Course Title: Pathophysiology and Pharmacology

Course Code: NSG520

Credit hours: 4.0

Lecture and Discussion (15 contact hours per credit) 60 Contact Hours

Course Description:

This course focuses on introductory concepts of pathophysiology related to human illness with an emphasis placed on cellular alterations in body systems as they relate to selected disease states. Students will use critical thinking processes to analyze diverse client presentations of selected illness for symptomatology, pathophysiology, and healthcare implications. Students will be introduced to the role of pharmacotherapeutic agents in the treatment of illness and in the promotion of wellness in patients throughout the lifespan. These concepts provide the basis for the study of drug actions, indications, side effects, nursing implications, and patient education.

Program: DEMSN Nursing

Program Outcomes:

Upon completion of their program, the student should be able to:

1. Prioritize patient-centered care using clinical judgment and the nursing process. (Knowledge for Nursing Practice, Person-Centered Care)
2. Collaborate with patients, families and team members to provide safe and culturally competent care. (Population Health, Quality and Safety)
3. Integrate evidence-based practice within diverse clinical settings to deliver optimal care. (Scholarship, Systems-Based Practice)
4. Minimize risk of harm to patients and providers through both systems effectiveness and individual performance. (Quality and Safety)
5. Use informational technology to communicate, mitigate error, support decision making, and manage patient care. (Informatics and Healthcare Technologies)
6. Evaluate quality improvement processes to enhance patient outcomes. (Quality and Safety)
7. Integrate professionalism and advanced leadership skills within the interdisciplinary healthcare environment. (Interprofessional Partnerships, Professionalism, Personal, Professional, and Leadership Development)
8. Analyze national and global policies, legislative concepts, and economics to address population outcomes. (Professionalism)

Course Learning Objectives:

Upon completion of this course, the student will be able to:

1. Describe the pathophysiological processes of common alterations in health.
2. Define indications, contraindications, and adverse events associated with pharmacologic therapy.
3. Explain proper administration of pharmacologic therapy.
4. Differentiate pathophysiological changes across the lifespan.
5. Understand the effects of pharmacologic treatments on patients across the lifespan.

Topics & Learning Activities

Unit	Topics & Activities	Points Possible
1 Introduction to Pathophysiology and Pharmacology	**Topics:** Introduction to Pathophysiology and Pharmacology: • Principles of Disease & Pathophysiology • Genetics & Congenital Alterations • Diagnosis & Treatment Modalities • Pharmacology in Nursing and Treatment of Human Disease • Drug Interactions, Adverse Drug Reactions, & Medication Errors • Drug Therapy Across the Lifespan **Reading:** • Chapter 1, Cellular Biology [Rogers] • Chapter 2, Altered Cellular and Tissue Biology: Environment Agents [Rogers] • Chapter 4, Genes and Genetic Disease [Rogers] • Chapter 5, Genes, Environment-Lifestyle, and Common Disease [Rogers] • Chapter 6, Epigenetics and Disease [Rogers] • Chapter 3, Mathematics Review and Introduction to Dosage Calculations [Workman] **Assignments:** • Sherpath Lesson: Understanding Cellular Adaptation and Injury • Sherpath Lesson: Understanding Genetics of Common Diseases • Sherpath Lesson: Dosage Calculation • Discussion: Introduction **Quizzes:** • EAQ Custom Quiz • EAQ Custom Quiz **Assessment:**	10 pt/each 5 20 pt/each
2	**Topics:** Primary Mechanisms of Disease:	

Primary Mechanisms of Disease	• Malnutrition & Obesity • Aging • Trauma • Infectious Diseases • Lifestyle and Environmental Factors Cancer • Immune Responses **Reading:** • Chapter 8, Adaptive Immunity [Rogers] • Chapter 9, Alterations in Immunity [Rogers] • Chapter 10, Infection [Rogers] • Chapter 11, Stress and Disease [Rogers] • Chapter 12, Cancer Biology [Rogers] • Chapter 13, Cancer Epidemiology [Rogers] • Chapter 23, Obesity, Starvation, and Anorexia of Aging [Rogers] • Chapter 11, Immunizations and Immunosuppressant Drugs [Workman] • Chapter 6, Methods of Calculation [Kee] **Assignments:** • Sherpath Lesson: Microorganisms and the Infection Process • Sherpath Lesson: Clinical Manifestations and Treatment of Cancer • Sherpath Lesson: Therapies for Autoimmune Disorders **Quizzes:** • EAQ Custom Quiz • EAQ Custom Quiz **Assessment:**	10 pt/each 20 pt/each
3 Inflammation & Wound Healing	**Topics:** Primary Mechanisms of Disease: • The Inflammatory Process • Cyclooxygenase Inhibitors: Nonsteroidal Anti-Inflammatory Drugs and Acetaminophen • Glucocorticoids for Nonendocrine Disorders • Infection **Reading:** • Chapter 7, Innate Immunity: Inflammation and Wound Healing [Rogers] • Chapter 10, General Antiinflammatory Drugs [Workman] • Chapter 1, Systems Used for Drug Administration and Temperature Conversion [Kee] • Chapter 2, Conversion Within the Metric and Household Systems [Kee] **Assignments:**	

	• Sherpath Lesson: Immunity and Cellular Response to Inflammation • Sherpath Lesson: Understanding Inflammation and Therapy with Systemic Corticosteroids and Nonsteroidal Antiinflammatory Drugs • HESI Exam 1 ProctorU Assignment **Quizzes:** • EAQ Mastery Quiz • NGN Case Studies • NGN Case Studies	10 pt/each C/I 20 pt/each
4 **Antimicrobial Agents**	**Topics:** Inflammation & Wound Healing: • Antimicrobial Therapy Basic Principles • Drugs to Weaken Bacterial Cell Wall I - Penicillins • Drugs to Weaken Bacterial Cell Wall II – Cephalosporins, Carbapenems, and Other Inhibitors of Cell Wall Synthesis • Bacteriostatic Inhibitors of Protein Synthesis: Tetracycline, Macrolides, and Clindamycin • Aminoglycosides: Bactericidal Inhibitors of Protein Synthesis • Sulfonamides and Trimethoprim Fluoroquinolones and Metronidazole • Antifungal Agents • Antiviral Agents I: Non-HIV Viral Infections **Reading:** • Chapter 6, Antiinfectives: Antibacterial Drugs [Workman] • Chapter 7 Antiinfectives: Antiviral Drugs [Workman] • Chapter 8 Antiinfectives: Antitubercular and Antifugal Drugs [Workman] • Chapter 5, Alternative Methods for Drug Administration [Kee] • Chapter 7, Methods of Calculation for Individualized Drug Dosing [Kee] **Assignments:** • Sherpath Lesson: Classes of Antibacterial Drugs • Sherpath Lesson: Antiviral Drugs and Antiretroviral Therapy • Sherpath Lesson: Drug Therapy for Tuberculosis **Quizzes:** • EAQ Mastery Quiz • NGN Case Studies • NGN Case Studies	10 pt/each 20 pt/each
5 **Disorders of the Integumentary**	**Topics:** Antimicrobial Agents: • Review of A&P, Skin Lesions, and Cancer	

	• Inflammatory and Infectious Disorders of the Skin, Hair, Nails, and Glands • Decubitus Ulcers and Burns • Disorders of the Eyes • Disorders of the Ears • Review of Musculoskeletal System and Disorders **Reading:** • Chapter 46, Structure, Function, and Disorders of the Integument [Rogers] • Chapter 9, Drugs for Pain Control, Migraines, and Skeletal Muscle Spasms [Workman] • Chapter 27, Drug Therapy for Eye Problems [Workman] • Chapter 3, Interpretation of Drug Labels, Drug Orders, Bar Codes, MAR and eMAR, Automation of Medication Dispensing Administration, and Abbreviations [Kee] • Chapter 8, Oral and Enteral Preparations with Clinical Applications [Kee] **Assignments:** • Sherpath Lesson: Structure and Function of the Skin • Sherpath Lesson: General Pain • Sherpath Lesson: Interpretation of Drug Labels, Drug Orders, and Drug Differentiation • HESI Remediation Packet **Quizzes:** • EAQ Mastery Quiz • EAQ Custom Quiz • NGN Case Studies • NGN Case Studies **Assessment:** • HESI Exam 1	10 pt/each 100 20 pt/each 100
6 **Disorders of the Respiratory**	**Topics:** Disorders of the Integumentary System, musculoskeletal system, and disorders of the Eyes and Ears: • Review of A&P and Process of Oxygenation • Infectious Disorders of the Respiratory System • Drugs for Allergic Rhinitis, Cough, and Colds • Antihistamines • Antimycobacterial Agents for Tuberculosis • Obstructive Lung Diseases • Drugs for Asthma and Chronic Obstructive Pulmonary Disease • Vascular and Expansion Disorders of the Respiratory System • Fluid Imbalances • Electrolyte Imbalances	

	• Drugs Affecting Fluid and Electrolyte Balance • Acid-Base Imbalances **Reading:** • Chapter 3, The Cellular Environment: Fluids and Electrolytes, Acids, and Bases [Rogers] • Chapter 34, Structure and Function of the Pulmonary System [Rogers] • Chapter 35, Alterations of Pulmonary Function [Rogers] • Chapter 18, Drug Therapy for Asthma and other Respiratory Problems [Workman] **Assignments:** • Sherpath Lesson: Acid–Base Balance and Imbalance • Sherpath Lesson: Review of Respiratory Disorders and Therapy with Bronchodilators • Sherpath Lesson: Antiinflammatory Drugs for Asthma and COPD **Quizzes:** • EAQ Mastery Quiz • EAQ Custom Quiz • NGN Case Studies • NGN Case Studies	10 pt/each 20 pt/each
7 **Disorders of the Gastrointestinal & Urinary Systems**	**Topics:** Disorders of the Respiratory System and fluid and electrolyte imbalances: • Disorders of the Gastrointestinal and Urinary Systems • Review of A&P Gastrointestinal System • Disorders of the Gastrointestinal System • Drugs for Peptic Ulcer Disease • Laxatives • Other Gastrointestinal Drugs • Review of A&P Urinary System • Disorders of the Urinary System • Drug Therapy for Urinary Tract Infections **Reading:** • Chapter 37, Structure and Function of the Renal and Urologic Systems [Rogers] • Chapter 38, Alterations of Renal and Urinary Tract Function [Rogers] • Chapter 40, Structure and Function of the Digestive System [Rogers] • Chapter 41, Alterations of Digestive Function [Rogers] • Chapter 12, Drugs that Affect Urine Output [Workman] • Chapter 19, Drug Therapy for Gastrointestinal Problems [Workman] • Chapter 20, Drug Therapy for Gastric Ulcers, Reflux, and Inflammatory Bowel Disease [Workman]	

	Assignments: • Sherpath Lesson: Urinary Tract Infections and Glomerular Disorders • Sherpath Lesson: Disorders of the Intestines • Sherpath Lesson: Types of Diuretics • HESI Remediation Packets **Quizzes:** • EAQ Mastery Quiz • EAQ Mastery Quiz • NGN Case Studies	10 pt/each 100 20 pt/each
8 **Disorders of the Cardiovascular & Peripheral Vascular Systems**	**Topics:** Disorders of the Cardiovascular & Peripheral Vascular Systems: • Review of A&P of Cardiovascular and Peripheral Vascular Systems • Heart Disorders and Shock • Calcium Channel Blockers • Vasodilators • Atherosclerotic Agents • Drugs for Angina Pectoris • Anticoagulant, Antiplatelet, and Thrombolytic Drugs • Myocardial Infarction Agents • Antidysrhythmic Drugs **Reading:** • Chapter 31, Structure and Function of the Cardiovascular and Lymphatic Systems [Rogers] • Chapter 32, Alterations of Cardiovascular Function [Rogers] • Chapter 14, Drug Therapy for Heart Failure [Workman] • Chapter 15, Drug Therapy for Dysrhythmias [Workman] **Assignments:** • Sherpath Lesson: Types of Drugs Used to Treat Heart Failure, Part I • Sherpath Lesson: Types of Drugs Used to Treat Heart Failure, Part II • Sherpath Lesson: Antidysrhythmic Therapy • HESI Exam 2 ProctorU Assignment **Quizzes:** • EAQ Custom Quiz • EAQ Mastery Quiz • NGN Case Studies	10 pt/each C/I 20 pt/each
9 **Vascular System**	**Topics:** • Vascular Disorders and treatment: • Hypertension • Adrenergic Agonists and Adrenergic Antagonists • Hemodynamics and Drugs Acting on the Renin-Angiotensin-Aldosterone System	

	• Other Vascular Disorders and Headache **Reading:** • Chapter 32, Alterations of Cardiovascular Function [Rogers] • Chapter 13, Drug Therapy for Hypertension [Workman] • Chapter 16, Drug Therapy for High Blood Lipids [Workman] **Assignments:** • Sherpath Lesson: Hypertension and General Issues for Antihypertensive Therapy • Sherpath Lesson: Antihypertensive Drugs, Part I • Sherpath Lesson: Antihypertensive Drugs, Part II **Quizzes:** • EAQ Mastery Quiz • EAQ Mastery Quiz • NGN Case Studies	10 pt/each 20 pt/each
10 **Disorders of the Blood & Lymphatic Systems**	**Topics:** Disorders of the Blood & Lymphatic Systems: • Blood and Circulatory System • Drugs for Deficiency Anemias • Lymphatic System **Reading:** • Chapter 28, Structure and Function of the Hematologic System [Rogers] • Chapter 29, Alterations of Hematologic Function [Rogers] • Chapter 17, Drugs that Affect Blood Clotting [Workman] **Assignments:** • Sherpath Lesson: Alterations of Platelets and Coagulation Disorders • Sherpath Lesson: Types of Drugs Used to Prevent Excessive or Inappropriate Clotting, Part I • Sherpath Lesson: Types of Drugs Used to Prevent Excessive or Inappropriate Clotting, Part II • HESI Remediation Packet **Quizzes:** • EAQ Mastery Quiz • EAQ Custom Quiz **Assessment:** • HESI Unit Exam	10 pt/each 100 20 pt/each 100
11 **Disorders of the Nervous System**	**Topics:** Disorders of the Nervous System: • Review of the Nervous System	

	• Acute Neurological Problems • Chronic and Congenital Neurologic Disorders **Reading:** • Chapter 15, Structure and Function of the Neurologic System [Rogers] • Chapter 17, Alterations in Cognitive Systems, Cerebral Hemodynamics, and Motor Function [Rogers] • Chapter 18, Alterations of the Brain, Spinal Cord, and Peripheral Nerves [Rogers] • Chapter 23, Drug Therapy for Seizures [Workman] • Chapter 24, Drug Therapy for Alzheimer's and Parkinson's Disease [Workman] **Assignments:** • Sherpath Lesson: Brain and Spinal Cord Injury • Sherpath Lesson: Seizures, Primary Headache Syndromes and Cerebrovascular Disorders • Sherpath Lesson: Types of Antiepileptic Drugs (AEDs) • HESI Remediation Packets **Quizzes:** • EAQ Mastery Quiz • EAQ Mastery Quiz	10 pt/each 100 20 pt/each
12 Psychotherapeutic Drugs	**Topics:** Psychotherapeutic Drugs: • Antidepressants • Management of Anxiety Disorders • Drugs for Bipolar Disorder • Antipsychotic Agents and Schizophrenia • Sedative-Hypnotic Drugs • Drugs of Abuse • Cholinergic Drugs: Muscarinic Agonists & Antagonists **Reading:** • Chapter 25, Drug Therapy for Psychiatric Problems [Workman] • Chapter 26, Drug Therapy for Insomnia [Workman] **Assignments:** • Sherpath Lesson: Psychiatric Illnesses • Sherpath Lesson: Drug Therapy for Psychiatric Problems • Sherpath Lesson: Physiology, Pathophysiology, and Drug Therapy for Insomnia **Quizzes:** • EAQ Mastery Quiz	10 pt/each

		20 pt/each
13 **Disorders of the Endocrine System**	**Topics:** Disorders of the Endocrine System: • Review of A&P of Endocrine System & Endocrine Dysfunction of Pancreas • Thyroid and Parathyroid Gland Diseases • Pituitary Gland Diseases and Adrenal Gland Diseases **Reading:** • Chapter 21, Mechanism of Hormonal Regulation [Rogers] • Chapter 22, Alterations of Hormonal Regulation [Rogers] • Chapter 21, Drug Therapy for Diabetes [Workman] • Chapter 22, Drug Therapy for Thyroid and Adrenal Gland Problems [Workman] **Assignments:** • Sherpath Lesson: Disorders Due to Alterations of Thyroid, Parathyroid and Adrenal Function • Sherpath Lesson: Antidiabetic Drug Therapy • Sherpath Lesson: Insulin Drug Therapy • HESI Final Exam ProctorU Assignment **Quizzes:** • EAQ Mastery Quiz • EAQ Custom Quiz • NGN Case Studies	10 pt/each C/I 20 pt/each
14 **Disorders of the Reproductive System**	**Topics:** Disorders of the Reproductive System: • Review of A&P of Male Reproductive System • Adrenergic Antagonists • Vasodilators and Phosphodiesterase 5 inhibitors • Review of A&P of Female Reproductive System • Sexually Transmitted Diseases • Fluroquinolones and Metronidazole **Reading:** • Chapter 24, Structure and Function of the Reproductive Systems [Rogers] • Chapter 25, Alterations of the Female Reproductive Systems [Rogers] • Chapter 26, Alterations of the Male Reproductive System [Rogers] • Chapter 27, Sexually Transmitted Infections [Rogers] • Chapter 28, Drug Therapy for Male Reproductive Problems [Workman] • Chapter 29, Drug Therapy for Female Reproductive Problems [Workman]	

	Assignments: • Sherpath Lesson: Abnormalities, Hormonal Alterations, and Inflammatory Disorders in Females • Sherpath Lesson: Alterations of Sexual Maturation and Disorders of the Urethra and Penis • Sherpath Lesson: Disorders of the Prostate Gland and the Male Breast and Sexual Dysfunction **Quizzes:** • EAQ Mastery Quiz • EAQ Custom Quiz	10 pt/each 20 pt/each
15 **Final Exam**	**Assessment:** • HESI Final Exam	100
16 **Final Reflection**	**Assignment:** • Discussion: Final Reflection	5

*Pass rates may vary by program requirement- Refer to the University Catalog.

Graduate Grade Scale

A	90.00-100%
B	80.00-89.99%
F	0.00-79.99%

Grade Summary

Grade Summary	Weight	Method of Scoring
Assignments (Sherpath Lessons; Discussions)	5%	Points
Remediation	5%	Points
Quizzes (Sherpath EAQ Quizzes)	10%	Points
HESI Unit Exams	40%	Points
Final Exam	40%	Points
Total	**100%**	

HESI Conversion Chart

HESI Score	Percentage Conversion
>= 1100	100
1050 – 1099	95
1000 – 1049	90
950 – 999	85
900 – 949	82
875 – 899	80
850 – 874	78
800 – 849	75
750 – 799	71
700 – 749	67
600 – 699	59
500 – 599	50
400 – 499	41
< 400	32

POLICIES

*University policies, such as attendance philosophy, notification of absences, extenuating circumstances, accommodation requests, academic dishonesty, late policy, grading and grading symbols, and student conduct are included in the University catalog. Students should reference the catalog for the complete listing of policies.

**Note: In some cases, program and/or course specific information may be appended to the syllabus as an addendum. In these instances, students must consider the syllabus to be inclusive of any appended information, and as such, students must adhere to all course requirements as described in the document in its entirety.*

Proctoring Policy for Remote Testing

Examinations in the nursing program are proctored. The following applies to exams that are taken remotely or on-campus that are proctored exclusively via third-party proctoring services. Herzing University is committed to protecting each student's privacy while also maintaining the integrity of assessments used to determine student achievement of learning objectives. As part of its efforts to do so, Herzing uses third-party proctoring services with software that allows for recorded or live proctoring of exams, to maintain the integrity of the exams administered by the University.

The automated and live proctoring solutions monitor test takers via a webcam, microphone, browser, and device to uphold the integrity of the assessment. This process includes compliance with testing guidelines including securing the testing environment, monitoring test taker behavior, prohibiting speaking aloud, dropped internet connections, and other activities that may indicate irregular or unapproved testing activities. When the process includes a live proctor, irregular testing activities may result in the proctor ending the

testing session early. An institution-approved representative will determine if any further action is warranted based on University policy.

Any student accessing an exam without the use of the required proctoring service will receive a zero on the exam.

THIRD-PARTY TESTING

Assessment and remediation are critical components of nursing education. Students in the nursing program may be required to take third-party, standardized exams in an electronic format throughout the curriculum. These standardized tests are valid and reliable predictors of success on the NCLEX examination and provide valuable feedback concerning student strengths and weaknesses. Student learning outcome data identifies content areas that require remediation, allowing faculty to personalize student support and intervention. Courses that utilize third-party exams will incorporate the points earned on the test as a percentage of the final grade earned for the course as specified in the course syllabus.