

## **Doctor of Nursing Practice Program-Nurse Anesthesia Course Descriptions**

### **Advanced Health Assessment (NAAHA-63401)**

This course focuses on the development of advanced practice nursing skills in health assessment for diverse populations. Critical thinking, diagnostic reasoning and communication techniques will be developed through individual and group interaction, as well as case-guided learning experiences.

Credit: 3 semester hours

Course Director: Megan Bullerwell

### **Advanced Pathophysiology I (NPATH-62105)**

This course focuses on the pathophysiological processes experienced throughout the lifespan. Evidence-based practice resulting from relevant research of pathophysiological disease states is incorporated to develop interventions and a plan of care for patients with health status alterations.

Credit: 2 semester hours

Course Director: Rachel Davis

### **Advanced Pathophysiology II (NPATH-62106)**

This course focuses on the pathophysiological processes experienced throughout the lifespan. Evidence-based practice resulting from relevant research of pathophysiological disease states is incorporated to develop interventions and a plan of care for patients with health status alterations.

Credit: 2 semester hours

Course Director: Rachel Davis

### **Advanced Principles of Anesthesia (NANPA-65802)**

This course builds on basic concepts and information covered in Principles of Anesthesia, including the evaluation and management of patients with increased complexity. Advanced principles of anesthesia are introduced and incorporated. Evidence-based practice will be utilized to formulate an anesthetic plan for increasingly complex surgical procedures and/or comorbidities, as well as patients of diverse populations.

Credit: 5 semester hours

Course Director: **Aimee Langley**

### **Anatomical Science I (AHANA-65101)**

This course is designed to provide the student an extensive background in the fundamentals of human anatomy through lecture, small group laboratory, and independent study formats. Embryology coupled with structures of the upper and lower extremities, cardiovascular and pulmonary systems, abdomen and pelvis, and reproductive organs are described and illustrated in lecture followed by laboratory experiential learning that emphasizes the location, identification, function, and relationships of pertinent structures using cadavers, prosections, radiograph images, and static models. The course is intended to provide an anatomical basis for understanding the physical examination and structural changes associated with illness and injury of each major organ and body system.

Credit: 5 semester hours

Course Director: **Ming Zhang**

### **Anatomical Science II (AHANA-62102)**

This course is designed to provide the student an extensive background in the fundamentals of human anatomy utilizing lecture, small group laboratory, and independent study formats. Anatomic structures

of the head and neck are described and illustrated in lecture followed by laboratory experiential learning to include location and identification as well as function and relationships of structures using cadavers, prosections, radiograph images, and static models. The course is intended to provide an anatomical basis for understanding the physical examination and structural changes associated with illness and injury of each major organ and body system.

Credit: 2 semester hours

Course Director: **Ming Zhang**

### **Approaches to Healthcare Education (NAAHE-83107)**

This course will introduce, contrast, and apply adult teaching-learning theories in the design of effective education. Innovative teaching strategies, including a web-based approach to education, will be incorporated to provide the student with tools to become an effective educator. Students will gain practical experience in planning and presenting educational projects and course development utilizing various technology mediums.

Credit: 3 semester hours

Course Director: **Rachel Davis**

### **Biomedical Instrumentation (NABMI-62603)**

This course is designed to educate the student about the essentials of biomedical and instrument technologies commonly used in anesthesia practice.

Credit: 2 semester hours

Course Director: Megan Bullerwell

### **Biostatistics (NBIOS-83110)**

This course provides a comprehensive overview of frequently used descriptive and inferential biostatistical methods. The course includes application of the theories of measurement, statistical inference, and decision trees, which all contribute to better clinical decisions and improved patient care outcomes. Conceptual understanding, rather than computational ability, is the focus of the course. Development of an adequate vocabulary, an examination of fundamental principles, and a survey of widely used procedures or tools to extract information from data will form a basis for fruitful collaboration with a professional biostatistician when appropriate.

Credit: 3 semester hours

Course Director: Linda Harrington

### **Clinical Biochemistry (AHBIO-63121)**

This course is designed to provide the student with the basics of clinical biochemistry in order to prepare them for their further studies. The course will review basic organic chemistry pertinent to understanding metabolic pathways with emphasis on different aspects of clinical biochemistry including structure and function of proteins, enzyme kinetics, and the metabolism of carbohydrates, lipids and amino acids. Special attention will be given to the nutritional needs of humans.

Credit: 3 semester hours

Course Director: Kristina Hulten

### **Clinical Skills Inquiry (NACLO-61608)**

This course is designed to acclimate beginning nurse anesthesia students to the clinical anesthesia arena. Basic clinical and geographical orientation is designed to facilitate the student transition from the didactic phase into the anesthesia provider role. Students will be given a checklist of objectives that must be accomplished during the orientation period. Under the guidance, direction and supervision of clinical faculty, patient care activities are strongly encouraged. Students will be assigned to four morning

rotations at Ben Taub Hospital 4th floor general/trauma OR. Additionally, one morning rotation at the Michael E. DeBakey Veterans Affairs Medical Center is required. There are additional group learning experiences scheduled during Term 2 and Term 3 of Clinical Skills Inquiry.

Credit: 1 semester hour

Course Director: Aimee Langley

### **Comprehensive Examination in Anesthesia (NACEA-70810)**

The comprehensive examination in anesthesia is given seven weeks prior to the date of graduation (i.e., the second Saturday in November for those graduating on Dec. 31). This examination serves to assure continued development of the core fund of anesthetic knowledge, retention of previously introduced concepts and assimilation of the didactic curriculum into clinical practice. The student will be expected to demonstrate depth and breadth of knowledge of the practice of anesthesia.

Credit: none

Course Director: James Walker

### **Critical Concepts in Anesthesia I (NACCA-71802)**

This course is designed to enhance the student's theoretic foundation and aid in the development of critical thinking abilities. The course consists of a series of clinically relevant reviews and examinations of critical anesthesia concepts in order to foster continued academic development and integration of theoretical knowledge into clinical practice. Concepts and principles pertinent to each examination will be formally reviewed with students on a monthly basis. Additionally, two core competency simulation assessments are utilized to evaluate learner integration of core anesthesia concepts into simulated clinical practice.

Credit: 1 semester hour

Course Director: Rachel Davis

### **Critical Concepts in Anesthesia II (NACCA-71805)**

This course is designed to enhance the student's theoretic foundation and aid in the development of critical thinking abilities. The course consists of a series of clinically relevant reviews and examinations of critical anesthesia concepts in order to foster continued academic development and integration of theoretical knowledge into clinical practice. Concepts and principles pertinent to each examination will be formally reviewed with students on a monthly basis. Additionally, two core competency simulation assessments are utilized to evaluate learner integration of core anesthesia concepts into simulated clinical practice.

Credit: 1 semester hour

Course Director: Rachel Davis

### **DNP Project in Anesthesia I (NAPIA-83901)**

This course emphasizes the synthesis, critique, and application of learning gained in the program to support quality clinical practice and organizational systems. The DNP candidate, in consultation with their academic advisor, proposes a project that begins with a thorough and scientific evaluation of a current healthcare issue requested by an approved healthcare entity. Following approval of the proposal by the academic chair and project committee, the DNP candidate will complete the doctoral project within two academic years as evidenced by the rendering of recommendation(s) or design of an innovative clinical practice or program solving an actual healthcare issue.

Credit: 3 semester hours

Course Director: James Walker

**DNP Project in Anesthesia II (NAPIA-84902)**

This course emphasizes the synthesis, critique, and application of learning gained in the program to support quality clinical practice and organizational systems. The DNP candidate, in consultation with their academic advisor, proposes a project that begins with a thorough and scientific evaluation of a current healthcare issue requested by an approved healthcare entity. Following approval of the proposal by the academic chair and project committee, the DNP candidate will complete the doctoral project within two academic years as evidenced by the rendering of recommendation(s) or design of an innovative clinical practice or program solving an actual healthcare issue.

Credit: 4 semester hours

Course Director: James Walker

**Decision Science and Informatics in Healthcare (NHIDS-83109)**

This course introduces students to concepts related to health information system management and provides an overview of the role of information systems in healthcare organizations. Coursework emphasizes the integration of evidence-based research into clinical decision making and the influence of information systems on health outcomes. This course explores technical, organizational, and cost-benefit issues related to healthcare information systems, including clinical decision-support, integrated networking and distributed computing technologies, telemedicine applications, and artificial intelligence solutions.

Credit: 3 semester hours

Course Director: Linda Harrington

**Emerging Sciences in Healthcare (NEMER-82111)**

This course surveys emerging sciences and technologies in health care including genetics, genomics, proteomics, robotics, stem cells, nanotechnology, tissue engineering, patient safety, and emerging mechanical technologies. Additional topics will be covered as they emerge.

Credit: 2 semester hours

Course Director: Linda Harrington

**Ethical and Multicultural Healthcare (NAEMH-83106)**

This course will provide a basic theoretical framework that will enable students to apply multicultural health care principles and concepts in their professional practice. An awareness of cultural influence on the biological, psychological, sociological, intellectual, and spiritual dimensions of the individual will be developed and specific health care values and practices of different cultural groups will be identified. International healthcare perspectives and issues will be explored.

Credit: 3 semester hours

Course Director: Linda Harrington

**Evidence-Based Anesthesia Practice (NAEBP-72804)**

This course is designed to enhance the student's theoretic and clinical foundations via an incorporation of evidence-based theory into clinical anesthesia practice. The course requires a review and synthesis of current published research germane to the student's area of interest for their capstone project. Students are required to develop, under faculty advisement, in-depth presentations utilizing an evidence-based framework that integrates research evidence into current clinical practice. Presentations are semi-formal requiring submission of a PowerPoint presentation with imbedded voice track. The option of presenting in person will also be afforded to students.

Credit: 2 semester hour

Course Director: James Walker

**Human Physiology I (AHPHY-64221)**

This course is designed to provide the student an extensive understanding of human physiology from the cellular to the organ and body systems level with a focus on the mechanisms of normal organ function and the consequences of malfunction of the nervous, cardiovascular, respiratory, renal and digestive systems along with temperature regulation. Clinical examples that illustrate the consequences of malfunction are used to emphasize, by comparison, normal physiology.

Credits: 4 semester hours

Course Director: David Johnson

**Human Physiology II (AHPHY-64222)**

This course is designed to provide an extensive understanding of human physiology from the cellular to the organ and body systems level with a major emphasis on the mechanisms of normal organ function and the consequences of malfunction of the endocrine and reproductive systems along with energy and metabolism, bone, and the physiology of normal pregnancy. Clinical examples that illustrate the consequences of malfunction are used to emphasize, by comparison, normal physiology.

Credits: 2 semester hours

Course Director: David Johnson

**Immunology for Allied Health (AHIMM-62131)**

This course will provide an overview of basic immunological concepts including components of the immune system, innate, and adaptive immune responses. The immune responses against infectious microbes, as well as immunologic diseases will also be addressed.

Credits: 2 semester hours

Course Director: Ram Reddy

**Influencing Healthcare Policy (NAIHP-83104)**

This course will provide an overview for understanding healthcare policy, organization, and economics within a systems analysis framework. Current literature and research related to healthcare policy development and healthcare delivery systems will be examined. The role of leadership in policy development and in changing healthcare delivery and healthcare education systems will be highlighted.

Credit: 3 semester hours

Course Director: James Walker

**Leading and Managing Healthcare Systems (NLMHS-83105)**

This course provides in-depth analysis and synthesis of the healthcare delivery system emphasizing improvement of healthcare delivery and access. It examines the complex organizational dynamics and structures that predicate the interaction among major components of the United States healthcare system. Individual strategies for effectively leading and managing organizational change, building strong organizational culture, developing effective teams, resolving conflicts, implementing effective motivational systems and nurturing a learning organization are investigated.

Credit: 3 semester hours

Course Director: James Walker

**Nervous System (NANEU-66301)**

This comprehensive course is a survey of the nervous system. It incorporates not only basic science disciplines, such as, neuroanatomy, chemistry, and physiology, but also neuropathology, pathophysiology, and pharmacology.

Credit: 6 semester hours

Course Director: Paul Pfaffinger

**Pharmacology in Advanced Practice I (NANAP-63901)**

This course begins with an in-depth study of basic human pharmacology principles. The course progresses to detailed explorations of the uptake, distribution, biotransformation, and elimination of currently used clinical anesthesia pharmacotherapeutics. Pharmacogenetic disorders with specific anesthesia implications are examined. Various agents affecting the autonomic nervous system are detailed.

Credit: 3 semester hours

Course Director: Rachel Davis

**Pharmacology in Advanced Practice II (NANAP-64902)**

This course is an in-depth study of the pharmacology of drugs currently used in human medicine. The student should gain an understanding of the uptake, distribution, biotransformation, and elimination of drugs that are currently prescribed for specific human conditions, such as endocrine disorders, hypertension, rheumatic/inflammatory disorders & obstetrics. An in-depth study of the pharmacology of drugs currently utilized in the management of central nervous system disorders is included. Cancer chemotherapeutic and antimicrobial agents are addressed along with attendant anesthetic implications. The pharmacology of drugs used to treat cardiovascular conditions and hemostatic derangements is also discussed. Phytopharmaceuticals, toxicology and agents that may be encountered in biological and chemical warfare are also described.

Credit: 4 semester hours

Course Director: Rachel Davis

**Physics in Anesthesia (NAPAP-61602)**

This course is designed to review and reinforce concepts in physics specifically as it relates to anesthesia. Clinical concepts and application are emphasized and reinforced.

Credit: 1 semester hour

Course Director: Rachel Davis

**Principles of Anesthesia (NANPA-64801)**

This course investigates the basic concepts in anesthesia care delivery including pre-anesthetic and post-anesthetic evaluation, premedication, formulation of anesthesia management plans, anesthetic techniques and procedures, equipment requirements, monitoring, and record keeping.

Credit: 4 semester hours

Course Director: Aimee Langley

**Professional Philosophy and Scholarship (NAPAS-83102)**

This course will draw upon the disciplines of philosophy, ethics, and the social sciences to examine key concepts of professional practice that form the foundations for many advanced practice roles in nursing and anesthesia, with a focus on leadership and scholarship. Emergence and foundations of nurse anesthesia practice will be explored. Scholarship within the discipline will be investigated.

Credit: 3 semester hours

Course Director: Aimee Langley

**Quality Outcomes Management (NAQOM-83108)**

This course analyzes problems raised by various levels of quality found in healthcare systems, educational institutions and other organizations. It includes knowledge about the major theories for the measurement of quality. This course will also explore the definitions of quality, how to measure quality, analyze outcome data, and implement improvements in a healthcare system.

Credit: 3 semester hours  
Course Director: Linda Harrington

**Radiology for Allied Health (NARAD-61151)**

This course acquaints the student with basic principles involved in, and the clinical value of, various radiologic examinations. The module will emphasize normal radiographic anatomy as compared with abnormalities and findings associated with various disease states. The primary effort is directed at teaching students how to use radiology examinations in evaluating various medical diseases/disorders.

Credit: 1 semester hour  
Course Director: Aimee Langley

**Seminars in Anesthesia (NASEM-71801)**

This course consists of weekly anesthesia capstone project presentations by students. Students will take a pre-test on the topic on Blackboard, and then a post-test following the presentation. The course is designed to inform the student regarding current, clinically-relevant research and anesthesia applications. The course is designed to enhance the student's theoretic foundation as well as development of critical thinking abilities.

Credit: 1 semester hour  
Course Director: James Walker

**Theories and Concepts in Healthcare (NPTHC-83101)**

This course reviews the history and evolution of the philosophy of science in nursing, laying the foundation for the generation and expansion of new professional knowledge that will guide evidence-based practice for nursing and healthcare. Selected approaches to concept/theory development, analysis, and evaluation are examined and applied. Concepts related to acceptable theories in the scientific community and epistemology and ontology of nursing will be explored. This course allows doctoral students to gain appreciation for the underpinnings of philosophical frameworks and epistemological paradigms in future research.

Credit: 3 semester hours  
Course Director: James Walker

**Translational Research (NATRR-83112)**

This course is designed to provide the tools for the advanced practice nurse to evaluate, translate and integrate published research results into clinical practice. During the course, students will learn how to conceptualize clinical practice problems, how to transform these problems into answerable clinical research questions, how to search for the best clinical evidence, how to assess clinical evidence using basic epidemiological, biostatistical and scientific principles and how to integrate the research results with patients' values and preferences across clinical sites. Critical appraisal and research synthesis will provide understanding of models used to inform evidence-based advanced practice nursing. The course will culminate in development of the capstone project proposal.

Credit: 3 semester hours  
Course Director: Linda Harrington