Lincoln University

DI 261 – Advanced Abdomen and Small Parts Scanning (Lab)

COURSE SYLLABUS
Summer 2019

Instructor: Ms. Setareh Dehdashty, BS, RDMS

Lecture Schedule: Tuesday, Wednesday and Thursday, 11:30 AM – 3:30 PM
Credits: 3 units / 90 hours of lectures
Level: Advanced (A)
Office Hours: By appointment

e-mail: setareh7@gmail.com
☎**:** (925) 487-9951

Textbook and Additional Sources: Textbook of Diagnostic Sonography Sandra L. Hagen-Ansert, Eight Edition ISBN-10: 0323028039

Additional recommended textbooks and instructional materials will be given during classes.

Prerequisite: *DI 251*
Last Revision: January 10, 2019

CATALOG DESCRIPTION

The course is the completion of courses on anatomy and pathology of the abdominal and superficial structures in ultrasound imaging. Areas include: thyroid, parathyroid, breast, neck, gastrointestinal tract, musculoskeletal system, pediatric abdominal ultrasound, and neonatal brain.

Prerequisite: DI 231

EDUCATIONAL OBJECTIVES AND STUDENT LEARNING OUTCOMES

Upon satisfactory completion of this Course, the students will be able to:

1. Demonstrate knowledge and understanding of the anatomy, physiology and normal variations of the abdomen, abdominal vascular systems and small parts.
2. Understand and expand the routine ultrasound protocols and presenting sonographic images in a logical sequence.
3. Describe the proper scanning technique and commonly used sonographic acoustic windows.
4. Utilize the principles of instrumentation to set up the ultrasound equipment for acquiring optimal quality of diagnostic images.
5. Demonstrate an increased knowledge of the applications of the ultrasound Doppler.

6. Be familiar with the standard measurements and diagnostic criteria for duplex evaluation of the abdomen.
7. Recognize sonographic signs of abdominal pathological findings.
8. Correlate sonographic and laboratory data.
9. Recognize and be able to compensate for common pitfalls in the diagnosis of abdominal and small parts pathologies.

COURSE LEARNING OUTCOMES[1]

Course LO	Program LO	Institutional LO	Assessment activities
Employ proper hands-on techniques to master and expand the routine ultrasound protocols.	PLO 1 PLO 2	ILO1a, ILO 2a, ILO 3a	In-class hands-on scanning; laboratory live & video demonstrations; self-study scanning training; midterm/final exams.
Utilize the principles of instrumentation, related to field size, TGC, focal zones, color scale, gain, depth, etc. for image interpretation.	PLO 2 PLO 3 PLO 4	ILO 1a	In-class hands-on scanning; laboratory live & video demonstrations
Recognize sonographic signs of pathological findings and differential diagnosis.	PLO 1 PLO 3 PLO 4	ILO1a, ILO 4a	Ultrasound case analysis and group discussions; quizzes
Explain the significance of clinical tests relevant to pathology. Correlate sonographic and laboratory data.	PLO 3	ILO1a, ILO 4a	Case studies; presentations and discussions of students' projects.
Demonstrate the knowledge of diagnostic criteria for duplex evaluation of the abdomen and small parts.	PLO 5 PLO 7	ILO 6a	Case studies and group discussions.

INSTRUCTIONAL METHODS:

Instructional methods will include:

- In-class hands-on scanning, using ultrasound machines and other lab equipment
- Live demonstration of vascular ultrasound imaging
- The instructor's guidance to developing students' scanning skills.
- Students' ultrasound hands-on self-study training: ***15 lab hours*** minimum of independent scanning throughout the semester
- Group work, discussions and ultrasound case analysis
- Quizzes based on the relevant topics

[1] Detailed description of learning outcomes and information about the assessment procedure are available at the Center for Teaching and Learning website (ctl.lincolnuca.edu).

- Ultrasound lab video demonstrations
- Presentations and discussions of students' projects.

Assignments and projects require students to actively use resources of the library. A detailed guide to business resources of the library as well as the description of Lincoln University approach to information literacy are available at the Center for Teaching and Learning website (ctl.lincolnuca.edu).

HOMEWORK AND PRESENTATION

Students will acquire, record and analyze ultrasound images during each lab session. Images containing anomalies should be selected and kept for the future presentation to others.

Each student will perform library research on a selected topic in the field of Abdominal and Small Parts Scanning, and present the findings along with their own images during a lab class orally, using Power Point.

A 10-minute presentation will be followed by a 5-minute question period.

Students should include enough background information, ultrasound images received during classes, pictures and references, for their peers to be able to understand the topic. Each student will choose the topic of his/her presentation with the instructor's approval. The oral presentation must be completed before the final hands-on lab examination (see schedule).

Evaluation Criteria for Presentation:

- Clinical statement: 2%
- Background information: 2%
- Slide content: 2%
- Slide design: 1%
- Resolution of the problem: 2%
- Oral presentation: 1%

Total: 10% of all the course grading elements.

ATTENDANCE AND PARTICIPATION

Efficient use of the lab time, demonstration of the development of the scanning skills, effective use of ultrasound machines, active participation during the class meetings is expected.

Students are encouraged to use open lab time as needed. Minimum 20 lab hours of the independent scanning throughout the semester should be recorded in a log sheet as a part of each student's hands-on self-study training.

Students are expected to arrive to class on time and stay till the end of the laboratory session. Absence, late arrival, poor use of class time, early leave will result in a lower grade.

Instructor may dismiss a student from the course after missing 3 consecutive class meetings.

HANDS-ON LAB EXAM:

During the final ultrasound hands-on examination, students have to demonstrate the understanding of the information presented during the course laboratory training.

1. The knowledge of the anatomy, physiology, normal variations, and pathology of the human body.

2. In-depth knowledge of the ultrasound scanning protocols and the ability to present images in a logical sequence.
3. The knowledge of the ultrasound machine capabilities for the optimal quality of diagnostic images (frequency, TGC, B-mode, focal zones, color scale, gain, depth, etc.).
4. Ability to demonstrate the optimal scanning technique and proper images acquisition in B-, Color-Modes, and M-mode.
5. The utilization of different acoustic windows to achieve the best picture quality possible.
6. The knowledge of the elements of the proper image labeling.
7. The explanation of the sonographic findings and differential diagnosis of abdominal and small pathology.

Since the intent of the lab examination is for students to demonstrate the knowledge of the scanning protocol, students are not allowed to ask questions and discuss the scanning procedures with classmates.

Reference materials are not allowed.

Only one time RETEST will be given to students with a valid excuse such as illness, family emergency, unforeseen traffic conditions or natural disaster.

GRADING

Midterm/Final Exam Grading System

Midterm and Final Exams will be performed on the scheduled days in the presence of the lab instructor.

The length of the examination will depend on the type of the ultrasound protocol. The type of the protocol for the exam will be chosen by the instructor for each student individually.

The score (%) will be determined by acquiring the ratio of the correct / incorrect images recorded by the student.

Depending on the quantity of the required images of the particular protocol, each image will be valued at certain amount of points.

The points for missed (or completely incorrect) ultrasound images will be subtracted from the total 100% score.

The added score of the correct ultrasound images (according to the protocol requirements) will represent the total examination grade.

To successfully complete this exam, the student must pass it with a total score 70% or better.

Quizzes:

- Students will take 7quizzes throughout the course. These quizzes will address the material presented in the previous lectures, discussions and text readings to evaluate students' work inside and outside the classroom.
- A quiz will consist of 10-15 questions, some combination of true/false, multiple choice, and "fill-in" questions.
- Each quiz will be timed, 1 minute for every question to complete.
- The correct answers of the quiz and a relevant topic will be discussed and reviewed.

- No make-up quizzes for missed quizzes will be administered (students will receive no score for missed quizzes).
- The primary purpose of these quizzes is to encourage and reward the students' progress through the course materials.

The final grade for the course will be given as the total weighted score for all activities according to the percentage shown in the table below.

Class Attendance	10%
Class Participation	10%
Quizzes	20%
Project Presentation	10%
Midterm Exam	20%
Final Exam	30%
Total	100%

All activities will be graded according to the points as shown below.

Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	F
Points	95-100	90-94	87-89	84-86	81-83	78-80	76-77	74-75	72-73	70-71	0-69

COURSE SCHEDULE:

Dates	Topics
June 11	Importance of Image Optimization for Correct Image Interpretation. Liver. Various Scanning Techniques. Measurements and Diagnostic Criteria.
June 12	Portal Hypertension. Hepatitis and Cirrhosis. Liver Surface Evaluation. Gallbladder & Biliary System. Patient Positioning, Approaches and Techniques.
June 13	Gallbladder Pathological Findings. Differential Diagnosis.
June 18	Pancreas. Various Scanning Techniques and Image Optimization.
June 19	Spleen. Image Optimization and Alternative Scanning Approaches.
June 20	Aorta. AAA Screening. IVC
June 24	Retroperitoneum. Kidneys. Various Scanning Techniques and Approaches.
June 25	Kidneys. Renal Pathologies.
June 26	Urinary System. Urinary Bladder Volume Calculation.
June 27	Full Abdominal Protocol1
July 2	Full Abdominal Protocol2
July 3	Full Abdominal Protocol3
July 9	Midterm
July 10	Ultrasound of the Neck. Thyroid.
July 11	Thyroid. Pathology.
July 16	Scrotum
July 17	Breast
July 18	Breast. Proper Image Annotation. Sonographic.
July 23	Final exam
July 24	Final exam
July 25	Final exam