptable use policies. Downloading of copyrighted or illegal materials can result in substantial legal penalties and fees, and can result in dismissal from the program.

Friendly advice – backup computer files frequently! When you finish your degree, a copy of project files must be given to your major professor.

Leaving the University

Once you have turned in the final version of your thesis or dissertation, and satisfied all requirements for graduation, now what?

First, return all data, electronic or hardcopy, to your major professor. Failure to do so is a severe violation of University policy, and possibly state and federal laws. Then return departmental computers to the Dept. Head’s Office, with passwords removed.

Two weeks prior to leaving the university, please contact the Departmental Head’s Administrative Assistant to begin the process of returning keys, resolving outstanding financial obligations, and filling out required forms. Failure to do so will result in a hold placed on your graduation and future transcript releases.
Appendix I: Academic Courses

This list of courses is not exhaustive, and changes semester by semester depending on scheduling and creation of new courses. If you discover a new course that you find helpful, please inform the Graduate Committee so the course can be added to this list.

<table>
<thead>
<tr>
<th>Animal Science Courses</th>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>ANSC 420 Advanced Reproductive Techniques (3)</td>
<td>Every</td>
<td></td>
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<tr>
<td>ANSC 531 Comparative Nutritional Biochemistry &amp; Metabolism (4)</td>
<td>Every</td>
<td></td>
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<td>ANSC 481 Beef Management (3)</td>
<td>Every</td>
<td></td>
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<tr>
<td>ANSC 482 Dairy Management (3)</td>
<td>Every</td>
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<td>ANSC 483 Swine Management (3)</td>
<td>Every</td>
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<tr>
<td>ANSC 484 Poultry Management (3)</td>
<td>Every</td>
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<td>ANSC 500 Thesis (1-15)</td>
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<td>ANSC 511 Special Problems in Animal Science (1-4)</td>
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<tr>
<td>ANSC 515 Special Topics (1-4)</td>
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<tr>
<td>ANSC 519 Techniques in Molecular Biology (3)</td>
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<tr>
<td>ANSC 520 Animal Physiology (4)</td>
<td>Odd years</td>
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<tr>
<td>ANSC 523 Advanced Mammalian Reproduction (3)</td>
<td>Even years</td>
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<tr>
<td>ANSC 525 Research Ethics for the Life Sciences (1)</td>
<td>Every</td>
<td></td>
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<tr>
<td>ANSC 535 Ruminology (3)</td>
<td>Even years</td>
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<tr>
<td>ANSC 536 Ecology of Grazing Land Systems (3)</td>
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<tr>
<td>ANSC 550 Animal Immune Physiology (3)</td>
<td>Even years</td>
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<tr>
<td>ANSC 571 Design and Analysis of Biological Research (3)</td>
<td>IGSP</td>
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<tr>
<td>ANSC 572 Mixed Linear Stat Modeling (3)</td>
<td>IGSP odd years</td>
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<tr>
<td>ANSC 600 Doctoral Research and Dissertation (3-15)</td>
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<tr>
<td>ANSC 620 Topics in Microbial Pathogenesis (1-3; also = Microbiology 620)</td>
<td>Even years</td>
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<tr>
<td>ANSC 621 Advanced Topics in Animal Physiology (1-4)</td>
<td>Varies</td>
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<tr>
<td>Multiple sections specific to disciplines</td>
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<tr>
<td>ANSC 652 Disorders of the Endocrine System (2)</td>
<td>Every</td>
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<tr>
<td>ANSC 675 Statistical Genomics (3)</td>
<td>IGSP even years</td>
<td></td>
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<tr>
<td>ANSC 696 Seminar on Advanced Topics in Animal Science (1)</td>
<td>Required 1st and 2nd year</td>
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<tr>
<td>Other Courses</td>
<td>Fall</td>
<td>Spring</td>
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<tr>
<td><strong>Agriculture and Natural Resources</strong></td>
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<tr>
<td>AGNR 512 Teaching Internship. [See details below]</td>
<td>1 hr required</td>
<td>1 hr required</td>
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<tr>
<td><strong>Biochemistry and Cellular and Molecular Biology</strong></td>
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<tr>
<td>401 Biochemistry-Molecular Biology I (4) – Protein</td>
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<tr>
<td>402 Biochemistry-Molecular Biology II (4) – DNA/RNA</td>
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<td>412 Molecular Biology and Genomics (4)</td>
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<td>511 Adv. Protein Biochemistry and Cell Biology II (3)</td>
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<tr>
<td>512 Advanced Molecular Biology (3)</td>
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<tr>
<td>513 Adv. Protein Biochemistry and Cell biology II (3)</td>
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<td>515 Experimental Techniques</td>
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<td>517 Physical Biochemistry (3)</td>
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<tr>
<td><strong>Comparative and Experimental Medicine (Vet Med)</strong></td>
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<tr>
<td>609 Mechanisms of Disease (3)</td>
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<tr>
<td>615 GIS and Geographical Epidemiology (3)</td>
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<tr>
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<td>675 Scientific Writing and Grantsmanship</td>
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<td>430 Immunology (3)</td>
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Experiential Learning Requirement for Graduate Degrees

**AGNR 512: Teaching Experience**

A required opportunity is provided so you can obtain a Teaching or Extension based experience. The primary goal is to learn by doing. One possibility for gaining Teaching experience is through AGNR 512, which gives one credit hour for each semester's participation. MS students are required to participate for at least one semester during their degree program, and PhD students are required to participate for an additional semester during their program. No more than one credit hour will be allowed in the MS program or two credit hours in the PhD program for this participation. Students on 1/2-time graduate teaching assistantships or with the rank of instructor may use their teaching assignments to satisfy this requirement. Alternatives to teaching-based experiences will be created based on your interests. You should consult with your major professor or the Animal Science Graduate Committee for extension-based experiences. In all cases the primary objective is for you to gain experience with scientific communication, particularly from the viewpoint of gaining skills to teach different audiences.

AGNR 512 is administered by the dean of Herbert College of Agriculture. With your major professor's consent and with assistance of the Graduate and Undergraduate Committees, you select a specific course prior to the semester in which enrollment occurs. Then, permission of the instructor(s) of the course must be obtained. Registration for the AGNR 512 must be with permission obtained from the Herbert College of Agriculture dean. You are responsible for attending classes for your selected course, observing the instructor during his/her presentations, and preparing and presenting one lecture and/or one laboratory demonstration during the semester. Following your presentation, the instructor should provide you with suggestions in an effort to improve your teaching ability. It should be borne in mind that the objective of this program is not to provide assistance to the instructor in the menial tasks of teaching a course, such as excessive grading of papers, but is to give you experience in various phases of the teaching activity. Obviously, to obtain this experience, you must participate in the various activities of the course which may include writing test questions about your presentations and grading the answers to those questions. It may also involve weekly assistance in setting up laboratories, but is not designed to replace teaching assistants.

**Or ANSC 515: Extension Based Experience**

Possibility to gain Extension experiences is through ANSC 515, which gives one credit hour for each semester's participation while meeting 1 credit hour requirement for both the MS and PhD programs. Permission to do so must be obtained by the Graduate Committee. Towards that end, Extension faculty member would need to provide the Graduate Committee, through its chair, an outline of what is to be expected for individuals to earn A-F grade in this 1 graduate credit hour course. Expectations of the student should be clear and the students should be aware and agreeable to the terms and conditions of this graded course. More consistent with lab based coursework, collective efforts may target ~60 hours in a given semester.
MINORS EARNED BY ANIMAL SCIENCE GRADUATE STUDENTS

Intercollegiate Graduate Statistics Program (IGSP)
Offers statistics minors at both the MS (9 hours required) and PhD (15 hours required) levels. See http://igsp.bus.utk.edu/ for details.

Be aware of specific requirements. You must have an IGSP approved faculty member on your advisory committee. The first two classes (Level A) must be an approved sequence, for example STAT 537 / STAT 538, or PLSC 561 / ANSC 571. Also at least one of the MS classes, and two for the PhD minor, must be from the Statistics department. The PhD minor requires a written comprehensive exam. A grade of B or higher is required to obtain statistics minor.

To declare an IGSP minor, your candidacy form should list the required courses in the Minor section, the IGSP form http://igsp.bus.utk.edu/apply.asp should be filled out and signed, and all should be submitted along with transcripts to the IGSP office. Of course the candidacy form must also be submitted to the Graduate School.

Interdisciplinary Graduate Minor in Computational Science (IGMCS)
Offers minors to students interested in using advanced computational facilities to address modeling or simulation based research questions. This has not been used by Animal Science graduate students, but a minor program can be created for interested students.
Appendix II: Monitoring and Planning Academic Progress

Suggested Milestones for MS Program

A MS program should be accomplished in approximately 2 years. The following milestones are suggestions that will help keep you on track.

Months 0-4 (1st semester)
- Identify 1st semester courses with your major professor
- Select your advisory committee members
- Hold a meeting with your advisory committee to discuss and approve your planned coursework prior to beginning your 2nd semester
- Begin developing & writing your research proposal (especially literature review)
- Begin research training in the lab

Months 5-8 (2nd semester)
- Research problem selected

Months 9-12 (3rd semester)
- Submit your research project proposal to your advisory committee by the end of the third semester

By 13-20 months (4th – 5th semesters)
- Conduct research, analyze and interpret data
- Submit Admission to Candidacy Form (Must be completed prior to the semester you expect to graduate)
- Submit Graduation Application form, due prior to your last semester

By 20 months (6th semester)
- Focus on writing your thesis – expect at least 3-6 months writing time. This is a labor and time-intensive process for you and your major professor. Expect multiple submissions to your major professor with plenty of red marks coming back to you for editing.
- Course work should be completed

By 23 months
- Oral presentation of thesis research followed by comprehensive final exam and thesis defense. The FULL thesis should be provided to your committee at least two weeks in advance, as well as turned into the graduate school for formatting checks. The oral presentation and defense should be scheduled at least one week in advance and announced publicly via the Animal Science Graduate Program Secretary.
- Turn in your defense Pass/Fail form to the Graduate School

Within 2-4 weeks AFTER your defense
- Return corrections requested by your committee to your committee and/or major professor
- Turn in FINAL thesis to the graduate school, major professor, and advisory committee. Ask your advisory committee members if they would like a hard-bound copy.
Suggested Milestones for PhD Program

A PhD program should be accomplished in approximately 3 years – depending upon prior research experience.

Months 0-4 (1st semester)
☐ Identify courses with your major professor that will give knowledge and skills necessary for your career goals
☐ Begin developing and writing your research project (especially literature review)
☐ Begin research training in the lab
☐ Advisory committee members selected

Months 5-8 (2nd semester)
☐ Course of study presented and approved by advisory committee
☐ Submit Doctoral Committee Appointment form

Months 9-12 (3rd semester)
☐ Continue research training, proposal writing, and coursework

Months 13-16 (4th semester)
☐ Research proposal presented to advisory committee

Months 17-24 (5th – 6th semesters)
☐ Continue conducting research, analyzing & interpreting data
☐ Course work should be completed

Months 25-28 (7th semester)
☐ Take comprehensive exam
☐ After successful completion of comprehensive exam – file Admission to Candidacy form. MUST be completed by the end of the semester prior to the one you expect to graduate.

Months 29-32 (8th semester)
☐ Complete remaining research experiments. Analyze and interpret data.
☐ Begin/continue writing your dissertation – expect at least 3 months writing time. This is a labor and time-intensive process for you and your major professor. Expect multiple submissions to your major professor, 3 revisions are perfectly normal.
☐ Submit the Graduation Application form (due prior to your last semester)

Months 33-36 (9th semester)
☐ Oral presentation of thesis research followed by comprehensive final exam and dissertation defense. The FULL dissertation must be turned into the graduate school for formatting checks about four weeks in advance, and must be provided to your committee at least two weeks in advance. The oral presentation and defense must be scheduled at least one week in advance, using the Graduate School Scheduling Defense of Dissertation form, and announced publicly via the Animal Science graduate program secretary.
☐ Turn in your defense Pass/Fail form to the Graduate School

Within 2-4 weeks AFTER your defense
☐ Return corrections requested by your committee to your committee and/or major professor
☐ Turn in FINAL thesis to the graduate school, major professor, and advisory committee. Ask your advisory committee members if they would like a hard-bound copy.
## PROGRESS IN REACHING MS DEGREE DEPARTMENTAL MILESTONES

**Student Name:** __________________________________________

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<th>Milestone</th>
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<td>Identified Courses Needed</td>
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<td>Formed MS Advisory Committee</td>
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<td>Course of Study Approved by Committee</td>
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<tr>
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<td>Yes ☐ No ☐ Date: ____________</td>
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<tr>
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<tr>
<td>Submitted Admission to Candidacy Form</td>
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<td>Completed MS Data Collection</td>
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<td>Completed Course Work</td>
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<tr>
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</tr>
<tr>
<td>Defended Thesis</td>
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<td>Submitted Manuscript(s) to Committee</td>
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<tr>
<td>Received/Will Receive MS Degree</td>
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**Received/Will Receive MS Degree:** ____________
# Progress in Reaching PhD Degree Departmental Milestones

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<td>Held PhD Advisory Committee Meeting</td>
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<tr>
<td>Submitted PhD Research Proposal to Chair</td>
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<td>Proposal Presented to Department</td>
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Appendix III: Student Evaluation Forms

The forms and tables in this appendix are to be filled out by you for the annual evaluation review by the Graduate Committee.
DEGREE PROGRESS REPORT
(To be Completed by the Student)

Name: ___________________________ Date: ____________________

Curriculum Vitae: (Attach a Copy to this Report) Typically this would include
- Contact information (name, address, phone, email);
- Education background (degrees, majors, colleges or universities), and employment (positions held, name of institution or company)
- Honor or professional society memberships; honors or academic awards
- Research publications (referred journal articles and conference proceedings, non-referred articles or conference proceedings, abstracts, popular press articles, web based contributions, reports granting agencies or supporters, other publications)
- Presentations (seminars, conferences, professional society meeting, etc.)
- Teaching (courses and responsibilities)
- Service (clubs, associations, department, college, university, community)
- Professional Development (workshops, short courses, conferences, professional meetings)

Course Work Planned: You should have already met with your advisory committee, and have a list of planned coursework by semester. Attach or paste a copy of this.

Research Planned for Coming Year: What research experiences have you planned for the next year? Include specifics as literature reviews, protocols designs, proposal writing, data collection and analysis and any new skills you plan to obtain.

Anticipated Progress: Indicate what you plan to accomplish in the next 12 months. How do these planned activities relate to your program of study?

Suggestions for Improvement: Identify specific needs or items that would help improve your program, covering all aspects of your program, including faculty, coursework and departmental and university resources.
**Course Checklist for MS Program (30 Credit Hours)**

24 Credit Hours – Course Work; and 6 Credit Hours - ANSC 500

All courses must be chosen in consultation with your major professor and advisory committee.

*Required courses

<table>
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<tr>
<th>Course /Name</th>
<th>Cr</th>
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<th>Year</th>
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<tr>
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*LAST SEMESTER ANSC 500

**Total credit hr (min = 24)**

| ≥ 24                                              | ≥ 14 | ≥ 6 |
COURSE CHECKLIST FOR PHD PROGRAM (48 CREDIT HOURS)

24 Credit Hours coursework beyond the MS degree; and 24 Credit Hours of ANSC 600

All courses must be chosen in consultation with your major professor and advisory committee.

* Required courses. # Required if not already taken in an MS program.

** Any cross-listed class can also count here.

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<tr>
<td>*AGNR 512 or equivalent/ (min 1 hr)</td>
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<td>#Physiology (min 3 hr)</td>
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Minimum Total Hours

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Appendix IV: Definitions, Contacts and Links

IGSP: Intercollegiate Graduate Statistics Program
UT: University of Tennessee
UTK: University of Tennessee, Knoxville
Credit Hours: The number of contact hours per week in a given course in a given term
Major Professor/Mentor: The primary advising professor and chair of your advisory committee
Term: The UT-established period for the duration of a course (fall, spring, and summer terms)

Contacts and Links

Animal Science Graduate Program Director: Dr. Lannett Edwards
Phone: (865) 976-1011 Email: jedwards@utk.edu

Animal Science Graduate Program Office: Denice Milligan, Graduate Program Assistant
2506 River Drive, 149 Brehm Animal Science Bldg., Knoxville, TN 37996
Phone: (865) 974-6389 Fax: (865) 974-7297 Email: dmilliga@utk.edu

The Graduate School: 111 Student Services Bldg. Knoxville, TN 37996
Phone: (865) 974-2475 Email: gradschool@utk.edu http://gradschool.utk.edu

Office of Graduate Admissions: 201 Student Services Building, Knoxville, TN 37996-0230,
Phone: (865) 974-3251 Email: graduateadmissions@utk.edu
http://graduateadmissions.utk.edu/

Registrar’s Office: Oversees enrollment services, grades, graduation, transcripts, and student records. 209 Student Services Building, Knoxville, TN 37996-0200, USA.
Phone: (865) 974-1111. http://registrar.tennessee.edu/

Center for International Education: Oversees international students, enforces immigration rules, issues I-20’s. 1620 Melrose Avenue, Knoxville TN 37996-3531
Phone: (865) 974-3177 http://international.utk.edu/
**Pertinent Graduate Student Web Pages:**

- Center for International Education [http://international.utk.edu/](http://international.utk.edu/)
- Counseling Center [http://counselingcenter.utk.edu/](http://counselingcenter.utk.edu/)
- Graduate Student Forms [http://gradschool.utk.edu/forms](http://gradschool.utk.edu/forms)
- Graduation Deadline Dates [http://gradschool.utk.edu/graduation/graduation-deadlines/](http://gradschool.utk.edu/graduation/graduation-deadlines/)
- Graduate Student Senate [http://web.utk.edu/~gss/](http://web.utk.edu/~gss/)
- Graduate Admissions [http://graduateadmissions.utk.edu/](http://graduateadmissions.utk.edu/)
- International House [http://web.utk.edu/~ihouse](http://web.utk.edu/~ihouse)
- Judicial Affairs [http://web.utk.edu/~osja/](http://web.utk.edu/~osja/)
- Office of Equity and Diversity [http://oed.utk.edu](http://oed.utk.edu)
- Office of Multicultural Student Life [http://web.utk.edu/~omsa/](http://web.utk.edu/~omsa/)
- Research Compliance/Research with Human Subjects [http://research.utk.edu/compliance/](http://research.utk.edu/compliance/)
- ITA (formerly SPEAK) Testing Program [http://gradschool.utk.edu/graduate-student-life/ita-testing-program/](http://gradschool.utk.edu/graduate-student-life/ita-testing-program/)
- VolAware [http://tntoday.utk.edu/tag/volare](http://tntoday.utk.edu/tag/volare)
- Library Website, Information for graduate students [http://libguides.utk.edu/graduate](http://libguides.utk.edu/graduate)
- OIT [http://oit.utk.edu/](http://oit.utk.edu/)