

**PROGRAM POLICY STATEMENT**

**Doctor of Philosophy (PhD) in Nutrition Science**

**Department of Behavioral Health and Nutrition**

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**I: Executive Summary**

In a College of Health Sciences town hall meeting, President Assanis identified growing graduate program offerings as a priority for our University and College.1 Beginning fall 2018, The Department of Behavioral Health and Nutrition is seeking to implement two Doctor of Philosophy degrees: a Doctor of Philosophy in Health Behavior Science and Promotion and a Doctor of Philosophy in Nutrition Science (Figure 1). While separate, these PhD programs will have extensive resource sharing, thus maximizing impact (e.g., student recruitment and scientific workforce development) and efficiency.

*Rationale for Separate Programs*: Nutrition Science and Health Behavior Science and Promotion are separate programs within the Department of Behavioral Health and Nutrition, and, are recognized as distinctly different disciplines in academic and industry contexts. Nutrition Science focuses on the physiological and biological aspects of foods and nutrients and their absorption, assimilation, biosynthesis, catabolism and excretion. Nutrition Science also seeks to identify effective strategies to improve the dietary intake among individuals and specific sub-groups (i.e., older adults, children) to prevent and treat disease, improving health and promoting successful aging. Health Behavior Science and Promotion is the study of creating and promoting sustainable behavior change to obtain optimal quality of life. Health Behavior Scientists determine how actions, cognitions, communications, and environment affect relationships, health and chronic disease across the lifespan. In recognition of these differences, two separate programs are being proposed (Figure 1). Each program will have 15 credit hours of discipline-specific content.

*Key Points of Resource Sharing:* As illustrated in **Figure 1**, while the Doctor of Philosophy in Nutrition Science and Doctor of Philosophy in Health Behavior Science and Promotion are separate programs, 15 credit hours of required research courses will be shared across the two programs since these research competencies and skills are common to both programs and disciplines. Likewise, students from both programs will have access to the same elective courses, and faculty from both programs will be available to serve on Dissertation Committees. The proposed doctor of philosophy programs will also share many of the same procedures and policies (e.g., general admissions requirements, deadlines, timetable and satisfactory progress toward degree standards). The only items that will differ between the two doctor of philosophy programs are the discipline-specific content courses.



The current document presents the program policy statement for the Doctor of Philosophy in Nutrition Science (NS PhD Program).

**II: Program History**

A. Context, Purpose, Planning Process, and Expectations

*A.1. Context*

Epidemiological transitions have demonstrated shifts from infectious disease and undernutrition, to degenerative and man-made chronic conditions such as over-nutrition (obesity), cardiovascular disease and cancer, constituting the primary causes of death and disability.2 Thus, health care has moved from a treatment to a more prevention-based model. Moreover, poor nutrition and inactivity are widely recognized as the leading health care challenge of the 21st Century.3 Converging with these epidemiological trends, are demographic shifts showing an increasing proportion of the population who are over the age of 65 years and from lower socio-economic strata, that are only expected to add to the chronic disease burden.4,5 Addressing the healthcare needs presented by these epidemiological and demographic transitions requires multidisciplinary teams that include nutrition scientists who have expert training in nutrition, metabolism, and disease prevention and management, at the individual, community, and population levels.5 While the Department of Behavioral Health and Nutrition (BHAN) has both baccalaureate and master’s degree programs in Nutrition, many of our graduates express that they would have stayed at the University of Delaware to complete a PhD had a program been available. In addition, there is a shortage of doctoral level training programs in Nutrition nationally. There are 151 Master of Science programs in Nutrition in the United States, but only 75 PhD programs. Moreover, in the mid-Atlantic region (New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia) there are only 8 PhD programs in Nutrition.

*A.2 Purpose*

The purpose of this proposal is to create a Nutrition Science (NS) PhD Program within the Department of Behavioral Health and Nutrition (BHAN) in the College of Health Sciences. This purpose directly aligns with, and advances, the University of Delaware and College of Health Sciences agenda to expand the number of graduate students and PhD degree offerings at the institution to meet healthcare demands locally and nationally.1

*A.3 Planning Process*

Beginning in fall 2015, the Department of BHAN formed a PhD planning committee which met bi-monthly to evaluate the need for the proposed programs. This included evaluating PhD programs internal and external to the University of Delaware. Using the information gathered, expectations and design for such a program were conceptualized. Starting in fall 2016, the planning committee met monthly and consulted with the following individuals within the College of Health Sciences: Deputy Dean, Dr. Susan Hall; Associate Dean for Research, Dr. Adam Davey; and faculty across the College of Health Sciences who currently administer PhD programs (Dr. David G. Edwards, Applied Physiology; Dr. Samuel Lee, BIOMS) to refine the program’s design and content. Draft copies of the proposal were then circulated in the following order: (1) Nutrition Science faculty (2) Department of Behavioral Health and Nutrition Chair, (3) Deputy Dean of the College of Health Sciences, Dr. Susan Hall, and (4) Director of Graduate Studies, Dr. Mary Martin. A meeting of all BHAN faculty and several meetings with Nutrition faculty, to work on content curriculum, were held for discussion of the proposal, with input incorporated into a revised proposal draft. The revised draft of the proposal was reviewed and approved by the BHAN (department faculty) and BHAN curriculum committee.

*A.4 Expectations*

The NS PhD Program provides the highest degree for nutrition science professionals, preparing graduates for research careers in many settings, including academia, non-governmental organizations (business and non-profit), allied health fields, and public service at all levels of national government. The curriculum will provide graduate students with the training needed to become effective scientific practitioners with the capacity to conduct independent research in nutrition with health-related outcomes, in applied and academic settings. Completion of a high-quality PhD dissertation, based on original research, is a key feature of the academic program. Students’ capacity to complete dissertation research is developed through a rigorous curriculum designed to bring students to the intellectual forefront of their discipline. Nutrition science research involves the study of diet and metabolism, including effects on health, performance and disease in addition to the study of human behaviors related to food choices, with the goal of translation of such knowledge to the community through high quality, evidence-based interventions.

B. Current Status.

The NS PhD Program will enroll students beginning in fall 2018 and will be reviewed for permanent status in fall 2023.

C. Degree Offered.

The degree awarded to those who complete this program will be a Doctor of Philosophy in Nutrition Science (NS PhD).

1Assanis D, University of Delaware, President’s Address to Faculty. College of Health Sciences, Town Hall Meeting; September 19 2016; STAR Campus, University of Delaware.

2Omran AR. The epidemiologic transition: a theory of the epidemiology of population change. 1971. Milbank Q. 2005; 83(4):731-57. doi:10.1111/j.1468-0009.2005.00398.x

3 Gaziano JM. Fifth phase of the epidemiologic transition: the age of obesity and inactivity. JAMA. 2010; 303(3):275-6. doi:10.1001/jama.2009.2025.

4 Dall TM, Gallo PD, Chakrabarti R, West T, Semilla AP, Storm MV. An aging population and growing disease burden will require a large and specialized health care workforce by 2025. Health Aff (Millwood). 2013; 32(11):2013-20. doi:10.1377/hlthaff.2013.071.

5 Bodenheimer T, Chen E, Bennett HD. Confronting the growing burden of chronic disease: can the U.S. health care workforce do the job? Health Aff (Millwood). 2009; 28(1):64-74. doi:10.1377/hlthaff.28.1.64.

**III: Admission**

A. Admission Criteria and Requirements

*A.1. Criteria*

Applicants from diverse educational and professional backgrounds in nutrition or a related science/health field, who have a strong interest in nutrition science and human behavior are encouraged to apply. Each application will be evaluated individually on the basis of these key areas:

1. Academic record/achievement;
2. Work, research, and/or community experience;
3. Matching interest with, and availability of, current NS faculty to serve as the student’s faculty advisor;
4. Commitment/interest/awareness to the study of diet and metabolism, and their effects on health, performance and disease, dietary behaviors, and the development and translation of evidenced based nutrition interventions.

*A.2. Requirements*

Applicants must submit all materials directly to the University of Delaware Office of Graduate and Professional Education using the online admission process before admission can be considered. Admission applications are available at: <https://grad-admissions.udel.edu/apply/>.

Admission decisions will be made by the Nutrition Science (NS) Graduate Programs Committee. Students will be admitted to the program based on enrollment availability, the availability of faculty mentorship, and their ability to meet the following **minimum** recommended entrance requirements:

1. A Master’s Degree in a related field from an accredited college or university with a GPA > 3.3 **or** a Bachelor’s Degree in a related field from an accredited college or university with an undergraduate GPA > 3.3 for the MS to PhD bypass option.
2. Verbal GRE (≥50th percentile) within past 5 years.
3. Quantitative GRE (≥50th percentile) within past 5 years.
4. TOEFL (Test of English as a Foreign Language) score of at least 600 (paper based) or a TOEFL IBT of at least 100.
5. Completion of both an advanced (≥600 level or graduate level equivalent) Macronutrient Metabolism course and an advanced (≥600 level or graduate level equivalent) Micronutrient Metabolism course, each with a grade of A- or higher, is required; a transcript from an accredited university must also be provided.

B. Prior Degree Requirements

A completed master’s degree in a nutrition and/or dietetics related field is required for direct admittance to the NS PhD Program.

Students enrolled in the MS in Human Nutrition (within the Department of Behavioral Health and Nutrition at the University of Delaware), who have completed Advanced Macronutrient Metabolism, Advanced Micronutrient Metabolism, a graduate level study design course, and a graduate level statistics course, each with a grade of A- or better) may apply to the NS PhD Program after completion of their first year of study with agreement in writing from their MS advisor. If admitted, they may begin their NS PhD Program in their second year within the Department. Students applying to the MS to PhD bypass option must: (1) have exceptional performance during the first year of the Master’s program, (2) have the approval of the NS Graduate Programs Committee and their advisor, and (3) have completed a bachelor’s degree in nutrition, dietetics, or a science/health related field from an accredited university.

C. Application Deadlines

Applications (all materials) for the NS PhD Program will be reviewed on a rolling basis between January 15 and March 15 for admission to the program at the beginning of the following fall semester. Since application decisions will be made on a rolling basis within this timeframe (January 15th – March 15th), applicants are strongly advised to complete and submit applications as early as possible. The materials required for the application to be considered complete include the application form, undergraduate/graduate transcripts, official GRE scores, at least three letters of recommendation, curriculum vitae, and a graduate application essay (directions for the graduate application essay may be found on the University of Delaware’s Graduate & Professional Education website). In addition, applicants should also explain in the graduate application essay, how their own research interests relate to those of at least two potential nutrition faculty advisors.

The admission process at the Department level will be completed as follows: completed applications will be reviewed by the NS Graduate Programs Committee, and applicants who meet the admission criteria will then have their application file circulated to the entire Nutrition Science graduate faculty. Faculty members will provide feedback on each applicant to the NS Graduate Programs Committee. Faculty identified by applicants as having shared research interests, will also comment on his/her willingness and ability (in terms of time and funding) to serve as the applicant’s advisor. A faculty member can advise no more than two NS PhD Program students simultaneously (regardless of where the students are in their course of study). The goal is for faculty to advise/mentor students whose background, goals and objectives are compatible with their own research and funding. Only qualified applicants who have a potential faculty advisor will be invited to complete an interview. To be admitted to the NS PhD Program, a student must have a faculty advisor. The NS Graduate Programs Committee, in conjunction with potential advisors, will make final decisions on admission. Admitted students will begin the program in the fall semester. Admission to the program is limited, and not all qualified applicants will be admitted.

D. Admission Categories

Students may be admitted into the program in one of three categories:

1. Admitted with full assistantship that provides tuition and a stipend support
2. Admitted with partial assistantship that provides tuition support
3. Admitted with no assistantship support

Graduate Assistantship support will be provided only to full-time students on a year-to-year basis.

E. Application Documents Required

Applicants are expected to submit:

1. A graduate application essay (see section C)
2. Current curriculum vitae
3. A minimum of three letters of recommendation, it is recommended that at least two letters be from academic references
4. Official transcripts and GRE scores

F. BHAN Statement of Diversity and Inclusion

The Department of Behavioral Health and Nutrition (BHAN) is committed to sharing values of diversity and inclusion. We believe that we can best promote and endorse these values by recruiting and retaining a diverse group of students, faculty and staff and by creating a climate of respect that is supportive of their academic success. This climate for diversity and inclusion is central to achieving our academic potential through research and scholarship, teaching, and service.

The Department of Behavioral Health and Nutrition gives definition to this climate of a diverse and inclusive community by encouraging and valuing:

1. **Equitable Access to our Departments Programs and Practices:** We implement academic programs and scholarly practices that seek to provide equitable access and enable all students to grow academically. Specific strategies that we keenly use include:

* Active participation in the annual, 6-day College of Health Sciences Summer Camp that provides a deep exploration into health sciences majors and careers for traditionally underrepresented students (i.e., minority, low-income, or (soon to be) first generation students).
* The provision of a dynamic and up-to-date BHAN website that utilizes culturally diverse images and engages current and potential students, as well as their families, in learning about our on-going programs.
* We are engaged with the Ronald E. McNair Post Baccalaureate Achievement Program (the McNair’s Scholars Program). The McNair Scholars program is renowned for preparing traditionally underrepresented groups for graduate education.
* We seek to recruit students from Historically Black Colleges (HBCUs) and other Minority Serving Institutions (MSIs) and organizations. Specifically, we engage with central organizations such as The Delaware Valley Consortium for Excellence & Equity (formerly the Delaware Valley Minority Student Achievement Consortium or DVMSAC), and The New Jersey Network to Close the Achievement Gaps to directly market our academic programs to traditionally underserved groups.

1. **Inclusive Teaching and Learning:** We are rigorous and empathetic teachers who collectively seek to examine and revise our curriculum and teaching practices as necessary to ensure that we are effective in helping all students achieve their academic potential. Specific strategies that we use to promote inclusive teaching and learning include:

* Prior to the start of each academic year, graduate students and faculty can participate in an intensive one-day in-service training on *Cultural and Linguistic Competence Express: Preparing to Become Culturally & Linguistically Competence Health Professionals*. This interactive training focuses on individual cultural competence and specifically works to build participant’s cultural awareness, knowledge and skills. At the conclusion of the training, attendees are encouraged to develop a cultural competence plan for an aspect of their work in the coming academic year.
* Faculty are trained and actively encouraged to connect students (both direct advisees and any student who solicits help) with professional groups and organizations that promote diversity and assist in establishing networks as per the university resource listing: <http://grad.udel.edu/students/diversity-inclusion/national-diversity-resources>
* All PhD student in the program will be provided with a tailored advising and mentoring plan that will be designed to maximize academic success. The University of Delaware’s Diversity and Inclusion resources will be consulted in the development of this plan (please see <https://www1.udel.edu/gradoffice/diversity/external.html> for a listing of these resources).

G. University Statement.

Admission to the graduate program is competitive. Those who meet stated requirements are not guaranteed admission, nor are those who fail to meet all of those requirements necessarily precluded from admission if they offer other appropriate strengths as determined by the HBS graduate program committee.

**IV: Academic Degree: Doctor of Philosophy (PhD) in Nutrition Science**

A. Degree Requirements

*A.1. Coursework and Credit Hours*

The NS PhD Program requires completion of a minimum of 48 credits, successful completion of preliminary examinations, and 9 credits of dissertation work. The program is designed to be completed within 4 years. An outline of the 48 required credits are provided in **Table 1** (page 8).

Students who have had substantially similar courses to one or more of those required prior to entering the NS PhD Program may substitute other appropriate courses with the approval of the advisor and the NS Graduate Programs Committee, and the completion/approval of the course substitution form required by the Office of Graduate and Professional Education. A maximum of 9 credits may be substituted in the program of study. Only those courses in the 600, 800 and 900 levels will apply towards the NS PhD Program. Independent study courses will be accepted based on approval of the student’s advisor and the NS Graduate Programs Committee. A maximum of 3 independent research study credits may be included in the program of study.

**Table 1: Outline of NS PhD Program Coursework**

|  |  |
| --- | --- |
| **Course** | **# Credits** |
| NTDT822 Research Methods in Nutrition Assessment | 3 |
| NTDT812 Current Topics in Nutrition *(New course proposals provided in Appendix A).* | 3 |
| NTDT electives *(Sample NTDT electives provided in Appendix B).* | 9 |
| BHAN856 Multivariable Biostatistics for Population Health  *(New course proposals provided in Appendix A).* | 3 |
| BHAN855 Qualitative and Mixed Methods Research in Health Sciences *(New course proposals provided in Appendix A).* | 3 |
| Statistics/Data Analysis Electives *(Sample Statistics/Data Analysis electives provided in Appendix B).* | 9 |
| BHAN seminar | 0 |
| NTDT seminar | 0 |
| *Sample general elective courses provided in Appendix B.* | 3 |
| NTDT868 Independent Research | 6 |
| NTDT969 Dissertation Research | 9 |
| **TOTAL CREDITS** | **48** |

*A.2 Planned Program of Study*

Students are required to develop a curricular program of study plan with their advisor during the first semester of study. Depending on the student’s background and interests, the program of study may include courses beyond the minimum number required for the degree. The planned program of study must first be approved by the student’s advisor by the end of the first semester. A typical plan for the program of study (**showing the minimum requirements for the degree**) for students in the NS PhD pgram is shown in **Table 2a**, page 9. A typical plan for the program of study for students wishing to complete the MS/NS PhD bypass option is shown in **Table 2b**, page 10. Please see **Section III item F.2** for information about development of student advising and mentoring plans.

**Table 2a: Sample Plan for NS PhD Program of Study (for those with MS degree)**

|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** |
| --- | --- | --- | --- | --- |
| **Fall** | BHAN Seminar (0)  BHAN855 Qualitative and Mixed Methods Research in Health Sciences (3)  NTDT822 Research Methods in Nutrition Assessment (3)  NTDT elective (3)  NTDT868 Independent Research (1) | BHAN Seminar (0)  NTDT elective (3)  NTDT 812 Current Topics in Nutrition (3)  Statistics/Data Analysis elective (3)  NTDT868 Independent Research (1) | BHAN Seminar (0)  NTDT969 Dissertation Research (9) | BHAN Seminar (0)  \*Sustaining |
| **Winter** |  | *Preliminary Exam* |  |  |
| **Spring** | BHAN856 Multivariable Biostatistics for Population Health (3)  NTDT elective (3)  Statistics/Data Analysis elective (3)  NTDT868 Independent Research (1)  NTDT665 Seminar (0) | Statistics/Data Analysis elective (3)  General Elective (3)  NTDT868 Independent Research (3)  NTDT665 Seminar (0)  *Dissertation Proposal Defense\*\** | \*Sustaining  NTDT665 Seminar (0) | \*Sustaining  NTDT665 Seminar (0) |
| **Summer** | Research (0) | Research (0) | Research (0) |  |

\*Note that *sustaining* in this context means that the student is still classified as a full-time student

\*\*Dissertation proposal defense to occur by the end of the 4th semester of study but no later than prior to the start of the 5th semester.

**Table 2b: Sample plan for MS/PhD bypass**

|  | **MS Year 1** |  |  |  |
| --- | --- | --- | --- | --- |
| Fall | NTDT611 Advanced Macronutrient Metabolism (3)  Research Design (3) |  |  |  |
| Winter |  |  |  |  |
| Spring | NTDT630 Advanced Micronutrient Metabolism (3)  Statistics (3) |  |  |  |
| Summer | *Apply to MS/PhD program bypass option)* |  |  |  |

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|  | **PhD Year 1** | **PhD Year 2** | **PhD Year 3** | **PhD Year 4** |
| --- | --- | --- | --- | --- |
| **Fall** | BHAN Seminar (0)  BHAN855 Qualitative and Mixed Methods Research in Health Sciences (3)  NTDT822 Research Methods in Nutrition Assessment (3)  NTDT elective (3)  NTDT868 Independent Research (1) | BHAN Seminar (0)  NTDT elective (3)  NTDT 812 Current Topics in Nutrition (3)  Statistics/Data Analysis elective (3)  NTDT868 Independent Research (1) | BHAN Seminar (0)  NTDT969 Dissertation Research (9) | BHAN Seminar (0)  \*Sustaining |
| **Winter** |  | *Preliminary Exam* |  |  |
| **Spring** | BHAN856 Multivariable Biostatistics for Population Health (3)  NTDT elective (3)  Statistics/Data Analysis elective (3)  NTDT868 Independent Research (1)  NTDT665 Seminar (0) | Statistics/Data Analysis elective (3)  General Elective (3)  NTDT868 Independent Research (3)  NTDT665 Seminar (0)  *Dissertation Proposal Defense\*\** | \*Sustaining  NTDT665 Seminar (0) | \*Sustaining  NTDT665 Seminar (0) |
| **Summer** | Research (0) | Research (0) | Research (0) |  |

\*Note that *sustaining* in this context means that the student is still classified as a full-time student

\*\*Dissertation proposal defense to occur by the end of the 4th semester of study but no later than prior to the start of the 5th semester.

*A.3. Residency Requirement*

While students who receive graduate assistantships will require at least 8 academic semesters to complete the NS PhD Program degree; self-funded students may complete the requirements in a minimum of 6 academic semesters. At least one continuous academic year must be devoted exclusively to full-time study (6 credit hours per semester for a student receiving an assistantship; 9 credit hours per semester for a student not on assistantship) in the NS PhD Program in residence at the University of Delaware. This residency requirement may be fulfilled using a fall and spring semester combination or a spring and fall semester combination, but summer and winter sessions do not count toward the residency requirement.

*A.4. Progress Requirement*

Students must convene their dissertation committees during the second semester of study and yearly thereafter to formally share progress towards their degree. Upon completion of the meeting, the student must complete a meeting report that is then reviewed and approved by the advisor before sharing with the dissertation committee and NS Graduate Programs Committee. Students who do not have committee meetings in a timely manner will be considered as failing to progress and will be required to meet with the NS Graduate Programs Committee to determine whether a recommendation for dismissal from the program is warranted.

*A.5 Preliminary Examination Requirement*

Students must pass a preliminary examination that tests their general knowledge base in nutrition science and their ability to critically evaluate scientific literature. Specific details are as follows:

1. The NS Graduate Programs Committee will have responsibility for the written examination, including writing and grading examination questions.
2. Content of the written exam will be based on nutrition and research coursework taken during the student’s first three semesters of the academic program.
3. The preliminary exam must be taken during the 4th week of Winter Session in the second academic year of study. A common day and time for the preliminary exam will be given to all students.
4. The written examinations are graded are graded on a pass/fail basis, with a letter grade of C or greater indicating “pass”. Students who fail the preliminary examination will be provided a marked copy of their exam and have a feedback session with their advisor where areas to improve will be discussed. Students have one opportunity to retake and pass the examination questions that were failed. The retake must be taken within 2 months. A failure on the retake will results in a dismissal from the NS PhD Program and students have the option to complete the MS in Human Nutrition program requirements.
5. Students must pass the preliminary examination requirement before proceeding to the dissertation proposal defense.

*A.6 Dissertation Proposal Defense and Dissertation Defense Requirements*

Students in the NS PhD Program should must be complete an oral dissertation defense preferably by the end of the 4th semester of study but no later than prior to the start of the 5th semester. Prior to the presentation, the student should have prepared their full IRB/IUCAC package (i.e., protocol, consent, HIPAA, measures). Following the successful defense of the dissertation proposal, the student should submit their IRB/IUCAC materials as soon as possible. IRB/IUCAC approval documentation should be shared with the Dissertation Advisor upon receipt.

Procedures for the dissertation proposal defense and the dissertation defense are the same. The written dissertation proposal and the written dissertation will be made available to the student’s PhD dissertation committee members at least two weeks prior to the oral defense date. The oral defense meeting will include both a defense of the student's proposed or completed dissertation research and an in-depth examination of the student's knowledge of their research specialization. Students are expected to demonstrate competency in both oral and written communication skills. All BHAN faculty and students will be invited to attend the oral defense meetings.

Following the oral presentation and questions from faculty/students in attendance, the PhD dissertation committee will meet separately to ask questions to the student. Once all questions have been answered the student will leave the room and the PhD dissertation committee will vote on the outcome. The possible outcomes of the oral defense are:

1. Pass. The student may proceed to the next stage of his/her degree training.
2. Conditional pass. In the event that the student’s PhD dissertation committee feels the student's performance was generally acceptable but with a specific deficiency, condition(s) will be specified that the student must satisfy to achieve a Pass and remain in the NS PhD Program. These conditions may include a re-examination on one or more questions.
3. Re-examination. This result is appropriate for a student whose performance was unsatisfactory, but displayed evidence of the potential to complete graduate degree training. Re-examination must be completed within one semester. The possible outcomes of the re-examination are pass or failure. The student may not take the exam a third time.
4. Failure. This outcome would indicate that student’s PhD dissertation committee considers the student incapable of completing degree training and the student would be recommended for dismissal from the program and the award of the Master’s (MS) in Human Nutrition degree pending the completion of any outstanding coursework.

The outcome will be presented to the student, along with any conditions or requirements for proposal or dissertation revisions. For conditional pass, specific deficiencies or conditions must be addressed within two months of the original oral defense date. For re-examination, the oral defense must be completed within one semester. The possible outcomes of the re-examination are pass or failure. The student may not take the exam a third time.

Once the proposal defense has been successfully completed, the student must apply to the graduate school for admission into candidacy.

*A.7 Dissertation Format*

The Department supports both a traditional and article style (“Three Paper”) dissertation format. While the scope and expectations for the NS PhD Program dissertation are provided elsewhere, the table below depicts the general content for both formats.

**Table 3: Content Overview for the conventional and article style dissertation**a

|  | **Traditional Dissertation** | **Three Papers Dissertation**a |
| --- | --- | --- |
| Introduction and Outline of the Problem | √ |  |
| Introduction to the Overall Topic |  | Include the logical link between the three papers |
| Conceptual or Theoretical Framework | √ | √ |
| Literature Review | √ | Included in three papers |
| Methodology | √ | Included in three papers |
| Results (Research Findings) | √ | Included in three papers |
| Three separate, publishable papers of normal journal article length related to the overall theme |  | * First Paper * Second Paper * Third Paper |
| Summary, Interpretations, Conclusions, Recommendations for Policy and/or Further Research | √ | Concluding scholarly discussion of the implications of the integrated findings |
| Resources | √ | Included in three papers |
| Appendices | optional | optional |

*aAdapted from Indiana University Richard M Fairbanks School of Public Health. bPapers do not have to be published to meet this requirement.*

B. Faculty Advisors and PhD Dissertation Committees

*B.1. Faculty Advisors*

During the application process, each student will nominate a minimum of two potential faculty advisors from among the faculty holding appointments in the Nutrition Science program. At least one faculty member must be willing and have the time to serve as an advisor and accept responsibility for oversight of the student’s academic progress in the program. Final faculty advisor selection will be made by the NS Graduate Programs Committee, and will be based on converging research interests and faculty availability. PhD student faculty advisors can advise no more than two NS PhD Program students simultaneously (regardless of where the students are in their respective NS PhD Program).

If, during the course of a student's academic program, the faculty advisor is unable or unwilling to continue as advisor, the student will work with the NS Graduate Programs Committee to identify another faculty member willing to be the new advisor. The new advisor must be identified within 2 months in order for the student to be considered making satisfactory progress toward the degree. Switching advisors does not change the deadlines for completing the degree requirements.

*B.2. PhD Dissertation Committee*

Upon entering candidacy into the NS PhD Program, the student is expected to work with their faculty advisor to assemble a dissertation committee. The dissertation committee will consist of:

1. not less than four and not more than six members, and shall be chaired by the faculty advisor;
2. at least two members that represent NS faculty, one of whom shall be the faculty advisor/committee chairperson; and
3. at least one member who will be an external examiner chosen from a different academic program or from outside the University.

The faculty advisor/committee chairperson shall have established a record of publication in the field of the dissertation and shall be a member of the faculty of the University; the definition of faculty shall include professional staff that hold secondary faculty appointments. Faculty who have retired or resigned from the University may chair committees of students whose work began under their direction prior to their retirement or departure from the University. A faculty advisor/committee chairperson who is not employed by the University of Delaware may serve as co-chair of the committee providing that the other co-chair meets the conditions stated above.

C. Timetable and Definition of Satisfactory progress towards degree

*C.1. Time Limit for Completing the Degree*

The time limit for completion of the NS PhD Program degree requirements begins with the date of matriculation and is specifically detailed in the student’s letter of admission. Students entering the NS PhD Program with a master’s degree are given 10 consecutive semesters to complete the requirements.  Students who change their degree plan and have transferred from one degree program to another degree program are given 10 consecutive semesters from the beginning of the first year in the NS PhD Program. Students in the MS to PhD bypass option are given 14 consecutive semesters to complete the degree requirements.

An extension of time limit may be granted for circumstances beyond the student’s control.  Requests for time extensions must be made in writing and approved by the NS PhD Program Director, the student’s dissertation committee and the BHAN Department Chair. The NS PhD Program Director will forward the request to the Office of Graduate studies.

*C.2. Submission of Required University Forms*

When a student has met the requirements for admission to candidacy as previously explained (section IV A.5), the NS PhD Program Director will submit a Recommendation for Candidacy to the NS PhD Program degree [form](http://grad.udel.edu/forms/) to the Office of Graduate Studies. The student’s classification will change to post-candidacy upon admission to candidacy status. The deadline for admission to candidacy for the fall semester is August 31. The deadline for admission to candidacy for the spring semester is January 31. The deadline for admission to candidacy for the summer is April 30. Responsibility for seeing that admission to candidacy is secured at the proper time rests with the student.

To initiate the process for degree conferral, candidates must submit an “Application for Advanced Degree” to the Office of Graduate Studies. The application deadlines are February 15 for Spring candidates, January 15 for Winter candidates, May 15 for Summer candidates, and September 15 for Fall candidates. The application must be signed by the candidate’s advisor, the NS Graduate Programs Director and Department Chair.  An application fee for PhD degree students is required when the application is submitted. Upon completion of the degree audit, the Office of Graduate Studies notifies students in writing when they have met all degree requirements.

*C.3. Grade Requirements for Satisfactory Progress*

Failure to satisfactorily progress in the program will be based on the University Graduate Policy as noted below:

The Office of Graduate Studies monitors the academic progress of all graduate students and notifies students in writing of all academic deficiencies. The cumulative GPA after each 9-hour increment determines academic standing.

**Table 4: The University’s Academic Probation Policy is expressed in the following chart:**

|  |  |  |
| --- | --- | --- |
| **If student** **is on:** | **And earns a** **GPA of:** | **The status** **becomes:** |
| Any status | 3.0 or above | Clear |
| Clear | 2.99-2.5 | Warning |
| Clear | 2.49-2.0 | Probation |
| Probation | Below 3.0 | Dismissal |
| Warning | Below 3.0 | Probation |
| Any status | Below 2.0 | Dismissal |

*C.4. Reasons for Dismissal from the Program*

The Office of Graduate Studies notifies students when they are dismissed from graduate programs without completing a degree. Dismissals usually take place at the end of a term. Students may be dismissed for the following reasons:

* Upon the expiration of the five-year time limit for those students in a PhD program who were admitted with a master’s degree. Upon the expiration of the seven-year time limit for PhD students who were admitted to the MS to PhD bypass option.
* Upon the failure to meet the grade point average requirements as stated in the policy on Academic Deficiency and Probation.
* Upon written notice to the Office of Graduate Studies of voluntary withdrawal from the program.
* Upon failure to pass the preliminary, or comprehensive/ candidacy examination(s), a dissertation proposal defense, or a dissertation defense.
* Upon the failure to meet the stated minima in specific course requirements as identified by individual programs when a department has a policy that such failure leads to dismissal from the program.
* Upon failure to satisfactorily conduct research required for the degree.
* Upon the determination by the PhD program faculty of the student’s department that the student has failed to meet or has failed to make satisfactory progress towards meeting academic standards required of the student’s program other than the failure to achieve a cumulative grade point average of 3.0 upon the completion of the stated number of required credits for a degree.
* Upon violation of University of Delaware regulations regarding academic honesty. All graduate students are subject to University of Delaware regulations regarding [academic honesty](http://www.udel.edu/stuguide/07-08/code.html#honesty). Violations of these regulations or other forms of gross misconduct may result in immediate dismissal from the Program.

In the case of dismissal, the NS PhD Program Director is required to send a report to the Office of Graduate Studies that states the faculty vote on the decision causing dismissal and the justification for this action. The Office of Graduate Studies will notify a student in writing when the student is being dismissed for failure to make satisfactory progress in the program. Students who are dismissed from the NS PhD Program may apply for admittance to the Master’s (MS) in Human Nutrition program.

*C.5. Procedures for Student Appeals*

Students who receive what they perceive as an unfair evaluation by a faculty member or faculty committee may file a written grievance to the Graduate Programs in Nutrition Committee within 10 business days of receiving the grade. Upon being notified of a student grievance, the Graduate Programs in Nutrition Committee will meet with the student to discuss the grievance within 10 business days.

If the issue remains unresolved after a meeting between the student and the Graduate Committee, the student may submit a written appeal to the Department Chair within 10 business days of the meeting. The department chair will issue a written decision on the appeal, and a description of the proposed resolution within 10 business days of appeal receipt.

Students who perceive the Department Chair decision as unfair, may follow the Office of Graduate Studies Grievance Procedures ([http://www1.udel.edu/stuguide/17-18/grievance.html - gradegrieve](http://www1.udel.edu/stuguide/17-18/grievance.html#gradegrieve)).

### Students wishing to review their program file must submit a written request to the NS PhD Program Director at least 24 hours in advance. Students must review the file in the presence of program staff or faculty and are not permitted to remove a file but may photocopy documents from their folder. All access to student records is in accordance with the Family Educational Rights and Privacy Act.

**V: Assessment Plan**

A variety of internal and external mechanisms will be used to evaluate the curriculum and overall effectiveness of the NS PhD Program.

Internally, the NS PhD Program Director and the NS Graduate Programs Committee will review student progress, grades, and pass/fail rate on coursework, preliminary examination results, enrollments, and advising contracts on an annual basis. This information will be used to evaluate the extent to which students are developing critical competencies in NS and to assess and adjust student flow through the NS PhD Program.

Markers of students’ success will be tracked, including:

1. Publications (chapters, peer-reviewed journal articles, books)
2. Presentations (invited and conferences)
3. Awards and honors
4. Fellowships and grants to support research
5. Job placements (post-PhD and faculty positions, leadership positions in private and governmental public health organizations)

In addition, we will track how effectively the NS PhD Program advances students by tracking the

following:

1. Program attrition (dropouts, dismissals)
2. Time to complete the NS PhD degree

Finally, we will use a variety of mechanisms for tracking students’ perceptions of the program,

including:

1. Teaching evaluations
2. Anonymous student surveys to assess different aspects of the program including: mentoring, funding, and research opportunities
3. Unsolicited student feedback

Externally, the NS PhD Program will be subject to program review every seven years by two external reviewers in the field of Nutrition Science. In addition, colleagues in the field who are Nutrition Science leaders will be surveyed regarding their assessment of the structure and value of the program, and to identify gaps in the program relevant to emerging Nutrition Science needs.

**VI: Financial Aid**

Funding for NS PhD Program students will primarily come from department graduate assistantships (*Department funded*) and faculty advisor grant support (*Faculty funded*).

Different types of assistantships (Department funded and Faculty funded) will be awarded to full-time students (registered in at least 6 graduate credits each semester) based on admission ranking, needs of the program, experience and expertise of the graduate student. Students appointed to assistantships are provided experiences that can only be gained by performing instructional or research activities that are compensated based on the University’s guidelines of 20 hours per week in an assigned position.

It is anticipated that the Department of Behavioral Health and Nutrition will award up to two full-time (tuition and annual stipend) assistantships to admitted NS PhD Program students. Depending on the pool of applicants and/or annual Department of Behavioral Health and Nutrition operating budget, these full-time assistantships may be divided out into partial assistantships (tuition only).

For Department-funded assistantships, it is expected that these students will engage in some teaching of lower level classes in the early program years. In the latter program years, the emphasis of the assistantship will be on working with their advisor on research and scholarly activities. Continuation of this award is contingent upon the evaluation of the NS PhD Program Director, the NS Graduate Programs Committee and the Department Chair. The student must remain in good academic standing to be eligible for the continuation of the award.

Faculty funded assistantships will be dedicated to the execution of the grant-funded activities as directed by the faculty advisor. Continuation of this award is primarily contingent upon the evaluation of the faculty advisor (study Principal Investigator) and secondarily with the NS PhD Program Director and the NS Graduate Programs Committee. The student must remain in good academic standing and meet the demands of the grant proposal and research activities directed by the faculty advisor to be eligible for the continuation of the award.

Students can also apply for internal funding.  For example, students can apply for any of the competitive awards offered through the UD Research and Graduate Studies Office. This includes the University Graduate Fellow Award, the University Graduate Scholar Award, and the University Dissertation Award.

Students can also apply for pre-PhD support from funding agencies such as the American Heart Association.  All students will be encouraged to apply for these external awards.  The faculty advisor will mentor the student on the writing of the proposal.

**VII: Program Administration and Organization**

* 1. A. Program Faculty
  2. As this NS PhD Program is launched, it will be supported by current BHAN faculty. The following BHAN faculty specialize in Nutrition Science and have research and teaching expertise that will be central to the implementation and administration of the proposed program. Responsibilities of program faculty include oversight of program policies and curriculum.

**Table 5: Summary of BHAN Faculty with Nutrition Expertise**

| Faculty Member | Research Expertise |
| --- | --- |
| Sheau Ching Chai, PhD, RD | Diet and nutrient intake in prevention and reduction of age- and nutrition-related diseases; phytochemicals. |
| Marie T. Fanelli Kuczmarski, PhD, RD | Gerontological nutrition, nutritional assessment methods. |
| Chen-Shun (Richard) Fang, PhD, RD | Dietary fiber and diseases, nutritional assessment. |
| Shannon Lennon, PhD, RD | Cardiovascular disease with an emphasis on nutrient intake and/or interventions. Additional focus on their role in hypertension and ischemia-reperfusion insults. |
| Carly Pacanowski, PhD RD | Obesity and eating disorders in college-aged individuals/emerging adults; psychological outcomes of interventions to control body weight; eating and health-related behaviors (e.g. self-weighing; yoga). |
| Shannon Robson PhD, MPH, RD | Behavioral weight management interventions in pediatric and adult populations; basic feeding studies manipulating diet. |
| Alisha Rovner, PhD | Public health nutrition, vitamin D, bone mineral metabolism. |
| Kelebogile Setiloane, PhD | Infant and child feeding practices, Cultural competency, Global health/Nutrition, Immigrant Health/Nutrition. |
| Jillian Trabulsi, PhD, RD | Early childhood nutrition; diet, nutrition and energy balance in healthy individuals and in those with chronic disease, obesity. |

Additionally, the Department of Behavioral Health and Nutrition faculty include those with expertise in Behavioral Health; these faculty frequently collaborate with NS faculty, serve on Dissertation committees and teach graduate elective courses that PhD NS Program students may take as an elective course. Faculty from other university departments wishing to affiliate with the program are invited to pursue joint appointments in the Department of Behavioral Health and Nutrition, in accordance with BHAN department policy.

B. NS PhD Program Director

The NS PhD Program Director will be a tenured faculty member affiliated with the program who holds the rank of associate or full professor. The term of service for the NS PhD Program Director is three years, with a limit of two consecutive terms. The NS PhD Program Director is the central program representative and point person.

### The responsibilities of the NS PhD Program Director include:

### Providing leadership and oversight for the program.

### Organizing and leading meetings of affiliated faculty and the NS Graduate Programs Committee.

### Communicating as necessary with the University Graduate Office.

### Serving as the first point of contact for issues arising with program students and faculty.

### Approving all changes to programs of study.

### Approving all changes in faculty advisors.

1. Corresponding with prospective students and overseeing program recruitment and admission decisions.
2. Program evaluation and assessment.
   1. C. NS Graduate Programs Committee

The NS Graduate Programs Committee will be responsible for the administrative duties needed to implement the NS PhD Program in the Department of BHAN. The NS Graduate Programs Committee will consist of NS faculty members, and shall be chaired by the NS PhD Program Director. Members of the NS Graduate Programs Committee shall be elected by NS program faculty for staggered, two-year terms. Responsibilities of the NS Graduate Programs Committee shall include (but not limited to):

* Admission of students into the program,
* Approval of student programs of study,
* Approval of student selection of a new faculty advisor after admission to the program,
* Writing and grading written Preliminary Examination questions,
* Oversight of student progress in the program, including dismissal of students who fail to make satisfactory progress,
* Approval of dissertation committees, and
* Other tasks required for the continued success of the program.
  1. D. Program Resources

*D.1.* *Travel for Professional Meetings or Presentations*

NS PhD students who have a first author peer-reviewed abstracts accepted for a podium or poster presentation at a professional conference may apply to the NS Graduate Programs Committee (who will make a recommendation to the Department Chair) for full or partial support to cover conference registration, travel and accommodation costs. Students may receive up to one travel award per academic year.

*D.2. Research Funding*

NS PhD students can apply for up to $2000/year to support research activities. Students will be expected to work closely with their faculty advisor to submit the plan of work and budget. The deadline for the funding will be in the summer months and notification of award will be made prior to the start of the fall semester so that work can begin promptly in the fall semester. Deliverables including published abstracts, manuscripts, and, the generation of pilot data for submission of an external grant, will be expected.

**Appendix A: New Course Applications and Course Revisions**

**New Course Proposal Form BHAN855**

This form parallels the Faculty Senate Online Course Approval form for New Course Proposals

Details can be found at[**http://www.udel.edu/registrar/coursemanagement/instructions.html**](http://www.udel.edu/registrar/coursemanagement/instructions.html)

Note that FYE and DLE designations and A&S group requirements have additional requirements for review.

In addition to completing this form, submit a syllabus to your departmental curriculum committee for review.

Course ID: new BHAN855

Course Title: \_Qualitative and Mixed Methods Research in Health Sciences

Credit type:

Fixed number of credits 3\_\_\_\_

Variable number of credits min: \_\_3\_\_ max:\_3\_\_\_

Can this be taken more than once per term? yes/no \_no\_\_\_\_

Max. repeatable credits: \_\_3\_\_\_

Grade type: standard or pass/fail \_\_\_standard\_\_

Multicultural Course: yes/no \_no\_\_\_\_

First Year Experience (FYE): yes/no \_\_no\_\_\_

Discovery Learning Experience (DLE): yes/no \_\_no\_\_\_

Arts & Science requirement: yes / no \_\_no\_

Use the A&S Educational Affairs Course Nomination Form to propose this course as an Arts & Science group requirement and/or second writing course.

Replaces (renumbering): \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter Course ID of the course being deactivated.

Instructional format:

Lecture hours \_3\_**\_**\_\_

Lab hours \_\_0**\_**\_\_

Discussion hours \_\_0\_\_

Independent Study: yes/no \_\_\_no\_\_

Cross Listed Courses: \_\_\_none\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Course catalogue title (60 characters max.): **\_\_\_\_\_\_** Qualitative and Mixed Methods Research in Health Sciences

Long Description (45 words max.):

Gain knowledge and skills in qualitative and mixed research methods used in health behavior, health promotion, and nutrition sciences. Theoretical and methodological qualitative approaches will be used to think through, design, execute, analyze and report qualitative and mixed methods data.

Prerequisites: \_\_ BHAN609 or similar graduate research methods course

Corequisites: \_\_\_none\_\_\_\_\_\_\_\_\_\_\_\_\_

Restrictions: \_\_\_graduate students\_\_\_\_\_\_\_\_\_\_\_\_\_

**Justifications**:

**Identify and justify any effect on other courses in your department or in another department. Specifically list other departments' chairpersons and/or faculty consulted and summarize results of discussion.**

Graduate-level training in qualitative and mixed methods research specific to health behavior, health promotion, and nutritional science is needed. Currently, there are no courses in the Department of Behavioral Health and Nutrition that focus on qualitative and mixed methods research despite these approaches being commonly used in the field. This course is designed to be taken by doctoral students but also suitable for master’s degree in the department and potentially across the College of Health Sciences. While there are other graduate-level qualitative research courses across the University including EDUC850, NURS816, SOCI676 and UAPP808, these classes have a small student cap size (between 4 and 15 students), are specific to the respective academic fields, and do not consider mixed research methodologies also. BHAN855 will offer discipline specific training on the qualitative and mixed research methods and skills pertinent to the fields of health behavior, health promotion and nutrition sciences. We do not expect that the addition of this course will impact the enrollment in the other qualitative research courses within the University.

This proposal has been developed, reviewed and approved by BHAN faculty and the BHAN curriculum committee; it is supported by the chair of the BHAN department.

**Identify the main emphasis of the course along with major topics covered. Include a list of learning objectives.**

The course objectives are:

1. Describe qualitative and mixed methods research paradigm as it is used in health sciences
2. Describe rationales for using qualitative and mixed research methods, value of these approaches, weaknesses in these approaches, and important ways in which qualitative research differs from quantitative research.
3. Create appropriate data collection tools (e.g. interview or focus group guides) for qualitative health and mixed methods research
4. Analyze small scale qualitative data
5. Evaluate the validity and reliability of qualitative and mixed methods research in the peer-reviewed, published literature

Major Topics covered:

* Theoretical and conceptual frameworks used in qualitative and mixed methods research
  + Grounded theory
  + Ethnography
* Developing qualitative and mixed methods research questions and study proposals
* Recruitment and sampling methods
* Data collection approaches for qualitative and mixed methods research:
  + observation
  + document review
  + focus groups
  + one-on-one interviews
* Validity criteria for qualitative research (credibility, transferability, dependability and confirmability)
* Ethical considerations
* Data analysis methods commonly used in health research:
  + Thematic Analysis
  + Grounded Theory
* Reporting qualitative and mixed methods research data

Suggested textbooks may include: Qualitative Research and Evaluation Methods by Michael Quinn Patton; Qualitative Research Methods by Monique Hennink and Inge Hutter; or Qualitative Data Analysis: A Methods Sourcebook by Matthew Miles and Michael Huberman along with articles from the published literature.

**Outline how this course addresses one or more of the 10 goals of undergraduate education.**

n/a.

**SAMPLE COURSE OUTLINE**

**Learning Objectives:**

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

1. Describe the qualitative research paradigm as it is used in health sciences
2. Describe rationales for using qualitative methods, value of the approach, weaknesses in the approach and important ways in which qualitative research differs from quantitative research.
3. Create appropriate data collection tools (e.g. interview or focus group guides) for qualitative health sciences research
4. Analyze small scale qualitative data
5. Evaluate the validity and reliability of qualitative research in the published literature

**Course Content:**

|  |  |
| --- | --- |
| Week 1 | Orientation to qualitative and mixed research methods |
| Week 2 | Conceptual frameworks used in qualitative research (e.g. grounded theory, ethnography) |
| Week 3 | Developing qualitative research questions |
| Week 4 | Recruitment and sampling methods |
| Week 5 | RQ assignment due |
| Week 6 | Data collection: observation and document review |
| Week 7 | Data collection: focus groups |
| Week 8 | Background section draft due |
| Week 9 | Data collection: one-on-one interviews, part 1 |
| Week 10 | Data collection: one-on-one interviews, part 2 |
| Week 11 | Draft interview guide due |
| Week 12 | Ethics and validity |
| Week 13, 14 | Data analysis, part 1 |
| Week 15 | Dissemination of qualitative research and writing qualitative research proposals |

**New Course Proposal Form BHAN856**

This form parallels the Faculty Senate Online Course Approval form for New Course Proposals

Details can be found at[**http://www.udel.edu/registrar/coursemanagement/instructions.html**](http://www.udel.edu/registrar/coursemanagement/instructions.html)

Note that FYE and DLE designations and A&S group requirements have additional requirements for review.

In addition to completing this form, submit a syllabus to your departmental curriculum committee for review.

Course ID: new BHAN856

# Course Title: Multivariable Biostatistics for Population Health

Credit type:

Fixed number of credits 3\_\_\_\_

Variable number of credits min: \_\_3\_\_ max:\_3\_\_\_

Can this be taken more than once per term? yes/no \_no\_\_\_\_

Max. repeatable credits: \_\_3\_\_\_

Grade type: standard or pass/fail \_\_\_standard\_\_

Multicultural Course: yes/no \_no\_\_\_\_

First Year Experience (FYE): yes/no \_\_no\_\_\_

Discovery Learning Experience (DLE): yes/no \_\_no\_\_\_

Arts & Science requirement: yes / no \_\_no\_

Use the A&S Educational Affairs Course Nomination Form to propose this course as an Arts & Science group requirement and/or second writing course.

Replaces (renumbering): \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter Course ID of the course being deactivated.

Instructional format:

Lecture hours \_3\_**\_**\_\_

Lab hours \_\_0**\_**\_\_

Discussion hours \_\_0\_\_

Independent Study: yes/no \_\_\_no\_\_

Cross Listed Courses: \_\_\_none\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Course catalogue title (60 characters max.): **\_\_\_\_\_\_** Multivariable Biostatistics for Population Health

Long Description (45 words max.):

This course provides an understanding of the theory and application of the general and generalized linear models to the analysis of population-based data. Emphasis will be placed on generating and interpreting results and health-related applications.

Prerequisites: \_\_ STAT 656 Biostatistics or permission of instructor.

Corequisites: \_\_\_none\_\_\_\_\_\_\_\_\_\_\_\_\_

Restrictions: \_\_\_graduate students\_\_\_\_\_\_\_\_\_\_\_\_\_

**Justifications**:

**Identify and justify any effect on other courses in your department or in another department. Specifically list other departments' chairpersons and/or faculty consulted and summarize results of discussion.**

Higher level graduate-level training in biostatistics for population health is needed. Currently, there are no higher-level biostatistics courses in the Department of Behavioral Health and Nutrition, despite biostatistics being critical to the field of health behavior science, health promotion, and nutritional science. This course is designed to be taken by doctoral students but also suitable for quantitatively strong master’s degree students in the department and potentially across the College. While there are other graduate-level biostatistics courses across the University including EDUC812 Regression and Structural Equation Modeling, PSYC861: Psychological Statistics II, PSYC878: Hierarchical Linear Modeling, and PSYC867: Structural Equation Modeling, these courses do not cover the regression, GEE and repeated measures approaches that are particularly relevant to the health field. Moreover, the application of these approaches to the population health context is not used. We do not expect that the addition of this course will impact the enrollment in other courses within the University and instead fill a curricular void at the College of Health Sciences graduate level.

This proposal has been developed, reviewed and approved by BHAN faculty and the BHAN curriculum committee; it is supported by the chair of the BHAN department.

**Identify the main emphasis of the course along with major topics covered. Include a list of learning objectives.**

**Learning Objectives:**

1. Solidify understanding of commonly used distributions in multivariate biostatistics
2. Develop understanding of the concepts and assumptions underlying a range of multivariate statistical techniques
3. Learn to select the most appropriate multivariate statistical approach to address specific research hypotheses
4. Gain experience applying a wide range of multivariate statistical techniques
5. Begin developing a sophisticated methodological tool kit
6. Write empirical report using multivariate statistics, consistent with format of publishable research paper

**Major Topics covered:**

|  |
| --- |
| * Fundamental Statistical Concepts |
| * Exploratory and Descriptive Methods |
| * Nonparametric Tests |
| * Simple Linear Regression |
| * Confounding and Effect Modification |
| * Multiple Regression |
| * Predictor Selection and Model Building |
| * Logistic Regression |
| * Survival Analysis |
| * Repeated Measures |
| * Generalized Linear Model |
| * Missing Data and Complex Surveys |

**Suggested textbooks may include:**

Acock, A. C. (2014). *A gentle introduction to Stata* (4th Ed.). College Station, Tx: Stata.

Vittinghoff, E., Glidden, D. V., Shiboski, S. C., & McCullough, C. E. (2012).*Regression methods in biostatistics: Linear, logistic, survival, and repeated measures models* (2nd ed.) New York: Springer.

**Outline how this course addresses one or more of the 10 goals of undergraduate education.**

n/a.

**BHAN8XX: Social and Environmental Determinants of Health**

**Learning Objectives:**

1. Solidify understanding of commonly used distributions in multivariate biostatistics
2. Develop understanding of the concepts and assumptions underlying a range of multivariate statistical techniques
3. Learn to select the most appropriate multivariate statistical approach to address specific research hypotheses
4. Gain experience applying a wide range of multivariate statistical techniques
5. Begin developing a sophisticated methodological tool kit
6. Write empirical report using multivariate statistics, consistent with format of publishable research paper

**Course Content:**

|  |  |
| --- | --- |
| Week 1 | Introduction and Fundamental Statistical Concepts |
| Week 2 | Exploratory and Descriptive Methods |
| Week 3 | Nonparametric Tests |
| Week 4 | Simple Linear Regression |
| Week 5 | Confounding and Effect Modification |
| Week 6 | Multiple Regression |
| Week 7 | Spring Recess (or fall break) |
| Week 8 | Predictor Selection and Model Building |
| Week 9 | Logistic Regression |
| Week 10 | Survival Analysis |
| Week 11 | Repeated Measures |
| Week 12 | Generalized Linear Model |
| Week 13 | Missing Data and Complex Surveys |
| Week 14 | Exam Review, Project Time, Course Synthesis |
| Week 15 | Exam |

**New Course Proposal Form NTDT812**

This form parallels the Faculty Senate Online Course Approval form for New Course Proposals

Details can be found at<http://www.udel.edu/registrar/coursemanagement/instructions.html>

Note that FYE and DLE designations and A&S group requirements have additional requirements for review.

In addition to completing this form, submit a syllabus to your departmental curriculum committee for review.

**Course ID:** NTDT812

**Course Title:** Current Topics in Nutritional Sciences

**Credit type:**

**Fixed number of credits:** 3

**Variable number of credits:** min: n/a max: n/a

**Can this be taken more than once per term?** no

**Max. repeatable credits:** 3

**Grade type:** standard

**Multicultural Course:** no

**First Year Experience (FYE):** no

**Discovery Learning Experience (DLE):** no

**Arts & Science requirement:**

Use the A&S Educational Affairs Course Nomination Form to propose this course as an Arts & Science group requirement and/or second writing course.

**Replaces (renumbering):** \_\_\_\_\_\_ Enter Course ID of the course being deactivated.

**Instructional format:**

**Lecture hours** 3

**Lab hours** \_\_\_\_\_\_

**Discussion hours** \_\_\_\_\_

**Independent Study:** (yes/no) no

**Cross Listed Courses:** no

**Course catalogue title (60 characters max**.): Current Topics in Nutritional Sciences

**Long Description (45 words max.):**

Evidence-based exploration of current controversies in Nutritional Sciences. Students will use principles of systematic and critical reviews to synthesize and summarize information from peer-reviewed literature and guidelines reputable scientific bodies, on a given topic.

**Prerequisites:**   
NTDT200 or similar undergraduate nutrition course

BISC276 or similar undergraduate human physiology course

STAT200 or similar undergraduate statistics course

**Co-requisites**: none

**Restrictions**: MS in Human Nutrition (MSHN) majors, proposed Master of Science in Nutrition and Dietetics/Dietetic Internship (MS/DI) majors, proposed PhD in Nutrition Science majors, proposed PhD in Health Behavior students, Master of Science in Health Promotion

**Justifications**:

**Justify the need to initiate this course.**

The graduate programs in nutrition (MS and a proposed PhD program) require that students have a firm foundation of the literature related to nutrition and its role in health and disease. Graduate-prepared Registered Dietitian Nutritionists (RDNs) and nutrition scientists need to develop the skills required to assimilate the research to date on important topics. This course will teach students how to methodically and systematically review the literature and create scientific summaries of the evidence for given topics. This course will be taken by students in the Master of Science in Human Nutrition, the proposed Master of Science in Nutrition and Dietetics/Dietetic Internship program, and the proposed PhD in Nutrition Sciences program. We anticipate an enrollment of approximately 15 graduate students per semester from nutrition graduate programs alone. There are no current topics courses in the nutrition curriculum to date.

**Identify and justify any effect on other courses in your department or in another department. Specifically list other departments' chairpersons and/or faculty consulted and summarize results of discussion.**

This course has been developed with input from all faculty in the Nutrition program within the Department of Behavioral Health and Nutrition (BHAN). This course has been reviewed and approved by the BHAN Department Chair and Curriculum Committee.

**Identify the main emphasis of the course along with major topics covered. Include a list of learning objectives.**

**Main emphasis:**

The course will teach students how to critically evaluate and summarize a body of work on a current nutritional topic. To teach students the process used to conduct a systematic literature review, all students will start with a common topic and work through the process together (common topic will be nutritional genomics). Thereafter, each student will: (1) be responsible for a specific current topic (conduct a systematic literature review that culminates with an oral presentation/slide deck summary), and (2) actively participate/summarize information learned from their classmate’s topics.

**Course Objectives:**

Upon completion of this course, the student will be able to:

1. Utilize search engines (e.g., PubMed, Google Scholar) to identify current literature and guidelines from reputable scientific bodies on a current topic.
2. Identify the main components of, and stages in conduct of, a critical/systematic review.
3. Emphasize the importance of quality assessment of research studies for utilization in critical/systematic review.
4. Create a literature search summary chart to organize the main results of each study/article/guideline.
5. Critically evaluate and summarize the findings on the topic in an oral presentation.
6. Summarize information presented by classmates on other current topics.

**Potential Topics (will change according to current controversies in the field)**

1. Nutritional genomics
2. Gluten free diets- who should consume them?
3. Sodium and salt consumption: AHA vs. IOM recommendations
4. FODMAP diets, low GI diets, Paleo diets for inflammation: What is the evidence?
5. Low fat versus low carbohydrate diets for weight loss
6. Probiotics- what does the science say?
7. Dietary supplements - do they improve nutritional status?
8. Caloric restriction - does it increase life span?
9. Is saturated fat intake related to heart disease?
10. Is sugar intake a driving factor for heart disease?
11. Health at every size – is there such a thing as ‘metabolically healthy’ obesity?
12. Does dietary soy intake increase cancer risk?
13. Effect of skipping meals versus alternate day fasting on total daily energy intake
14. Dietary lectins and phytates - are “anti-nutrients” a concern?
15. Evidence and controversies surrounding vitamin D

**Outline how this course addresses one or more of the 10 goals of undergraduate education.**

n/a

**Outline how this course relates to the overall program goals.**

This course will be offered as a required graduate level NTDT (nutrition) course for masters and doctoral students in the Department of Behavioral Health and Nutrition (BHAN). The course meets the following goals for nutrition graduate programs, which are to produce graduate students who have:

* Advanced knowledge and practice of nutritional science;
* Ability to critically evaluate scientific literature; and
* Skills for research, teaching, and leadership positions.

Related to the MS/DI program in BHAN, the course meets several ACEND (Accreditation Council for Education in Nutrition and Dietetics) competencies:

* ACEND standard 1.1.1: ‘Analyzes the usefulness and limitations of epidemiological, clinical and other study designs and identifies trends in diet and disease’
* ACEND standard 1.1.2: ‘Demonstrates general understanding of nutrition and genetics, as it relates to health conditions’
* ACEND standard 6.3: ‘Applies current research and evidence-informed practice to services”

**Sample Course Calendar and Required Assignments**

|  |  |
| --- | --- |
| **Week** | **Tentative Lecture Topics** |
| 1 | Overview of course, syllabus, calendar  Electronic search engines for identifying nutrition and health related journal articles and authoritative guidelines  Steps for conducting critical/systematic literature review (specifying a study question, writing a protocol for how the review will be conducted, gathering the evidence comprehensively) |
| 2 | Quality assessment of research studies  Creating research studies summary chart |
| 3 | Evaluating and summarizing the evidence from critical/systematic literature review |
| 4 | Group project: Nutritional genomics: Identifying articles, quality assessment of research studies |
| 5 | Group project: Nutritional genomics: Research studies summary chart |
| 6 | Group project: Nutritional genomics: Evaluating and summarizing evidence from critical/systematic review |
| 7 | Group project: Nutritional genomics, scientific presentations of group projects |
| 8 | Student presentations (based upon current controversies in the field – see Potential Topics above) |
| 9 | Student presentations (based upon current controversies in the field – see Potential Topics above) |
| 10 | Student presentations (based upon current controversies in the field – see Potential Topics above) |
| 11 | Student presentations (based upon current controversies in the field – see Potential Topics above) |
| 12 | Student presentations (based upon current controversies in the field – see Potential Topics above) |
| 13 | Student presentations (based upon current controversies in the field – see Potential Topics above) |
| 14 | Student presentations (based upon current controversies in the field – see Potential Topics above) |
| 15 | Student presentations (based upon current controversies in the field – see Potential Topics above) |

**Sample Textbook:** Cochrane Handbook for Systematic Reviews of Interventions 1st Edition

Julian P. T. Higgins and Sally Green (Editors). John Wiley & Sons Ltd., 2008. ISBN-13: 978-0470699515.

Due to the focus on current controversies in nutritional sciences, peer reviewed literature will be the primary source of readings for this course.

**Sample Required Assignments:**

Attendance/class participation 5%

Group Project: Systematic Review 20%

Independent Project: Systematic Review 30%

Independent Project: Presentation 30%

Minute Papers 15%

**TOTAL 100%**

**Attendance/Class Participation**

Attendance at lecture is mandatory. Class will be a combination of lecture, group work, and scientific literature presentation/discussions. All students are expected to actively participate either by a question, comment, or more each class period.

**Group Project: Systematic Review**

Students will work in groups of two to three, inside and outside of class time, to conduct a systematic literature on a common topic related to nutritional genomics. The project will culminate with an oral presentation of the findings.

**Independent Project: Systematic Review Summary Table**

Each student will work independently to conduct a systematic literature review on a current nutritional issue/ controversy. Upon approval of the systematic review topic by the course instructor, the student will create a literature review summary table and an executive summary of their findings.

**Independent Project: Presentation**

Each student will create a 20-minute summary presentation of the literature findings. There will be a 5-minute question and answer session immediately after the presentation.

**Minute Papers**

Following each literature review presentation, each student will write a one-paragraph summary (“minute paper”) of the main concepts of the presentation and identify the most important things learned from the presentation.

**Appendix B:** List of Sample Elective Courses

|  |  |
| --- | --- |
| **NUTRITION AND GENERAL ELECTIVES** | |
| HLPR813 | Health Behavior and Health Psychology |
| HLPR815 | Health Behavior and Health Psychology |
| HLPR819 | Social Marketing |
| KAAP802 | Human Cardiovascular Control |
| NTDT640 | Nutrition and Aging |
| NTDT655 | International Nutrition |
| PHYT809 | Psychological Aspects of Health and Disease |
| PSYC809 | Research Design |
| UAPP653 | Politics and Healthcare |
| UAPP608 | Poverty, Neighborhoods, and Community Development |
| UAPP655 | Geographic Information Systems in the Public and Non-Profit Sectors |
| UAPP804 | Program Evaluation for Health and Social Services |
| UAPP808 | Qualitative Methods for Program Evaluation |
|  |  |
| **STATISTICS/DATA ANALYSIS ELECTIVES** | |
| BISC643 | Biological Data Analysis |
| EDUC812 | Regression and Structural Equation Modeling |
| EDUC856 | Introduction to Statistical Inference |
| ELEG815 | Analytics I: Statistical Learning |
| KAAP602 | Data Analysis and Interpretation in Health Science |
| PSYC860 | Psychological Statistics |
| PSYC878 | Hierarchical Linear Modeling |
| SOCI614 | Advanced Data Analysis |
| STAT608 | Statistical Research Methods |
| STAT656 | Biostatistics |
| STAT818 | Multivariate Analysis |
| STAT831 | Time Series Analysis |