Natural Resources Management

Student Handbook

Master of Science (MS) Degree
Professional Degree (MNRM)
Doctoral (Ph.D.) Degree

Academic Year 2016-2017

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Welcome Message

Dear prospective Natural Resources Management graduate student,

Thank you for your interest in the Natural Resources Management (NRM) Program at North Dakota State University! We offer exceptional graduate programs and are delighted that you are considering graduate studies with us. We seek to admit outstanding applicants into a community of students, faculty and staff who engage in scholarly research and application.

The graduate program offers a Masters of Natural Resources Management (professional degree), a Master’s of Science degree, and a Doctor of Philosophy program of study. Our program is truly interdisciplinary with a number of emphasis areas including:

- Biotic Resource Science
- Environmental Communication
- Natural Resource Economics
- Physical Earth Science
- Pollution Control
- Social Science
- Sustainability and Resiliency

This guide provides an overview of what the Natural Resources Management Program is about, our mission and goals, program of study, and expectations. We encourage you to visit the NDSU Graduate School web site for additional information including application requirements and procedures at http://www.ndsu.edu/gradschool.

I look forward to having in the NRM program, and don’t hesitate to contact me with any questions.

Sincerely,

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# Table of Contents

NRM Program Overview ............................................................................................................................4
Mission, Program Goals, and Educational Objectives ............................................................................4
Participating Units ....................................................................................................................................5
Emphasis Areas ........................................................................................................................................5
Degrees Offered ........................................................................................................................................7
  Master of Science ................................................................................................................................7
  Master of Natural Resource Management .........................................................................................9
Doctoral ................................................................................................................................................11

NRM Policies and Procedures ................................................................................................................14
Graduate School Application Procedures ..............................................................................................14
Assistantship Opportunities .....................................................................................................................14
Scholarships ...........................................................................................................................................16
Student Expectations and Responsibilities ...............................................................................................16
  Plan of Study ......................................................................................................................................16
  Thesis / Dissertation Requirements ....................................................................................................17
  Defense (Oral Exam) ............................................................................................................................17
Intellectual Property .................................................................................................................................18
Satisfactory Progress and Standards of Scholarship ...............................................................................18
Other Requirements ................................................................................................................................19
Communications ....................................................................................................................................20
Appeals ....................................................................................................................................................20

Recommended Classes for Curriculum of Study ....................................................................................21
  Natural Resources Management .......................................................................................................21
  Biotic Resources ...............................................................................................................................21
  Social Sciences ..................................................................................................................................22
  Earth Sciences ....................................................................................................................................22
  Geographic Information Systems / Remote Sensing .........................................................................22
  Resource Analysis ..............................................................................................................................22

Student Services ....................................................................................................................................23
Campus Safety ........................................................................................................................................24
General Information .................................................................................................................................25
Appendix A: Graduate Assistant Contract and Evaluation Form ..............................................................27
Appendix B: Master’s Degree Plan of Study Form ..................................................................................29
Appendix C: Doctoral Degree Plan of Study Form ................................................................................31
Appendix D: Student Acknowledgement ...............................................................................................33
NRM Program Overview

Natural Resources Management (NRM) in the School of Natural Resource Sciences prepares students for the environmental challenges of the 21st century. The Master of Natural Resources Management (MNRM), Master of Science (M.S.) and the Doctor of Philosophy (Ph.D.) NRM degrees are interdisciplinary and offer a broad, systems-based approach toward managing natural resources. NRM graduates are prepared to compete for and be productive in careers where issues reach beyond a single discipline or subject area. They have the skills necessary to address problems from holistic-ecological and global-social perspectives.

Through the NRM graduate program, students gain a breadth of knowledge in relevant planning, analysis and management.

Mission, Program Goal, and Educational Objectives

The **mission** of the Natural Resources Management Interdisciplinary Program at North Dakota State University is to establish and implement educational and research programs directed toward educating students in areas of natural resources expertise, enabling them to employ this knowledge in solving problems associated with the management of natural resources for their highest and best uses for society while maintaining the integrity of natural systems.

The **goal** of the NRM graduate degree program is to produce graduates who have a strong background in research in conjunction with one or more available areas of expertise in the affiliated disciplines comprising the program. Graduates garner an extensive portfolio of coursework relating to areas that are highly relevant to understanding the complexity of ecosystem processes, ecosystem management, applied natural resources economics, social aspects, communication impacts, and future research on natural resources management.

These graduates are able to work on problems that require assimilation of data, methods, and strategies from many supporting disciplines. Problem recognition, definition, analysis, and resolution are the ultimate objectives. They are willing and able to engage in cooperative solutions to interdisciplinary environmental problems; professionals who can engage with and be respected by decision-makers at all levels of private, public and civil society.

The **educational objectives** of the NRM graduate program are to provide formal education in a chosen specialty area, introductions to other subject areas, appropriate course work in analytical methods, and research and writing experiences in the general area of natural resource management. Problem recognition, definition, analysis and resolution, along with critical thinking are the ultimate learning objectives.
Participating Units
In cooperation with the following NDSU academic programs and departments, students select a curriculum and an adviser from one of these participating units:

- Agribusiness and Applied Economics*
- Agricultural and Biosystems Engineering
- Animal Sciences
- Biological Sciences (Botany and Zoology)
- Civil Engineering
- Communications*
- Entomology
- Plant Sciences*
- Range Sciences
- Earth and Climate Science
- Geosciences
- Soil Science*
- Sociology/Anthropology/Emergency Management
- Veterinary and Microbiological Sciences

*Departments recommending/requiring the GRE.

A list of Affiliated Faculty may be found in the NDSU Graduate Bulletin at:
https://bulletin.ndsu.edu/graduate/programs/natural-resources-management/#facultytext

Emphasis Areas
Although declaring an emphasis area is not required at the graduate level, it is worthwhile for a student to review these areas to guide and identify personal, professional, and research interests. Depending on a student’s major area of research, an appropriate curriculum will developed into a Plan of Study by the student, their adviser, and their committee. The seven emphasis areas of NRM are:

Biotic Resources Science – deals with basic scientific principles that govern the interrelationship between biotic (e.g., plants, animals) and abiotic factors (e.g., climate, soils) in major ecosystems and the use of these principles for environmentally sound management of both natural and agro-ecosystems.

Environmental Communication – is for environmentally oriented students preparing for careers in communications fields such as journalism, public relations, broadcast media and the internet.

Natural Resources Economics – prepares students for management, administrative, regulatory, and policy positions that require a broad understanding of natural resources management and allocation.

Physical/Earth Resources Science – leads to an understanding of the physical and chemical aspects of ecosystems. Topics of study include hydrology, water management and quality, waste management, soil properties, energy resources and land-use management.
Pollution Control – focuses on the principles and practices of managing natural resources for pollution control. Topics include the technical aspects of pollution as they relate to water, air/solids, earth/soils, and the impact of environmental pollution on the biotic factors.

Social Sciences – concentrates on human factors (social, anthropological, political) in environmental management and environmental disaster management, while recognizing constraints and opportunities presented by physical and biological factors.

Sustainability and Resiliency - Focuses on how to build capacity to deal with change; prepares students through system, strategic, and anticipatory thinking on sustainability issues.

These linking circles illustrate our commitment to interdisciplinary programming
Degrees offered
Three graduate degree options are offered through the NRM Program:

- Masters of Science (MS)
- Masters of Natural Resources Management (MNRM)
- Doctor of Philosophy (Ph.D.)

Master of Science (MS)
Studying at NDSU afforded me an experience that was uniquely tailored to my interests. Not only was I able to study environmental economics, policy and law, but I was also able to learn the details in the importance natural resource systems like watersheds, wetlands, and ecology. The NDSU Natural Resource Management Department did a fantastic job equipping me with the knowledge and skill set needed to find success in the career field.
- Jade Monroe, M.S., Aquatic Land Manager, Washington State Department of Natural Resources.

The Master of Science (MS) program in Natural Resources Management (NRM) at North Dakota State University was initiated in 1974. Through the program, students gain breadth in relevant planning, analysis, communication, and management areas while developing depth in one of several disciplines. This interdisciplinary approach makes NRM unique among master’s degree programs. While traditional structuring of curricula is highly specialized and focuses on disciplinary compartmentalization, the NRM MS degree garners a broad, systems-based perspective.

Admission Requirements
- Relevant undergraduate degree from an accredited institution
- Appropriate TOEFL and GRE scores as required by the home department

- Students attracted to the NRM MS degree program generally, although not necessarily, have an undergraduate background in a natural resources related area such as one of the NRM emphasis areas and/or other related disciplines.
- Potential students have an interest in broadening their understanding of natural resources from an interdisciplinary approach.
- Please consult with the NRM Program Director regarding GRE requirements.

Degree Options: Thesis or Comprehensive Study Paper
NRM offers the Master of Science degree as a thesis option or comprehensive study paper for the Master of Natural Resources Management option. The thesis option emphasizes research and abilities to analyze data and prepare scholarly work, whereas the comprehensive study paper option emphasizes a broader understanding of a major area. Prior to applying to the Graduate School, applicants should meet
with the NRM Program Leader to discuss the nature of the responsibilities for which you are preparing and determine which degree option is best for you.

**Degree Requirements**

*MS degree policies, procedures including electronic forms can be found on The Graduate School Web page at [http://www.ndsu.edu/gradschool/](http://www.ndsu.edu/gradschool/)*

Prior to the end of the first academic year:

- Select an academic adviser. If you did not receive an adviser upon admission, you may choose one from among the NRM faculty or participating academic units.

- Select a supervisory committee. This committee assists you in preparing a Plan of Study and provides advisement during the period of graduate work. The committee generally convenes at least once per semester and meets annually to review your progress. Select, with your adviser, two other members to serve on your committee. The two other members may be either a graduate faculty member or an affiliate member of the faculty, but one member needs to be from outside the student’s program.

- Develop a Plan of Study. Work with your adviser, in consultation with your supervisory committee, to develop a list of classes for the Plan of Study. Obtain approval of your plan by submitting it to the Graduate School using the approved graduate school form. Be sure to have the NRM Program Leader review and sign the form prior to submission.

- Research approval. Students on full stipend will produce a research proposal for approval by the committee. If a proposed graduate research project involves human or animal subjects, or biohazards, it must be submitted for review and approval to one of the oversight committees listed below. You should initiate this process after your supervisory committee has approved the final research design and before the research begins. For further information visit the Sponsored Programs web site at [http://www.ndsu.edu/research/sponsored_programs_administration/](http://www.ndsu.edu/research/sponsored_programs_administration/).

- Secure full-standing status. If you were admitted with conditional status, remove admission deficiencies in order to qualify for full-standing status.

**During the period of graduate work**

- Complete a minimum of 30 semester units. These 30 units include:
  - A recommended 16 didactic units for the thesis option and 21 for the comprehensive study paper option. Didactic courses are numbered 601-689, 691, 700-789, 791, 800-889, and 891.
  - It is recommended that 6 units come from outside the selected emphasis area with 3 units in resource analysis.
  - Research: (IMPORTANT - read the Research Approval section above)
    - For the thesis option, research units (NRM 798) must be at least 6 but not more than 10.
    - For the comprehensive study paper option, research units (NRM 797) must be at least 2 but not more than 4.
• Maintain a minimum cumulative GPA of 3.0. Only grades of A, B, C or S (satisfactory) are acceptable. Refer to The Graduate School’s Scholastic Standards at http://www.ndsu.edu/gradschool/about_us/graduate_bulletin/graduate_school_policies/general_policies/

• Maintain continuous enrollment. Coursework must be completed within seven (7) years of continuous enrollment. A master’s candidate has one (1) year after the final oral examination to submit the disquisition. If a leave of absence is necessary at any time during your studies, submit your request in writing to the Dean of The Graduate School. Notify your adviser and the NRM Director, as well. It is important to note that a leave of absence does not amend the seven-year time limitation.

• Complete any requirements determined by your participating academic unit. Contact your participating academic unit to ensure you have met their specific requirements for degree completion (e.g., foreign language requirement).

• Schedule and complete an oral exam. The oral exam, also called a “defense”, generally takes place during your last semester. You must be enrolled during the semester of the examination. Seek permission from your academic adviser to schedule your exam and then submit the “Request to Schedule Examination” form. The Graduate School must receive this form at least two (2) weeks prior to the oral examination.

• Complete a graduate disquisition. This is your Thesis or Comprehensive Study Paper. It must be submitted in final form to the supervisory committee no less than seven days prior to the oral examination. Once you have prepared a draft in final form, submit it to The Graduate School following the directions on the Graduate School web site.

• Commencement. Participating in the graduation ceremony is optional but encouraged! It is an opportunity to celebrate your accomplishment with family and friends.

Degree completion. Your official date of graduation (degree completion) is based on the semester in which your disquisition is approved by The Graduate School.

Master of Natural Resource Management (MNRM)

...I had come to NDSU with a deep interest in the environment, specifically for the tall grass prairie, but had not been able to pinpoint exactly what I wanted out of a career. Through the classroom, lab and summer field work opportunities with the NRM Program and Entomology Department I was able to develop a strong sense of self which has made me confident to explore many different avenues for a career." - Sarah Wilson, MNRM, Conservation Programs Coordinator, Audubon Dakotas, Fargo, ND.

The Master of Natural Resources Management (MNRM) degree program at North Dakota State University was initiated in 2010. The MNRM is designed as a professional, non-thesis degree program designed for students holding a Bachelor of Science Degree in Natural Resources Management or a closely related field who are seeking an educational opportunity for advanced coursework culminating in a professional terminal degree.
MNRM graduates are prepared to compete for and be productive in jobs where issues reach beyond a single discipline or subject area. Our graduates have the skills necessary to address problems from holistic-ecological and global-social perspectives. The MNRM interdisciplinary approach prepares students for current and impending natural environmental challenges of the 21st century.

**Degree Requirements**

MNRM degree policies, procedures including electronic forms can be found on The Graduate School Web page at [http://www.ndsu.edu/gradschool/](http://www.ndsu.edu/gradschool/)

Prior to the end of the first academic year.

- Select an academic adviser. If you did not receive an adviser upon admission, you may choose one from among the NRM faculty or participating academic units.

- Select a supervisory committee. This committee assists you in preparing a Plan of Study and provides advisement during the period of graduate work. Select, with your adviser, two other members to serve on your committee. The two other members may be either a graduate faculty member or an affiliate member of the faculty, but one member needs to be from outside the student’s program.

- Develop a Plan of Study. Work with your adviser, in consultation with your supervisory committee, to develop a plan of study. A list of recommended courses can be found in section VII of this document. Obtain approval of your plan by submitting it to the Graduate School using the approved graduate school form. Be sure to have the NRM Program Leader review and sign the form prior to submission.

During the period of graduate work

- Complete a minimum of 32 semester units. These 32 units include:
  - A minimum of 30 didactic units. Didactic courses are numbered 601-689, 691, 700-789, and 791.
  - A recommendation of 16 units in NRM management and the selected emphasis area.
  - A recommended 6 units in areas outside of the chosen emphasis.
  - A recommended 3 units in resource analysis.

- Students attracted to the MNRM degree program generally, although not necessarily, have an undergraduate background in a natural resources related area and/or other related disciplines.

- Potential students have an interest in broadening their understanding of natural resources from an interdisciplinary approach.

- Please consult with the NRM Program Director regarding the GRE.
• Maintain a minimum cumulative GPA of 3.0. Only grades of A, B, C or S (satisfactory) are acceptable. Refer to The Graduate School’s Scholastic Standards at http://www.ndsu.edu/gradschool/about_us/graduate_bulletin/graduate_school_policies/general_policies/ 

• Maintain continuous enrollment. Coursework must be completed within seven (7) years of continuous enrollment.

• Schedule and complete an oral presentation based on an NRM topic of choice. The oral presentation generally takes place during your last semester. You must be enrolled during the semester of the presentation.

• Complete the Application for Graduation and Exit Survey in addition to a $25.00 processing fee. More information is found at https://www.ndsu.edu/gradschool/graduating_students/non_thesis_masters_programs/.

• Commencement. Participating in the graduation ceremony is optional but encouraged! It is an opportunity to celebrate your accomplishment with family and friends.

• Degree completion. Your official date of graduation (degree completion) is based on the semester in which you were enrolled.

Doctoral (Ph.D.)
"My experience as a graduate student in the NRM department at NDSU equipped me with a diverse skill set that is required to be a successful project and resource manager, and enabled me to land my dream job." - Miranda Meehan, PhD, Extension Livestock Environmental Stewardship Specialist, North Dakota State University, Fargo, ND.

The Doctor of Philosophy degree program in Natural Resources Management at North Dakota State University was initiated in February 2002. Through this program, students gain breadth in relevant planning, analysis, and management while developing depth in one of several area specialties. This interdisciplinary program prepares students to work on problems that require assimilation of data, methods, and strategies from many supporting disciplines. Problem recognition, definition, analysis, and resolution are the ultimate objectives. The program prepares students to compete for and be productive in careers where problems and issues reach beyond a single discipline or subject area.
Students attracted to this program generally, although not necessarily, have an undergraduate and graduate background in a natural resources related area and/or other related disciplines. Students admitted to the program have an interest in enhancing their expertise in natural resources management by broadening their understanding of the complexity of interacting systems from an interdisciplinary approach and elect to pursue this degree to enhance and broaden their area of interest and expertise. This offers a unique quality to the NRM graduate degree program, because while most doctoral degrees are derived from a narrow focus, the NRM PhD takes a holistic approach that covers the complexity of interacting systems involved in the management of natural resources.

Admission Requirements

- Relevant undergraduate/graduate degree from an accredited institution
- Appropriate TOEFL and GRE scores as required by the home department

Degree Requirements

PhD degree policies, procedures including electronic forms can be found on The Graduate School Web page at [http://www.ndsu.edu/gradschool/](http://www.ndsu.edu/gradschool/)

The degree requirements for the NRM Doctoral Degree program are in accordance with the NDSU Graduate School requirements. Prior to the end of the first academic year, the student will select an academic adviser from among the NRM Coordinating Committee faculty or other NDSU graduate faculty and arrange for an appointment of a Graduate Advisory Committee, consisting of at least four members of the NDSU graduate faculty. One of the committee members must be from a program other than the student’s home program and one of these faculty members will act as the Graduate School appointee (recommendations are requested).

The student and major adviser will prepare a Plan of Study by the end of the first year in residence. The student’s Graduate Advisory Committee, the NRM Director, and the Graduate School Dean shall approve the Plan of Study. The program of study must be filed in the Graduate School of NDSU. The Graduate School requires the Plan of Study for the PhD degree to include not less than 60-semester graduate units (90 credits if the student did not matriculate with a master degree). Of this total, not less than 27 units must be in courses other than seminar or research units, and 15 of these units must be at the 700-800 level. An overall GPA of 3.0 or above must be maintained.
Departmental Requirements
Participating departments in Natural Resources Management may have additional and specific requirements pertinent to the student’s home department. Such requirements may pertain to specific courses or pre-requisite courses that must be completed by the student while being admitted to the program on a “conditional standing”. After successful completion of these departmental specific requirements the student’s status may then be changed to “full standing” in the NRM graduate program. These specific requirements are unique to each department. The student should inquire as to any specific departmental requirements at the time of application.

A comprehensive/preliminary examination will be required of each student after the greater portion of courses has been completed and any required language proficiency has been certified. This examination consists of a written part and an oral part. After passing the comprehensive/preliminary examination, the student will be formally admitted to candidacy for the Doctor of Philosophy degree. At least one academic semester must elapse between the comprehensive/preliminary examination and the final examination.

The final examination will be taken after the candidate has completed the course work and dissertation. This oral examination will be concerned primarily with the dissertation, but it may also cover material from course work, especially those courses fundamental to the dissertation.

Research Approval
Students on full stipend will produce a research proposal for approval by the committee. If a proposed graduate research project involves human or animal subjects, or biohazards, it must be submitted for review and approval to one of the oversight committees listed below. You should initiate this process after your supervisory committee has approved the final research proposal and before the research begins. For further information visit the Sponsored Programs web site at http://www.ndsu.edu/research/sponsored_programs_administration/.
NRM Policies and Procedures

Graduate School Application Procedures.
1. Select area of emphasis and a department after visiting with the NRM Director and selected members of the NRM Program Coordinating Committee.

2. Complete Application for Admission to Graduate School.
   - Include the following on the application:
     Degree Objective: MS, MNRM, or PhD as appropriate
     Department/Program: Natural Resources Management

3. Complete any departmental requirements (e.g., assistantship requests). Appropriate TOEFL and GRE scores as required by the home department.

Applications for the NRM program received by the Graduate School will be sent to the Natural Resources Management Director. The NRM Director will make an initial assessment and evaluate the application and will forward the decision to the Graduate School. The Graduate School will inform the applicant, providing copies of correspondence to the NRM Director and the appropriate department.

Applications for financial aid are made directly to the home program.

Admission to NDSU is subject to policies and requirements of The Graduate School located online at http://www.ndsu.edu/gradschool/.

Upon admission to NDSU Graduate School
- Contact your adviser to complete paperwork related to assistantships, tuition waivers, etc.
- If you have been admitted on “conditional standing,” inquire with the NRM Director about the requirements that must be met to acquire “full standing.” Please note the terms stated in your acceptance letter.

Assistantship Opportunities
Three types of assistantships available at NDSU are:
1. Graduate Research Assistantship (GRA): GRAs generally provide a stipend and a tuition waiver. They are funded by the student’s home participating academic unit and are available on a competitive basis. GRAs may be for ¼-time or ½-time work, representing 10 or 20 hours work per week.

2. Graduate Teaching Assistantship (TA): TAs generally provide a stipend and require teaching lab or recitation sessions. TAs are allocated by the participating academic unit.

3. Project Assistantship (PA): PAs are available to students to work on specific, grant/contract funded projects that may or may not be associated with the student’s thesis/paper research. Stipends are for ¼-time or ½-time work. Availability of PAs depends on need for student labor and grant/contract funded research.
Rights and Privileges of Graduate Assistants

Graduate assistants have certain rights and privileges specific to the assistantship experience:

- The right to be notified in writing of all decisions that affect their status as a graduate assistant. This includes advance notification of evaluation procedures and a summary of their performance evaluation.
- The right to be notified of any complaints received by a supervisor or department chair concerning their performance of duties.
- The right to respond in writing to such complaints.
- The right, depending on the availability of departmental and university resources, to be supported in pursuing additional activities that pertain to their professional development.
- The right to balance their assistantship responsibilities with their responsibilities to their academic program so that they can complete their degree in a timely manner.
- The privilege of being treated as a professional in their chosen field of study.

Termination

Graduate assistants may have their assistantship terminated by the graduate dean, upon recommendation by their supervisor, with probable cause. Early termination for cause may occur when:

- A student does not abide by the appointment conditions.
- A student fails to perform tasks as assigned.
- A student does not make adequate degree progress.
- A student is placed on Academic Probation.
- A student does not make satisfactory research progress.
- A student fails to maintain minimum registration.
- A student persistently refuses to follow reasonable advice and counsel of faculty in carrying out assistantship obligations.
- A student fails to comply with responsibilities as an employee set forth in the Graduate Bulletin, department rules and regulations governing assistantships, or the terms of sponsored research agreements that fund the assistantship.
- A student's personal conduct is seriously prejudicial to the university, including violation of the NDSU Code of Student Behavior, state or federal law, and general university regulations.

Appeals Process

The North Dakota State University philosophy is to encourage and seek resolution of problems at the level most closely related to the origin of the specific disputes. This means

- The first step should be an informal conference to first discuss and attempt to resolve the problem(s) with the person(s) directly involved.
- When a mutually satisfactory resolution cannot be reached or if discussion of the problem(s) seems inappropriate because of the nature of the student's complaint, the student should seek advice from the chair of the department.
- Depending on the nature of the problem(s), the department chair or student's graduate committee chair may deal with the situation directly, advise the student to discuss the problem(s) with the appropriate academic dean and/or the graduate dean, or advise the student of the appropriate grievance procedure to pursue.
If the graduate assistant wishes to challenge the termination decision, a written appeal to the dean of the Graduate School must be made within two weeks of notification of the mediation results (refer to section titled "Graduate Student Appeals").

Note: Students should not carry more than a full-time load.

Scholarships
Funds for scholarships are provided by individuals, companies, foundations and organizations aware of the commitment a student must make to complete a college education. They establish these scholarships to encourage students who are willing to pursue academic excellence. Below is a limited list of graduate scholarships offered and students are considered for a scholarship based on the following criteria:

- cumulative GPA of 3.0 or higher
- student meets eligibility requirements specific to the scholarship

Scholarship recipients are notified in the spring and receive their award the following fall. Recipients and donors are recognized at the college’s Scholarship Recognition Luncheon each November.

Note: Scholarships and amounts may vary from year to year.

- Mark and Mary Andrews Scholarship – graduate student, native of North Dakota
- Frank Bain Graduate Student Scholarship – current graduate students

A. Student Expectations and Responsibilities

Orientation
An orientation meeting for new graduate students is conducted at the beginning of every semester by The Graduate School. New graduate students are expected to attend.

Student Responsibilities
As a graduate student in a professional program, you are expected to take on more responsibility and initiative to complete your degree than in your undergraduate experience. You will need to plan your program, keep up with classes, complete your practical experience and paper, and leave sufficient time for reading, writing, and thinking.

Specifically, it is your responsibility to know what classes you need, take these classes when offered, keep in contact with your adviser, know when deadlines are, and what forms are required and where and when to submit them. You will be very supported by faculty, staff, and student peers but it is ultimately your responsibility to be prepared for classes and to complete your coursework. In order to be successful in your graduate work, you will need to outline your goals and work towards them.

Plan of Study
Coursework shall be the initial priority of each graduate student. The Plan of Study, designating the specific courses to be taken, will be designed as a cooperative effort between the student, adviser and supervisory committee. Adviser and committee input on the timing of course offerings will ensure the student graduates within the time prescribed in their Plan of Study.
Thesis / Dissertation Requirements

- **Topic.** The adviser and the student collaboratively decide on a thesis/paper topic that is suitable to the abilities, circumstances, and interests of the master’s degree candidate. The topic shall be sufficiently limited in scope such that it can be completed within a reasonable time period. The research project should be well designed and the pertinent literature reviewed and understood.

- **Research proposal.** (Contact your adviser as to whether a research proposal is required or optional.) A research project proposal is prepared under the guidance of the adviser and then discussed with the supervisory committee prior to the initiation of the research. The research proposal should follow the standard format pertinent to the research topic and/or discipline in question and should contain sufficient detail so as to lend itself to evaluation by an external reviewer. The proposal should state the aspects of the project that represent original research and the relevance of this research toward advancing the discipline. The proposal should be presented by the student to the members of the graduate advisory committee. The original proposal will be maintained in the student files and copies will be distributed to the graduate advisory committee and the student. Any changes to the proposal should be approved by the members of the graduate advisory committee. (Contact the participating academic unit regarding proposal, specifications, and protocols.)

- **Drafts.** The adviser will decide when review drafts of the thesis/paper are ready to be distributed to the supervisory committee. The committee will work closely with the student to review drafts of the thesis.

- **Final disquisition.** Theses and comprehensive study papers must conform to Graduate School guidelines.

- **Timely completion.** The student’s home department may decline to provide continued financial support beyond such a reasonable timeframe in order to encourage the timely completion of the graduate program by individual students.

- **Publication.** Students are encouraged to pursue their work into the publication stage as publication provides a useful experience and demonstrates professional performance. Research may be reported in a variety of departmental publications, including extension bulletins and circulars, and professional journals. Publication in regional or national peer-reviewed professional journals is particularly encouraged. The adviser and supervisory committee can advise the student on how to prepare manuscripts to increase the probability of publication acceptance. Senior authorship is negotiable between the student and adviser but normally corresponds with the effort each expends in preparing the manuscript.

**Defense (oral exam)**

All degree candidates are required to pass a final oral examination, which includes a defense of the thesis, dissertation or comprehensive study paper in an open departmental seminar. Supervisory committee members constitute the examining committee. The exam is designed to test the student's understanding of principles underlying their thesis or comprehensive study paper, as well as general concepts and analytical techniques. Applications to real world situations and the resulting implications are of considerable importance.

The committee may decide during the course of the exam that the candidate is not adequately prepared and recommend that the exam be rescheduled or reconvened at a later date. Concurrence...
of two or more committee members that the student's performance is unsatisfactory constitutes failure of the exam.

Upon permission of a majority of the supervisory committee members, a candidate is allowed to take each examination twice. The supervisory committee will set a date at least one month after the failed examination. Exception to this time limit will be considered by the Dean of the Graduate College upon presentation of written justification from the chair of the supervisory committee in consultation with the committee members. Should both attempts to pass an examination result in failure, the candidate may request to take the examination a third time. A request for a third examination requires the support of the supervisory committee and program administrator, and the approval of the Dean of the Graduate College after consultation with the Graduate Council.

Continuous enrollment is required until all degree requirements are completed, including submitting final copies. To participate in commencement, the student must have passed the final examination.

Following successful completion of the oral exam, the adviser will assist the student in making the required additions and/or corrections to the completed thesis/dissertation as suggested by the supervisory committee before submission of the dissertation to The Graduate School for final approval.

The student will have one (1) year from the date of the final examination to submit the final electronic version of the disquisition and complete all other degree requirements. Should the disquisition not be deposited as specified or any other degree requirements not be completed, the student must retake the final examination and request an extension. If a period of time two (2) years or greater lapses before the final copies are submitted, the student must reapply to the Graduate College, retake the final examination, register for a minimum of two (2) credits and request an extension.

Intellectual Property
The NDSU policy 190 (Intellectual Property Policy) establish guidelines, and details rights and responsibilities to support staff, faculty, and students, in identifying, protecting and administering Intellectual Property and defining rights and responsibilities of all involved. See https://www.ndsu.edu/fileadmin/policy/190.pdf.

Satisfactory Progress and Standards of Scholarship
Excerpted from the Graduate School Scholastic Standards Policy:
In fulfilling graduate course requirements on any plan of study, only grades of A, B, or C are acceptable. For master's paper (797), master's thesis (798), and doctoral dissertation (899), only the grade of satisfactory (S) is acceptable. For seminar (790), case studies (792), individual study/tutorial (793), practicum/internship (794), or field experience (795), only grades of A, B, C, or S are acceptable.

All courses taken by a graduate student for which grades are given will be used in calculating the grade point average, except where a course has been repeated. Both grades will appear on the transcript, but only the second grade will be used in calculating the grade point average. (A specific course can be retaken only once, and only three total courses can be retaken.)
Satisfactory (S) or Unsatisfactory (U) is assigned for research units, and they are not used in calculating the GPA. To be in academic good standing and to receive a graduate degree, a student must have a cumulative grade point average of at least 3.0.

Programs and/or supervisory committees may require a higher performance than C in certain courses. While some courses may be used for graduate credit with a grade of C, acquisition of more than two grades of C or below may be grounds for dismissal upon recommendation by the program administrator.

Any student in good standing whose cumulative grade point average drops to less than 3.0 at any time of attendance is automatically placed on academic warning. Any student admitted in conditional status because of grade deficiency is automatically placed on academic warning. A student on academic warning cannot register for the following semester until the grades for the current semester post. If a student on academic warning fails to achieve a cumulative GPA of at least 3.0 in the subsequent semester of attendance, then the student will be placed on academic probation.

A student on academic probation may not continue the pursuit of a graduate degree program without a recommendation from the appropriate program administrator and a waiver from the Dean of the Graduate College. This recommendation must include a review of the student’s current status and a proposed plan of remediation which provides the student an opportunity to return to a cumulative GPA of at least 3.0 within one additional semester (fall or spring). The remediation plan must be submitted and approved in time for the student to register for the academic term (fall or spring) that immediately follows the term in which the student was placed on probation. If the student does not submit an acceptable plan in time to enroll for the next academic term (fall or spring), or if the cumulative GPA is not at least 3.0 after this one additional semester, the student will be dismissed from his or her graduate program. A student on academic probation is not eligible for a graduate assistantship or tuition waiver.

Other Requirements
Mandatory Training
All graduate students are required to complete mandatory training according to NDSU policy, including but not limited to:
- Baseline Safety
- Harassment/sexual harassment
- Defensive Driving*
- Institutional Review Board*
*dependent on specialty study needs.

Student Demeanor and Conduct
Although the NRM graduate student is not a full-time employee of NDSU, the student represents the university and the Natural Resources Management Program in all manner of demeanor and conduct. The student shares in the responsibility for the teaching, research, and service rendered by NRM while at NDSU and is encouraged to use initiative, resourcefulness, courtesy, and leadership in carrying out his/her duties.

The NRM graduate student is viewed by the public, fellow graduate students, and undergraduate students as a Natural Resources Management Program representative and therefore, has the
responsibility for demonstrating exemplary behavior by his/her self-presentation, dress, speech, and conduct under all circumstances. When a graduate student demonstrates high standards, he/she serves as a leadership role model for all undergraduate and graduate students.

In conjunction with research, teaching, and public service activities, NRM graduate students are encouraged to converse with other faculty members and staff in Natural Resources Management and the university system. NRM graduate students are also expected to assist with academic and research activities as requested by other NRM faculty members upon consultation with the student’s adviser.

**Communication**
Email is the official form of communication for the University and the NRM program. All students are expected to use their University email address and pay prompt attention to NDSU emails. Students are also responsible for maintaining contact with their NDSU adviser at least once a semester.

**Absence from campus**
All graduate students shall keep their advisers informed of any extended absences from campus. The Graduate School maintains a “continuous enrollment” policy requiring a student to be enrolled each fall and spring semester up to the time the student completes all degree requirements, including submitting final copies of a thesis or paper.

**Appeals**
Student complaints about grades are generally handled at the level of the University, whereas other student complaints remain under the purview of the individual colleges within NDSU.

There is a set policy on graduate student appeals. Current policy can be found on the Graduate School web site.
### Natural Resources Management
*(recommended 6 units)*

- NRM 702 Natural Resources Management Planning 3 units
- NRM 720 Natural Resources Administration and Policy 2 units
- NRM 621 Environmental Outreach Methods 3 units
- NRM 631 NEPA & Environmental Impact Assessment 3 units
- NRM 620 Scenarios in Natural Resources Management 2 units
- NRM/SOIL/RNG 654 Wetland Resources Management 3 units
- NRM/RNG 662 Natural Resource and Rangeland Planning 3 units
- NRM 761 Current Issues in Natural Resource Management 1 unit

### Biotic Resources
*(recommended 6 units)*

- BIOL 680 Ecotoxicology 3 units
- BIOL 681 Wetland Science 3 units
- BIOL 850 Advanced Ecology 3 units
- BIOL 876 Population Dynamics 4 units
- BIOL 877 Population Analysis 3 units
- BOT 660 Plant Ecology 3 units
- BOT 762 Environment and Adaptation 3 units
- BOT 764 Ecological Processes 3 units
- ENT 770 Insect Ecology 3 units
- NRM 601 Urban Ecosystem Management 3 units
- NRM 602 River and Stream Resource Management 3 units
- NRM 701 Terrestrial Resources Management 3 units
- RNG 650 Range Plants 3 units
- NRM/SOIL/RNG 654 Wetland Resources Management 3 units
- RNG 656 Range Habitat Management 3 units
- RNG 658 Grazing Ecology 3 units
- RNG 660 Plant Ecology 3 units
- RNG 662 Natural Resource and Rangeland Planning 3 units
- ZOO 640 Microbial Ecology 3 units
- ZOO 650 Invertebrate Zoology 3 units
- ZOO 652 Ichthyology 3 units
- ZOO 656 Ornithology 3 units
- ZOO 658 Mammalogy 3 units
- ZOO 662 Physiological Ecology 3 units
- ZOO 760 Evolutionary Ecology 3 units
- ZOO 670 Limnology 3 units
- ZOO 672 Fisheries Biology 3 units
- ZOO 674 Fisheries Management 3 units
- ZOO 675 Conservation Biology 3 units
- ZOO 676 Wildlife Ecology and Management 3 units
ZOO 677 Wildlife and Fisheries Management Techniques 3 units
ZOO 850 Advanced Conservation Biology 3 units
ZOO 870 Aquatic Community Ecology 3 units
**Social Sciences** (recommended 6 units)
ECON 681 Natural Resources Economics 3 units
ECS 740 Environmental Management 3 units
ECS 770 Environmental Law and Policy 3 units
EMGT 681 Disaster Analysis 3 units
EMGT 683 Holistic Disaster Recovery 3 units
HIST 634 History of Environmental Science 3 units
NRM 621 Environmental Outreach Methods 3 units
NRM 631 NEPA & Environmental Impact Assessment 3 units
NRM 632 Environmental Impact Statements 2 units
SOC 631 Environmental Sociology 3 units

**Earth Sciences** (recommended 6 units)
CE 676 Watershed Modeling 3 units
GEOL 612 Geomorphology 3 units
GEOL 614 Hydrogeology 3 units
GEOL 628 Geochemistry 3 units
NRM 602 River and Stream Resource Management 3 units
NRM 653 Rangeland Resources Watershed Management 3 units
NRM/SOIL/RNG 654 Wetland Resources Management 3 units
SOIL 610 Soils and Land Use 3 units
SOIL 644 Soil Genesis and Survey 3 units
SOIL 647 Microclimatology 3 units
SOIL 784 Advanced Soil Genesis, Morphology, and Classification 3 units
SOIL 680 Soil and Pollution 3 units

**Geographic Information Systems / Remote Sensing** (recommended 3 units)
EMGT 614 Spatial Analysis in Emergency Management 3 units
GEOG 655 Introduction to Geographic Information Systems 4 units
GEOG 656 Advanced Geographic Information Systems 3 units
GEOG 670 Remote Sensing 3 units
RNG 652 Geographic Information Systems in Range Survey 3 units

**Resource Analysis** (recommended 3 units)
ENT 742 Quantitative Biology 3 units
STAT 725 Applied Statistics 3 units
STAT 726 Applied Regression and Analysis of Variance 3 units
RNG 765 Analysis of Ecosystems 3 units

*Note*: Alternate courses that may be incorporated into the program of study with the approval of the student’s Graduate Committee.
Student Services

ENT 770: Writing Scientific Literature Review
Explore how and why to create a scientific literature review in this writing intensive class. Hands-on exercises will help improve scientific writing, peer-review, and self-assessment while working throughout the semester to create your own review.

Libraries
http://library.ndsu.edu/

The Main Library supports the learning and research needs of the students and faculty of NDSU. It also serves the community and general public. The Main Library is located on Albrecht Boulevard.

NDSU has access to other libraries on campus and across the state. The Librarian for the NRM programs is the best contact for NRM students to find the appropriate reference materials and their location:
Nicole Juve
218A Library
NDSU Dept 2080
701-231-8879
nicole.km.juve@ndsu.edu

Graduate Center for Writers
https://www.ndsu.edu/centers/graduate_writers/

The Graduate Center for Writers (GCFW) is part of the Graduate School, and provides workshops and fellowship application support, as well as free writing assistance to students, faculty, and staff. Services include strategies for writing proficiently and independently; assistance in reading materials from various disciplines; and assessing student writing.

Two one-credit writing courses are offered through the Graduate Center for Writers: ENGL 751 – Tools for Academic Writing: Clarity and Style (8 weeks); and, ENGL 252 – Tools for Academic Writing: Writing Your Manuscript.

Counseling
http://www.ndsu.edu/counseling/

The NDSU Counseling Center provides a confidential setting in which students may explore concerns of a personal, academic, or career-related nature; makes referrals; and serves as consultants for faculty and staff. Students in counseling can explore a variety of concerns which may prevent them from functioning at their optimum levels.

Career Center
NDSU Career Center is located in Ceres Hall and provides the resources and professional assistance to help students and alumni understand what employers expect and what kind of activities may advance their employability. Teaching students and alumni the job search skills required to successfully compete in today's labor market and connecting those students to employers is the commitment of the Career Center. http://www.ndsu.edu/career/.

CAREERlink account

Wellness Center / Health Services
http://www.ndsu.edu/wellness/ http://www.ndsu.edu/studenthealthservice/

The purpose of the Wellness Center is to support the academic mission of NDSU by providing an environment where students may learn behaviors conducive to creating healthy lifestyles. Wellness, which is about making healthy lifestyle choices regarding mind, body, and spirit, is the common thread of the Center’s programs and services.

The mission of the Student Health Service is to support the academic success of a diverse student population in an atmosphere of health and wellness through education and services. Services provided integrated health promotion, education for prevention of disease, and clinical treatment for illness.

Multicultural Affairs/International Office
http://www.ndsu.edu/international
International students are given an international adviser in addition to their academic adviser in the NRM program. Contact your student adviser in the Office of International Programs for all the regulations regarding your international student status.

Campus Safety

Personal Safety and Security
For all NDSU safety and security related policies and preparedness, please see the Personal Safety + Security report at http://www.ndsu.edu/police_safety/universitypolice/annualsecurityreport/
Escort Service is available on the NDSU main campus and immediate surrounding area as a 24-hour service by the University Police; call 701-231-8998.

NDSU has anti-harassment and sexual harassment policies as well as a reporting system for bias, bigotry or hate. Main contacts for reporting and assistance are the University Police and Safety Office at 701-231-8998 and the Office of the Vice President for Equity, Diversity, and Global Outreach at 701-231-7708.

For weather-related and all other postings for University closures, please check the following media outlets: www.ndsu.edu for an announcement on the homepage, 231-INFO (4636) - the emergency announcement phone number, or local TV and radio stations

*Campus Emergency Notification System (CENS)*
NDSU utilizes a number of redundant emergency notification systems that together comprise the CENS. Some or all of these methods of communication may be activated in the event of an immediate threat to the campus community. These methods of communication include emails, emergency voice messages that can be sent to a cellular or landline phone through a system named NotiFind, a recorded information telephone line, Audix voice messages to university phone lines, and audio and video interruption of televisions on campus tuned in to local or cable programming. This can be accessed not only by students, faculty and staff, but to anyone with Internet access.

Students other than student employees, although not required to participate, shall be notified of their opportunity to participate in the emergency notification system and encouraged to do so during registration or as otherwise provided under an institution's emergency notification system policy or procedures.

**General Information**

North Dakota State University, with a population of 14,000+ students, is located in a metropolitan area of more than 150,000. The surrounding region is rich with study and recreational opportunities for students interested in natural resources. North Dakota offers opportunities for land reclamation research, vast grasslands and wetlands, a major wildfowl flyway, wildlife, the Badlands, Lake Sakakawea, Theodore Roosevelt National Park, and much more. Also nearby are northern Minnesota’s abundant forests, lakes and parks.

*A Natural Classroom*
Many academic course requirements include field studies to provide hands-on learning experiences. Students gain valuable environmental recognition and problem solving skills.

*Volunteering*
Volunteering is an excellent way to network with people and build a resume – all while developing and sharing your abilities, skills, and knowledge. Many opportunities exist in the area for volunteering with natural resource agencies and organizations. Please consult the NRM Web page or the NRM Student Services Coordinator for updates.
Internships
Students are encouraged to gain valuable real-world experiences by participating in summer or semester-long internships or co-op opportunities with natural resources management agencies. A variety of internships become available every year. Please consult with the NRM Student Services Coordinator or visit the NRM Web page for a current listing of internships.

Cooperative Education (Co-ops)
Co-ops are paid career-related work experiences students can use as credit toward their degree. Co-op experiences are available to students who have completed their sophomore year. This type of work experience can assist students in deciding what career path they may wish to pursue.

NRM Club
The NRM Club’s goal is to enrich the college experience for undergraduate and graduate students who are interested in the management of natural resources by providing opportunities for social interaction, service, personal, and professional development and career contacts. The club participates in social events like camping and hiking, voluntary local community service, such as river cleanup, wood duck box maintenance and Earth Day. The club is open to all NDSU undergraduate and graduate students. A $10 annual membership fee helps fund club activities.

Career Opportunities
Students graduating with advanced degrees in natural resources management are in demand in several areas including, but not limited to: ecosystem restoration, planning and management; landscape, water and waste management; pollution prevention and control; environmental testing, analysis and research; environmental communications and public relations; environmental and conservation education; urban planning and sustainable development; environmental economics, consulting, compliance, policy, advocacy, and administration.

Individuals trained in natural resources are employed by government agencies such as the U.S. Forest Service, U.S. Department of Agriculture, U.S. Fish & Wildlife Service, U.S. National Park Service, U.S. Geological Survey, and the Natural Resources Conservation Service; as well as health, recreation, urban planning and natural resource agencies at the state, county and city level. Private, public and non-profit organizations that hire natural resources professionals include engineering and consulting firms, foundations, conservancies, universities, museums, parks, and public interest organizations focused on environmental issues and initiatives.
APPENDIX A. Graduate Assistant Contract and Evaluation Form

Contract
The NDSU Graduate Assistant Contract includes information on appointment details, specific responsibilities, expectations, rights and privileges, and termination. The most current document may be downloaded from:
https://www.ndsu.edu/fileadmin/gradschool.ndsu.edu/Forms/Faculty_Staff_Documents/GA_Contract.pdf

Evaluation Form
This form is designed to promote and to track communication among graduate assistants, their supervisors, the Department Chair, and the Department’s Graduate Committee. Each faculty member who is supervising a graduate assistant should complete this form each semester three weeks prior to final exam week. Faculty members should do this for each graduate assistant he or she has. These completed forms will be given to the graduate assistant and to the Department Chair. The Department Chair will give them to the Graduate Committee.

Information on these forms will be considered in the Committee’s recommendations for assistantship renewals from semester to semester. If the graduate assistant wishes to do so, she or he may respond in writing to any comments on this form. These responses should be given to the Department Chair who will forward them to the Graduate Committee.

If the supervisor perceives the performance of the graduate student to be unsatisfactory in some fashion, then the Department Chair should try to arrange a meeting that includes, if at all possible, the Department Chair, the faculty supervisor, and the graduate assistant within a week or two of receiving these forms. (The graduate assistant should receive her or his copy of this form prior to this meeting.) Hopefully, this meeting will provide an opportunity to address any misunderstandings that might have triggered the unsatisfactory evaluation. The Department Chair is encouraged to note the results of this meeting in sending this form on to the Graduate Committee.

Term: _______________

Supervising Faculty Member __________________________________

Graduate Assistant __________________________________

Rating: _____ Superior
____ Satisfactory
____ Unsatisfactory

Comments:
______________________________________________________________________
_________________________________________________________________________

NDSU NATURAL RESOURCES MANAGEMENT
APPENDIX B. Master’s Degree Plan of Study Form

NDSU GRADUATE SCHOOL

Master’s Degree Plan of Study and Supervisory Committee

Student: ___________________________  Student ID#: ___________________________

Degree: ___________________________

Program: ___________________________________________

Option (if needed): ___________________________

NDSU Graduate Courses:
Enter courses in the order in which you have taken (or plan to take) them. Please list research credits as one entry of total credits.*

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<tr>
<th>Dept. and Course #</th>
<th>Title</th>
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Total: ___________________________

Please note: If a proposed graduate research project involves human or animal subjects, or biohazards, it must be submitted for review and approval by the Institutional Review Board (IRB), the Institutional Animal Care and Use Committee (IACUC), and/or the Institutional Biosafety Committee (IBC). The student should initiate this process after his or her supervisory committee has approved the final research design because IRB, IACUC, and IBC approval must be obtained before the research project commences.
## Transfer Credits

Official transcripts showing completion of credit to be transferred from other institutions must be in the Graduate School PRIOR to approval of the Plan of Study.

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<th>Institution</th>
<th>Department</th>
<th>Course #</th>
<th>Title</th>
<th>Term Taken</th>
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Credit hours transferred to master's program (in semester credit hours):

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<th>Total credit hours:</th>
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<th>Transfer</th>
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### Supervisory Committee Approval

The supervisory committee must be at least three members, one of which must be from outside of the student’s department program. If this committee member is not a full or associate member of the graduate faculty, the approval of the Dean of the Graduate School is required. Please attach a recommendation from the program administrator accompanied by rationale and curriculum vitae. The supervisory committee approves the following courses and research to satisfy the master’s degree requirements.

(Please type names)  

Signature (Recommends approval)  

Department

Approved by:  

Department Program Chair Signature

Student Services Associate Review  

Approved by Graduate Dean

<table>
<thead>
<tr>
<th>601-699, 691:</th>
<th>700-799, 791:</th>
<th>800-899, 891:</th>
<th>69x, 79x, 89x:</th>
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<td>Research:</td>
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The Graduate School will send copies to Student, Committee, and Program Administrator  

2/2014
### APPENDIX C. Doctoral Degree Plan of Study Form

#### NDSU Graduate School

**Doctoral Degree Plan of Study and Supervisory Committee**

**Student:**

**Student ID#:**

**Degree:**

**Program:**

**Area of Concentration:**

**Previous Graduate Degree:**

**Degree:**

**Month/Year Earned:**

**Institution:**

**Previous Graduate Degree:**

**Degree:**

**Month/Year Earned:**

**Institution:**

**NDSU Graduate Courses:** Enter courses in the order in which you have taken (or plan to take) them. Please list research credits as one entry or total credits. Do not include courses from your master's Plan of Study.

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<tr>
<th>Dept. and Course #</th>
<th>Title</th>
<th>Credits</th>
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**Total:**

*PLEASE NOTE: If a proposed graduate research project involves human or animal subjects, or biohazards, it must be submitted for review and approval by the Institutional Review Board (IRB), the Institutional Animal Care and Use Committee (IACUC), and/or the Institutional Biosafety Committee (IBC). The student should initiate this process after his or her supervisory committee has approved the final research design because IRB, IACUC, and IBC approval must be obtained before the research project commences.*
Transfer Credits
Official transcripts showing completion of credit to be transferred from other institutions must be in the Graduate School PRIOR to approval of the Plan of Study. Only include transfer courses. Do not list the courses taken for a previous master's degree.

<table>
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<tr>
<th>Institution</th>
<th>Department</th>
<th>Course #</th>
<th>Title</th>
<th>Term Taken</th>
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Credit hours transferred to doctoral program (in semester credit hours):

Supervisory Committee
If a committee member is not a full or associate member of the graduate faculty, the approval of the Dean of the Graduate School is required. Please attach a recommendation from the program administrator accompanied by rationale and curriculum vitae. The Graduate Appointee must have full graduate faculty status.

The supervisory committee approves the above listed courses and research to satisfy the doctoral degree requirements.

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<th>Typed Names</th>
<th>Signature (Recommends approval)</th>
<th>Department</th>
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Graduate Appointee

Approved by:

Student Services Associate Review
621-689, 691:
700-799, 791:
800-869, 891:
69x, 79x, 89x:
Research:
Total:

Approved by Graduate Dean

1/2014
Appendix D: Student Acknowledgement

I have read the 2015-2016 NRM Student Handbook and agree to abide by the Policies and Procedures contained therein. I understand that policies and procedures may change throughout the duration of my program of study and that I will be made aware of these changes by Program Faculty and held accountable to these policy and procedural changes.

________________________________________  ___________________________  ___________
Signature                                   Student ID #                 Date

________________________________________
Print Name