

**UNMC College of Allied Health Professions**  
**Distance Course Offerings - 2023-2024 Academic Year**

**General CAHP Courses**

**CAHP 310 Medical Terminology (2 credit hours) Fall**

Please note, this is an upper level, **pre-requisite and/or professional development course.**

Students planning to enter a health care career need an introduction to medical language. This course will serve as such, as it teaches students to analyze the basic word structure of medical terms. Students will learn the meaning of individual parts, common prefixes, and suffixes, as well as combining vowels. Students will be able to understand new terms, knowing the meanings of individual parts, prefixes, suffixes, and how medical terms are structured. Students are required to have a webcam, computer microphone, and Microsoft PowerPoint for course assignments and exams.

**Prerequisites:** None

**ExamSoft:** No

**Proctor:** None/Not required

**Minimum enrollment:** 5 students

**Instructor:** Ellie Miller, BS, RT(R)(CT), RDMS, RVT

**Textbook:** Chabner DE. Medical Terminology: A Short Course. 8th Edition. Saunders Elsevier, St. Louis, MO: 2017. With Companion online resources (<http://evolve.elsevier.com>). **Paperback** ISBN:978-0-3234-4492-7eBook ISBN: 978-0-3234-7988-2

**CAHP 360 Pathogenic Medical Microbiology (4 cr) Fall, Spring, Summer (10 week course)**

This course is an introduction to medical microbiology and infectious disease. Topics will focus on the most common pathogenic microorganisms and the infections they cause in humans. The course concentrates primarily on bacteriology but includes introductory coverage of parasitology, mycology, and virology. The course provides opportunities for the student to enhance their knowledge base regarding laboratory functions by interpreting laboratory tests to diagnose infectious diseases.

**Prerequisites:** Previous Biology or permission from the instructor

**ExamSoft:** No

**Proctor:** Not required

**Instructors:** Linsey Donner, PhD, MPH, CPH, MLS(ASCP)<sup>CM</sup>, [Imdonner@unmc.edu](mailto:Imdonner@unmc.edu) & Marnie Imhoff, MEd, MBA, MLS(ASCP)<sup>CM</sup>, [mimhoff@unmc.edu](mailto:mimhoff@unmc.edu); **Teaching Assistant:** Paige Haberkon, MLS(ASCP)<sup>CM</sup>

**Textbook:** Mahon, C. R. & Lehman, D. C., (2023). Textbook of Diagnostic Microbiology (7th ed.). St. Louis, MO: Elsevier Health Sciences.

Hardcopy ISBN: 9780323829977 OR ebook ISBN: 9780323832717

**CAHP 400 BIOCHEMISTRY FOR HEALTH PROFESSIONALS (3 cr) Fall/Spring**

This online course includes the theory and application of basic concepts in biochemistry related to health and disease. Topics of study include the fundamental concepts of biochemistry, water, biological membranes, enzymes, hormones, and gene expression. The biosynthesis and metabolism of amino acids, proteins, carbohydrates, lipids, nucleic acids, and nucleotides will also be addressed as they relate to the human body.

**Prerequisites:** College General Biology and College Chemistry or permission of instructor

**ExamSoft:** No

**Proctor:** None/Not required

**Instructor:** Kevin McGuire, MHPTT, MLS(ASCP)<sup>CM</sup>

**Textbook:** Lehninger Principles of Biochemistry, 8th Edition, 2021; David L. Nelson; Michael M. Cox; w.h. freeman / Macmillan Learning, New York

ISBN-10: 1-319-22800-3

ISBN-13: 978-1-319-22800-2

**CAHP 415/615; HDS 815 COMMUNICATION & CULTURAL IN HEALTHCARE (3 cr) Summer**

Communication and Culture in Healthcare is an upper-level course for allied health professions students and other interested students that facilitates an understanding of the role of culture and diversity in the healthcare arena and explores the ethical and legal implications of these situations. The course enables students to explore the value of diversity in our society through self-examination of their own beliefs, values, and biases. Students will evaluate the dynamics involved when cultures interact and apply this to the healthcare setting. The course will include an in-depth assessment of the Culturally and Linguistically Appropriate Services [CLAS] standards and the cultural competency responsibilities of healthcare organizations.

**Prerequisites:** Admission in the UNMC College of Allied Health Professions and/or current registration/certification in an allied health profession or permission of the instructor

**ExamSoft:** No

**Proctor:** None/not required

**Instructor:** Sarah McBrien, PhD

**Required Textbook:**

Ruffin, A. & Lamar, L. (2021), You'll Never Believe What Happened to Lacey: Crazy Stories about Racism, Grand Central Publishing, New York, NY. ISBN: 978-1538719367. Also available in e-book and audiobook.

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**CAHP 420 Foundations of Information Technology in Healthcare (2 cr) Fall**

The online course provides an introductory overview and application of information technology in healthcare to improve learner understanding of the following key tenets: health informatics, electronic health records, healthcare data analytics, ethics and safety, computer and network architecture, information privacy and security, telemedicine, and medical imaging informatics.

**PLEASE NOTE:** This course follows an accelerated 8-week format, beginning at the start of the semester.

**Prerequisites:** Enrollment in the Radiography or Degree Advancement Option Programs or by instructor permission

**ExamSoft:** No

**Proctor:** None/not required

**Instructor:** Ashley Balliet, Assistant Professor, Radiography Education

**Textbook:** Hoyt, R.E., Hersh, W.R., (2022). Health informatics: Practical guide (8th ed.). Informatics Education. Print copy ISBN: 978-1-387-85475-2, eBook ISBN: 978-1-4357-8775-9

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**CAHP 422 Principles of Education for HC Professionals (2 cr) Spring**

The purpose of this course is to introduce the student to the principles of education for the purposes of preparing health care professionals to fulfill the role of clinical instructor and/or program director for their specific clinical discipline. The topics to be covered include curriculum development, the use of terminal objectives, developing test questions, preparation of lesson plans and assignments, and the development of audiovisual materials for didactic instruction.

**Prerequisites:** Admission in the UNMC College of Allied Health Professions and/or current registration/certification in an allied health profession and/or instructor permission.

**ExamSoft:** N/A

**Proctor:** None/not required

**Instructor:** Karen Honeycutt, PhD, MEd, MLS(ASCP)<sup>CM</sup>SM<sup>CM</sup>

**Textbook:** N/A

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**CAHP 423/723; HDS 823 Principles of Critical Inquiry (2 cr) 423 – Spring; 723 - Fall**

This course is designed to develop the students' abilities to read and appraise published research studies. The primary focus will be on learning research study designs, basic statistical methods, and the use of research information for clinical decision-making in evidence-based practice.

**Prerequisites:** None

**ExamSoft:** Yes

**Proctor:** None/not required

**Instructor:** Jana Koth, MPH, R.T.(R)(T)

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**Textbook:** Polgar, S & Thomas, S. 2020. Introduction to Research in the Health Sciences, 7th edition, Elsevier. ISBN-13: 978-0702074936

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**CAHP 426/626; HDS 826 Health Care Ethics & Critical Thinking (3 cr) Fall/Spring**

This upper-level course introduces ethical issues that Allied Health professionals can expect to encounter during their education and career. It covers such areas of concern as confidentiality, informed consent, responsible practice, professionalism, culture differences, handling mistakes, difficult cases, and key legal aspects of these issues. To assist students in resolving issues, the course identifies and applies key principles of critical thinking. The course trains students in the use of these principles in ethics and professionalism. The course is designed to improve the ability of students to reason soundly in professional ethics, to be familiar with the health professional ethics literature, and to communicate clearly about ethical values, integrity, and judgement.

**Prerequisites:** None

**ExamSoft:** Yes

**Proctor:** None/not required

**Instructor:** Laura J. Dart, PA-C, MPAS

**Textbook:** (NOT Required)

Doherty R, Purtilo R. Ethical Dimensions in the Health Professions (6th ed). St Louis, Missouri: Elsevier Saunders, 2015.

Pozgar G. Legal and Ethical Issues for Health Professionals (4th ed). Burlington, Massachusetts: Jones & Bartlett Learning, 2017

Fletcher JC, Spencer EM, and Lombardo PA (Eds). Fletcher's Introduction to Clinical Ethics (3rd ed). Hagerstown, Maryland: University Publishing Group, 2005.

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**CAHP 430/630; HDS 830 Scanning the Health Care Environment (3 cr) Fall**

This upper-level course in the College of Allied Health Professions is designed to provide allied health professions students with an overview of health care delivery in the United States. The course will explore many factors that influence the delivery of health care, including the determinants of health, the financing of health care, and various health care settings. The course will examine the evolution of health care in the United States and will project issues that will affect health care in the future. Allied health professionals are affected by such changes in both their personal and professional lives. It will be the challenge of health care professionals of the future to consider the value of Medicare and Medicaid, the handling of insurance issues, the creation of policy governing health care delivery and the reduction of health care disparities. This course is designed to assist students in gaining an understanding of why change is occurring, recognizing trends in their particular professional environment, and identifying strategies to affect the changes to assure the patient's access to quality care in an economical environment.

**Prerequisites:** None

**ExamSoft:** No

**Proctor:** None/not required

**Instructor:** Ashley Balliet, MEd, RT(R)(M), LSSGB & Christina Gregg, BS, CNMT, RT(R)(N)(CT)

**Textbook:** Shi, Leiyu, Singh, Douglas, (2019) Delivering Health Care in America: A Systems Approach, Jones and Bartlett, Seventh Edition, ISBN-13: 9781284124491

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**CAHP 431/631; HDS 831 Management in Health Care (3 cr) Spring**

This course introduces allied health students and practitioners to the concepts of organizational theory and behavior as they apply to health care settings. The topics to be covered include personality types in the workplace, leadership and management, the principles of employee motivation, team performance and development, organizational culture, planning and implementing organizational change, human resource management practices, continuous quality improvement, financial management, and risk management.

**Prerequisites:** Enrollment in a College of Allied Health Professions program or permission of the instructor

**ExamSoft:** No

**Proctor:** None/not required

**Instructor:** Cynthia Arnold, MSN RN-BC, PMC, LSSGB & Christina Gregg, BS, CNMT, RT(R)(N)(CT)

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**Textbook:** No textbook required for the course

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### **General Medical Imaging & Therapeutic Science Courses**

#### **MIT 410/610R Sectional Anatomy and Pathology I (4 cr) Fall**

This course is designed to give students a basic understanding of sectional anatomy and pathology requisite to competently perform computed tomography and magnetic resonance imaging procedures. To enable the students to create optimal diagnostic images, this course provides the students with the ability to identify normal human anatomical structures in sectional images, and the ability to distinguish common pathological processes and variant anatomy. The sectional anatomy and pathology covered in this course will include neck/spine, bones (osseous system), joints, cranial nerves and head (nervous systems).

**Prerequisites:** Admission & good standing within the MRI, CVIT or DAO Program OR permission from the instructor

**Examsoft:** Yes

**Proctor:** Required

**Instructor:** Michael Dutt, MHPTT, RT(R)(MR)

**Required Textbook/Materials:** Sectional Anatomy for Imaging Professionals, 4th edition, Kelley & Peterson, Elsevier, 2018; ISBN-13: 978-0323414876

Radiographic Pathology for Technologists, 8th edition, Kowalczyk, Elsevier, 2021; ISBN-13: 978-0323791298

**Recommended Textbook:** Workbook for Sectional Anatomy for Imaging Professionals, 4th edition, Kelley & Peterson, Elsevier, 2018; ISBN-13: 978-0323569613

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#### **MIT 411/611R Sectional Anatomy and Pathology II (4 cr) Spring**

This course is a continuation of RSTE 410R/610R and is designed to give students a basic understanding of sectional anatomy and pathology requisite to competently perform computed tomography and magnetic resonance imaging procedures. To enable the students to create optimal diagnostic images, this course provides the students with the ability to identify normal human anatomical structures in sectional images, and the ability to distinguish common pathological processes and variant anatomy. The sectional anatomy and pathology covered in this course will include chest (respiratory system & lymphoid system), abdomen (gastrointestinal system) and pelvis (genitourinary & reproductive systems).

**Prerequisites:** Admission & good standing within the MRI, CVIT or DAO Program OR permission from the instructor

**Examsoft:** Yes

**Proctor:** Required

**Instructor:** Michael Dutt, MHPTT, RT(R)(MR)

**Required Textbook/Materials:** Sectional Anatomy for Imaging Professionals, 4th edition, Kelley & Peterson, Elsevier, 2018; ISBN-13: 978-0323414876

Radiographic Pathology for Technologists, 8th edition, Kowalczyk, Elsevier, 2021; ISBN-13: 978-0323791298

**Recommended Textbook:** Workbook for Sectional Anatomy for Imaging Professionals, 4th edition, Kelley & Peterson, Elsevier, 2018; ISBN-13: 978-0323569613

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#### **MIT 413R Radiologic Contrast Agents (2 cr) Summer**

This course provides students with a study of different types of contrast media; how each is used to delineate specific anatomic parts or organs; common radiographic procedures using contrast media; indications & contraindications; patient prep & care. This course presents the physical principles of contrast media related to imaging, the physical and chemical properties of contrast media solutions, classification/chemistry/pharmacology of contrast agents, pharmacodynamics, the pharmacokinetics and biopharmaceutics of contrast media, routes of drug administration, infection prevention and control, anxiety/phobia/conscious sedation, pharmacology of emergency medications, contrast-related nephrotoxicity, mechanisms of contrast media reactions, radiographic contrast media terminology, and the economic and legal issues involving contrast media and radiographic procedures.

**Prerequisites:** Enrollment in a health science program or radiography program

**Examsoft:** Yes

**Proctor:** None/not required

**Instructor:** Iman M. Ahmad, PhD

**Textbook:** Jensen SC, Peppers MP. (2006) Pharmacology and drug administration for Imaging Technologists, 2nd edition. Mosby Elsevier. ISBN # 978-0-323-03075-5

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### **MIT 414/614T Oncology Sectional Anatomy and Pathology I (2 cr) Fall**

This course is designed to give students a basic understanding of sectional anatomy and pathology requisite to competently perform radiation therapy treatment and imaging procedures. To enable the students to create optimal diagnostic images, this course provides the students with the ability to identify normal human anatomical structures in sectional images, and the ability to distinguish common pathological processes and variant anatomy. The sectional anatomy and pathology covered in this course will include chest (respiratory system) and abdomen (gastrointestinal system).

**Prerequisites:** Admission & good standing within the Radiation Therapy Program or DAO Program OR permission from the instructor

**Examsoft:** Yes

**Proctor:** Required

**Instructor:** Tanya Custer, MS, R.T.(R)(T)(ARRT) & Jana Koth, MS, R.T.(R)(T)(ARRT)

**Required Textbook/Materials:** Sectional Anatomy for Imaging Professionals, 4th edition, Kelley & Peterson, Elsevier, 2018; ISBN-13: 978-0323414876

Pathology for the Health Professions, 6th edition, Damjanov, Perry & Perry, Elsevier, 2022; ISBN: 978-0-323-65412-8

**Recommended Textbook:** Workbook for Sectional Anatomy for Imaging Professionals, 4th edition, Kelley & Peterson, Elsevier, 2018; ISBN-13: 978-0323569613

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### **MIT 415/615T Oncology Sectional Anatomy and Pathology II (2 cr) Spring**

This course is a continuation of MIT 414/614T and is designed to give students a basic understanding of sectional anatomy and pathology requisite to competently perform radiation therapy treatment and imaging procedures. To enable the students to create optimal diagnostic images, this course provides the students with the ability to identify normal human anatomical structures in sectional images, and the ability to distinguish common pathological processes and variant anatomy. The sectional anatomy and pathology covered in this course will include pelvis (urinary & reproductive systems), spine/ head (nervous system) and neck/neck lymphatics.

**Prerequisites:** Admission & good standing within the Radiation Therapy Program or DAO Program OR permission from the instructor

**Examsoft:** Yes

**Proctor:** Required

**Instructor:** Tanya Custer, MS, R.T.(R)(T)(ARRT) & Jana Koth, MS, R.T.(R)(T)(ARRT)

**Required Textbook/Materials:** Sectional Anatomy for Imaging Professionals, 4th edition, Kelley & Peterson, Elsevier, 2018; ISBN-13: 978-0323414876

Pathology for the Health Professions, 6th edition, Damjanov, Perry & Perry, Elsevier, 2022; ISBN: 978-0-323-65412-8

**Recommended Textbook:** Workbook for Sectional Anatomy for Imaging Professionals, 4th edition, Kelley & Peterson, Elsevier, 2018; ISBN-13: 978-0323569613

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### **MIT 423/623S Pathology for the Health Care Professional (2 Cr) Fall, Spring, Summer**

This course allows an in-depth investigation into pathology that may be encountered by the health care professional in clinical practice. The relationship of clinical symptoms, labs values, and imaging findings will be covered for each disease process.

**Prerequisites:** Current American Registry of Diagnostic Medical Sonography (ARDMS) or American Registry of Radiologic Technologist (ARRT) credentials OR permission of the instructor.

**Examsoft:** Yes

**Proctor:** None/not required

**Instructor:** Tanya Custer, MS, R.T.(R)(T); Kim Michael, MA, RT(R), RDMS, RVT, FSDMS; Lauren Riggs BS, RDMS, RVT

**Textbooks:** None

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### **MIT 438/638N Advanced Radiation Biology (3 cr) Spring**

This course is directed to senior level students enrolled in the Radiation Therapy and BSMITS degree completion programs. Content will include review and continuation of basic radiobiology involved with radiographic and nuclear medicine imaging, and radiation therapy. It will address the radiobiological/biophysical events at the cellular and subcellular levels. Analysis of factors influencing radiation response of cells and tissues will be covered. Construction and evaluation of radiobiological data on graphs, charts, and survival curves will be included. Relationships of time, dose, fractionation, volume, and site as they apply to both normal and tumor biology will be evaluated. The principles of radiation response modifiers, hyperthermia, chemotherapy, and their influence on biologic effects in combination with radiation will be examined. Note: This is an interdisciplinary course for imaging and therapeutic science modalities. Students are expected to learn biological considerations specific to several modalities within the imaging science professions

**Prerequisites:** Enrollment & good standing within a Medical Imaging & Therapeutic Sciences or BSMITS DAO Program OR permission from the instructor. College Biology is recommended.

**Examsoft:** Yes

**Proctor:** Required

**Instructor:** Iman M. Ahmad, PhD

**Textbook:** *Radiobiology for the Radiologist* by Eric J. Hall, Amato J. Giaccia, 8<sup>th</sup> Ed., Lippincott Williams & Wilkins, 2019. ISBN: 978-1-496335418

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### **MIT 440R Case Studies & Journal Review (2 cr) Summer**

This is an upper-level course designed for imaging science students in a baccalaureate degree program to facilitate analytical and critical thinking skills, apply their written and oral communication skills, and foster professional development and growth. Students will research, identify, and form a differential diagnosis for clinical cases imaged by various diagnostic modalities. Students will study and critique medical cases and professional peer-reviewed journal articles. Students will review clinical cases to gain a better understanding of their scope of practice/role as a radiation science professional in an integrated health care system.

**Prerequisites:** Enrollment in the BSMITS DAO Option or permission from the instructor

**Examsoft:** No

**Proctor:** None/not required

**Instructor:** Tanya Custer, MS, R.T.(R)(T)

**Textbook:** None

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### **MIT 451/651R MRI Safety (1 cr) Fall, Spring, Summer**

This course is designed to facilitate an understanding of magnetic resonance imaging (MRI) safety considerations and practices. Concepts covered include: 1) MRI contrast administration 2) static magnetic field 3) radiofrequency magnetic field 4) gradient magnetic field 5) patient and personnel screening 6) equipment safety and 7) emergencies in MRI. \*\*Access to an MRI Department is required.

**Prerequisites:** Enrollment in the UNMC Magnetic Resonance Imaging Program or by permission of instructor.

**Examsoft:** Yes

**Proctor:** None/not required

**Instructor:** Stephanie Vas, MA, R.T.(R)(CT)(MR), MRSO

**Required Textbook:** None

**Optional Textbooks:** Westbrook, C.& Talbot, J. (2019). *MRI in Practice* (5th Ed.). Hoboken, NJ: John Wiley & Sons Ltd. ISBN: 978-1119391968

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## **Cardiovascular Interventional Technology Courses**

### **MITS 457/657R Cardiovascular-Interventional Technology I (3 cr) Fall**

This didactic course includes instruction over: the history of angiography, medical and legal implications of angiographic procedures, pharmaceuticals and contrast agents used in interventional radiology, patient care procedures, quality control, angiographic equipment, and image enhancement techniques.

**Prerequisites:** Successful admission to CVIT program or by approval of the CVIT director. Student must have a certification in Radiography from the American Registry of Radiologic Technologists.

**Examsoft:** Yes

**Proctor:** Required

**Instructor:** Michael Dutt, MHPTT, RT(R)(MR)

**Textbooks:**

1. Kandarpa K, Machan L. Handbook of Interventional Radiologic Procedures 6th Ed. (2023). Philadelphia Pa: Wolters Kluwer. ISBN 978-1975146269
2. Kaufman J., Lee M., Vascular and Interventional Radiology: The Requisites 2nd Ed. (2013). Philadelphia, PA: Elsevier Saunders. ISBN 978-0323045841

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### **MITS 458/658R Cardiovascular -Interventional Technology II (3 cr) Spring**

This didactic course includes instruction over: procedural angiography including; imaging of the heart, pulmonary vascular system, thoracic aorta, central venous access procedures, cardiac-interventional, vascular-interventional, and nonvascular interventional procedures.

**Prerequisites:** Successful admission to CVIT program or by approval of the CVIT director. Student must have a certification in Radiography from the American Registry of Radiologic Technologists. Successful completion of MITS 457R, Vascular-Interventional Technology I, or permission of the program instructor; proctor required

**Examsoft:** YES

**Proctor:** Required

**Instructor:** Michael Dutt, MHPTT, RT(R)(MR)

**Textbooks:**

1. Kandarpa K, Machan L. Handbook of Interventional Radiologic Procedures 6th Ed. (2023). Philadelphia Pa: Wolters Kluwer. ISBN 978-1975146269
2. Kaufman J., Lee M., Vascular and Interventional Radiology: The Requisites 2nd Ed. (2013). Philadelphia, PA: Elsevier Saunders. ISBN 978-0323045841

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## **Computed Tomography Courses**

### **MITS 460/660R CT Protocols and Cross-Sectional Anatomy (2 cr) Fall, Spring, Summer**

This course includes proper CT patient preparation, patient positioning, and technical knowledge. Technical parameters will include neuro imaging of the brain and spine; body imaging of the chest, abdomen, pelvis, neck, and imaging of the extremity and joints, vascular imaging of the brain, neck, body, and extremities and 3-D reconstruction.

**Prerequisites:** Instructor approval

**Examsoft:** Yes

**Proctor:** None/not required

**Instructor:** Stephanie Vas, MA, R.T.(R)(CT)(MR), MRSO

**Textbook:** Romans, L. *Computed Tomography for Technologists: A Comprehensive Text, 2<sup>nd</sup> Ed.* (2019). Lippincott Williams & Wilkins. ISBN: 978-1496375858

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### **MITS 461/661R CT Physics (1 cr) Fall, Spring, Summer**

This course will provide a comprehensive overview of the physics and basic theory of operation of computed tomography. Topics covered include historical perspectives, computing and digital image processing concepts, principles, data acquisition, and spiral-helical scanning, image reconstruction, image quality, radiation dose, quality control, artifacts, and specialty exams.

**Prerequisites:** Instructor approval

**Examsoft:** Yes

**Proctor:** None/not required

**Instructor:** Stephanie Vas, MA, R.T.(R)(CT)(MR), MRSO

**Textbook:** Romans, L. *Computed Tomography for Technologists: A Comprehensive Text, 2<sup>nd</sup> Ed.* (2019). Lippincott Williams & Wilkins. ISBN: 978-1496375858

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### **Diagnostic Medical Sonography Courses**

#### **MIT 407/607S Advanced Obstetrical Ultrasound (2 cr) Spring**

This course is designed to give the student a working knowledge of obstetrics as it relates to sonography. The student is instructed on fetal embryology, normal anatomy, gestational age assessment, anomalies of each organ system, uteroplacental anatomy and physiology, and maternal and fetal complications associated with pregnancy.

**Prerequisites:** Instructor approval

**Examsoft:** Yes

**Proctor required:** None/not required

**Instructor:** Kim Michael, MA, RT(R), RDMS, RVT, FSDMS & Lauren Riggs BS, RDMS, RVT

**Textbooks:** Woodward, *Diagnostic Imaging: Obstetrics*, 4th Ed., 2021, ISBN-13: 978-0323793964

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#### **MIT 408/608S Gynecological Ultrasound (1 cr) Spring**

This course is designed to give the student a working knowledge of patient care preparation, normal female pelvic anatomy, reproductive physiology, gynecological pathology and scanning techniques. Clinical application of gynecological sonography will be emphasized in this course.

**Prerequisites:** Instructor approval

**Examsoft:** Yes

**Proctor required:** None/not required

**Instructor:** Kim Michael, MA, RT(R), RDMS, RVT, FSDMS & Lauren Riggs BS, RDMS, RVT

**Textbooks:** Ovel, *Sonography Exam Review*, 3rd ed 2020, ISBN 9780323582285

Rumack, *Diagnostic Ultrasound*, Vol. 1 & 2, 5th Ed., 2017, Elsevier Mosby, ISBN 9780323401715 (recommended)

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#### **MIT 409/609S Genitourinary Ultrasound (1 cr) Spring**

This course is designed to give the student an understanding of anatomy, physiology, and pathology of the genitourinary system. Clinical application of genitourinary Sonography will be emphasized in this course.

**Prerequisites:** Current credentialing by the American Registry of Diagnostic Medical Sonography (ARDMS) or American Registry Of Radiologic Technologist (ARRT), or permission of the Diagnostic Medical Sonography program director

**Examsoft:** Yes

**Proctor required:** None/not required

**Instructor:** Kim Michael, MA, RT(R), RDMS, RVT, FSDMS & Lauren Riggs BS, RDMS, RVT

**Textbooks:** Ovel, *Sonography Exam Review*, 3rd ed 2020, ISBN 9780323582285

Rumack, *Diagnostic Ultrasound*, Vol. 1 & 2, 5th Ed., 2017, Elsevier Mosby, ISBN 9780323401715 (Recommended)

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#### **MIT 414S Introduction to Sonography (2 cr) Fall, Spring, Summer**

This course is designed to give the allied health professions student an introduction to the field of sonography. The course will begin by covering the physics and instrumentation of ultrasound. Students will also learn sonographic anatomy, exam preparations, scanning techniques, and pathology in the areas of abdomen, obstetrics, gynecology, neurosonography, and high-resolution sonography.

**Prerequisites:** Instructor Approval

**Examsoft:** No

**Proctor required:** None/not required

**Instructor:** Kim Michael, MA, RT(R), RDMS, RVT, FSDMS & Lauren Riggs BS, RDMS, RVT

**Textbook:** None

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### **MIT 422/622s Vascular Anatomy & Physiology (3 cr) Fall, Spring, Summer**

The course is designed to provide the student with a working knowledge of vascular sonography. Course content will cover hemodynamics, anatomy, and pathology of the cerebral, extremity, abdominal and pelvic vessels. Students will also be introduced to exam preps and scanning techniques.

**Prerequisites:** Admission to the Vascular Sonography Program and/or permission of the instructor.

**Examsoft:** No

**Proctor required:** None/not required

**Instructor:** Kim Michael, MA, RT(R), RDMS, RVT, FSDMS, Jesse Roettger BS, RDCS, RVT & Lauren Riggs BS, RDMS, RVT

**Textbook:** Kupinski, The Vascular System, 3rd ed. 2023, ISBN: 9781975175269

Kupinski, Workbook for Diagnostic Medical Sonography: A Guide to the Vascular System, 3rd ed. 2023, ISBN: 9781975177072.

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### **MIT 424/624S Breast Sonography (2 cr) Fall, Spring, Summer**

This course is designed to prepare the registered sonographer or radiographer for the Breast Sonography Certification Exam offered by ARDMS or ARRT. The course will offer a comprehensive review of the sonographic principles and instrumentation, sonographic anatomy and pathology of the breast, and interventional procedures/treatment. This course will provide only didactic instruction and will not include a clinical component.

**Prerequisites:** Current credentialing by the American Registry of Diagnostic Medical Sonography (ARDMS), the American Registry Of Radiologic Technologist (ARRT), or permission of the Diagnostic Medical Sonography program director.

**Examsoft:** No

**Proctor required:** None/not required

**Instructor:** Kim Michael, MA, RT(R), RDMS, RVT, FSDMS Angela Ridenour BS, RDMS & Lauren Riggs BS, RDMS, RVT

**Textbook:** No text required

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### **MIT 432/632S Abdominal Ultrasound (3 cr) Fall**

This course is designed to provide the student with a working knowledge of gastrointestinal sonography. The student is provided with instruction in sectional anatomy, scanning techniques, physiology, & pathophysiology of the liver, gallbladder, biliary tract, pancreas, & spleen.

**Prerequisites:** Current credentialing by the American Registry of Diagnostic Medical Sonography (ARDMS), the American Registry Of Radiologic Technologist (ARRT), or permission of the Diagnostic Medical Sonography program director.

**Examsoft:** Yes

**Proctor required:** None/not required

**Instructor:** Kim Michael, MA, RT(R), RDMS, RVT, FSDMS & Lauren Riggs BS, RDMS, RVT

**Textbooks:** Ovel, Sonography Exam Review, 3<sup>rd</sup> ed 2020, ISBN 9780323582285

Rumack, Diagnostic Ultrasound, Vol. 1 & 2, 5th ed., 2017, Elsevier Mosby, ISBN9780323401715  
(Recommended)

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### **MIT 437/637S Cardiac Anatomy & Physiology (3 cr) Fall**

This course is designed to provide the student with a working knowledge of cardiac sonography. The student is provided with instruction in anatomy, scanning techniques, physiology, & pathophysiology of the heart.

**Prerequisites:** Satisfactory completion of an accredited sonography program and ARDMS or ARRT(S) certification. Permission of the program director required.

**Examsoft:** No

**Proctor required:** None/not required

**Instructor:** Kim Michael, MA, RT(R), RDMS, RVT, FSDMS & Walker R. Thomas, MHPTT, RDCS, FASE

**Textbooks:** *Textbook of Clinical Echocardiography* 6<sup>th</sup> ed. 2018, Otto ISBN: 9780323481823 (eBook), ISBN: 9780323480482 (Hardcover)

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### **MIT438/638S Cardiac Pathology & Hemodynamics (3 cr) Spring**

This course is designed to prepare the registered sonographer for the Adult Echocardiography Certification Exam offered by the ARDMS or CCI. The course will offer a comprehensive review of cardiac pathology and the related sonographic findings. This course does not offer a clinical component.

**Prerequisites:** Satisfactory completion of an accredited sonography program and ARDMS or ARRT(S) certification. Permission of the program director required.

**Examsoft:** No

**Proctor required:** None/not required

**Instructor:** Kim Michael, MA, RT(R), RDMS, RVT, FSDMS & Walker R. Thomas, MHPTT, RDCS, FASE

**Textbooks:** *Textbook of Clinical Echocardiography* 6<sup>th</sup> ed. 2018, Otto ISBN: 9780323481823 (eBook), ISBN: 9780323480482 (Hardcover)

Aehlert, B. *Pocket References for ECGs Made Easy*, 4th Ed., ISBN 978-0323069281

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### **MIT 443/643S Fetal Echocardiography (2 cr) Fall, Spring**

This course is designed for registered sonographers who are preparing to take their Fetal Echocardiography credentialing examination. The course will cover anatomy, physiology, and pathology of the fetal heart. Students will also learn exam views and image evaluation. This course will provide only didactic instruction and will not include clinical experience.

**Prerequisites:** Current credentialing by the American Registry of Diagnostic Medical Sonography (ARDMS), the American Registry Of Radiologic Technologist (ARRT), Cardiovascular Credentialing International (CCI) or permission of the Diagnostic Medical Sonography program director.

**Examsoft:** No

**Proctor required:** None/not required

**Instructor:** Kim Michael, MA, RT(R), RDMS, RVT, FSDMS & Lauren Riggs BS, RDMS, RVT

**Textbooks:** Abuhamad, AZ *A Practical Guide to Fetal Echocardiography*, 3<sup>rd</sup> ed. 2015. ISBN 9781451176056

\*\*this is available through the McGoogan library at no cost to the student, please contact the instructor - <https://ebookcentral.proquest.com/lib/unmc/detail.action?docID=4786251>

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### **MIT 451/651s Ultrasound Physics II (1 cr) Spring**

This course is designed to provide the student with an understanding of the fundamental principles of ultrasound physics & instrumentation. Topics to be covered include hemodynamics, Doppler, color Doppler, quality assurance, bioeffects and new advances in technology. Concepts will focus on applicability in the clinical setting and preparation for the registry examination.

**Prerequisites:** MIT 401S/601S Ultrasound Physics I and/or permission of the instructor.

**Examsoft:** Yes

**Proctor required:** None/not required

**Instructor:** Kim Michael, MA, RT(R), RDMS, RVT, FSDMS & Lauren Riggs BS, RDMS, RVT

**Textbooks:** Required: Penny, *Examination Review for Ultrasound*, 2<sup>nd</sup> ed., 2018, Wolters Kluwer, ISBN: 149637732X; Recommended: Edelman, *Understanding Ultrasound Physics*, 4<sup>th</sup> ed., 2012, EPS, Inc. ISBN 0962644455

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### **MIT 455/655s High Resolution Sonography (1 cr) Summer**

This course is designed to provide the student with a working knowledge of anatomy, physiology, & pathology related to the scrotum, penis, retroperitoneum, RE system, musculoskeletal system, thyroid, parathyroid, GI tract, breast, abdominal wall, diaphragm, & peritoneum. Scanning techniques will also be covered for each topic.

**Prerequisites:** Instructor approval

**Examsoft:** Yes

**Proctor required:** None/not required

**Instructor:** Kim Michael, MA, RT(R), RDMS, RVT, FSDMS & Lauren Riggs BS, RDMS, RVT

**Textbooks:** Ovel, *Sonography Exam Review*, 3<sup>rd</sup> ed 2020, ISBN 9780323582285

Rumack, Diagnostic Ultrasound, Vol. 1 & 2, 5th ed., 2017, Elsevier Mosby, ISBN9780323401715 (recommended)

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**MIT 456/656s Neurosonography (2 cr) Summer**

This course is designed to give the student a working knowledge of the embryologic development, anatomy, and physiology of the CNS, CSF formation and circulation scheme, blood supply to the brain, scanning techniques, pathology of the neonatal brain and spine, and medical care of the neonate during scanning.

**Prerequisites:** Instructor approval

**Examssoft:** No

**Proctor required:** None/not required

**Instructor:** Kim Michael, MA, RT(R), RDMS, RVT, FSDMS

**Textbook:** Rumack, Diagnostic Ultrasound, Vol. 1 & 2, 5th ed., 2017, Elsevier Mosby, ISBN9780323401715 (recommended)

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**MIT 457/657s Pediatric Sonography (2 cr) Fall, Spring, Summer**

This course focuses on the use of ultrasound in the pediatric patient. It is designed to provide the student a working knowledge of patient care practices and scanning techniques related to pediatric imaging. Anatomy, pathology, and sonographic correlation will be covered for organs/structures related to the central nervous system, neck, thorax, abdomen, pelvis, and musculoskeletal system.

**Prerequisites:** Current credentialing by the American Registry of Diagnostic Medical Sonography (ARDMS) or American Registry of Radiologic Technologist (ARRT), or permission of the Diagnostic Medical Sonography program director.

**Examssoft:** No

**Proctor required:** None/not required

**Instructor:** Kim Michael, MA, RT(R), RDMS, RVT, FSDMS & Lauren Riggs BS, RDMS, RVT

**Textbook:** Rumack, Diagnostic Ultrasound, Vol. 1 & 2, 5th ed., 2017, Elsevier Mosby, ISBN9780323401715

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**MIT 458/658S Musculoskeletal Sonography (2 cr) Fall, Spring, Summer**

This course focuses on the use of ultrasound for imaging the musculoskeletal system. It is designed to provide the student with a basic working knowledge and the skills required to image and diagnose musculoskeletal-related conditions. Key concepts to be covered include scanning techniques, anatomy and pathology with sonographic correlation, and invasive procedures.

**Prerequisites:** Current credentialing by the American Registry of Diagnostic Medical Sonography (ARDMS) or American Registry Of Radiologic Technologist (ARRT), or permission of the Diagnostic Medical Sonography program director.

**Examssoft:** No

**Proctor required:** None/not required

**Instructor:** Kim Michael, MA, RT(R), RDMS, RVT, FSDMS & Lauren Riggs BS, RDMS, RVT

**Textbook:** *Fundamentals of Musculoskeletal Ultrasound*, 3rd ed., Jacobsen, ISBN 9780323445252.

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**MIT 462/662s Vascular Pathology & Hemodynamics (2 cr) Fall, Spring**

This course will cover pathology and pathophysiology of complex diseases of the cerebral, peripheral, and abdominal vascular systems along with the associated clinical, hemodynamic, and sonographic findings.

**Prerequisite:** Admission to the Cardiac Sonography Program and /or permission of the instructor.

**Examssoft:** No

**Proctor required:** None/not required

**Instructor:** Kim Michael, MA, RT(R), RDMS, RVT, FSDMS & Lauren Riggs BS, RDMS, RVT

**Textbook:** Kupinski, *The Vascular System*, 3rd ed. 2023, ISBN: 9781975175269

Kupinski, *Workbook for Diagnostic Medical Sonography: A Guide to the Vascular System*, 3rd ed. 2023, ISBN: 9781975177072

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## **Magnetic Resonance Imaging Courses**

### **MIT 419/619R MRI Physics & Systems I (2 cr) Fall**

This course is Canvas based and is designed for use within a magnetic resonance imaging program (MRI), or related health science profession. Course content will include a comprehensive MRI safety overview, an introduction of fundamental MRI concepts including magnetization, image contrast, image weighting, and introduction to pulse sequences, instrumentation, spatial encoding principles and imaging parameters and their trade-offs.

**Prerequisites:** Enrollment in the UNMC Magnetic Resonance Imaging Program, BSMITS DAO Option or by permission of instructor.

**Examsoft:** Yes

**Proctor:** Required

**Instructor:** Michael Dutt, MHPTT, RT(R)(MR)

**Textbook:** Westbrook, C. & Talbot, J. *MRI in Practice*, 5<sup>th</sup> ed. (2019) ISBN-13: 978-1119391968

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### **MIT 420/620R MRI Physics & Systems II (2 cr) Spring**

This course is a continuation of MIT 419/619R and is for the student who is enrolled in a Magnetic Resonance Imaging (MRI) program or related health science discipline. Content will build upon principles covered in MIT 419/619 and establishing understanding of spin echo and gradient echo pulse sequences, image artifacts and methods to correct them, and advanced imaging procedures including contrast and contrast procedures, diffusion, perfusion, fMRI, and spectroscopy.

**Prerequisites:** MIT 419/619R MRI Physics & Systems I required

**Examsoft:** Yes

**Proctor:** Required

**Instructor:** Michael Dutt, MHPTT, RT(R)(MR)

**Textbook:** Westbrook, C. & Talbot, J. *MRI in Practice*, 5<sup>th</sup> ed. (2019) ISBN-13: 978-1119391968

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### **MIT 425/625R MRI Positioning & Protocols I (2 cr) Fall**

This course is intended as the first semester in a two-semester course. It is directed to the student who is enrolled in a Magnetic Resonance Imaging (MRI) program or related health science discipline. Content will include materials related to MRI safety and patient care, cross sectional anatomy, patient preparation, patient positioning, MRI instrumentation, and technical parameters associated with MR imaging of the brain, spine, abdomen, and musculoskeletal exams. \*\*Students enrolled in this course must have access to an MRI scanner in order to complete various protocol assignments.

**Prerequisites:** None

**Examsoft:** Yes

**Proctor:** Required

**Instructor:** Stephanie Vas, MA, R.T.(R)(CT)(MR), MRSO

**Textbook:** Westbrook, C. *Handbook of MRI Technique*, 5<sup>th</sup> ed. (2022) ISBN 978-1119759331

**Optional Textbooks:** Westbrook, C. & Talbot, J. *MRI in Practice*, 5<sup>th</sup> ed. (2019) ISBN-13: 978-1119391968

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### **MIT 441/641R MRI Positioning & Protocols II (2 cr) Spring**

This course is a continuation of MIT 425/625R MRI Positioning & Protocols I. Content will include materials related to MRI safety and patient care, cross sectional anatomy, patient preparation, patient positioning, MRI instrumentation, and technical parameters associated with MR imaging of the upper and lower extremities, soft tissue, and bony pelvis, cardiac, chest, and breast MRI. Content will also include material related to MRI quality control procedures. \*\*Students enrolled in this course must have access to an MRI scanner in order to complete various protocol assignments.

**Prerequisites:** MIT 425R MRI Positioning & Protocols I

**Examsoft:** Yes

**Proctor:** Required

**Instructor:** Stephanie Vas, MA, R.T.(R)(CT)(MR), MRSO

**Textbook:** Westbrook, C. *Handbook of MRI Technique*, 5<sup>th</sup> ed. (2022) ISBN 978-1119759331

**Optional Textbooks:** Westbrook, C. & Talbot, J. *MRI in Practice*, 5<sup>th</sup> ed. (2019) ISBN-13: 978-1119391968

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### **Medical Laboratory Science Courses**

#### **MLS 300 Introduction to Medical Laboratory Science (1 cr) Fall, Spring, Summer**

This course is an introduction to the medical laboratory science (MLS) profession. Emphasis is placed on the MLS professional's role in today's healthcare systems, including the evaluation and communication of diagnostic data for providers to make quality patient care decisions. The clinical laboratory areas of urinalysis, chemistry, hematology/coagulation, microbiology, immunology, molecular diagnostics/serology, and immunohematology will be discussed. Specimen collection and processing, quality control, regulatory concepts, historical perspectives, professional ethics, and desirable personal attributes/characteristics are also introduced.

**Prerequisites:** None

**ExamSoft:** No

**Proctor:** Not required

**Instructor:** Susanne Bishop, MS, MLS(ASCP)<sup>CM</sup>SBB<sup>CM</sup>, [susanne.bishop@unmc.edu](mailto:susanne.bishop@unmc.edu)

**Textbook:** Not required

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#### **MLS 302 Introduction to Hematology (3 cr) Fall, Spring**

This online course includes the theory and application of basic concepts in hematology and hemostasis. The theory and basic principles of procedures performed in the clinical hematology laboratory will be introduced as well as evaluation of test data to detect possible disease. Introduction to quality control measures will be addressed.

**Prerequisites:** General Biology, Physiology and/or Cell Biology or instructor permission

**ExamSoft:** No

**Proctor:** Not required

**Instructors:** C.J. Woslager, DC, MS, MLS(ASCP)<sup>CM</sup>SM<sup>CM</sup>, [christopher.woslager@nmc.edu](mailto:christopher.woslager@nmc.edu); Ashley Eichelberg, MHPTT, MLS(ASCP)<sup>CM</sup>, [ashley.eichelberg@unmc.edu](mailto:ashley.eichelberg@unmc.edu); Kaylyn Rogers, MHPTT, MLS(ASCP)BB<sup>CM</sup>, [kaylyn.rogers@unmc.edu](mailto:kaylyn.rogers@unmc.edu)

**Textbook:** Ciesla, B (2019). *Hematology in Practice* (3rd ed). Philadelphia, PA: F.A. Davis Company. ISBN-13: 978-0-8036-6824-9

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#### **MLS 404 Immunology (3 cr) Fall, Spring**

This online course includes the theory and application of basic concepts in immunology, immunopathology, and immunologic testing methods. Topics of study include the cells, proteins and chemicals involved in the immune system. Immune disorders such as hypersensitivity, autoimmunity, immunodeficiency, and protein abnormalities are addressed, as well as transplant and tumor immunology, immunologic testing methods and flow cytometry.

**Prerequisites:** General Biology, Physiology and/or Cell Biology or instructor permission

**ExamSoft:** NO

**Proctor:** Not required

**Instructor:** Kaylyn Rogers, MHPTT, MLS(ASCP)BB<sup>CM</sup>, [kaylyn.rogers@unmc.edu](mailto:kaylyn.rogers@unmc.edu)

**Textbook:** Kuby Immunology, 8th Edition, 2019; Jenni Punt, Sharon Stranford, Patricia Jones, Judy Owen w.h. freeman / Macmillan Learning, New York  
ISBN-10: 1-4641-8978-1; ISBN-13: 978-1-4641-8978-4

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## **Medical Nutrition Courses**

### **MNED 477 NUTRITION IN THE MANAGEMENT OF CHRONIC DISEASES (MEDICAL NUTRITION THERAPY) (3 cr) Spring**

This course focuses on basic nutrition principles for the management of common chronic diseases using a format of lectures, case studies, and an independent study. It explores the relationship between nutrition and the development and management of common chronic diseases and their associated medical conditions. Course content includes appropriate strategies for implementing nutrition care as it relates to specific diseases/medical conditions. Topics include nutrition assessment, diagnosis, and intervention for disease states such as cardiology, diabetes, oncology, renal disease, and obesity. Students use case studies from clinical settings to apply knowledge related to nutrition assessment, diagnosis, and intervention.

**Prerequisites:** Introduction to Nutrition (3 credit hours) and Human Physiology (3 credit hours), or permission of the instructor

**ExamSoft:** Yes

**Proctor:** No

**Instructor:** Mariah Jackson, MMN, RDN, LMNT

**Required Textbook/Materials:** Nutrition Therapy & Pathophysiology. Marcia Nelms, Kathryn P. Sucher; Fourth Edition. ISBN: 978-0357041710.

Medical Nutrition Therapy: A Case Study Approach. Marci Nelms; Sixth Edition. ISBN: 978-1305628663