Professional Science Master’s Degree in Applied Nutrition

Nutrition & Wellness Emphasis

Program Handbook

Fall 2022 Cohort
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School of Nutritional Sciences and Wellness
The School of Nutritional Sciences (SNSW) at the University of Arizona leads in cutting-edge research, outstanding undergraduate and graduate programs, Cooperative Extension programs, and continuing professional education that advance the discovery and translation of nutrition and physical activity in optimizing health for people in Arizona and beyond.

Professional Science Master’s—Program Overview
The Professional Science Master’s (PSM) degree program in Applied Nutrition–Nutrition & Wellness serves the needs of students, educators, registered dietitian nutritionists (RDNs), and health professionals interested in obtaining advanced training in the application of nutrition science to human health, and in the development of valuable professional skills (e.g., leadership, writing and communication skills, project management) while gaining hands-on experience in business or the public sector.

Coursework for this 30-unit master’s degree program is offered 100% online through Arizona Online, providing maximum flexibility to students, many of whom are working professionals. The program is designed to be completed in less than 18 months and can be extended as needed.

Unlike existing master’s degrees in nutritional science programs, the PSM includes six (6) credit hours of graduate-level capstone during which students work with a partner organization to complete approximately 270 hours (45 hours per unit of credit) of hands-on experience that serves as their graduate capstone project. Students also have the opportunity to complete nine (9) units of PLUS coursework (elective coursework) tailored to their profession and/or professional development goals. Please note that a minimum of five (5) units per semester are required to be eligible for financial aid.

Course Requirements for PSM program—Nutrition & Wellness Emphasis (30 units) *
NSC 501: Statistics for Applied Nutritional Sciences (1 unit)
NSC 502: Statistics for Applied Nutritional Sciences II (1 unit)
NSC 509: Advanced Nutrition Metabolism and Disease (3 units)
NSC 519: Advanced Applied Nutritional Sciences (3 units)
NSC 562: Leadership and Communication in Nutrition & Dietetics (3 units)
NSC 610: Nutrition & Disease (3 units)
PLUS Coursework (9 units) - Multiple course options available*
NSC 597: Capstone Prep Workshop (1 unit)
NSC 698A: Capstone I (3 units)
NSC 698B: Capstone II (3 units)
*Course descriptions appear in the Appendix.

Student Outcomes
1. Critically evaluate nutrition sciences research and demonstrate knowledge of research methods and statistics.
2. Apply evidence-based nutrition concepts to a professional setting, i.e., clinical, communication, education, and industry.
3. Demonstrate professional interpersonal skills including communication, collaboration, and leadership.
# Program Faculty and Staff

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<tr>
<th>Faculty Member and Contact Information</th>
<th>Course(s) Taught</th>
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<td>Kyle Jones, MS</td>
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<tr>
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<td>NSC 501: Statistics for Applied Nutritional Sciences I</td>
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<td>NSC 502: Statistics for Applied Nutritional Sciences II</td>
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<td>NSC 509: Advanced Nutrition Metabolism and Disease</td>
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<td>NSC 542: Advanced Medical Nutrition Therapy</td>
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<td>NSC 610: Nutrition and Disease</td>
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<td>NSC 698B: Capstone II</td>
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Admissions Requirements
Program applicants must meet the following minimum requirements:

• Bachelor of Science (BS) degree in nutrition or related field from an accredited institution. A Bachelor of the Arts (BA) degree in the area of nutrition will be accepted.
• If undergraduate degree is in a field other than nutrition, then coursework in physiology, biochemistry, and previous nutrition coursework is required.
• Minimum 3.0 GPA overall in undergraduate degree or over the last 60 units of coursework.
• Additionally, because the PSM program is delivered exclusively online, the following student characteristics are essential for successful program completion:
  o Self-directed, independent learner
  o Able to manage time effectively
  o Effective written and verbal communication
  o Able to utilize a wide range of resources effectively

Students must be admitted to the Graduate College prior to enrolling in courses. Refer to the Graduate College’s [Admissions Application website](#) for application requirements and instructions on how to apply to the Graduate College.

Credit for Courses Taken as a Nondegree-seeking Student
Domestic students may transfer up to six (6) units of coursework taken as nondegree-seeking status. This means that you may enroll in the required courses prior to being admitted into the program. This does not mean that you may transfer other courses to count toward the degree. Courses taken as a nondegree-seeking student that may be applied to the PSM Nutrition & Wellness Program are NSC 501, NSC 502, NSC 509, NSC 519, NSC 542/610, NSC 562, and PLUS course electives (see page 11 of this document for list of PLUS courses).

Advising
The PSM program coordinator serves as advisor for students enrolled in the program. Currently enrolled students should contact the program coordinator at least once each semester to facilitate adequate communication regarding progress in courses, questions regarding future coursework, and any other issues that may impact academic progress.

Students are able to extend their graduation timeline as needed, depending on ability to take classes. Any concerns about the timeline should be communicated with program coordinator. Working together, a personal timeline for coursework and graduation can be established.

Student Responsibilities and Professional Conduct
The Arizona Board of Regents sets the standards of behavior for university students. The Student Code of Conduct exists to create a safe and healthy environment for all University students, faculty, and staff. For more information, see the [Student Code of Conduct website](#). In addition, the students are expected to abide by standards of integrity and ethical behavior set forth on the [Code of Academic Integrity website](#).

Financial Information
Cost per unit for the program is $650. Financial aid is available, and students must be enrolled in at least five units per semester. More information about financial aid eligibility is available on the [Scholarships and Financial Aid website](#).
The University utilizes Scholarship Universe, an advanced scholarship management system, for our students. See the Scholarship Universe website for details.

The Graduate College’s Funding and Financial Information website lists information about various funding opportunities, including grants, fellowships, and scholarships.

The Graduate & Professional Student Council (GPSC) website includes information about research and project (ReaP) grants that offer up to $1,000 to partially or completely fund projects. The GPSC website also includes information about travel grants for professional development purposes.

Hourly grader positions may be available on a competitive basis. Students interested in a grader opportunity should contact the program coordinator. For paid grader positions, students need to be enrolled in at least six (6) units a semester. No research assistantship (RA) or teaching assistant (TA) opportunities are available for this program.

NetID and Email
Your University NetID is your personal identifier for a number of online services, including email and UITS computing accounts (UAConnect), UAccess account, D2L (learning management system), and University site-licensed software. You can set up your NetID and find related information on the UA NetID website. Refer to the IT Support website if you need assistance.

Your Email account is created automatically when you select your NetID. Students receive University notifications of tuition, bills, etc., via this email account. Students should use their this account for communication with their instructors, faculty, and staff. The email address format is YourNetID@arizona.edu. The email account is provided by the Google G Suite for Education, which provides access to Google’s full suite of applications. Details are available on the UA Google Workspace website.

CatCard
The CatCard is the official student identification card. Features include a digitized photo digitized signature, Contactless SmartChip, ISO number, and magnetic strip. You can decide how you want to use your CatCard. Online students are not required to obtain a CatCard, but there are many benefits, like using/showing your card to obtain student discounts. As an online student, you are able to obtain a CatCard, but first you will need to upload a photo. To learn more about this process and obtain your card, see the CatCard website.

Course Registration
For guidance on how to register for classes once you are admitted to the program, refer to the Office of the Registrar website. See also the Sample Schedule and Completion Timeline in the Appendix of this document.

GradPath System
The University Graduate College requires all students to complete and submit information via the Graduate College’s GradPath system to document their progress in their selected program as part of their path toward graduation. Students access GradPath using their UAccess account. Per Graduate College policy, students’ degrees will not be awarded until they have submitted their GradPath forms. Students are strongly advised to complete these requirements as soon
as possible to expedite the approval process through the SNSW and Graduate College approval units. The [GradPath website](#) provides information on how to access GradPath, along with student FAQs (frequently asked questions).

PSM Nutrition & Wellness students must complete/submit these required GradPath items:
1. Responsible Conduct of Research statement acknowledgment (see also the Research, Innovation & Impact website for [Compliance Training information](#)).
2. Plan of Study
3. Master’s Specialist Committee Appointment

**Academic Policies**

SNSW policy requires that students hold final responsibility for being aware of and responding to all SNSW, Graduate College, and University polices, requirements, formats, and deadlines as they pertain to progression toward and completion of their program. If any questions persist following review of all policies, contact the Nutrition & Wellness program coordinator for assistance and clarification.

**Incomplete Policy**

Students earning a grade of Incomplete (I) for a course should submit a completed Report of Incomplete Grade form to the program coordinator for inclusion in their academic record. Refer to the [Incomplete information on the Registrar’s website](#). Incomplete grades should be completed in a timely manner and are submitted at the discretion of the course instructor.

**Remediation Policy**

Students must pass all coursework with a grade of C or better for the units to count toward the required 30 units of the degree. An overall GPA of > 3.0 in the program is required for graduation.

Students judged to have academic difficulties (e.g., poor grades, failing, or at risk of failing to satisfy program requirements) will receive notice from the program coordinator with specific suggestions as to how these problems might be remedied and the date by which such actions must be taken. This notification will be copied to the Graduate College. The Graduate College has established guidelines that must be followed in order to dismiss students from their programs. Students should familiarize themselves with the steps so they know their rights, responsibilities, and remedies should such a situation develop. Students who fail to remediate by the deadlines specified may be dismissed from the program. Refer to the Graduate College’s [Academic Policies website](#) to review policies pertaining to graduate students.

**D2L (Desire2Learn) Learning Management System**

D2L provides instructors and students with an online space for traditional classroom courses, online courses, or hybrid courses. In D2L you will find resources related to your courses; each course has its own D2L workspace that includes:

- Course syllabus
- Course materials and resources
- Assignments
- Grades
- List of classmates
- Online discussions
- Assessments (quizzes, tests, etc.)
D2L also provides access to such tools as ZOOM, Panopto, VoiceThread, and Examity. You can access D2L via the [D2L website](https://d2lwebsite.com) (UA NetID required to login), which includes tech support information. Also refer to the [D2L Consulting website](https://d2lconsulting.com) for additional guidance and support.

Note that files submitted in D2L must be Microsoft Office compatible (i.e., MS Word) in PDF format. Other file types (i.e., PAGES) will not be accepted. University students can download Microsoft Office 365 for their use. Refer to the [UA Bookstore website](https://uabookstore.com) for details.

Other software is available to students for free or a discounted fee. See the [University Software Licensing website](https://uasoftware.com) for details.

**University of Arizona Libraries**
The University of Arizona libraries provide resources, services, and expertise to the University and the local community. Find out more on the [University Libraries website](https://ullibraries.com). The Library team has set up a [PSM Nutrition website](https://psmnutrition.com) for PSM students. This website has the contact information for the librarian for the College of Agriculture and Life Sciences as well as links for information relevant to graduate students and to online students.

**Student Support and Resources**
The Graduate College provides various types of support resources to new and current students. Refer to the Graduate College’s [New and Current Students website](https://newandcurrentstudents.com).

The [Student Success & Retention Innovation website](https://studentretention.com) provides information on Support, Opportunity, Success (SOS) services. SOS is for University students who find themselves facing questions or issues and are unsure about where to go for answers. Whether you’re brand-new to campus or have been around for a while, just reach out to SOS for round-the-clock support.

The [Disability Resource Center (DRC) website](https://disability-resource-center.com) provides information on creating inclusive learning and working environments and facilities, including assistive technology, throughout all aspects of the University.

The Graduate & Professional Student Council (GPSC) serves all graduate students. View the [GPSC website](https://gpscsite.com) for student resources. Students can also [sign up for the GPSC newsletter](https://gscnewsletter.com) for timely information regarding funding opportunities, employment opportunities, trainings, social events, and more.

**Campus Health Resources**
Arizona Online students can receive healthcare services from Campus Health, including mental health services. View all the services offered to Online students on the [Campus Health website](https://campushealth.com).

**General Catalog**
Students will find comprehensive information related to all University academic programs on the [Catalog website](https://catalogsite.com).
APPENDIX

Sample Schedule and Completion Timeline—Fall 2022 Enrollment

Fall 2022: 8 units
NSC 501 Statistics for Applied Nutritional Sciences I (1 unit; seven-week 1 session)
NSC 502 Statistics for Applied Nutritional Sciences II (1 unit; seven-week 2 session)
NSC 610 Applied Nutrition and Disease (3 units; full semester)
PLUS Course (3 units; see PLUS Courses listed below)

Spring 2023: 7 units
NSC 597 Capstone Prep Workshop (1 unit; seven-week 1 session)
PLUS Course (3 units; see PLUS Courses listed below)
PLUS Course (3 units; see PLUS Courses listed below)

Summer 2023: 9 credits
NSC 509 Advanced Nutrition Metabolism and Disease (3 units; five-week 1 session)
NSC 519 Advanced Applied Nutritional Sciences (3 units; five-week 2 session)
NSC 562 Professional Ethics and Best Practices in Nutrition Education and Counseling (3 units; 10-week session)

Fall 2023: 6 credits
NSC 698A Capstone I (3 units; seven-week 1 session)
NSC 698B Capstone II (3 units; seven-week 1 session)

Graduation: December 2023 (30 total units)

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Program Course Requirements for PSM program—Nutrition & Wellness Emphasis (30 units) *

NSC 501: Statistics for Applied Nutritional Sciences (1 unit). Offered: Fall semester
NSC 502: Statistics for Applied Nutritional Sciences II (1 unit). Offered: Fall semester
NSC 509: Advanced Nutrition Metabolism and Disease (3 units). Offered: Summer session
NSC 519: Advanced Applied Nutritional Sciences (3 units). Offered: Summer session
NSC 562: Leadership and Communication in Nutrition & Dietetics (3 units). Offered: Summer session
NSC 610: Nutrition & Disease (3 units). Offered: Fall and Spring semesters
PLUS Coursework (9 units) - Multiple course options available*
NSC 597: Capstone Prep Workshop (1 unit). Offered: Fall and Spring semesters
NSC 698A: Capstone I (3 units). Offered: Fall, Spring, Summer
NSC 698B: Capstone II (3 units). Offered: Fall, Spring, Summer
*Course descriptions appear below.
Program Course Requirements and Descriptions

NSC 501 – Statistics for Applied Nutritional Sciences (1) This course will introduce the conceptsof research methods with a focus on the varied research conducted in nutritional sciences. Students will be guided through a comprehensive compendium of the elements of research design in order to understand the application of these elements to Applied Nutritional Science.

NSC 502 – Statistics for Applied Nutritional Sciences II (1) This course will introduce basic statistical concepts and applied statistical strategies that are essential for conducting and critiquing research in nutritional sciences and related fields. The course will be delivered online structured with video lectures, self-check practices, discussion forum, assignments and quizzes. The experiences within the course will provide students the necessary competencies to appropriately summarize data (descriptive statistics) and implement statistical tests (inferential statistics) based upon appreciation of research design and data characteristics.

NSC 509 – Advanced Nutrition Metabolism and Disease (3) This class will review the multi-facetsof macronutrient metabolism and application to the prevention and development of common chronic diseases. The clinical applications of nutrient deficiencies and toxicities will also be reviewed. Metabolic alterations associated with obesity, metabolic syndrome, and other diseases will be discussed. The application of evidence-based guidelines and research for nutritional interventions will be discussed through weekly readings and assignments.

NSC 519 – Advanced Applied Nutritional Sciences (3) This course will advance understanding of research design, methods, and implementation, interpretation of research findings, and advances in nutrition science research for selected chronic diseases.

NSC 542 – Advanced Medical Nutrition Therapy (3) This course focuses on the prevention and management of selected chronic disease and acute care conditions. An in-depth exploration of the selected topics and related research using an evidence-based approach will serve as the class foundation. The course will be completed with students presenting a discussion/review of an approved topic.

OR NSC 610 – Nutrition & Disease (3) The overall goal of this class is to improve students’ understanding of how diet influences health and chronic disease risk by examining the biochemical and physiological effects of specific dietary components and overall dietary patterns. This course will use current research materials and in-depth examples—or case studies—of how nutrition can impact diabetes, inflammatory diseases, cardiovascular disease, and cancer. By learning these prevalent examples, students will gain the ability to develop new areas of expertise in response to specific nutrition and disease challenges that they encounter in their careers and/or research. Review articles and primary research papers will be made available on D2L to supplement textbook material and provide examples of real-world applications for lecture content. This course will emphasize current research as it applies to material covered in class.

NSC 562 – Professional Ethics and Best Practices in Nutrition Education and Counseling (3) Students will learn and implement inclusive best practices in nutrition education and counseling to serve diverse audiences in preparation for supervised experiential learning in food, nutrition, and healthcare settings. This course will touch on various theories and best practices in culturally responsive education, counseling, leadership, and communication to help students demonstrate the professional competency required for dietetics professionals by the Accreditation Council for Education in Nutrition and Dietetics (ACEND). Students will complete the course with a deeper understanding of the Code of Ethics for the Profession of Nutrition and Dietetics and practice applications that align with the “core values of customer focus, integrity, innovation, social responsibility, and diversity,” including the influence of personal identities and biases on practitioner interactions. Students will complete written and oral deliverables, including self-assessments, reflections, case studies, and targeted education materials. Students will also begin the process of developing their professional digital portfolios.
OR  ALC 522 – Communicating Knowledge in Agriculture and the Life Sciences (3) Principles and processes of knowledge diffusion and methods of transferring appropriate technology to user/clientele groups. Community effectively within organizations. Graduate level requirements include an additional report.

OR  GHI 514 – Intercultural Communication for Health Sciences (3) This course will examine how culture influences health communication. Students will gain an understanding of intercultural communication theories and will be able to apply them to become more effective health communicators. Students will gain skills to identify different variables as they relate to intercultural encounters such as values, assumptions, context, and audience. A variety of local and global contexts will be explored including health literacy, health promotion campaigns, healthcare interactions, global health collaborations, health identity, health research, health policy, and patient/provider interactions.

PLUS Courses (9 units required) See below for PLUS course options.

NSC 597 – Capstone Prep Workshop (1) The Capstone Workshop Prep course is designed to help students: identify potential sites for their capstone courses, develop talking points when discussing the capstone with potential sites, obtain the required affiliation requirements with their site, build knowledge of research requirements through completion of CITI trainings and further develop presentation and writing skills.

NSC 698A – Capstone I (3) Capstone I consists of 135 hours of practical professional training with a sponsoring agency/facility. Students will conduct a needs assessment and propose a topic for final project to be completed in NSC 698B. Students will write a progress report which will be presented to the class.

NSC 698B – Capstone II (3) Capstone II consists of 135 hours of practical professional training with a sponsoring agency/facility that culminates the Professional Science Master program and produces a final project. Students will develop a final report on the project objectives, methods, and outcomes. The project will be presented to the class in a presentation form, and a poster will also be produced.

PLUS COURSES

PLUS courses are electives that allow students to broaden their professional knowledge and/or professional development goals. Students must complete nine (9) units of PLUS courses. Students should make sure their Plan of Study reflects the PLUS courses that they have selected.

Students following the approved timeline will typically complete three 3-unit PLUS courses during the program (either 1 course in the Summer, 1 course in the Fall and 1 course in the Spring, OR 2 courses in the Fall and 1 course in the Spring).

This following list includes courses taken by previous PSM students or that might be of interest to currently enrolled students; it is not an all-inclusive list of available courses. The courses in which Applied Nutrition (PSM) students have enrolled or have had approval to do so are highlighted in green. All other courses require approval from the PSM Program Director, Kayle Skorupski (kayleskorupski@arizona.edu). Note that not all PLUS courses are offered each semester. Refer to the Course Schedule website to search for courses in the semester of interest (Summer, Fall, Spring).
PLUS Courses—Nutrition

NSC 515L - Advanced Sports Nutrition Lab (1) NSC 415/515 Lab will use nutritional science and physiology to focus on sport specific menu and food needs for athletes. Content will include menu development and analysis of various menus, recipes and cookbooks designed for athletes. This will encompass designing specific food products and menus that are appropriate for specific sport activities that have special nutritional challenges during training and competition. This course will also include training on dietary and body composition assessment tools, allowing students to use that knowledge while assessing both body composition and food intake of an athlete. Graduate students will be required to complete an additional project described in syllabus. **MUST TAKE WITH NSC 515R**

NSC 515R - Advanced Sports Nutrition (3) NSC 415R/515R will use nutritional science and physiology to focus on sport specific competition and training nutritional challenges and issues. Content will include the nutritional and physiological requirements of various sports; sport specific cultural influences that affect attitudes towards nutrition; and nutritional challenges faced by athletes training and competing in different sports. This course will also include a review of dietary intake methodologies; body composition assessment; diet analysis; and training table and residence hall menu development and assessment. Graduate students will be required to complete a research project described in syllabus. **MUST TAKE WITH NSC 515L**

NSC 540 – Nutrition Interventions (3) This course will provide students with tools and competencies for developing, implementing, and evaluating nutrition intervention programs. Course topics include evidence-based behavior change, social determinants of health and wellness, nutrition screening and tools for community settings, using nutrition surveillance data to inform program development, and cultural awareness/bias recognition. Course skill-building will focus on problem identification, conducting needs assessments, developing evidence-based intervention strategies, evaluating program implementation and effectiveness (including planning a budget and seeking/obtaining funding support). Students will select a semester-long course project based on their personal interests and that of a collaborating community entity. Students completing this course will be able to apply knowledge of social, psychological and environmental aspects of eating and food to formulate food and nutrition services that meet the needs of individuals, communities, and populations.

NSC 545 – Assessment and Regulation of Human Body Composition (3) This course covers advanced principles of body composition assessment and management. Methods of body composition assessment will be covered with a focus on aging, obesity, sarcopenia and bone health. The impact of physical activity and pharmacology will be reviewed.

NSC 558 – Advanced Food Service Management (3) This course will provide students with knowledge, tools and competencies related to foodservice systems management to prepare them to lead in institutional foodservice management and entrepreneurial roles. Course topics include recipe/menu development and modification; supply and procurement; food production and service systems; sanitation and safety; quality management; management tools, functions, skills; resource management; and information management and reporting.

NSC 570 – Agriculture and Food Literacy for Nutrition & Health Professionals (3) This course will provide students with knowledge, tools and competencies related to foodservice systems management to prepare them to lead in institutional foodservice management and entrepreneurial roles. Course topics include recipe/menu development and modification; supply and procurement; food production and service systems; sanitation and safety; quality management; management tools, functions, skills; resource management; and information management and reporting.

NSC 575 – Nutrigenomics for the Study of Disease Prevention & Intervention (3) Nutrigenomics is the application of genomics to human nutrition. This online course will explore relevant technologies, genetics & nutrition. Designed by researchers in colleges & centers of excellence, it will be continually updated with the latest information. Graduate-level requirements include Nutrigenomics/Organization of the genome; Advanced Models; Target validation; Mouse models; lab assignments; Advanced discussion board questions (4 total) are due after each unit.
PLUS Courses—Non-Nutrition

ACBS 527R – General Mycology (3) An exploration of the diversity of fungi and fungus like organisms covering general biology and roles as pathogens (of humans and plants), saprobes and symbionts. Fungi as models for eukaryotic molecular research and their uses in industry will be covered. Graduate-level requirements include a term paper 10 pages in length to allow a more in depth exploration of a topic in fungal biology. Also required is a 30 minute oral presentation on a topic of choice for 100 points of grade.

AED 617 - Research, Methods and Project Design (3) Principles and practices of planning, designing, conducting and reporting research and scholarly activities in education, extension, other social science disciplines, and agricultural technology management.

AED 621 - Program Planning and Evaluation (3) Developing and evaluating programs in teaching and extension; situation analysis, objectives, policies, content, procedures, and evaluative criteria.

AED 697C - Workshop on Teaching at the College Level (3) Workshop that deals with the practical applications of teaching/learning theories at the college level as they relate to instructional methodologies, strategies, and planning. This will include instructional objectives, content organization, and assessment of learning experiences. This workshop will involve the exchange of ideas, and will focus on practical methods, skills and principles.

ALC 510 - Entrepreneurial Leadership in Agriculture and the Life Sciences (3) This course is an exploration of the principles and practices of entrepreneurial leadership, and the application of such principles and practices within agricultural and rural communities, the Cooperative Extension system, educational organizations and systems, agricultural agencies at the local, state, and federal levels, and agricultural enterprises and life sciences industries. Emphasis is placed on the knowledge and skills required to effectively lead change within and across organizations, communities, and settings that intersect the agricultural and life sciences fields. Graduate students will thoroughly outline a lesson plan (learning objectives, measurable learning outcomes, instructions methods, etc.) specific to entrepreneurial leadership topic to be delivered to an audience of adult learners within a non-formal (or informal) community setting.

ALC 511 - Principles and Applications of Organizational Innovation (3) This course provides an introduction to the principles and practices central to organizational innovation and leadership. Frameworks and methods for designing, developing, and implementing innovation within agricultural organizations and industrial settings and environments will be explored. The overarching goal of the course is to equip students with the perspective and skill base necessary to be leaders of innovation and change within agriculture organizations that extend across educations, public, governmental, and industrial settings and environments. Graduate-level requirements include a semester long case study that will culminate in both a term paper and in-class presentation. Additionally, the graduate level requirements will include three short papers that critique scholarly research on topics relevant to organizational change and innovation across the agricultural fields. Lastly, graduate students will be expected to make meaningful contributions to in-class discussions.

ALC 522 - Communicating Knowledge in Agriculture and the Life Sciences (3) *If not taken for Communication Course Requirement* Principles and processes of knowledge diffusion and methods of transferring appropriate technology to user/clientele groups. Community effectively within organizations. Graduate level requirements include an additional report.

BME 578/SIE 578 - Artificial Intelligence for Health and Medicine (3) The practice of modern medicine in a highly regulated, complex, sociotechnical enterprise is a testament to the future healthcare system where the balance between human intelligence and artificial expertise will be at stake. The goal of this course is to introduce the underlying concepts, methods, and the potential of intelligent systems in medicine. We will explore foundational methods in artificial intelligence (AI) with greater emphasis on machine learning and knowledge representation and reasoning, and apply them to specific areas in medicine and healthcare including, but not limited to, clinical risk stratification, phenotype and biomarker discovery, time series analysis of physiological data, disease progression modeling, and patient outcome prediction. As a research and project-based course, student(s) will have opportunities to identify and specialize in particular AI methods, clinical/healthcare applications, and relevant tools.
CTE 500 - Principles & Philosophy of Career and Technical Education (2) Understanding the historical social and economic values of career and technical education through investigation of federal laws, and state policies. As well as, developing a symbiotic philosophy with administration, theories, and principles in mind in regards to programs in the secondary school. CTE 500 Students will be required to complete a Literature Review in addition to course modules 1 - 4 which is required for the Undergraduate Student.

CTE 510 - Curriculum Development in Career and Technical Education (2) Creating an understanding for the development of robust classroom curriculum, aligned with Arizona State and CTE standards, and incorporating learning devices geared for student success. This development process will focus on the total program within CTE, and assist in planning year-long curriculum maps with an emphasis on writing objectives, cross walking standards, and elaboration on objective building for full lesson creation and implementation. Lesson content and teaching methods will be tailored into the next course of CTE 420/520. CTE 510 students will be required to complete a literature review in addition to course modules required for the undergraduate student in CTE 410.

CTE 520 - Classroom Instructional Development for Career and Technical Education (2) Implementing principles of teaching and learning based on classroom instruction objectives, as well as development of content for lesson planning. Based on contextual needs within specific CTE programming, methodology, instruction techniques, and assessments will be developed. Basic classroom management skills will also be compared. CTE 520 students will be required to complete and submit a literature review as part of their course requirements in addition to course module completion.

CTE 530 - Career and Technical Education Student Organization Development (2 units) This course focuses on the Career and Technical Student Organizational aspect of the total CTE program. Understanding your role as an advisor will assist you in carrying out the program of work for your organization, management of the organization, and implementing pivotal leadership training to ensure student success in developing an effective youth organization. CTE 530 students will be required to complete and submit a literature review as part of their course requirements in addition to course module completion.

EHS 520 - Environmentally Acquired Illness (3) Illnesses related to environmental exposures are on the rise but frequently misdiagnosed due to a lack of understanding of the complexities of multiple hazard exposures and variable health outcomes. This course provides an overview of common and emerging Environmentally Acquired Illnesses (EAl's) and explores the multitude of hazards, conditions, and predisposing factors related to human disease. Students will learn how to identify gaps in the current model of patient evaluation and treatment. In addition, they will critique current research design and gain hands on experience in developing a systems approach to understanding, evaluating, and communicating the impact and control of EAl's relative to human health.

EHS 575 - Environmental and Occupational Health (3) Course emphasizes health hazard sources, methods to identify & evaluate them, and framework used to effect hazard control. Students will evaluate public health issues, understand research designs, identify and evaluate factors important to the development of monitoring programs.

EHS 539A – Outbreaks and Environmental Biology: Then and Now (3) This course will examine historical and present day outbreaks in regards to the environmental microbiology of pathogens. Different pathogens control interventions that were used to mitigate the outbreaks will also be explored. Graduate-level requirements include a more in-depth analysis of topics, more participation in online discussion groups, and additional test questions.

ENGL 514 – Advanced Scientific Writing (3) Preparation of professional literature for publication. Graduate level requirements include longer and more detailed papers.

ENVS 508 - Scientific Writing for Environmental, Agricultural and Life Sciences (3) Effective writing is a valuable tool for any student aspiring for a career in the Environmental, Agricultural, and Life Sciences. This course will cover in-depth technical writing skills needed for scientific writing success, ranging from how to perform comprehensive reviews of the scientific literature, to performing peer reviews of the writing of
fellow students. Ultimately, completion of this course will improve students' ability to write technical reports, theses and dissertations, and journal articles. Graduate-level requirements include work on theses, dissertations or journal articles.

**FCSC 513A/LAW/PHIL 513A - The Ethical Entrepreneur (3)** Students undertake an ethical and economic assessment of the institutions that make up a marketplace. Acquire powerful ideas for discussing the daily news with students or colleagues and equipping them with analytical skills for addressing ethical issues in their daily lives and in their future roles as citizens. General use of statistics, and perhaps more importantly, misleading with statistics is a topic covered. Sample topics that may be addressed include why some societies grow rich while others remain poor; why some institutions lead to corruption, waste and mutual destruction; why other institutions steer human ingenuity toward inventing ways of making fellow citizens (one's customer base) better off; the boundaries of individual ethics within the market-place; what one must do to succeed in a market society; and what one must do to deserve to succeed.

**GLO 535 – Global Media Ethics and Diversity (3)** This course will provide students with a framework to think critically about media's obligations to the public. Analyses examine ethical philosophies as they relate to both citizen-driven media and journalist professionals' roles and responsibilities in various societies and governmental systems around the world. Through case studies, readings, lectures, documentaries and individual research, students will explore ethics questions related to cultural bias, political and economic pressure, diverse representation, accuracy, privacy, national security, and other pressures on news media in countries around the world.

**HPS 529 - Project Design and Implementation in Global Health (3)** This course will equip students with skills in conceptualizing, developing, implementing, and evaluation small-scale projects in global health and development.

**HPS 530 - Nutrition, Health and Development (2)** This course focuses on nutritional issues of women and children in low and middle income countries. Local and international programs that combat malnutrition will be evaluated in the context of socioeconomic development and current political/economic policies and realities.

**HPS 531 - Contemporary Health Issues and Research (3)** Designed to explore a broad spectrum of health education and health behavior issues and programs in order to evaluate their impact (or potential impact). Toward that end, we will read, review, and critique numerous research efforts that were designed to change behavior via health education and/or health behavior programs.

**HPS 533 - Global Health (3)** Examines major health problems of underdeveloped, developed, and emerging nations. Students conduct in-depth analyses of health problems among various populations in multicultural settings, both nationally and internationally.

**HPS 534 - Infectious Diseases, Global Health and Development (3)** This course will analyze the etiology and distribution of major tropical infectious disease, and the environmental, economic, and cultural factors that lead to their proliferation. Impact on development and global prevention initiatives will be appraised.

**HPS 544 - Fundamentals of Evaluation (3)** Evaluation is essential to all research and service based programs. The course provides all students interested in pursuing an advanced public health degree with the fundamentals of planning and evaluation. In addition to core issues surrounding evaluation (e.g., measurement and design) the role of the evaluator in the planning and implementation phases of research and service-based public health programs is highlighted. The relationship between areas of specialization and evaluation will be a central theme throughout the course.

**HPS 577 - Sociocultural and Behavioral Aspects of Public Health (3)** This course is an overview of significant social, cultural and behavioral issues related to public health. Major public health problems and the influences of sociocultural issues are analyzed in relation to health behavior. Readings, discussions, films, and class experiences/assignments focus on understanding the social and cultural issues that influence health-related behavior among specific populations in the southwestern U.S., North America and internationally.
INFO 517 - Introduction to Digital Cultures (3) Digital information technologies shape our lives. The benefits and the possible dangers of digital information technologies will be explored from a multidisciplinary perspective, looking at the insights into our digital age from history, linguistics sociology, political theory, information science, and philosophy. Students will have opportunities for active reflection on the ways in which digital technology shapes learning and social interaction. Graduate-level requirements include different percent break-down of requirements and more stringent expectations in work produced.

INFO 533 - Medical On-Line Searching (3) This course will focus on the online retrieval and evaluation of medical literature and the issues surrounding provision of timely, relevant, peer-reviewed medical information. Emphasis will be on the development of the intellectual acuity required to provide physicians, nurses, pharmacists, allied health professionals, medical researchers and consumers with targeted responses to medical queries. Current search modalities such as Evidence-Based Medicine will be covered both in readings and in class discussions.

INFO 587 – Information Seeking Behaviors (3) Information-seeking theories, methods, and user behaviors will be covered in order to gain an understanding of how people seek, gather, retrieve and use information. Information-seeking behavior draws on literature from library and information science, psychology, and communications. Graduate-level requirements include conducting a real-world experience or evaluation of information seeking behaviors in a self selected social context and information system. The project will include a two-page proposal of the experience due at the mid term and an online presentation to the class of the findings of the study, including; problem/issue studies, research question, data collected and analyzed, significance to the social context, and a statement of personal relationships to the topic and participants.

LIS 520 – Ethical Issues in Information (3) This course presents an overview and understanding of the intractable and pressing ethical issues as well as related policies in the information fields. Emerging technological developments in relation to public interests and individual well-being are highlighted throughout the course. Special emphasis is placed on case studies and outcomes as well as frameworks for ethical decision-making.

LIS 533 - Medical On-Line Searching (3) This course will focus on the online retrieval and evaluation of medical literature and the issues surrounding provision of timely, relevant, peer-reviewed medical information. Emphasis will be on the development of the intellectual acuity required to provide physicians, nurses, pharmacists, allied health professionals, medical researchers and consumers with targeted responses to medical queries. Current search modalities such as Evidence-Based Medicine will be covered both in readings and in class discussions.

MKTG 558 – Health Care Marketing (3) This course provides an overview and applications of health care marketing theories and methods for health care and public health organizations. Graduate level requirements include a 20-page paper describing a marketing plan and the process used to complete it.

NURS 520 – Foundations of System Leadership (3) Learners will explore basic concepts related to the health care system, professional knowledge, and quality and safety using a systems perspective. Please contact Cheryl Lacasse at clacasse@email.arizona.edu if you are interested in adding this course.

NURS 521 – Evidence-Based Practice Improvement (4) Learners will analyze and apply evidence for selected areas of clinical practice to facilitate optimal patient outcomes. Evidence will be used to develop, validate, and endorse strategies for system-wide practice improvements. Please contact Cheryl Lacasse at clacasse@email.arizona.edu if you are interested in adding this course.

NURS 540 – Health Promotion and Risk Reduction (4) Learners will apply concepts of health promotion and risk reduction at the individual and interpersonal level of care. Emphasis will be placed on evidenced-based strategies that acknowledge patient-centered values and beliefs in the process of optimizing health and well-being. Please contact Cheryl Lacasse at clacasse@email.arizona.edu if you are interested in adding this course.

NURS 541 – Population Health (4) Learners will apply concepts related assessment, surveillance, and interventions for risk reduction, disease prevention, and health promotion in populations and communities. Multiple perspectives of vulnerability (including cross cultural) will be emphasized. Please contact Cheryl
Lacasse at clacasse@email.arizona.edu if you are interested in adding this course.

**NURS 543 – Health Information and Patient Care Technologies (3)** Learners will evaluate and apply emergent health care technologies such as point of care clinical decisional support, telehealth/medicine, and electronic documentation that support patient-provider communication, interprofessional practice, and coordinated patient care delivery. Please contact Cheryl Lacasse at clacasse@email.arizona.edu if you are interested in adding this course.

**NURS 640 – Healthcare Business Dynamics (3)** Learners will apply business concepts and principles across a variety of healthcare settings. Concepts include the following: organizational structure and finance, budgeting, cost-benefit analysis, marketing, resource allocation, innovation, and entrepreneurship. Business values consistent with patient-centered care will be highlighted. Please contact Cheryl Lacasse at clacasse@email.arizona.edu if you are interested in adding this course.

**NURS 642 - Health Policy and Economics (3)** This course will explore history, definitions, and applications related to health policy, economics, and advocacy. Students will be prepared to discuss the complexities of health policy development, implementation, and evaluation, to engage in comparative analysis of the U.S. and international health care systems, and to understand the role of policy competency and advocacy in advanced practice nursing and nursing science.

**NURS 647 - Human Factors in Health Information Technology (3)** This course is designed to describe the role of human factors in the design, analysis and evaluation of health information technology. The interaction between the human and the machine will be described as background to which the health information technology fits and reshapes the completion of tasks and the extent to which performance can be supported across settings. Students will begin with a focus on elements of human factors that influence performance, learn approaches to design and analysis that account for human factors and evaluate dimensions of usability and user experience applied to Health Information Technology (HIT).

**NURS 653 - Healing Environments and Practices (3)** Learners will evaluate models of optimal healing environments that promote personal and organizational health and well-being. Emphasis is placed on evidence-based integrative approaches that support structural and human care processes.

**NURS 654 - Quality and Safety Management (4)** Learners will evaluate models of optimal healing environments that promote personal and organizational health and well-being. Emphasis is placed on evidence-based integrative approaches that support structural and human care processes.

**PHIL 515 - Healthcare Ethics (3)** This course explores many challenging moral questions related to situations encountered by healthcare professionals. For example: What rights and responsibilities come with the role of healthcare provider? Should the healthcare provider always disclose to a patient the full truth about his or her diagnosis? Should diagnosis and treatment errors be disclosed to patients? Under what circumstances is it morally permissible to break patient confidentiality? Why does moral distress arise in medical professionals who regularly deal with futility of treatment cases? Should one have absolute rights over one’s body (e.g. with respect to euthanasia) or are there other moral considerations that limit such freedom? What is the proper justification for allocation of moderately scarce resources? Should everyone have an absolute right to healthcare, and who should provide access? As we explore these and many other questions, we will learn about some major moral theories along the way, with an emphasis on applying them to real world moral problems. This course will give you skills for recognizing the scope and force of an ethical conflict when it occurs and ways of becoming more reflective and open-minded about differing moral views. I also hope to provide you with the skills to cogently defend your own principles and lobby for changes in regulations when there is a perceived need. The skills acquired in philosophical argument are indispensable for engaging with the evolving moral discussions surrounding medical ethics.

**PHP 521 - Administrative Dimensions of Indigenous Health (3)** This course will provide an introduction to state and federal administrative processes that impact Indigenous (American Indian/Alaskan Native) the delivery of healthcare and public health measures within the Indian Health Service (IHS) system. The course will further examine the legislative, organizational and operational frameworks of the IHS that will provide
comprehensive and meaningful knowledge for health and/or public health professionals to implement informative policy measures to improve the health of Indigenous people through administrative frameworks.

**PHP 536 – Aging, Environment & Well-being (3)** What does environment have to do with aging and well-being? In this course we explore the relationship between older people and their environment. In doing so we look at environment through a variety of lens, such as physical space (i.e. location), and place (location imbued with individual meaning), private versus public, as contributor versus constraint to a sense of belonging and empowerment for older persons. We will consider how factors such as models of social care, human service practices, public policy, societal attitudes, and environmental design positively or negatively impact the environmental experience of diverse older persons as they age in place. Our goal is to expand our knowledge and sensitivity to the subtleties of environmental experience for older persons and challenge us to consider how development of environmental design, social interventions, and public policy can support wellbeing and optimize the lived experience of the aging and aged.

**PHP 564 - Science of Health Disparities (3)** This course will focus on the current knowledge and approaches used to evaluate the intersectionalities that affect health inequities. Students will be required to demonstrate a breadth of global perspectives from social and biomedical sciences required to understand health inequity injustices and the science of health disparities.

**PHPM 506 - Economic Foundations for Health Sciences (3)** Review of economic concepts and theories which underlie economics topics typically encountered in the graduate curriculum of Public Health, Nursing, Pharmacy, and health economics courses taught in the College of Business.

**PHPM 507 - Health Care Economics and Policies (3)** Health policy is examined from an economic perspective. Basic economic theories and their relationships to the structure and function of the U.S. health care system are explored. Alternative health care systems and heath care reforms are also evaluated. Graduate-level requirements include more weekly writing assignments and a major paper demonstrating independent research, integrate and analyze data related to a contemporary problem of health care delivery or financing.

**PHPM 558 - Health Care Marketing (3)** This course provides an overview and applications of health care marketing theories and methods for health care and public health organizations. Graduate level requirements include a 20-page paper describing a marketing plan and the process used to complete it.

**PHPM 561 - Introduction to Health Care Quality and Safety (3)** This course provides an overview of health care quality and safety. Students will learn quality improvement concepts and techniques and will practice the techniques in teams. **CPH 574 or instructor permission.

**PHPM 569 - Fundamentals of Health Budgeting and Financial Management (3)** This course will offer a current approach to the fundamentals of budgeting and financial management, with an emphasis on non-profit health care organizations, in particular the community health sector.

**PHPM 574 - Public Health Policy and Management (3)** Management processes/roles of public health professionals; health service organization; policy issues and resource utilization/control; human resources management; public health trends.

**SIE 514 - Law for Engineers/Scientists (3)** Topics covered in this course include patents, trade secrets, trademarks, copyrights, product liability contracts, business entities, employment relations and other legal matters important to engineers and scientists. Graduate-level requirements include an in-depth research paper on a current topic.

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