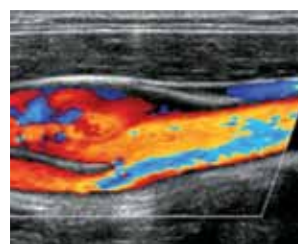


2009-2010

# Diagnostic Ultrasound

Courses, Seminars &  
Educational Media

NATIONAL CENTER FOR APPLIED LEARNING  
Program for Medical Ultrasound



*Sponsored by:*



WAKE FOREST  
UNIVERSITY

SCHOOL of MEDICINE

# Excellence in Ultrasound Education

Since 1975, the Program for Medical Ultrasound at Wake Forest University Baptist Medical Center has been a pioneer in providing ultrasound education and coordinates the activities of several Medical Center departments involved in diagnostic ultrasound. Approximately 1,200 physicians, sonographers, and other allied health professionals attend our courses and seminars annually. The individual courses conducted at the Medical Center are enhanced by daily afternoon hands-on scanning sessions to reinforce morning lectures and develop scanning technique. Limits on class size and scanning lab size keep the interactions informal and effective. Advanced seminars in Echocardiography and in OB/GYN sonography are conducted at various locations throughout the southeast region.

Date	Course Title	Credits
<b>2009</b>		
August 17-21	Neurovascular Ultrasound (Carotid & TCD)	37
August 17-19	Carotid (Only)	22.5
August 20-21	Transcranial Doppler (Only)	14.5
September 14-18	Obstetrical Ultrasound	31
October 1-4	4th Annual The Beat Goes On Conference, Orlando, FL	24.25
October 12-16	Adult Echocardiography	30
October 26-29	Peripheral Vascular Ultrasound	25
November 2-6	Neurovascular Ultrasound (Carotid & TCD)	37
November 2-4	Carotid (Only)	22.5
November 5-6	Transcranial Doppler (Only)	14.5
November 9-13	Obstetrical Ultrasound	31
December 7-11	Neurovascular Interpretation	40
<b>2010</b>		
February 18-20	33rd Annual Advanced Ultrasound Seminar: OB/GYN, Orlando, FL	TBA
March 1-5	Adult Echocardiography	30
March 8-12	Obstetrical Ultrasound	31
April 22-25	7th Annual Team Echocardiography Conference, Hilton Head Island, SC	TBA
May 3-7	Neurovascular Ultrasound (Carotid & TCD)	37
May 3-5	Carotid (Only)	22.5
May 6-7	Transcranial Doppler (Only)	14.5
May 10-13	Peripheral Vascular Ultrasound	25
May 14	Nerve and Muscle Ultrasound	7
May 17-21	Adult Echocardiography	30

Each course begins at 8:30 a.m. and ends between 4:30 to 5:00 p.m. daily.

The last day of each course concludes as follows:

- Adult Echocardiography – 11:00 a.m.
- Neurovascular – 4:30 p.m.; Carotid – 5:00 p.m.; Transcranial Doppler – 4:30 p.m.
- Neurovascular Interpretation – 5:00 p.m.
- Obstetrical – 12:00 p.m.
- Nerve and Muscle – 5:00 p.m.
- Peripheral Vascular – 12:30 p.m.



## Location

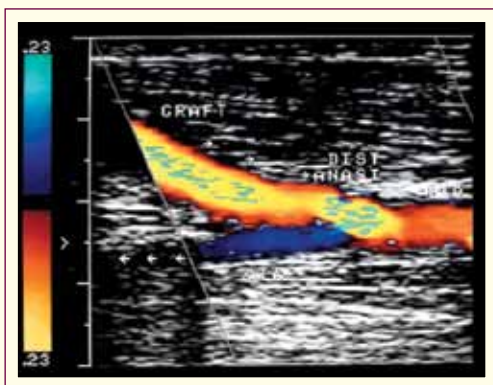
Unless otherwise noted, all courses listed above are conducted at:  
 Wake Forest University Baptist Medical Center  
 Medical Center Boulevard  
 Winston-Salem, NC 27157

## Administration

Frederick Kremkau, PhD, Director  
Louise Nixon, Program Coordinator  
Jennifer Dutrow, Registrar

## Target Audience

Physician and non-physician allied health professionals may attend any single course or groups of courses to gain knowledge in performing and interpreting ultrasound examinations. (Note the non-physician prerequisites below.)



## Overview

Each course is conducted in the Program for Medical Ultrasound of Wake Forest University School of Medicine and Wake Forest University Baptist Medical Center in Winston-Salem, North Carolina. Lectures are presented by leaders in each specialized area of ultrasound. Scanning laboratories are equipped with systems from leading manufacturers and are used in instructional scanning sessions with patients and volunteers as subjects. Attendance is limited to insure adequate hands-on practicum.

## Overall Objectives

At the conclusion of each continuing medical education activity, the participant should be better able to:

- impart in lecture and discussion formats and in scanning and problem sessions, clinical and technical ultrasound knowledge and skills;
- present and practice reading and interpretation of ultrasound images and information;
- compare and relate ultrasound knowledge and skills with peers.

### IMPORTANT NOTE:

These short-term courses do not constitute comprehensive ultrasound training leading to proficiency, which takes several months to accomplish. They are regarded as continuing medical education; they serve to update the physician on current techniques and clinical applications and act as an introductory complement to the sonographer's supervised clinical on-the-job ultrasound training.

## Prerequisites for Non-physicians

- Completed training and one year of experience in an allied health profession including sonography, radiologic technology, radiation therapy, nuclear medicine technology, vascular technology, respiration therapy or nursing

or

- B.S. degree with a major in a biological science and one year of experience in allied health.

**Accreditation** The Wake Forest University School of Medicine is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

**Credit** The Wake Forest University School of Medicine designates this educational activity for a minimum of 7 and maximum of 40 *AMA PRA Category 1 Credits™*. Physicians should only claim credit commensurate with the extent of their participation in the activity.

Sonographers may apply credits toward meeting CME requirements for the ARDMS.

## Adult Echocardiography

October 12-16, 2009 • March 1-5, 2010 • May 17-21, 2010

The Adult Echocardiography courses provide an introduction to basic cardiac ultrasound techniques, including two-dimensional and m-mode echocardiography and spectral and color flow Doppler. A combined lecture and hands-on porcine heart dissection format provides coverage of relevant cardiac anatomy. An introduction to basic ultrasound and Doppler physics is followed by an overview of normal and abnormal patterns as well as quantitative analysis. Pathophysiology relevant to common cardiac diagnoses is covered in a systematic fashion. While brief overviews of advanced techniques such as transesophageal and stress echocardiography are provided, the emphasis is on fundamental and practical aspects of adult echocardiography. There are several interpretation workshops and a guided self-assessment section in an extensive syllabus with lecture summaries and reprints provided to each participant. Several small-group scanning labs are conducted using equipment from major manufacturers to provide practical “hands-on” experience.

Mohsen Nomeir, MD, *Director*; Pam Burgess, RDCS, RDMS, RVT, *Coordinator*

### *Learner Objectives*

At the conclusion of this continuing medical education activity, the participant should be better able to:

- Identify the basic sonographic anatomy and physiology of the cardiovascular system.
- Interpret the fundamental physical principles of cardiac ultrasound.
- Discuss pathophysiology and echocardiographic diagnoses of common adult cardiac disorders.

*CME Credits: 30    Fee: \$1,395*

## Obstetrical Ultrasound

September 7-11, 2009 • November 9-13, 2009 • March 8-12, 2010

The Obstetrical Ultrasound courses are a combined course in obstetrics and gynecology with the primary emphasis devoted to the study of obstetrics. The first day is primarily gynecology, including lectures in orientation and terminology of the gynecology tract and hands-on transvaginal scanning labs. The remaining days are devoted to obstetrics, to include approximately 15 hours of dedicated lectures by experienced physicians and sonographers. Each afternoon is spent in scanning labs with obstetrical patients under the guidance of a registered sonographer. Since many general OB/GYN textbooks are available, no specific text is required.

Heather L. Mertz, MD, *Director*; Anita Fleming, RDMS, *Coordinator*

### *Learner Objectives*

At the conclusion of this continuing medical education activity, the participant should be better able to:

- Translate key topics in basic obstetrical and gynecological ultrasound and physics.
- Demonstrate skillful scanning techniques when assessing obstetrical and gynecological patients.
- Identify normal anatomy and common abnormal pathology of the fetus, placenta, ovaries and the non-gravid uterus.

*CME Credits: 31    Fee: \$1,395*

## Neurovascular Ultrasound

August 17-21, 2009 • November 2-6, 2009 • May 3-7, 2010

The Neurovascular Ultrasound courses present the basic principles of ultrasound physics and technology as well as anatomy, pathophysiology and hemodynamics regarding the extra- and intracranial cerebral circulation. Carotid duplex sonography, color-flow imaging, carotid intima-media thickness measurement, transcranial Doppler (TCD), embolus detection and new developments in ultrasonographic methods are presented during both lectures and hands-on scanning lab sessions. The emphasis is on clinical applications, case examples and principles of interpretation. The courses are designed as a one week curriculum, and students are encouraged to attend for the entire week. However, the first three days focus on principles, physics and extracranial carotid sonography, while the last two days focus on TCD. Either part may be attended separately.

Charles H. Tegeler, IV, MD, *Director*; Lawrence Myers, MBA, RDMS, RVT, *Coordinator*

### **Learner Objectives**

At the conclusion of this continuing medical education activity, the participant should be better able to:

- Define the basic principles of ultrasound physics and technology, as well as pertinent anatomy, pathophysiology and hemodynamics regarding the extra- and intracranial cerebral circulation.
- Discuss indications and applications for extracranial duplex ultrasound, color-flow imaging and transcranial Doppler ultrasound.
- Discuss criteria for the interpretation of carotid duplex and transcranial Doppler ultrasound studies.

**CME Credits:** Neurovascular 37 • Carotid (Only) 22.5 • TCD (Only) 14.5

**Fee:** Neurovascular \$1,495 • Carotid (Only) \$995 • TCD (Only) \$695

## Neurovascular Interpretation

December 7-11, 2009

The Neurovascular Interpretation course is designed for attendees to interpret at least 200 neurovascular ultrasound cases (100 carotid and 100 TCD studies) in a supervised environment. Cases will be presented using video, electronic images, or other hard copy results, from which attendees will create a preliminary interpretation. The findings will be discussed, and when possible, compared with the clinical reading. Some unknown cases will be reviewed and submitted for critique. Prior completion of the Neurovascular Ultrasound course (or its equivalent) including hands-on and practical interpretation experience is strongly encouraged.

Charles H. Tegeler, IV, MD, *Director*

### **Learner Objectives**

At the conclusion of this continuing medical education activity, the participant should be better able to:

- Discuss criteria for the interpretation of carotid duplex and transcranial Doppler ultrasound studies.
- Discuss the descriptors of plaque features used for interpretation of B-mode imaging data on carotid duplex ultrasonography.
- Create a preliminary interpretation of carotid duplex and transcranial Doppler ultrasound examinations.

**CME Credits:** 40    **Fee:** \$1,495

## Nerve and Muscle Ultrasound

May 14, 2010

The Nerve and Muscle Ultrasound courses present an introduction to basic principles of ultrasound technology and are integrated with hands-on demonstrations of technique and case interpretation. It is in real-time use of the instrument that the practitioner recognizes the importance of this type of basic knowledge and it is in this context that they can apply this knowledge to troubleshoot difficult imaging cases, identify artifacts, and improve resolution at the bedside. Lectures will focus on applications in muscle disease, peripheral and cranial nerve imaging, and an introduction to the use of ultrasound in evaluating musculoskeletal disorders. A small group format facilitates questions and answers and tailors the educational experience to meet the specific needs of individual participants.

Francis Walker, MD, *Director*; Michael Cartwright, MD, *Coordinator*

### *Learner Objectives*

At the conclusion of this continuing medical education activity, the participant should be better able to:

- Define terms of ultrasound and demonstrate application of the principles while imaging neuromuscular structures.
- Identify upper extremity, lower extremity and cranial musculature and the visible boundaries that distinguish muscle groups in these areas.
- Recognize loss of heterogeneity, fasciculations, hyperechoic changes, hypertrophy and other common pathologic changes in affected human muscles.
- Identify the median, radial and ulnar nerves in the upper extremity and areas of the sural, peroneal and tibial nerves in the lower extremity and recognize common anatomic variants and pathologic abnormalities of these nerves.
- Discuss indications for appropriate use of ultrasound imaging, factors that could complicate interpretation and clinical situations where ultrasound imaging is particularly contributory to addressing clinical problems.

*CME Credits:* 7    *Fee:* \$395

## Peripheral Vascular Ultrasound

October 26-29, 2009 • May 10-13, 2010

The Peripheral Vascular courses describe how ultrasound is applied to the detection and evaluation of disorders affecting extremity and abdominal blood vessels. Anatomy and physiology of the circulation is covered, along with the signs and symptoms of peripheral vascular disease. An overview of ultrasound and Doppler physics is included. Scanning labs address technical skills for both the novice and those with experience with ultrasound imaging and concentrate upon duplex and color flow Doppler modalities. (Carotid artery disease is addressed in the Neurovascular courses.) With an emphasis on the interpretation of test results, this course has been designed as one for physicians, general/cardiac sonographers and vascular technologists.

Terence N. Needham, RVT, FSVU, *Director and Coordinator*

### *Learner Objectives*

At the conclusion of this continuing medical education activity, the participant should be better able to:

- Recognize the prevalence of peripheral vascular disease in the general population and the signs and symptoms of its effects upon the vasculature.
- Select the most appropriate peripheral vascular study according to the patient's signs and symptoms, incorporating an appreciation of the limitations of each testing modality.
- Interpret the results from noninvasive peripheral vascular studies and differentiate true information from artifactual.

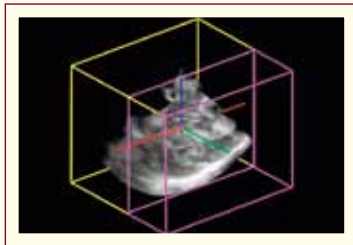
*CME Credits:* 25    *Fee:* \$1,195

# Advanced Seminars, Fellowships, and Preceptorships

## 4th Annual The Beat Goes On

**October 1-4, 2009**

The Ritz-Carlton Orlando Grande Lakes  
Orlando, Florida



## 7th Annual Team Echocardiography

**April 22-25, 2010**

The Westin Resort  
Hilton Head Island, South Carolina



## 33rd Annual Advanced Ultrasound Seminar: OB/GYN

**February 18-20, 2010**

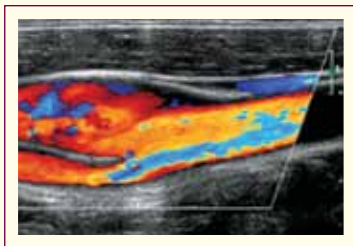
Disney's Contemporary Resort  
Orlando, Florida

## Visiting Preceptorship in Echocardiography – Ongoing (Sonographers Only)

Wake Forest University School of Medicine  
Winston-Salem, North Carolina  
Call **336.716.4800** for details.

## Mini-Fellowship in Neurosonology – Ongoing

Wake Forest University School of Medicine  
Winston-Salem, North Carolina  
Call **336.716.7668** for a separate  
detailed brochure.



## Acknowledgement

The Program for Medical Ultrasound gratefully acknowledges support in the form of educational grants and equipment/product loans from the following:

- Aloka Ultrasound
- American Institute of Ultrasound in Medicine
- AS Software
- Biosound Esaote
- CardiacQA
- CIVCO Medical Solutions
- Core Sound Imaging
- Diagnostic Health Group
- DWL Systems, Inc.
- Elsevier
- GE Healthcare
- Genzyme Genetics
- Hokanson
- Imaging Associates, Inc.
- Kardia Health Systems
- Lenetix Medical Screening Labs
- Lippincott, Williams and Wilkins
- Medical Positioning
- Medison
- Medtronic
- Parker Laboratories
- Parks Medical Electronics
- Philips Medical Systems
- Siemens Medical Solutions
- SONODEPOT, Inc.
- SonoSite
- Terason
- Unetixs Vascular, Inc.
- Vidistar

## Special Needs

Wake Forest University School of Medicine adheres to the Americans with Disabilities Act. Please report any special needs you may have for participation in and/or access to any of the educational activities.

# Registration Process

Registration forms are accepted by Mail, Fax, or Online. Fees must be paid in full at the time of registration or a space may be reserved by Telephone with a VISA or MasterCard number. Online registrations without follow-up payment will not guarantee reserved space. Foreign payments must be made in U.S. Funds. Wire transfers are required from overseas unless paying by credit card. Registrations are accepted on a first-come, first-serve basis. A confirmation will be **e-mailed** to you.

**Register early for guaranteed attendance!**

**Telephone: 336.716.4505 or 800.277.7654 ext. 6.4505 • FAX: 336.716.2447**

**E-mail: [cmu@wfubmc.edu](mailto:cmu@wfubmc.edu) • Web site: [www.wfubmc.edu/ultrasound](http://www.wfubmc.edu/ultrasound)**

# Cancellation Policy

Written notice of cancellation must be received no later than 10 business days before the first day of the course. Paid registration fee(s) less a \$100 cancellation fee per course will be refunded if appropriate notice is given. Registration may be transferred among colleagues or be applied to a future course within one year.

In the unlikely event that a course is rescheduled or cancelled, pre-paid registrants will be given the opportunity to transfer to a future course or may receive a full refund. The Program for Medical Ultrasound will not be responsible for any travel and/or lodging reimbursements.

# Transportation

The **Piedmont Triad International Airport** (Greensboro/High Point/Winston-Salem) is located in Greensboro, NC and is approximately 25 miles from Winston-Salem. **Central Piedmont Transportation** serves the area for ground transportation from the airport and is located on the Baggage Claim Level in the center of the terminal. To make reservations for the return trip, contact them at 1.877.796.5466.

# Accommodations

**The Hawthorne Inn and Conference Center** proudly serves guests of the Medical Center by offering 155 bright and spacious rooms with the following features and benefits:

- Complimentary shuttle service to/from the Medical Center (1.5 miles)
- Direct access from Business I-40 and conveniently located to Highway 52
- Ample, free parking
- Complimentary hot breakfast and USA Today
- Full service restaurant, offering three meals and room service daily, weekday lunch buffet and Sunday brunch
- Coffee maker, refrigerator, microwave, iron, ironing board, hair dryer, data port with High Speed Internet and voice mail in each guest room
- Cable T.V. with remote and HBO
- Self-service laundry facility
- On-site fitness center and outdoor swimming pool
- Lobby computer work station with Internet connection and printer
- Wireless internet throughout the hotel

**Rates:** \$82 Single/Double plus tax; \$112 Suite plus tax.

**Online Reservations:** [www.hawthorneinn.com](http://www.hawthorneinn.com)

- For 2009 reservations, enter Code #26D4CJ.
- For 2010 reservations, enter Code #26D4D5.

**Phone Reservations:** 877-777-3099 and refer to the *Ultrasound Courses*.



Recorded lecture presentations in diagnostic ultrasound are available for purchase. In addition to the lecture series listed below, a listing of Obstetrical and Gynecological Ultrasound presentations by internationally recognized lecturers can be found on our website at [www.wfubmc.edu/ultrasound](http://www.wfubmc.edu/ultrasound). A copy can be requested by calling 336.716.4505 or e-mail: [cmu@wfubmc.edu](mailto:cmu@wfubmc.edu). Each lecture is available on DVD and is 45-60 minutes in length.

## Principles of Diagnostic Ultrasound Lecture Series

*Presented by:* Frederick W. Kremkau, Ph.D.

This 6-hour lecture series covers the major topics involved in how modern ultrasound imaging and Doppler ultrasound work. Recent technological advances are included.

The lecture series serves three purposes:

- It provides an introduction for participants who are new to the field.
- It provides a review and update of recent technological advances for practicing physicians, sonographers and other health professionals.
- It provides a review for participants preparing for the UPI, CPI and VPI examinations administered by the ARDMS.

Topics within the series are:

- Ultrasound
- Transducers
- Instruments
- Doppler
- Artifacts
- Safety

## Order Form

<b>Principles of Diagnostic Ultrasound Lecture Series DVD</b>	\$395.00
NC Residents add 7% sales tax	\$ .
<b>Total Enclosed</b>	<b>\$ .</b>

(Please print or type all information.)

Name \_\_\_\_\_

Institution \_\_\_\_\_

Mailing Address (No P.O. Boxes) \_\_\_\_\_

City/State/Zip \_\_\_\_\_

Daytime Phone \_\_\_\_\_ E-mail \_\_\_\_\_

### Payment Method

Check  VISA  MasterCard  Purchase Order # \_\_\_\_\_

Make checks payable to: **Wake Forest University Health Sciences-Ultrasound**  
for total amount (U.S. funds only) or complete credit card information.

\_\_\_\_\_  
Card # \_\_\_\_\_ Expiration Date \_\_\_\_\_

\_\_\_\_\_  
Signature \_\_\_\_\_ Cardholder's Name \_\_\_\_\_

**Return order form and payment to:**  
Program for Medical Ultrasound  
Wake Forest University School of Medicine  
Medical Center Boulevard  
Winston-Salem, NC 27157-1039  
Fax: 336.716.2447

# COURSE REGISTRATION FORM

This was previously submitted by:  Fax  Online  Telephone Date: \_\_\_\_\_

(Please print or type all information. You may duplicate this form for multiple registrations)

Name \_\_\_\_\_  
First Name Middle Initial Last Name

MD  DO  RN  LPN  RT  RDMS  RDCS  RVT  Other, Specify \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_ Country \_\_\_\_\_

E-mail (Required for Confirmation) \_\_\_\_\_

Daytime Telephone \_\_\_\_\_ Fax \_\_\_\_\_

Physician Specialty \_\_\_\_\_ Last 4 digits of Social Security No. \_\_\_\_\_

Sonographer/Specialist: College/Technical School \_\_\_\_\_

Please see prerequisites

Years of Allied Health Experience \_\_\_\_\_ Current Position \_\_\_\_\_

## Course(s) Desired

Title(s) 1 \_\_\_\_\_ Date \_\_\_\_\_ Fee \$ \_\_\_\_\_

2 \_\_\_\_\_ Date \_\_\_\_\_ Fee \$ \_\_\_\_\_

3 \_\_\_\_\_ Date \_\_\_\_\_ Fee \$ \_\_\_\_\_

Total \$ \_\_\_\_\_

(U.S. Funds)

## Payment Method

Check  VISA  MasterCard  Wire Transfer (Required for Overseas Payment other than Credit Card)

Make checks payable to: **Wake Forest University Health Sciences-Ultrasound** for total amount (U.S. funds only) or complete credit card information.

If paying by credit card, please complete:

Card # \_\_\_\_\_ Expiration Date \_\_\_\_\_

Signature \_\_\_\_\_ Cardholder's Name \_\_\_\_\_

Telephone: 336.716.4505 or 800.277.7654 ext. 64505

E-mail: [cmu@wfubmc.edu](mailto:cmu@wfubmc.edu)

Web site: [www.wfubmc.edu/ultrasound](http://www.wfubmc.edu/ultrasound)

2009-2010

## Mail or Fax to:

Program for Medical Ultrasound  
Wake Forest University School of Medicine  
Medical Center Boulevard  
Winston-Salem, NC 27157-1039  
Fax: 336.716.2447

# Diagnostic Ultrasound

Courses, Seminars &  
Educational Media

2009-2010

# Diagnostic Ultrasound

Courses, Seminars &  
Educational Media

NATIONAL CENTER FOR APPLIED LEARNING  
Program for Medical Ultrasound

## Courses

Adult Echocardiography  
Neurovascular Interpretation  
Neurovascular Ultrasound  
Obstetrical Ultrasound  
Nerve And Muscle  
Ultrasound  
Peripheral Vascular  
Ultrasound

## Seminars

4th Annual The Beat Goes On  
33rd Annual Advanced  
Ultrasound Seminar: OB/GYN  
7th Annual Team  
Echocardiography

Excellence in  
Ultrasound Education

[www.wfubmc.edu/ultrasound](http://www.wfubmc.edu/ultrasound)



WAKE FOREST  
UNIVERSITY

SCHOOL of MEDICINE

Program for Medical Ultrasound  
Medical Center Boulevard  
Winston-Salem, NC 27157-1039

Non-profit Organization  
U.S. Postage  
PAID  
Winston-Salem, N.C.  
Permit No. 154



Mixed Sources

Product group from well-managed  
forests and other controlled sources and  
recycled wood or fiber  
www.fsc.org Cert no. SGS-COC-00551  
© 1996 Forest Stewardship Council