Program of Study

Course Descriptions and Student Outcomes

**(96 total credits required)**

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| **<Name>**  University of Washington  School of Nursing  Planned Dissertation Topic: Precision Health and Ventilator-Assisted Pneumonia Prevention: Role of the Microbiome | Dissertation Supervisory Committee Linus Van Pelt, PhD, RN - Chair  Sally F. Brown, PhD - GSR  Wendy Othmar, PhD, RN - Member  Frieda Rich, PhD - Member  Patty Reichart, PhD, GNP – Member |

**This Program of Study is hereby approved by:**

Committee Chair: Linus Van Pelt Signature: Date:

Committee GSR: Sally Brown Signature: Date:

Committee Member: Wendy Othmar Signature: Date:

Committee Member: Frieda Rich Signature: Date:

Committee Member: Patty Reichart Signature: Date:

Submit this approved Program of Study, including this completed signature page, to Student and Academic Services (Room T-301) immediately following approval.**Nursing Science Core Courses – 29 credits attained / 29 credits required**

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| **Courses** | **Faculty** | **Credits** | **Date** |

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| NURS 588 Philosophical Inquiry and Nursing Science | Belza | 4 | Autumn 20XX |
| Course Emphasis: Focuses on the epistemological and ontological basis of forms of inquiry for generating knowledge in nursing. Emphasizes approaches to knowledge development as applied to phenomena in nursing. Includes critique of conceptual issues among schools of thought including but not limited to interpretive/postmodern, critical/feminist, and contemporary empiricist and how the philosophical underpinnings influence the generation of research questions.  Student Outcomes: Completed four reflection papers related to various aspects of assigned readings (feminism, critical theory, interpretive); participated in group project/presentation of Zen “ways of knowing;” and completed a scholarly paper titled: Positivism and Post-Positivism Philosophies. This course assisted me with how I will think, rethink and approach my doctoral education by gaining new insights and appreciation to a myriad of approaches for conducting research. | | | |

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| NURS 587 Leadership Seminar | Zierler | 1 | Autumn 20XX |
| Course Emphasis: Facilitates transition to successful doctoral study and future professional roles and serves to integrate content and experiences across core courses. Addresses leadership and future roles, cross-disciplinary teamwork, and scientific communication competencies. Topics include collaboration and facilitation, giving and receiving feedback, leadership and career development strategies to facilitate success in the doctoral program.  Student Outcomes: Growing self-awareness, self-knowledge and developing strategies for maintaining well-being. (Complete Personal Styles inventory, Emotional Intelligence Assessment). Developing two-way communication skills focusing on listening and achieving shared understanding (Practice 3 techniques that can help listeners and identify the 5 levels of listening). Building key skills of getting things done by collaborating with others. Planning and organizing all aspects of your work (Develop action plan for 30, 60, 90 days). Running effective research meetings (Lead the discussion of one class meeting assigning roles to others (leader, facilitator, recorder, time keeper). Preparing to take on the role of managing and leading others. (Complete assessment form on analyzing your leadership style). | | | |

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| NURS 589 Application of Theory and Evidence in Nursing Science | Cochrane | 4 | Winter 20XY |
| Course Emphasis: Addresses the role of theory in guiding scientific inquiry in nursing. Concept and theory development, analysis, and critique are examined as foundational to the scientific evidence that informs nursing inquiry, practice, and systems/contexts of health. Distinct approaches for synthesizing and representing knowledge about health phenomena are reviewed for their theoretical elements and contributions to the quality of evidence in nursing science.  Student Outcomes: Evaluated the contexts, theoretical foundations, and research evidence for linkages among concepts related to a phenomenon of interest. Depicted a conceptual model for a selected study. Prepared a short concept analysis paper on a phenomenon of interest. Evaluated and rated the level of evidence of published studies. Compared and contrasted different types of literature reviews about a phenomenon of interest. Compared and contrasted, in a class presentation, mid-range theories relevant to a phenomenon of interest in nursing science. Prepared an in-depth paper that synthesized and critiqued the evidence to support the application and testing of these theories in research. | | | |

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| NMETH 579 Quantitative Research Methods | Ward | 5 | Spring 20XY |
| Course Emphasis: Provides the foundation for appraising and designing quantitative research (non-experimental, quasi-experimental, and experimental), including research questions, hypothesis testing, methodological and analytic approaches for nursing and health-related sciences.  Student Outcome: Ability to critically distinguish among non-experimental, quasi-experimental, and experimental designs and the research questions and analytic approaches that each can and cannot address. Apply and analyze the ethical, moral, and human subject issues in non-experimental and experimental research designs. | | | |

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| NMETH 582 Qualitative Inquiry | Boutain | 4 | Spring XY |
| Course Emphasis: An introductory seminar appraising multiple interpretive traditions, methodologies, and research questions, designs and methods for knowledge development about health related issues. Explores moral, ethical, and research consent issues.  Student Outcome: Gained extensive knowledge of methods for qualitative inquiry. Participated in weekly class discussion on a variety of topics. Performed exploratory interview and observation and wrote up general findings of each as well as new perspectives gained. Qualitative project write-up was performed including initial description of project idea for assessing dyspnea post-ICU stay, framing literature and conceptual framework, a researcher identity memo. | | | |

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| NURS 587 Leadership Seminar | Zierler | 1 | Spring 20XY |
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| NURS 595 Synthesis of Nursing Science | Dougherty | 4 | Winter 20XA |
| Course Emphasis: Advanced seminar for critical analysis, integration, and synthesis of material for a research proposal. Focus includes discussion of research integrity and ethics including scientific conduct, risk management related to scientific misconduct and negligence. Student Outcomes: Developed research proposal including specific aims and analysis plan; participated in mock study section/peer review of proposal gaining experience in giving and receiving critical, constructive feedback. | | | |

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| NMETH 596 Application of Methods in Conduct of Research | Kohler | 5 | Spring 20XA |
| Course Emphasis: Develops knowledge and skills related to practical implementation of research projects for PhD students. Areas include protocol development, IRB procedures and applications, standard operating procedures, data management, study staff composition, community advisory boards, budget management, and study oversight.  Student Outcome: Ability to operationalize proposed dissertation work into a protocol and IRB application for submission. Familiarity with data management processes and systems. Readiness to conduct field research. | | | |

**Statistics Sequence – 12 credits attained / 12 credits required**

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| **Courses** | **Faculty** | **Credits** | **Date** |

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| BIOST 511 Medical Biometry I | Sheppard | 4 | Autumn 20XX |
| Course Emphasis: Presentation of the principles and methods of data description and elementary parametric and nonparametric statistical analysis. Examples are drawn from the biomedical literature, and real data sets are analyzed by the students after a brief introduction to the use of standard statistical computer packages. Statistical techniques covered include description of samples, comparison of two sample means and proportions, simple linear regression and correlation.  Student Outcomes: Obtained general understanding of statistical techniques including description of samples, comparison of two sample means and proportions, simple linear regression and correlation. Completed 8 weekly homework assignments and 1 midterm exam and a final exam. | | | |

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| BIOST 512 Medical Biometry II | Barlow | 4 | Winter 20XY |
| Course Emphasis: Multiple regression, analysis of covariance, and an introduction to one-way and two-way analyses of variance: including assumptions, transformations, outlier detection, dummy variables, and variable selection procedures. Examples drawn from the biomedical literature with computer assignments using standard statistical computer packages.  Student Outcomes: Obtained general understanding of multiple regression, analysis of covariance, and an introduction to one-way and two-way analyses of variance. Completed 6 weekly homework assignments with STATA, 1 group project Midterm, 2 midterms and 1 Final exam. | | | |

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| BIOST 513 Medical Biometry III | Hughes | 4 | Spring 20XY |
| Course Emphasis: Analysis of categorical data including two sample methods, sets of 2 x 2 tables, R x C tables, and logistic regression. Classification and discrimination techniques. Survival analysis including product limit estimates and the Cox proportional hazards model.  Student Outcomes: Obtained general understanding of logistic regression, survival analysis, odds ratio and relative risks. | | | |

**Epidemiology and Clinical Trials – 11 credits attained / 7 credits required**

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| **Courses** | **Faculty** | **Credits** | **Date** |

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| EPI 512 Epidemiologic Methods I | Rowhani-Rahbar, A.  Phipps, A.  Weiss, N. | 4 | Autumn 20XX |
| Course Emphasis: Considers principles and methods of epidemiology. Covers measures of disease frequency, descriptive epidemiology, overview of study designs, measures of excess risk, causal inference, screening, measurement error, misclassification, effect modification, and confounding. First in a two-course sequence  Student Outcomes: greater understand of epidemiological measures and gained training in critical reading of journal articles related to these topics. Ultimately, gained a greater understand of the application of these methods to a variety of situations and population groups. | | | |

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| EPI 513 Epidemiologic Methods II | Rowhani-Rahbar, A.  Phipps, A.  Weiss, N. | 4 | Winter 20XY |
| Course Emphasis: Considers how epidemiologic studies may be designed to maximize etiologic inference. Covers infectious disease epidemiologic studies, randomized controlled trials, cohort studies, case-control studies, cross-sectional studies, ecological and multilevel studies, and selected topics such as meta-analysis. Second in a two-course sequence.  Student Outcomes: Gained greater understand of study designs and gained training in critical reading of journal articles related to these designs. Ultimately, gained a greater understanding of the strengths and limitations of each of these study designs. | | | |
| **BIOST 524 Design of Medical Studies** | Fleming | 3 | Spring 20XA |
| Course Emphasis: Design of medical studies, with emphasis on randomized controlled clinical trials. Bias elimination, controls, treatment assignment and randomization, precision, replication, power and sample size calculations, stratification, and ethics. Suitable for graduate students in biostatistics and for research-oriented graduate students in other scientific fields.  Student Outcomes: Gained a better understanding of medical studies; collaborated with team of graduate students (medicine, public health, biostatistics) in the development of a clinical trial protocol to test a delirium prevention bundle in hospitalized older adults. Participated in mock review of the protocol as team member to defend choices and plan. | | | |

**Policy – 3 credits attained / 2 credits required**

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| **Courses** | **Faculty** | **Credits** | **Date** |

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| SOC WL 553 Policy Implementation and Organizations | Vesneski, W. | 3 | Winter 20XY |
| Course Emphasis: Examines diverse organization theories relevance to policy implementation, translational research, and practice interventions within health and human service settings. Emphasizes multilevel models and integrative frameworks that take into account individual, group, and organizational factors, recognizing outcomes as embedded phenomenon nested within organization, community, and societal contexts.  Student Outcomes: Obtained fundamental understanding of how to better align research strategies with policy goals. Gain experiences working in a collaborative, multidisciplinary team to enhance policy integration. | | | |

**Advanced Nursing Science or Nursing Methods Electives – 14 credits attained / 6 credits required**

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| **Courses** | **Faculty** | **Credits** | **Date** |

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| NURS 540 C Omics and Symptom Science Seminar | Heitkemper/Thompson | 1 | Autumn 20XX |
| Course Emphasis: Seminar draws on the expertise of speakers from multiple disciplines and research interests to emphasize omics methods/techniques as well as symptom science. Ethical considerations in this area of science. Encourages critical discourse and development/refinement of research questions and .  Student Outcomes: Exposed to a variety of faculty and their omics-based research methods and endeavors as well as presented Works in progress format for this BNHI Training Grant. Networked with students and postdoctoral fellows with interest in omics approaches. Critiqued article submitted to Nursing Research for publication as part of course assignment with journal permission, learning about peer review process. | | | |
| **NURS 540 C Omics and Symptom Science Seminar** | Heitkemper/Thompson | 1 | Winter 20XY |
| Course Emphasis: See Autumn.  Student Outcomes: Exposed to a variety of faculty and their omics-based research methods and endeavors as well as presented Works in progress format for this BNHI Training Grant. Networked with students and postdoctoral fellows with interest in omics approaches. | | | |

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| NURS 540 C Omics and Symptom Science Seminar | Heitkemper/Thompson | 1 | Spring 20XY |
| Course Emphasis: See Autumn  Student Outcomes: Exposed to a variety of faculty and their omics-based research methods and endeavors as well as presented Works in progress format for this BNHI Training Grant. Networked with students and postdoctoral fellows with interest in omics approaches. | | | |
| NURS 539 Management of Patients with Acute/Critical Illness and Injury | Streur | 4 | Winter 20XY |
| Course Emphasis: Systematic inquiry into pathophysiology and management of the acute/critically ill or injured across the lifespan. Emphasizes evidence-based assessment, management and evaluation strategies including therapeutics and use of technology to support care. Highlights multidisciplinary approach to management.  Student Outcomes: Contributed to EPost discussions about a variety of infectious disease and infection control current issues; (2) completed a paper discussing state of science of prevention of VAP in the critical care setting. | | | |

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| NURS 599 A Selected Readings in Nursing Science | Van Pelt | 3 | Autumn 20XZ |
| Course Emphasis: Analysis of synthesis of selected readings with faculty mentor. Independent reading and study of microbiology concepts with the following objectives:   1. Discussed key concepts of pathogenesis of infections, infectivity, and virulence as a framework for 3 organisms: 2 gram-negative [*Strep pneumoniae* & *Pseudomonas aeruginosa*] and 1 gram-positive [*Staphlyococcus aureus*] organisms that are common in VAP per the literature. 2. Analyzed molecular strategies for identification and measurement of bacteria. 3. Discussed how the virulence of bacteria affects the patient's risk for development of VAP. 4. Determined how biofilm figures into the pathogenesis of VAP.   Delineated how oropharyngeal hygiene impacts the pathogenesis of VAP.  Student Outcomes: Conducted one on one discussion sessions for fundamental microbiology concepts focused on molecular strategies for VAP identification. | | | |

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| NMETH 584 Methods: Physiologic Measures | Heitkemper | 4 | Spring 20XY |
| Course Emphasis: Exploration of the measurement of physiologic functioning in human and animal models. Examples include biochemical and biophysical measure. Students develop beginning skills with one physiologic measure.  Student Outcome: Synthesized general understanding of measuring physiologic functioning in humans. Developed a paper and presentation about microbiological assays to identify oral and tracheal aspirate organisms.   |  |  |  |  | | --- | --- | --- | --- | | NURS 537 Symptom Science and Patient Reported Outcome Research | Berry | 3 | Spring 20XZ | | Course Emphasis: Focuses on research to understand symptom development and trajectories, design of interventions to prevent and treat symptoms and improve function and quality of life across diverse populations.  Student Outcomes: Focused on understanding assessment and measurement of dyspnea as symptom in ventilated ICU patients, identifying evidence based treatments for dyspnea and gaps in current literature and where precision health may play a role. | | | | | | | |

**Related Fields (non-nursing) – 7.5 credits attained / 6 credits required**

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| **Courses** | **Faculty** | **Credits** | **Date** |

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| ENV Health 509 Microbiome and Environmental Health | Brown | 3 | Autumn 20XY |
| Course Emphasis: Introduces the current science of microbiome impacts on environmental public health. Defines human, animal, and environmental microbiomes, describes the methods used to characterize these microbiomes, and discusses the impact of microbiomes on the health of human and animal populations. Factors that have been suggested to modulate microbial populations, host-microbe interactions, and the dynamics of microbiome populations are also examined.  Student Outcomes: Evaluated choice of fecal vs. oral microbiome sample for VAP and host-microbe interactions as well as the role of the hospital setting on microbiome dynamics. Host factors and influences reviewed. | | | |
| CONJ 526 Introduction to Systems Biology and Quantitative Approaches to Biomedical Sciences Atchison 1.5 Winter 20XZ | | | |
| Course Emphasis: Covers philosophy of systems biology, experimental design, and the linkages between discovery and hypothesis-driven science. Reviews quantitative systems biology tools for genomics, proteomics, modeling and data integration, and emerging technologies  Student Outcomes: Critiqued and presented in seminar format data modeling approaches using clustering techniques in biological sciences. Participated in seminars on various systems biology topics from experts in the field as well as accompanying journal clubs. | | | |

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| BIOST 545 Biostatistical Methods for Big Omics Data | Rich | 3 | Autumn 20XZ |
| Course Emphasis: This "hands-on" course introduces statistical methods for high-dimensional omics data, as well as the R programming language and the Bioconductor project as tools to extract, query, integrate, visualize, and analyze real world omics data sets.  Student Outcomes: Used R to query omics data set, which is applicable in support of training needed to answer dissertation questions. | | | |

**Teaching Practicum – 3 credits attained / 3 credits required**

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| NURS 610 Teaching Practicum | Chu, A. | 3 | Autumn 20XY |
| Course Emphasis: Guided individualized experience in selected teaching-learning situations in nursing, in both classroom and clinical situations. Identification, analysis, and solution of teaching-learning problems in undergraduate clinical nursing in the laboratory setting.  Student Outcomes: Developed learning objectives for specific lectures in Undergraduate Assessment course: performed teaching activities, sought feedback from students and faculty mentor. Developed test items for content. Observed simulation teaching and evaluation in the learning lab. | | | |

**Research Practicum – 4 credits attained / 4 credits required**

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| NMETH 610 Research Practicum | Van Pelt | 3 | Autumn 20XY |
| Course Emphasis: Hands-on, practical experience as a member of a research team, supervised by graduate faculty in Nursing or related disciplines. Students will participate in team meetings, complete reflection assignments, and contribute to study activities.  Student Outcomes: Attended research team meetings, participated in research data collection of oral and fecal microbiome samples. Participated in data analysis activities of Dr. Van Pelt’s current study of fecal microbiome samples in critically ill adults. | | | |
| NMETH 610 Research Practicum | Van Pelt | 3 | Winter 20XY |
| Course Emphasis: Hands-on, practical experience as a member of a research team, supervised by graduate faculty in Nursing or related disciplines. Students will participate in team meetings, complete reflection assignments, and contribute to study activities.  Student Outcomes: Attended research team meetings, participated in analysis activities, observed testing of microbiome samples in collaborator’s laboratory, contributed to development of manuscript and abstract for dissemination. | | | |

**Dissertation – 6 credits in process / 27 credits required**

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| NMETH 800 | Van Pelt | 6 in process | Spring 20XZ |
| Course Emphasis: Complete dissertation proposal Complete IRB application and submit to UW IRB and human subjects for review. Proposal approved for scientific merit by full committee, IRB approved  Student Outcome: TBD | | | |

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| NMETH 800 | Van Pelt | 2 | Summer 20XZ |
| Course Emphasis: Begin dissertation research activities, subject recruitment and data collection; Complete recruitment of 20% of planned subjects, refine IRB protocol if needed to address identified recruitment issues if below target, discussed responsible conduct of research with human subjects issues in meetings with mentor bi-weekly, data entry and cleaning.  Student Outcome: TBD | | | |

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| NMETH 800 | Van Pelt | 10 | Fall 20XZ |
| Course Emphasis: Continue and complete subject recruitment and continue data collection; Draft Dissertation manuscript #1.  Student Outcome: TBD | | | |

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| NMETH 800 | Van Pelt | 10 | Winter 20XB |
| Course Emphasis: Finish data collection. Draft of MS #2 with introduction chapter to reading committee.  Student Outcome: TBD | | | |

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| NMETH 800 | Van Pelt | 10 | Spring 20XB |
| Course Emphasis: Complete data analysis; First draft of MS #3 (Ch. 4) to committee, Revise Chapters 1-3 as indicated from committee feedback.  Student Outcome: TBD | | | |

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| NMETH 800 | Van Pelt | 6 | Summer 20XB |
| Course Emphasis: Complete dissertation. Submit dissertation to committee 2 weeks before final exam; final exam; revise dissertation and turn into upper campus. MS #1 and #2 submitted for publication.  Student Outcome: TBD | | | |