

LAST REVIEW: 2008-2009 **NEXT REVIEW:** 2013-2014 **STATUS:** A
(i.e. 2003-2004) *(i.e. 2008-2009)* *(A, I, D)*

COURSE TITLE: Small Parts Sonography

COMMON COURSE NUMBER: SON 1141

CREDIT HOURS: 3

CONTACT HOUR BREAKDOWN

(per 16 week term)

CLOCK HOURS:

(Voc. Course ONLY)

Lecture: 48

Lab:

Clinic:

Other:

PREREQUISITE(S): SON 1211, SON 1212, SON 1111, SON 112, SON 1121, SON 1122, SON 1804, SON 1814

COREQUISITE(S): SON 1824

PRE/COREQUISITE(S):

COURSE DESCRIPTION *(750 character smaximum)*: **A general introduction to the areas of carotid, eye, thyroid, prostate, scrotum, breast and other superficial structures.**

General Education Requirements – Associate of Arts Degree (AA), meets Area(s): Area
 General Education Requirements – Associate in Science Degree (AS), meets Area(s): Area
 General Education Requirements – Associate in Applied Science Degree (AAS), meets Area(s): Area

UNIT TITLES

1. **Thyroid, Parathyroid and Neck Masses**
2. **Male Reproductive Organs**
3. **Anterior Abdominal Wall**
4. **Intracranial Cerebrovascular Evaluation**
5. **Chest, thoracocentesis, amniocentesis, and other puncture/biopsy procedures**
6. **Breast**
7. **Ophthalmic Applications**
8. **Introduction to Carotid Arteries and Peripheral Vascular Evaluation**
9. **Bladder and Prostate**
10. **Rule Out Lower Limb Mass and Baker’s Cyst**
11. **Retroperitoneum and Miscellaneous Exams/Sonographer Interactions**
12. **Role of the Sonographer**

ASSESSMENT:

Please provide a brief description (250 characters maximum) that details how students will be assessed on the course outcomes.

Quizzes, Midterm and Final Exams – all comprehensive, Classroom Assignment and Outside Assignments. Discussion group participation.

**** Complete the following only if course is seeking general education status ****

GENERAL EDUCATION Competencies and Skills*:

Please highlight in green font all Competencies/Skills from the list below that apply to this course. In the box to the right of the Competency/Skill, enter all specific learning outcome numbers (i.e. 1.1, 2.7, 5.12) that apply.

1. Read with critical comprehension	
2. Speak and listen effectively	
3. Speak and listen effectively	
4. Think creatively, logically, critically, and reflectively (analyze, synthesize, apply, and evaluate)	
5. Demonstrate and apply literacy in its various forms: (highlight in green ALL that apply) (1. technological, 2. informational, 3. mathematical, 4. scientific, 5. cultural, 6. historical, 7. aesthetic and/or 8. environmental)	
6. Apply problem solving techniques to real-world experiences	
7. Apply methods of scientific inquiry	
8. Demonstrate an understanding of the physical and biological environment and how it is impacted by human beings	
9. Demonstrate an understanding of and appreciation for human diversities and commonalities	
10. Collaborate with others to achieve common goals.	
11. Research, synthesize and produce original work	
12. Practice ethical behavior	
13. Demonstrate self-direction and self motivation	
14. Assume responsibility for and understand the impact of personal behaviors on self and society	
15. Contribute to the welfare of the community	

* General Education Competencies and Skills endorsed by '05-'06 General Education Task Force

Common Course Number: SON 1814

UNITS

Unit 1 Thyroid, Parathyroid and Neck Masses

General Outcome:

- 1.0 The student shall:** demonstrate an understanding of anatomy, physiology, pathology and scanning procedures of normal and abnormal structures of the neck.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 1.1 Identify the gross, cross-sectional plane, sagittal plane, and coronal plane anatomy of the thyroid, parathyroid and surrounding anatomical structures which includes the vasculature and muscles.
- 1.2 Describe the physiological function of the thyroid and parathyroid
- 1.3 Determine if the thyroid gland is an endocrine or exocrine gland
- 1.4 Recall the hormones released by the thyroid gland and their controlling factors
- 1.5 Describe the symptoms associated with hypocalcemia
- 1.6 Describe which structure(s) a parathyroid mass must be distinguished from
- 1.7 Recall the chief cause of hyperparathyroidism
- 1.8 Determine how to adjust the gains to scan a patient with Reidel's struma
- 1.9 Recall which type is the most malignant and deadly of thyroid carcinomas
- 1.10 Determine what causes the blood levels of calcitonin to increase
- 1.11 Name the structures contained in the carotid sheath
- 1.12 Describe the cause of hyperthyroidism with Grave's Disease
- 1.13 Describe the echogenicity of a normal thyroid gland as compared to a gland with thyroiditis
- 1.14 Distinguish between a "hot" or "cold" spot (area of increased uptake and area of decreased or no uptake) on a nuclear medicine study and recall which lesions show up as "hot" and which are "cold"

- 1.15 Recall the symptoms and sonographic appearance associated with a thyroid adenoma
- 1.16 Describe the anatomic variant known as a pyramidal lobe
- 1.17 Describe the clinical and sonographic signs associated with Hashimoto' thyroiditis. Name the most common chronic inflammation of the thyroid gland.
- 1.18 Name the important landmarks to be demonstrated when scanning the parathyroid glands
- 1.19 Name the thyroid stimulating hormone that is produced by the pituitary gland
- 1.20 Define Grave's disease
- 1.21 Describe the sonographic appearance of a thyroglossal duct cyst (location) and explain the origin and location of the thyroglossal duct
- 1.22 Identify the important landmarks related to the thyroid gland
- 1.23 Define myxedema
- 1.24 Define cretinism
- 1.25 Describe the function of the parathyroid glands
- 1.26 Discuss the probable cause(s) of a persistently high blood calcium level
- 1.27 Describe the location of the parathyroid glands
- 1.28 Describe the appearance of a goiter
- 1.29 Define hypercalcemia
- 1.30 Recall which type of carcinoma exhibits rapid growth
- 1.31 Describe the function of iodine in thyroid hormone formation
- 1.32 Distinguish between which condition(s) of the thyroid exhibit FINE calcifications and which exhibits COARSE calcifications
- 1.33 Define hyperthyroidism and hypothyroidism
- 1.34 Recall the symptoms and appearance associated with "endemic" goiter
- 1.35 Determine where a branchial cleft cyst might be located
- 1.36 Recall the location from which the most common metastatic lesion of the thyroid originates
- 1.37 Recall which condition is also known as chronic fibrous thyroiditis

- 1.38 Recall the most common malignancy of the thyroid gland
- 1.39 Recall the location of the longus colli as related to the thyroid gland
- 1.40 Describe the sonographic appearance associated with carcinoma of the thyroid gland
- 1.41 Describe the sonographic appearance of the trachea
- 1.42 Recall the size of the normal parathyroid glands
- 1.43 Describe the characteristics of an effective small-parts scanner
- 1.44 Recall the structures contained in the minor neurovascular bundle
- 1.45 Recall the developmental congenital aberrations that may be associated with the neck area
- 1.46 Correlate related diagnostic imaging procedures and sonographic examinations of the thyroid, parathyroid, and surrounding neck locations
- 1.47 Describe the following techniques for obtaining a diagnostic examination of the thyroid, parathyroid, and surrounding neck area
 - a. protocol
 - b. patient position
 - c. scanning planes
 - d. use of TGC
 - e. transducer selection and focusing
- 1.48 Identify on sonograms:
 - a. normal and congenital anatomy
 - b. normal versus abnormal sonographic patterns
 - c. pathological conditions in terms of:
 - 1. cystic
 - 2. solid
 - 3. complex
 - 4. diffuse changes
 - d. those which are technically satisfactory and unsatisfactory
- 1.49 Describe utilization of Doppler techniques and explain the role of Doppler in evaluating structures in the neck (spectral and/or color-flow)
- 1.50 Formulate differential diagnosis for thyroids, parathyroids, and neck masses, based on the clinical history, laboratory data, results of related diagnostic procedures, and the appearance of the sonographic examination's tissue signature and blood flow patterns, if appropriate

Common Course Number: SON 1141

UNITS

Unit 2 Male Reproductive Organs

General Outcome:

- 2.0 The student shall:** demonstrate an understanding of anatomy, physiology, and pathophysiology, blood flow patterns, and scanning procedures associated with the male reproductive system.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 2.1** Describe the normal anatomy and scanning techniques to demonstrate the male pelvis
- 2.2** Discuss gross anatomy, pathology and scanning techniques of the ureters, urinary bladder, prostate and testicles
- 2.3** Identify the gross, cross-sectional plane, sagittal anatomy of the scrotum, testes, and epididymis
- 2.4** Correlate related diagnostic imaging procedures and sonographic examinations of the scrotum, testes, and epididymis
- 2.5** Demonstrate the following techniques for obtaining a diagnostic examination of the scrotum, testes and epididymis
- a. protocol
 - b. patient position
 - c. scanning planes
 - d. use of TGC and focusing
 - e. transducer selection
 - f. application of Doppler techniques
- 2.6** Identify on sonograms:
- a. normal and congenital anatomy of the scrotum, testes, epididymis
 - b. normal versus abnormal sonographic patterns
 - c. pathological conditions in terms of:
 1. cystic
 2. solid
 3. complex
 4. diffuse alterations
 5. abnormal blood flow patterns on Doppler spectrum or color-flow
 6. those that are technically satisfactory or unsatisfactory

- 2.7 Formulate a specific differential diagnosis for the scrotum, testes, and epididymis, based on the clinical history, laboratory data, results of related diagnostic procedures, and the appearance of the sonographic examination's tissue signature and blood flow patterns, when appropriate.
- 2.8 Describe the origin of testosterone
- 2.9 Define cryptorchidism
- 2.10 Describe the chief function of interstitial cell stimulating hormone
- 2.11 Describe the function of FSH
- 2.12 Distinguish between the function of Sertoli cells and Leydig cells
- 2.13 Recall the location in which sperm is produced
- 2.14 Describe the function of testosterone
- 2.15 Recall the clinical manifestations and sonographic appearance of hydrocele
- 2.16 Describe the relationship between mumps and the testes
- 2.17 Locate the appendix testes, rete testes, raphe, and ductus deferens
- 2.18 Describe the vasculature of the scrotal contents. Identify varicocele. Understand potential implications of a varicocele on the right vs. left side.
- 2.19 Discuss the role of sonography and Doppler in evaluating torsion of the testes
- 2.20 Name the most common type of testicular tumor
- 2.21 Describe the relationship of the ductus epididymis to the seminal duct (vas deferens). (At what point does it become the latter and how does it appear?)
- 2.22 Describe the physiology of the male reproductive organs
- 2.23 Describe the most important role sonography plays in scrotal evaluation
- 2.24 Define vasectomy. Describe the reported changes in the sonographic appearance of the testis/scrotal contents after a vasectomy has been performed
- 2.25 Describe the clinical problems of the penis which can be assessed with Sonography
- 2.26 Describe the condition of Peyronie's disease

Common Course Number: SON 1141

UNITS

Unit 3 Anterior Abdominal Wall

General Outcome:

- 3.0 The student shall:** demonstrate an understanding of scanning procedures associated with normal and abnormal structures in the anterior abdominal wall

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 3.1** Identify anterior abdominal wall anatomy
- 3.2** Demonstrate the following techniques for obtaining a diagnostic examination of the anterior abdominal wall:
- a. protocol
 - b. patient position
 - c. scanning planes
 - d. use of TGC
 - e. transducer selection
 - f. optimal focusing
- 3.3** Identify on sonograms:
- a. normal and congenital anatomy
 - b. normal versus abnormal sonographic patterns
 - c. pathological conditions in terms of:
 1. cystic
 2. solid
 3. complex
 4. diffuse changes
 5. those that are technically satisfactory and unsatisfactory

Common Course Number: 1141

UNITS

Unit 4 Intracranial Cerebrovascular Evaluation

General Outcome:

- 4.0 The student shall:** demonstrate an understanding of scanning procedures associated with intracranial cerebrovascular evaluation

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 4.1** Identify clinical applications in which transcranial color flow imaging may be beneficial
- 4.2** Describe the intracranial artery anatomy encountered during transcranial color flow imaging
- 4.3** Describe the way(s) access for intracranial artery assessment is accomplished
- 4.4** Identify the usual windows for establishing access
- 4.5** Identify the four segments of the internal carotid artery
- 4.6** Describe the Doppler spectrum waveform configuration
- 4.7** Describe the limitations of the transcranial Doppler exam
- 4.8** Describe the anatomy of the circle of Willis
- 4.9** Describe the usual symptoms of subclavian steal syndrome

Common Course Number: SON1141

UNITS

Unit 5 Chest, thoracentesis, amniocentesis, and other puncture/biopsy procedures

General Outcome:

- 5.0 The student shall:** demonstrate an understanding of the role of sonography and scanning procedures associated with various biopsy and puncture procedures.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 5.1** Identify normal chest anatomy
- 5.2** Describe when diagnostic sonographic imaging plays an important role in making a differential diagnosis related to pathology of the chest
- 5.3** Describe the different thoracentesis and biopsy locations and the role of sonographer assistance in location of sites
- 5.4** Define infiltration as it relates to an IV line.
- 5.5** Describe aseptic and sterile techniques
- 5.6** Describe the role of the sonographer in biopsy procedures
- 5.7** Describe the sites to be avoided when performing an amniocentesis
- 5.8** Recall the location in the fetal body or cord where blood is inserted during a fetal transfusion for RH-incompatibility or other fetal-maternal blood group incompatibility
- 5.9** List the reasons for amniocentesis
- 5.10** Describe the risks and benefits involved in amniocentesis
- 5.11** Explain percutaneous umbilical blood sampling, chorionic villi sampling, and amniocentesis, and describe which is most hazardous
- 5.12** Relate the advantages of percutaneous umbilical blood sampling, chorionic villi sampling and amniocentesis, and recall the period of pregnancy when each is used
- 5.13** Relate the most likely protocol for handling a patient who goes into shock or has a vasovagal reaction while undergoing a diagnostic or interventional procedure.

Common Course Number: SON 1141

UNITS

Unit 6 Breast

General Outcome:

- 6.0 The student shall:** demonstrate an understanding of anatomy, physiology and pathophysiology, and scanning procedures associated with sonographic examination of the breast

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 6.1** Discuss the reasons sonographic imaging plays an important role in making a differential diagnosis of the breast
- 6.2** Identify the gross, cross-sectional plane, sagittal, plane and coronal plane anatomy of the normal breast and the variations in breast tissue
- 6.3** Describe the physiological function of the breast
- 6.4** Correlate related imaging procedures and sonographic examinations of the breast, defining the advantages and disadvantages of ultrasound
- 6.5** Describe the techniques for obtaining a diagnostic examination of the breast:
- a. protocol
 - b. patient position
 - c. scanning planes
 - d. use of TGC
 - e. transducer selection
 - f. focusing
 - g. labeling of images
- 6.6** Identify on sonograms:
- a. normal and congenital anatomy
 - b. normal versus abnormal sonographic patterns
 - c. pathological conditions in terms of
 1. cystic mass
 2. solid mass
 3. complex mass
 4. diffuse alterations in texture
 5. sound transmission through area of suspicion
 6. those which are technically satisfactory and unsatisfactory

- 6.7 Name the most common pathologic lesions of the female breast in order of decreasing frequency
- 6.8 Name the most sensitive method for detecting cancer in the fatty breast
- 6.9 Recall the only reliable method for determining if a breast mass is malignant or benign
- 6.10 Identify the location in the breast where most cancers will originate
- 6.11 Describe the function of Cooper's ligaments
- 6.12 Identify the area where the greatest amount of glandular tissue in the breast is located
- 6.13 Recall the clinical and sonographic manifestations associated with benign or malignant processes of the breast
- 6.14 Explain the congenital anomalies of the breast and name the most common
- 6.15 Recall the most common form of breast cancer
- 6.16 Describe the physiology of the breast
- 6.17 Formulate a specific differential diagnosis for the breast masses based on the clinical history, laboratory data, results of related diagnostic procedures, the appearance of the sonographic examination's tissue signature, and Doppler techniques, if appropriate
- 6.18 Describe the reasons for needle biopsy of the breast

Common Course Number: SON 1141

UNITS

Unit 7 Ophthalmic Applications

General Outcome:

- 7.0 The student shall:** demonstrate an understanding of the role of sonography in locating pathology of the eye

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 7.1** Describe when sonography plays an important role in making a differential diagnosis of the eye
- 7.2** Discuss common pathology found in the eye and orbit

Common Course Number: SON 1141

UNITS

Unit 8 Introduction to Carotid Arteries and Peripheral Vascular Evaluation

General Outcome:

- 8.0 The student shall:** demonstrate an understanding of the basics of anatomy and physiology, normal and abnormal blood flow patterns, scanning procedures, Doppler techniques and pathology associated with the carotid arteries

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 8.1** List the risk factors for stroke and describe which are modifiable (controllable) and which are nonmodifiable (noncontrollable). Describe: CVA, RIND, TIA.
- 8.2** Describe the transducer positions to image the carotid arteries and the direction the transducer would be moved to image the internal and external carotid arteries. (*answer: from the carotid bulb the transducer is moved posteriorly to image the ICA and anteriorly for the ECA in the majority of persons*)
- 8.3** Determine which location in the carotid arteries that occlusion would be most serious and relate whether or not total ICA occlusion is amenable to surgery
- 8.4** Define a bruit and describe its causes
- 8.5** Distinguish between the features of the carotid arteries and the jugular vein
- 8.6** Describe the methods the sonographer can use to distinguish the external from the internal carotid artery- both imaging and Doppler spectral waveform and/or color flow imaging
- 8.7** Recall the clinical sign(s) which would lead the sonographer to suspect the subclavian steal syndrome
- 8.8** Describe the most common anomaly seen in carotid realtime scanning
- 8.9** Recall the areas which should be interrogated with Doppler when performing a carotid artery examination
- 8.10** Describe the anatomical relationship of the external to the internal carotid artery. i.e., which is normally or typically posterior and which is anterior
- 8.11** Recall the most common site for plaque and intimal thickening (*answer: Carotid bulb*)
- 8.12** Describe the origin of the carotid arteries. i.e., which vessels they arise from

- 8.13 Describe which has the least resistance – the internal or external carotid artery (which has a more pulsatile flow and goes to or below the baseline)
- 8.14 Determine which has the larger diameter – the internal or external carotid artery
- 8.15 Describe the anatomical relationship of the jugular vein to the carotid arteries
- 8.16 Describe the sonographic appearance of the intima. Determine what pathology a loud bruit suggests
- 8.17 Identify the Doppler spectral and color flow characteristics of the internal carotid artery, the external carotid artery and the common carotid artery - i.e. low resistance or high
- 8.18 Identify the main vessel areas involved in a carotid artery study
- 8.19 Describe the direction of flow (on a graph, strip chart, color flow image or spectral analysis display) that is considered abnormal
- 8.20 Describe the angle the Doppler beam should be to the vessel to obtain useful information. At what angle would NO useful information be obtained?
- 8.21 Describe the artifact produced when the Nyquist limit is exceeded. Describe the location in the carotid artery evaluation where it is considered normal to see a transient reverse flow.
- 8.22 Identify the gross, cross-sectional plane, and sagittal plane anatomy and blood flow patterns of the normal carotid arteries
- 8.23
 - 1.1 Describe the following techniques for obtaining a diagnostic examination of the carotid arteries:
 - a. protocol
 - b. patient position
 - c. scanning planes
 - d. use of time-gain compensation and focusing
 - e. transducer selection
 - f. Doppler applications
- 8.24 Identify on sonograms
 - a. normal and congenital anatomy
 - b. normal versus abnormal sonographic tissue and blood flow patterns
 - c. pathological conditions
 - d. those sonograms which are technically satisfactory or unsatisfactory
- 8.25 Regarding deep vein thrombosis from the extremities, identify the **abdomen** pathology that has been associated with multiple episodes of deep vein thrombus

- 8.26** Describe techniques for evaluating deep vein thrombosis. i.e. how does compression and augmentation affect normal flow? What role does compression of the lumen play in evaluating a thrombus? What are clinical signs? What is Homan's sign?
- 8.27** Name a potentially lethal complication of deep vein thrombosis
- 8.28** Define claudication
- 8.29** Describe the sonographic and Doppler patterns associated with a pseudoaneurysm
- 8.30** Describe the causes of pseudoaneurysm
- 8.31** Describe the function of venous valves
- 8.32** Describe the normal lower extremity arterial Doppler patterns

Common Course Number: SON1141

UNITS

Unit 9 Bladder and Prostate

General Outcome:

- 9.0 The student shall:** demonstrate an understanding of normal anatomy, pathophysiological processes and sonographic scanning procedures associated with the bladder and prostate.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 9.1** Describe the way a diagnosis of bladder diverticulum is made
- 9.2** Describe acute cystitis and relate whether it is more common in males or females
- 9.3** Name the most common type of prostatic neoplasm
- 9.4** Describe the sonographic appearance of the seminal vesicles associated with prostatitis
- 9.5** Describe the function of the prostate gland
- 9.6** Describe the sonographic appearance of the prostate gland with prostatitis
- 9.7** Describe the anatomical relationship of the seminal vesicles to the prostate gland
- 9.8** Recall the congenital abnormalities of the bladder
- 9.9** Recall the cause(s) of prostatitis
- 9.10** Recall the symptom(s) of a bladder tumor
- 9.11** Describe the causes of acute and chronic cystitis
- 9.12** Name the most common type of tumor of the bladder
- 9.13** Describe the sonographic appearance of the prostate gland
- 9.14** Describe the sonographic appearance of the prostate associated with hypertrophy. Which zone is most likely affected?
- 9.15** Describe the anatomy related to the bladder and prostate gland
- 9.16** Describe the sonographic appearance of the prostate with carcinoma (the most common appearance). Which zone is most affected?

- 9.17 Describe the effect androgens have on prostatic carcinoma
- 9.18 Describe the effect estrogens have on prostatic carcinoma
- 9.19 Recall the conditions which would cause disruption of the prostate capsule
- 9.20 Recall the approximate size of the normal prostate gland
- 9.21 Discuss the role of sonography in the biopsy procedures of the prostate gland
- 9.22 Discuss the advantages and disadvantages of transrectal approach versus transperineal approach for biopsy of the prostate gland
- 9.23 Describe the role of the laboratory tests - PSA (Prostate specific antigen) and acid phosphatase – in the diagnosis of prostate carcinoma
- 9.24 Describe the sonographic appearance of a distended neurogenic bladder
- 9.25 Describe the sonographic appearance of, and be able to identify, ureterocele.
- 9.26 Recall the contraindications for clamping off a urinary catheter
- 9.27 Describe potential risks associated with retrograde filling of the urinary bladder

Common Course Number: SON 1141

UNITS

Unit 10 Rule Out Lower Limb Mass and Baker's Cyst

General Outcome:

10.0 The student shall: demonstrate an understanding of the role of sonography in evaluating the lower limbs for masses

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 10.1** Define popliteal cyst and relate it's cause
- 10.2** Describe the sonographic appearance of Baker's cysts
- 10.3** Distinguish between a popliteal cyst and a popliteal aneurysm
- 10.4** Identify the other sites that should be examined when a popliteal aneurysm is discovered
- 10.5** Discuss the role of Doppler techniques in evaluating the popliteal artery and vein

Common Course Number: SON 1141

UNITS

Unit 11 Retroperitoneum and Miscellaneous Exams/Sonographer Interactions

General Outcome:

11.0 The student shall: demonstrate an understanding of the retroperitoneum anatomy and pathological conditions, and various other exams such as baby hips, adult shoulders, etc. as well as sonographer/patient interactions associated with all exams.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 11.1** Describe the anatomy of the retroperitoneum and determine which structures are located in the various retroperitoneal spaces.
- 11.2** Identify structures border the retroperitoneum anteriorly and posteriorly.
- 11.3** Name structures/space(s) located in the retroperitoneum in the true pelvis
- 11.4** Compare the mortality rate for patients with retroperitoneal abscess with that of patients with intraperitoneal abscess.
- 11.5** Describe the most common pathologies located in each of the retroperitoneal spaces, the origin of the various pathologies, clinical signs and symptoms, and sonographic appearances.
- 11.6** Describe the appearance of acute bleeding into the psoas muscle
- 11.7** Describe retroperitoneal fibrosis and it's effect on adjacent structures.
- 11.8** Compare the sonographic appearances of Hodgkin's and non-Hodgkin's lymphoma, retroperitoneal fibrosis, metastatic lymphadenopathy, abscess and hematoma. Can they be always distinguished from each other sonographically? How are these manifested clinically?
- 11.9** Identify on a sonogram the most common appearances of retroperitoneal fibrosis.
- 11.10** Identify on a graph, drawing or sonogram the psoas muscles and the quadratus lumborum muscles.
- 11.11** Describe the conditions and/or populations most associated with a higher incidence of congenital hip dislocation.
- 11.12** Identify the sonographic appearance of the ileum, ishium, pubus, triradiate cartilage
- 11.13** Distinguish between the various abnormalities associated with infant hip scanning, e.g., complete dislocation, partial dislocation, Subluxation, and describe the appearance during the various scanning maneuvers.
- 11.14** Name the muscles/tendons which comprise the rotator cuff (shoulder).
- 11.15** Identify the information which can be placed on preliminary reports issued by the sonographer
- 11.16** Describe several ways the sonographer can demonstrate understanding and acceptance of the patient during sonographer/patient interaction.

Common Course Number: SON 1141

UNITS

Unit 12 Role of the Sonographer

General Outcome:

12.0 The student shall: demonstrate an understanding of role and duties of the sonographer in the operation of equipment, patient care and should be able to follow a given exam protocol.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 12.1** Demonstrate personal skills and qualifications of a sonographer.
- 12.2** Demonstrate the correct usage of the ultrasound equipment.
- 12.3** Demonstrate proper imaging and scanning techniques for general exam protocols.
- 12.4** Demonstrate communication skills required to be an effective participant in the health care system.
- 12.5** Recognize the importance of, and employ, ergonomically correct scanning techniques.