

# Master of Science in Health Sciences

## Nurse Anesthetist Program

Bettie A. Davis, Ph.D., Director

Faculty: James Barnett, Ph.D.; Bettie A. Davis, Ph. D.; Michael Rhodes, Ph. D., Michael Sierk, Ph. D.

Adjunct Faculty: Howard Armour, CRNA; Daniel Stairs, CRNA

This program is designed to prepare practitioners in the area of anesthesia, to prepare nurse anesthetists to serve as leaders, educators and role models in anesthesia and health care teams, to prepare specialists who are able to facilitate managerial improvement in the delivery of anesthesia service.

Upon completion of the master's level nurse anesthetist program, the students will be able to demonstrate in-depth knowledge of the fundamental sciences to insure greater competence in anesthesia practice, engage in collateral reading in anatomy, physiology, chemistry, pharmacology and clinical subjects related to the field of anesthesia. The program will help the student to assume a leadership role in collaboration with health care team members, function as a resource person in the training of paramedical personnel and in nursing care of the acutely ill. The student will be able to apply principles of research to the clinical anesthesia setting, design, evaluate and implement an anesthetic care plan for a patient, utilize appropriate scientific principles related to asepsis, anesthesia and respiratory technique, apply knowledge of nursing theories and modes in advanced nursing and specialty areas of nurse anesthesia.

The program requires 37 credits of courses taken in the following sequence:

Fall: Year One

HSC 001	Professional Aspects of Anesthesia Practice
HSC 500	Pharmacology I
HSC 503	Organic and Medicinal Chemistry
HSC 521	Anatomy, Physiology and Pathophysiology I

Spring: Year One

HSC 501	Pharmacology II
HSC 504	Biochemistry
HSC 522	Anatomy, Physiology and Pathophysiology II

Summer: Year One

HSC 510	Nursing Research I (first six weeks)
HSC 512	Medical Physics (second six weeks)

Fall: Year Two

HSC 612	Nursing Research II
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Spring: Year Two

HSC 655	Advanced Theory and Practice of Anesthesia
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### HSL 001 Professional Aspects of Anesthesia Practice

This course includes an introduction to the ethics, psychology, and professional adjustments associated with a career in anesthesia. The history of anesthesia and nurse anesthesia is presented as well as a discussion of the role of the CRNA in department management and organization. 0 credits.

### HSL 500 Pharmacology I HSL 501 Pharmacology II

Three credits  
Three credits

This is a two-semester course which will cover the basic principles of pharmacology needed in daily practice. This includes drug effect, mechanism and interactions. In most cases, emphasis will be on the pharmacological action of drugs on specific organ systems. In some instances, drugs will be discussed in relation to their clinical use in anesthesia.

### HSL 503 Organic and Medicinal Chemistry

This is a one-semester survey course in organic chemistry organized around functional groups of compounds. Aspects of organic chemistry pertinent to health, environment, and biochemistry are stressed. Time permitting; classes of drug molecules will also be examined. Because concepts such as spatial orientation and geometric, optical and conformational isomerisms are essential to an understanding of drug action, these concepts are essential to the course. Three credits.

### HSL 504 Biochemistry

This introduction to the chemistry of living organisms includes a discussion of cellular macromolecules, metabolic pathways, energy transformation and respiratory mechanisms. The composition of body fluids is also considered. The effects of anesthesia on body fluids, on the function of major organs, and on the activity of specialized molecules is also considered. Finally, the major theories of narcosis and their biochemical implications will be covered. Four credits.

### HSL 510 Research Methodology

This course will critically examine the steps of the research process. Emphasis will be placed on research needs and the identification of researchable problems in nursing. Utilization of research knowledge as applied in nursing practice will be discussed. Students will develop skills in evaluating and critically analyzing nursing research. Three credits.

### HSL 512 Medical Physics

This course deals with a basic review of math, the metric system, organic chemistry and physics. The instructor will attempt to demonstrate the anesthetic applications of these basic concepts. Specific topics to be covered include, but are not limited to, pressure, hydrostatics, hydrodynamics, ideal gas laws, osmosis, vaporization, heat and temperature, fire and explosions, CO<sub>2</sub> absorption, Archimedes principle, flow meters, diffusion, acid-base, and a review of chemistry. Four credits.

### HSL 521 Human Anatomy, Physiology and Pathophysiology I

This course is a study of the principles of structure and function of the human body. It deals primarily with the muscle, nervous, and cardiovascular systems. The thorough investigation of these systems in the healthy body enables the student to study the pathophysiology of the above systems. Five credits.

**HSL 522 Human Anatomy, Physiology and Pathophysiology II**

This course is a continuation of HSC 521, Human Anatomy, Physiology and Pathophysiology I. The cardiovascular, respiratory, renal, hepatic and endocrine systems will be studied. Representative pathophysiology of each system will also be discussed. Five credits.

**HSC 612 Research II**

This second research course is designed to provide the student with the opportunity to apply theoretical concepts and skills derived from the first research course to the development of a thesis or an alternate research activity. The student is assisted in the preparation of a thesis/project specific to a phenomenon related to nursing practice. Particular emphasis is placed on responsibility of participation in scientific inquiry and on adhering to ethics in the design and conduct of research. Three credits.

**HSC 655 Advanced Theory and Practice of Anesthesia**

This course is designed to build upon the students' basic knowledge and skills. It will encompass and integrate a variety of input for medical and anesthetic management. It will focus on a greater depth of understanding and the ability to analyze concurrent problems that can arise in patient care and propose an appropriate course of management. Four credits.