

University of Pennsylvania
School of Nursing
Course Syllabus
2014

TITLE: NURS 794 Nurse Anesthesia Residency I

COURSE UNITS: 1 cu

CATALOG DESCRIPTION:

This course is the first of two residencies that provide the nurse anesthetist student the opportunity to attain competencies within the Certified Registered Nurse Anesthesia (CRNA) scope of practice. Throughout the residency, the nurse anesthesia trainee will utilize appropriate clinical judgment to manage the complex medical, physical and psychosocial needs of clients in the perioperative phases. Further refinement of the patient assessment, anesthesia administration, and critical thinking skills is emphasized. Students progress by providing anesthesia care for patients throughout the continuum of health care services. The guidance of CRNA faculty preceptors contributes to the development of the independence of the CRNA student. Collaborative practice within a care team model is emphasized and the student assumes more overall responsibility for the quality of care for the patients throughout the perioperative experience, with clinical support as required.

PLACEMENT: Fall / Year II

FACULTY: Kelly L. Wiltse Nicely, PhD, CRNA
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SIMULATION FACULTY: Kelly Wiltse Nicely, PhD, CRNA; Russ Lynn, CRNA, MSN; Lori Ann Winner, CRNA, MSN; Dawn Bent, DNP, CRNA; Marco Gidaro, CRNA, MSN; Pete Conicelli, CRNA, MSN

PRE-REQUISITES: N 617, N 618, N 619, N 681, N 682, N 683, N 791, N 792, N 793-Clinical Fieldwork in Nurse Anesthesia Practice I-III

CO-REQUISITES: None

COURSE OVERVIEW:

This course is designed to expand the base of experience in clinical practice and encourages independence in the nurse anesthesia student as the student is expected to provide anesthesia services to more medically complex patients. Clinical preceptors assist the student in assuming a progressively more independent role with appropriate support as required. Classroom

discussions will focus on the application of relevant clinical literature to nurse anesthesia practice.

COURSE OBJECTIVES:

1. Provide skilled, competent care in a broad range of clinical situations including pre-anesthesia assessment intra-operative and post operative assessment, anesthesia care planning, anesthesia administration, and crisis management using consultation of a preceptor appropriately.
2. Demonstrate advanced clinical decision-making and develop clinical competency as a beginning nurse anesthetist.
3. Develop and implement plans of care in collaboration with members of the interdisciplinary health care team.
4. Implement legally and ethically sensitive care to patients undergoing anesthesia.
5. Demonstrate advanced verbal and written communication skills.
6. Integrate a systems approach to the assessment and plan of care development for the patient undergoing anesthesia services.
7. Identify areas within the scope of nurse anesthesia education in need of review. Once identified, the student will develop a plan of study to review these areas. This study outline will serve as evidence of their reviewing and studying areas of weakness in preparation for the self evaluation examination.
8. Develop and demonstrate critical thinking skills with the use of simulation.
9. Demonstrate with the use of simulation advanced cardiac life support in a crisis situation.
10. Demonstrate appropriate intubation skills with the use of sim man.

TEACHING METHODS:

Supervised clinical practice, clinical conferences, lecture, discussion, problem based learning case presentations, and simulations

EVALUATION METHODS:

Self-Directed Review - 20%

Participation - 15%

Quizzes – 15%

Oral Boards – 15%

Comprehensive Exam - 35%

Simulation Lab Competency–Pass/Fail

Grade	Score Range	Interpretation
A	90 – 100	Exceptional performance
B	80 – 89	Performance meeting expectations
C	70 – 79	Minimally passing performance
D	0 – 69	Performance below expectations

GRADING POLICY:

A+ 97-100	B+ 87-89	C+ 77-79	F 0-69
A 93-96	B 83-86	C 73-76	
A- 90-92	B- 80-82	C- 70-72	

A grade ending in 0.5 or above will be rounded up to the next whole number. A grade ending in 0.4 or less will be rounded down to the next whole number.

The clinical fieldwork of this course is dependent upon successful completion of the clinical objectives at a competent level that is necessary to pass the course. Students who do not successfully complete the clinical fieldwork component of this course will fail the entire course and may not progress in the program.

Clinical Progression:

- Verbal warning for clinical probation - Final grade decreases to B
- Written warning for clinical probation - Final grade decreases to B-
- Clinical Probation for 30days - Final grade decreases to C+

E.g.: If your final grade at the end of the semester is an 'A' (100%), your final grade will decrease to a 'B' if you have been given a verbal warning for clinical probation, a 'B-' if you were given a written warning for clinical probation, and a 'C+' if you were placed on clinical probation.

N.B: Verbal or written warnings for clinical probation are described in the MSN Nurse Anesthesia Handbook Addendum.

Removal from clinical due to unsafe practice and/or clinical probation necessitates review from the University of Pennsylvania School of Nursing Academic Progressions Committee and may result in failure of the course, failure to progress and/or dismissal from the program.

Failure to be successfully removed from probation or actions requiring a recurrence of probation may result in failure of the course, failure to progress in the program and/or necessitate review from the University of Pennsylvania School of Nursing Progressions Committee.

GUIDELINES FOR SELF DIRECTED STUDY GUIDE

The student will identify gaps within their anesthesia related knowledge base. A self directed plan of study will be developed to explore anesthesia resources to improve the student's understanding of self identified areas of weakness. A sample Self Directed Review is included for reference below. The plan of study should include:

1. A time schedule of material to be covered on each Self Directed Review Session. This outline should reflect a minimum of 7.5 hours of study per week: Three 3 hour sessions with two 15 minute breaks per session **OR** 22.5 hours total for the 3 weeks of class time.
2. The study guide must include:
 - a. All individuals must include the date the either took the SEE exam or the date they are scheduled to take the SEE exam
 - b. **For individuals who have not passed the SEE prior to 8/26/2014 or who are scheduled to take the SEE after 8/26/2014 but before 9/9/2014:** A summary of the preparation done *prior* to self directed review days, with the understanding that you will likely exceed 22.5 hours of study time in preparation for the SEE. This will enable faculty to review your 3 week plan to determine what material you have already reviewed and what material you will be focusing on during the beginning of the semester.
 - c. **For individuals who pass the SEE prior to 8/26/2014:** A copy of the SEE exam results. The areas identified for study in the Self Directed Review should correlate with the areas identified on the SEE exam results as areas of relative weakness.
3. The study guide must include a time break down, including breaks. For each allotted time slot a category and detailed content outline must be provided.
4. The method of evaluation of each review session, e.g. review questions from a specific source, must be included to assess your knowledge related to the content area that you have identified. It is the student's responsibility to maintain a record of these evaluations. Faculty may ask to review these evaluations with the student at any time and students will be expected to produce these records upon request.
5. Include a reference text and page for each session and topic. References *must* include anesthesia textbooks (e.g. Nagelhout & Plaus, Barash, etc.). Additional non-textbook references (e.g. Valley review/Prodigy) may be used as supplemental materials.
6. **This study plan should be submitted electronically to wiltse@nursing.upenn.edu no later than 9:00AM EST on August 26, 2014.** Failure to meet the assigned due date and time will result in a full letter grade deduction for each 24 hours that the Self Directed Review Plan is late. For example, a plan that was submitted on time that would have received a 95% would be scored as an 85% if submitted on August 26, 2014 at 9:01am EST and as a 75% if submitted on August 27, 2014 at 9:01am.
7. Faculty will expeditiously review each plan to determine that the guidelines are met as per the instructions listed above. Individuals with reviews that are considered suboptimal will be notified by faculty by September 2, 2014. After discussion and direction by a faculty member the student may be required to revise their study plan. However, students are strongly encouraged to do due diligence in submitting their Self Directed Review Plan as any required revisions will not lead to an increase in the grade.

Grades will be based solely on the quality of the product submitted for the 8/26/2014 due date.

8. This self directed review is a requirement for N794, N620, and N747. The percentage grade awarded for this assignment will be sent to each course director for each of these courses, as per the requirements.
9. If any further examples or explanation for the Self Directed Review is needed, please email wiltse@nursing.upenn.edu for clarification.

SAMPLE SELF DIRECTED REVIEW PLAN

Self-Directed Study Guide

CONTENT COVERED PRIOR TO STUDY DAYS

Equipment (M&M 17-90)

- ✓ Anesthesia gas machine
- ✓ Compressed gas cylinders
- ✓ Breathing systems
- ✓ Laryngeal mask airway
- ✓ Quick Quiz: Equipment and Monitoring, Valley
- ✓ *Gas Sources, Memory Master*
- ✓ *Regulators & Flowmeters, Memory Master*
- ✓ *Vaporizers, Memory Master*
- ✓ *Alarms & Safety Devices, Memory Master*
- ✓ *Ventilators, Memory Master*
- ✓ *C02 Absorbers, Memory Master*
- ✓ *Anesthetic Circuits, Memory Master*
- ✓ *Machines, Memory Master*
- ✓ *Airway Equipment, Memory Master*
- ✓ *Airway Devices, Prodigy Quick Review*
- ✓ *Anesthetic Delivery System, Prodigy Quick Review*

Pre-anesthesia Evaluation

- ✓ Preoperative Evaluation and Preparation of the Patient (Nagelhout, p 358-398)
- ✓ *Preoperative Assessment, Memory Master*

Hepatic Physiology and Anesthesia

- ✓ Functional Anatomy of the Liver (M&M p. 773-775)
- ✓ Vascular Functions of the Liver (M&M p. 775-780)
- ✓ Effect of Anesthesia on Hepatic Function (M&M p. 781-788)
- ✓ *Hepatic Anatomy & Physiology, Memory Master*
- ✓ *Hepatic Pathophysiology, Memory Master*
- ✓ *Hepatic Failure, Prodigy*
- ✓ *Hepatitis, Prodigy*

Hemostasis and Immunology

- ✓ Formation of the platelet plug (Valley p. 172-181)
- ✓ Fibrin production, Disorders (Valley p. 177, 181)
- ✓ Coagulation Cascade (Valley p. 179-180)
- ✓ Physiology & Pharmacology of Anticoagulation (Valley p. 182-183)
- ✓ Fibrinolysis (Valley 184-185)
- ✓ Complex Disorders of Coagulation (Valley p. 186)
- ✓ Fluid and Blood Products
- ✓ Immune Function (Rhoades & Bell, p 187-206, notes from 607 and 683)

- ✓ *Hemostasis Quiz, Valley p. 190-191*
- ✓ *Blood Components, Memory Master*
- ✓ *Coagulation, Memory Master*
- ✓ *Anemias, Memory Master*
- ✓ *Coagulopathies, Memory Master*
- ✓ *Coagulation Tests*

Professional Issues

- ✓ History (Nagelhout, p 1-4)
- ✓ Organizational and Professional Survival (Nagelhout, p 5-23)
- ✓ Standards of Practice (Nagelhout, p 28-32)
- ✓ *Professional Practice Standards, Memory Master*

Medical/Legal Issues

- ✓ Sources of Law (Nagelhout, p. 40-42)
- ✓ Areas of Interest to Nurse Anesthetist (Nagelhout, p. 43-46)
- ✓ Avoiding a Lawsuit (Nagelhout, p. 46-48)
- ✓ *Legal, Memory Master*
- ✓ *Patient Safety, Memory Master*
- ✓ *Legal Issues, Prodigy Quick Review*

Research

- ✓ Fundamentals (Nagelhout p. 49, 66)
- ✓ EBP (Nagelhout p. 63-66)
- ✓ Process stages (Nagelhout p. 50-62)
- ✓ Reliability, validity (Nagelhout p. 49-50)
- ✓ Research terminology, Prodigy
- ✓ *Research Methods and Quality, Memory Master*

Pediatric Anesthesia

- ✓ Pediatric anatomical differences (Valley p. 453-58 & M&M p. 923-931)
- ✓ Pediatric Anomalies (Valley p. 458-66 & M&M p. 939-944)
- ✓ Congenital Anomalies
- ✓ Malignant Hyperthermia
- ✓ Airway Difficulties
- ✓ Neonate
- ✓ *Pediatric Anesthesia Review, Valley p. 472-75*
- ✓ *Pediatric Anatomy & Physiology, Memory Master*
- ✓ *Congenital Problems & Management, Memory Master*
- ✓ *Pediatric Pathophysiology, Memory Master*
- ✓ *Pediatric Pharmacology, Memory Master*
- ✓ *Prematurity, Prodigy Quick Review*
- ✓ *Pediatric Anatomy & Physiology, Prodigy Quick Review*
- ✓ *Pediatric Pharmacology, Prodigy Quick Review*

Obstetrical Anesthesia (M&M 890-922, Nagelhout 1103-1147, Valley p. 404-435)

- ✓ Physiological changes of Pregnancy
- ✓ General and Regional Anesthesia
- ✓ Stages of Labor and Pain Pathways
- ✓ Anesthesia for the Complicated Pregnancy
- ✓ *Obstetrical Anesthesia Quiz, Valley p 436-437*
- ✓ *OB Anatomy & Physiology, Memory Master*
- ✓ *PIH, Memory Master*
- ✓ *OB Complications, Memory Master*

Geriatric Anesthesia (M&M p. 951-958, Nagelhout p 1210-1217, Valley p. 461-474)

- ✓ General Physiological and Cellular Changes
- ✓ Pharmacology in the Geriatric Patient
- ✓ *Geriatrics Quiz, Valley 476*
- ✓ *Geriatric A&P, Memory Master*
- ✓ *Geriatric Pharmacology, Memory Master*

Anesthesia and Obesity (Nagelhout p. 1024-1044, Valley p. 478-493)

- ✓ Physiology of Obesity
- ✓ Medical Consequences of Obesity
- ✓ Organ System Pathophysiology
- ✓ Anesthetic Management
- ✓ *Obesity Anatomy and Physiology, Memory Master*
- ✓ *Obesity Pharmacology, Memory Master*
- ✓ *Obesity Anesthetic Management, Memory Master*
- ✓ *Obesity Complications, Memory Master*
- ✓ *Obesity, Prodigy Quick Review*

Cell Physiology

- ✓ Valley (p. 1-6,)
- ✓ Rhoades & Bell (p. 20-38)
- ✓ *Cell Physiology Review Questions, Valley p. 10-11,*

Cardiac Physiology

- ✓ Cardiac Electrophysiology (Valley p. 110-111 & M&M p. 413-416)
- ✓ Ionic Changes with Ventricular Contraction (Valley p. 111 & M&M p. 418-420)
- ✓ ECG interpretation (Valley, p. 116-122)
- ✓ *Cardiac Electrophysiology, Memory Master*
- ✓ Determinants of Cardiac Output (Valley p. 129-130 & M&M p 420-425)
- ✓ Ventricular Hypertrophy (Valley p. 130 & M&M p. 435)
- ✓ Anatomy and Physiology of Coronary Circulation (M&M, p 430- 432)
- ✓ *Heart Sounds and Murmurs, Memory Master*
- ✓ *Cardiac Output & Cardiac Cycle, Memory Master*
- ✓ *Blood Pressure, Memory Master*
- ✓ *Circulation, Memory Master*

Cardiac Pressure Volume Loops (Nagelhout, p.478-479, 492-499)

- ✓ Normal LV loops (Valley p. 130)
- ✓ Preload changes and Pressure Volume Loop (Valley p. 131-133 & M&M p. 434)
- ✓ Afterload changes and Pressure Volume Loops (Valley p 134-136 & M&M p. 434)
- ✓ Altered Contractility on Pressure Volume Loops (Valley p. 137-139)
- ✓ Pressure-Volume Loop Shifts Associated with Valve Problems (Valley p. 141-143)
- ✓ Ventricular Function Curves (Valley p 145-146)
- ✓ *Valley Exercise on Pressure Volume Loops, Valley p. 144*
- ✓ *Valley Exercise on Ventricular Function Curves, Valley p. 148*
- ✓ *Quick Quiz: Cardiovascular*
- ✓ *Myocardial Blood Flow & Oxygen Consumption, Memory Master*

Miscellaneous Cardiac Topics

- ✓ Treatment of Intraoperative Ischemia (Valley p 149-150, M&M p. 453-463)
- ✓ Control of BP (Baroreceptor Reflex) (Valley p. 151)
- ✓ Nitric Oxide (Valley p. 152-154, M&M 256-259)
- ✓ Determinants of Myocardial O₂ supply (Valley p. 155)
- ✓ Nonadrenergic CV drugs (Valley, p 156)
- ✓ Antihypertensives (Valley p 156, M&M p. 255-262)

Valvular Heart Disease

- ✓ IHSS, Valley (p. 160-161, M&M p. 475)
- ✓ Aortic Regurgitation (Valley p. 162-163, M&M p. 476-477)
- ✓ Mitral Regurgitation (Valley p. 164-165, M&M 469-472)
- ✓ Aortic Stenosis (Valley, p 166-167, M&M 473-474)
- ✓ Mitral Stenosis (Valley p 168-169, M&M p. 467-469)
- ✓ *Valley Quick Quiz: Valvular Lesions*
- ✓ *Arrhythmias, Hypertrophy, Valve Lesions, Memory Master*
- ✓ *CAD, Cardiac Failure, Tamponade, Memory Master*

Pain Pathways and Modulation of Pain

- Pain Pathways and Opioids (Valley p. 77-85 & Nagelhout p. 603-604)
- Substantia Gelatinosa, (Valley p. 81)
- Modulation of Pain (Valley p. 88)
- Afferent and efferent pain pathway quick review (Valley p 89)

NMB

- ✓ NMB Pharmacology (Valley p. 14-19 & M&M p. 208-209)
- ✓ Peripheral Nerve Stimulation (Valley p. 25-28 & M&M 209-210)
- ✓ NMB Reversal (M&M p. 227-241)
- ✓ *NMB Review Questions, Valley p. 29-32*
- ✓ *Succinylcholine Review Questions, Memory Master p. 184-185*
- ✓ *Non-Depolarizer Review Questions, Memory Master p. 186-190*
- ✓ *Interaction & Complication Review Questions, Memory Master p. 190-194*
- ✓ *Peripheral Nerve Stimulator Questions, Memory Master p. 304-306*
- ✓ *Antimuscarinics, Memory Master p. 194-196*
- ✓ *Atypical Plasma Cholinesterase, Memory Master*

- ✓ *Reversal Agents, Memory Master*

Med Review

- ✓ Drugs Acting on the SNS (Valley p. 42-43)
- ✓ Alpha & Beta Adrenergic Antagonists (M&M p 242-253)
- ✓ Pharmacology of PNS (Valley p. 54-58)
- ✓ Pharmacology of Bronchial Smooth Muscle (Valley p. 59-62)

Monitoring (Nagelhout, p. 315-331, 337-342)

- ✓ Pulse Oximetry (Valley p. 518)
- ✓ Capnography (Valley p. 519-23)
- ✓ BIS (Valley p. 518)
- ✓ CVP (Valley p. 524)
- ✓ PAC (Valley p. 526-29)
- ✓ A-line (Valley p. 530-31)
- ✓ Quiz equipment and monitoring (Valley p. 532-35)
- ✓ *CVP Questions, Memory Master*
- ✓ *Pulmonary Artery Pressure Questions, Memory Master*
- ✓ *Arterial Blood Pressure Questions, Memory Master,*
- ✓ *Capnography Questions, Memory Master*
- ✓ *Pulse-Ox Questions, Memory Master*

Endocrine

- ✓ Pancreas (M&M. p. 803-806)
- ✓ Thyroid (M&M. p. 806-808)
- ✓ Parathyroid (M&M p. 809-811)
- ✓ Adrenal Gland (M&M p. 811-813)
- ✓ Pituitary (M&M p 814)
- ✓ *Thyroid & Parathyroid, Memory Master*
- ✓ *Thyroid & Parathyroid Pathophysiology, Memory Master*
- ✓ *Pancreas, Memory Master*
- ✓ *Pancreas Pathophysiology, Memory Master*
- ✓ *Adrenal Gland, Memory Master*
- ✓ *Adrenal Pathophysiology, Memory Master*
- ✓ *Pituitary, Memory Master*

Clinical Scenarios

- Cardiac Surgery (M&M p. 490-520)
- Mediastinoscopy (Valley p. 538)
- Pheochromocytoma (Valley p. 539, Hines & Marschall, p. 388-393)
- One Lung Ventilation (Valley p. 540)
- ASA Physical Status Classification (Valley p. 541)
- Neuromuscular Diseases (Valley p. 542-543, Hines & Marschall p. 446-466)
- Parkinson's Disease (Valley p. 544, Hines & Marschall p 227-228 & 642-643)
- Rheumatoid Arthritis (Valley p. 545, Hines & Marschall p. 455-457)
- Osteoarthritis (Valley p. 545, Hines & Marschall p. 458-459)
- Scoliosis (Valley p. 546, Hines & Marschall p. 459-460)

Carcinoid Syndrome (Hines & Marschall p. 289-291)

Additional Review: In addition to utilizing Valley review book (sweat book), Valley memory master, and Nagelhout Review of Nurse Anesthesia, a minimum of 30 minutes a session will be devoted to Prodigy software questions.

DAY 1

0900-1030: Neuroanatomy/Neurophysiology

- Neuromuscular Physiology/Pharmacology (Valley, p 12-28, Nagelhout, p 179-199)
- Peripheral Nervous System (Valley, p 31-54, Nagelhout, p 656-658)
 - Sympathetic Nervous System
 - Parasympathetic Nervous System
- *Neuropathophysiology and Autonomic Nervous System Review Questions, Memory Master*

1030-1045: break

1045-1200: Neuroanatomy/Neurophysiology (cont.)

- Central Nervous System (Valley, p 90-103, Nagelhout, p 651-690, M&M, p 614-626)
 - Neuroanatomy of spine and spinal cord
 - Cranial nerves
 - Cerebral blood flow and metabolism
 - Spinal cord blood flow
- *Spinal Cord, Cranial Nerves, Spinal Cord, Cerebral Blood Flow Review Questions, Memory Master*

1200-1245: Lunch Break

1245-1415: Larynx Anatomy, O₂ and CO₂ Dissociation Curves

- Anatomy of the Larynx (Valley p. 192-193, M&M p. 91-93, Nagelhout p. 560-563)
- Oxyhemoglobin Dissociation Curve (Valley p. 194-197, M&M p. 561- 564, Nagelhout p. 573-575)
- Carbon Dioxide Blood Dissociation Curve (Valley p. 200 & M&M p. 564-567)
- *Respiratory Anatomy Review Questions, Memory Master*

1415-1430: break

1430-1600: Ventilation Control, Pulmonary Mechanics and V/Q Relationship

- Control of Ventilation (Valley p. 203 & M&M p. 567-568)
- Pulmonary Mechanics (Valley p. 204, M&M p. 539-542, Nagelhout p. 565-570)
- V/Q Relationship (Valley p. 210 & M&M p. 552-556, Nagelhout p. 572)
- V/Q Review Questions (Valley p. 211)
- *Respiratory Mechanics Review Questions, Memory Master*
- *Ventilation Review Questions, Memory Master*

1600-1615: break

1615-1745: Lung Zones, Pre-O₂, PFTs, Obstructive and Restrictive Dx

- Zones of the Lung (Valley p. 217 & M&M p. 554-555, Nagelhout p.570-571)
- Preoxygenation (Valley p. 219)
- Pulmonary Function Tests (Valley p. 221 & M&M p. 544-551)
- Obstructive and Restrictive Disease (Valley p. 223)

- Airway Closure, Closing Volumes/Capacities (Valley p. 224-228)
- *Respiratory Quiz, Valley p. 231-234*

1745-1800: break

1800-1930: Review of Day

- Memory Master Sections:
 - *Blood Flow, HPV/Shunts Review*
 - *Blood Gases (O₂ and CO₂) Review*
 - *Respiratory Control Review*
 - *Ventilation:Perfusion Review*
 - *Obstructive & Restrictive Diseases Review*
- Prodigy
- Nagelhout Review of Nurse Anesthesia

Total Study Time for Day 1 = 8.75 hours

Areas not covered adequately will continue to be reviewed during this week.

DAY 2

0900-1000: Renal Function, Regulation of Fluid (Nagelhout, p 694-714)

- Overview of Renal Function (Valley p. 235-239 & M&M p. 725-732)
- Renal Control of Glucose (Valley p.241)
- Regulation of Extracellular Fluid Osmolality (Valley p.242-245)
- Control of Extracellular Fluid Volume (Valley p. 246)
- *Renal Anatomy and Physiology Review Questions, Memory Master*
- *Renal Pathophysiology Questions, Memory Master*

1000-1015: break

1015-1115: Renal Electrolyte Control, Diuretics, Renal Failure

- Renal Control of Electrolytes (Valley p. 246-251)
- Diuretics (Valley p. 253-255 & M&M p. 736-739)
- Renal Failure, (Valley p. 256-257 & M&M p. 746-756)
- *Acute and Chronic Renal Failure, Memory Master*
- *Renal Function Tests, Memory Master*
- *Diuretics, Memory Master*

1115-1145: lunch break

1145-1245: Fluid and Electrolytes & Acid/Base Balance

- Fluid and Electrolyte Balances/Disturbances (Valley p. 260-263, M&M 246-251)
- Kidneys' Role in Acid/Base Balance (Valley p. 265-268)
- *Renal, Electrolytes, Acid-Base Issues, Quiz, Valley p. 271-273*
- *Acid Base, Memory Master*
- *Fluids and Electrolytes, Memory Master*

1245-1300: break

1300-1430: Local Anesthetics

- Structure (Valley p 291-293, M&M 263-275)
- Mechanism of action, (Valley p 294, M&M 267-275)

- Metabolism (Valley p 295, M&M 263-275)
- Toxicity (Valley p 295)
- *Pharmacology Quiz, Valley p 298*

1430-1600: Regional Anesthesia

- Spinal Anesthesia (Valley p 357-366, M&M 289-309)
- Epidural Anesthesia (Valley p 367-372, M&M 310-314)
- Complications of Neuraxial Blockade (Valley p 373, M&M 316-323)
- Upper Extremity Blocks (Valley p 374-379, M&M 324-342)
- Lower Extremity Blocks (Valley p 381-395, M&M 343-357)

1600-1630: break

1630-1730: Positioning and Nerve Injuries

- Positioning (Valley p 402)
- *Peripheral Nerve Injuries Quiz, Valley p 403*
- Nerve Injuries (Valley p 396-400)

1730-1930: Review of Day

- Memory Master Sections:
 - *Esters*
 - *Amides*
 - *Infiltration and Topical*
 - *Subarachnoid*
 - *Brachial Plexus Blocks*
 - *Lower Extremity*
 - *Other Regional Blocks*
 - *Regional Anesthesia Complications*
 - *Positioning*
 - *Peripheral Nerve Injury*
- Prodigy
- Nagelhout Review of Nurse Anesthesia

Total Study Time for Day 2 = 9.0 hours

Areas not covered adequately will continue to be reviewed during this week.

Day 3

0900-1045: Chemistry/Physics

- Vapor Pressures (Valley p. 317-319, Nagelhout p. 244-251)
- Pressure and Tension (Valley p. 319-321, Nagelhout p. 244-251)
- Fluid dynamics (Valley p. 321-323, Nagelhout p 244-251)

1045-1100: break

1100-1215: Chemistry/Physics (cont)

- Solubility of Gases (Valley p. 324, Nagelhout p. 244-251)
- Gas Laws (Valley p. 324-325, Nagelhout p 244-251)
- Math for Calculating Concentrations (Valley p 335)
- *Physics/Chemistry Quiz Valley p. 343-355*

1215-1300: Lunch

1300-1400: Pharmacokinetics (Naghelout 77-92)

- Volume of Distribution (Valley p 276-278)
- Kinetics (Valley p. 279-283)
- Hepatic Metabolism (Valley p. 284)

1400-1445: Weak Acids and Weak Bases (Nagelhout 77-92)

- Weak Acids (Valley p. 285-286)
- Weak Bases (Valley p. 287-289)
- Identifying Weak Acids and Weak Bases (Valley p 290)

1445-1500: break

1500-1630: Inhalational Agents (Nagelhout 99-112, M&M 155-178)

- Pharmacodynamics/Pharmacokinetics (Valley p. 301-302)
- Concentration and Second Gas Effects (Valley p. 307-312)
- N₂O pharmacology review (M&M p.164-166 & Valley p. 330-331)
- *N₂O Review Questions, Memory Master*
- *Volatile Agent Review Questions, Memory Master*
- *Uptake Curve Review, Valley p. 332-333*

1630-1700: break

1700-1745: IV Anesthetics

- Intravenous Anesthetics (Valley p. 314-316 & M&M p. 180-203)
- *Barbiturate Review, Memory Master*
- *Opioid Review, Memory Master*
- *Benzodiazepine Review, Memory Master*
- *Ketamine, Etomidate, & Propofol Review, Memory Master*

1745-1930: Review of Day

- ✓ Memory Master
 - *Chemistry & Basics, Chemistry*
 - *Gas and Gas Laws*
 - *Fluid Flow*
 - *Pharmacodynamics*
 - *Pharmacokinetics*
 - *Pka and Ionization*
 - *Metabolism & Toxicity*
- ✓ Nagelhout Review of Nurse Anesthesia

Total Study Time for Day 3 = 8.75 hours

Areas not covered adequately will continue to be reviewed during this week.

References:

Hines, R.L. & Marschall, K.E. (2008). *Stoelting's Anesthesia and Co-Existing Disease* (5th ed). Philadelphia: Churchill Livingstone

Memory Master: Questions & Answers for the Student Registered Nurse Anesthetist (2012). Valley Anesthesia.

Morgan, G. E., Mikhail, M. S. & Murray, M. J. (2006). *Clinical Anesthesiology* (4th ed).

New York: McGraw-Hill.

Nagelhout, J.J. (1999). *Review of Nurse Anesthesia*. Philadelphia: Saunders.

Nagelhout, J. J. & Plaus, K. L. (2010). *Nurse Anesthesia* (4th ed). St. Louis: Elsevier Saunders

Rhoades, R.A. & Bell, D.R. (2009). *Medical Physiology: Principles for Clinical Medicine* (3rd edition). Philadelphia: Lippincott Williams & Wilkins.

Sauvage, T.R. & Schaus, S.S. (2012). *A Comprehensive Certifying Examination Review and Update Course*. Valley Anesthesia Educational Programs.

SELF EVALUATION EXAMINATION (SEE) POLICY:**As per the student handbook:**

1. Students must pass the Self Evaluation Examination (SEE) to be eligible for graduation. The SEE exam must be completed by September 30 of the students' second year. Failure of the SEE is defined as scoring below the average scaled score for the same year in the program nationally.
2. **Students must re-take the SEE exam within four weeks after notification of failure.** Failure to pass the exam a second time will result in a remediation plan designed by the Program Director/Assistant Program Director.
3. Students who do not pass the SEE exam prior to graduation receive an incomplete in the N795 clinical fieldwork course and will be required to register for an independent study class in the School of Nursing at their own expense the following semester. During the independent study, clinical responsibilities will be reduced to two days per week and will focus on competencies to pass the SEE. The University of Pennsylvania School of Nursing Academic Standard and Progressions Committee will be notified of students' failure to pass the SEE exam and will monitor their progress. The Committee reserves the right to remove students from the Nurse Anesthesia program for failing to pass the SEE exam in an appropriate timeframe.
4. The cost of the SEE examination is \$110.00 (subject to change); students are responsible for all expenses related to the SEE exam.

ORAL BOARDS

The purpose of the oral board exam is the evaluation of advanced anesthesia comprehension that warrants a student safe and prepared for upcoming independence and further specialty training. The examination is designed to assess the integration of didactic and clinical knowledge. A certain amount of factual information is required to successfully discuss the management of a patient. In addition, the oral exam is designed to test the SRNA's judgment, application of knowledge, clarity of expression, and adaptability to changing, unexpected circumstances that could be encountered in the practice of anesthesia. Finally, in order to be successful, the SRNA's must be able to clearly and concisely communicate their rationale for management of the patient's care to the examiner throughout the case discussion.

There should be no discussion of case topics between students. If there is discussion, this constitutes a violation of the code of academic integrity and will result in a failing grade in the course for both students. In addition, the students will be referred to the University of Pennsylvania School of Nursing Academic Progressions Committee.

The Oral Board Examination is based a patient case study that will not be disclosed to the examinee until they sign an agreement of confidentiality in the presence of the examiner. Once the patient case study is presented, the exam will begin and will be based on a set of guided questions followed by the examiner. The exam will be based on a discussion of the anesthesia care plan and management of the patient. Students are expected to select and defend their plans and management.

The examinee must convince the examiners that their knowledge and judgment are sufficient to provide safe anesthetic care and earn the confidence and respect of colleagues and patients. Specific areas that the examiner will be evaluating are:

- **Knowledge:** E.g. Knowledge of the normal values for pulmonary function tests.
- **Ability to apply knowledge to a clinical situation:** E.g. Able to describe the relationship of abnormal pulmonary function test values to the selection of an anesthetic technique, anticipation of complications, or preparations for post-operative care.
- **Ability to adapt to changing clinical conditions:** Ability to adapt efficiently and effectively to a complication which develops or to a patient who responds uncharacteristically to an intervention. E.g. Ability to analyze the causes of hypoxemia during a thoracotomy and to describe appropriate interventions to treat the hypoxemia.
- **Ability to express ideas or defend a point of view in a convincing manner:** There may be several ways to interpret or to act on a set of data. As such, there may be several ways to manage anesthesia care in a particular situation. It is the student's responsibility to express her or his point of view or treatment plan, whatever it may be, in a coordinated, rational, evidence based and convincing manner.

COMPREHENSIVE EXAM

The comprehensive exam will be an assessment of the student's cumulative knowledge from the beginning of the nurse anesthesia program through the completion of N794. All answers to questions included on the comprehensive exam will be based on language from the required reading list for N794.

N794 COURSE REQUIREMENTS:

Immunizations/PPD/RN Licenses/ACLS/BLS/PALS Certification:

Students who are noncompliant with renewal will:

- Have their N 794 final grade dropped by one letter grade.
- Be removed from clinical on the date of expiration.
- The student will not be permitted to return to clinical assignments until proof of renewal or record of immunization is submitted.
- The clinical time missed will be required to be made up during the semester missed.
- In the event the student does not make up the missed time, the student will be given an incomplete in the N 794 course and required to take an independent study.

You are required to adhere to the policies and procedures of your clinical affiliate site. Failure to do may result in a failure in this course and/or dismissal from the program.

Rotation Expectations:

Students who are rotating to a clinical affiliate site outside of their primary clinical site:

Must schedule a pre and post rotation meeting with the Program Director and/or Associate Program Director. This meeting must take place a no later than 2 weeks prior to rotating out and no later than 2 weeks post rotation.

A post rotation evaluation form must be submitted to the Program Director at the post rotation meeting.

Students who fail to comply with the above mentioned will have their N 794 final grade dropped by one letter grade per offense.

The University Code of Academic integrity will be followed in this course. It is available on Blackboard and the student handbook.

Code of Academic Integrity

Since the University is an academic community, its fundamental purpose is the pursuit of knowledge. Essential to the success of this educational mission is a commitment to the principles of academic integrity. Every member of the University community is responsible for upholding

the highest standards of honesty at all times. Students, as members of the community, are also responsible for adhering to the principles and spirit of the following Code of Academic Integrity.

Academic Dishonesty Definitions

Activities that have the effect or intention of interfering with education, pursuit of knowledge, or fair evaluation of a student's performance are prohibited. Examples of such activities include but are not limited to the following definitions:

1. Cheating: Using or attempting to use unauthorized assistance, material, or study aids in examinations or other academic work or preventing, or attempting to prevent, another from using authorized assistance, material, or study aids. Example: using a cheat sheet in a quiz or exam, altering a graded exam and resubmitting it for a better grade, etc.
2. Plagiarism: Using the ideas, data, or language of another without specific or proper acknowledgment. Example: copying another person's paper, article, or computer work and submitting it for an assignment, cloning someone else's ideas without attribution, failing to use quotation marks where appropriate, etc.
3. Fabrication: Submitting contrived or altered information in any academic exercise. Example: making up data for an experiment, fudging data, citing nonexistent articles, contriving sources, etc.
4. Multiple Submissions: Submitting, without prior permission, any work submitted to fulfill another academic requirement.
5. Misrepresentation of Academic Records: Misrepresenting or tampering with or attempting to tamper with any portion of a student's transcripts or academic record, either before or after coming to the University of Pennsylvania. Example: forging a change of grade slip, tampering with computer records, falsifying academic information on one's resume, etc.
6. Facilitating Academic Dishonesty: Knowingly helping or attempting to help another violate any provision of the Code. Example: working together on a take-home exam, etc.
7. Unfair Advantage: Attempting to gain unauthorized advantage over fellow students in an academic exercise. Example: gaining or providing unauthorized access to examination materials, obstructing or interfering with another student's efforts in an academic exercise, lying about a need for an extension for an exam or paper, continuing to write even when time is up during an exam, destroying or keeping library materials for one's own use., etc.

* If a student is unsure whether his action(s) constitute a violation of the Code of Academic Integrity, then it is that student's responsibility to consult with the instructor to clarify any ambiguities.

(Source: Office of Provost, 1996)

REQUIRED TEXTS:

Barash, P.G., Cullen, B.F. & Stoeling, R.K. (2000). *Clinical Anesthesia*. (4th ed.) Philadelphia: Lippincott, Williams & Wilkins.

Nagelhout, J.J. & Plaus, K.(2009/2013). *Nurse Anesthesia*. (4th or 5th ed.) St. Louis: Elsevier Saunders.

Rhoades, R.A. & Bell, D.R. (2009). *Medical Physiology: Principles for Clinical Medicine*. (3rd ed) Philadelphia: Lippincott, Williams & Wilkins.

Stoeling, R. & Miller, R. (2000). *Basics of Anesthesia*. (4th ed.) New York: Churchill Livingstone.

RECOMMENDED TEXTS:

Atlee, J.L., Bucklin, B.A., & Chaney, M.A. (2007). *Complications in Anesthesia*. (2nd ed.) Philadelphia: Saunders Elsevier.

Morgan, G., Mikhail, M. & Murray, M. (2006). *Clinical Anesthesiology*. (4th ed.) McGraw-Hill Companies, Inc.

WEEKLY TOPICAL OUTLINE:

Date/Time	N 794 Topic	Objective	Readings
Week 1 8/26/2014	Student Directed Review Day #1* Course Overview & Expectations Self Directed Study Guide Due	7	Student directed
Week 2 9/2/2014	Student Directed Review Day #2*	7	Student directed
Week 3 9/9/2014	Student Directed Review Day #3*	7	Student directed
Week 4 9/16/2014	AANA Annual Congress OR Clinical		
Week 5 9/23/2014 R. Shearer	Anesthesia for Neurosurgical Procedures		
Week 6 9/30/2014 Wiltse Nicely	SIM		
Week 7 10/7/2014 Anes. Faculty	??		
Week 8 10/14/2014 Wiltse Nicely	SIM (MH)		

Week 9 10/21/2014 Anes. Faculty	ECG		
Week 10 10/28/2014 Wiltse Nicely	SIM (ENT)		
Week 11 11/4/2014 Wiltse Nicely	ECG		
Week 12 11/11/2014 Anes. Faculty	Closed claims		
Week 13 11/18/2014 R. Polomano	Rosemary 1/2		
Week 14 11/25/2014 Wiltse Nicely	No N794 Class Happy Thanksgiving!		
Week 15 12/2/2014	SIM		
Week 16 12/9/2014 Anes. Faculty	Oral Boards		
Week 15 12/10/2013	Comprehensive Exam		

***Self Directed Review Days: Students will be required to sign in and out with faculty for each study day. Students are expected to remain on campus throughout the duration of their study day unless given prior exception by the nurse anesthesia faculty.**