

CHATTANOOGA STATE COMMUNITY COLLEGE
CHATTANOOGA, TENNESSEE
DIVISION OF NURSING & ALLIED HEALTH
DIAGNOSTIC MEDICAL SONOGRAPHY PROGRAM
COURSE SYLLABUS

US 223 – Abdomen & Small Parts III

Class Hours: **3** **Credit Hours:** **3**
Laboratory Hours: **1**

Semester: SUMMER 2011
Dates: TBA, EVERY OTHER Tuesday & 1st Wed. each month
Times: Class on Tues. 8:30 a.m.–12:00 p.m. / Lab on designated Weds. 8:30 a.m.–12:00 p.m.

Course & Lab Instructor:
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Office Hours: M-F, 8:30 a.m.-5:00 p.m. (unless clinic travel or class)

Additional Lab Instructor:
Jody Arnold Hancock, MAEd, RDMS, RVT, RT(R) Voice Mail: (423)697-3341
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Office: Chatt. State HPF Building, Office 177
Office Hours: M-F, 8:30 a.m.-5:00 p.m. (unless clinic travel or class)

CATALOG COURSE DESCRIPTION

The third of a three-course sequence; US 223 is a continuation of US 213 in the anatomic appearance and pathologic patterns of the abdominal organs. The student will also gain knowledge in the demonstration of anatomy and pathology of superficial structures (small parts) and neonatal encephalography.

ENTRY LEVEL STANDARDS

Successful completion of US 213, as documented by a minimum grade of "C" in the course, as well as proper demonstration of patient care within the clinical environment and proficient relational abilities between didactical coursework and actual clinical involvement of these principles. The student should demonstrate a responsible attitude toward attendance, independent learning activities, participation, and preparation for classroom material.

PREREQUISITE: US 213, with a minimum grade of "C."

COREQUISITES: US 220, US 221, US 222, and US 225.

TEXTBOOKS USED:

1. Hagen-Ansert, S. (2001). Textbook of Diagnostic Ultrasonography, 6th ed., Vol. One. St. Louis: Mosby.
2. Curry, Tempkin (2004). Exercises in Sonography: Introduction to Normal Structure and Function. (2nd ed.) Philadelphia: W.B. Saunders & Co.
3. Curry, Tempkin (2004). Sonography: Introduction to Normal Structure and Function. (2nd ed.) Philadelphia: W.B. Saunders & Co.
4. Hickey & Goldberg (1999). Ultrasound Review of the Abdomen, Male Pelvis, and Small Parts, Philadelphia: Lippincott.
5. Tempkin, B. (1999). Ultrasound Scanning: Principles and Protocols (2nd ed.). Philadelphia: W.B. Saunders & Co.

COURSE DELIVERY FORMAT:

Standard Format – This format is the traditional format and may use an online format to provide access to “static” materials which include the syllabus, course material, contact information, and presentations. Faculty must make available when requested a copy of syllabus and any other instructor provided course materials, including their

contact information. Faculty may require on-line activities and assignments to include online tests and submission of all written and on-line communications. The extent of on-line activities/assignments may vary by course but will be specified on the syllabus.

PRESENTATION METHODS:

- Interactive Lectures/Discussions
- Audio-Visual Aids
- Computerized Presentations
- Internet Research Preparation
- Clinical Correlation
- Laboratory Correlation with Images
- Laboratory Scanning Review
- Interactive Computer Laboratory Sessions
- Independent Studies
- Group Studies
- Examination Review

OUTCOMES & OBJECTIVES

ISLOs - INSTITUTIONAL STUDENT LEVEL OUTCOMES: Specific definitions of each may be found in your Program Handbook. Graduates of the accredited diagnostic medical sonography programs will demonstrate reflective outcomes related to knowledge, skills and attitudes that a community college graduate is expected to develop, to include:

- ISLO1. Effective Communication**
- ISLO2. Critical Thinking and Analytical Skills**
- ISLO3. Information Technology Skills**
- ISLO4. Societal & Cultural Awareness**
- ISLO5. Foundational Knowledge in a Specialty**
- ISLO6. Work Ethic**

PSLOs - PROGRAM STUDENT LEVEL OUTCOMES: This course is offered in conjunction with other pre-requisite and/or co-requisite courses as part of the accredited sonography program. At the end of the program year, the student will demonstrate mastery of the following knowledge, skills, attitudes and/or values as related to all program learning.

- PSLO1.** Obtain, review, and integrate pertinent patient history and supporting clinical data to facilitate optimum diagnostic results. **(RELATES TO ISLO 5)**
- PSLO2.** Perform appropriate procedures and record anatomic, pathologic, and/or physiologic data for interpretation by a physician. **(RELATES TO ISLO 5)**
- PSLO3.** Record, analyze, and process diagnostic data and other pertinent observations made during the procedure for presentation to the interpreting physician. **(RELATES TO ISLO 3)**
- PSLO4.** Exercise discretion and judgment in the performance of sonographic and/or other diagnostic services. **(RELATES TO ISLO 2)**
- PSLO5.** Demonstrate appropriate communication skills with patients and colleagues. **(RELATES TO ISLO 1)**
- PSLO6.** Act in a professional and ethical manner. **(RELATES TO ISLO 6)**
- PSLO7.** Provide patient education related to medical ultrasound and/or other diagnostic vascular techniques, and promote principles of good health. **(RELATES TO ISLO 4)**

CSLOs - COURSE STUDENT LEVEL OUTCOMES: To be better prepared to interact and function in the sonography department upon course completion, the student will achieve the following course outcomes.

- CSLO1.** Properly assess the GI Tract, utilizing sonographic technique. **(RELATES TO PSLO 2)**
- CSLO2.** Properly assess the thyroid, parathyroid and breast demonstrating the role that ultrasound plays to differentiate benign from malignant characteristics. **(RELATES TO PSLO 2)**
- CSLO3.** Compare techniques and procedures in scanning the pediatric patient with those for the adult patient. **(RELATES TO PSLO 4)**
- CSLO4.** List the variances in anatomic, physiologic, and pathologic considerations of the pediatric patient. **(RELATES TO PSLO 2)**
- CSLO5.** Describe the special preparation necessary to perform neonatal neurosonography. **(Relates to PSLO 5)**
- CSLO6.** View neonatal brain development and anatomical components to identify abnormalities that may be detected in neurosonography by ultrasound technique. **(RELATES TO PSLO 2)**
- CSLO7.** Review male reproductive physiology, particularly of the prostate and scrotum, in the context of ultrasound imaging. **(RELATES TO PSLO 1)**
- CSLO8.** Using the knowledge gained of using ultrasound to determine/differentiate testicular masses, especially in the younger age groups, define the various types of pathology of the scrotal contents that can be demonstrated by sonography. **(RELATES TO PSLO 3)**
- CSLO9.** Demonstrate beginner techniques for imaging miscellaneous superficial structures, otherwise uncommonly considered. **(RELATES TO PSLO 2)**
- CSLO10.** Correlate previous anatomic knowledge with current pathology knowledge, for formulation of an integrated educational process. **(RELATES TO PSLO 7)**

LEARNING INDICATORS AND OBJECTIVES: These objectives assist in assuring the student will be better prepared to interact and function in the sonography department upon course completion. These learning indicators have also been included, and expanded upon, within the Instructional Objectives of each Topic section of this syllabus, to correlate with assignments for the purpose of focused student comprehension.

- LO1.** Diagram, describe and or assess the structures of the GI tract detailing anatomic divisions, positional relationships and normal sonographic appearance. **(CSLO 1)**
- LO2.** Utilize ultrasound to assess the GI tract and abdominal cavity for the evaluation of pathology and/or fluid collections, detailing clinical signs, symptoms and presentation, sonographic appearance, and scanning techniques, treatment, and challenges. **(CSLO 3)**
- LO3.** Describe and/ or discuss normal anatomic, developmental, and physiologic variants of the pediatric patient when sonographically assessing the thyroid, parathyroid, scrotum, superficial structures, and GI tract. **(CSLO 4)**
- LO4.** Diagram, describe and/or assess the anatomy of the neonatal brain detailing anatomic divisions, positional relationships, landmarks, and the normal sonographic appearance versus abnormal findings. **(CSLO 6)**
- LO5.** Discuss neonatal neurosonography detailing patient preparation, proper equipment/transducers, and sonographic technique. **(CSLO 5)**
- LO6.** Diagram, describe and/ or assess the Thyroid, Parathyroid and/or Breast detailing normal tissue echogenicity, anatomic relationships, and hormonal functions/influences. **(CSLO 2)**
- LO7.** Discuss the land marking method used to localize lesions within the breast or thyroid detailing the sonographic appearance of benign versus malignant pathology. **(CSLO 10)**
- LO8.** Diagram, describe and/or assess the anatomy of the male reproductive system detailing the location, function, and zones of the prostate gland and the contents of the scrotum. **(CSLO 8)**
- LO9.** Assess the scrotum detailing the normal sonographic appearance, blood supply, location and size of the testicles. **(CSLO 7)**
- LO10.** Describe common pathologies of the male reproductive system detailing signs, symptoms, sonographic appearance, evaluation methods, and age groups in which diagnosed. **(CSLO 8)**
- LO11.** Describe and/or assess superficial uncommonly imaged structures such as salivary gland or Baker's cysts detailing anatomic location/land marks, size, echogenicity, and sonographic appearance. **(CSLO 9)**

REQUIRED ASSESSMENTS

Syllabus Review	Submit Syllabus Acknowledgement Statement				ISLO 1
Topic 1 Objectives	Part 1 Instructional Objectives in Syllabus (Gastro-Intestinal Tract) +C & T Work Chapter 14	LO 1 LO 2 LO 3	CSLO 1 CSLO 3 CSLO 4	PSLO 2 PSLO 4 PSLO 2	ISLO 5 ISLO 2
Topic 2 Objectives	Part 2 Instructional Objectives in Syllabus (Ultrasound Guided Invasive Procedures)	LO 2	CSLO 3	PSLO 4	ISLO 2
Exam 1	Covers Topics & Materials on: Topic 1: Gastro-Intestinal Tract & Topic 2: Ultrasound Guided Invasive Procedures	LO 1 LO 2 LO 3	CSLO 1 CSLO 3 CSLO 4	PSLO 2 PSLO 4 PSLO 2	ISLO 5 ISLO 2
Topic 3 Objectives	Part 3 Instructional Objectives in Syllabus (Neurosonography & Pediatric Imaging) C & T Work Chapter 22 SHA Ch. 17 Review question 1 - 8 SHA Ch. 18 Review question 2-14	LO 3 LO 4 LO 5	CSLO 4 CSLO 6 CSLO 5	PSLO 2 PSLO 5	ISLO 5 ISLO 1
Laboratory 1	Activity 1: Neonatal Neuro Video (Student outline of information)	LO 4 LO 5	CSLO 6 CSLO 5	PSLO 2 PSLO 5	ISLO 5 ISLO 1
Laboratory 1	Activity 2: Fetal Head CME (Printed score sheet)	LO 4 LO 5	CSLO 6 CSLO 5	PSLO 2 PSLO 5	ISLO 5 ISLO 1
Exam 2	Covers Topics & Materials on: Topic 3: Neurosonography & Pediatric Imaging	LO 1 - 6	CSLO 1	PSLO 2	ISLO 5
Topic 4 Objectives	Part 4 Instructional Objectives in Syllabus (Thyroid & Parathyroid) +C & T Work Chapter 20	LO 3 LO 6 LO 7	CSLO 4 CSLO 2 CSLO 10	PSLO 2 PSLO 7	ISLO 5 ISLO 4
Topic 5 Objectives	Part 5 Instructional Objectives in Syllabus (Breast Sonography) +C & T Work Chapter 21	LO 6 LO 7	CSLO 2 CSLO 10	PSLO 2 PSLO 7	ISLO 5 ISLO 4
Exam 3	Covers Topics & Materials on: Topic 4: Thyroid & Parathyroid & Topic 5: Breast Sonography	LO 3 LO 6 LO 7	CSLO 4 CSLO 2 CSLO 10	PSLO 2 PSLO 7	ISLO 5 ISLO 4
Topic 6 Objectives	Part 6 Instructional Objectives in Syllabus (Male Reproductive System) +C & T Work Chapter 15	LO 3 LO 8 LO 9 LO 10	CSLO 4 CSLO 7 CSLO 8	PSLO 2 PSLO 1 PSLO 3	ISLO 5 ISLO 3
Topic 7 Objectives	Part 7 Instructional Objectives in Syllabus (Miscellaneous Superficial Structures)	LO 3 LO 11	CSLO 4 CSLO 9	PSLO 2	ISLO 5

Laboratory 2	Activity: Small Parts Case Study Presentation	LO 2 LO 3 LO 5 LO 6 LO 7 LO 9 LO 11	CSLO 3 CSLO 4 CSLO 5 CSLO 2 CSLO 10 CSLO 7 CSLO 9	PSLO 4 PSLO 2 PSLO 5 PSLO 7 PSLO 1	ISLO 2 ISLO 5 ISLO 1 ISLO 4
Final Exam	Comprehensive Exam Covers Topics & Materials on: Topics 1-7	LO 1-11	CSLO 1-10	PSLO 1 -5 PSLO 7	ISLO 1 – 5

EXAMS:

- Three (3) noncumulative objective tests - 45% of final grade
 - Each exam will be 15% of the final course grade.
 - All exam scores, however, MUST be passing (70% or higher) /or/ remediation will be expected.*
- One (1) cumulative final exam (no remediation allowed) - 25% of final grade.

The student will be tested on comprehension of anatomic, physiologic, and pathologic processes, as well as patient care considerations of the abdomen, superficial structures, and neonatal neurosonography.

*Remediation of an exam must take place if the student does not pass the exam with a score of 70% or greater. The policy of the CSTCC DMS program is to allow remediation of one(1) non-cumulative exam per course. This means that:

- When a final exam is cumulative/comprehensive, it is not eligible for remediation. (The student must pass with a minimum score of 70% to progress to the next course or to complete the program if the course exists in the final semester.)
- If a student has already remediated an exam during this same course, the student is no longer eligible for additional remediation within the specified course. (Students will continue to be eligible for a one-time remediation within another course during the same semester, however.)
- When sitting for a remediation exam, the student is expected to achieve a minimum score of 80% in order to progress to the next course or to complete the program if the course exists in the final semester.
- Although the student is allowed the opportunity for remediation for the sake of progression, the student's original exam grade will be posted for final grade calculation purposes.

Students who do not pass the remediation attempt with a minimum score of 80%, or students who have already remediated and do not achieve a minimum score of 70% on a following examination will not be allowed to progress in the course or program. Such students will have the opportunity to apply for readmission to the program during the following program year.

TEST SCHEDULE:

Exam #	Scheduled Date	Material Covered
1	TBA	Parts 1 & 2
2	TBA	Part 3
3	TBA	Parts 4&5
Final	TBA	Comprehensive (1-7)

LABORATORY EXPECTATIONS:

1. Demonstrations/Simulations, where applicable. Laboratories will be conducted to correspond with presentations, protocols and homework assignments.
2. Image recognition and case impressions.
3. Scanning/simulation participation and multimedia assignments will be graded for a portion of the laboratory grade, which consists as 10% of the student's final grade.

FIELD WORK:

Clinical Correlation to all Instructional Learning with clinical assignments that may be given as homework. Completion of assigned reading and homework objectives/exercises between class sessions is required.

CASE PRESENTATION:

Every student will be REQUIRED to present one (1) SMALL PARTS case study (5-10 minute presentation) to peers, as assigned by the instructor. HIPAA Regulations must be adhered to in such instances, with the **HIPAA Privacy Statement** submitted with the case, and the **Case Rubric** utilized if a full case is assigned by the instructor. These forms are located in your Syllabus following the Syllabus Acknowledgement Statement.

The student WILL NOT be allowed to use this case as one of the required clinical cases during this semester. This is a separately graded project. The required case presentation is worth **5%** of the student's final course grade.

OBJECTIVES & WORKBOOK COMPLETION:

Students will be expected to perform objectives located within the topic overviews for each section *INDEPENDENTLY*, in addition to other chapter objectives that may also be assigned. These objectives will be turned in prior to each exam that correlates to this material in the student's dropbox (either online or on campus).

Objectives completion directly assists in preparing the student for the assessment on related material, so these MUST be completed. The student should consider these as the "Entrance Ticket" to your exam. The instructor reserves the right to refuse the student entrance to the exam without first submitting these objectives.

Note that the student should preferably use the online dropbox and only use the on-campus one if online submission is not available or achievable. (The student should choose only one means or the other of submission; do not duplicate assignment submission into both places, please.)

Chapter and Instructional objectives will make up **10%** of the final course grade, while additional workbook assignments will comprise another **5%** of this grade.

OTHER EVALUATION METHODS:

Attendance and Participation will be taken into consideration when assigning the final grade, with points being deducted for unexcused absenteeism or tardiness. The instructor reserves the right to adjust grades according to these or other considerations (i.e. participation, disruption, etc.).

Attendance and other relevant classroom policies are specifically addressed in the DMS Student Handbook, where the student has previously given signature to an understanding and acceptance of these policies.

COURSE GRADING & GRADING SCALE:

Exam 1	15%
Exam 2	15%
Exam 3	15%
Final Exam	25%
Homework Completion	
Workbook	5%
Case Study	5%
Objectives	10%
Class Laboratories	10%

The final grades of A, B, C, D, or F will be assigned on the basis of the numerical average determined by the assignments listed above with the following point ranges:

A	(90-100)
B	(80-89)
C	(70-79)
D	(65-69)
F	(64 or less)

In the event that a student fails an exam and has exhausted all remediation attempts, the student will NOT be awarded a grade higher than a D, regardless of how the numeric grade would otherwise calculate. Students must successfully complete all work with passing competency grades for each assignment to achieve a minimum of a C in the course, thereby maintaining eligibility for program progression.

SYLLABUS STATEMENTS

STUDENT-INSTRUCTOR COMMUNICATION

All sonography program students are required to set up a TigerMail account and supply this official college email address to the program director at the beginning of the program year. Your director and/or instructor will use your TigerMail account to relay any *program-specific* information to you. The link to set up this account can be found on the campus TigerWeb home page, which will first require input of your Student campus ID (your "A" number) and setting up your own password.

Any email communications that are *course-specific* will be addressed by your instructor through the e-Learn (online course platform) email system. Your instructor(s) will demonstrate the use of this tool during your sonography orientation. Please utilize the e-Learn email system within your course when asking a *course-specific* question or submitting *course-specific* information to your instructor.

You may email your instructor at his/her Chattanooga State email address (rather than the e-Learn site) or call and leave a message on your instructor's voice mail when your question or information is either program-specific or your course-specific question has not been answered according to the procedure established in the following paragraph.

It is my goal, as your sonography course instructor, to answer your emails and voice mails within 48 hours during the regular program week (Mon-Fri) and within 72 hours when a weekend is involved. However, please understand that the sonography program requires faculty to travel to clinic sites and other professional events (often for multiple consecutive days) as part of my program duties. I will continue to make reasonable attempts to check my email and/or voice mail within the stipulated timeframe above. However, in an emergency where you have not received an adequate response in a timely manner, please leave a message with our secretary at 423-697-3360, specifically explaining your need, so that she may attempt to reach me or someone else who can assist you immediately. Thank you.

ASSIGNMENT GRADING

Students are asked to submit graded documents either within their Dropbox (online) or Inbox (on campus) by the designated due date. Your instructor will have submitted items graded no later than the following class week, where you will either receive confirmation of a grade in your Dropbox Comments (online) or your graded materials will be located in your Outbox (on campus). Your instructor will notify you of any grading delays beyond this standard, along with the anticipated time you may expect to receive your returned graded assignment.

Where instructor dates are provided (on the course online calendar, syllabus, lesson plans and/or in each topic segment), late work will be accepted only under extenuating circumstances and upon completion and submission of the Extension Request Form together with explanation and proof of need for an extension (i.e. doctors certificate, etc.). All accepted late assessment, regardless of cause, may be penalized.

If the course is not completed prior to the end of the term, the student will receive an Incomplete and will have two additional weeks into the following semester to complete the course work (unless the instructor has approved a later date in advance, due to approval of the extension request form). After such time, an Incomplete will be changed to a Failure of the course.

EXTENSION POLICY

Assignments will not be accepted after 2 weeks from the end of the assigned course week. Late assignments can only receive a maximum of 75% of the grade assigned. (Extreme extenuating circumstances, such as a health issue, may receive special consideration.)

ADA STATEMENT

Students who have educational, psychological, and/or physical disabilities may be eligible for accommodations that provide equal access to educational programs and activities at Chattanooga State. These students should notify the instructor immediately, and should contact Disabilities Support Services within the first two weeks of the semester in order to discuss individual needs. The student must provide documentation of the disability so that reasonable accommodations can be requested in a timely manner. All students are expected to fulfill essential course requirements in order to receive a passing grade in a class, with or without reasonable accommodations.

DISRUPTIVE STUDENTS

The term "classroom disruption" means – student behavior that a reasonable person would view as substantially or repeatedly interfering with the activities of a class. A student who persists in disrupting a class will be directed by the faculty member to leave the classroom for the remainder of the class period. The student will be told the reason(s) for such action and given an opportunity to discuss the matter with the faculty member as soon as practical. The faculty member will promptly consult with the division dean and the college judicial officer. If a disruption is serious, and other reasonable measures have failed, the class may be adjourned, and the campus police summoned. Unauthorized use of any electronic device constitutes a disturbance. Also, if a student is concerned about the conduct of another student, he or she should please see the teacher, department head, or division dean.

AFFIRMATIVE ACTION

Students who feel that he or she has not received equal access to educational programming should contact the college affirmative action officer.

ACADEMIC INTEGRITY/ACADEMIC HONESTY

In their academic activities, students are expected to maintain high standards of honesty and integrity. Academic dishonesty is prohibited. Such conduct includes, but is not limited to, an attempt by one or more students to use unauthorized information in the taking of an exam, to submit as one's own work, themes, reports, drawings, laboratory notes, computer programs, or other products prepared by another person, or to knowingly assist another student in obtaining or using unauthorized materials. Plagiarism, cheating, and other forms of academic dishonesty are prohibited. Students guilty of academic misconduct, either directly or indirectly through participation or assistance, are immediately responsible to the instructor of the class. In addition to other possible disciplinary sanctions, which may be imposed through the regular institutional procedures as a result of academic misconduct, the instructor has the authority to assign an "F" or zero for an activity or to assign an "F" for the course.

SYLLABUS GUIDELINES STATEMENT

The instructor reserves the right to modify this syllabus in writing anytime during the course of the semester.

This course is governed by the policies and procedures as stated in the current:

- Chattanooga State Student Handbook
- CSTCC Nursing/Allied Health Student Handbook
- CSTCC Diagnostic Medical Sonography Student Handbook.

Additional or more specific guidelines may apply.

PROGRAM POLICIES: This class is governed by the policies and procedures stated in the current Chattanooga State Diagnostic Medical Sonography Student Handbook. Additional or more specific guidelines may apply.

COLLEGE POLICIES: This class is governed by the policies and procedures stated in the current Chattanooga State Student Handbook. Additional or more specific guidelines may apply.

STUDENT ACKNOWLEDGEMENT STATEMENT

By my signature below, I attest that I have received and reviewed the US 223
course no.

Syllabus for _____
Semester Year

I understand the course requirements with regard to attendance, grading, objectives, course policies and procedures, including those regarding my conduct in this course. I agree to be held accountable for my performance and actions according to such requirements and also agree to the provisions of the *Syllabus Guidelines Statement* as written within the course syllabus.

Student Name (Please Print): _____

Student Signature: _____ Date: _____

Chattanooga State Community College Diagnostic Medical Sonography Program
HIPAA Privacy Statement Related to Sharing of Case Study Information for Educational Purposes

Course #: _____ Semester/Year: _____

Case Study Title: _____

Case Study #: _____ Instructor: _____

The submitted archived images/reports associated with this case study are to be used only by the ChSCC DMS/CVS Programs for case study information, according to the current HIPAA agreement that has been signed by all relevant parties. No portion is to be shared for any other purpose outside of the agreed upon scope to pursue academic knowledge for professional necessity. Any parties viewing such information are within this same instructional scope and also agree that no information about this patient or case will be discussed or used outside of this environment.

Any cases remaining with the instructor will be stored in a case file that is either physically locked in the digital imaging room or file room storage facility or digitally stored on a password protected computer that will only be accessed by parties covered within the designated instructional scope OR will be disposed of in the same manner as all privacy records on campus. Any case study records returned to the student MUST be immediately returned to the clinical site from which they were released for use.

The Student submitting this case should designate one of the following options, related to the extent of privacy information included:

- Submitted documents and/or images DO NOT contain any recognizable patient identification.
- Submitted documents and/or images DO NOT contain any recognizable facility identification.
- Submitted documents and/or images DO contain information that is recognizable but CANNOT be removed. The Data archiving/PACS system does NOT allow the removal of data or I am NOT provided with any alternate capability to hide patient information.
 - The recognizable data is related to patient identification.
 - The recognizable data is related to facility identification.
- Students are not permitted to remove Images/reports associated with case studies from this facility. Relevant Data pertaining to this case study must be reviewed on site by ChSCC faculty.

Student Signature: _____ Date of Signature: _____

**Chattanooga State Community College
Diagnostic Medical Sonography Program**

Case Study Assessment Guide

	Criteria				
	17	15	13	11	Points
Indications/ Presenting Symptoms	Completeness of case history to include: Age, gender, presentation of symptoms/indications, and prior diagnosis or problems.	Case history is complete except one criterion is omitted.	Case history partially complete, two criteria are omitted.	Limited Case history included.	
Sonographic Findings	Excellent description of a specific US exam (with submitted images) to include: US appearance using appropriate medical terminology to describe pathology/findings in students' own words.	Very Good description of US findings and use of terminology, however, one abnormality is omitted. Appropriate images are submitted.	Good description of US findings, however, one abnormality is omitted and/or inappropriate terminology is used. Only a limited number of images are included.	US findings are limited to a copied radiology report. No images/few images are submitted.	
Scanning Problems/ Caveats Involved and How These Were overcome	Scanning caveats/problems are thoroughly discussed along with a description of how these were overcome.	Scanning caveats/problems are discussed along with a limited description of how these were overcome.	Scanning caveats/problems are discussed along with no description of how these were overcome.	Scanning caveats/problems and a description of how these were overcome were not discussed, only limited entry, such as "no problems"	
Applicability to Present Didactical Studies	Student relates in excellent detail how this case applies to their present didactic studies.	Student relates in very good detail how this case applies to their present didactic studies.	Student relates in good detail how this case applies to their present didactic studies.	Student relates in very limited detail how this case applies to their present didactic studies.	
New Clinical Applicability	Student relates in excellent detail how new technology, instrumentation or other procedures were used to obtain diagnosis for this case.	Student relates in good detail how new technology, instrumentation or other procedures were used to obtain diagnosis for this case.	Student relates in limited detail how new technology, instrumentation or other procedures were used to obtain diagnosis for this case.	Student relates in very limited or no detail how new technology, instrumentation or other procedures were used to obtain diagnosis for this case.	
Additional Information	Excellent additional information is gathered concerning this specific case or pathology including (if available): lab results, imaging reports and /or images from other modalities, surgical notes, pathology reports, and research information concerning the abnormality/pathology.	Good additional information is gathered concerning this specific case or pathology to including (if available): lab results, imaging reports and /or images from other modalities, surgical notes, pathology reports, and research information concerning the abnormality/pathology.	Additional information is gathered concerning this specific case or pathology including (if available): lab results, imaging reports and /or images from other modalities, surgical notes, pathology reports, and research information concerning the abnormality /pathology.	Only limited additional information is gathered concerning this specific case or pathology.	
				Total →	

US 223

Part 1 Gastrointestinal Tract

Summer Semester

Reading Assignment(s): S. Hagen-Ansert, Chapter 9
 Chapter 17
 Chapter 14, pg. 213-231
 Chapter 5, pg. 56-74
Homework Assignment(s): Instructional Objectives
 C&T Workbook, Ch. 14

Instructional Objectives: Due on exam date

1. List the pathologies which may have the sonographic appearance of a "pseudokidney" or "sandwich sign" and describe.
2. Discuss why gastrointestinal sonography is often challenging or impossible.
3. Describe the divisions of the small and large intestines.
4. Identify the parts of the stomach, including the parts of the pylorus.
5. Name the wall layers of the stomach.
6. Identify the best method for localizing the appendix.
7. Explain how color Doppler can be utilized to aid in the diagnosis of appendicitis.
8. List the three hormones secreted by the GI tract and describe their functions.
9. Draw and label the normal bowel wall layers.
10. Describe the sonographic appearance of normal bowel (gut signature) including the wall thickness.
11. List three ways to differentiate a mass from the normal stomach.
12. Identify the most common tumor of the stomach and describe the sonographic findings related to it.
13. Discover the malignant tumor which is predominantly (90-95%) found in the stomach and discover the most likely location and sonographic appearance of this tumor.
14. List the signs and symptoms of hypertrophic pyloric stenosis (HPS) and explain the most common treatment.
15. Describe the sonographic technique for identifying hypertrophic pyloric stenosis including the parameters for size.
16. Describe where the appendix is located and its normal sonographic appearance.
17. Appendicitis results from lumen obstruction and inflammation leading to ischemia of the vermiform appendix.

List six causes of obstruction.

18. Describe the clinical symptoms of appendicitis and discuss why surgical removal is necessary.

19. Identify the sonographic findings associated with acute appendicitis.

20. Discover the most common type of colorectal cancer and list the main symptoms.

21. Identify the areas of the body that should be investigated with ultrasound when colorectal cancer is diagnosed.

22. Discuss the clinical and sonographic features of intussusception.

23. List and describe common diagnostic tests that are utilized to diagnose gastrointestinal pathology (omit sonography).

24. Define the following:

Crohn's disease
Duplication cysts
Intussusception
Keyboard sign
McBurney's Point
Physiologic herniation
Valvulae conniventes

Topic Outline:

Part 1 Gastrointestinal Tract

- I. Introduction
- II. Prenatal Development
 - a. The primitive gut development
 - b. Physiologic herniation
- III. Anatomy
 - a. Esophagus
 - b. Stomach
 - c. Small Intestines
 - d. Colon
 - e. Vermiform Appendix
 - f. Blood supply to GI tract
- IV. Physiology
 - a. Endocrine functions
 - b. GI tract hormones
- V. Sonographic Appearance
 - a. Normal bowel wall layers
 - b. Esophageal-gastric junction
 - c. Stomach
 - 1. Gastric antrum
 - d. Small Intestines
 - e. Large Bowel or colon
- VI. Clinical Symptoms
- VII. Laboratory Tests
 - a. Fecal blood
 - b. White blood cell count
 - c. Carcinoembryonic antigen (CEA)
- VIII. Pathology

- a. Duplication cysts
 - b. Leiomyomas
 - c. Gastric carcinoma
 - d. Hypertrophic Pyloric Stenosis
 - e. Inflammatory Bowel disease
 - 1. Crohn's disease
 - 2. Appendix
 - Appendicitis
 - Appendicoliths
 - Abscess
 - f. Obstruction
 - g. Intussusception
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Part 2

Ultrasound Guided Invasive Procedures

Summer Semester

Reading Assignment(s):	S. Hagen-Ansert, Hickey & Goldberg	Ch.13, pg. 402-409, 405-408 (images) Ch.10, pg. 197, 203, 206, & 218
Homework Assignment(s):	Instructional Objectives	

Instructional Objectives: Due on exam date

1. List at least six advantages of using ultrasound guided methods for percutaneous biopsy.
2. Computerized tomography and sonography are both used for biopsies and aspirations. What information is needed when deciding which modality to use for a specific procedure?
3. List indications and contraindications for percutaneous biopsy.
4. Identify the laboratory tests usually required before performing an ultrasound guided biopsy.
5. Explain the technique used to best demonstrate the needle while performing an ultrasound guided biopsy.
6. Describe the order in which fluid accumulates in the body.
7. Draw a table comparing the sonographic appearance of the two major types of ascites.
8. List the common indications for a paracentesis.
9. Discover the pathologies associated with ascites.
10. Identify the laboratory tests which may be ordered on the fluid after a paracentesis.
11. Describe how a paracentesis is performed.

12. List the common indications/contraindications for a liver biopsy.
13. Describe how a liver biopsy is performed.
14. Explain why sonographic guidance for a thoracentesis is valuable.
15. List the causes of exudative and transudative pleural effusions.
16. Describe the ultrasound findings related to exudative and transudative pleural effusions.
17. Explain how a thoracentesis is performed, include alternative patient positions for patients who are not physically able sit upright in your discussion.
18. List common indications for a prostate biopsy.
19. Explain why sterile technique is not required for a prostate biopsy.
20. Describe ultrasound's role in renal biopsies.

Topic Outline:

Part 2 Ultrasound Guided Invasive Procedures

- I. Introduction
- II. Advantages of Ultrasound Guided Biopsy
 - a. Readily available
 - b. Portable
 - c. Uses no ionizing radiation
 - d. Lower medical costs for the patient
 - e. Precise needle placement in real-time
- III. Imaging Methods
 - a. Computerized Tomography
 - b. Sonography
- IV. Indications and Contraindications
- V. General Procedures for Biopsy and Aspiration
 - a. Obtain detailed patient history
 - b. Informed consent should be received
 - c. Frequently performed on an outpatient basis
 - d. Prep
 - e. Sterile procedure
 - f. Coagulation test results
 - g. Biopsy techniques
- VI. Paracentesis
 - a. Two types of ascites:
 1. Exudative - Malignant ascites
 2. Transudative - Serous
 - b. Sonographic appearance
 - c. Indications
 - d. Associated pathologies
 - e. Procedure
- VII. Liver Biopsy
 - a. Common indications/contraindications
 - b. Procedure
- VIII. Thoracentesis

- a. Causes of exudative pleural effusions
 - b. Causes of transudative pleural effusions
 - c. Ultrasound signs of pleural fluid
 - d. Procedure
- IX. Prostate Biopsy
- a. Indications
 - b. Procedure
-

US 223

Part 3 Neonatal Neurosonography Pediatric Sonography

Summer Semester

Neonatal Neurosonography

- Reading Assignment(s): SHA Ch. 21
C&T Ch. 22 pg. 397- 409
- Homework Assignment(s): Instructional Objectives
C&T Workbook, Ch. 22

Pediatric Sonography

- Reading Assignment(s): SHA Ch. 22
SHA Ch. 23
- Homework Assignment(s): SHA Review Questions 1-8 (Ch. 22) Due on Exam date
SHA Review Questions 2-14 (Ch. 23) Due on Exam date
-

Instructional Objectives: Due on exam date

1. Identify the soft-tissue structure visualized within the third ventricle when it is dilated.
2. Name the structure from which the lateral ventricles drain.
3. Explain how the third and fourth ventricles are connected.
4. Identify the anatomical landmark within the brain which is utilized to locate the middle cerebral arteries.
5. Name the four segments of the lateral ventricles.
6. List the transducer type and transducer frequency most commonly used for neurosonography.
7. Identify the best acoustic window to use when imaging the neonatal brain.
8. List four causes of neonatal brain hemorrhage.
9. Identify the site where a subependymal hemorrhage can be found.
10. List the grades of intracranial hemorrhage and define each.

11. Name the structures in which the choroid plexus lies.
12. Identify the most common site for a choroids plexus hemorrhage.
13. Define periventricular leukomalacia.
14. Discover the etiologies for periventricular leukomalacia.
15. Identify the malformation associated with agenesis of the corpus callosum

REVIEW QUESTIONS: Chapters 22 & 23 (see SHA 5th ed. Chapters 17 & 18)

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Part 4 Thyroid and Parathyroid Anatomy, Physiology, and Pathology

Required Reading:	S. Hagen-Ansert Curry & Tempkin	Chapter 14, pg. 395-407 Chapter 20
Additional Reading:	Hickey & Goldberg	Chapter 8, pg. 151 - 168
Homework:	Instructional Objectives C&T Workbook Chapter 20	

Instructional Objectives: Due on exam date

1. Describe the location, echogenicity, texture and size of the normal thyroid.
2. Draw a diagram showing the relational anatomy of the thyroid and parathyroid (include the surrounding muscles, vessels, esophagus, trachea, minor neurovascular bundle, and vertebral body).
3. Discuss any normal variants of the thyroid gland.
4. Identify the vessels which supply blood to and drain the blood from the thyroid glands.
5. Describe the sonographic technique used to image the thyroid including the patient position, transducer type, and scan planes.
6. List the thyroid and parathyroid hormones and explain their functions.
7. Define hyperthyroidism and discuss the common disorders associated with it.
8. Identify the tests used to determine the function of the thyroid.
9. Explain how ultrasound is used in the detection of Grave's disease.

10. Discover the most common thyroid disorder and identify its causes.
11. Describe a goiter and its sonographic appearance.
12. List the different forms of thyroiditis and describe.
13. Describe a thyroid adenoma and discover the related ultrasound findings.
14. List the types of thyroid carcinoma and describe the sonographic characteristics of each.
15. Discover the normal size, shape, and most common locations of the parathyroid glands.
16. Discuss the function of the parathyroid glands.
17. Detail the characteristics of primary hyperparathyroidism and identify the most common cause.
18. Explain how ultrasound can aid in the diagnosis of parathyroid cancer.
19. Describe the developmental anomalies:
 - Thyroglossal cyst
 - Brachial cleft cyst
 - Cystic hygroma.

Topic Outline:

Part 4 Thyroid and Parathyroid Glands

- I. Introduction
- II. Physiology
 - a. Hormone cycle
 - b. Thyroid hormones
 1. Thyroxine (T4)
 2. Principle hormone
 3. Triiodothyronine (T3)
 4. Calcitonin
 - c. Functions
 1. Distribution of iodide into the body
 2. Combines with iodide & other enzymes to produce T4 & T3
 3. Stores and releases hormones gradually over time
 4. Production of calcitonin
- III. Thyroid Gland Anatomy
 - a. Normal and variants
 - b. Location
 - c. Size and shape
 - d. Relational Anatomy
 - e. Vascular Supply
- IV. Thyroid Lab Values
- V. Thyroid Gland Sonography
 - a. Obtain detailed patient history
 - b. High frequency transducer
 - c. Patient position
 - d. Imaging
 1. Scan planes
 - Transverse - superior, mid, and inferior lobe

- Sagittal - lateral, mid, and medial lobe
- 2. Additional images:
 - Measurement of mid-portion of each lobe
 - Isthmus
 - Comparison view
 - Color flow
 - Pathology
- e. Sonographic appearance
- f. Other useful modalities
- g. Sonographic applications
- VI. Thyroid Pathology
 - a. Hyperthyroidism
 - Grave's Disease
 - Clinical signs and symptoms
 - b. Hypothyroidism
 - Clinical signs & symptoms
 - c. Benign Lesions of the Thyroid
 - Follicular adenoma
 - Cyst
 - Goiter
 - Thyroiditis
 - d. Malignant Lesions of the Thyroid
 - Thyroid carcinoma
 1. General ultrasound appearance
 2. Predisposing factors
 3. Common symptoms
 4. Nuclear Medicine's role
 5. Four types:
 - Papillary
 - Follicular
 - Medullary
 - Anaplastic
- VII. Parathyroid Glands
 - a. Anatomy
 - Location
 - Size
 - b. Physiology
 - Functions
 - Labs
 - c. Sonographic applications
 - High frequency transducer
 - Ultrasound appearance
- VIII. Parathyroid Pathology
 - a. Primary Hyperparathyroidism
 - Adenoma
 - b. Secondary hyperparathyroidism
 - c. Hyperplasia
 - d. Parathyroid carcinoma
- IX. Pitfalls in Parathyroid Diagnoses
- X. Miscellaneous Neck Masses
 - a. Developmental Thyroglossal Cyst
 - b. Brachial cleft cysts
 - c. Cervical Adenopathy
 - d. Cavernous lymphangioma
 - e. Thyroid Agenesis

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Part 5 Breast Anatomy, Physiology, and Pathology

Required Reading:	S. Hagen-Ansert Curry & Tempkin	Chapter 13, pg. 363-394 Chapter 21
Additional Reading:	Hickey & Goldberg	Chapter 3, pg. 23-35
Homework:	Instructional Objectives C & T Workbook	Chapter 21

Instructional Objectives: Due on exam date

1. Identify the sonographic layers and boundaries of the breast and describe the ultrasound appearance of each layer including the specific anatomy contained within each layer.
2. Describe the sonographic technique used in imaging the breast.
3. Draw diagrams using four methods (clock face, quadrant, 123, and ABC) of identifying the location of a breast mass.
4. Discuss the use of different scan planes when imaging the breast (when is it important to use radial/antiradial instead of sagittal and transverse).
5. Explain what structures make up a terminal ductal lobar unit and tell why the TDLU's are important.
6. Discuss why the parenchyma pattern of each individual's breasts are variable.
7. List and discuss at least two common pitfalls in imaging the breast with ultrasound and tell how to avoid them.
8. What is the current role of Sonography in the detection and diagnosis of breast cancer?
9. List the sonographic characteristics common of most benign masses.
10. List the sonographic criteria used to identify a mass suspicious for malignancy.
11. Identify the risk factors for male breast cancer.
12. Discover the incidence of metastatic disease to the breast from another primary cancer and list the major sites that spread to the breast.
13. Explain how metastatic spread to the breast can be differentiated from primary breast cancer with sonography.
14. Describe the clinical and sonographic findings of the most common breast cancer.

Topic Outline:

Part 5 Breast Anatomy, Physiology, and Pathology

- I. Introduction
- II. Anatomy
 - a. Location
 - b. Breast layers
 - 1. Skin
 - 2. Subcutaneous
 - 3. Mammary or parenchyma
 - 4. Retromammary space
 - 5. Muscle
 - 6. Chest wall
- III. Ultrasound characteristic of the breast
 - a. Normal sonographic breast anatomy
 - 1. Sonographic breast layers
 - 2. Sonographic appearance of structures
- IV. Breast Physiology
 - a. Female function
 - b. Male function
 - c. Breast development
 - d. Breast density changes due to pregnancy
 - e. Changes in breast architecture over time
- V. Lymphatics of the Breast
 - a. Drainage
 - b. Lymph nodes
 - 1. Location
 - 2. Sonographic appearance
- VI. Vascular Supply to the Breast
 - a. Arteries
 - b. Veins
 - 1. Venous Drainage
 - c. Imaging the Vessels of the Breast
- VII. Breast Imaging
 - a. Mammography
 - b. Other modalities:
 - 1. Digital mammography
 - 2. Ultrasound
 - 3. MRI
 - 4. CT
 - 5. Radionuclide imaging
 - c. Approaches to breast evaluation:
 - 1. Screening for breast carcinoma
 - 2. Diagnosis and management of benign and malignant breast disease
 - d. Indications for Ultrasound
 - e. Patient History
 - f. Risk factors
 - g. Scanning Preparation
 - h. Annotation of images
 - 1. Breast zones
 - i. Image documentation
 - j. Ultrasound Pitfalls
- VIII. Benign Breast Disease
 - a. Cysts
 - b. Inflammation

- c. Lipoma
 - d. Fibrocystic changes
 - e. Fibroadenoma
 - f. Intraductal papilloma
- IX. Breast Cancer
- a. Key Statistics
 - b. Breast Cancer Screening
 - c. Breast Cancer Symptoms
 - d. Criteria for Suspicious Masses
 - e. ACR BI-RADS Classification
 - f. Malignant masses
 - 1. Metastasis
 - 2. Infiltrating Ductal Carcinoma
 - 3. Medullary Carcinoma
 - 4. Papillary Carcinoma
 - 5. Tubular Carcinoma
 - 6. Infiltrating Lobular Carcinoma
- X. Ultrasound Guided Invasive Procedures
- a. Cyst Aspiration
 - b. Fine Needle Aspiration Biopsy
 - c. Stereotatic Breast Biopsy
- XI. Other Breast Concerns
- a. Red hot breast
 - b. Nipple discharge
 - c. Male breast
 - 1. Gynecomastia
 - 2. Breast Cancer
 - d. Breast implants
 - 1. Ultrasound's role
 - 2. MRI's role
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Part 6 A&B Male Reproductive System Prostate Gland

Required Reading: S. Hagen-Ansert Chapter 15 pg. 408-427
 Curry & Tempkin Chapter 15 pg. 235-247

Additional Reading: Hickey & Goldberg Chapter 12, pg. 219 -237

Homework: Instructional Objectives
 C & T Workbook Chapter 15

Instructional Objectives: Due on exam date

1. Draw a diagram of the normal anatomy of the scrotum and label:
 - a. Tunica vaginalis cavity with visceral and parietal layers
 - b. Testis
 - c. Ductus vas deferens
 - d. Epididymis (head, body and tail)
 - e. Tunica albuginea
 - f. Seminiferous tubules
 - g. Mediastinum testis
 - h. Scrotal sac
 - i. Testicular lobules
2. Discuss the three major vessels supplying blood to the scrotum, testis, epididymis and vas deferens. Also, describe the vessels which drain them. Be specific.
3. Discover the endocrine and exocrine functions of the testes.
4. Describe the sonographic appearance of the testes, epididymis, mediastinum testis, and scrotal sac.
5. State the normal testicular size, shape, and location.
6. Explain where the testes are formed and how they migrate to the scrotal sac. Describe the abnormality related to incomplete migration.
7. Discuss the significance of microlithiasis.
8. Describe the age group and clinical findings associated with primary testicular cancer.
9. List the major types of malignant tumors of the testis and tell the sonographic findings related to each type.
10. Discuss why it is important to know if a mass is intratesticular or extratesticular.
11. Tell which malignant tumor of the testicle has the best prognosis and which one is the most common.
12. Describe how testicular torsion develops and its significance.

13. Discuss the clinical and sonographic findings associated with testicular torsion.
14. Describe the clinical and ultrasound findings related to acute epididymitis.
15. Discover and explain the clinical and ultrasound findings related to orchitis.
16. Define a varicocele and explain its causes. Discuss the best method for diagnosing a suspected varicocele.
17. Describe a hydrocele and explain the two types.
18. Identify the best sonographic method to determine if a hernia is present.
19. Draw the zonal anatomy of the prostate and label.
20. Describe the sonographic appearance of the normal prostate.
21. List the clinical and sonographic signs of prostatitis.
22. Identify the area of the prostate from which the majority of malignant tumors originates and describe the ultrasound findings associated with prostatic cancer.
23. Discuss the function of the prostate and the relevance of the PSA level.
24. Describe the clinical and sonographic findings of benign prostatic hyperplasia or BPH.
25. Define:
 - Appendix testis
 - Epididymal cyst
 - Spermatocele
 - Verumontanum

Topic Outline:

Part 6 Male Reproductive System and Prostate

- I. Introduction
- II. Anatomy
 - a. Location
 - b. Relational anatomy
 - c. Blood supply
 1. Spectral Doppler of the testicular artery
- III. Physiology
 - a. Exocrine gland function
 - b. Endocrine gland function
 - c. Laboratory tests
- IV. Testicular Sonography
 - a. Applications
 - b. Technical Factors
 - c. Patient prep
 - d. Sonographic appearance
 - e. Sonographic Protocol for the Scrotum
- V. Male Reproductive System Pathology
 - a. Cryptorchidism
 - b. Testicular Torsion

- c. Torsion of the Testicular Appendages
 - d. Testicular Trauma
 - e. Testicular Rupture
- VI. Benign Testicular Pathology
 - a. Spermatocele
 - b. Epididymal Cyst
 - c. Hydrocele
 - d. Varicocele
 - e. Inguinal Hernia/bowel herniation
 - f. Microlithiasis
 - g. Inflammatory Processes
 - h. Epididymitis
 - i. Epididymo-orchitis
 - j. Orchitis
- VII. Malignant Testicular Tumors
 - a. Primary testicular cancer
 - b. Choriocarcinoma
 - c. Embryonal Cell Carcinoma
 - d. Seminoma
 - e. Teratoma
 - f. Yolk Sac Tumors
 - g. Leydig's Cell Tumor
 - h. Lymphoma/Leukemia
 - i. Metastases
- VIII. Prostate
 - a. Anatomy
 - 1. Size
 - 2. Location
 - 3. divided into four zones:
 - Peripheral zone
 - Central zone
 - Transitional zone
 - Periurethral glandular tissue or zone
 - b. Physiology
 - c. Transrectal Sonography
 - 1. Applications
 - 2. Patient prep
 - 3. Sonographic appearance
 - d. Pathology
 - 1. Benign Prostatic Hyperplasia (BPH)
 - 2. Prostatitis
 - 3. Adenocarcinoma
 - e. Prostate Laboratory Data

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Part 7 Imaging of Miscellaneous Superficial Structures

Summer Semester

Required Reading: Hickey & Goldberg Chapter 8, pg. 151-154
Chapter 15 pg. 270-271, 285, 290, 293-295
SHA pg 407 (Baker's cyst image)

Homework: Instructional Objectives

Instructional Objectives: Due on exam date

1. Discover and list the differential diagnoses for a Baker's cyst.
2. Describe the location of the popliteal vessels.
3. Make a table contrasting the description, location, causes, and ultrasound appearance of a Baker's cyst, popliteal aneurysm, and DVT of the popliteal vein.
4. Explain the functions of the salivary glands.
5. List the major salivary glands.
6. Identify the largest salivary gland and describe its shape and location.
7. List the two most common salivary gland tumors and describe.
8. Identify the most common type of salivary gland carcinoma and the ultrasound findings associated with malignancies of the salivary glands.

Topic Outline:

Part 7 Miscellaneous Superficial Structures

- I. Introduction
- II. Lower extremity
 - a. Anatomy
 - b. Baker's cyst vs DVT or Popliteal Artery aneurysm
- III. Salivary Glands
 - a. Composition
 - b. Functions
 - c. Locations
 - d. Sonography of the salivary glands
 - e. Benign tumors
 1. Pleomorphic adenomas (60%)
 - Clinical findings

- Sonographic appearance
- 2. Warthin's tumors
 - Clinical findings
 - Sonographic appearance
- f. Malignant tumors
 - 1. Adenocarcinoma