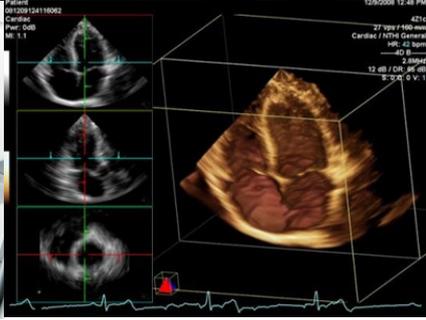


# RIT



## Diagnostic Medical Sonography (Ultrasound) Program





Most people have heard of, and probably know someone who has had an ultrasound examination. Some of you may have even had an ultrasound examination yourselves. Did you ever think that a career in ultrasound might be right for you? Do you like to work and interact with people? Do you want to work in the medical field? We hope to answer some of these questions and to give you a basic understanding of what Ultrasound is and who performs the examinations. You may find that an exciting career in Ultrasound might be right for you.

**It is our mission to produce well-educated, well-rounded, compassionate and successful health care professionals (Sonographers).**



## What is Diagnostic Medical Sonography (Ultrasound)?

Sonography (or ultrasound), one of the fastest-growing areas in diagnostic medicine, is a noninvasive, nontoxic diagnostic medical examination in which high frequency sound waves are used to produce images of many different areas of the human body. Ultrasound is readily used to image the heart, abdominal organs (kidneys, pancreas, liver, spleen, etc.), the developing fetus, male and female reproductive organs, as well as blood flow throughout the body.

The role Ultrasound plays in the diagnosis and treatment of disease has grown rapidly in the last twenty years and is expected to continue to grow. Ultrasound is playing an increasingly important role in the evaluation of disease and health without the use of surgery, injection of dyes or radiation.

## What is a Sonographer?

A sonographer (one who performs Ultrasound examination) plays an integral role as a member of the diagnostic health care team. Sonographers are committed to providing one-on-one care to a wide variety of patients, as well as providing the best possible diagnostic examination. Sonographers use the latest in biomedical technology to diagnose and treat a wide variety of diseases.

Unlike some medical imaging modalities, the sonographer interacts very closely with the patient from the moment he/she walks into the ultrasound department until he/she leaves. Ultrasound brings the sonographer into close contact with patients, as opposed to most other imaging procedures where the technologist has a more distant and transient relation, sometimes behind a protective wall. The sonographer interviews the patient, inquiring about their history and why they are having an ultrasound examination. Therefore, obtaining an accurate medical history by the sonographer is very crucial for making a correct diagnosis.

In addition, the sonographer selects and evaluates new products and equipment for possible future use. He/She also develop new techniques for performing the examinations. The sonographer assists surgeons in operating rooms to see structures and organs that may be obscured from direct view.

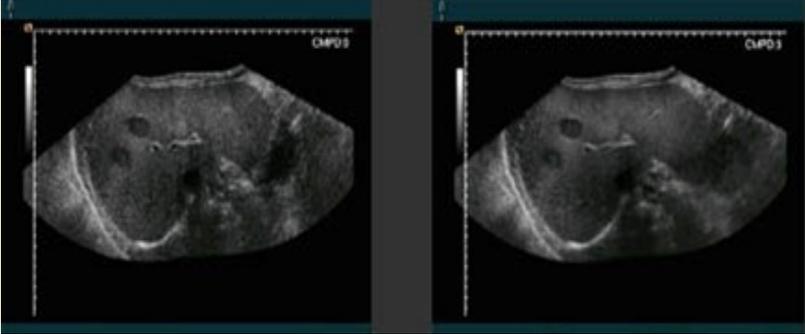
Nowadays, the sonographers' responsibilities have increased by working hand-in-hand with radiologists, by assuming "independent" roles, working for non-radiologists, and by working in hospital settings without physician supervision. Sonographers are treated with high respect within the medical community. Their jobs are never dull and always challenging!



# VARIETY OF EXPERINCES

## Specializations within Ultrasound

Currently, there are many different areas of specialization within the field of ultrasound. The variety of specialties within the field of ultrasound offer individuals greater flexibility to find the area of medicine which best suit their own interests and skills. Below is a list of the various specialties and a brief description of their focus.



Pictures of liver showing lesions (the two round black lesions)

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## Abdomen/Small Parts

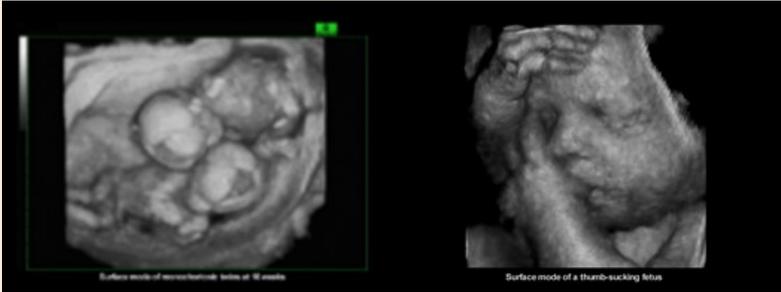
The sonographer evaluates most of the organs in the abdomen and checks for any abnormalities. Some of these organs are the kidneys, liver, gallbladder, pancreas, spleen, blood vessels, prostate gland, breasts, thyroid gland, etc.



# Obstetrics and Gynecology

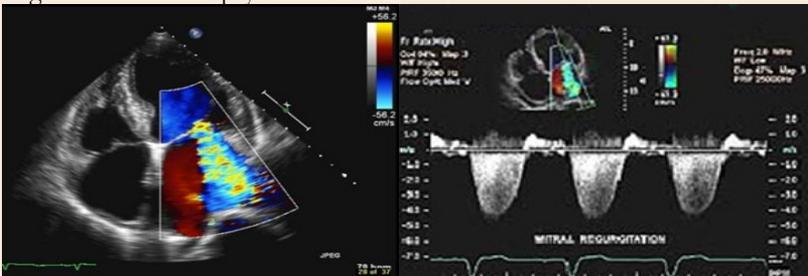
Here, the sonographer tries to evaluate the fetus' head, body, and limbs in order to give accurate assessments of the length of pregnancy. It also helps to determine whether the fetus is suffering from abnormalities or retarded growth. He/She also try to evaluate the amniotic fluid, fetus presentation, and the placenta.

The sonographer uses his/her skill and knowledge to evaluate the non-pregnant uterus as well. The sonographer looks for signs of infections, cancerous and non-cancerous tumors, and other types of abnormalities.

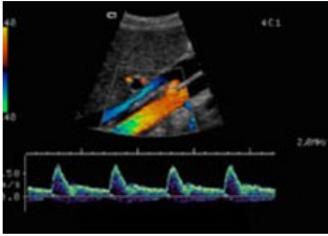


## Echocardiography (Heart Ultrasound)

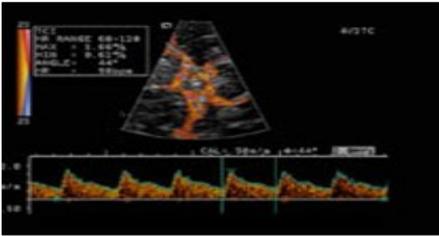
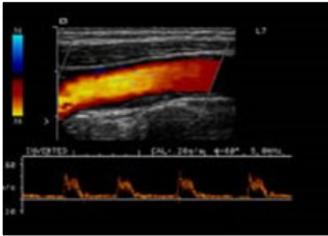
The cardiac sonographers job is to assess the heart and its valves, chambers, and blood vessels. Moving two dimensional images of the heart are obtained and evaluated. The sonographer can assess if the heart's chambers are enlarged, if its valves are stiff or leaky, if it is pumping efficiently, if there are blood clots, tumors or infectious growths within the heart, or if there are abnormal communications between the heart's chambers, just to name a few! The cardiac sonographer is able to perform a variety of exams such as a transthoracic echocardiogram, exercise stress echocardiogram, dobutamine echocardiogram and will work side-by side with the cardiologist during a transesophageal echocardiogram, pericardiocentesis, right ventricular biopsy and more!



## Vascular Ultrasound



The sonographer uses Doppler ultrasound to evaluate blood vessels, detect vascular problems and blood flow throughout the body (i.e. arms, legs, aorta, inferior vena cava, and much more).

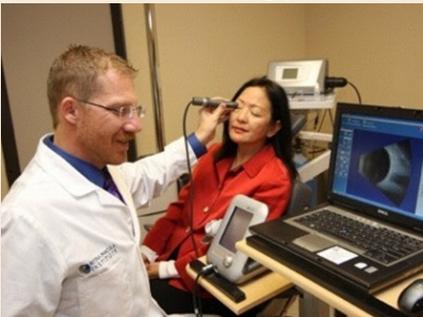


## Neurosonography

The sonographer examines the inner structures of the brain and looks for tumors or masses (if any). He/She also evaluates the spinal cord for any abnormalities.



## Ophthalmology



The sonographer uses his/her skill and knowledge to examine the eye and detect any abnormalities such as tumors, detached retinas or internal bleeding. The ultrasound examination is extremely operator dependent. This means the quality of the examination is directly affected by the skill and expertise of the sonographer performing the examination.

# COMPETITIVE SALARIES

## A Career in Ultrasound?

Yes, that's right, a career in Ultrasound. Sonographers enjoy the best that the medical field has to offer. Using the latest technology, caring for others, and working in a vibrant health care environment makes ultrasound a fun and exciting career. Sonographers are challenged on a daily basis to provide the best possible care and examination. Sonographers are not just found in hospitals. Private offices, clinics, and even mobile ultrasound companies are also employers of sonographers. With the wide range of workplace options comes the variety of specialties in ultrasound along with flexible hours and work schedules. Direct healthcare settings aren't the only place to work either. Companies that manufacture ultrasound machines often need sonographer specialists to help market, sell, and demonstrate their machines.



## Salary Range and Demand

The current demand is very high for sonographers throughout the United States and abroad. It has been shown that the demand for sonographers will continue to increase well into the future. As the demand grows for competent Sonographers, so will the salaries.



The attractive salaries and flexible work hours, as well as the diversity of options available and the lack of geographical limitations on employment opportunities, makes Ultrasound an attractive career field. Sonographers may choose from a wide variety of medical specialties for the one that they enjoy the most.

Sonographers (according to the Society of Diagnostic Medical Sonography, also known as SDMS) are earning \$73,000 per year as a base salary which does not include benefits or overtime. In addition, sonographers may add to their base salary when they take responsibility for emergency call-in procedures. Please note that salaries vary depending on many different factors including geographic area, amount of experience, and registry status.

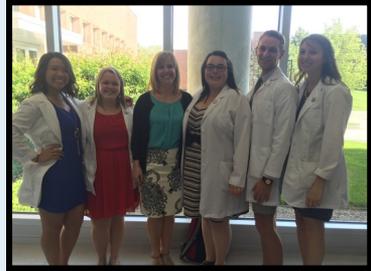
# SUCCESS AFTER GRADUATION



## Our Graduates

RIT Ultrasound Program graduates can be found in a wide range of positions in:

- Hospitals
- Clinics
- Doctor's Offices
- Industry
- Education
- Administration
- Research
- Free-lancing
- Advanced Graduate Degrees



Many of our graduates are involved in ultrasound education, and a great number of them act as our clinical instructors. Other graduates hold supervisory positions at local, regional, and national hospitals. Some have pursued careers through medical, dental, veterinary or graduate schools. They also hold high-level positions in local and national professional Ultrasound organizations. RIT's Ultrasound Program is very proud of its tremendous success in placing its graduates we take sincere interest in our graduates' career development long after they have left the RIT campus.



## Do You Want to Become a Physician?

- Thinking of medical, dental, veterinary, or graduate school
- Have you asked yourself what is needed to distinguish you from the rest of the applicant's?
- We have the answer for you.

The Ultrasound Program at RIT has assisted students to enter the world of medicine and dentistry. With the addition of few courses and **WITHOUT** extending your stay at RIT, our program will prepare you for medical, dental, veterinary, or graduate school.

Graduates of the program have gone to become physicians, dentists, chiropractors, veterinarians and more.

What is needed to enter the medical/dental career fields?

Most of these schools require students to complete basic science courses such as physics, chemistry, biology, mathematics, and liberal arts including English and literature.

After checking the Ultrasound program curriculum, you will find that all of these courses are required and taught. Your Bachelor of Science (BS) degree will not only provide you with the premedical/pre-dental requirement but also will provide you with invaluable “hands-on” medical experience. This medical experience can be the one thing that will distinguish you from other applicants to medical and dental schools.

In addition, the BS degree in Ultrasound will allow you to obtain a professional job with good pay while waiting to enroll in the dental, medical, or veterinary school of your choice.

Due to the complexity of preparation for such careers, a premedical advisory committee will assist you in all aspects of the application process and interviewing.

It is important to realize that the Ultrasound program curriculum is not only developed to produce leaders in the field of ultrasound, but also, well-educated, well-rounded individuals who can become active participants in their societies. As you may know, good grades, medical experience, and well-rounded education will be your key to enter the medical, dental, or veterinarian school of your choice. **WHY WAIT**, contact us.



# CAREER ORIENTED PROGRAMS

## Ultrasound at RIT

The goal of the RIT Ultrasound program is not only to educate competent, compassionate, and responsible sonographers but also to produce leaders in this exciting profession. The Curriculum content has been formulated to meet, and to exceed when possible, the objectives (Essentials) sited in CAAHEP “Standards and Guidelines for an Accredited Educational Program for the Diagnostic Medical Sonographer”.

*Ranked  
Top 10 in the  
nation by  
College  
Choice*

## Diagnostic Medical Sonography (Ultrasound) B.S. Degree

RIT has offered a Bachelor of Science degree in Ultrasound since the early eighties. We are one out of a few schools throughout the entire United States that offer a BS degree in Ultrasound. We currently prepare our students for a career in General Ultrasound. This includes Abdominal and Small Parts, Obstetrics and Gynecology, and an introduction to Vascular technology.

The RIT BS Ultrasound Program has a three-year didactic phase. The didactic phase is divided into two parts: the lower division, the first two years of the program, provides students with a strong foundation in basic sciences. In addition to the strong background that RIT provides the students in the area of basic science, RIT Ultrasound Program has the unique advantage of having extensive experience in teaching students in the health related fields and Pre-Medical Studies. As a result, efforts have been made to keep curriculum relevant to the needs of health care professionals.



# ACHIEVE YOUR GOALS

The third year of the curriculum is the core of the training program. The third year builds on the sound foundation from the first two years, as the students are intensively introduced to the clinical sciences. For example, the Human Cross-Sectional Anatomy course builds on the basic knowledge of anatomy. The emphasis is on the recognition of sectional anatomy of major human structures, their function, and their ultrasound appearance. The two-semester Sonography Physics and Instrumentation courses are other highlights of the third year. Principles of Ultrasound and Doppler Physics are directly applied to the use of ultrasound instrumentation in medical imaging. The emphasis is on the creation of high quality images on laboratory ultrasound equipment. Students are given opportunities to visit clinical affiliates. Didactic and “hands on” instruction are offered. Students practice skills such as manipulation of controls, adjusting gain, and anatomical structure identification. The “hands-on” training during the third year is obtained and performed in the Ultrasound Scanning Suite located in the Louise Slaughter Building (Bldg. 78) at RIT.



The fourth year of the program is the clinical internship. This internship is divided into two rotations where students’ time is spent at two different hospitals or clinics. It is during this final or clinical internship year that students will work side by side with sonographers and physicians to learn, apply, and sharpen their ultrasound skills and techniques. At this time, students will interact with patients, take medical histories, and perform actual ultrasound examinations on real patients.

The RIT Ultrasound Program offers two certificate programs, with one academic year didactic and the other clinical. RIT is affiliated with sixty hospitals and medical centers throughout the Central and Western New York regions as well as national hospitals and clinics.

Upon graduation students will not only receive their BS degree or professional certificates, but will also be eligible to sit for the national registry examinations. You will also be prepared to start your career as soon as you graduate. For more information, please visit: <https://www.rit.edu/programs/diagnostic-medical-sonography-ultrasound-bs>

# EXPLORE THE OPTIONS

## Certificate Ultrasound Options at RIT

In addition to the BS degree, RIT also offers a Certificate in Diagnostic Medical Sonography and a Certificate in Echocardiography (Cardiac Ultrasound). These programs are intended for individuals who hold degrees in the medical field or life sciences. For more information, please visit: <http://www.rit.edu/healthsciences/undergraduate-programs/diagnostic-medical-sonography/certificate-options>.



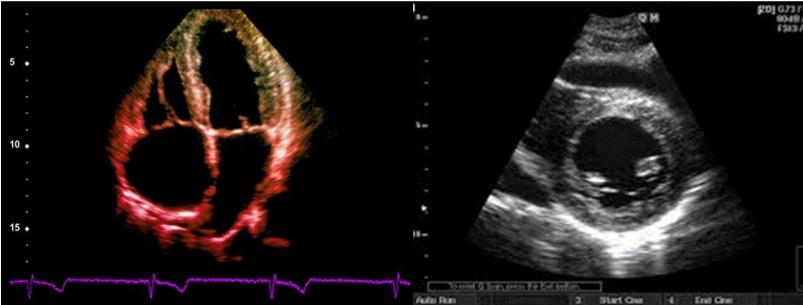
## Diagnostic Medical Sonography (Ultrasound) Certificate

The Diagnostic Medical Sonography certificate is an 18-month program that includes a clinical internship. The program, which focuses on various abdominal, gynecological, obstetrical, and small parts examinations including certain vascular studies, has been formulated to meet and exceed the objectives of the Joint Review Committee on Education in Diagnostic Medical Sonography of the Commission on Accreditation of Allied Health Education Programs (CAAHEP). It is designed to produce competent, compassionate, and responsible ultrasound professionals and leaders. This certificate is available to all registered allied health practitioners as well as to those holding an associate or bachelor's degree in a relevant discipline. The certificate includes lectures and course work integrated with a clinical internship. Dependent on the previous degree, certain prerequisite courses may be required prior to enrollment in the program. Required prerequisite courses include a year of anatomy and physiology with laboratories and a year of college or general physics with laboratories. A medical terminology course can be very beneficial for your studies.

# HIGH-TECH FACILITIES

## Echocardiography Certificate (Cardiac Ultrasound)

The Certificate in Echocardiography is an 18-month program that includes a clinical internship. The program, which focuses on the evaluation of the heart, its valves and chambers, and associated vessels, was designed to exceed the objectives of the Joint Review Committee on Education in Diagnostic Medical Sonography. The program produces competent, compassionate, and responsible echocardiography professionals and leaders. This certificate is available to all registered allied health practitioners as well as those holding an associate or bachelor's degree in a relevant discipline. The certificate includes lectures and course work integrated with a clinical internship. Depending on a candidate's previous course work, certain prerequisite courses such as a patient care course may be required prior to or during enrollment in the program. Contact the program director for further information on prerequisite course work and degree options.



## Plan of Study

During the first academic year, students complete all the prerequisite courses required to enter the clinical internship phase of the program. Students also apply, polish, and test their clinical skills and techniques in the on-campus ultrasound scanning suite, which is equipped with a variety of ultra-sound equipment. Following a required three-week pre-clinical internship orientation session, students begin their training at the first of two assigned clinical training sites.

## Clinical Internship

All options have a clinical internship is divided into two rotations completed at various medical facilities. After successfully completing the first year of course work, students are assigned to a clinical training site. At these facilities, students work side by side with physicians, echocardiographers, cardiologists, and other health care professionals to learn, develop, apply, sharpen, and master the necessary skills to perform various echocardiographic examinations. Each student's clinical progress and performance is closely monitored by faculty. As an accredited program, our students are eligible to sit for their national certifying examinations prior or upon graduation.

## Graduates earning a certificate will:

- gain a thorough working knowledge of echocardiography scanning techniques;
- be skilled in the operation of ultrasound instrumentation and laboratory equipment;
- acquire the proper manner in working with patients; and under guidance from faculty and professional staff, become capable of scheduling and performing the daily workload of ultrasound procedures, of evaluating new procedures where necessary, and of supervising other technical personnel.



# SO MUCH TO OFFER...

## Rochester Community



The third largest city in New York State, Rochester is home to not only RIT, but to 11 colleges and universities. The city also serves as the headquarters to some of the world's most innovative companies, from Eastman Kodak and Bausch and Lomb, to Wegmans Food Markets, Paychex, and Constellation Brands.

The greater Rochester metropolitan area is one of America's top-rated places to live, work, and play. The four-season climate, home to almost 1.5 million people, is perfect for seasonal activities like snow skiing, kayaking, hiking, cycling, and sailing.



# RIT Ultrasound Program Accreditation



The Diagnostic Medical Sonography (Ultrasound) Program at RIT is accredited by the Commission on Accreditation of Allied Health Education Programs ([www.caahep.org](http://www.caahep.org)) upon the recommendation of the

## Find out more!

If you are interested in a career in Ultrasound or in Medicine consider RIT Ultrasound Program for your undergraduate education. It is our goal to help you reach your full potential. Contact us: <https://www.rit.edu/healthsciences/undergraduate-programs/diagnostic-medical-sonography>



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