



# LINCOLN UNIVERSITY

## DI 280 B – Practicum / Externship II

### Summer 2013 Course Syllabus

**Term:** Summer 2013

**Course Number:** DI 280B

**Course Title:** Practicum / Externship II

**Course Credit:** 3 units = 135 practicum hours

#### **COURSE DESCRIPTION**

Students will get clinical experience in Diagnostic Imaging covering a wide variety of technical procedures. (3 units) *Prerequisites: DI 280 A, permission of the externship coordinator and the program director*

#### **PREREQUISITES**

DI 280 A, and permission of the externship coordinator and the program director

#### **LEARNING OBJECTIVES**

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

- Conduct themselves in a courteous manner while in a medical office, a hospital, or other clinical environment.
- Handle stressful situations relating to technical and ultrasound-procedural standards and patient care conditions.
- Communicate verbally in an effective manner in order to direct patients when conducting ultrasound examinations.
- Read and interpret patients' charts and requisition for imaging examinations.
- Identify and describe ultrasound terminology in an effective manner.
- Perform ultrasound examinations at competent levels by the end of the clinical training.
- Demonstrate knowledge of current scanning techniques in the field of medical sonography and ultrasound technique manipulation.
- Manipulate the technical controls on the equipment used in the ultrasound department to produce an optimum image for diagnostic purposes.
- Produce images of anatomic structures outlined by the clinical objectives provided by the Sonographer or Physician during the externship.

- Record and process the displayed images for diagnostic medical ultrasound examinations.
- Demonstrate the ability to apply knowledge of cross-sectional anatomy relative to diagnostic ultrasound.
- Identify normal and pathological conditions on sonograms.
- Describe the principles and applications of Doppler ultrasound.
- Demonstrate effective teamwork in the clinical setting.
- Solve basic imaging challenges as they pertain to the conduct of clinical examinations.

## **COURSE CONTENTS**

Major topics to be covered by concentrations:

Vascular Ultrasound Concentration:

- Abdominal Ultrasound
- Obstetrics & Gynecology
- Vascular Ultrasound

Echocardiography Concentration:

- Echocardiography
- Vascular Ultrasound

## **INSTRUCTIONAL METHODS:**

The course will be conducted in the form of practicum / externship at an off-campus Diagnostic Imaging facility. The instructor will be available to help students with all tutorials and other assignments.

The procedures include the following:

- Participation in scanning with an ultrasound supervisor for 1 to 8 hours a day
- Introduction to clinical requirements of a Sonographer, policies and procedures of the facility
- Pre-scanning or back scanning, whenever possible, under the supervision of the instructor; Introduction to Scan Book — entering appropriate data into Scan Book
- Explaining the clinical experience in a group discussion on Ultrasound Protocols

## **REQUIREMENTS:**

### **EXTERNSHIP INSTRUCTIONS FOR DIAGNOSTIC IMAGING STUDENTS**

- Please be on time and wear scrubs.
- Cell phone use is not permitted during the externship hours.
- Do not interfere with your instructor's work.
- Complete 135 hours if you registered for one externship, or 270 hours if you signed up for two.

Please bring the following with you to the externship site:

1. Resume
2. Student ID card
3. Practical course attendance sheet

Upon the externship completion, please submit the following to Admissions Officer:

1. Resume
2. Recommendation letter from your externship instructor
3. Practical course attendance sheets signed by the instructor
4. Essay #1 – describe externship experience, techniques learned and overall experience
5. Essay #2 – describe career objectives and future goals

## **EXTERNSHIP CONTRACT:**

It is the policy of the university to place students who have completed classroom and laboratory training in externship learning environment. The externship sites will be selected based on systematic, documented evaluation. The experience will include a contract for practical learning, demonstration of identified competency, periodic on-site visits by the university staff, and mutual evaluation by all participants in the externship (students, the externship site, and the university).

### General conditions

- To commit to the externship process and follow its requirements;
- To conduct the externship in a manner consistent with effective and productive workplace activities;
- To treat the externship site staff with personal and professional respect;
- To respond to directions efficiently;

- To ask questions of the externship site staff in order to clarify issues which may arise;
- To enhance the student's knowledge and skills acquired during the Diagnostic Imaging program at the university.

**GRADING:**

Practicum/Externship of work experience will be evaluated by the instructor. A grade of **CR or NC only** will be given.

<b>Criteria of Grading</b>	<b>%</b>
Attendance	10%
Personal appearance	10%
Quality of work	10%
Motivation and attitude	10%
Interpersonal skills	10%
Communicational skills	10%
Writing preliminary report	20%
Performing ultrasound protocols	20%
<b>Total</b>	<b>100%</b>

# COURSE OUTLINES BY ULTRASOUND CONCENTRATIONS

## ABDOMINAL ULTRASOUND

- **Liver (anatomy and echo structures):** right and left lobes; segments, dome of the Liver & diaphragm; right Lobe & right Kidney (at the level of the sinus); blood vessels (HV, HA, PV), Aorta, IVC;
- **Gallbladder (GB) (anatomy and echo structures ):** cystic duct of GB & portal vein and cephalic artery cystic duct; common bile duct & pancreas;
- **Pancreas (anatomy and echo structures ):** head, body, tail & confluence SMV & splenic vein, Superior Mesenteric artery; Wirsung's duct; stomach, splenic vein & superior mesenteric vein, celiac trunk; Aorta; IVC;
- **Kidneys (anatomy and echo structures):** right and left kidneys (sinus, medulla, cortex, pyramids); Adrenal Gland; Renal blood vessels;
- **Urinary bladder (anatomy and echo structures):** urinary bladder (distended), bladder wall (epithelial layer visualized), Urinary Jet; Blood vessels, artery, pelvis;
- **Male patients:** transabdominal examination prostate gland with full bladder and after avoid; in two dimensional and volume measurements;
- **Spleen (anatomy and echo structures):** spleen; splenic v.& a.;
- **The breast examination;**
- **Ultrasound Examination of the Lymph nodes;**
- **Ultrasound Examination of the GI tract.**

## OBSTETRICS & GYNECOLOGY ULTRASOUND

### GYNECOLOGY

- Assess the cervix; evaluate the myometrial texture; assess and record uterine position; evaluate the contour of the uterus, assess the texture of the endometrium; assess the posterior and anterior cul-de-sac, both adnexa.

### OBSTETRICS, 1st

- Number of the pregnancy; look for the double decidual sac sign, embryonic size: CRL; fetal position: vertex, transverse, breech; evaluate gestational sac (GS); the yolk sac.

## **OBSTETRICS, 2nd & 3rd Trimester**

- **HEAD** : assess the shape of the fetal head at the level of the BPD, HC and OFD, the cavum septi pellucidi, the choroid plexus, the lateral and third ventricles, Cerebellum, Cisterna magna, the thalami, nuchal fold;
- **FACE**: the facial profile (nasal bone; chin; lips; forehead); fetal orbits, lens of the eye; ears, tongue, palate; fetal teeth);
- **THORAX**: assess the fetal neck: shoulder-head space; evaluate the texture of the fetal lungs, the size of the fetal thorax, cardiac size in the thorax;
- **HEART**: assess the cardiac axis, document the fetal diaphragm, the aortic arch w/bifurcation; four chamber heart, intraventricular septa, interatrial septa, tricuspid valve, mitral valve, right vent. Outflow track W/Doppler, left vent. Outflow track W/Doppler, evaluate three blood vessels, IVC;
- **ABDOMEN**: abdominal circumference/AC, evaluation the fetal liver, gall bladder, spleen, stomach, bowel and intestine, document the insertion of the umbilical cord in the placenta;
- **URO-GENITAL**: kidneys, evaluate the renal pelvis, document the fetal adrenal glands, examine the fetal genitalia/male/female; urine bladder +arteries (Color/Power Doppler);
- **SKELETON**: scalp, clavicle, scapula, ribs, humerus/HL, ulnar & radial os, the fetal hands/fingers/count! The fetal ankles and feet/count! Femur/FL, tibia & fibula; spine: neck; thorax; lumbar; sacral area with iliac bones;
- **PLACENTA**: position: anterior/posterior/lateral/fundal, thickness, placenta edges; look for multiple gestations;
- **AMNIOTIC FLUID**: amniotic membrane, amniotic "pockets"/ 1-2-3-4;
- **UMBILICAL CORD**: insertion Umbilicus to placenta and Umbilicus to abdomen; Umbilical cord transverse/three vessel cord/Color Doppler.

## **VASCULAR ULTRASOUND**

- **Carotid arteries protocol**: CCA, ECAA, ICA (prox., med., dist), bulb, vertebral a., innominate a., subclavian a.;
- **Upper Extremities arteries protocol**: innominate a., subclavian artery (prox., med., dist), axillar a., brachial a.; ulnar & radial aa. Bifurcation of the ulnar & radial aa.;
- **Lower Extremities Arteries Protocol**: aorta, common iliac artery, external & internal Iliac arteries; femoral artery; superficial femoral artery; deep femoral artery; popliteal artery; anterior tibial artery; tibioperoneal trunk, posterior tibial artery; dorsalis pedis;
- **Upper Extremities Veins protocol**: innominate veins; subclavian vein; axillar vein, brachial vein; right radial & ulnar v., basilic & cephalic veins;
- **Lower Extremities Veins protocol**: common femoral v.; profunda femoris & femoral veins; saphenofemoral junction; femoral vein, popliteal v.;

- **Calf veins protocol:** bifurcation of the Popliteal vein, Anterior Tibial vein & Tibioperoneal trunk; Bifurcation of the Tibioperoneal trunk to Posterior Tibial v. & Perineal v.; greater saphenous & lesser saphenous veins;
- **Mesenteric arteries Duplex Protocol:** celiac trunk, superior mesenteric a., inferior mesenteric a., splenic a. (prox. & dist.), aorta (prox., mid., dist.) & Bifurcation;
- **Portal System Duplex Protocol:** portal v., hepatic veins, hepatic a. splenic v. aorta, IVC;
- **Ankle-Brachial test.**

## ECHOCARDIOGRAPHY

- Complete a full echo protocol in less than one hour;
- Find views: PLAX, PSAX, Apical 4, Apical 2, Apical 3 and Apical 5 and subcostal;
- Select the proper transducer for the examination to be performed;
- Utilize correct anatomical landmarks and scanning references when performing and labeling a study;
- Demonstrate the area of interest by utilizing correct scanning planes and paths;
- Adjust gain controls for optimum display;
- Demonstrate professionalism and ethical behavior in a clinical setting;
- Perform the examination using the correct scan planes and scan paths. Identify pathological conditions commonly demonstrated on this type of study;
- Calculate Atrium Volume;
- Calculate 2D and M-mode measurements;
- Calculate Ejection Fraction;
- Know how to properly evaluate regurgitation of all severities;
- Identify common cardiac arrhythmias;
- Set up patient for Stress Echo;
- Performer Stress Echo with the proper view;
- Identify Wall Motion Abnormalities;
- Perform hybrid views such as PSAX from Subcostal to gain additional information in TDS cases;
- Perform right hand scanning.

### **Note:**

The instructor may change this syllabus and the course schedule at any time according to a judgment as to what is best for the course. Any changes will be declared ahead of time during the course.

Revised: 06/21/2013