

Department of Health, Nutrition, and Exercise Sciences

MS Health, Nutrition and Exercises Science

Option: Exercise/Nutrition Science

Graduate Student Handbook

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Welcome and Introduction

Welcome to the graduate programs offered by the Department of Health, Nutrition, and Exercise Sciences (HNES). The information provided in this document is designed to help you understand the procedures in HNES. Graduate students should also consult with the [NDSU Graduate Handbook](#) for further clarification on requirements. In addition, please consult with the NDSU [Academic Calendar](#) for specific dates that may be important for completing your degree on time.

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HNES Graduate Programs

The Department of HNES offers a Master of Science (MS) degree in Health, Nutrition, and Exercise Sciences with one option: 1) Exercise/Nutrition Science. Within the option, students may elect to finish their degree with different culminating experiences. The department also offers an online MS degree in Dietetics through Great Plains Interactive Distance Education Alliance. Additionally, there is one degree path available for those students planning on pursuing athletic training: Master of Athletic Training (MATrg). The department also offers a PhD degree in Exercise Science and Nutrition.

Diversity, Equity, and Inclusion

The Department of Health, Nutrition, and Exercise Sciences is committed to fostering, cultivating and preserving a culture of diversity, equity and inclusion. The collective sum of the individual differences, life experiences, knowledge, inventiveness, innovation, self-expression, unique capabilities and talent that our students invest in their work represents a significant part of not only our culture, but our reputation as a Department, College, and University at North Dakota State University.

We embrace and encourage our students' differences in age, color, disability, ethnicity, family or marital status, gender identity or expression, language, national origin, physical and mental ability, political affiliation, race, religion, sexual orientation, socio-economic status, veteran status, and other characteristics that make our students unique.

Student resources: Diversity, equity, inclusion

<https://www.ndsu.edu/news/view/detail/61605/>

MS Exercise/Nutrition Science Option

The purpose of this handbook is to familiarize you with how to complete the requirements needed for the MS degree within the Exercise/Nutrition Science option. The MS in Exercise/Nutrition Science option prepares the graduate for advanced positions in industry and academia. The department is devoted to researching and understanding the long-term effects of exercise programming, physical activity, and nutrition, and translating this research into effective exercise/nutrition science and wellness programs for children, adolescents, and men and women of all ages, as well as athletes. This option is appropriate for dietetics, nutrition, kinesiology, and exercise science graduates or related fields and contains three degree paths (Plan A, B, C).

1. Plan A- Thesis
2. Plan B- Paper
3. Plan C- Internship/Capstone

Upon admission to the MS Exercise/Nutrition Science program students should consider which path they wish to pursue and consult with their academic advisor. A formal decision should be declared before the end of the first academic semester.

Advisors

Graduate Faculty eligible to mentor students in the MS Exercise/Nutrition Science Option are: [Dr. Bryan Christensen](#), [Dr. Shannon David](#), [Dr. Nathan Dicks](#), [Dr. Marty Douglas](#), [Dr. Matt Drescher](#), [Dr. Julie Garden-Robinson](#), [Dr. Kyle Hackney](#), [Dr. Elizabeth Hilliard](#), [Dr. Ryan McGrath](#), [Dr. Yeong Rhee](#), [Dr. Sherri Stastny](#) , [Dr. Brad Strand](#) and [Dr. Joshua Wooldridge](#).

In the letter notifying an applicant of admission, the Graduate School will identify an individual in HNES whom the applicant should contact as an advisor. This person can help you select your academic option, as well as serve as the chair for the culminating experience. Students may change their advisor at any time prior to proposing their thesis/capstone. If students change their assigned advisor, they should inform their former advisor. If a plan of study was previously submitted, the [Request to Form or Change Supervisory Committee](#) form needs to be completed and sent to the graduate school.

MS Exercise/Nutrition Science Degree Paths

Plan A- Thesis

The traditional thesis typically includes a problem statement, a review of existing literature relevant to that problem, and the execute of a research project to address the problem. Each student assembles a supervisory committee as described in the [NDSU Graduate Handbook](#). Each candidate is required to pass a final oral examination in which the supervisory committee serves as the examining committee. Following a successful defense, the candidate will submit an electronic copy of their thesis to the Graduate School for review and often there is an attempt to publish the work in a prestigious academic journal. Pairing a student with faculty mentor that has experience in the area of interest is fundamentally important in this path.

Required:

- HNES 790 Seminar Introduction to HNES (1 credit)
- HNES 710 Introduction to Research Design and Methods in HNES (3 credits)
- STAT 725 Applied Statistics (3 credits)
- HNES 713 Graduate Exercise Physiology (3 credits)
- HNES 726 Nutrition and Wellness (3 credits)
- HNES 727 Physical Activity Epidemiology (3 credits)
- HNES --- Electives (9 credit hours)
- HNES 798 Thesis (6 credit hours)

Curriculum: Total 31 credits

Plan B- Paper

The Plan B path will proceed thorough understanding of existing knowledge and the ability to apply/understand that existing knowledge to a problem of interest. Note that under this degree, the new knowledge being created is focused more on a singular review or manuscript type deliverable (rather than a novel research investigation as with Plan A-thesis), and this is the primary difference between the Plan A and Plan B paths. The precise nature of the individual creative component is defined by the faculty mentor, committee, and student. Examples of possible creative components include a comprehensive paper that is prepared for an academic or practitioner based journal or an in depth exploration of applicable technology in the area. Each candidate would assemble a supervisory committee as described in the [NDSU Graduate Handbook](#), propose the intellectual work, and defend the product at a formal defense. This final submission to the Graduate College is to be approved by the student's supervisory committee.

- HNES 790 Seminar Introduction to HNES (1 credit)
- HNES 710 Introduction to Research Design and Methods in HNES (3 credits)
- STAT 725 Applied Statistics (3 credits)
- HNES 713 Graduate Exercise Physiology (3 credits)
- HNES 726 Nutrition and Wellness (3 credits)
- HNES 727 Physical Activity Epidemiology (3 credits)
- HNES --- Electives (12 credits)
- HNES 797 Paper (3 credits)

Curriculum: Total 31 credits

Plan C-Internship/Capstone

Plan C is designed for programs in which a well-defined culminating experience is more important than is an individual creative research component. In this path, a capstone experience or some other approach to measure the candidate's understanding of the relevant material in the area (certification, internship experience/project) is proposed. Additional course work is included in this path to give a formal document and defense is not required to be submitted to the Graduate College.

Required:

- HNES 790 Graduate Seminar: Introduction to HNES (1 credit)
- HNES 713 Graduate Exercise Physiology (3 credits)
- HNES 726 Nutrition and Wellness (3 credits)
- HNES --- Electives (21 credits)
- HNES 793/4/5 Independent study/ Internship/ Field Experience (6 credits*)

*All experiences are subject to approval by your advisor and/or graduate coordinator.

Electives for all Plan A, B, and C paths (if not required by path)

- HNES 668 Leadership and Communication in Dietetics
- HNES 642 Community Health and Nutrition Education
- HNES 703 Graduate Biomechanics of Sport and Exercise
- HNES 704 Psychological Foundations of Sport and Physical Activity
- HNES 710 Introduction to Research Design and Methods in HNES
- HNES 724 Nutrition Education
- HNES 727 Physical Activity Epidemiology
- HNES 735 Nutrition for Human Performance
- HNES 743 Obesity Across the Lifespan
- HNES 754 Assessment in Physical Activity and Nutrition
- HNES 760 Skeletal Muscle Physiology
- HNES 761 Physiological and Fitness Assessment in Exercise and Nutrition
- HNES 762 Exercise Endocrinology
- HNES 764 Advanced Cardiovascular Exercise Physiology
- HNES 770 Evidence Based Research and Practice
- HNES 777 Scholarly Writing and Presenting in HNES
- HNES 791 Temporary/Trial Topics

Other HNES course electives or other graduate courses offered by the University may be substituted with approval from the faculty teaching the course as well as the supervisory committee.

Curriculum: Total 34 credits

Additional Course Information

Students should consistently progress through the credits needed to graduate and know all prerequisites for their individual graduate studies. Tentative course schedules are provided to help students schedule their courses as they progress toward completion of the degree. Some HNES graduate courses are offered on a two-year rotation. You may view the course rotation schedule further down in this handbook. Please also consult with the [Graduate School Bulletin](#) for the most up to date changes.

Courses numbered: 600/700/800 may be taken for graduate credit in the student's field of study. Courses not listed in the Bulletin of the Graduate School may not be taken for credit toward the Master of Science degree. All prerequisites must be met before a student can take a 600/700/800 level graduate class or instructor permission must be granted.

Transfer of Credits: It is possible to transfer up to 10 semester credits of graduate work provided the work is from an accredited graduate program, is of "B" grade or better, is the same subject matter required in a selected program, and is approved by the Department Head and the Graduate School. These courses are listed on the plan of study form when it is submitted.

Out-of-Date Course Work: Course requirements must be completed within a period of seven (7) years from the date of application for the MS degree. Out-dated courses may be renewed in accordance with the Graduate school regulations found in the bulletin.

Academic Requirements: "To be in good standing and to receive a graduate degree, a student must maintain a cumulative grade point average of 3.0 or B." (Graduate Bulletin, General regulations)

Credit Load: Nine credits are considered a full-time graduate load (even with a 10 hour graduate assistantship). Graduate teaching assistants in half-time status (20 hours per week) are considered full-time if registered for five or more graduate credits.

Tri-College: Graduate students may take courses offered at Minnesota State University Moorhead or Concordia College for credit toward a degree. The courses, however, must be listed as graduate courses and approved by the supervisory committee and the Department Head, as well as being listed on the plan of study when it is submitted.

Continuous enrollment/leave of absence:

Graduate credit for any course that is more than seven (7) calendar years old at the time of the final examination cannot be used to satisfy a master's degree program. Following the final examination, the candidate has one (1) year to provide The Graduate School a disquisition for which the Graduate Dean will sign final approval of all requirements for the degree. Should the disquisition not be deposited as specified or any other degree requirements not be completed within this time limit, the student must repeat the final examination and may have to retake courses in their plan of study.

Final Culminating Experience

All graduate students must complete a culminating experience as part of their program of study (A-Thesis/b-Paper/C-capstone). Specific procedures have been developed for the culminating experience. It is each student's responsibility to be familiar with and to follow the procedures. Students should plan to hold their proposal and defense dates during the academic school year as faculty may not be available during the summer months.

Plan A- Thesis

HNES 798 Master's Thesis – A thesis is defined as original research under the supervision of a major advisor and a supervisory committee. A proposal meeting with the supervisory committee is required before one may commence with a thesis. Six credits of HNES 798 is required to be taken.

Thesis Proposal Guidelines:

Preparation of a research proposal is an important writing experience. The purpose of a research proposal is to provide your supervisory committee with sufficient information to decide if the proposed research is needed and is likely to be fruitful. In order to accomplish that goal, the proposal should: 1) present the logical need for conducting the proposed piece of research, 2) provide an analysis of the most important past research as a context for the proposed study, 3) specify the objectives and/or the hypotheses or research questions, and 4) outline the basic procedures to be followed. The proposal provides a statement of agreement between you and your committee as to the minimum expected for the thesis research. Enough detail should be provided, so the committee can be certain that the student is aware of the relevant prior research, detect any of the student's misconceptions, and identify potential errors in the proposed study. You will, of course, in consultation with your advisor, fill in details, often expanding on the anticipated procedures, as you conduct the research.

The following sequence of suggested sections for a thesis proposal reflects a basic logic of investigation, from intellectual uncertainty to plan of action. The sections are those essential to an adequate proposal, although some advisors may prefer a different order. The general structure may need to be modified depending upon the particular type of research problem being addressed by the student.

For all research proposals, there should be an "Introduction" that includes a "Statement of the Problem", "Brief Review of Literature," and a "Methods and Procedures" section appropriate to the type of research to be conducted. Without these, it is difficult for the committee to anticipate what you plan to do, to help guard against potential errors of inappropriate approaches, and to judge when you have completed the agreed-upon project. There are different formats that can be used – check with your advisor to determine which one you should use. You should be familiar with the current documents providing information for this formatting. The proposal must be written in present or future tense and the table of contents/organization should be similar to Table 1.

Table 1. Table of Contents/Organization for Thesis Proposal

Chapter 1 Introduction

Statement of the Problem

 Purpose of the Study

 Focus

 Objectives, Hypothesis, or Research Questions

Significance of the Study (optional)

Limitations of the Study

Organization of Remaining Chapters (optional)

Definition of Terms

Chapter 2 Review of Literature

 Purpose of the Study

 Body (by subdivision/topics following sequence set by statement of the problem)

 Summary

Chapter 3 Methodology Purpose of the Study

 Population Sample and Sampling Procedures

 Data Collection (instrument, description, reliability, validity and how determined)

 Procedures

 Research Design

 Statistical Analysis

References

Chapter 1 Introduction

This section provides a short introduction to the research being proposed and provides the parameters under which the study will be completed. The identification of a problem provides the logical foundation upon which the rest of the proposal is built. This section should include a one-or two- sentence statement of the general purpose of the research, followed by a list of specific objectives to be accomplished by the research. These outcomes should be stated as outcomes, not as procedures.

Following the objectives, the hypotheses or research questions that guide the study are listed, sometimes in a separate section. Research questions may be used rather than hypotheses. Next, a section of definition of terms used in the research is provided. A listing of the limitations of the research will be added at the conclusion of the study. Finally, it is often helpful to include toward the end of the problem section a one-or two-sentence synopsis of the research problem.

Chapter 2 Review of Literature

This involves conducting an exhaustive search for research and theoretical publications that relate to the problem discussed in the introduction. After relevant sources are located, the student reads and makes notes on each source and then prepares a report that defines the problem and indicates how the review of the literature helps to address the problem. The review should be critical in nature, and based, preferably, on a systematic model for recording and analyzing information from professional research journals, books, reports and the like. It should result in conclusions or provide direction with respect to the identified problem.

In the review of literature, the study is placed in context through a critical analysis of selected studies that should: 1) pull together findings to provide a "state-of-knowledge" summary in regard to the research problem₁₀

and provide additional evidence in regard to the nature and/or the importance of the problem underlying the study; 2) make clear how further research should extend, differ from, or replicate past studies, including the identification of the critical variables in the problem area and important hypotheses to be tested; 3) indicate shortcomings in the design of prior research that should be avoided and/or strengths to be repeated in conducting another study; and 4) where there are methodological alternatives, especially controversial ones, critique the literature that is relevant to making a choice. This section is not intended to be a complete presentation of the comprehensive review of related literature that has been done prior to writing the proposal. Only those studies that are directly pertinent to structuring the proposed research should be discussed briefly, in order to assure the student's committee that major studies and/or issues have not been overlooked.

Chapter 3 Methods and Procedures

The methods and procedures section of the proposal is an explanation of the specific steps to be followed in meeting the objectives and in testing the hypotheses or answering the questions posed in the prior sections. An introduction describing the purpose of the research is included. The procedures to be followed in the present research should take into account the major criticisms of or comments on prior research in the review of literature section. A chronological listing of major procedural steps is often useful. The following subsections will usually be included in the procedures section: population sample, data collection and instrumentation, procedures, research design, and statistical analysis.

Final Thesis Guidelines

After your proposal has been approved by your supervisory committee and IRB, you will conduct your research. After gathering your data, you will prepare your final product. This final product may take different forms depending upon if you are using the traditional thesis format or an article form. In either case, however, the first three chapters of your thesis will be the same. Those chapters simply come from your proposal. All material in the first three chapters must be changed to past tense in the final thesis. Using the traditional format you will add chapters 4 (results) and 5 (discussion) to your proposal document. The table of contents/organization should look similar to the information in Table 2.

Chapter 4 Results

The results of a study are presented in relation to the research questions posed in chapter 1, usually with the assistance of tables. You must be careful to avoid discussing the findings in this chapter or connecting the findings to previous studies.

Chapter 5 Discussion

In this chapter, the findings are discussed as you attempt to explain what was learned, why it might have happened, and how the findings support or refute previous research. You will draw conclusions in this chapter and provide an overall summary.

You may opt to use an article format in the preparation of your final thesis. With the article format you will add a chapter 4 (manuscript) to your defense document. The table of contents for a thesis prepared using the article should look something like that is Table 2. Note that tables and figures that are repeated in the thesis should be numbered consecutively. Note- This method is likely the most preferred method by your advisor.

Table 2. Table of Contents/Organization for Manuscript Format

Chapter 1 Introduction

Statement of the Problem

Purpose of the Study

Focus

Objectives, Hypothesis, or Research Questions

Significance of the Study (optional)

Limitations of the Study

Organization of Remaining Chapters (optional)

Definition of Terms

Chapter 2 Review of Literature

Purpose of the Study

Introduction (by rephrasing the statement of the problem in Chapter 1 to fit focus)

Body (by subdivision/topics following sequence set by statement of the problem)

Summary (of literature findings in order set by statement of the problem)

Chapter 3 Methodology

Purpose of the Study

Introduction (by rephrasing the statement of the problem in Chapter 1 to fit focus)

Population Sample and Sampling Procedures

Data Collection (instrument, description, reliability, validity and how determined)

Procedures

Research Design

Statistical Analysis

Chapter 4 Manuscript

Introduction (summary of Chapters 1 and 2)

Methods (summary of Chapter 3)

Results

Discussion

References (references used in the manuscript)

Chapter 5 Summary and Conclusions (optional)

References (all references used in the thesis)

Appendices

Chapter 4 Manuscript

This chapter is written as a manuscript that may be submitted to a professional journal. The chapter will contain an introduction, methods, results, discussion, and reference list.

Chapter 5 Summary and Conclusions (optional)

This chapter consists of an overall summary of the project and conclusions regarding the research. Suggestions for additional research are usually put in this chapter.

Final Thesis Defense

The candidate shall pass a final examination before being awarded the master's degree. Enrollment in at least one credit is required during the term in which the final examination is taken and in subsequent semesters until the thesis is approved by the graduate school. The examination (defense) format is as follows (times listed are suggestions only):

- Student may be excused from the room while committee has preliminary discussion - up to 5 minutes (if needed).
- Duration of the student presentation - up to 30 minutes.
- Questions from the defense committee - up to 30 minutes.
- Committee deliberation - up to 20 minutes. The student is excused from the committee's deliberations.
- Student advised of outcome by the defense committee chair.

Your presentation should be conducted as an oral research presentation. The times noted are suggested to help you discuss what you need to in the 30 minutes that you are to present. You will begin with an introduction that cites a few important studies (3 minutes) followed by the statement of the problem (1 minute). Next, discuss your research methods and procedures (up to 4 minutes) and your results (up to 4 minutes). Finally, finish your oral presentation with a discussion of your findings (up to 8 minutes). Your 20-minute oral presentation is followed by questions from your committee.

Questions and concepts a student should be prepared to answer during the oral examination include:

- Questions about the paper.
- Questions about the student's plan of study and coursework.
- Questions regarding the statistical terms and the statistical analysis used in the study.
- Questions regarding the type of research methods used in the study.

Basis for Evaluation for pass or fail.

- Demonstrates scholarly writing using Graduate School guidelines for disquisitions;
- Integrates existing research and theory with own project or study and makes appropriate conclusions;
- Indicates an understanding of the scientific process;
- Clear articulation of the study and contribution to the field;
- Ability to defend one's work during the oral examination.

The copy of your thesis submitted to your supervisory committee is considered a draft, which is subject to changes the supervisory committee and the HNES Department Head require. Such changes could involve rewriting major sections. After the final defense, you will incorporate into the thesis corrections suggested at the final oral defense and the HNES Department Head.

You have one year from the date of the final examination to send the thesis to The Graduate School 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. If a period of two years or greater has lapsed before the final copies are submitted, the student must reapply to The Graduate School and must register for a minimum of two credits. Degree date is based on the date when final copies are submitted to The Graduate School.

Plan B- Paper

HNES 797 Masters Paper- The paper will proceed thorough understanding of existing knowledge and the ability to apply/understand that existing knowledge to a problem of interest. Often this is a detailed academic manuscript submission of an overarching topic. Three credits of HNES 797 is required to be taken.

Paper Proposal Guidelines:

Preparation of a research paper proposal is an important writing experience. The purpose of a research proposal is to provide your supervisory committee with sufficient information to decide if the proposed research is needed and is likely to be fruitful. The proposal provides a statement of agreement between you and your committee as to the minimum expected for the research. Enough detail should be provided, so the committee can be certain that the student is aware of the relevant prior research, detect any of the student's misconceptions, and identify potential errors in the proposed study. You will, of course, in consultation with your advisor, fill in details, often expanding on the anticipated procedures, as you conduct the research.

The following sequence of suggested sections for a research paper proposal reflects a basic logic of investigation, from intellectual uncertainty to plan of action. The sections are those essential to an adequate proposal, although some advisors may prefer a different order. The general structure may need to be modified depending upon the particular type of research problem being addressed by the student. For all research paper proposals, there should be an "Introduction" that includes an: Overview of the Purpose/Problem" Statement of the Purpose/Problem", a "Brief Summary of Literature", Significance of the Topic" a "Definition of Terms" and "References". Without these, it is difficult for the committee to anticipate what you plan to do and to judge when you have completed the agreed-upon project. The written proposal table of contents/organization should be similar to Table 3.

Table 3. Table of Contents/Organization for Paper Proposal

Chapter 1 Introduction
Overview of the Problem
Statement of Purpose/Problem
Brief Summary of Literature
Significance of Review
Definition of Terms
References

Chapter 2 Review of Literature

After proposing your paper idea to your committee, you can now complete the full literature review. This involves conducting an exhaustive search for research and theoretical publications that relate to the problem discussed in the introduction. The review should be critical in nature, and based, preferably, on a systematic model for recording and analyzing information from professional research journals, books, reports and the like. It should result in conclusions or provide direction with respect to the identified problem.

In the review of literature, the study is placed in context through a critical analysis of selected studies that should: 1) pull together findings to provide a "state-of-knowledge" summary in regard to the research problem and provide additional evidence in regard to the nature and/or the importance of the problem underlying the study; 2) make clear how further research should extend, differ from, or replicate past studies, including the identification of the critical variables in the problem area and important hypotheses to be tested; 3) indicate shortcomings in the design of prior research that should be avoided and/or strengths to be repeated in conducting another study; and 4) where there are methodological alternatives, especially controversial ones, critique the literature that is relevant to making a choice. This section is not intended to be a complete presentation of the comprehensive review of related literature that has been done prior to writing the proposal. Only those studies that are directly pertinent to structuring the proposed research should be discussed briefly, in order to assure the student's committee that major studies and/or issues have not been overlooked. The review paper may end with summary/conclusion/or recommendations for practitioners in the field or for future research in the area.

Final Paper Guidelines

After your proposal has been approved by your supervisory committee you can continue to complete your research and complete the final review of literature. The table of contents/organization should look similar to the information in Table 4.

Table 4. Table of Contents/Organization for Final Paper Defense

Chapter 1 Introduction
Overview of the Problem
Statement of Purpose/Problem
Brief Summary of Literature
Significance of Review
Definition of Terms
Chapter 2 Review of Literature
Body (by subdivision/topics)
Summary/Conclusion/Recommendation
References

Final Paper Defense

The candidate shall pass a final examination before being awarded the master's degree. Enrollment in at least one credit is required during the term in which the final examination is taken and in subsequent semesters until the thesis is approved by the graduate school.

The examination (defense) format is as follows (times listed are suggestions only):

- Student may be excused from the room while committee has preliminary discussion - up to 5 minutes (if needed).
- Duration of the student presentation - up to 30 minutes.
- Questions from the defense committee - up to 30 minutes.
- Committee deliberation - up to 20 minutes. The student is excused from the committee's deliberations.
- Student advised of outcome by the defense committee chair.

Your presentation should be conducted as an oral research presentation. The times noted are suggested to help you discuss what you need to in the 30 minutes that you are to present.

Questions and concepts a student should be prepared to answer during the oral examination include:

- Questions about the paper.
- Questions about the student's plan of study and coursework.

Basis for Evaluation for pass or fail.

- Demonstrates scholarly writing using Graduate School guidelines for disquisitions;
- Integrates existing research and theory with own project or study and makes appropriate conclusions;
- Indicates an understanding of the scientific process;
- Clear articulation of the study and contribution to the field;
- Ability to defend one's work during the oral examination.

The copy of your paper submitted to your supervisory committee is considered a draft, which is subject to changes the supervisory committee and the HNES Department Head require. Such changes could involve rewriting major sections. After the final defense, you will incorporate into the thesis corrections suggested at the final oral defense and the HNES Department Head.

You have one year from the date of the final examination to send the thesis to The Graduate School 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. If a period of two years or greater has lapsed before the final copies are submitted, the student must reapply to The Graduate School and must register for a minimum of two credits. Degree date is based on the date when final copies are submitted to The Graduate School.

Plan C- Internship/Capstone:

Requirements for internships/field experiences/independent study.

Students may elect to complete up to three credits of independent study and/or field experience/practicum. Both of the options require advisor/department approval and are graded with a letter grade. As a guide an individual must complete ~40 hours per credit for independent studies but can vary based on the project and is set by the mentor. Internship hours and field experiences are set by [Registration and Records Office](#) at ~40 hours per credit. You must complete the appropriate contract, with the help of your advisor, prior to registration. **The contracts are located on the HNES Graduate Program Blackboard page.** Students may elect to take up to 6 credits of internship (~40 hours per credit) with the appropriate documentation and permission from the host site. Allow additional time for approval and agreements with this option as it can take several months for an affiliation agreement to be approved by NDSU and the host site.

HNES 794 Practicum/Internship: Mentored experience in research or industry that may be on or off campus.

HNES 793 Independent Study: Directed study allowing an individual student under faculty supervision to undertake selected, independent work in topics of special interest or a limited experience in research. Examples include research study, directed readings, or a review of literature.

HNES 795 Field Experience: Field-oriented, supervised learning activities conducted outside the traditional classroom/laboratory.

Timelines and Forms

1. Once you have been accepted to the graduate school and the Department of Health, Nutrition and Exercise Sciences, visit with your assigned major advisor and review the program path (A, B, C) that you are interested in pursuing for the MS Exercise/Nutrition Science Option. Timelines vary per student but it is generally expected that the degree can be complete in 2 years.

For plan A and B paths following steps 2-16. For plan C paths jump to step 17

2. In consultation with your advisor, select additional members to serve on your thesis/paper/capstone committee. You need three members on your committee for a MS degree. However, please explore the committee requirements provided by [NDSU Graduate Handbook](#) to assure the appropriate committee is created. Guidelines are below:
Plan A and B committees:
 - 1) MS advisor who serves as the committee chair.
 - 2) A second member, who must be a full or affiliate member of the graduate faculty.
 - 3) A third member, who could be either a faculty member from outside the student's program or a qualified off-campus expert in the field. If this committee member is not a full or affiliate member of the graduate faculty, the approval of the Dean of the Graduate College is required. Approval by the dean requires a memo from the program/department chair explaining the qualifications of the person to be on the committee and the person's curriculum vitae. A list of graduate faculty affiliation status is here. <https://catalog.ndsu.edu/graduate/faculty/>
3. Develop a preliminary plan of study in consultation with your major advisor. This should estimate what classes you will take to complete your degree. An example Plan of Study is shown in Appendix A. Class rotation list is shown in Appendix B.
4. Submit the formal plan of study to the Dean of the Graduate School for approval no later than the term immediately after the supervisory committee is formed. An example Plan of Study is shown in Appendix A but the official submission must be made [Master's Plan of Study Page](#)
5. Complete the courses listed on the plan of study with B or better grade. Maintain continuous enrollment through completion of the degree or obtain a leave of absence from the Graduate School. [Leave of absence forms](#)
6. Register for HNES 798 Master's Thesis/HNES 797 Paper. Complete the appropriate contract **located at the NDSU graduate program blackboard page** with the help of your advisor, prior to registration.
7. In consultation with your advisor, prepare a draft of your thesis or paper using [templates](#) provided by the graduate school.
8. Upon approval of your advisor, schedule a proposal meeting with your committee. **All committee members should receive a copy of your proposal at least 7 days prior to the meeting. No additional documentation is required to be submitted to the graduate school for the proposal.**
9. Upon approval by your committee submit paperwork to [NDSU's Institutional Review Board \(IRB\)](#) or other compliance requirements, if necessary. You will need to complete the online [CITI](#) training for Human Subjects Protection –This must be completed before you can begin your research and before you receive IRB approval. You may begin your research after you receive approval from IRB.

10. Once you complete your research and in consultation with your advisor complete the [Intent to Graduate](#) form by the posted deadline required by the graduate school. These are generally within the first month of the start of the semester so explore the [NDSU graduate school](#) page to make sure you complete the form prior to the deadline.
11. At the completion of your research and upon approval of your advisor, you may schedule the final oral examination (defense). A [Notification of Scheduled Exam](#) form must be submitted to the **Graduate School two weeks prior to the examination.**
12. **All committee members must receive a copy of your completed thesis or paper at least 7 days prior to the meeting.** The HNES Department Head must read your updated thesis and approve before it is sent to the Graduate School. It is helpful to send the Department Head a copy of the thesis/paper when you send it to your committee.
13. Defend your thesis work. At this meeting you will orally explain and defend your research. The examining committee will immediately report, in writing, the results of the examination to the Dean of the Graduate School via the [Report of Final Examination Form](#).
14. Upon approval by the advisor and Department Head, submit one draft of the thesis or paper to the Graduate School for approval via the NDSU graduate school [online submission](#) system.
15. If corrects are required, edit, and resubmit to the graduate school. Submit the final disquisition to the Graduate School office no later than one year after the oral defense. Failure to do so, results in another oral defense. If you want to graduate the semester you finish, there are additional timelines that must be met.
16. If you are unsuccessful at your defense, please consult with our advisor and the [NDSU Graduate Handbook](#). With 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. 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.

For Plan C Path

17. Upon consultation with your advisor, you must formally declare a change of degree objective from Plan A (default) to plan C. To do this please submit the “Degree objective change” form with the graduate school. This action moves you to the plan C plan of study in campus connection. The form can be found here: https://www.ndsu.edu/gradschool/current_students/forms
18. In consultation with your advisor, mutually agree on your culminating experience. The experience must reflect high quality work and effort to be approved. You must complete the appropriate contract prior to registering for your credits. **The contracts are located on the HNES Graduate Program Blackboard page. The contract is the official record of the requirement needed to graduate and must be signed by both parties. A copy can be sent to the graduate coordinator if needed.**

19. Register for HNES 793/794/795 Independent study/ Internship/and/or Field experience or upon approval of your advisor. Some internships or field experience may require special permissions, affiliation agreements, or requirements. The internship/field experience cannot begin until these forms have been completed/processed, so be sure to discuss with your program site on requirements. Note these experiences can be completed at any time in the program.
20. If completing an internship, complete any requirements assigned by the site. Note affiliation agreements may take several months to get approved and an internship cannot begin prior to approval (Advisor note- affiliation agreement template is located in “HNES Graduate Program” blackboard page under the “HNES MS Exercise/Nutrition Science Handbook”. Also, see screen shot below.
21. If completing a capstone and associated deliverable (certification, research document, etc.) that was agreed upon by you and your advisor, make sure that is in final form and/or completed.
22. As previously indicated, formal plans of study are not required for Plan C students. Instead they will be tracked on campus connection in the “academic requirements” section. This section is the official “audit” of the degree being completed, therefore, please keep it up to date. With the assistance of the advisors, students can update their plan of study by performing the following. The [Change to Plan of Study](#) for document (with electronic signatures through docuSign of student, advisor, and graduate coordinator) triggers the graduate school to accept courses that are not in HNES or on the current campus connection academic requirements page to count toward the 34 credit total for degree completion. When completing the form place the course number, title, and credit number in the “add section”. **Also, in the “Substitutions” simply write “Electives”. An example is below. If you are substituting a “requirement” course please write that into the “Substitutions” as well. All substitutions are subject to departmental approval by the graduate coordinator or department chair.**

Change to Plan of Study

Student First Name _____ Last Name _____

ID ***** Degree and Program MS HNES option Exercise/Nutrition Science

Add:

<u>Dept./Course #</u>	<u>Title</u>	<u>Institution (if transfer credit)</u>	<u>Credits</u>
PSYC 657	Managing Work Motivation		3
STAT 725	Applied Statistics		3

Delete:

<u>Dept./Course #</u>	<u>Title</u>	<u>Credits</u>

Substitutions

If any course(s) added above is a substitution, list which NDSU course the added course is substituting.

	<u>Dept./Course #</u>	<u>Title</u>	<u>Credits</u>
Substitution for:		Electives	6
Substitution for:			
Substitution for:			
Substitution for:			

23. Submit the [Intent to Graduate](#) form by the posted deadline in the semester in which they plan to graduate. This form will not require the adviser's approval. **These are generally within the first month of the start of the semester so explore the [NDSU graduate school](#) page to make sure you complete the form prior to the deadline.**
24. Submit the [Application for Graduate Degree](#) by the last day of the semester in which they plan to graduate. This form will be a DocuSign form to be signed by the student, adviser and program coordinator.
25. Await confirmation from the NDSU graduate school that you have completed all requirements for the degree via Plan C.

Frequently Asked Questions

How do I decide what path to pursue?

Students should consider what career they are interested in obtaining in the immediate future as well as long term career aspirations and evaluate how the MS degree can help them obtain these positions. Consulting with their advisor is helpful in answering this question but it is up to the student to ultimately decide which path is best for their career.

Why are more credits required for the Plan C option (34 vs. 31)? Given plan C path students do not need to complete a formal defense for their final culminating experience (steps 2-16 above) additional course work is required to make the effort in the paths equivalent.

How many hours per credits is required for an internship? The Registration and Records Office at NDSU states the 40 hours of work is needed per credit for internships.

How many hours per credits is expect for an independent study? The expected hours requirement for an independent study should reflect a similar amount of effort as an internship (40 hours per credit).

How do I declare for the plan C path?

Please see step 17 above.

I am a plan C path student. How do I update my plan of study on campus connection?

Please see step 21 above.

I have taken research credits (HNES 798/HNES 797), however, now I wish to move to Plan B or C. Will those thesis/paper credits count toward my new path?

Yes. Students moving from Plan A master's to a Plan B or C (non-thesis) masters may use, with the approval of their advisor and graduate program coordinator, up to four (4) completed research credits toward the minimum credits for the new degree objective.

Transfer Credits

Official transcripts with grades posted from the transfer institutions must be on file in the Graduate School PRIOR to approval of the Plan of Study.

Do not include courses previously taken at NDSU. All NDSU courses should appear on the first page.

<u>Institution</u>	<u>Dept</u>	<u>Course #</u>	<u>Title</u>	<u>Term</u>	<u>Cr</u>	<u>Gr</u>

Total Transfer Credits (in semester credit hours):

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 a committee member is not a full or affiliate 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.

<u>Typed Names</u>	<u>Signature (Recommends approval)</u>	<u>Dept</u>
Adviser		

Approval

Graduate School Dean

Graduate Program Coordinator Signature

Appendix B. HNES Course Rotations

A general list of the HNES course rotation schedule is shown in the pages to follow. This is for planning purposes only. HNES may make changes to the scheduled rotations. The updated plan will be available each semester as soon as it is known.

HNES Graduate Course Rotations (Fall 2021- Summer 2026)

Course #	Class Delivery		MS Exercise/Nutrition Science Option PhD Exercise Science and Nutrition														
			F21	Sp22	Su22	F22	Sp23	Su23	F23	Sp24	Su24	F24	Sp25	Su25	F25	Sp26	Su26
642/L	In person	Community Health and Nutrition Education/Lab	X			X			X			X			X		
668	In person	Leadership and Communication in Dietetics	X			X			X			X			X		
703	In person	Graduate Biomechanics of Sport and Ex.	X						X						X		
704	Online	Psychological Foundations of Sport and Physical Activity (online)				X			X			X			X		
710	Hybrid	Introduction to Research Design and Methods in HNES (GPIEDA SECTION NOT ALLOWED)	X			X			X			X			X		
713	In person	Graduate Exercise Physiology		X						X						X	
724	Hybrid	Nutrition Education		X													
726	Online	Nutrition & Wellness (GPIEDA SECTION NOT ALLOWED)					X						X				
727	Online	Physical Activity Epidemiology		X						X						X	
735	In person	Nutrition for Human Performance (GPIEDA SECTION NOT ALLOWED)				X			X			X			X		
743	Online	Obesity Across the Lifespan (GPIEDA SECTION NOT ALLOWED)				X						X					
754	In person	Assessment in Nutrition and Exercise Science	X						X						X		
760	Online	Skeletal Muscle Physiology					X						X				
761	In person	Physiological and Fitness Assessment in Exercise Science	X				X						X				
764	Hybrid	Advanced Cardiovascular Exercise Physiology								X						X	
777	In person	Scholarly Writing and Presenting in HNES					X						X				
790	In person	Graduate Seminar: Intro to HNES	X			X			X			X			X		

F= indicates fall semester. Sp= Spring semester. Su=indicates summer semester.

Appendix C. Affiliation Agreement

- **Please email Graduate coordinator and department chair as this agreement is a docuSign form**

**EDUCATIONAL AGREEMENT
(Draft for schools with no instructors on site)**

_____ = site information

This agreement is between _____, whose mailing address is _____ ("Facility"), and North Dakota State University ("NDSU"), College of Human Sciences and Education, whose mailing address is P.O. Box 6050 Fargo, North Dakota 58108-6050.

WHEREAS, the NDSU has programs for qualified students preparing for exercise science careers; and

WHEREAS, Facility has the necessary facilities and/or resources needed by the NDSU and desires to contribute to the success of this program by making certain facilities and services available for student instruction; and

WHEREAS, it is in the mutual benefit of both the NDSU and Facility to cooperate in promoting quality education; and

NOW THEREFORE, it is mutually agreed by said parties as follows:

I. NDSU SHALL:

- A. Assume responsibility for all instruction and administration of the student's academic program.
- B. Establish standards for selection and employment of academic faculty employed primarily to teach students. The instructors will be responsible for planning and directing the student's learning experiences in conjunction with the assigned instructor or preceptor at Facility.
- C. Assure Facility that students have been instructed to: *respect and function according to the policies of Facility; *adhere to Facility standards and policies regarding confidentiality and privacy; and *collaborate with designated preceptor regarding coordination of their schedule and supervision of the educational experience.
- D. Consult and coordinate periodic conferences with Facility regarding planning and evaluation of the experience. As part of the communication, meetings will be held to: familiarize and update institutional and student objectives; and familiarize and update the program faculty with Facility philosophy, objectives and expectations. Informal conferences may be initiated by either party as necessary during the school year.
- E. Designate the students who are enrolled in a program to be assigned for an educational experience at Facility, in such numbers as are mutually agreed to by both parties.
- F. Require that all students carry or are provided with professional liability insurance in recommended amounts (one million/occurrence; three million

aggregate). Evidence of in-force coverage shall be provided to Facility prior to commencement of clinical experience at Facility. Such documentation shall indicate the name of the insured, the amount of coverage, name of the insurer and the effective dates of the insurance coverage.

- G. Assure Facility through appropriate documentation that each student has received immunizations for measles, mumps and rubella during their lifetime and a negative reading of a tuberculosis test within the past two years. Inform the students that they are not to participate in the care of patients if they have an active infection or a contagious illness (e.g. cold, flu, gastrointestinal upset, rash, fever, sore throat, etc.).
- H. NDSU assumes the responsibility for students being academically prepared for the educational experience.
- I. Provide Facility with documentation as follows:
 - *verification of current program/educational institution accreditation status.
 - *verification of professional liability malpractice insurance as specified above.
 - *verification of immunizations and TB test status as specified above.

II. FACILITY SHALL:

- A. Accept qualified students of NDSU for experiences as planned in conjunction with NDSU. Facility may exclude any student who does not meet the requirements of Facility policy, including but not limited to, the requirement of being free from contagious diseases.
- B. Provide employees designated as instructors or preceptors to supervise the students and provide the education contemplated under this Agreement while the students are onsite at Facility. Facility shall also provide a student evaluation as reasonably requested by NDSU on forms provided by NDSU.
- C. Provide a reasonable amount of time for orientation of new students, joint conferences for planning with instructors from NDSU, and for such other assistance that is mutually agreeable.
- D. Provide a room for conferences for students as needed.
- E. Have the ultimate responsibility for the care of its patients/clients.
- F. Maintain its health care delivery services without reliance on students.
- G. Have the right to summarily terminate the use of any of its facilities by any student for violation of Facility rules, regulations, procedures, and policies. Facility agrees that such action will not normally be taken until the grievance against any faculty member or student has been discussed with the appropriate representatives of the NDSU, however, Facility shall be free to exercise its discretion in the matter without consultation with NDSU representatives.
- H. Maintain the confidentiality of any educational records pertaining to students pursuant to the Family Educational Rights and Privacy Act. Facility cannot

transfer to any third party or allow access to third parties to the educational records in violation of the Family Educational Rights and Privacy Act.

- III. The students assigned to Facility shall be and remain students of the NDSU and shall in no sense be considered employees of Facility except when they may be employed by Facility during time free from the educational program.
- IV. Students who are injured or become ill while at Facility shall immediately request permission to leave the premises or report to the appropriate area for emergency treatment. Hospital and medical costs arising from such injury or illness shall be the sole responsibility of the individual party and not the responsibility of Facility.
- V. Facility certifies that it has in place policies that protect NDSU's students and employees from sexual harassment and discrimination while they are onsite during this Agreement. NDSU does not discriminate on the basis of age, color, disability, gender expression/identity, genetic information, marital status, national origin, public assistance status, sex, sexual orientation, status as a U.S. veteran, race or religion and Facility agrees to extend the same protections to NDSU's students. Facility agrees to provide NDSU with copies of its non-discrimination and sexual harassment policies
- VI. This agreement shall be effective for a term commencing on (beginning date), and shall terminate on (ending date). This agreement may be earlier terminated by either party upon 30 days written notice of breach by the other party and the breaching party's failure to cure the breach within said 30 day period. In the event there are students currently participating in a clinical experience at Facility, all reasonable efforts shall be made to allow said student(s) to complete their clinical experience.
- VII. No modification, change or amendment of this agreement shall be effective until reduced to writing signed by both parties. This agreement may not be assigned by either party without the consent of the other party.
- VIII. Notices, as required under this Agreement, shall be deemed to have been properly given or sent when made in writing and deposited in the United States mail, postage prepaid. (or by any other method actually resulting in delivery)
- IX. All matters relating to the validity, construction, performance, or enforcement of this Agreement shall be controlled by and determined in accordance with the laws of the State of North Dakota. All legal actions initiated with respect to or arising from this Agreement or any provision contained therein shall be initiated, filed and venued solely and exclusively in the State of North Dakota District Court located in the City of Fargo, County of Cass, State of North Dakota.

IN WITNESS THEREOF, this Agreement has been executed by and on behalf of the parties hereto, the day and year as appears next to their signatures below.

Facility

By: _____ Date: _____

By: _____ Date: _____

NORTH DAKOTA STATE UNIVERSITY

By: _____ Date: _____
Dean/College of Human Sciences and Education

By: _____ Date: _____
Head, HNES

Appendix D. MS Exercise/Nutrition Science Course Objectives

HNES 642 – Community Health and Nutrition Education (3 credits)

Course Objectives

1. Students will develop skills for communicating with a diverse population.
 2. Students will communicate health and nutrition messages to the public.
 3. Students will apply motivational interviewing techniques to affect behavior change.
 4. Students will identify community resources targeted at improving health and nutrition status.
 5. Students will engage in advocacy to affect policy change.
-

HNES 642L Community Health and Nutrition Lab

Course Objectives

1. Demonstrate how to locate, interpret, evaluate and use professional literature to make ethical, evidence-based practice decisions.
 2. Select and use appropriate current information technologies to locate and apply evidence-based guidelines and protocols.
 3. Apply critical thinking skills.
 4. Demonstrate effective and professional oral and written communication and documentation.
 5. Develop an educational session or program/educational strategy for a target population.
-

HNES 668 Leadership and Communication in Dietetics

Course Objectives

1. Demonstrate effective and professional oral and written communication and documentation.
 2. Demonstrate cultural humility, awareness of personal biases and an understanding of cultural differences as they contribute to diversity, equity and inclusion.
 3. Describe contributing factors to health inequity in nutrition and dietetics including structural bias, social inequities, health disparities and discrimination.
 4. Identify and articulate one's skills, strengths, knowledge and experiences relevant to the position desired and career goals.
 5. Practice resolving differences or dealing with conflict.
 6. Promote team involvement and recognize the skills of each member.
 7. Demonstrate an understanding of the importance and expectations of a professional in mentoring and precepting others.
-

HNES 703- Graduate Biomechanics of Sports and Exercise (3 credits)

Course Objectives

1. To learn the biomechanical concepts related to training, sport, and physical activity.
 2. To further understand the application of biomechanical research to training, sport, and physical activity.
 3. To become familiar with some of the equipment used in the analysis of training, sport and physical activity.
 4. To practice and improve the student's ability to write professionally and adhere to APA or AMA format.
 5. To practice professional presentation skills
-

HNES 704- Psychological Foundations of Sport and Physical Activity (3 credits)

Course Objectives

1. To develop a comprehensive understanding of applied sport psychology.
 2. To learn how to apply the concepts to sports to improve performance in athletics.
 3. To learn how to apply the concepts to improve other areas of life outside of sports.
 4. To improve the student's literature search ability.
 5. To practice and improve the student's ability to write professionally and adhere to APA format.
-

HNES 710-Introduction to Research Design and Methods (3 credits)

Course Objectives

1. Develop a research topic of interest based on the available equipment and faculty expertise at NDSU.
 2. Understand the intricacies and importance of research ethics, methods, design and process.
 3. Conduct a literature review about a relevant research topic using the tools available at NDSU.
 4. Write high-quality sentences using specific skills for the area of expertise.
 5. Explain the differences between quantitative and qualitative research designs.
 6. Make corrections and edits to current writing based on the feedback of the instructor and peers.
 7. Understand the process of writing succinctly.
- Produce the start of a document serving as the basis for a Chapter 2 (e.g. Literature review) of a thesis/dissertation or other research project.
-

HNES 713 – Graduate Exercise Physiology (3 credits)

Course Objectives

1. Discuss the physiological bases of exercise stimuli.
 2. Interpret new research in field.
 3. Gain experience with advanced exercise physiology laboratory procedures.
-

HNES 724- Nutrition Education (3 credits)

Course Objectives

1. Apply theories (e.g. learning/educational theories, health behavior theory, health promotion theory, and communication theory) to decisions made in curriculum design, including teaching style and techniques.
 2. Identify social, environmental, and psychological factors influencing health behavior in terms of appropriate theories used to change eating behavior.
 3. Interpret current research.
 4. Interpret and incorporate new scientific knowledge into program design.
 5. Assess audience learning needs considering age, culture, needs/wants, readiness, resources, literacy level, and previous knowledge, using a variety of resources and data collection methods.
 6. Select content and teaching strategies to match nutrition or health education goals and audience needs. Recognize and differentiate between teaching techniques and their strengths and weaknesses for specific purposes.
 7. Write measurable goals and instructional objectives including cognitive, affective, and psychomotor (knowledge, attitude, and skill) domains.
-

HNES 726 – Nutrition and Wellness (3 credits)

Course Objectives

1. Utilize Maslow's Hierarchy of Needs to explore a person's or community's ability to develop a state of wellness.
 2. Apply current research on nutrition to promote wellness across the lifespan.
 3. Apply current research in nutrition and wellness to write a literature review on chosen topic.
 4. Develop relevant social media content to promote nutrition for wellness to a community.
-

HNES 727- Physical Activity Epidemiology (3 credits)

Course Objectives

1. Topics and concepts related to physical activity epidemiology.
 2. Critical thinking linked to physical activity epidemiology.
 3. Principles of interventions and secondary data analyses.
 4. Construction of an intervention that increases an aspect of physical activity participation for disease or disability mitigation.
-

HNES 735-Nutrition for Human Performance (3 credits)

Course Objectives

1. Students will be able to describe basic nutrition science concepts such as the six classes of nutrients.
 2. Students will recognize that choosing a variety of foods contributes to optimum health and will gain skills in utilization of the latest USDA dietary guidelines, including iron and calcium recommendations and avoidance of fad diets and fad supplements.
 3. Students will demonstrate their knowledge of nutritional habits and use of ergogenic aides that contribute to optimization of endurance and performance among active individuals.
 4. Students will gain knowledge and skills to select a diet that supports health and reduces the risk of chronic disease such as obesity (or overweight) and skills that support reduction for disordered eating/eating disorders (DEED).
 5. Students will learn the signs and symptoms of physical activity and nutrition related chronic and acute conditions and will gain skills related to health promotion and prevention such as body composition testing and knowing consequences of excess or too little body fat.
 6. Students will supervise use of established position papers and peer reviewed research publications in the field of sports nutrition.
 7. SN 2.2 (for Dietetics accreditation): Evaluate emerging research for application in promoting active lifestyles across the lifespan.
-

HNES 743- Obesity Across the Lifespan (3 credits)

Course Objectives

1. Topics and concepts related to obesity and health.
2. Trends in obesity, and obesity in society.
3. Critical thinking linked to obesity and health.
4. Risk factors associated with obesity and strategies for mitigating such risk factors.
5. The central- and population-level influences of obesity across the lifespan.

HNES 754 – Assessment in Nutrition and Exercise Science (3 credits)

Course Objectives

1. Examining and discussing research related to nutrition and exercise science assessments.
 2. Understanding the reliability, validity, feasibility, and appropriateness of assessment modes.
 3. Using assessment hardware and software for research and practical purposes.
 4. Applying assessment modes and interpreting their data.
-

HNES 760–Skeletal Muscle Physiology (3 credits)

Course Objectives

1. Identify skeletal muscle microanatomy and associate structures with muscle function;
 2. Explain the process and regulation of skeletal muscle contraction;
 3. Explain how muscle adapts to altered patterns of use including exercise, disuse, and aging;
 4. Identify and explain factors thought to contribute to the onset of fatigue during exercise;
 5. Critically analyze current literature pertaining to skeletal muscle physiology.
-

HNES 761- Physiological and Fitness Assessment in Exercise Science (3 credits)

Course Objectives

1. To explore why exercise testing is applicable in the health/fitness setting.
 2. To provide the student with advanced techniques and tools relative to exercise assessments.
 3. To provide the student with information to prepare well-developed exercise prescriptions for the general public.
 4. Advanced skills in essential resting and exercising clinical measurements.
 5. Advanced skills in monitoring physiological responses to dynamic exercise
-

HNES 762- Exercise Endocrinology (3 credits)

Course Objectives

1. Discuss the various hormones and organs within the endocrine system.
 2. Understand the hormonal response to exercise and related stimuli.
 3. Interpret new research in field of exercise endocrinology.
-

HNES 764 Advanced Cardiovascular Exercise Physiology (3 Credits)

Course Objectives:

By the end of the course, students will be able to:

1. Know in-depth knowledge of each component of the cardiovascular system – the heart, the vasculature, and the blood.
 2. Know the clinical relationship between electrical activity in the heart and the waveforms visible on the electrocardiogram (ECG).
 3. Possess skills in assessing hemodynamics, cardiac output, and ECGs in a laboratory setting.
 4. Ability to know and assess the effects of acute and chronic exercise on the components of the cardiovascular system
-

HNES 777- Scholarly Writing and Presenting in HNES (3 credits)

Course Objectives

1. Understanding the peer-review process.
 2. Critical thinking skills.
 3. Revising research materials with respect to critical feedback.
 4. Disseminating research in writing.
 5. Disseminating research in presentations.
-

HNES 770 - Athletic Training Evidence Based Research & Practice (2 credits)

Course Objectives

1. Understand and define evidence-based practice as it related to athletic training clinical practice.
2. Apply evidence-based practice in the clinical decision-making process and advancing clinical practice. (Standard 62)
3. Determine the effectiveness and efficacy of an athletic training intervention using evidence-based practice concepts. (Standard 62)
4. Apply methods of assessing patient status and progress (global rating of change, minimal clinically important difference, minimal detectable difference) using psychometric clinical outcomes assessments.
5. Describe a systematic approach to create and answer a clinical question through review and application of existing research.
6. Develop a relevant clinical question using a pre-defined question format (PICOT/PIO).
7. Describe and contrast research and literature resources including databases and online critical appraisal libraries that can be used for conducting clinically-relevant searches.
8. Conduct a literature search using a clinical question relevant to athletic training practice using search techniques (Boolean search, Medical Subject Headings) and resources appropriate for a specific clinical question.
9. Use standard criteria or developed scales (PEDro, CEBM/SORT) to critically appraise the structure, rigor, and overall quality of research studies.
10. Describe and differentiate the types of quantitative and qualitative research designs, research components, and levels of research evidence (hierarchies).

11. Understand basic level statistics.
12. Understand validity (internal and external) and reliability.
13. Understand the concepts of diagnostic accuracy.
14. Explain the theoretical foundation of clinical outcomes assessment (eg: disablement, HRQOL) and describe common methods of outcomes assessment in athletic training clinical practice (generic, disease-specific, region-specific, and dimension-specific outcomes instruments).
15. Analyze a research study/studies to determine if the reported results are valid, reliable, and applicable to clinical practice (Critically appraised paper – CAP and Critically appraised topic - CAT).
16. Execute scientific, professional writing to submit for publication.
17. Present a research question of interest to an audience.

Appendix E. Handbook Revision Log

Summary of Handbook Revisions

Date	Revision	HNES Representative
9/2022	Course Rotation List updated. Imbedded Links were checked for accuracy.	Kyle Hackney
3/8/2023	Added course objectives to document	Kyle Hackney
9/21/2023	Revised handbook following merger, include MS paper information/format for proposal and defense.	Kyle Hackney