PIKES PEAK STATE COLLEGE

Master Course Syllabus

General Ultrasound Scan Lab – DMS 2111

Purpose of Document

This document contains important information for transfer. It may be helpful for you to retain a copy for your records, along with the class specific syllabus. This document will be especially helpful if you decide to later change your course of study.

Pikes Peak State College and the Colorado Department of Higher Education have determined that graduates should have a broad range of learning skills as well as discipline related skills. Both types of skills are detailed below.

Course Description

DMS 2111 General Ultrasound Scan Lab (3 credits) prepares the general sonography student for an ultrasound internship with an emphasis on abdominal, superficial structure, gynecological, and obstetrical ultrasound scanning. In this intensive lab course, students practice hands-on scanning using grayscale and Doppler modes; apply patient care protocols including safe positioning, infection control, and ergonomics; and perform exams following standard sonographic protocols for abdomen, pelvis, OB, and superficial structures.
Credit Hours: 3
Contact Hours: 3 hours per week

Required Course Learning Outcomes

1. Perform complete abdominal sonographic exams (e.g., liver, gallbladder, biliary tree, pancreas, spleen, kidneys, aorta, IVC) following standard lab protocols, including required measurements and documentation.
2. Scan superficial structures (e.g., thyroid, scrotum/testes, breast or other small parts) using appropriate transducers, patient positioning, and protocols.
3. Perform basic gynecologic ultrasound exams, including uterus and adnexa, using transabdominal scanning and demonstrating proper image labeling and measurements.
4. Perform first-trimester and basic second/third-trimester obstetrical scans (e.g., gestational sac, CRL, BPD/HC/AC/FL, fetal heart activity, fetal position, placenta, amniotic fluid).
5. Optimize image quality by appropriately adjusting TGC, depth, gain, focal zones, frequency, and Doppler controls to produce diagnostic-quality images.
6. Demonstrate safe and effective patient care behaviors in the lab, including verification of patient identity, privacy, comfort, and adherence to infection-control and ergonomics guidelines.
7. Apply standard sonographic protocols and sequence of images for each type of exam, including required views and documentation to match clinical expectations.

8. Recognize normal sonographic anatomy and basic/common pathology patterns of the abdomen, pelvis, OB, and superficial structures at an entry clinical level.
9. Communicate technical findings by labeling images correctly, recording measurements, and composing a brief technical impression appropriate to a student level.
10. Demonstrate readiness for internship by meeting lab performance benchmarks (speed, completeness of protocol, patient interaction, and professionalism).

Topical Outline

I. Course Orientation & Lab Safety
- a. Lab policies, HIPAA/privacy concepts in simulation
- b. Infection control, probe cleaning and disinfection
- c. Ergonomics and injury prevention for the sonographer
- d. Equipment overview: machine controls, presets, transducer types

II. Scanning Foundations & Image Optimization
- a. Image orientation and standard scan planes (sagittal, transverse, coronal, oblique)
- b. Grayscale optimization: depth, gain, TGC, focus, frequency
- c. Color and spectral Doppler basics for general sonography applications
- d. Image labeling, measurements, cine loops, and documentation standards

III. Abdominal Ultrasound Scanning
- a. Patient preparation and positioning (NPO, breathing techniques)
- b. Liver and biliary system (liver lobes, portal/hepatic veins, gallbladder, CBD)
- c. Pancreas and spleen protocols
- d. Kidneys and urinary tract
- e. Abdominal aorta and IVC assessment
- f. Evaluation of peritoneal spaces and free fluid

IV. Superficial Structures / Small Parts
- a. Thyroid scanning protocol: lobes, isthmus, nodules, vascular assessment
- b. Scrotal/testicular scanning protocol: testicles, epididymis, hydrocele/varicocele patterns
- c. Use of high-frequency linear transducers and appropriate settings

V. Gynecologic Ultrasound Scanning
- a. Patient preparation and positioning for transabdominal pelvic exams
- b. Uterine anatomy: size, position, endometrium, myometrium
- c. Ovarian anatomy and measurement
- d. Protocol completion and labeling for pelvic exams

VI. Obstetrical Ultrasound Scanning
- a. First-trimester: gestational sac, yolk sac, embryo, CRL, heart activity
- b. Second/third trimester basics: fetal position, placenta location, AFI/MVP, fetal biometry
- c. Basic fetal survey: head, spine, thorax, abdomen, extremities
- d. Documentation standards and measurement techniques

VII. Lab Practicals & Clinical Workflow
- a. Performing complete protocol exams within a set time frame
- b. Simulated patient interaction: introductions, consent, positioning, draping
- c. Lab practicals with checklists for each protocol
- d. Image review and critique sessions

VIII. Internship Readiness & Competency Evaluation
- a. Review of clinical expectations and ARDMS-related competency standards
- b. Identification of individual strengths and areas for improvement

c. Final comprehensive lab practical(s) spanning multiple exam types
d. Professionalism and communication expectations for internship