LINCOLN UNIVERSITY
DI 265 / UT 265 – Advanced Echo Imaging (Lab)
Spring 2013 Course Syllabus

DATES: 01/22/2013 – 05/13/2013

COURSE TITLE: Advanced Echo Imaging (Lab)

COURSE CODE: DI 265 / UT 265

CREDIT HOURS: 4 units (120 lab hours)

TIME: Mondays & Wednesdays, 5:30 pm – 9:15 pm

LAB INSTRUCTOR: Diana Wagle, RDCS

CONTACT (EMAIL): di.turrell.lu@gmail.com

COURSE DESCRIPTION:
Students will learn advanced echocardiographic procedures. Topics include stress echo, related diagnostic imaging, and related noninvasive cardiac testing.

COURSE PRE-REQUISITE: DI 145 / UT 145 – Echo Scanning (Lab)

READING ASSIGNMENT: Attached

GOALS AND OBJECTIVES FOR ULTRASOUND ADULT HEART IMAGING:

Upon satisfactory completion of this course, students will be able to:
- ✓ Utilize the principles of instrumentation to set up the ultrasound equipment for scanning
- ✓ Perform a standard ECHO protocol
- ✓ Apply appropriate measurements and scanning techniques: 2-D, Color Doppler, Spectral Doppler, CW, PW, Pedoff probe, M-Mode
- ✓ Determine the cardiac hemodynamics and detect the presence of pathology
- ✓ Perform Stress Echo Test
- ✓ Obtain knowledge of Contrast Echo and Bubble Study
- ✓ Perform an oral or written summary of preliminary findings to the interpreting physician

STUDENT RESPONSIBILITIES:
Students are expected to be prepared in advance before the class sessions. Being prepared includes the following: wear uniform (Lincoln logo scrubs), don't use cell phones in class, attend all classes, be on time to class, participate in scanning lab, ask questions, memorize protocols, bring appropriate materials to class (e.g. notebook, writing utensils, handouts) have reading materials (e.g. textbooks lectures & outlines), collect images/studies for review, use class time effectively and efficiently, and PRACTICE, PRACTICE, more PRACTICE scanning during lab hours and self lab hours. The harder you work in the school lab the easier it will be in the real one.

SCANNING LAB RULES:
Lab hours:
- ✓ **Lab hours are posted front door & bulletin board** (please respect class time, do not enter when class time is in session)
- ✓ **Each student has a maximum time of 35-45 min. (times may vary according to instructor or # of students waiting)**
- ✓ **Timer is used to track accurate time**
- ✓ **Use student subjection envelope for questions or concerns**
- ✓ **Sign in on preferred machine** (see clipboards) (with your name, start time & finish time) (after finish must resign in if you want to continue to scan)

Respect Others and Lab:
- ✓ **No eating or drinking in lab** (only water)
- ✓ **No cell phones** (exit room if must use phone)
- ✓ **Clean up after yourself** (table, transducer, put away chairs & other equipment, trash etc.)
- ✓ **Inform instructor or staff of needed supplies or equipment broken**
- ✓ **Keep a low tone of voice** (lab room is small, speaking loudly can be very disrupting to student(s) who need their concentration for scanning
- ✓ **Don't interrupt students' scanning time** (ask the student is it okay to asked them questions while their scanning?)
- ✓ **Lecture scanning** (ask questions at appropriate time only ask instructor not other students)
- ✓ **Personal property** (never leave your personal property unattended, Lincoln University is not responsible for lost or stolen items. Although, Lincoln University does have a zero tolerance for theft, any student(s) caught stealing will be prosecuted)
- ✓ **Please don't remove any objects from lab room** (books, study materials)
- ✓ **Leave personal conversation outside lab room**
- ✓ **Outside patients** (please inform your outside patients to only bring 1 person with them, due to lab size, and number of students present)
- ✓ **No children allowed unless being scanned**

Machines (Acuson & Mindray):
- ✓ Please kindly shut down the machine after scanning class
- ✓ Do not erase any information on machines (only instructors or lab assistants)
- ✓ Please inform lab assistants of needed supplies (baby wipes, paper towels, gel)
- ✓ Wipe down transducer after every patient using the Transeptic spray)
- ✓ Change paper after every patient, and place pillow under paper not on top
- ✓ Please safely move around equipment (ultrasound machines, patient tables)

IN-CLASS PRESENTATION
Students are to perform library research on a current topic in the field of Echocardiography and present their findings orally in a PowerPoint presentation (10-minute presentation; 5-minute question period). Students should include enough background information, ultrasound images, pictures and references for their peers to be able to understand the topic. The topic of each presentation will be chosen by the students with the approval of the teacher. Presentation dates will be assigned on a first come, first served basis. You may do so in class, during office hours, by phone, or by E-mail. Student presentations will be spaced in every lab class throughout the semester. An oral presentation must be completed **AT LEAST SIX WEEKS BEFORE your FINAL HANDS-ON ULTRASOUND LAB EXAMINATION** (see schedule below). In-class presentation will account for 20 percent of your final grade.

Evaluation Criteria for Presentation:

- ✓ Clinical statement
- ✓ Background information
- ✓ Slide content (images, video, schemes, tables, pictures)
- ✓ Slide design
- ✓ Resolution of the problem
- ✓ Oral presentation
- ✓ Confident knowledge of the presented topic
- ✓ Ability to answer question of the presented topic

GRADING SCALE

HANDS-ON LAB EXAM:

- Each student will be assigned time;
- Each partner will have his/her turn to perform parts of the Physical Exam covering any of the material taught during semester;
- ECHO protocol and all modalities will be demonstrated and trained students during semester;
- Student will perform ECHO protocol independently from lab instructor;
- Students have to conduct and demonstrate finished ultrasound protocols with required sonograms qualities: proper use of transducers, scanning modes (B-scan, Color- , Power-, and Spectral Doppler), accurate measurements of anatomical structures, and proper image labels if needed;
- Students have to submit final performance of scanning all required by course ECHO protocol throughout the semester;
- Students have to conduct **full standard protocol** in final lab exam:
- Final exam dates are scheduled in the syllabus (see schedule below).
- Students must pass the final exam with **AN AVERAGE OF 72-69% (grade "C") OR BETTER OR YOU WILL FAIL THE ENTIRE COURSE AND WILL NEED TO TAKE LAB CLASS AGAIN.**

GRADING:

Attendance	10%
Presentation	20%
Performance of scanning protocols	20%
Final exam	50%
Total	100%

100-93	A		72-69	C
92-89	A-		68-65	C-
88-85	B+		64-61	D+
84-81	B		60-50	D
80-77	B-		**49≤**	F
76-73	C+			

SCHEDULE: Spring 2013

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	DATES	ULTRASOUND HANDS-ON SCANNINGS
W	**23-Jan**	Review anatomical structures of the heart in ECHO views
M	**28-Jan**	Review ECHO protocol
W	**30-Jan**	Review measurements of all normal heart structures
M	**4-Feb**	Diastology of the normal adult heart
W	**6-Feb**	Pathology of diastolic function of the heart
M	**11-Feb**	Systolic function, Volumes, Ejection Fraction
W	**13-Feb**	Simpson method, dP/dT, and LV mass index
M	**18-Feb**	Left ventricle wall motion evaluation, coronary artery segments
W	**20-Feb**	Left Ventricular Hypertrophy (grades and estimation)
M	**25-Feb**	Stress ECHO protocol
W	**27-Feb**	Regurgitations (MR, TR, PI, and AI)
M	**4-Mar**	Stenosis (AS, MS, TS, and PS)
W	**6-Mar**	Review ECHO and Stress Echo protocol
M	**11-Mar**	Cardiomyopathy
W	**13-Mar**	Pericardial diseases
M	**18-Mar**	Hypertensive heart (Systemic)
	19-23 Mar	Spring Recess
M	**25-Mar**	Definity (Contrast ECHO), Bubble Study
W	**27-Mar**	Presentations
M	**1-Apr**	Presentations
W	**3-Apr**	Evaluation of the left side of the heart
M	**8-Apr**	Evaluation of the right side of the heart
W	**10-Apr**	Prediction of the intracardiac pressure
M	**15-Apr**	Prosthetic Valves (types, normal PG and blood flow velocity)
W	**17-Apr**	Valve pathologies (obtained and congenital)
M	**22-Apr**	Review ECHO protocol
W	**24-Apr**	Congenital diseases of the heart
M	**29-Apr**	Echo Stress Test
W	**1-May**	Review ECHO protocol
M	**6-May**	Preparation for the final exam
W	**8-May**	**Final hands-on examination**
M	**13-May**	**Final hands-on examination**

The syllabus updated 01/15/2013
Note: Instructor may change this syllabus and course schedule at any time according to the circumstance of the class and overall students' performance. Any changes will be declared ahead of time in class.

READING ASSIGNMENT:

1.		The Echocardiographer's Pocket Reference, Second Edition [Spiral-bound] By Terry Reynolds and Pamela Kidd (July 2000) ISBN-10: **0963576798**, ISBN-13: **978-0963576798** Approximate price $120
2.		Clinical Echocardiography Review: A Self-Assessment Tool By Allan L. Klein and Craig R. Asher (Mar 28, 2011) ISBN-10: **160831054X**, ISBN-13: **978-1608310548** Approximate price $118-$120
3.		Practice of Clinical Echocardiography: Text with DVD-ROM, 3e By Catherine M. Otto (Nov 26, 2007) ISBN-10: **1416036407**, ISBN-13: **978-1416036401** Approximate price $200-$100
4.		Feigenbaum's Echocardiography By William F. Armstrong and Thomas Ryan (Dec 16, 2009) ISBN-10: **0781795575**, ISBN-13: **978-0781795579** Approximate price $140-$120
5.		Echocardiographer's Pocket Reference, 3rd edition By Terry Reynolds (Jan 1, 2008) ISBN-10: **001405101X**, ISBN-13: **978-0014051014** Approximate price $120
6.		Echocardiography By Mark Allen, Diane M. Kawamura, Marveen Craig and Mimi C. Berman (Jan 15, 1999) ISBN-10: **0397552629**, ISBN-13: **978-0397552627** Approximate price $70-$30