



Course Name: Vascular Anatomy, Physiology and Pathophysiology

DMS 102

Semester: Spring

**Number of Credits:** 3

**Days Class Meets:** Monday-Sunday

**Office:** Weekly Discussions Room

**Meeting Times:** Monday-Sunday

**Contact Phone:** 517-260-4810

**Location:** Online

**Contact Email:** [ruttkofheatherm@jccmi.edu](mailto:ruttkofheatherm@jccmi.edu)

**Instructor:** Heather Ruttkofsky, MA, RVT

**Office Hours:** Tuesday 10am-10:30

Assistant Professor

**Online:** Jetnet

Program Director, Vascular Technology

### **Course Description**

In this course, anatomy of the venous, arterial, microcirculation, and anatomic variants of the body is introduced. The abdominal structures associated with the vasculature is explored. In this course, normal function of the venous and arterial systems, abnormal mechanisms, risk factors, and indications of arterial and venous disease associated with a range of pathological conditions will be covered.

### **Prerequisite(s)**

Acceptance into VSON program

### **Course Goals: Learning level upon completion**

Introduce (knowledge and comprehension) =I

This course will begin to address the program accreditation curriculum standards of the

Commission on Accreditation of Allied Health Programs(CAAHEP) standards

- Demonstrate knowledge of anatomy and anatomic variants of the cardiovascular system
- Demonstrate knowledge of normal and abnormal peripheral vascular physiology and hemodynamics.
- Demonstrate knowledge of mechanisms of vascular diseases, vascular pathophysiology, and hemodynamic effects

### National Education Curriculum competencies

- Identify the vessels in the extracranial and intracranial cerebrovascular system
- List the risk factors and mechanism for cerebrovascular disease.
- Describe the evolution of atherosclerotic plaque
- Identify the central, upper and lower extremity deep and superficial veins, and list the major perforating veins in the lower extremity
- Describe the function of vein valve leaflets in venous physiology in the normal patient and the patient with venous insufficiency
- List the components of Virchow's Triad, and relate how these impact venous pathophysiology
- Identify the major arteries of the upper and lower extremities and the branches of the abdominal aorta
- List the risk factors and mechanisms for arterial disease
- Differentiate between arterial and venous wall anatomy at the microscopic level
- Identify the arteries and veins of the abdomen and list the major branches of the abdominal aorta
- List the common risk factors for abdominal arterial and venous disorders
- Describe the mechanisms of disease for renovascular hypertension, renal fibromuscular dysplasia, abdominal aortic aneurysm, portal hypertension and acute and chronic mesenteric ischemia

### **Textbook**

#### **Required:**

Inside Ultrasound Vascular Reference Guide 1st Edition

by [Gail P. Size](#) (Author), [Eileen French-Sherry](#) (Editor), [Denise Eggman](#) (Illustrator)

ISBN: 9780974769431

Inside Ultrasound Vascular Workbook

Edition: N/AISBN: 9780974769479 By: Gale Size

#### **Optional:**

CardioVascular Haemodynamics and Doppler Waveforms Explained, 2001 ISBN: 1-84110005

## Extras

Computer, secure high-speed internet service, mobile Moodle app, twitter, Google Apps, video recording device, [Maker Lesson](#) Plan DIY tools

## Course Management

Learning is a process. We will use small steps when learning new content. In the course, we use the following learning plan “**Learn**”-Engage in new material with lessons and textbook readings “**Practice Assessments**”-Engage in interactive activity assessments. The assessments will show the student and teacher strengths and weaknesses as the student moves towards competency. The information may shape how the teacher supports the student and how the student modifies his or her practices. Some activities are required, and some are optional (see syllabus for required activities) “**Evaluations**”-Exams are designed to evaluate and categorize level of knowledge and skills. The information may shape how the teacher and student modify learning processes where needed.

## Grading Procedure

**Knowledge Check is worth no points.** If a 90% is earned on the first attempt the learner has the option to opt out of the post assessment. The grade of the knowledge check will be added as the post assessment score. The assessment is timed @ 30 sec per question.

**Post Assessment is worth 25 points** with 3 attempts allowed and is a timed exam @ 30 sec per question, a minimum score of 85% is required to demonstrate knowledge and comprehension of module goals

**Final Exam is worth 100 points**, a minimum score of 85% is required to demonstrate knowledge and comprehension of course goals

**[Maker Lesson](#) is worth 100 points**, a minimum of 85% is required to demonstrate knowledge and comprehension of course goals

## Grading Scale

**\*\*Students must maintain a 2.0 in each DMS class to remain in the vascular sonography program\*\***

4.0

94-100%

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3.5	90-93%
3.0	85-89%
2.5	80-84%
2.0	79-75%
1.5	74-70%
1.0	69-64%
0.5	63-60%
0.0	Below 60%
4.0	94-100%

### **Failure**

A 2.0 or "C" is a passing grade for Jackson College vascular ultrasound program. In this course, a student is required to earn a minimum score of 85% on module assessments and evaluations. A score less than 85% will prompt a corrective plan designed by the student and teacher. If scores remain below 85% a more intensive plan will be discussed, and a written warning will be issued. Students will be encouraged to contact the Center for Success and assigned navigator for additional support plans.

### **Academic Honesty Policy**

Academic Honesty is defined as ethical behavior that includes student production of their own work and not representing others' work as their own, by cheating or by helping others to do so.

**Plagiarism is defined as the failure to give credit for the use of material from outside sources.**

**Plagiarism includes but is not limited to:**

- Submitting other's work as your own
- Using data, illustrations, pictures, quotations, or paraphrases from other sources without adequate documentation
- Reusing significant, identical or nearly identical portions of one's own prior work without acknowledging that one is doing so or without citing this original work (self-plagiarism)

**Cheating is defined as obtaining answers/material from an outside source without authorization.**

**Cheating includes, but is not limited to:**

- Plagiarizing in any form
- Using notes/books/electronic material without authorization
- Copying
- Submitting others' work as your own or submitting your work for others
- Altering graded work
- Falsifying data
- Exhibiting other behaviors generally considered unethical
- Allowing your work to be submitted by others

### **Makeup Policy**

Instructors will work with students on an individual case scenario.

### **Accessibility**

Jackson College understands that cultivating a broadly diverse community is crucial to our educational mission and to our foundational commitment to leadership and service. Jackson College is fully committed to ensuring our courses are accessible to everyone including those with disabilities. We are currently working to increase accessibility and usability of our course materials in order to meet or exceed the requirements of Section 508 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1991 and Web Content Accessibility Guidelines (WCAG) 2.0. For more information about Jackson College's efforts to ensure accessibility please visit the [Jackson College accessibility web page](#).

If you have an accessibility need in any of our classes please e-mail the Center for Student Success at [JCCSS@jccmi.edu](mailto:JCCSS@jccmi.edu) or visit the [Center for Student Success web page](#).

At the Center for Student Success (CSS), we are committed to providing all students the opportunity to achieve academic success by providing a variety of support services free of charge to Jackson College students. This includes, but is not limited to, peer and faculty tutoring, mental health referral, temporary assistance with transportation, various workshops/seminars, and the TRIO program.

In addition, the CSS staff is committed to adapting the College's general services to meet the individual needs of otherwise qualified students with disabilities, for the purpose of providing equal access to all programs and facilities.

## Calendar

A partial or complete list of dates or class periods for the course. Within the calendar on specific days are: Assignments, readings, homework, exercised, performances, quizzes, topics, subject matter, skills, chapter titles, discussion topics, tests, comprehensive exams, due dates for major papers or performances. Add or remove columns as necessary to suit your course.

*\*Also include a statement that calendar timelines and assignments are an approximation and could be changed.*

MODULE	LEARN	MILESTONE DATE	ASSESSMENTS
1	The cardiovascular system- -heart & circulatory system	JULY 26	<b>Module 1 Research</b> <ul style="list-style-type: none"> <li>• Begin by exploring <b>Jetnet Big Blue Button</b>, OneDrive, <a href="#">Google docs</a> and Google forms. <ul style="list-style-type: none"> <li>○ Post an introduction video using BigBlue Button.</li> </ul> </li> <li>• Create a <a href="#">google account</a> and email; or if preferred use OneDrive. <ul style="list-style-type: none"> <li>○ Using Onedrive or google doc, write a short story about a fun fact about yourself and share the link in the module forum.</li> </ul> </li> <li>• Complete the <a href="#">entry-survey</a>.</li> </ul>
2	Upper and Lower Extremity Venous and Arterial Anatomy; normal functions of the venous and artery systems	JULY 26	<b>Module 2 Learn</b> <ul style="list-style-type: none"> <li>• Research stage 1 lesson concepts using web resources (Youtube videos, wiki's, blogs, JetNet instructional material) <ul style="list-style-type: none"> <li>○ Share images of notes and all the resources used to guide your research in module forum</li> </ul> </li> <li>• Read module readings <ul style="list-style-type: none"> <li>○ Share images of notes from readings. In Module forum</li> </ul> </li> </ul>

3	Venous and arterial anatomy of the extracranial and intracranial vasculature; normal functions of the venous and artery systems	AUGUST 9	<p><b>Module 3 Brainstorm</b></p> <ul style="list-style-type: none"> <li>• Create summaries of stage 1 lesson concepts and share link in module reflection. Use <b>Jetnet Big Blue Button</b> to share your brainstorming ideas. . Answer the guiding questions in BBB presentation <ul style="list-style-type: none"> <li>○ What obstacles do you predict?</li> <li>○ What questions remain</li> <li>○ What DIY model are you designing?</li> </ul> </li> <li>• Gather material for prototype and play with selected tools and resources</li> <li>• Share images of brainstorming ideas via <b>module reflection</b></li> </ul>
4	Abdominal vasculature and surrounding structures; normal function of the venous and arterial systems and surrounding structures	AUGUST 9	Work on Prototype
5	Pathology and abnormal functions associated with arterial and venous systems(mechanisms)	AUGUST 23	<p><b>Module 5 Prototype</b></p> <ul style="list-style-type: none"> <li>• Create prototype model using DIY tools and resources</li> <li>• Share images of design steps via module reflection</li> <li>• Share the prototype via <b>Jetnet Big Blue Button</b>.. You are NOT required to demonstrate it at this session <ul style="list-style-type: none"> <li>○ What obstacles remain?</li> <li>○ What questions remain</li> <li>○ What DIY model are you designing?</li> </ul> </li> </ul>

6	Risk factors and indications of non-invasive testing associated with pathological presentation	AUGUST 23	<b>Module 6 Test/Share</b> <ul style="list-style-type: none"> <li>Share video demonstrations via <b>Jetnet Big Blue Button</b></li> <li>Share a report summary in the Module Forum and video presentation of the design steps and report summary via <b>Jetnet Big Blue Button</b>. <ul style="list-style-type: none"> <li>(a) Summary: Describe the design model. Reflect on the summaries from Stage 1 and answer the following questions regarding your prototype. <ol style="list-style-type: none"> <li>1. What worked? How far did the fluid make it with one cycle(pump)?</li> <li>2. What didn't work?</li> <li>3. How might introducing gravity (standing the patient) impact flow throughout the vascular beds?</li> <li>4. How might adding more flow channels (branches, tributaries, bifurcations) impact flow patterns?</li> <li>5. How might venous valves impact flow?</li> </ol> </li> </ul> </li> </ul>
7	Final Project/Exam	AUGUST 28	Grading and Feedback offered

**Important Dates:**

DATE	EVENT
JULY 13, 2020	CLASS BEGINS
AUGUST 30	SEMESTER ENDS
AUGUST 31	FALL SEMESTER BEGINS

**Student Responsibilities**

Student must actively participate in on-line course work, daily clinical activities and daily scheduled vascular exams. Additionally, students will log required number of clinical hours, clinical data, and be prepared to discuss daily clinical experiences. At all times students will behave in a manner supportive



of the SDMS code of ethics. <https://secure.sdms.org/about/who-we-are/code-of-ethics>. Students are responsible for providing the clinical assessment sets and evaluations to their clinical instructor(s) a minimum of two weeks prior to due dates. Students are responsible for following up with the assessment/evaluation outcomes. Students are responsible for submitting all clinical work to the program faculty on or before the due date.

### **Attendance- Participation Policy**

For online sections:

Just as in a traditional classroom course, regular class participation and keeping up on the reading and assignments is strongly correlated with survival in college. It is my recommendation that you plan to do your assignments and take your exams BEFORE the last day they are due. If problems occur, there is time to fix them before the deadline.

In compliance with Federal Title IV funding requirements, as well as college initiatives, I will be monitoring student participation on a regular basis and officially reporting student activity throughout the term to assure compliance with college policy and federal regulations. It is imperative that you log in to the course and actively participate *within the first couple days of the term* to validate your enrollment in the course. After that, not actively participating in class may result in you being withdrawn from the course. Being withdrawn from a course can have an impact on financial aid, billing, athletic eligibility, and housing status. As a college student you are responsible for how your participation impacts your academic progress; the accountability lies with you

### **Caveat**

Some revisions may be necessary during the course. Assessment tools and instruction may need to be modified as needed to improve the learning experience for all learners. The modifications could be as a class or on an individual basis. Learner and Instructor must agree to the modifications.

### **Jackson College Serves (Community Service)**

Minimum of 8 hours of community service by the end of the program. The required event must be health related and preferably an event that provides information and screenings related to vascular health.