

Bergen Community College  
Division of Health Professions  
Department of Diagnostic Medical Sonography

**DMS-113 Abdominal Sonography I**

**Course Information**

Semester and Year:  
Course and Section Number:  
Meeting Times and Locations:  
Instructor:  
Office Location:  
Phone:  
Departmental Secretary:  
Office Hours:  
Email Address:

**Course Description**

This course is a comprehensive study of abdominal structures with an emphasis on specialty organ examinations. Knowledge of the diagnosis, history and physical findings, as they pertain to the pathophysiology of abdominal organs and systems are presented. Normal and abnormal tissue patterns are included within the discussions. Students will practice scanning in the lab in preparation for objectives required in Ultrasound Clinic I.

3 Credits  
2 Lecture Hours  
3 Lab Hours

Prerequisite(s): [BIO-109](#); [DMS-101](#); [DMS-102](#); [DMS-115](#)

**Student Learning Outcomes:** As a result of meeting the requirements in this course, students will be able to:

1. Identify normal and abnormal anatomy.
2. Describe medical ethics and professional behavior in a clinical setting.
3. Evaluate the appearance of congenital abnormalities and pathologies, comparing results of laboratory and diagnostic tests to help establish a diagnosis.
4. Create high quality diagnostic scans within a limited abdominal study.

**Means of Assessment:** Students will be assessed in the following methods:  
Quizzes, midterm and final exams, lab worksheets, and scanning protocol: limited abdominal ultrasound

**Course Content**

Abdominal Sonography I is a comprehensive study of abdominal structures with emphasis on specialty organ examinations. Knowledge of the diagnosis, history, and physical findings as they pertain to the pathophysiology of abdominal organs and systems is presented. Normal and abnormal tissue patterns are included within the discussions. Students will practice scanning in the lab in preparation for objectives required in Ultrasound Clinic I. Focus is on the liver, biliary system, spleen, and gastrointestinal tract. Study also includes vascular anatomy, Doppler flow patterns of the abdominal vessels, Aorta, IVC, Portal Vein, Hepatic artery, Hepatic Vein, Celiac Artery, and Superior Mesenteric Artery.

## Course Texts and/or Other Study Materials

Hagen-Ansert, Sandra *Textbook of Diagnostic Ultrasound*, Mosby Co.

## Grading Policy

The midterm and final are cumulative.

Final Grade Calculation: Final grades will be calculated as follows:

Quiz average (4)	25%	Midterm exam	25%
Lab Protocol	25%	Final exam	25%

Grade Scale: All grades are absolute and will NOT be rounded off.

<b>A</b>	92% – 100%	<b>C+</b>	79% – 82.9%
<b>B+</b>	88% – 91.9%	<b>C</b>	75% – 78.9%
<b>B</b>	83% – 87.9%	<b>F</b>	0% – 74.9%

## Academic Integrity Policy and Attendance Policy

### *Academic Integrity*

Academic dishonesty is a serious violation of BCC policy and personal ethics and will be treated as such if the reason for suspicion should arise. Students should be careful to avoid plagiarism, falsification, and compliance. Academic integrity is vital to an academic community and for fair evaluation of student assessments. All assessments submitted must be your own, completed in accordance with the college's academic policies and the student code of conduct. You may not engage in unauthorized collaboration or make use of any artificial intelligence (AI) composition systems. Academic dishonesty also includes cheating on examinations. Refer to the [BCC student code of conduct](#), student handbook for additional information, and the statement on plagiarism

(<https://catalog.bergen.edu/content.php?catoid=4&navoid=163#academic-dishonesty>).

### *BCC Attendance Policy*

All students are expected to attend and be punctual for every scheduled meeting of each course in which the student is registered. Attendance and lateness policies and sanctions are to be determined by the director for each section of each course. These are in writing in the Policy and Procedure Student Handbook and in each course outline.

## Other College, Divisional, and/or Departmental Policy Statements

### **Accommodations for Disabilities**

Bergen community college aims to create inclusive learning environments where all students have maximum opportunities for success. Any student who feels he or she may need an accommodation based on a disability should contact the Office of Special Services.

Americans with Disabilities Act: Students who require accommodations by the Americans with Disabilities Act [ADA] can request support services from "The Office of Specialized Services of Bergen Community College] 201-612-5270/5269 or via email at [ossinfo@bergen.edu](mailto:ossinfo@bergen.edu).

### **Mental Health and Well Being**

Mental Health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. Bergen Community College has licensed personal counselors available to assist you with addressing these and other concerns you may be experiencing.

You can learn about the confidential mental health services available on campus via the Health and Wellness Center at [www.bergen.edu/personal\\_counseling](http://www.bergen.edu/personal_counseling).

## Student and Facility Support Services

## Available Online and On-Campus Resources

Library- <https://bergen.edu/library/>

Academic support <https://bergen.edu/academics/pathway-scholars-program/academic-support>

The Writing center and Tutoring Center- L-125 [https://Bergen.edu/tutoring/writing center/](https://Bergen.edu/tutoring/writing%20center/)  
 OWL(Online Writing Lab) <http://www.owl.english.perdue>

Free Time Computer Labs [https://Bergen.edu/technology assistance/computer lab availability/](https://Bergen.edu/technology%20assistance/computer%20lab%20availability/)

The Center for student A-118 (Academic, Career, International, and Transfer Counselors)  
<https://bergen.edu/center-for-student-success/>

Personal counseling HS-100 <https://bergen.edu/health-wellness-and-personal-counseling/personalcounseling/>

### Sample Course Outline

Week	Topic/Activity	Events
1	<p><b>Lecture 1:</b> Upon completion of this lecture, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Know the requirements of the course.</li> <li>2. Know the anatomic and physiologic relationships within the abdominal cavity.</li> <li>3. Understand anatomic directions, terms, and planes and body sections.</li> <li>4. Know the retroperitoneum, the abdominopelvic membranes and ligaments.</li> </ol> <p><b>Lab:</b> Demonstrate scanning the proximal and distal abdominal aorta. Demonstrate scanning the proximal and distal inferior vena cava.</p>	
2	<p><b>Lecture 2:</b> Upon completion of this lecture, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the bases abdominal scanning techniques and protocols.</li> <li>2. Discuss the various sonographic medical terms.</li> <li>3. Know the criteria for identifying sonographic abnormalities.</li> </ol> <p><b>Lab:</b> Demonstrate scanning three images of the longitudinal liver showing it in the porta hepatis region, in the area of the gallbladder, and lateral in the area of the right kidney. The student will document the results, and the films are reviewed with the instructor.</p>	
3	<p><b>Lecture 3:</b> Upon completion of this lecture, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Recognize normal basic vascular anatomy.</li> <li>2. Identify the branches of the abdominal aorta.</li> <li>3. Discuss the various sonographic scanning techniques when trying to scan the vascular structures.</li> </ol> <p><b>Lab:</b> Demonstrate scanning the gallbladder in the longitudinal plane at its longest length. The student is required to practice the GB in various positions including supine and oblique in order to obtain the longest length. Students need to be NPO for the lab when scanning gallbladder.</p>	
4	<p><b>Lecture 4:</b> Upon completion of this lecture, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Explain the pathology of the Aorta.</li> <li>2. Discuss the classification of Aneurysms.</li> <li>3. Describe aortic graft and its sonographic interpretation.</li> <li>4. Discuss Marfan's syndrome.</li> <li>5. Explain abdominal doppler techniques used in vascular imaging.</li> <li>6. Discuss the definition of hepatofugal and hepatopedal flow.</li> <li>7. Define resistance and nonresistance pattern.</li> </ol>	

	<b>Lab:</b> Demonstrate scanning the CBD, once found magnifying it, and measuring it in an AP dimension. The CBD should attempt to be found in a longitudinal oblique plane	
5	<p><b>Lecture 5:</b> Upon completion of this lecture, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. State the branches of the IVC and its sonographic appearances.</li> <li>2. Review the portal vein, its branches, and its significance as a landmark in the abdomen.</li> <li>3. Distinguish the sonographic differences in recognizing the portal and hepatic veins.</li> <li>4. State the IVC abnormalities that can be seen with various diseases.</li> </ol> <p><b>Lab:</b> Demonstrate scanning the pancreas in a longitudinal plane. The student needs to visualize the body of pancreas in the area of the aorta, and the pancreatic head anterior to the IVC on a long plane. Gains need to be adjusted to view pancreatic tissue.</p>	
6	<b>Lab:</b> Upon completion of this lab, the student will be able to demonstrate scanning the liver in a transverse plane. Three images are recorded of the liver. The students are assisted in the lab where to obtain these images, and then the images are reviewed by the instructors.	<b>Mid Term Exam</b>
7	<p><b>Lecture 6:</b> Upon completion of this lecture, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Evaluate the normal anatomy of the liver.</li> <li>2. Identify the various ligaments and fissures seen in the liver, and its sonographic evaluation.</li> <li>3. Identify functional divisions of the liver.</li> <li>4. Discuss the physiology of the liver.</li> <li>5. Identify the hepatic enzymes and its reactions to liver disease.</li> <li>6. Recognize several changes in hepatic enzymes with severe liver disease.</li> <li>7. Explain the function of bilirubin and its importance to abnormal disease.</li> </ol> <p><b>Lab:</b> <b>Demonstrate scanning the GB in a transverse plane at its widest.</b></p>	
8	<p><b>Lecture 7:</b> Upon completion of this lecture, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the Sonographic Evaluation of the Liver.</li> <li>2. Recognize the various stages of fatty infiltration of the liver and its sonographic appearances.</li> <li>3. Understand Hepatic Vascular Flow Abnormalities.</li> <li>4. State the sonographic appearance of diffuse liver disease.</li> <li>5. Identify Portal Venous Hypertension.</li> </ol> <p><b>Lab:</b> Demonstrate scanning the pancreas in a transverse plane. The student will take three images of the pancreas, visualizing the head, body, and tail. Measurements of the pancreas need to be done in AP dimension.</p>	
9	<p><b>Lecture 8:</b> Upon completion of the lecture, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Discuss focal liver diseases that can occur in the liver.</li> <li>2. Recognize the inflammatory diseases of the liver.</li> <li>3. Review and understand the differential diagnosis of liver metastases, hepatocellular disease, and hepatic tumors benign and malignant.</li> </ol> <p><b>Lab:</b> Demonstrate scanning the aorta in a transverse image plane. The aorta can be obtained either proximal or distal, allowing the student to choose the best area to visualize it. The aorta needs to be magnified with strong borders and an echo-free center. A transverse measurement needs to be done. The Aorta will be imaged in the longitudinal plane and Doppler flow pattern of mid Aorta will be demonstrated. The hepatic veins Doppler flow pattern will be demonstrated.</p>	
10	<p><b>Lecture 9:</b> Upon completion of this lecture, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Identify the normal anatomy of the biliary system.</li> <li>2. Know the laboratory data of the gallbladder and biliary system.</li> <li>3. Discuss the normal measurements of the gallbladder and the CBD.</li> </ol>	

	<p>4. Recognize the concrete clinical symptoms when dealing with gallbladder disease.</p> <p><b>Lab:</b> At this time the student should practice the entire limited abdomen protocol in preparation for lab testing.</p>	
11	<p><b>Lecture 10:</b> Upon completion of this lecture, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Discuss the various sonographic appearances when dealing with gallbladder disease.</li> <li>2. Evaluate the sonographic appearance of gallstones, and the common pitfalls when interpreting them.</li> <li>3. Recognize the sonographic appearance of the normal bile ducts.</li> <li>4. Identify the criteria used when attempting to recognize biliary obstruction on ultrasound.</li> <li>5. State the definition of the double barrel shot gun sign.</li> <li>6. Distinguish the sonographic difference between dilated biliary ducts and hepatic ducts.</li> </ol> <p><b>Lab:</b> At this time the student should practice the entire limited abdomen protocol in preparation for lab testing.</p>	
12	<p><b>Lecture 11:</b> Upon completion of this lecture, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Recognize the anatomy, physiology and laboratory data of the gastrointestinal tract.</li> <li>2. Know the sonographic evaluations of the gastrointestinal tract.</li> <li>3. Discuss the abnormalities of the appendix and acute appendicitis.</li> <li>4. Recognize the sonographic appearances of the normal and abnormal appendix.</li> <li>5. Know benign and malignant tumors of the gastrointestinal tract.</li> <li>6. Discuss various abscess formation and pockets in the abdomen and pelvis and their sonographic findings.</li> </ol> <p><b>Lab:</b> At this time the student should practice the entire limited abdomen protocol in preparation for lab testing.</p>	
13	<p><b>Lecture 13:</b> Upon completion of this lecture, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Complete an abdominal study case.</li> <li>2. Know how to write a report describing normal and abnormal sonographic appearance.</li> <li>3. Comprehensive review.</li> </ol>	<b>Lab: LAB TESTING STARTS</b>
14	<p><b>FINAL EXAM (COMPREHENSIVE)</b> Multiple choice. Abdomen films included</p>	<b>FINAL EXAM (COMPREHENSIVE)</b> <b>Lab: LAB TESTING</b>

**Note to Students:** This Course Outline and Calendar is tentative and subject to change, depending upon the progress of the class.