

## **DMS Vascular Option**

### **SONO117 Vascular Sonography I**

#### **Course Description**

Provides a study of diagnostic foundations of clinical medicine pertinent to vascular sonography. Includes obtaining the clinical history, interpretation of clinical laboratory test, the pathophysiologic effects of disease, related clinical signs and symptoms, sectional/vascular anatomy, and normal/abnormal sonographic patterns. Includes a laboratory component for the practice and application of normal sonographic patterns, basic scanning techniques and protocol.

#### **Course Competencies**

1. Demonstrate the ability to perform sonographic examinations of the cerebrovascular and intracranial vascular structures according to protocol guidelines established by national professional organizations utilizing real-time equipment and Doppler display modes.
2. Recognize and identify the sonographic appearance of normal cerebrovascular and intracranial vascular structures, anatomic variants, and normal Doppler patterns included in the cerebrovascular and intracranial vascular structures.
3. Recognize, identify, and appropriately document the abnormal sonographic and Doppler patterns of disease processes, pathology, and pathophysiology of the cerebrovascular and intracranial vascular structures.
4. Make choices based upon awareness of ethics and differing perspectives/ideas.

### **SONO118 Vascular Sonography II**

#### **Course Descriptive**

Covers the study of the clinical applications of peripheral venous, peripheral arterial and abdominal vasculature within the sonographic vascular concentration. Includes related clinical symptoms and laboratory test, pathophysiologic effects of disease and anomalies, and normal/abnormal sonographic patterns. Includes basic scanning techniques and protocol. Designed for the student to utilize the laboratory facilities to demonstrate clinical applications of theoretical principles and concepts.

#### **Course Competencies**

1. Demonstrate the ability to perform sonographic examinations of the peripheral venous, peripheral arterial and abdominal vascular structures according to protocol guidelines established by national professional organizations utilizing real-time equipment and Doppler display modes.
2. Recognize and identify the sonographic appearance of normal peripheral venous, peripheral arterial and abdominal vascular structures, anatomic variants, and normal Doppler patterns included in the peripheral venous, peripheral arterial and abdominal vascular structures.
3. Recognize, identify, and appropriately document the abnormal sonographic and Doppler patterns of disease processes, pathology, and pathophysiology of the peripheral venous, peripheral arterial and abdominal vascular structures.
4. Make choices based upon awareness of ethics and differing perspectives/ideas.

## **SONO121 Sonography Physics and Instrumentation**

### **Course Description**

Consists of lectures and related laboratory exercises covering the areas of ultrasonic propagation principles, transducer parameters, interactive properties of ultrasound with human tissue, possible biologic effects, basic equipment types, instrumentation and quality control procedures, hemodynamics, and basic Doppler.

### **Course Competencies**

1. Describe sound waves, propagation of ultrasound through tissue, reflection, refraction, and scattering.
2. Explain transducer technology, and discuss the advantages and limitations of the various types.
3. Discuss the basic features of medical sonographic equipment, including operator controls and image processing
4. Describe the role of advanced scanning features, including harmonics, coded excitation, and compounding
5. Explain how pulsed Doppler, color flow imaging, and amplitude imaging is achieved
6. Recognize and describe image artifacts and techniques to minimize or eliminate them
7. Describe the importance of performance, safety, and output measurements and standards.
8. Use mathematics to organize, analyze, and synthesize data to solve a problem.

## **SONO136 Vascular Education I**

### **Course Description**

Includes observation and practice of all clinical duties performed in the vascular lab. Basic instruction and scanning experience will be under the supervision of an experienced Vascular Sonographer.

### **Course Competencies**

1. Demonstrate an understanding of the various types of ultrasound equipment and how to choose the proper type for a cerebrovascular and intracranial examination.
2. Recognize and identify the normal sonographic, spectral Doppler, and color Doppler patterns of the cerebrovascular and intracranial structures.
3. Recognize and appropriately document the abnormal sonographic, spectral Doppler, and color Doppler patterns of the cerebrovascular and intracranial structures.
4. Apply learning in academic, personal, and public situations.

## **SONO204 Online Vascular Review**

### **Course Description**

Provides a review of vascular sonography to prepare the student for the ARDMS certification examination. Includes activities and quizzes related to cerebrovascular, intracranial, peripheral venous, peripheral arterial and abdominal vascular sonography.

### **Course Competencies**

1. Successfully pass a vascular sonography mock certification exam.
2. Use appropriate search strategies and resources to find, evaluate, and use information.

## **SONO206 Online Vascular Sonography III**

### **Course Description**

Covers the various test, miscellaneous conditions encountered in vascular sonography. Emphasizes the importance of quality measurements and safety practices.

### **Course Competencies**

1. Describe the test procedures and protocols used for the evaluation in cerebrovascular, peripheral vascular and abdominal vascular procedures.
2. Evaluate sonographic image and Doppler spectral quality, and recognize the importance of preventive maintenance of the sonographic system.
3. Define and discuss the biological effects with the use of medical sonography.
4. Explain the importance of test validation.
5. Describe the capabilities and limitations encountered with Spectral Doppler interpretation.
6. Demonstrate problem solving through interpreting, analyzing, and summarizing test data.

## **SONO236 Vascular Clinical Education II**

### **Course Description**

Includes experience in clinical applications of cerebrovascular, intracranial, peripheral arterial, peripheral venous, and abdominal vascular sonographic examinations. The rate of progress is dependent upon the student's ability to comprehend and perform assignments. Competencies will be performed.

### **Course Competencies**

1. Demonstrate an understanding of the various types of ultrasound equipment and how to choose the proper type for a cerebrovascular, intracranial, peripheral venous, peripheral arterial and abdominal vascular examination.
2. Recognize and identify the normal sonographic, spectral Doppler, and color Doppler patterns of the cerebrovascular, intracranial, peripheral venous, peripheral arterial and abdominal vascular structures.
3. Recognize and appropriately document the abnormal sonographic, spectral Doppler, and cooler Doppler patterns of the cerebrovascular, intracranial, peripheral venous, peripheral arterial and abdominal vascular structures.
4. Demonstrate the ability to perform basic vascular examinations of the cerebrovascular, intracranial, peripheral venous, peripheral arterial and abdominal vascular structures.
5. Demonstrate effective oral and written communication skills.

## **SONO237 Vascular Clinical Education III**

### **Course Description**

Provides a more active clinical role in assisting the practicing vascular Sonographer and performing sonographic duties under direct supervision. The rate of progress is dependent upon the student's ability to comprehend and perform assignments. Competencies will be performed.

### **Course Competencies**

1. Demonstrate an understanding of the various types of ultrasound equipment and how to choose the proper type for a cerebrovascular, intracranial, peripheral venous, peripheral arterial and abdominal vascular examination.
2. Recognize and identify the normal sonographic, spectral Doppler, and color Doppler patterns of the cerebrovascular, intracranial, peripheral venous, peripheral arterial and abdominal vascular structures.
3. Recognize and appropriately document the abnormal sonographic, spectral Doppler, and cooler Doppler patterns of the cerebrovascular, intracranial, peripheral venous, peripheral arterial and abdominal vascular structures.
4. Demonstrate progressive development in performing vascular examinations of the cerebrovascular, intracranial, peripheral venous, peripheral arterial and abdominal vascular structures.
5. Apply learning in academic, personal, and public situations.

