Jackson COLLEGE

Vascular Sonography
Syllabus-DMS 198

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Dear Student,

Welcome to vascular sonogrpahy. We're excited to have you and look forward to assisting each student with his or her educational goals. The student workbook is meant to provide a structured, comprehensive hands-on tool for the student. Jackson College promotes autonomy and encourages students to take the "student-centered approach; putting an emphasis on demonstrating and modeling skill sets. The student-centered style will encourage a ***"see one, do one, teach one" method***.

Jackson College's instructors recognize that students have multiple learning styles, along with unique backgrounds and will work to identify each student's learning style. A student might hear comments like: "I show Jackson College students how to properly do a task or work through a skill and then I'll help them master the task or problem solution through demonstration. It's important that students can independently solve similar problems by using and adapting demonstrated methods and theories."

Jackson College instructors work diligently to create trusting relationships and create a positive learning environment. Jackson College's program is YOUR program; please don't hesitate to provide positive, constructive feedback to any instructor. Student's ideas and suggestions will create a well-rounded and diverse program for all learners. Please read the student testimonies located in the back of the workbook. Their experiences will assist you to make the transition from class to clinical.

Instructors

Heather Ruttkofsky, B.A.S, RVT
Jessica Hagerty, RVS
Candy Nighswander, BAS, RVT
Vicki Ruttkofsky, RVS
Jennifer Taylor, RVT

Course Description

This course will prepare the students to begin the clinical education in the field of vascular technology. Students will explore the machine console, inter-personal relationship skills, professional skills, ethical decision-making, and proper scanning techniques. Students will learn basic sonographic anatomy of the peripheral, cerebrovascular, venous duplex imaging and arterial Doppler testing protocols, tips and techniques. Completion of this course will meet requirements for entry into DMS 161-Clinical I.

Course Objective/Competencies

Successful completion of DMS 198 the student will able to perform and understand: venous duplex for obstruction, single level arterial Doppler, and imitate the carotid duplex exam.

Competencies
Explains sonographic findings throughout the exam
Exams are completed & sufficient data is obtained
Reviews techniques and optimal machine settings for each image obtained
Student implements testing protocol, and obtains all necessary images within the allotted timeframe.
Recognized and locates normal anatomy of the lower extremity venous system
Understands basic hemodynamics (Doppler waveforms) associated with lower extremity venous system
Locates anatomy/palpate pulses (dorsalis pedis, posterior tibial, radial arteries and brachial artery
Performs proper cuff placement
Explains basic hemodynamics of the lower extremity arterial system (Doppler waveforms) associated with exam.
Locates carotid artery branches
Describes basic hemodynamics and locates Doppler waveform patterns associated with each carotid artery
Imitates proper techniques used to obtain velocity measurements
Student explains procedure and patient assessments
Student interacts professionally while working with scan models, faculty, and classmates.

Student recalls previously taught tips and techniques and apply concepts learned from textbooks and other learning material.

Measurement of Objective

1. Student must actively participate in course work and daily case studies and receive a minimum score (90%) in the affective, cognitive and psychomotor learning domains. Students are evaluated using research, group discussions, quiz questions, and 2 affective domain evaluations.

2. Student must actively participate in daily lab activities and log practice exams of a variety of scan models. Students will be evaluated using fundamental performance assignments log sheets scan model log sheets and clinical scenarios.

Student and Facilitator's Responsibilities

- **Student Responsibilities:**

  Students are expected to participate and be prepared for each session. It is presumed by the facilitator that assignment, including reading, will be completed on time prior to material on subjects being presented; such preparations allows the student the best learning opportunities to understand material presented and pose questions in areas requiring clarity. The pace of this course makes it very difficult for a student to catch up once a student falls behind.

  It is highly suggested by the instructor that students utilize as many references as possible to enhance their learning and understanding.

- **Facilitator’s Responsibilities:**

  The facilitator’s responsibilities include facilitate learning by providing and explaining the necessary materials for each student to understand the assignments and develop course goals, objectives, and performance objectives to a near mastery level. See JC DMS VSON Handbook for a listing of these goals, course objectives and performance objectives. Knowledge gained from this course should aid students in their clinical experiences. Classes will begin on time weather permitting.

Course Method and Assignments

Attendance:
Each student is expected to attend each class session students will be allowed ONE absence (one session) without penalty. Each additional absence will result in a 20% reduction of the overall final grade.

Scanning Phases and Scanning Skill Development: Each student will develop new skills and knowledge at different paces. Students will be allowed to advance to each phase at his or her own pace. Students are expected to imitate, acquire and perform the necessary skills within the time allowed for this course.

Phase I ending week 1-6 Imitate new skill and explain techniques (students are completing worksheets, working with equipment, and scan models). Students will complete fundamental performance assignments before beginning the portfolio capstone project. The first Affective Domain Evaluation #1 will be completed during phase 1.

Please note: Students must log a minimum # of exams prior to beginning the performance assignment

Venous Duplex: 5 right limbs, 5 left limbs, 5 bilateral

Carotid Duplex: 5 right side, 5 left side, 5 bilateral

ABI: 5 bilateral

Phase II- Beginning week 6-8- Students will begin completing the capstone portfolio requirements.

Students who have completed all course requirements may begin logging clinical hours at their clinical location.

Vascular Ultrasound Image Portfolio Assignment

Purpose: To evaluate students' progress and use of lab time effectively. To provide clinical instructor with information about the students' progress in lab.

Objective: To provide students with a better understanding of a vascular examination. To develop examination sequencing to understand scanning protocols. To develop time management during an ultrasound examination. To prepare students for clinical.

Students will assemble a portfolio in a folder consisting of a table of contents including the student's logbook, and the 3 examinations containing the required images neatly organized in a "storybook" progression within the timeframes outlined for each section. The time will be measured from the first image in the portfolio to the last. Failure to meet the timeframe will result in a failure of that portion of the portfolio. Each section must be neatly assembled inside of a folder and reviewed by a lab instructor before moving onto phase III, performance assignments.

Every image must be the criteria, with appropriate image depth, focus placement and gain settings. Failure to meet these requirements may result in rejection of image portfolio, and result in the student missing the deadline to complete the final scan examination. **It is encouraged that students periodically check with lab instructors for appropriateness of image quality to avoid this situation.**

Bilateral exams are required to present for portfolio

Vascular Ultrasound portfolio sections

Carotid Duplex Exam	**40 minutes**

Longitudinal subclavian artery with color and spectral Doppler velocity measurements (proximal)
Cine Loop of common carotid artery
B-mode transverse common carotid
Color: Longitudinal common carotid
Color: Cine Loop of transverse bifurcation
B-mode transverse bifurcation (label ICA and ECA)
B-mode longitudinal right carotid bulb/internal carotid artery
Color: longitudinal right carotid bulb/internal carotid artery
Cine loop longitudinal right carotid bulb/ internal carotid with color
longitudinal common carotid with color and spectral Doppler velocity measurements (proximal, mid, distal)
longitudinal right internal carotid with color and spectral Doppler velocity measurements (proximal, mid, distal)
longitudinal right external carotid with color and spectral Doppler velocity measurements (proximal)
longitudinal vertebral artery with color flow and spectral Doppler velocity measurements (antegrade or retrograde)

Venous Duplex Exam	**40 minutes**

Transverse dual image (with and without compression) common femoral vein
Transverse dual image (with and without compression saphenofemoral junction
Transverse dual image (with and without compression) femoral vein (mid)
Transverse dual image (with and without compression) gastrocnemius veins
Transverse dual image (with and without compression) popliteal vein
Transverse dual image (with and without compression) posterior tibial veins
Transverse dual image (with and without compression) peroneal veins
Transverse dual image (with and without compression) short saphenous vein
Transverse dual image (with and without compression) greater saphenous vein
Longitudinal common femoral vein with color and spectral Doppler (calf augmentation)
Longitudinal proximal and distal femoral vein with color and spectral Doppler (calf augmentation)
Longitudinal popliteal vein with color and spectral Doppler (calf augmentation)

Single Level Arterial Doppler (ABI, TBI) **30 minutes**

Brachial Pressure
Posterior tibial artery pressure
Dorsalis pedis artery pressure
Great toe pressure
Doppler waveform common femoral artery
Doppler waveform femoral artery
Doppler waveform popliteal artery
Doppler waveform posterior tibial artery
Doppler waveform dorsalis pedis artery
Calculate ABI

DMS Lab Rules

1. Show up for class on time and be prepared to participate
2. Take advantage of all opportunities to scan.
3. Take the initiative to be involved in every learning opportunity.
4. Accept constructive criticism from instructors and fellow students.
5. Seek to help others with challenging situations.
6. Ask questions or volunteer information pertinent to your knowledge.
7. Demonstrate appropriate communication to others.
8. Demonstrate and maintain a positive attitude.
9. Demonstrate patience for others.
10. Show respect for the patient's/model's modesty and dignity.
11. Demonstrate concern for patient's/model's comfort.
12. Communicate effectively and appropriately with others.
13. Behave in a manner that promotes friendliness and cooperation.
14. Demonstrate eagerness to perform assigned tasks.
15. Demonstrate a willingness to work with/for others to accomplish goals.
16. Demonstrate an ability to communicate in an appropriate and constructive manner.
17. Demonstrate professionalism in attendance and conduct.
18. Demonstrate respect for the equipment and lab environment
19. Bring your own towel.
20. Do not monopolize scanning opportunities.
21. Clean transducers between patients/models.
22. No scanning without supervision from lab instructors.
23. Computer use is limited to lab related material.
24. Students are responsible for learning experiences.
25. All students must submit a signed or unsigned scan model consent form.
26. Scan models must first sign a scan model release form.
27. Shut down and clean machines in your area before you leave the lab.
28. No eating or drinking in the lab.
29. No cell phone use during lab session

Class Schedule

Day	Class Discussion/Demonstration
1	✓ **DMS 198 Syllabus/Portfolio Assignment** **Machine Overview** ✓ Introduction to screen orientation, Transducer manipulation ✓ Imaging planes, Landmarks, ✓ Introduce Machine Console and functions ✓ Ergonomics/MSI **Demonstration/Practice Scanning** ✓ Introduction to Lower Extremity Anatomy (Venous and Arterial) ✓ Introduction to Venous and arterial Physiology ✓ Venous Imaging of the LE to evaluate for DVT
2	✓ Class Discussion/ **Demonstration/Practice Scanning** ✓ ABIs exam (Blood pressure techniques) ✓ Introduce Doppler waveforms and PVR tracings; Waveform explanation (PVR tracings and Doppler waveform ✓ Testing protocols ✓ Lower extremity arterial disease signs and symptoms ✓ Practice Scanning
3	✓ Class Discussion/ **Demonstration/Practice Scanning** ✓ Introduce Carotid Anatomy and carotid physiology (Doppler waveforms explained) ✓ Testing protocols ✓ Testing Indications ✓ Practice Scanning

4	✓ Class Discussion/ **Practice Scanning** ✓ Affective Domain #1
5	✓ Class Discussion **Practice Scanning**
6	✓ Class Discussion **Practice Scanning**
7	✓ Class Discussion/ **Practice Scanning**
8 **Please note: Students may begin clinical during this week and begin logging clinical hours.**	✓ Class Discussion ✓ Affective Domain #2 ✓ Portfolio ALL COURSE WORK IS COMPLETED

Grading System

Grading Scale:
95-100%- 4.0
90-94%-3.5
85-89%-3.0
80-84%-2.5
75-79%-2.0
70-74%-1.5
65-69%-1.0
60-64%-0.5
Students must maintain a 2.0 in each DMS class to remain in the vascular sonography program

Condition of clinical placement depends upon: Student must successfully demonstrate all course measurable objectives to begin the clinical education. If a student does not earn the required score for all objectives the student will not advance into clinical I and risk dismal from the DMS VSON program.

Course Work	Points
Performance Assignments. (learning domains)	5
Participation/Log sheet	5
Affective Domain Evaluation #1 Affective Domain Evaluation #2	15 15
Scanning Portfolio	60

What the Beginner Student Should Know

Basic Transducer skills:

- Gently hold the probe and make *small* movements with just the tip of your fingers.
- Don't "wrap" your hand around the probe this will lead to clumsy, uncontrolled movements.
- Relax; make the transducer an extension of your hand. Your hand is the tool that guides the transducer and your fingertips are what "steers" the beam.
- Place the transducer firmly on the skin to maintain good contact with the gel and skin surface. Watch out for "heavy hand" syndrome…
- Become ambidextrous

Imaging Essentials:

- Keep the image CENTERED (transverse)- As you move along (up and down) keep the vessel centered on the screen
- Keep the sound beam (transducer) perpendicular to the structures being imaged. This ensures that many echoes will return to the transducer. Move the beam around till you find the optimal image.
- When in the sagittal view, keep the sound beam level

Moving the Probe

- Sliding: Moving the transducer along the surface of the skin, medial, lateral, caudal, or cephalad
- "Heal-Toe" or Rocking: In the long axis of the beam move the beam "uphill" or "downhill". In transverse, the vessel will move from side to side
- Angling (tipping): Moving the beam across the axis, side to side. In the long axis view the view will be lateral and medial'

- Rotating: Twisting the transducer

Imaging Techniques: Screen Orientation/Vessel Anatomy

Screen Orientation

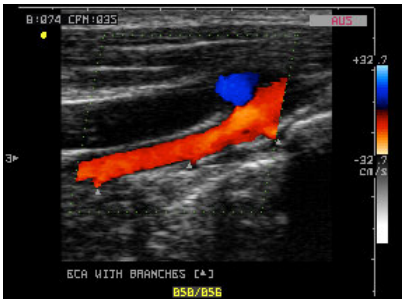
When you look at the screen, you should assume that you are looking at the person facing you in anatomical position. When we talk about screen orientation it is the direction or position on the screen. Using the transducer as a guide, keep the “notch” to the patient’s right at all times. Do not flip the transducer or image when switching from right to left.

The top of the screen is ALWAYS anterior/superficial, whether you are in transverse or sagittal. The bottom is ALWAYS posterior/deep, again whether you are in transverse or sagittal.

When you are scanning in transverse, the left side of the screen is the patient's right; the right side is the patient's left. Medial and lateral will vary depending on what you are imaging.

The image below represents the ECA in sagittal view

Anterior/superficial



Cephalad

Caudal

Posterior/deep

Affective Domain Evaluation #1

1=UNACCEPTABLE PERFORMANCE
(Student demonstrates this skill less than 74% of the time)
2-3= BELOW AVERAGE PERFORMANCE
(Student demonstrates this skill greater than 75% of the time)
4= AVERAGE PERFORMANCE
(Student demonstrates this skill greater than 80% of the time)
5=ABOVE AVERAGE PERFORMANCE
(Student demonstrates this skill greater than 95% of the time)

Student demonstrates the ability to act independently, professionally and be self-motivated: Evaluate the student using the following scale 1-5

	Takes advantage of all opportunities to scan.
	Takes the initiative to be involved in every learning opportunity.
	Accepts constructive criticism from instructors and students.
	Seeks to help others with challenging situations.
	Asks questions or volunteers information pertinent to their knowledge.
	Demonstrates the ability to be accountable for educations, understands roles and responsibilities as a DMS student
	Regularly explores machine settings to optimize images (depth, TGC, focus, gain)
	Demonstrates leadership through coordinating learning experiences.
	Displays ability to retain, recall and process information provided by textbooks or other learning materials
	Student demonstrates and maintains a friendly and positive attitude.
	Demonstrates patience for others.
	Shows respect for the patient's modesty, comfort and dignity.
	Displays confidence when working with scan models and faculty
	Behaves in a manner that promotes friendliness and cooperation
	Demonstrates eagerness to perform assigned tasks.

	Demonstrates a willingness to work with/for others to accomplish goals.
	Demonstrates an ability to communicate in an appropriate and constructive manner with faculty and fellow classmates.
	Demonstrates professionalism in attendance
	Demonstrates appropriate conduct and appearance (uniform, hygiene, professional behavior)
	Regularly participates in group course work

Comments:

Instructor:_____

Student:_____

Affective Domain Evaluation #2

1=UNACCEPTABLE PERFORMANCE
(Student demonstrates this skill less than 74% of the time)
2-3= BELOW AVERAGE PERFORMANCE
(Student demonstrates this skill greater than 75% of the time)
4= AVERAGE PERFORMANCE
(Student demonstrates this skill greater than 80% of the time)
5=ABOVE AVERAGE PERFORMANCE
(Student demonstrates this skill greater than 95% of the time)

Student demonstrates the ability to act independently, professionally and be self-motivated: Evaluate the student using the following scale 1-5

	Takes advantage of all opportunities to scan.
	Takes the initiative to be involved in every learning opportunity.
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	Demonstrates professionalism in attendance
	Demonstrates appropriate conduct and appearance (uniform, hygiene, professional behavior)
	Regularly participates in group course work

Comments:

Instructor:_____

Student:_____
_

What *are the learning Domains*?

This summary was compiled by Karin Kirk, SERC.

Background

The affective domain is part of a system that was published in 1965 for identifying, understanding and addressing how people learn. Part of *Bloom's Taxonomy,* this classification of educational objectives includes the cognitive domain, the affective domain and the psychomotor domain.

The cognitive domain is organized in a hierarchy that begins with the straightforward acquisition of knowledge, followed by the more sophisticated cognitive tasks of comprehension, application, analysis, synthesis, and evaluation.

The psychomotor domain relates to the learning of physical movements. The members of the original committee did not write a book on about the psychomotor domain.

More information

- Learning Domains or Bloom's Taxonomy (more info)
- Benjamin Bloom publishes Taxonomy of Educational Objectives: The Classification of Educational Goals (more info)
- Krathwohl's Taxonomy of Affective Domain

Definitions of the affective domain

The affective domain describes learning objectives that emphasize a feeling tone, an emotion, or a degree of acceptance or rejection. Affective objectives vary from simple attention to selected phenomena to complex but internally consistent qualities of character and conscience. We found a large number of such objectives in the literature expressed as interests, attitudes, appreciations, values, and emotional sets or biases. [from Krathwohl et al, 1964]

Here are descriptions of each step in the taxonomy, starting at the most basic level. *(From Krathwohl's Taxonomy of Affective Domain)*

> **Receiving:** is being aware of or sensitive to the existence of certain ideas, material, or phenomena and being willing to tolerate them. Examples include: to differentiate, to accept, to listen (for), to respond to.

Responding: is committed in some small measure to the ideas, materials, or phenomena involved by actively responding to them. Examples are: to comply with, to follow, to commend, to volunteer, to spend leisure time in, to acclaim.

Valuing: is willing to be perceived by others as valuing certain ideas, materials, or phenomena. Examples include: to increase measured proficiency in, to relinquish, to subsidize, to support, to debate.

Organization: is to relate the value to those already held and bring it into a harmonious and internally consistent philosophy. Examples are: to discuss, to theorize, to formulate, to balance, to examine.

Characterization: by value or value set is to act consistently in accordance with the values he or she has internalized. Examples include: to revise, to require, to be rated high in the value, to avoid, to resist, to manage, to resolve.

What is the relevance of the affective domain in education?

If we are striving to apply the continuum of Krathwohl et al. to our teaching, then we are encouraging students to not just receive information at the bottom of the affective hierarchy. We'd like for them to respond to what they learn, to value it, to organize it and maybe even to characterize themselves as science students, science majors or scientists.

We are also interested in students' attitudes toward science, scientists, learning science and specific science topics. We want to find teaching methods that encourage students and draw them in. Affective topics in educational literature include attitudes, motivation, communication styles, classroom management styles, learning styles, use of technology in the classroom and nonverbal communication. It is also important not to turn students off by subtle actions or communications that go straight to the affective domain and prevent students from becoming engaged.

In the educational literature, nearly every author introduces their paper by stating that the affective domain is essential for learning, but it is the least studied, most often overlooked, the most nebulous and the hardest to evaluate of Bloom's three domains. In formal classroom teaching, the majority of the teacher's efforts typically go into the cognitive aspects of the teaching and learning and most of the classroom time is designed for cognitive outcomes. Similarly, evaluating cognitive learning is straightforward but assessing affective outcomes is difficult. Thus, there is significant value in realizing the potential to increase student learning by tapping into the affective domain. Similarly, students may experience affective roadblocks to learning that can neither be recognized nor solved when using a purely cognitive approach.

What is Spatial Recognition Awareness?

Spatial Recognition Awareness

Spatial ability refers to an individual's capacity to visualize and mentally manipulate 3D objects. Since sonographers manually manipulate 2D and 3D sonographic images to generate multi-viewed logical, sequential renderings of an anatomical structure, it can be assumed that spatial ability is central to the perception and interpretation of these medical images A significant relationship between the students' spatial ability scores and their scanning performance scores was found. This study suggests that the use of spatial ability tests for admission to sonography programs may improve student selection as well as assist programs in adjusting instruction and curriculum for students who demonstrate low spatial ability.

Visual-Spatial Ability

Visual-spatial ability refers to the neuro-psychological processing of spatial relations of image properties.1 Furthermore, it is defined as the "ability to generate, retain, retrieve, and transform well-structured images. Complex in nature, it is not a unitary construct, but rather exists in several forms," with each emphasizing different aspects of the process of image generation, storage, retrieval, and transformation.2 Sonographers create relationships among the sonography images produced and give meaning to the anatomical structures they see on sonographic images. However, they rarely see the entirety of the anatomical object being scanned. Therefore, sonographers must be able to construct a series of images that logically represents
the whole object. This requires an ability to mentally rotate and transform 2D images and create a series of views that represents the 3D structure.

Improving Sonography: Spatial Ability Is Key to Becoming a Successful Sonographer, Study Finds

Science Daily (Oct. 16, 2010) — Diagnostic ultrasounds are the most widely used medical tests in the world. Though the technology is more than 50 years old, scientists continue to discover new uses for it, ranging from more targeted cancer treatments to liposuction. As the technology becomes more complex, a sonographer's skill level is even more important. Now, researchers at the University of Missouri may have found one of the keys to becoming a successful sonographer: spatial ability.

Doug Clem, clinical assistant professor of MU's diagnostic ultrasound program in the MU School of Health Professions, led the study of ultrasound students' spatial abilities. The study is the first to show how students' spatial abilities correlated to their results on scanning proficiency tests. Spatial ability is the ability to process and understand physical relationships among objects. This is important in sonography because ultrasounds are not like other medical tests, such as x-rays or CT scans. A sonographer cannot capture the entire object at once, but instead must collect a series of images and assemble them into a logical sequential order for a physician to read.

"It's operator dependent," said Sharlette Anderson, clinical instructor of MU's diagnostic ultrasound program. "I can scan the entire liver, but I'm not giving the radiologist images of every millimeter of the liver. I am giving him specific images and anything that I see that looks abnormal. If I miss an abnormality, the radiologist never sees it and the diagnosis is missed."

The study tested first-year ultrasound students' spatial abilities prior to any major coursework. Then, scientists tracked students' results on standard scanning proficiency tests over two semesters. Initially, the study showed little association between spatial ability and scanning proficiency. However, by the end of the academic year, students with greater spatial abilities were much more likely to have scored high on scanning tests.

Clem sees spatial ability tests as a potential consideration for admission to a sonography program. Currently, the program uses academic criteria like grade point average and ACT scores to evaluate undergraduate applications. Other professions, including dentistry and engineering, have used spatial ability testing for years. Spatial ability is affected by genetics, but recent research has shown

that individuals can improve their spatial ability. Participating in certain hobbies, such as playing video games, working puzzles and other similar activities can encourage spatial ability development.

"Even though you may be a really strong academic student, you may not learn to scan as easily as other people might." Clem says. "Some of our best students, straight-A students, will need extra time or extra clinical time to get past their scanning competency tests. This poses a challenge for selecting the best candidates for admission, and we think that spatial ability testing may turn out be one more piece of the puzzle that is needed to select the right individual."

The study was published in the *Journal of Diagnostic Medical Sonography*. Clem worked with Anderson and Moses Hdeib, director of the diagnostic ultrasound program. The team has started a second study, in cooperation with several universities, community colleges and proprietary schools from across the country. Through this larger study, Clem hopes to further validate the results of the first study by increasing the number of students observed. Depending on the results of the second study, the department will consider changing admission requirements next summer.

Story Source:

The above story is reprinted (with editorial adaptations by Science*Daily* staff) from materials provided by **University of Missouri-Columbia**, via Eur

Scanning Labs Policies and Procedures

Scanning labs cannot take the place of clinical education in a hospital or office setting on real patients, but can be used to enhance scanning experience in certain limited settings.

Open lab objective(s):

- Complete clinical worksheets
- Learn and practice lab testing protocols
- Share tips and techniques
- Remediation
- Explore new theories and concepts

Student Goals and Expected Outcomes during open lab time:

- Develop goals for each lab session
- Improve scanning skills
- Demonstrates professionalism-through encouraging independence and confidence
- Patient interviewing techniques-obtaining patient history.
- An introduction to vascular exam protocols.
- Sonographic patient positioning.
- Scanning motion and transducer manipulation.
- Demonstrate knowledge of sonographic anatomy
- Perform and demonstrate basic scanning techniques
- Explain and demonstrate proper ergonomics during the course of the exam
- Explore new theories and concepts

Student Conduct –Clinical Attendance /DMS 198

Attendance: Dependability and punctuality are important factors in the DMS clinical component. Any absences or tardiness, no matter how legitimate, disrupts the learning process of the student and disrupts the operational function of the Ultrasound Department. Students must complete a request for clinical absence for an approved scheduled absence.

- Students must call or email their instructor within one hour of start time for notification of illness..
- Jackson College does not award sick days or personal days. If a student is absent 2 or more days per semester a written warning will be issued and the student risks dismissal from the DMS VSON program if any additional days are missed. All absences, including doctor appointments must be approved by the program faculty and clinical site instructor. Page 28 of the DMS Handbook
- In accordance with the DMS Handbook, Page 11: Excessive tardiness may result in a **warning action**. JC has identified 2 or more to be considered excessive.
- Planned time off must be pre-arranged and a “Clinical time off” form is to be filled out and signed by clinical instructor and faxed to program director.
- Forms can be found online in clinical courses.
- Clinical instructor is asked to sign student attendance form for tracking clinical hours.

Remediate- To correct or improve a deficiency or problem; Intended to correct or improve a deficient skill during the student's clinical externship. This includes all affective domain areas and cognitive domain (technical skills)

Affective Domain- Includes (but not limited to): motivation, attitude, perceptions, and values
Cognitive Domain-Includes: recollection, comprehension, evaluation, and analysis.

A student entering remediation will:

- Have a consultation with lab instructor to determine areas of deficiency (student should bring to the consultation: weekly assessments, self evaluation, and lab protocols)
- Create a personalized plan of action
- Lab instructor will forward plan of action to the clinical coordinator and clinical instructor
- Complete remediation logs and submit to lab instructor, clinical coordinator, and clinical instructor

Criteria for a student entering remediation

- Does not demonstrate any or all areas of affective domain
- Does not demonstrate advancement of technical skills daily/weekly as indicated through the weekly assessments
- Does not meet program expectations as stated in the clinical evaluation and/or clinical coordinator's on site evaluation

Criteria for a student exiting remediation

- Demonstrates advancement/improvement in any or all areas of affective domain
- Demonstrates advancement/improvement of technical skills as indicated through exit assessments.
- Meets program expectations as stated in the clinical evaluation and/or clinical coordinator's on site evaluation

Student exiting remediation will:

- Have an exit consultation with lab instructor (student will complete an exit self-evaluation)
- Lab instructor will forward a plan of action for continued support of the student during clinical.

Notes: