West Virginia University Nurse Anesthesia Program Course Descriptions

Fall, Year 1 (11 credits)

NSG 703: Theoretical Foundations of Nursing Practice (3 credits)

The objectives of this course are to integrate theoretical and scientific knowledge from nursing, ethics, biophysical, psychosocial, analytical, and organizational sciences as the basis of the scientific foundation for the highest level of nursing practice. Use science based theories and concepts to determine the nature and significance of health and health care delivery phenomena. Use science-based theories and concert to describe actions and strategies to enhance health, alleviate and ameliorate state of health. Evaluate new practice approaches based on theories from nursing and other disciplines.

NSG 706: Advanced Pathophysiology (3 credits)

The objective of this course is to provide an in-depth analysis of factors underlying pathophysiologic changes in selected acute and chronic diseases confronted in primary care adults and children. Understanding of pathological changes will be based on knowledge of normal physiology and physiological change across the lifespan.

NSG 724: Health Research Statistics 1 (3 credits)

This course provides development of statistical knowledge and skills needed for quantitative health research. Topics include descriptive statistics, probability, hypothesis testing, analysis of variance, chi square, and regression techniques.

NSG 740A: Standards of Practice, Professionalism, and Overview of the Nurse Anesthesia Role (3 credits)

This course introduces and examines professionalism, develops an understanding of nurse anesthesia practice standards, and analyzes the roles of the nurse anesthetist as an advanced practice registered nurse. Students will explore the DNP Essentials, development of nurse anesthesia as a specialty, curricular standards, regulatory authorities, and professional organizations. Students will also compare and contrast pathways to CRNA education and practice.

Spring: Year 1 (13 credits)

NSG 701: Advanced Pharmacotherapeutics (3 credits)

The objectives of this course are to emphasize the pharmacological principles fundamental to the age and gender appropriate selection of pharmacologic agents in altered health states across the lifespan. Content includes the pharmacodynamics and pharmacotherapeutic properties of drug categories and specific agents, clinical responses to the use of pharmacologic agents, efficacy and cost-effectiveness issues, patent education, adherence, culture, genetics, genomics, and the legal requirements of prescriptive authority.

NSG 705: Advanced Lifespan Assessment (3 credits)

The objectives of this course are to prepare the advanced practice nursing student to conduct comprehensive health assessment of patients of all ages and in complex situations. The processes of skilled communication and diagnostic reasoning are emphasized as the primary means of collecting documenting and analyzing data obtained from the patent history physical examination and diagnostic
procedures. Emphasis is placed on the physical, developmental, functional, psychosocial, genetic, genomic, and cultural dimensions of the patients. The practice of new skills occurs in laboratory workshops where standardized patents and various simulation methods are available.

**NSG 707: Evidence Based Practice Methods (3 credits)**

The objectives of this course focus on the use of research and epidemiological principles to guide the advanced practice nurse in the translation of research into practice, to design interventions to promote change in a variety of settings, and to understand methods to disseminate and integrate new knowledge into evidence-based practice. Students will use analytical methods to critique existing literature and practices against national benchmarks, design, implement, and evaluate outcomes of practice, and apply relevant findings to improved practice guidelines and healthcare outcomes.

**NSG 741: Genetics, Chemistry, and Physics of Anesthesia (3 credits)**

The student will apply knowledge of genomics, genetics, and genetic variation to anesthesia, surgery, and disease processes. Basic inorganic and organic chemistry topics include chemical structures of drugs and anesthetic gases as well as the physiologic effects of anesthetics. The student will calculate common math problems in anesthesia and discuss physics as related to diffusion of gases, gas laws, electricity and fire safety in the operating room, and anesthesia delivery systems.

**NSG 830: Nurse Anesthesia DNP Project (1 credit)**

This course prepares the student nurse anesthetist to develop a DNP project that is consistent with the DNP Essentials. Types of projects include quality improvement, policy analysis, demonstration, clinical inquiry, translation of evidence-based practice, and program evaluation. The student will prepare a contract for each semester of this course, equal to one or two credits per contract per semester. The student will complete the project over the course of at least a year for at least 5 credits. Each contract must broadly address a part of the DNP project process, including refining the problem, searching the literature for most recent evidence, developing an implementation plan, submitting an application for institutional review, implementing the plan, and evaluating the project. The student will be prepared to present the project in NSG 832: Nurse Anesthesia DNP Project Presentation.

**Summer: Year 1 (9 credits)**

**NSG 702: Population Health Promotion (3 credits)**

Explore the epidemiological, environmental, psychological, social, cultural, and gender as key factors that impact health across the lifespan. Explore health promotion concepts including health, wellness, disease, quality of life, health, promotion and disease-prevention interventions and factors that impede health lifestyle changes. Explore evidence-based interventions that address key lifespan health themes and facilitate evaluation and application of epidemiological, occupational, and environmental data analysis. Understand how to develop, implement, and evaluate programs of clinical prevention and population health for individuals, aggregates, and populations.

Revised: 6/30/18
NSG 742A: Foundations of Anesthesia I: Basic Principles of Safe Anesthesia Care (3 credits)

The objective of this course is to prepare the student for clinical entry to administer basic and safe anesthetics to adult patients. The student will examine the essential elements involved in planning, initiating, maintaining, and concluding an adult anesthetic in a traditional operating room. By the end of the course, the student will have the knowledge to prepare the work space and patient for anesthesia and surgery, initiate and interpret basic monitoring, manage simple adult airways, administer weight-based fluids and drugs, execute safe patient positioning, and document on the anesthetic record.

NSG 743: Foundations of Anesthesia 1 Lab (1 credit)

The objectives of this course are to prepare the student for clinical practicum entry, and to rehearse the administration of basic and safe anesthetics on adult patients with an attendant faculty instructor. The student will be able to prepare the anesthesia work space and gas machine, conduct a routine pre-anesthetic patient interview, position an adult patient for anesthetic induction and common surgeries, apply basic monitors, insert peripheral intravenous and arterial catheters, and demonstrate the ability to effectively manage complications that arise during routine anesthetic inductions.

NSG 752A: Foundations Clinical Practicum 1 (1 credit)

This course will introduce the student to clinical practice with experiences in common surgical cases for the first rotation. Certified registered nurse anesthetist (CRNA) clinical preceptors will guide the student in the organization of the anesthesia workspace, daily checkouts of anesthesia gas machines, and management of orthopedic, general, basic neurosurgical, and other non-specialty procedures.

Fall: Year 2 (10 credits)

NSG 742B: Foundations of Anesthesia 2: Regional Anesthesia and Considerations for Common Procedures (2 credits)

This course will prepare the student for clinical experiences in regional anesthesia, including applied anatomy, techniques, pharmacology, and management of spinals and epidurals. The student will be introduced to the age-related anatomic and physiologic differences among the pediatric and geriatric populations. The course will also present basic principles of anesthetic management (including enhanced recovery after surgery (ERAS)) for common surgical procedures in the orthopedic, neurosurgery, ophthalmology, ear, nose, throat (ENT), abdominal, thoracic, gynecologic, and urologic subspecialties.

NSG 744A: Advanced Principles of Anatomy, Physiology, Pathophysiology 1: Cardiac, Pulmonary, and CNS (3 credits)

This course will present advanced principles of applied anatomy, physiology and pathophysiology for anesthesia management. Students will examine advanced physiologic principles of the cardiovascular, pulmonary, and central nervous system and relate them to the performance of the body as a whole. Students will develop advanced knowledge of pathophysiology to plan management of anesthesia in patients with diseases of the cardiovascular, pulmonary, and central nervous systems.
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**NSG 746: Advanced Pharmacology for Nurse Anesthetists (3 credits)**

This course provides an in-depth understanding of the anesthetics and adjunctive medications used in clinical nurse anesthesia practice. The student will be able to describe the pharmacodynamic and pharmacokinetic properties of a wide array of medications including dosing, mechanism of action, metabolism, excretion, and side effects. The student will be able to develop sound, cost-effective anesthetic management plans incorporating pharmacoeconomic issues.

**NSG 752B: Foundations Clinical Practicum 2 (2 credits)**

This second clinical course promotes refinement of skills introduced in NSG 752A and integrates knowledge of anatomy, physiology, and pharmacology associated with regional and general anesthesia. Students will be assigned to clinical sites that broaden exposure to various surgical procedures. The student will be guided by certified registered nurse anesthetist (CRNA) and anesthesiologist preceptors during clinical practicums. Students will be able to combine didactic content with patient-specific perioperative anesthesia care.

**Spring: Year 2 (12 credits)**

**NSG 744B: Advanced Principles of Anatomy, Physiology, Pathophysiology 2: Endocrine, Renal, Liver (2 credits)**

This course continues discussion of organ systems from NSG 744A of applying knowledge of anatomy, physiology and pathophysiology to anesthesia management. Advanced principles of patient management supported by best evidence will be applied to the clinical practice of nurse anesthesia across a variety of body systems and surgical procedures. Students will formulate and evaluate approaches to anesthesia management in the presence of pathophysiologic conditions affecting the endocrine, renal, hepatic, peripheral vascular, immune, and related organ systems.

**NSG 747: Perioperative Assessment and Care (2 credits)**

This course offers students the skills required for conducting a preoperative, anesthesia-based history and physical exam, identifying risk factors associated with the patient, anesthetic, and surgery, developing relevant anesthetic management plans, and writing appropriate post-operative orders. Students will be able to interpret preoperative diagnostic tests and lab values. Students will become familiar the electronic medical record (EMR) and documentation skills. Finally, students will focus on communication skills with patients in a culturally sensitive and therapeutic manner.

**NSG 748A: Advanced Principles of Anesthesia 1: Cardiothoracic and Neurosurgical Procedure Management (3 credits)**

This course provides an in-depth study of the specialized areas of cardiac, thoracic, and neuroanesthesia. The student will concentrate on the theoretical basis for interventions and rationale in each area of subspecialization. The student will be able to plan for the anesthetic care of patients requiring cardiac, thoracic, heart and lung transplant, intracranial and spine procedures. Current, evidence-based techniques and best practices related to safe management for patients undergoing these procedures will be discussed. Interactive workshops using partial task trainers and full simulators will allow skill development in the areas of fiberoptic bronchoscopy (FOB), high frequency jet ventilation.
(HFJV), double lumen endobronchial tube placement (DLEBT) and central venous catheter (CVC) insertion.

**NSG 753A: Advanced Clinical Practicum 1 (2 credits)**

This third clinical course combines basic principles of anesthesia with more advanced concepts in anesthesia management. The student will focus on applying advanced principles of anatomy, physiology, and pharmacology associated with patients and procedures of increased complexity. Students will be assigned to clinical sites that broaden exposure to various surgical experiences, including advanced cardiac, thoracic, and neurosurgical procedures. The student will be guided by certified registered nurse anesthetist (CRNA) and anesthesiologist preceptors during clinical practicums.

**NSG 709: Health Care Informatics (3 credits)**

This course focuses on health care information technology in the clinical setting. Roles of the advanced nursing practice leader in planning, designing, selecting and implementing information technology will be explored. The use of information obtained through technology in improving health care practices and evaluating patient care outcomes will be studied.

**Summer: Year 2 (6 credits)**

**NSG 748B: Advanced Principles of Anesthesia 2: Obstetrics, Pediatrics, and Pain Management (3 credits)**

This course provides an in-depth study of the specialized areas of nurse anesthesia practice in obstetrics, pediatrics, and pain management procedures. The student will concentrate on the theoretical basis for interventions and rationale in each area of subspecialization. The student will be able to plan for the anesthetic care of patients requiring obstetrics and pain management procedures. Current, evidence-based techniques and best practices related to safe management of pediatric patients at all developmental stages will be presented.

**NSG 753B: Advanced Clinical Practicum 2 (2 credits)**

This fourth clinical course builds upon the prior clinical practicums with more experience in management of specialized anesthesia cases. The student will continue to acquire experience in providing anesthesia for adult patients in a variety of specialty and non-specialty cases, but the student will focus on providing anesthesia for obstetric, pediatric, and pain management patients. The student will be guided by certified registered nurse anesthetist and anesthesiologist clinical preceptors during clinical practicums.

**Fall: Year 3 (11 credits)**

**NSG 704: Health Care Leadership (3 credits)**

This course focuses on the role of doctorally prepared nurses in providing organizational and systems leadership. Leadership theories and frameworks serve as the foundation for situational analysis and development of a plan to lead change.
NSG 748C: Advanced Principles of Anesthesia 3: Trauma, Vascular, and Transplant Management (2 credits)

This course provides advanced principles of anesthetic management in the specialized areas of trauma, vascular, and abdominal transplant procedures. The student will concentrate on the theoretical basis for interventions and rationale in each area of subspecialization and be prepared to administer anesthetics for patient requiring trauma, vascular, or abdominal transplant surgery. Current, evidence-based techniques and best practices related to safe management for patients undergoing these procedures will be reviewed.

NSG 749: Business, Management, and Finance in Nurse Anesthesia Practice (3 credits)

This course discusses principles of business, management, and finance unfamiliar to many CRNA clinicians. The student will review business models for anesthesia practice, anesthesia reimbursement, and determine a value that the CRNA adds to the organization of employment and the marketplace. This course dives deeply into quality measures, professional liability insurance, and understanding and negotiating a contract. The student will be able to develop a staffing schedule and financial plan for a simulated staff of nurse anesthetists.

NSG 832: Nurse Anesthesia DNP Project Presentation (1 credit)

This course requires the student nurse anesthetist to develop a portfolio, presentation, and a manuscript to conclude the DNP project process. The student will compile a portfolio to concisely present how each DNP Essential was addressed in the student’s curricular path. The student will present the outcomes of a DNP project. Finally, the student will prepare a manuscript for submission to a peer-reviewed journal.

NSG 753C: Advanced Clinical Practicum 3 (3 credits)

This fifth clinical course builds upon the prior clinical practicums with more experience in management of specialized anesthesia cases. The student will focus on applying advanced principles of anesthesia management associated with trauma, organ transplant, and vascular cases. Students will be assigned to affiliated clinical sites and broaden exposure to various surgical procedures. In addition to cardiac, thoracic, neurosurgical, obstetric, chronic pain, and more advanced pediatric patients, students will provide anesthesia for trauma, transplant, and vascular patients. The student will be guided by certified registered nurse anesthetist and anesthesiologist clinical preceptors during clinical practicums.

Spring: Year 3 (9 credits)

NSG 710: Health Care Issues, Ethics, Policy (3 credits)

This course will prepare students who will perform at the highest levels of nursing practice. This course will examine the roles of the advanced practice and doctorally prepared nurse leaders in influencing policy development and implementation at a variety of levels (both macro and micro), considering the needs of multiple stakeholders, finance, regulation, and the need for social justice, equity, and quality of care. Ethical principles and personal values that shape professional practice and influence decision making will be expounded upon in the discussion of contemporary issues to allow critical analysis of the interaction between practice, research, and policy.
NSG 740B: Professional Issues in Nurse Anesthesia (2 credits)
This course enables students to develop a professional philosophy to guide their practice based on clinical experiences; the literature; and discussions of safety, professional interactions, added value of the nurse anesthetist, legal issues, and future trends in nurse anesthesia. To broaden their professional perspectives, each student will meet with a CRNA in a unique role and will report to the class on his/her experience.

NSG 810: Nurse Anesthesia Clinical Immersion 1 (3 credits)
This sixth clinical course begins the student’s immersion in advanced practice nursing. The student will be able to practice in a variety of settings, caring for a variety of patients. The student will be able to gain experience in the academic, tertiary-care setting or work with nurse anesthetists who practice independently. The student will focus on refining techniques in the management of specialized cases and building a professional interest and identity. The student will be guided by certified registered nurse anesthetist and anesthesiologist clinical instructors during clinical practicums.

Summer: Year 3 (5 credits)

NSG 751: Evidence Based Anesthesia Review Seminar (2 credits)
This course is designed to comprehensively review the body of knowledge necessary to enter Nurse Anesthesia practice. Nurse Anesthesia student preparation for both the DNP Comprehensive Examination and the NBCRNA National Certification Examination will be enhanced. Review topics will include: Basic Sciences, Equipment, Instrumentation, Technology, Basic Principles of Anesthesia and Advanced Principles of Anesthesia. A series of seminars and presentations interspersed with comprehensive, computerized examinations will be administered to allow students to evaluate their knowledge level and their test taking skills.

NSG 812: Nurse Anesthesia Clinical Immersion 2 (3 credits)
This seventh clinical course begins the student’s immersion in advanced practice nursing. The student will be able to practice in a variety of settings, caring for a variety of patients. The student will be able to gain experience in the academic, tertiary-care setting or work with nurse anesthetists who practice independently. The student will focus on refining techniques in the management of specialized cases and building a professional interest and identity. The student will be guided by certified registered nurse anesthetist and anesthesiologist clinical instructors during clinical practicums.