



# Fort Hays State University

## Department of Allied Health

### Virtual Student Success Folder:

Click on the information to view.

- [FHSU Medical Imaging Fast Facts](#)
- [Radiologic Technology Program Requirements](#)
- [Sonography Program Requirements](#)
- [Radiologic Technology Brochure/Application](#)
- [Sonography Brochure/Application](#)
- [Student Involvement Opportunities](#)
- [Tuition and Fees](#)
- [Department Specific Scholarship Opportunities](#)
- [Bureau of Labor Statistics Outlook](#)
- [Salary Survey](#)
- [Radiologic Technology Career Options](#)
- [Sonography Career Options](#)
- [Supplemental Information and Activities](#)

# FHSU MEDICAL IMAGING

## DEGREES

**A.S. in Radiologic Technology**

**B.S. in Medical Diagnostic Imaging**

**B.S. in Medical Diagnostic Imaging: Emphasis in Ultrasound**

**M.P.S. in Medical Diagnostic Imaging**



**≈100%**  
First time  
board pass  
rate

**100%**  
Job  
Placement

Projected job  
growth of  
medical imaging  
to exceed rate of  
other  
occupations

**Salaries**  
Radiologic  
Technologist:  
**\$61,900**  
Sonographers:  
**\$75,920**



## Student Involvement Opportunities:

**Imaging with Tiger Pride Learning Community**

**Association of Radiologic Technology Students**

**Society of Student Sonographers**

**State of the art laboratory facilities**





# FORT HAYS STATE UNIVERSITY

## DEPARTMENT OF ALLIED HEALTH

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### RADIOLOGIC TECHNOLOGY

#### To be considered eligible, students must meet the following requirements:

- Students must be a high school graduate or equivalent (GED)
- Must complete all prerequisite courses before starting the program. Some courses may be in progress at the time of application
- Must have earned a "C" or better in all prerequisite courses
- Must have earned a college grade point average of 2.75 or better (on a 4.0 scale)
- Final determination of course equivalency will be determined by the FHSU Registrar

## THE DEADLINE FOR APPLICATION SUBMISSION IS JANUARY 31

#### PREREQUISITE COURSES

Students preparing for admission into the Radiologic Technology Program at Fort Hays State University must complete the following list of courses. If taking courses at another institution, please confirm equivalency with the FHSU Registrar.

BIOL	100	Human Biology
BIOL	102	Laboratory Experiences in Biology
BIOL	230	Anatomy and Physiology I
BIOL	230L	Anatomy and Physiology I Laboratory
BIOL	231	Anatomy and Physiology II
BIOL	231L	Anatomy and Physiology II Laboratory
BIOL	245	Medical Terminology
MATH	110	College Algebra
COMM	100	Fundamentals of Oral Communication
ENG	101	English Composition I
ENG	102	English Composition II
<i>ELECTIVES:</i>		
MDI	250	<i>Principles of Medical Imaging</i>
MDI	350	<i>Anatomy for Medical Imaging Professionals</i>



**FORT HAYS STATE UNIVERSITY**  
DEPARTMENT OF ALLIED HEALTH

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#### WEB LINK TO RT APPLICATION:

[fhsu.edu/alliedhealth/academic-programs/asdegree/rad-tech-application-and-info-12-18](https://fhsu.edu/alliedhealth/academic-programs/asdegree/rad-tech-application-and-info-12-18)



# FORT HAYS STATE UNIVERSITY

## DEPARTMENT OF ALLIED HEALTH

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### DIAGNOSTIC MEDICAL SONOGRAPHY

#### To be considered eligible, students must meet the following requirements:

Students must be a high school graduate or equivalent (GED) and qualify in at least **one** of the following:

- Successful completion of a two-year accredited program in Radiologic Technology
- Successful completion of a clinically related two-year AMA recognized allied health training program
- Successful completion of a baccalaureate degree
- Successful completion of 60 credit hours in a health care related field or with an emphasis in science/math

Must complete all prerequisite courses before starting the program. Some courses may be in progress at the time of application

Must have earned a "C" or better in all prerequisite courses

Must have earned a college grade point average of 2.75 or better (on a 4.0 scale)

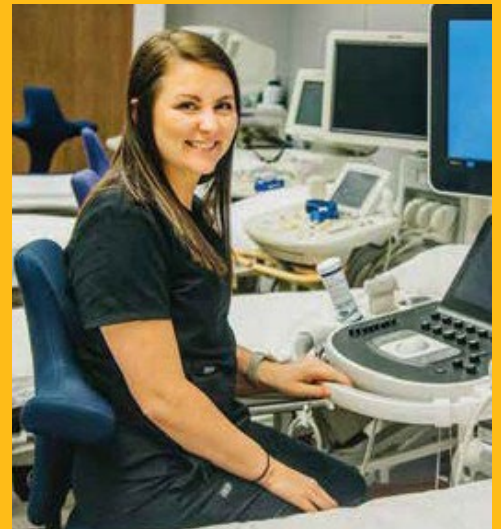
Final determination of course equivalency will be determined by the FHSU Registrar

## THE DEADLINE FOR APPLICATION SUBMISSION IS FEBRUARY 15

#### PREREQUISITE COURSES

Students preparing for admission into Diagnostic Medical Sonography at Fort Hays State University must complete the following list of courses. If taking courses at another institution, please confirm equivalency with the FHSU Registrar.

BIOL	100	Human Biology
BIOL	102	Laboratory Experiences in Biology
BIOL	230	Anatomy and Physiology I
BIOL	230L	Anatomy and Physiology I Lab
BIOL	231	Anatomy and Physiology II
BIOL	231L	Anatomy and Physiology II Lab
MATH	110	College Algebra
BIOL	245	Medical Terminology
ENG	101	English Composition I
ENG	102	English Composition II
COMM	100	Fundamentals of Oral Communication
MDI	428	Principles of Diagnostic Medical Sonography
<b>ELECTIVE:</b>		
MDI	410	Cross-Sectional Anatomy: Normal



**FORT HAYS STATE UNIVERSITY**  
DEPARTMENT OF ALLIED HEALTH

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#### WEB LINK TO DMS APPLICATION:

[fhsu.edu/uploadedFiles/academic/  
college\\_of\\_health\\_and\\_life\\_scienc  
es/allied\\_health/DMS%20INFO.pdf](https://fhsu.edu/uploadedFiles/academic/college_of_health_and_life_sciences/allied_health/DMS%20INFO.pdf)





# FORT HAYS STATE UNIVERSITY

## DEPARTMENT OF ALLIED HEALTH

### ***RADIOLOGIC TECHNOLOGY (RT) PROGRAM***

The Fort Hays State University Department of Allied Health is pleased you have expressed interest in the Radiologic Technology Program.

The curriculum will prepare students to master radiography concepts and techniques through an integration of didactic and clinical components. The student will have the opportunity to obtain the **Associate of Science Degree in Radiologic Technology** and pursue further into a **Bachelor of Science in Medical Diagnostic Imaging**.

The Radiologic Technology Program requires a separate application to the Radiologic Technology Program in addition to applying to FHSU. Included is detailed information, application materials, and an application checklist. Please review the material and follow the directions for application. The application, and all other required materials, **must be received by January 31st** for consideration.

Thank you for considering Fort Hays State University in your pursuit for Radiologic Technology education. If you require any assistance or have any question regarding the program or application process, please do not hesitate to contact:

Ms. Jennifer Wagner, MS, RT(R)(M)(QM), RDMS, RVT  
Director of Radiologic Technology  
785-628-5972 or 785-628-5678

### **THE PROFESSION**

General radiography involves the use of radiation to image bones and structures within the human body. The radiologic technologist (R.T.) works directly with patients to correctly position their body, manipulate the equipment and technical settings to produce a diagnostic image for the radiologist to interpret. For certain exams, the radiologic technologist will work closely with the radiologist to assist with an imaging procedure. Radiologic technologists work in hospitals, physician offices, orthopedic clinics, and surgical centers. Radiologic technologists must be well educated in human anatomy, disease processes, exam requirements, positioning skills, equipment, radiation safety and patient care.

After an individual obtains the initial certification in radiography, they may also choose to specialize in other diagnostic imaging areas such as: Computed Tomography, Magnetic Resonance Imaging, Radiation Therapy, Nuclear Medicine, Cardiovascular Interventional Technology, Mammography, Bone Densitometry, and Ultrasound.

### **CAREER OPPORTUNITIES**

A radiologic technologist may choose to work in diagnostic imaging or cross-train in other imaging modalities. The current market displays job openings and growth predicted until 2028. However, a recent graduate may have to consider first employment outside of their preferred location, preferred setting, and preferred shift. Radiologic technologists could secure employment with hospitals or clinics, traveling companies, equipment sales, equipment application, advance into management, or become an educator.

## **FACILITIES**

The Department of Allied Health is located in Cunningham Hall 129 on the FHSU campus. Students complete lecture courses in a classroom that is fully mediated. A radiography laboratory is available with equipment and digital technologies similar to a hospital environment. Students learn the principles and practices of radiology examinations in the classroom and then apply them in the laboratory setting. Once students complete requirements of the on-campus didactic and laboratory courses, they will apply the knowledge to the clinical setting. At the various clinical facilities, students will perform patient examinations under the direct supervision of qualified staff. Here is a complete list of current facilities and contact information to arrange a clinical visit at one of our program's clinical affiliates:

**Memorial Hospital**  
**511 N.E. 10th Street**  
**Abilene, KS 67410-0069**  
**(785)263-6663**  
**Clinical Preceptor:**  
**Noel Schultze**

**Salina Regional Health Center**  
**400 S. Santa Fe**  
**Salina, KS 67402-5080**  
**(785)452-7181**  
**Clinical Preceptor:**  
**Harmony Ibarra**

**Sterling Regional MedCenter**  
**615 Fairhurst Street**  
**Sterling, CO 80751**  
**(970)521-3147**  
**Clinical Preceptor:**  
**Lisa Haas**

**Advent Health Ottawa**  
**1301 S. Main Street**  
**Ottawa, KS 66067**  
**(785)229-8406**  
**Clinical Preceptor:**  
**Kerrie Jung**

**University of KS Health System**  
**3901 Rainbow Blvd.**  
**Kansas City, KS 66160-7234**  
**(913)588-6850**  
**Clinical Preceptor:**  
**Mallory Fischer**

**Wesley Medical Center**  
**550 N. Hillside**  
**Wichita, KS 67214**  
**(316)962-2955**  
**Clinical Preceptor:**  
**Michelle Moore**

**Ascension Via Christi-St. Francis**  
**929 N. St. Francis**  
**Wichita, KS 67204**  
**(316)286-5934**  
**Clinical Preceptor:**  
**Allison Fisher**

**University of KS Health System-Olathe**  
**20333 W. 151<sup>st</sup> Street**  
**Olathe, KS 66061-7211**  
**(913)791-4291 ext 4692**  
**Clinical Preceptor:**  
**Madison Miller**

**Citizens Medical Center**  
**100 E College Dr**  
**Colby, KS 67701**  
**(785)460-1289**  
**Clinical Preceptor:**  
**Rachel Wolf**

**Southwest Medical Center**  
**315 W. 15<sup>th</sup> Street**  
**Liberal, KS 67905**  
**(620)629-2435**  
**Clinical Preceptor:**  
**Elizabeth Denoyer**

**Common Spirit-St. Catherine Hospital**  
**401 East Spruce**  
**Garden City, KS 67846**  
**(620)272-2270**  
**Clinical Preceptor:**  
**Alex Argueta**

**HaysMed**  
**2220 Canterbury Road**  
**Hays, KS 67601**  
**(785)623-5707**  
**Clinical Preceptor:**  
**Mandy Meyers**

**Common Spirit-St Catherine Dodge City**  
**3001 Avenue A**  
**Dodge City, KS 67801**  
**(620)225-8487**  
**Clinical Preceptor:**  
**Mikeyla Shearer**

**University of KS Health System-Paola**  
**2100 Baptiste Dr**  
**Paola, KS 66071**  
**(913)294-6635**  
**Clinical Preceptor:**  
**Megan Breiner**

**Rooks County Health Center**  
**1210 N Washington St**  
**Plainville, KS 67663**  
**(785)688-4424**  
**Clinical Preceptor:**  
**Karen Harris**

**North Central Kansas Medical Center**  
**155 West College Dr**  
**Concordia, KS 66901**  
**(785)243-8448**  
**Clinical Preceptor:**  
**Logan Widen**

**University of KS Health System-Great Bend**  
**514 Cleveland**  
**Great Bend, KS 67530**  
**(620)791-6242**  
**Clinical Preceptor:**  
**Amy Kaiser**

**Mitchell Co. Hospital Health Systems**  
**400 West 8th**  
**Beloit, KS 67420**  
**(785)738-2266**  
**Clinical Preceptor:**  
**Max Thomas**

## **CURRICULUM**

The Associate of Science Degree in Radiologic Technology (RT) requires twenty-six hours of prerequisite coursework in addition to twenty-four months of study of major coursework. Students must be accepted into the program in order to enroll in the major courses. The prerequisite courses may be taken at FHSU or at any college as long as they are considered equivalent by the Fort Hays State University Registrar. Upon successful completion of the Radiologic Technology Program, students will be eligible to take the national certification exam offered by the American Registry of Radiologic Technologists (ARRT).

### **Pre-Radiology Technology Coursework**

**26 HRS**

#### **Year 1 (FHSU Campus)**

##### **Semester I – Summer**

RAD 260	Orientation/Rad Tech	1
RAD 262	Radiographic Procedures I	2
RAD 262L	Radiographic Procedures I Lab	1
RAD 265	Patient Care in Medical Imaging I	1
RAD 363	Principles/Rad Exposure I	<u>1</u>
		6

##### **Semester II – Fall**

RAD 263	Radiographic Procedures II	3
RAD 263L	Radiographic Procedures II Lab	2
RAD 266	Patient Care in Medical Imaging II	1
RAD 364	Principles/Rad Exposure II	2
RAD 365	Special Procedures in Radiology (1 <sup>st</sup> 8 weeks)	1
RAD 373	Radiographic Pathology I (2 <sup>nd</sup> 8 weeks)	<u>1</u>
		10

##### **Semester III – Spring**

RAD 261	Radiologic Safety (1 <sup>st</sup> 8 weeks)	1
RAD 264	Radiographic Procedures III	2
RAD 264L	Radiographic Procedures III Lab	2
RAD 300	Radiation Biology (2 <sup>nd</sup> 8 weeks)	1
RAD 368	Seminar in Radiology	1
RAD 372	Biophysics	<u>2</u>
		9

#### **Year 2 (at assigned clinical site)**

##### **Semester IV – Summer**

RAD 330	Clinical Experience	4
RAD 340	Advanced Radiology Seminar I	<u>2</u>
		6

##### **Semester V – Fall**

RAD 331	Clinical Experience	6
RAD 341	Advanced Radiology Seminar II	<u>2</u>
		8

##### **Semester VI – Spring**

RAD 332	Clinical Experience	6
RAD 342	Advanced Radiology Seminar III	<u>2</u>
		8
	Total Prerequisite Credits	26
	Major Credits	47
	Other Related General Education Credits	<u>18</u>
	Total Hours Required	91

## **ACCREDITATION**

Fort Hays State University is accredited by the Higher Learning Commission of the North Central Association of Colleges and Schools. The Radiologic Technology program also has programmatic accreditation granted by the Joint Review Commission on Education in Radiology Technology (JRCERT). [www.jrcert.org/students](http://www.jrcert.org/students)

## **GENERAL ADMISSION REQUIREMENTS TO THE UNIVERSITY**

Applicants to the Radiologic Technology Program must meet the general admission requirements to Fort Hays State University as outlined in the college catalog. Students can apply for admission on-line at <http://www.fhsu.edu/admissions>.

## **PROGRAM ADMISSION AND APPLICATION REQUIREMENTS**

All candidates must successfully complete the prerequisite courses with a minimum of "C" or better and have a minimum cumulative GPA of 2.75. If taking courses at another institution, please confirm equivalency with the FHSU Registrar.

			CREDITS
BIOL	100	Human Biology	3
BIOL	102	Laboratory Experiences in Biology	1
BIOL	230	Anatomy and Physiology I	3
BIOL	230L	Anatomy and Physiology I Laboratory	1
BIOL	231	Anatomy and Physiology II	3
BIOL	231L	Anatomy and Physiology II Laboratory	1
BIOL	245	Medical Terminology	2
MATH	110	College Algebra	3
COMM	100	Fundamentals of Oral Communication	3
ENG	101	English Composition I	3
ENG	102	English Composition II	<u>3</u>
			26

Recommended MDI ELECTIVES prior to program application:

MDI	250	Principles of Medical Imaging (on-campus)	2
MDI	350	Anatomy for Medical Imaging Professionals (on-campus)	3
MDI	410VA	Cross Sectional Anatomy: Normal (on-line)	4
MDI	411VA	Sectional Pathology & Variant Anatomy (on-line)	4

\*Equivalency of transfer credit will be determined by the FHSU Registrar's Office.

**\*\*In addition, to the above-mentioned pre-requisite courses, all students must complete the KBOR General Education Program.**

<https://www.fhsu.edu/general-education/documents/fhsu-kbor-general-education-framework.pdf>

Students seriously considering the program are strongly encouraged to arrange observational experiences within any radiology department. However, it is encouraged that the student arranges at least one observational experience at a FHSU associated clinical affiliate. Students should be aware that some facilities limit the number of hours a student is allowed to job shadow. Students are encouraged to shadow to better understand the responsibilities one will gradually assume during the academic and clinical courses while at FHSU and eventually within the profession.

The FHSU associated clinical affiliates have graciously agreed to allow students the opportunity to arrange and complete clinical observations/job shadowing at their facilities. It is expected that the student will follow all directions of supervising staff and abide by all facility policies. Please be considerate of their time and effort.



## **APPLICATION DEADLINE AND SELECTION PROCESS**

Consideration for admission to the Radiologic Technology Program involves an application process. The application process requires that the student meets the aforementioned criteria. Meeting the criteria does not guarantee admission. In addition, **the student must complete and submit all application materials by January 31** of each year. The completed application, official transcripts from colleges where any previous or current coursework was completed, and the applicant's professional resume must be received by the deadline for consideration. Incomplete application files will not be considered.

Acceptance into the program is conducted through a selection process. Following the **January 31 application deadline**, complete applications will be reviewed. Approximately sixty to seventy of the most qualified applicants will be invited to campus to interview with the RT Student Selection Committee in early March. The number of students selected is based off available clinical capacity which could vary year to year. These selected students will begin the program in the upcoming summer semester. Applicants who do not receive an interview may reapply the following year and must comply again with the application process.

The RT Program Selection Committee is comprised of FHSU faculty and affiliate clinicians. A sample of the interview scorecard can be located on the Allied Health webpage affiliated with the Associate of Science in Radiologic Technology. Acceptance in the program will be based upon the information provided in the student's application, student record of academic achievement, nature of work experiences or work experience within the medical field, knowledge of radiology, perceived communications skills, motivation, and maturity, all of which will all be considered.

Student acceptance letters are mailed in March. A student who receives an acceptance letter is required to return acceptance confirmation within a specific time frame to secure their space in the class. Failure to return the confirmation by the specified date will result in forfeiture of the student's space in the class.

It is anticipated that the number of qualified applicants will exceed the number of positions in the program. Students are advised that not all qualified applicants are admitted to the program.

## **ELIGIBILITY FOR PROFESSIONAL PRACTICE**

In addition to the successful completion of the program, graduates must pass the national ARRT certification examination. Additionally, graduates must inquire, meet, and pursue application to state specific licensing.

## **FINANCIAL INFORMATION**

This program is an advanced program, limiting availability for employment during the program course sequence. Therefore, it is strongly suggested that you have plans for adequate financing of your education prior to entering the Radiologic Technology Program. The office of Student Financial Services can assist you in planning to meet your financial needs. The information listed here is subject to change. This information is only meant to give the student a general idea of the overall costs of the program.

Each student admitted to the Radiologic Technology Program is responsible for the following expenses and information associated with the program:

- **Tuition and student fees** as defined by Fort Hays State University and approved by the Board of Regents. Visit [http://www.fhsu.edu/sfs/students\\_parents/tuition/](http://www.fhsu.edu/sfs/students_parents/tuition/) to learn more.
- **All living expenses and transportation, including appropriate parking permits.** Student attending FHSU contact University Police Office, <http://www.fhsu.edu/university-police/parking-brochure/> to learn more.
- **Books** for the entire curriculum are an estimated cost of **approximately \$900-1100**.
- **Program fee, \$300 is non-refundable.** This fee will be used toward equipment repair, and other miscellaneous materials during the program. This due upon acceptance into the program.
- **Background check, immunization record management, & drug test** are required for each student. **The cost is approximately \$120.00** from CastleBranch.

*Before beginning the program of study, students must complete a background check required by affiliate clinical sites. Students who have been convicted of a felony or misdemeanor may have violated the American Registry of Radiologic Technologists (ARRT) Rules of Ethics and may be considered ineligible to sit for the registry examinations. An individual who wishes to determine the impact of a previous criminal matter on their eligibility to sit for the ARRT examination may submit a pre-application determination of approval to test form to the ARRT. This material may be located at [www.arrt.org](http://www.arrt.org) or the individual may contact them directly for the information at (650) 687-0048.*

- **Professional liability insurance** – each student will need to provide a valid social security number when purchasing professional liability insurance. Insurance is available at an appropriate cost **\$40.00 - \$60.00**. Must provide proof to the Program Director, prior to beginning clinical experience.
- **Basic Life Support CPR** required for the duration of the program – required from American Heart Association; **estimated cost \$45.00**.
- **Scrubs and Shoes** - FHSU RT program approved scrubs. Several sets of scrubs will be needed throughout the duration of the program. Students will also need to purchase appropriate shoes and any other necessary uniform items required per clinical affiliate policy.
- **Anatomic R/L Lead Image Markers** – Students will be given instructions on specifics prior to the start of the program of what lead image markers to order. Image markers are what technologists use to identify the right and left sides of the body when acquiring the radiographic image. **Estimated cost \$45.00**.
- **Health Insurance** – each student is required to have appropriate health insurance to cover the cost associated with illness or injury while on campus and at the clinical facility. Student health insurance policies are available through the university at the Student Health Center. Please contact the Director of the Student Health Center for more information. Students must provide proof of health insurance.
- **On-Line Clinical Handbook** - All students are required to purchase user access (**\$100**) for Trajecsyst, an on-line database designed to track student clinical progress.

## **FINANCIAL ASSISTANCE**

FHSU students are strongly encouraged to apply for scholarships and/or financial assistance. The Office of Student Financial Services is available to assist students in the pursuit of financial aid visit <http://www.fhsu.edu/finaid> to learn more. A large percentage of students receive some type of academic or activity scholarship, as well as other types of financial assistance.

Once accepted for the Radiologic Technology Program, students may qualify for additional departmental scholarships. Contact the Program Director for further information.

## **MEDICAL DIAGNOSTIC IMAGING PROGRAM**

Fort Hays State University is the only university in Kansas that offers a Bachelor of Science Degree in Medical Diagnostic Imaging. The Medical Diagnostic Imaging Program is designed to provide Radiologic Technology students with didactic clinical training in additional modalities. Many clinics and hospitals are seeking individuals with experience in more than one specialty area. The Medical Diagnostic Imaging (MDI) coursework will allow students to increase their knowledge and skills in these specialty areas, expand their job opportunities, and assist in obtaining advanced certifications.

**The following specialty courses are offered within the Medical Diagnostic Imaging major:**

*Magnetic Resonance Imaging (MRI), Computed Tomography (CT), Mammography (M), Cardiovascular Interventional Technology (CVIT), Diagnostic Medical Sonography (DMS), Bone Densitometry (BD), Nuclear Medicine, Picture Archiving and Communication Systems (PACS), Leadership and Management.*

### **CURRICULUM**

Upon admission to the Radiologic Technology Program, each student will work cooperatively with their professional academic advisor to develop a course of study tailored to individual interests. The program of study will include advanced imaging courses and could include any requisite general education credits where a student is deficient. Often, a student will integrate medical diagnostic imaging courses into their radiologic technology course curriculum. A pre-radiologic student is limited to a maximum of three Medical Diagnostic Imaging major courses prior to Radiologic Technology Program acceptance.

### **CAREERS**

Employment for graduates is abundant throughout our region and starting salaries are quite good. Competence and skill in more than one diagnostic imaging modality will enable you to pursue a wider variety of jobs and compete for higher salaries.

Most of our graduates are employed to staff diagnostic imaging departments in hospitals, but you may seek employment in clinics, physician's offices, mobile diagnostic imaging units and industrial health care facilities.

### **ELIGIBILITY FOR THE PROGRAM**

Students must be accepted into the Fort Hays State University Radiologic Technology Program and maintain good academic standing (C or better) to remain within the Medical Diagnostic Imaging degree track.

## **MAJOR ELECTIVE COURSES**

Students must successfully complete a minimum of **30 credit hours** from the following list of courses:

### **RT Year 1**

<b>Semester</b>	<b>Courses Available</b>	<b>Credit Hours</b>
1 <sup>st</sup> Fall		
	MDI 410VA      Cross-Sectional Anatomy: Normal	4
	MDI 411VA      Sectional Pathology & Variant Anatomy	4
	MDI 428          Principles of Diagnostic Medical Sonography	4
1 <sup>st</sup> Spring		
	MDI 410VA      Cross-Sectional Anatomy: Normal	4
	MDI 411VA      Sectional Pathology & Variant Anatomy	4
	MDI 413          Computed Tomography Physics & Instrumentation	4
	MDI 417          Magnetic Resonance Imaging Physics & Instrumentation	4
	MDI 418          Cardiovascular Interventional Technology	4
	MDI 428VA      Principles of Diagnostic Medical Sonography	4

### **RT Year 2**

<b>Semester</b>	<b>Courses Available</b>	<b>Credit Hours</b>
2 <sup>nd</sup> Summer		
	MDI 423VA      Bone Densitometry Techniques	2
	MDI 472VA      Problems in MDI: Nuclear Medicine	2
2 <sup>nd</sup> Fall		
	MDI 413VA      Computed Tomography Physics & Instrumentation	4
	MDI 417VA      Magnetic Resonance Imaging Physics & Instrumentation	4
	MDI 420VA      Leadership & Management in Radiology	3
	MDI 422VA      Advanced Patient Care for Imaging Professionals (1 <sup>st</sup> 8 weeks)	2
	MDI 430VA      PACS Administration (2 <sup>nd</sup> 8 weeks)	2
2 <sup>nd</sup> Spring		
	MDI 412VA      Computed Tomography Procedures	4
	MDI 419          Mammography for Radiologic Technologists	4
	MDI 421VA      Advanced Mammography (2 <sup>nd</sup> 8 weeks of semester)	2
	MDI 428VA      Principles of Diagnostic Medical Sonography	4
	MDI 431VA      MRI Procedures	4
	MDI 432VA      Managing Change in Healthcare	4
	MDI 433VA      Emerging Issues in Healthcare Administration	4

\*VA - indicates Virtual Course

**Students must earn a “C” or higher in all MDI credits in order to count towards the required 30 upper division hours for the major.**

## **PRECEPTORSHIPS**

Students must attain a grade of "C" or better in all prerequisite courses before being allowed to enroll in the Clinical Preceptorship for each of the following specialties. At the current time, the following courses are required before being allowed to enroll in a clinical preceptorship:

### **MDI 441 Preceptorship: Leadership & Management**

MDI 420VA Leadership Management in Radiology

### **MDI 442 Preceptorship: PACS**

MDI 430VA PACS Administration

### **MDI 443 Preceptorship: Computed Tomography (CT)**

MDI 410VA Cross-Sectional Anatomy: Normal

MDI 411VA Sectional Pathology & Variant Anatomy

MDI 412VA Computed Tomography Procedures

**OR**

MDI 413 Computed Tomography Physics & Instrumentation

### **MDI 444 Preceptorship: Magnetic Resonance Imaging**

MDI 410VA Cross-Sectional Anatomy: Normal

MDI 411VA Sectional Pathology & Variant Anatomy

MDI 417 MRI Physics & Instrumentation

**OR**

MDI 431VA MRI Procedures

## **TO LEARN MORE**

Please feel free to contact the Allied Health Department.  
We invite you to visit the FHSU campus and meet the program faculty.

**FHSU - Allied Health Department - CH 129**  
**600 Park Street Hays, KS 67601**  
**(785) 628-5678 [jrwagner@fhsu.edu](mailto:jrwagner@fhsu.edu)**

Disclaimer – All information provided has been prepared as correctly and accurately as possible at the time of preparation. This information does not constitute a contract between Fort Hays State University and any person. Further, the university reserves the right to make changes in the content of this brochure without obligation or requirement of notices to any person.



# FORT HAYS STATE UNIVERSITY

## DEPARTMENT OF ALLIED HEALTH

### ***RADIOLOGIC TECHNOLOGY (RT) PROGRAM***

#### APPLICATION FOR PROGRAM ADMISSION

**INSTRUCTIONS:** Please submit your completed application and all required application materials, including transcripts to:

Director of Radiologic Technology  
Fort Hays State University  
Department of Allied Health, CH 129  
600 Park Street  
Hays, KS 67601-4099

In order to be considered as an applicant to the program, all application materials must be received by **JANUARY 31**.  
Incomplete applications will not be processed.

Full name: \_\_\_\_\_  
Last First Middle

Other name(s) that information may be found under: \_\_\_\_\_

Address \_\_\_\_\_  
Street City State Zip

Phone: \_\_\_\_\_ E-Mail Address: \_\_\_\_\_

#### **EDUCATION**

Please list all schools/programs attended and/or completed beginning with high school. It is the applicant's responsibility to arrange for an official transcript of credit from each college/university attended to be sent to the Allied Health Department. (PLEASE NOTE: Failure to list all previous college/universities may result in your dismissal from the university).

High School \_\_\_\_\_  
Name Location Graduation Date

College \_\_\_\_\_  
Name Location

\_\_\_\_\_  
Dates of Attendance Number of Credits Earned Degree

College \_\_\_\_\_  
Name Location

\_\_\_\_\_  
Dates of Attendance Number of Credits Earned Degree

College \_\_\_\_\_  
Name Location

\_\_\_\_\_  
Dates of Attendance Number of Credits Earned Degree



**Please provide the following information for the prerequisite courses listed: course #, # credit hours, grade received, semester completed, and the institution** for each course. All prerequisite courses must be completed with a minimum grade of “C” or better and you must have a minimum overall college GPA of 2.75 (on a 4.0 scale) to be eligible to apply. Final determination of course equivalency will be determined by the FHSU Registrar.

**EXAMPLE: The following is how you should complete this sheet.**

<b>PREREQUISITE COURSES:</b>	<b>COURSE NUMBER</b>	<b>CREDIT HOURS</b>	<b>GRADE</b>	<b>TERM/YEAR COMPLETED</b>	<b>INSTITUTION</b>
<b>HUMAN BIOLOGY</b>	<b>BIOL 100</b>	<b>3</b>	<b>B</b>	<b>SPRING 2019</b>	<b>FORT HAYS STATE UNIVERSITY</b>
<b>COLLEGE ALGEBRA</b>	<b>MATH 110</b>	<b>3</b>	<b>A</b>	<b>FALL 2018</b>	<b>BARTON COUNTY COMMUNITY COLLEGE</b>

<b>PREREQUISITE COURSES:</b>	<b>COURSE NUMBER</b>	<b>CREDIT HOURS</b>	<b>GRADE</b>	<b>TERM/YEAR COMPLETED</b>	<b>INSTITUTION</b>
HUMAN BIOLOGY					
LABORATORY EXPERIENCES IN BIOLOGY					
ANATOMY AND PHYSIOLOGY I					
ANATOMY AND PHYSIOLOGY I LABORATORY					
ANATOMY AND PHYSIOLOGY II					
ANATOMY AND PHYSIOLOGY II LABORATORY					
MEDICAL TERMINOLOGY					
COLLEGE ALGEBRA					
FUNDAMENTALS OF ORAL COMMUNICATION					
ENGLISH COMPOSITION I					
ENGLISH COMPOSITION II					

**PROFESSIONAL RESUME:** To include the following elements:

- Career interest
- Education
- Work Experience
- Volunteer Experience/Leadership Roles
- Personal qualities or skill sets
- Honors/Achievements

Note: Before beginning the program, students must complete a background check as required by affiliated clinical education sites. Students who have been convicted of a felony or misdemeanor may have violated the American Registry of Radiology Technologists (ARRT) Rules of Ethics and may be considered ineligible to sit for board examinations. Individuals may submit a pre-application form to the ARRT (Phone: 651-687-0048, ext.580) at any time either before or after entry into an approved educational program.

**PLEASE READ AND SIGN BELOW:** The information contained in this application is true and complete to the best of my knowledge. I understand that any misrepresentation or falsification of information on this application may remove this application from further consideration, and if I am accepted, might be cause for my dismissal. I understand that the information contained in this application will be utilized by the Radiology Technology Selection Committee for purposes of evaluating my application. I understand that acceptance into the program is dependent upon having the prerequisites completed. If the total number of candidates applying for the program is larger than can be admitted, I understand that preference will be given to those candidates who are best prepared.

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**Signature – Handwritten only, no electronic signatures accepted**  
(required for application to be processed)

---

**Date**

Notice of Non-discrimination: Fort Hays State University does not discriminate on the basis of gender, race, religion, national origin, color, age, marital status, sexual orientation, disability or veteran status in its programs and activities. The director of affirmative action, coordinator of Title IX, Title VI, Section 504 and ADA regulations may be contacted at 600 Park Street, Hays, Ks 67601-4099. Phone: 785-628-4033.

## **COMPLETE APPLICATIONS DUE JANUARY 31**

**SUBMIT ALL APPLICATION MATERIALS TO:** Fort Hays State University  
Department of Allied Health – Cunningham Hall 129  
600 Park Street  
Hays, KS 67601-4099

**ELECTRONIC TRANSCRIPTS TO:** [alliedhealthdept@fhsu.edu](mailto:alliedhealthdept@fhsu.edu)

# **APPLICATION CHECKLIST**

- ☐ Completed all prerequisite courses needed for admittance into the Radiologic Technology Program.
- ☐ Have earned a "C" or better in all prerequisite courses.
- ☐ Current FHSU students do not need to submit a FHSU transcript to the Allied Health Department. However, if transfer credits exist outside of the FHSU institution, an official transcript must be submitted to [alliedhealthdept@fhsu.edu](mailto:alliedhealthdept@fhsu.edu) Electronic transcripts are accepted.
- ☐ Students who are not officially admitted to FHSU, must submit official electronic transcripts from all educational institutions to [alliedhealthdept@fhsu.edu](mailto:alliedhealthdept@fhsu.edu).
- ☐ Completed and Signed Application.
- ☐ Completed professional resume described in the application.
- ☐ Received notification of completed application. If not, you are encouraged to reach out to confirm.

**IF YOU HAVE ANY QUESTIONS PLEASE CONTACT US:**

**FHSU - Allied Health Department - CH 129  
600 Park Street Hays, KS 67601  
(785) 628-5678**



# FORT HAYS STATE UNIVERSITY

## DEPARTMENT OF ALLIED HEALTH

### ***DIAGNOSTIC MEDICAL SONOGRAPHY (DMS) PROGRAM***

The Fort Hays State University Department of Allied Health is pleased you have expressed interest in the Diagnostic Medical Sonography Program. The program offers qualified students a dedicated curriculum in the categories of general (abdomen extended and OB/GYN) and vascular ultrasound. Students are also provided opportunities within neurosonography, breast, cardiac, and musculoskeletal ultrasound.

The curriculum will prepare students to master sonography concepts and techniques through an integration of didactic and clinical components. The student will have the opportunity to obtain the **Bachelor of Science Degree in Medical Diagnostic Imaging with Emphasis in Ultrasound**. Upon successful completion of the curriculum, the student will be eligible for registry examinations with the American Registry for Diagnostic Medical Sonography (ARDMS) to earn the credentials RDMS and/or RVT.

The Diagnostic Medical Sonography Program requires a separate application in addition to applying to FHSU. Included is detailed information, application materials, and an application check list. Please review the material and follow the directions for application. The application, and all other required application materials, **must be received by Feb 15** for consideration.

Thank you for considering Fort Hays State University in your pursuit for Diagnostic Medical Sonography education. If you require any assistance or have any questions regarding the program or application process, please do not hesitate to contact:

Ms. Brenda Hoopingarner, MS, RT(R)(CT), RDMS, RVT  
Director of Diagnostic Medical Sonography  
785-628-5674 or 785-628-5678

### **THE PROFESSION**

Diagnostic Medical Sonography involves the use of high frequency sound waves to image most structures within the human body. An ultrasound transducer is placed in contact with the patient's skin. It produces pulses of ultrasound which are sent into the body. The sound waves are then reflected off of various tissues or organs and travel back to the transducer to produce an image of specific anatomy. Physicians can then evaluate the images to make a medical diagnosis.

The procedure is commonly known as a sonogram or ultrasound examination and can be used to examine many parts of the body such as the liver, gallbladder, kidneys, uterus, heart, fetus, blood vessels, and breast. There are various specialties within diagnostic medical sonography to include: abdomen, obstetrics/gynecology, breast, neurosonography, ophthalmology, musculoskeletal, vascular, adult echocardiography, pediatric echocardiography, and fetal echocardiography.

The highly skilled professional who performs the ultrasound examination is known as a Diagnostic Medical Sonographer. This professional is a key member of the health care team and provides individualized care to a variety of patients using technology to create and interpret images of internal organs, tissues, and blood flow.

### **CAREER OPPORTUNITIES**

Diagnostic Medical Sonography is a rapidly expanding health care profession and the need for qualified sonographers continues. The number of diagnostic medical sonography procedures continues to increase. The equipment manufacturers continue to rapidly develop new technologies. Growth is projected to continue and graduates have opportunities for employment in: hospital ultrasound departments, clinics, physicians' private offices, mobile services, management and administration, sales and product development with equipment manufacturers, application/ education specialist, marketing, education and research.

## **FACILITIES**

The Department of Allied Health is located at 129 Cunningham Hall on the FHSU campus. Students complete lecture courses in a classroom that is fully mediated. An ultrasound laboratory is available and equipped with ultrasound equipment capable of imaging sonographic examinations. Students learn the principles and practices of ultrasound examinations in the classroom and then apply them in the laboratory setting. Once students complete requirements of the on-campus didactic and laboratory courses, they will apply the knowledge to the clinical setting. At the various clinical facilities, the student will perform patient examinations under the direct supervision of qualified staff. Please find a list of our current clinical facilities and contact information to arrange an observational visit at one of our established programs official affiliates. If you have any difficulty in making an arrangement, please contact the DMS program director.

<b>Citizens Health</b> <b>100 E College Dr</b> <b>Colby, KS 67701</b> <b>(785)460-1250</b> <b>Clinical Instructor:</b> <b>Katie Rehmer</b>	<b>HaysMed</b> <b>2220 Canterbury Road</b> <b>Hays, KS 67601</b> <b>(785)623-5705</b> <b>Clinical Instructor:</b> <b>Heidi Schlautman</b>	<b>Olathe Medical Center</b> <b>20333 W. 151<sup>st</sup> Street</b> <b>Olathe, KS 66061-7211</b> <b>(913)791-4294</b> <b>Clinical Instructors:</b> <b>Kelsey Haeberle &amp; Bailee Leiker</b>	<b>Lawrence Memorial Hospital</b> <b>325 Maine Street</b> <b>Lawrence, KS 66044</b> <b>(785)505-5000</b> <b>Clinical Instructor:</b> <b>Carmon Morton</b>
<b>Wesley Medical Center</b> <b>505 N Hillside St.</b> <b>Wichita, KS 67214-2468</b> <b>(316)962-2925</b> <b>Clinical Instructors:</b> <b>Jenna Guerrero &amp; Josie Blackmore</b>	<b>Salina Regional Health Center</b> <b>400 S Sante Fe Ave</b> <b>Salina, KS 67401</b> <b>(785)452-7682 or 6737</b> <b>Clinical Instructor:</b> <b>Kayla Nuss</b>	<b>AdventHealth Shawnee Mission</b> <b>9100 W 74<sup>th</sup> St</b> <b>Merriam, KS 66204</b> <b>(913)676-2459</b> <b>Clinical Instructor:</b> <b>Macy Werth</b>	<b>Ascension Via Christi St. Francis</b> <b>929 North Saint Francis</b> <b>Wichita, KS 67214</b> <b>(316)676-2459</b> <b>Clinical Instructor:</b> <b>Kelsey Delp</b>
<b>University of Kansas Health Systems Great Bend Campus</b> <b>514 Cleveland St</b> <b>Great Bend, KS 67530</b> <b>(620)791-6298</b> <b>Clinical Instructor:</b> <b>Clay Stewart</b>	<b>University of Kansas Health System St. Francis Hospital</b> <b>1770 SW 7<sup>th</sup></b> <b>Topeka, KS 66606</b> <b>(785)295-8352</b> <b>Clinical Instructor:</b> <b>Mandy Isernhagen</b>	<b>SkyRidge Medical Center</b> <b>10101 Ridge Gate Parkway</b> <b>Lone Tree, Co 80124</b> <b>(720)225-1780</b> <b>Clinical Instructor:</b> <b>Amber Johnson</b>	

## **CURRICULUM**

The ultrasound program encompasses a 24-month sequenced curriculum of full-time study designed to prepare entry-level sonographers to meet the community's need for qualified and competent sonographers. The curriculum will prepare students to master sonography concepts and techniques through an integration of sequenced didactic and clinical components. Students first learn concepts and techniques in the classroom. Students have the opportunity to apply what they learn in the corresponding laboratory sessions prior to placement for the assigned clinical experience. Once students demonstrate competence in simulated procedures, students will spend twelve months at one of the clinical affiliates performing ultrasound procedures under the supervision of one or more registered sonographers. A significant component of the ultrasound program is the extensive clinical experience. Students will be exposed to a large volume and variation of examinations to obtain the necessary skills.

The student will obtain a Bachelor of Science Degree in Medical Diagnostic Imaging with Emphasis in Ultrasound. The student is eligible for registry examinations in physics and instrumentation, abdomen extended, obstetrics and gynecology, and vascular technology.

### **THE DETAILED SEQUENCED CURRICULUM BEGINS EACH SUMMER SEMESTER:**

<b>Semester I – Summer (FHSU Campus)</b>	<b>HRS</b>	<b>Semester IV – Summer (at assigned clinical site)</b>	<b>HRS</b>
Diagnostic Medical Sonography I	3	DMS Clinical Experience I	6
Nursing Fundamentals	2	Clinical Sonography I	2
	5	Neurosonography I	1
			9
<b>Semester II – Fall (FHSU Campus)</b>	<b>HRS</b>	<b>Semester V – Fall (at assigned clinical site)</b>	<b>HRS</b>
Diagnostic Medical Sonography II	1	DMS Clinical Experience II	8
Ultrasound Physics & Instrumentation I	2	Clinical Sonography II	2
Abdominal Ultrasound Procedures I	2	Echocardiography I	2
Obstetric/Gynecology Ultrasound Procedures I	2	Foundations of Musculoskeletal Ultrasound	2
General Ultrasound I Laboratory	2		14
Vascular Ultrasound Procedures I	2		
Vascular Ultrasound Procedures I Laboratory	2		
	13		
<b>Semester III – Spring (FHSU Campus)</b>	<b>HRS</b>	<b>Semester VI – Spring (at assigned clinical site)</b>	<b>HRS</b>
Advanced Ultrasound Seminar I	1	DMS Clinical Experience III	8
Ultrasound Physics & Instrumentation II	1	Clinical Sonography III	2
Abdominal Ultrasound Procedures II	2	Advanced Ultrasound Seminar II	2
Obstetric/Gynecology Ultrasound Procedures II	2		12
General Ultrasound II Laboratory	2		
Vascular Ultrasound Procedures II	2	Total Prerequisite Credits	18
Vascular Ultrasound Procedures II Laboratory	2	General Education Credits	35
Breast Ultrasound Procedures	2	Major Credits	67
	14	Total Hours Required	120



## **ACCREDITATION**

Fort Hays State University is accredited by the Higher Learning Commission of the North Central Association of Colleges and Schools.

## **GENERAL ADMISSION REQUIRMENTS TO THE UNIVERSITY**

Applicants to the Diagnostic Medical Sonography Program must meet the general admission requirements to Fort Hays State University as outlined in the college catalog. Students can apply for admission online at <http://www.fhsu.edu/admissions>.

## **PROGRAM ADMISSION AND APPLICATION REQUIREMENTS**

All candidates applying for admission to the Diagnostic Medical Sonography Program:

Must be a high school graduate or equivalent (GED) and qualify in at least **one** of the following:

- Successful completion of a two year accredited program in Radiology Technology
- Successful completion of a baccalaureate degree
- Successful completion of 60 credit hours in a health care related field or with an emphasis in science and math

Must successfully complete the prerequisite courses with a minimum of a 'C' or better and have a minimum cumulative GPA of 2.75. The prerequisite courses are:

			CREDITS
BIOL	100	Human Biology	3
BIOL	102	Laboratory Experiences in Biology	1
BIOL	230	Anatomy and Physiology I	3
BIOL	230L	Anatomy and Physiology I Laboratory	1
BIOL	231	Anatomy and Physiology II	3
BIOL	231L	Anatomy and Physiology II Laboratory	1
BIOL	245	Medical Terminology	2
MATH	110	College Algebra	3
COMM	100	Fundamentals of Oral Communication	3
ENG	101	English Composition I	3
ENG	102	English Composition II	3
DMS	428	Principles of Diagnostic Medical Sonography	4
(only offered at FHSU, available on campus in the fall and online in the spring semester)			
Recommended elective course:			
MDI	410	Cross Sectional Anatomy: Normal	4

\*Equivalency of transfer credit will be determined by the FHSU Registrar's Office.

**\*\*In addition to the prerequisite courses, all students must complete the KBOR General Education Program.**

<https://www.fhsu.edu/general-education/documents/fhsu-kbor-general-education-framework.pdf>

Students seriously considering the program are advised to arrange observational experiences within any sonography department. It is suggested that the student arrange at least one observational experience at a FHSU associated clinical affiliate. Overall, it is recommended that you spend a minimum of 16 hours observing the activities within the department. Students should be aware that some facilities limit the number of hours a student may job shadow. Therefore, it may require a student to arrange additional observations at other clinical facilities to meet the minimum 16 hour recommendation. Observational experiences ensure you are better informed of the responsibilities you will gradually assume during the academic and clinical courses while at FHSU and eventually within the profession.

While completing an observational experience(s) at one of the FHSU associated clinical affiliates, supervising staff may provide feedback to the FHSU Program Director to assist in the assessment of the student's aptitude for Diagnostic Medical Sonography upon the completion of their observational experience. Specifically, did the student:

- Arrive on time
- Dress appropriate for the hospital setting
- Seem genuinely engaged and interested in observing activities and examinations
- Display professionalism
- Interact and communicate appropriately with supervising staff

The FHSU associated clinical affiliates have graciously agreed to allow students the opportunity to arrange and complete clinical observations at their facilities. It is expected that the student will follow all directions of supervising staff and abide by all facility policies. Please be considerate of their time and effort.

## **APPLICATION DEADLINE AND SELECTION PROCESS**

Consideration for admission to the Diagnostic Medical Sonography Program involves an application process. The application process requires that the student meets the above criteria, but meeting the criteria does not guarantee admission. In addition, **the student must complete and submit all application materials by Feb 15** of each year. The completed application, official transcripts from colleges where any previous or current coursework was completed, letters of reference and the applicant's personal statement must be received by the deadline for consideration. Incomplete application files will not be considered.

Acceptance into the program is conducted through a selection process. Following the **Feb 15 application deadline**, complete applications will be reviewed. Approximately 30 of the most qualified applicants will be invited to campus to interview with the FHSU DMS Student Selection Committee in **March**. At this time, candidates invited for an interview will be required to complete the Ultrasound Student Assessment (USA). Candidates will be provided with instructions for completion of this aptitude assessment prior to the interview. Approximately **16 students will be selected** to begin the program during the subsequent summer semester. The number of selected students is based on the availability of clinical placement determined by the number of available clinical facilities. Applicants who do not receive an interview may reapply the following year and must comply with the application process.

The DMS Program Selection Committee is comprised of FHSU faculty and affiliate supervising sonographers. All students will be considered for clinical placement at any of the current affiliate clinical facilities at the time of the interview process. Prior to the interview, the student is asked to prioritize the available clinical sites for their assigned clinical placement. The decision of the committee is based upon information provided in the student's application and interviews. Student record of academic achievement, nature of experiences within the medical field, knowledge of diagnostic medical sonography, letters of recommendation, and perceived communications skills, motivation, and maturity will all be considered.

Students will be notified of their application status. A student who receives an acceptance letter is required to return acceptance confirmation within a specific time frame to secure their placement in the program. Failure to return the confirmation by the specified date will result in forfeiture of the student's position in the program.

It is anticipated that the number of qualified applicants will exceed the number of positions in the program. Students are advised that not all qualified applicants are admitted to the program.

## **PROFESSIONAL CREDENTIALING ORGANIZATION ETHICS & ELIGIBILITY REQUIREMENTS**

Before beginning the program of study, students must complete a background check required by affiliate clinical sites. Students who may have been convicted of a felony or misdemeanor may have violated the American Registry of Diagnostic Medical Sonography (ARDMS) Rules of Ethics and may be considered ineligible to sit for the registry examinations. An individual who wishes to determine the impact of a previous criminal matter on their eligibility to sit for the ARDMS examinations is encouraged to submit a pre-application determination of approval to test form to the ARDMS prior to acceptance. This information is available at [www.ardms.org](http://www.ardms.org) & <https://www.ardms.org/compliance-predetermination-application> or the individual may contact them directly for the information at (301) 738-8401.

## **FINANCIAL INFORMATION**

This specialized program requires a student to attend full-time. Availability for employment may be limited while in the program. Therefore, it is strongly suggested that you have plans for adequate financing of your education prior to entering the Diagnostic Medical Sonography Program. The office of Student Fiscal Services can assist you in planning to meet your financial needs. The information listed here is subject to change. This information is only meant to give the student a general idea of the overall costs of the program.

Each student admitted to the Diagnostic Medical Sonography program is responsible for the following expenses and information associated with the program:

- **Tuition and student fees:** Tuition and fees are defined by FHSU and approved by the Kansas Board of Regents. These fees can be viewed at <http://www.fhsu.edu/sfs/studentsparents/tuition>
- **Living expenses, transportation, and appropriate parking permits:** Students attending FHSU may contact Residential Life, <https://www.fhsu.edu/reslife>, and the University Police Department, <https://www.fhsu.edu/university-police/parking-brochure>, to learn more.
- **Textbooks/Mock exams:** Estimated cost for the entire curriculum is approximately \$900 - \$1100.
- **Program fee:** There is a non-refundable program fee of \$275. This fee is used to purchase each student a two-year student membership in the Society of Diagnostic Medical Sonography (SDMS), laboratory equipment repairs and other miscellaneous laboratory supplies.
- **Health assessment/physical:** Students must have a completed FHSU DMS health assessment form/physical completed by a physician or provider upon admissions. Students may arrange this with their own family physician or provider or can arrange through the FHSU Student Health & Wellness Services, <https://www.fhsu.edu/health-and-wellness/medical>, fees may apply.

- **Background check, immunization record management & drug testing:** Students are required to complete requirements through Castlebranch. Information will be provided to students once admitted. The cost is approximately \$120.
- **Electronic record system Trajecsys:** Students are required to purchase user access for the duration of the program. Estimated cost is \$150.
- **Computer/Technology requirement:** Students enrolled at Fort Hays State University are expected to have a computer for use in a variety of university learning experiences. For hardware considerations, to meet basic security, networking, and upgrade requirements, the computer should be running Windows 10 (or newer) or MacOS 12-Monterey (or newer). Ideally, the computer's warranty should be supported by the manufacturer throughout the student's college career. Chromebooks and iPads are **not** recommended for use as a primary device due to limited functionality. Specific technology requirements may apply for most courses throughout the program to include high-speed internet connection (audio/video), full duplex sound card and speakers, internet access and e-mail account, windows medial player 9.0 (or newer), Quick Time 7.5 (or newer), internal camera or webcam required, external microphone and Chrome browser is ideal. For software considerations, **enrolled** students can take advantage of a variety of options to get FREE and/or discounted software for use on **personal** devices at [www.fhsu.edu/tigertech/software](http://www.fhsu.edu/tigertech/software). If you have any technical questions, please contact FHSU TigerTech.
- **Professional liability insurance:** Each student will need to provide a valid social security number when purchasing professional liability insurance. Insurance is available at an approximate cost of \$30 - \$60. Student must provide proof to the Program Director, prior to beginning clinical experience.
- **Basic life support CPR:** CPR will be required prior to clinical placement. It must be completed with the American Heart Association. The estimated cost is \$40. Students will be provided with the opportunity to complete during the first year of the program through arrangements made with HaysMed.
- **Scrubs and shoes:** Student will need to purchase the required FHSU DMS program approved scrubs. Several sets of scrubs will be needed throughout the duration of the program. Students will also need to purchase appropriate shoes and any other necessary uniform items required per clinical affiliate policy.
- **Health insurance:** Each student is required to have appropriate health insurance to cover the cost associated with illness or injury while in the program. Proof of coverage must be provided prior to attendance at clinical experience. Student health insurance policies are available through the university at the Health and Wellness Services of the Fischl-Wills Center for Student Success. Please contact the Director of Health & Wellness for more information.

Information is needed from students while on campus and while attending clinical experience at an affiliated site. On occasion, clinical sites may have additional requirements for the students. Students will be notified of additional information as needed.

## **FINANCIAL ASSISTANCE**

FHSU students are strongly encouraged to apply for scholarships and financial assistance under one or more of the available programs. The Office of Financial Aid is available to assist students in the pursuit of financial aid visit <http://www.fhsu.edu/finaid> to learn more. A large percentage of students receive some type of academic or activity scholarship, as well as other types of financial assistance.

Once accepted for the Diagnostic Medical Sonography Program, students may qualify for additional departmental scholarships or loan programs. Contact the Program Director for further information.

## **TO LEARN MORE**

Please feel free to contact the Allied Health Department.  
We invite you to visit the FHSU campus and meet the program faculty.  
**FHSU - Allied Health Department - CH 129**  
**600 Park Street, Hays, KS 67601**  
**(785) 628-5678**

Disclaimer – All information provided has been prepared as correctly and accurately as possible at the time of preparation. This information does not constitute a contract between Fort Hays State University and any person. Further, the university reserves the right to make changes in the content of this brochure without obligation or requirement of notices to any person.



# FORT HAYS STATE UNIVERSITY

## DEPARTMENT OF ALLIED HEALTH

### DIAGNOSTIC MEDICAL SONOGRAPHY (DMS) PROGRAM

#### APPLICATION FOR PROGRAM ADMISSION

**INSTRUCTIONS:** Please submit your completed application and all required application materials to:

Director of Diagnostic Medical Sonography  
Fort Hays State University  
Department of Allied Health, CH 129  
600 Park Street  
Hays, KS 67601-4099

In order to be considered as an applicant to the program, all application materials **must be received by FEBRUARY 15**. Incomplete applications will not be processed.

Full Name: \_\_\_\_\_  
Last First Middle

Other name(s) under which your academic records may appear: \_\_\_\_\_

Please mark the box next to the address where correspondence should be sent.

☐ Current Address: \_\_\_\_\_  
Street City State Zip

☐ Permanent Address: \_\_\_\_\_  
Street City State Zip

Phone: \_\_\_\_\_ Email Address: \_\_\_\_\_

If applicable, list any professional organizations with which you are registered or have membership within the health care field. Please provide copies of any memberships and registries with application materials.

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**Please provide the following information for the prerequisite courses listed: course #, # credit hours, grade received, semester completed, and the institution** for each course. All prerequisite courses must be completed with a minimum grade of “C” or better and you must have a minimum overall college GPA of 2.75 (on a 4.0 scale) to be eligible to apply. Final determination of course equivalency will be determined by the FHSU Registrar.

**EXAMPLE: The following is how you should complete this sheet.**

<b>PREREQUISITE COURSES:</b>	<b>COURSE NUMBER</b>	<b>CREDIT HOURS</b>	<b>GRADE</b>	<b>TERM/YEAR COMPLETED</b>	<b>INSTITUTION</b>
<b><i>HUMAN BIOLOGY</i></b>	<b><i>BIOL 100</i></b>	<b><i>3</i></b>	<b><i>B</i></b>	<b><i>SPRING 2019</i></b>	<b><i>FORT HAYS STATE UNIVERSITY</i></b>
<b><i>COLLEGE ALGEBRA</i></b>	<b><i>MATH 110</i></b>	<b><i>3</i></b>	<b><i>A</i></b>	<b><i>FALL 2018</i></b>	<b><i>BARTON COUNTY COMMUNITY COLLEGE</i></b>

<b>PREREQUISITE COURSES:</b>	<b>COURSE NUMBER</b>	<b>CREDIT HOURS</b>	<b>GRADE</b>	<b>TERM/YEAR COMPLETED</b>	<b>INSTITUTION</b>
HUMAN BIOLOGY					
LABORATORY EXPERIENCES IN BIOLOGY					
ANATOMY AND PHYSIOLOGY I					
ANATOMY AND PHYSIOLOGY I LABORATORY					
ANATOMY AND PHYSIOLOGY II					
ANATOMY AND PHYSIOLOGY II LABORATORY					
MEDICAL TERMINOLOGY					
COLLEGE ALGEBRA					
FUNDAMENTALS OF ORAL COMMUNICATION					
ENGLISH COMPOSITION I					
ENGLISH COMPOSITION II					
PRINCIPLES OF DIAGNOSTIC MEDICAL SONOGRAPHY					



**EDUCATIONAL BACKGROUND:** Please list all educational programs attended and/or completed beginning with high school. It is the applicant's responsibility to arrange for an official transcript of credit from each college/university attended to be sent to the Allied Health Department. (PLEASE NOTE: Failure to list all previous college/universities may result in your dismissal from the university).

High School	_____	_____	_____
	Name	Location	Graduation Date
College	_____	_____	
	Name	Location	
	_____	_____	_____
	Dates of Attendance	Number of Credits Earned	Degree
College	_____	_____	
	Name	Location	
	_____	_____	_____
	Dates of Attendance	Number of Credits Earned	Degree
College	_____	_____	
	Name	Location	
	_____	_____	_____
	Dates of Attendance	Number of Credits Earned	Degree
College	_____	_____	
	Name	Location	
	_____	_____	_____
	Dates of Attendance	Number of Credits Earned	Degree

Has the college/university information been submitted with a previous Allied Health Department application?

Yes ☐

No ☐

When Submitted: \_\_\_\_\_

**EMPLOYMENT HISTORY:** Please list the last 3 places of employment beginning with the most recent. Please include the dates of employment, job title and job responsibilities.

Employer: \_\_\_\_\_ Dates of employment: \_\_\_\_\_

Job title & responsibilities: \_\_\_\_\_

\_\_\_\_\_

Employer: \_\_\_\_\_ Dates of employment: \_\_\_\_\_

Job title & responsibilities: \_\_\_\_\_

\_\_\_\_\_

Employer: \_\_\_\_\_ Dates of employment: \_\_\_\_\_

Job title & responsibilities: \_\_\_\_\_

\_\_\_\_\_

**REFERENCES:** Please provide the names of three individuals who are familiar with your work experience, preferably within health care. References from faculty, professional, and business associates are preferred. It is the applicant's responsibility to ensure each of the three individuals listed send a letter of reference on their behalf. Letters are to be sent directly to Director of Diagnostic Medical Sonography, Department of Allied Health – CH 129, Fort Hays State University, 600 Park Street, Hays, KS 67601-4099.

Reference:

Name

Title

Address

Phone

Reference:

Name

Title

Address

Phone

Reference:

Name

Title

Address

Phone

**PERSONAL STATEMENT:** To evaluate the applicant's interest and understanding of Diagnostic Medical Sonography, formulate a 1-2 page essay describing the following: (Use a separate sheet of paper for this personal statement).

- Describe your initial interest in the field of Diagnostic Medical Sonography.
- Describe any patient care experience (if applicable).
- Describe any observational experience in Diagnostic Medical Sonography (if applicable).
- Describe personal goals related to the field of Diagnostic Medical Sonography.
- Describe any achievements, honors, school/community activities, or personal qualities/experiences that make you, as an applicant, a competitive candidate for the FHSU Diagnostic Medical Sonography Program.

**PLEASE READ AND SIGN BELOW:** The information contained in this application is true and complete to the best of my knowledge. I understand that any misrepresentation or falsification of information on this application may remove this application from further consideration, and if I am accepted, might be cause for my dismissal. I understand that the information contained in this application will be utilized by the Diagnostic Medical Sonography Selection Committee for purposes of evaluating my application. I understand that acceptance into the program is dependent upon having the prerequisites completed. If the total number of candidates applying for the program is larger than can be admitted, I understand that preference will be given to those candidates who are best prepared.

Signature (required for application to be processed)

Date

Notice of Non-discrimination: Fort Hays State University does not discriminate on the basis of gender, race, religion, national origin, color, age, marital status, sexual orientation, disability or veteran status in its programs and activities. The director of affirmative action, coordinator of Title IX, Title VI, Section 504 and ADA regulations may be contacted at 600 Park Street, Hays, Ks 67601-4099. Phone: 785-628-4033.

**COMPLETE APPLICATIONS DUE FEBRUARY 15**

SUBMIT ALL APPLICATION MATERIALS TO:

Fort Hays State University  
Department of Allied Health – Cunningham Hall 129  
600 Park Street  
Hays, KS 67601-4099

ELECTRONIC TRANSCRIPTS TO: [alliedhealthdept@fhsu.edu](mailto:alliedhealthdept@fhsu.edu)

# **APPLICATION CHECKLIST**

- ☐ Completed all prerequisite courses needed for admittance into the Diagnostic Medical Sonography Program.
- ☐ Have earned a 'C' or better in all prerequisite courses.
- ☐ Students who are not officially admitted to FHSU, must submit official electronic transcripts from all educational institutions to [alliedhealthdept@fhsu.edu](mailto:alliedhealthdept@fhsu.edu).
- ☐ Current FHSU students do not need to submit a FHSU transcript to the Allied Health Department. However, if transfer credits exist outside of the FHSU institution, an official transcript must be submitted to [alliedhealthdept@fhsu.edu](mailto:alliedhealthdept@fhsu.edu) Electronic transcripts are accepted.
- ☐ Completed and Signed Application.
- ☐ Completed personal statement described in the application.

**If you have any questions, please contact us:**

**FHSU - Allied Health Department - CH 129  
600 Park Street Hays, KS 67601  
(785) 628-5678**

# STUDENT INVOLVEMENT OPPORTUNITIES

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**Student organizations and learning communities give students the opportunity to make friends, build leadership skills, boost resumes, attend conferences, and make a positive change on campus. The Allied Health Department has a learning community and two student organizations.**

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## **Imaging with Tiger Pride Learning Community**

A learning community is a group of first-year students who share common interests, take classes together, live on the same floor and participate in activities together throughout the year. These particular students are interested in radiologic technology and/or medical diagnostic imaging.





## Association for Radiologic Technology Students

The organization helps to develop and strengthen student contact with professionals within the healthcare field with emphasis in radiologic technology. Members promote and encourage participation in professional activities, educational opportunities, and sponsor events to enhance social development among students majoring in pre-radiologic technology, radiologic technology, and medical diagnostic imaging.

## Society of Student Sonographers

The organization helps to develop and strengthen student contact with professionals within the health care field with emphasis in Diagnostic Medical Sonography. Members promote and encourage participation in professional activities, educational opportunities, and sponsor events to enhance social development among students majoring in pre-Diagnostic Medical Sonography and Diagnostic Medical Sonography

**Connect with us on social media!**



**Instagram:**

fhsualliedhealthdept

**Facebook:**

FHSU Department of Allied Health

**Our department posts our student achievements, upcoming events, and organization activities. Follow us to stay up to date on everything related to Medical Imaging!**



**Fort Hays State University  
Student Fiscal Services**

**Tuition and Fees Schedule\*  
Fall 2025, Intersession 2026, Spring 2026, Summer 2026**

Credit Hours	On-Campus Tuition & Fees						FHSU Online Tuition				
	Undergraduate			Graduate			Under-graduate	Graduate	Graduate MBA	Graduate DNP	Graduate MSCoun
	Resident/ Regional	Non-Resident	MSEP	Resident/ Regional	Non-Resident	MSEP	FHSU Online	FHSU Online	FHSU Online	FHSU Online	FHSU Online
1	203.73	614.47	285.28	284.38	734.83	406.27	265.05	348.78	385.74	467.29	360.29
2	407.46	1228.94	570.56	568.76	1469.66	812.54	530.10	697.56	771.48	934.58	720.58
3	611.19	1843.41	855.84	853.14	2204.49	1218.81	795.15	1046.34	1157.22	1401.87	1080.87
4	814.92	2457.88	1141.12	1137.52	2939.32	1625.08	1060.20	1395.12	1542.96	1869.16	1441.16
5	1018.65	3072.35	1426.40	1421.90	3674.15	2031.35	1325.25	1743.90	1928.70	2336.45	1801.45
6	1222.38	3686.82	1711.68	1706.28	4408.98	2437.62	1590.30	2092.68	2314.44	2803.74	2161.74
7	1426.11	4301.29	1996.96	1990.66	5143.81	2843.89	1855.35	2441.46	2700.18	3271.03	2522.03
8	1629.84	4915.76	2282.24	2275.04	5878.64	3250.16	2120.40	2790.24	3085.92	3738.32	2882.32
9	1833.57	5530.23	2567.52	2559.42	6613.47	3656.43	2385.45	3139.02	3471.66	4205.61	3242.61
10	2037.30	6144.70	2852.80	2843.80	7348.30	4062.70	2650.50	3487.80	3857.40	4672.90	3602.90
11	2241.03	6759.17	3138.08	3128.18	8083.13	4468.97	2915.55	3836.58	4243.14	5140.19	3963.19
12	2444.76	7373.64	3423.36	3412.56	8817.96	4875.24	3180.60	4185.36	4628.88	5607.48	4323.48
13	2648.49	7988.11	3708.64	3696.94	9552.79	5281.51	3445.65	4534.14	5014.62	6074.77	4683.77
14	2852.22	8602.58	3993.92	3981.32	10287.62	5687.78	3710.70	4882.92	5400.36	6542.06	5044.06
15	3055.95	9217.05	4279.20	4265.70	11022.45	6094.05	3975.75	5231.70	5786.10	7009.35	5404.35
16	3259.68	9831.52	4564.48	4550.08	11757.28	6500.32	4240.80	5580.48	6171.84	7476.64	5764.64
17	3463.41	10445.99	4849.76	4834.46	12492.11	6906.59	4505.85	5929.26	6557.58	7943.93	6124.93
18	3667.14	11060.46	5135.04	5118.84	13226.94	7312.86	4770.90	6278.04	6943.32	8411.22	6485.22

*(Tuition and Fees for enrollment in more than 18 hours continue to be assessed per credit hour.)*

*\*Tuition and Fees are subject to change at any time by the Kansas Board of Regents.*

Tuition and fees charged will be calculated based on two factors: the type of course (On-Campus or FHSU Online) and the student's residency status (Resident/Regional, Non-Resident, or MSEP). An international student is a Non-Resident student.

- A Resident/Regional student will be charged On-Campus tuition and fees for On-Campus courses and FHSU Online tuition for FHSU Online courses.
- A Non-Resident student will be charged Non-Resident tuition and fees when taking *both* On-Campus and FHSU Online courses. A Non-Resident student taking FHSU Online courses *only* will pay the FHSU Online tuition. An international student is a Non-Resident student for tuition calculation purposes.
- Students who meet eligibility requirements for the Midwest Student Exchange Program (MSEP) qualify for the MSEP rate for On-Campus courses. An MSEP student will be charged MSEP tuition and fees when taking *both* On-Campus and FHSU Online courses. An MSEP student taking FHSU Online courses *only* will pay the FHSU Online tuition. More information can be found at <https://www.fhsu.edu/admissions/tuition/midweststudentexchangeprogram>.

Students pay tuition and fees for all hours in which they are enrolled. Changes in residency classification can affect the amount of tuition and fees owed.

Graduate tuition and fees are assessed based on course enrollment level rather than individual classification. Students will pay graduate tuition and fees for graduate credit courses and undergraduate tuition and fees for undergraduate credit courses. Graduate students enrolled in FHSU Online MBA classes will pay graduate MBA tuition. Graduate students enrolled in FHSU Online DNP classes will pay graduate DNP tuition. Graduate students enrolled in FHSU Online MSCoun classes will pay graduate MSCoun tuition.

Special fees may be added to select approved courses such as noncredit courses, workshops, conferences, and seminars based on direct and indirect operating costs.

Students who add or process an add/drop together at any time for the semester will have tuition and fees recalculated at the time of each transaction. These transactions may change the fee status of the student for the semester, and tuition and fees will be assessed accordingly. The student is required to remit payment for additional tuition and fees owed at the time of the transaction. If the recalculation results in a refund due to the student, FHSU will process the transaction to the student account.

# SCHOLARSHIP OPPORTUNITIES

FHSU offers first time, full-time, on-campus freshman students the opportunity to receive an automatic and renewable scholarship based on a combination of their ACT/SAT score and cumulative GPA. Students may be eligible to receive up to \$15,000 in scholarship funds automatically. The actual scholarship award will be based upon your verified official academic credentials.

All NEW on-campus transfer scholarships for fall are based on cumulative GPA and 30 hours completed. All scholarships are automatic upon receipt of an official or unofficial transcript(s). FHSU will accept transcripts until June 15.

Students may apply for additional Fort Hays State University scholarships. The Department of Allied Health has the following opportunities for students below. The priority deadline is November 15<sup>th</sup>, and the final deadline is February 15<sup>th</sup>. Please visit the FHSU Admission's Office website to apply:

<https://www.fhsu.edu/admissions>.

## **Barbara Michaelis Scholarship**

Preference to students majoring in Allied Health or a pre-professional program related to a medical field with a minimum 3.0 GPA. Financial need shall be considered.

## **Madden Allied Health**

Recipient must be a full time junior or senior majoring in the Allied Health degree program with a minimum 3.2 GPA.

## **Mike Madden Family Radiology Scholarship**

1. Recipients must be full-time, on-campus undergraduate student at FHSU who has been accepted into the Radiologic Technology program.
2. Recipients must have a cumulative GPA of 3.5
3. Preference will be given to students who graduated from a high school in Kansas.
4. Preference will be given to students in financial need.



# OCCUPATIONAL OUTLOOK HANDBOOK

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[PRINTER-FRIENDLY](#)

## Healthcare Occupations

Employment in healthcare occupations is projected to grow 16 percent from 2020 to 2030, much faster than the average for all occupations, adding about 2.6 million new jobs. Healthcare occupations are projected to add more jobs than any of the other occupational groups. This projected growth is mainly due to an aging population, leading to greater demand for healthcare services.

The median annual wage for healthcare practitioners and technical occupations (such as registered nurses, physicians and surgeons, and dental hygienists) was \$69,870 in May 2020, which was higher than the median annual wage for all occupations in the economy of \$41,950.

Healthcare support occupations (such as home health aides, occupational therapy assistants, and medical transcriptionists) had a median annual wage of \$29,960 in May 2020, lower than the median annual wage for all occupations in the economy.

## Full-time Compensation Overall and by Years in the Profession for Each Discipline<sup>a</sup>

	R	N	T	MR	S	CT	M	CI	VI	MD	All disciplines
<b>Overall</b>											
<b>N</b>	5190	429	777	1316	521	1772	934	403	442	136	12581
<b>Mean</b>	\$57,865	\$83,385	\$89,159	\$76,177	\$77,825	\$69,896	\$71,725	\$76,902	\$75,243	\$114,891	\$69,266
<b>Grouped Median</b>	\$54,085	\$80,927	\$83,471	\$72,808	\$71,934	\$67,452	\$68,703	\$74,681	\$70,708	\$113,129	\$65,032
<b>Mean by Years in Profession</b>											
2 years or less	\$48,175	\$77,236	\$70,447	\$58,016	\$56,262	\$55,877	\$56,670	\$55,084	\$54,985	\$93,176	\$51,763
3 to 5 years	\$50,980	\$69,538	\$72,910	\$63,629	\$62,213	\$59,425	\$59,812	\$62,582	\$62,507	\$106,719	\$56,476
6 to 10 years	\$54,383	\$67,861	\$82,414	\$70,445	\$63,075	\$66,591	\$64,572	\$71,471	\$66,598	\$106,469	\$63,192
11 to 15 years	\$60,014	\$79,971	\$92,268	\$74,065	\$69,217	\$69,768	\$68,968	\$72,485	\$76,237	\$102,377	\$69,495
16 to 20 years	\$63,778	\$83,469	\$98,509	\$79,332	\$80,161	\$72,220	\$76,184	\$86,959	\$81,795	\$116,757	\$75,689
21 to 30 years	\$65,815	\$90,609	\$101,081	\$82,343	\$85,801	\$76,437	\$75,304	\$81,228	\$88,943	\$118,209	\$79,364
31 years or more	\$70,639	\$90,131	\$99,160	\$82,459	\$85,328	\$78,396	\$74,703	\$89,015	\$86,127	\$125,567	\$80,017

	PACS	BD	RA	PET	QM	VS	BS	3D	BMR	Other	All disciplines
<b>Overall</b>											
<b>N</b>	111	28	20	54	28	28	15	19	4	355	12581
<b>Mean</b>	\$84,412	\$60,129	\$108,494	\$82,770	\$76,281	\$78,619	\$80,408	\$82,195	\$76,771	\$83,227	\$69,266
<b>Grouped Median</b>	\$81,259	\$55,103	\$105,685	\$79,778	\$74,795	\$76,507	\$77,464	\$78,275	\$80,711	\$78,090	\$65,032
<b>Mean by Years in Profession</b>											
2 years or less		\$49,718		\$66,560						\$47,859	\$51,763
3 to 5 years	\$76,138	\$49,920	\$71,591	\$63,640	\$47,731	\$63,835		\$66,560		\$52,144	\$56,476
6 to 10 years	\$76,801	\$53,562	\$93,282	\$83,873	\$70,700		\$69,630	\$70,078	\$61,984	\$69,309	\$63,192
11 to 15 years	\$78,421	\$51,883	\$116,442	\$79,719	\$70,003		\$55,210	\$76,745		\$76,644	\$69,495
16 to 20 years	\$65,504		\$103,794	\$93,778	\$67,798	\$72,554	\$84,044	\$85,478	\$70,720	\$86,729	\$75,689
21 to 30 years	\$84,648	\$57,767	\$114,368	\$106,685	\$84,134	\$82,075	\$85,415	\$98,821	\$83,585	\$93,231	\$79,364
31 years or more	\$105,590	\$80,077	\$113,002	\$85,998	\$82,238	\$95,680	\$88,459		\$80,683	\$94,200	\$80,017

<sup>a</sup>R=radiography; N=nuclear medicine; T=radiation therapy; MR=magnetic resonance; S=sonography; CT=computed tomography; M=mammography; CI=cardiac interventional; VI=vascular interventional; MD=medical dosimetry; PACS=imaging informatics/PACS administrator; BD=bone densitometry; RA=registered radiologist assistant or RPA; PET=fusion (e.g., PET/CT, SPEC/CT); QM=quality management; VS=vascular sonography; BS=breast sonography; 3D=3D image postprocessing; BMR=breast MRI; Blank cell=no data.

## Full-time Compensation Overall and by State for Each Discipline<sup>a</sup>

	R	N	T	MR	S	CT	M	CI	VI	MD	All disciplines
<b>Overall</b>											
<b>N</b>	5190	429	777	1316	521	1772	934	403	442	136	12581
<b>Mean</b>	\$57,865	\$83,385	\$89,159	\$76,177	\$77,825	\$69,896	\$71,725	\$76,902	\$75,243	\$114,891	\$69,266
<b>Grouped Median</b>	\$54,085	\$80,927	\$83,471	\$72,808	\$71,934	\$67,452	\$68,703	\$74,681	\$70,708	\$113,129	\$65,032
<b>State</b>											
Alabama	\$46,388	\$77,792	\$79,382	\$63,187	\$60,133	\$51,048	\$59,380	\$56,332	\$50,613	\$93,500	\$54,122
Alaska	\$73,780	\$90,958	\$99,711	\$92,775	\$61,547	\$94,169	\$80,038				\$85,191
Arizona	\$56,702	\$93,600	\$85,043	\$76,184	\$89,099	\$73,690	\$75,884	\$91,083	\$82,077	\$125,000	\$71,949
Arkansas	\$47,452		\$85,643	\$64,288	\$66,414	\$55,304	\$61,498	\$60,840	\$55,994	\$111,072	\$56,213
California	\$87,323	\$121,954	\$125,538	\$103,369	\$124,732	\$101,049	\$101,708	\$108,468	\$113,407	\$134,490	\$101,699
Colorado	\$55,128	\$91,000	\$94,968	\$82,302	\$85,973	\$77,393	\$77,457	\$93,739	\$77,844	\$145,080	\$69,781
Connecticut	\$62,246	\$94,363	\$99,916	\$88,720	\$87,478	\$74,973	\$78,624	\$69,680	\$96,919		\$77,753
Delaware	\$66,792		\$106,564	\$62,514		\$72,509	\$62,774	\$62,400	\$63,138		\$74,502
DC	\$75,174		\$92,851	\$124,779			\$85,280		\$92,352	\$108,000	\$83,707
Florida	\$51,790	\$79,527	\$77,989	\$70,148	\$65,520	\$62,121	\$61,336	\$72,140	\$68,125	\$115,171	\$62,474
Georgia	\$51,553	\$74,297	\$78,589	\$70,392	\$57,663	\$63,429	\$68,363	\$83,871	\$72,843	\$111,180	\$63,318
Hawaii	\$77,806		\$94,770	\$92,040	\$112,320	\$84,163	\$89,665		\$119,371		\$89,497
Idaho	\$52,412		\$89,158	\$85,158	\$70,311	\$65,537	\$67,482			\$121,000	\$64,380
Illinois	\$57,881	\$77,189	\$88,329	\$76,336	\$99,840	\$67,141	\$75,422	\$72,938	\$78,944	\$109,763	\$68,800
Indiana	\$56,873	\$83,852	\$77,188	\$69,668	\$68,754	\$64,437	\$65,369	\$67,429	\$66,744	\$108,600	\$65,532
Iowa	\$50,605	\$61,013	\$70,742	\$64,219	\$63,206	\$64,440	\$65,872	\$53,617	\$45,443	\$121,473	\$58,450
Kansas	\$51,478	\$70,733	\$78,365	\$66,448		\$61,112	\$64,978	\$71,977	\$62,660	\$112,954	\$62,144
Kentucky	\$47,993	\$54,080	\$87,951	\$65,091	\$69,264	\$61,674	\$63,179	\$61,405	\$65,074	\$100,000	\$59,522
Louisiana	\$55,173	\$85,433	\$79,045	\$65,966	\$64,064	\$57,101	\$59,712	\$68,015	\$50,284	\$155,282	\$62,146
Maine	\$56,035	\$74,360	\$67,520	\$71,680	\$74,880	\$62,662	\$71,822			\$114,000	\$63,656
Maryland	\$60,594	\$68,784	\$83,628	\$85,394	\$84,587	\$76,268	\$72,664	\$78,449	\$83,514	\$102,544	\$71,272
Massachusetts	\$67,340	\$97,299	\$95,464	\$90,878	\$79,040	\$87,502	\$84,510	\$83,541	\$91,431	\$112,960	\$81,490
Michigan	\$54,808	\$66,453	\$75,206	\$68,807	\$68,187	\$62,948	\$66,119	\$70,217	\$67,278	\$101,500	\$62,818
Minnesota	\$64,594	\$76,466	\$80,133	\$74,750	\$89,440	\$73,275	\$73,275	\$82,478	\$74,696	\$112,200	\$72,023
Mississippi	\$47,242		\$68,715	\$61,121	\$63,846	\$57,367	\$63,140	\$71,892	\$46,072	\$114,400	\$55,898
Missouri	\$51,108	\$89,767	\$80,504	\$66,602	\$70,418	\$62,662	\$63,683	\$75,145	\$60,414	\$116,050	\$62,626
Montana	\$51,564	\$92,494	\$76,410	\$79,523		\$67,035	\$61,291	\$75,972	\$58,947		\$65,630

<sup>a</sup>R=radiography; N=nuclear medicine; T=radiation therapy; MR=magnetic resonance; S=sonography; CT=computed tomography; M=mammography; CI=cardiac interventional; VI=vascular interventional; MD=medical dosimetry; PACS=imaging informatics/PACS administrator; BD=bone densitometry; RA=registered radiologist assistant or RPA; PET=fusion (e.g., PET/CT, SPEC/CT); QM=quality management; VS=vascular sonography; BS=breast sonography; 3D=3D image postprocessing; BMR=breast MRI; Blank cell=no data.

# RADIOLOGICAL TECHNOLOGY (X-RAY)



## WHAT CAN I DO WITH A MAJOR IN...?

### WHAT IS RADIOLOGICAL TECHNOLOGY (DIAGNOSTIC RADIOLOGY)?

Diagnostic Radiology involves the use of ionizing radiation to produce medical images to assist the radiologist or other physicians in their interpretation and analysis for diagnosis of illness and injury.

### RELATED CAREER TITLES

<b>Educator/Education*</b> <ul style="list-style-type: none"> <li>Clinical Coordinator</li> <li>Clinical Instructor</li> <li>Clinical Researcher</li> <li>College/University Faculty</li> <li>Medical Researcher</li> </ul>	<b>Mammographer*</b> <ul style="list-style-type: none"> <li>Mammography Technologists</li> <li>Mammography Tech</li> </ul> <b>Bone Densitometrist*</b> <ul style="list-style-type: none"> <li>Bone Densitometry Technologists</li> <li>Bone Densitometry Tech</li> <li>Dexa Technologist</li> </ul>	<b>Radiology Administrator*</b> <ul style="list-style-type: none"> <li>Administrator of Imaging Services</li> <li>Director of Imaging Services</li> <li>Director of Radiology</li> <li>Lead Radiologic Technologist</li> <li>Radiology Supervisor</li> </ul>
<b>Radiologic Technologist</b> <ul style="list-style-type: none"> <li>X-ray Technologist</li> <li>Radiographer</li> <li>Staff Technologist</li> <li>General Diagnostic Radiographer</li> <li>Traveling Imaging Technologist</li> </ul>	<b>Other related*</b> <ul style="list-style-type: none"> <li>Equipment Application Specialists</li> <li>Diagnostic Equipment Sales Representative</li> <li>Picture Archiving &amp; Communication System (PACS) Administrator</li> <li>Radiology Diagnostics</li> <li>State Inspector</li> </ul>	<b>Advanced career options*</b> <ul style="list-style-type: none"> <li>Dosimetrist</li> <li>Radiation Physicist</li> <li>Radiologist</li> <li>Radiology Assistants (RA)</li> <li>Radiology Practitioner Assistant (RPA)</li> </ul>

\*Career options may require advanced education; State licensing/education requirements vary by state.

### TRANSFERABLE SKILLS

Ability to meet ethical, practice, and quality assurance standards	Detail oriented/accuracy	Strong work ethic
Ability to work as an integral member of the health care team	Flexibility/adaptability	Technical skills
Ability to work under stress & in emergency situations	Leadership	Understand patient's history and symptoms related to disease processes
Associate degree in radiologic technology	Problem solving skills/critical thinking*	Valid certification; where applicable, additional valid state license(s)
Communication skills to relate with patients, families, physicians, & co-workers	Provide excellent patient care	

Attainment and demonstration of [NACE Career Readiness Competencies](#) help prepare for a successful transition into the workplace.

### CONTACT FOR ADDITIONAL INFORMATION

Department of Allied Health - Cunningham Hall 129 - 785.628.5678



# RADIOLOGICAL TECHNOLOGY (X-RAY)

FHSU

## WHAT CAN I DO WITH A MAJOR IN...?

### RELATED CAREER EXPLORATION LINKS

A.S. in Radiologic Technology: [www.fhsu.edu/alliedhealth/asdegree/](http://www.fhsu.edu/alliedhealth/asdegree/)

B.S. in Medical Diagnostic Imaging: [www.fhsu.edu/alliedhealth/bs-mdi/](http://www.fhsu.edu/alliedhealth/bs-mdi/),  
[www.fhsu.edu/alliedhealth/ultrasound/](http://www.fhsu.edu/alliedhealth/ultrasound/)

American Registry of Radiologic Technologist: [www.arrt.org](http://www.arrt.org)

American Society of Radiologic Technologist: [www.asrt.org](http://www.asrt.org)

FHSU Career Services: <http://www.fhsu.edu/career/>

Occupational Outlook Handbook: [www.bls.gov/ooh/](http://www.bls.gov/ooh/)



Click to explore additional career information

# DIAGNOSTIC MEDICAL SONOGRAPHY



## WHAT CAN I DO WITH A MAJOR IN...?

### WHAT IS DIAGNOSTIC MEDICAL SONOGRAPHY (ULTRASOUND)?

Diagnostic Medical Sonography involves the use of sound waves to produce medical images to assist the radiologist or other physicians in their interpretation and analysis for diagnosis of illness and injury.

### RELATED CAREER TITLES

<b>Cardiac Sonographer*</b> <ul style="list-style-type: none"> <li>Cardiovascular Sonographer</li> <li>Cardiovascular Tech</li> <li>Echocardiographer</li> </ul> <b>Vascular Sonographer*</b> <ul style="list-style-type: none"> <li>Vascular Technologist</li> <li>Vascular Tech</li> </ul>	<b>Diagnostic Medical Sonographer*</b> <ul style="list-style-type: none"> <li>General Sonographer</li> <li>General Ultrasound Technologist</li> <li>Sonographer</li> <li>Staff Sonographer</li> <li>Ultrasonographer</li> <li>Ultrasound Diagnostic Technologist</li> <li>Ultrasound Technologist</li> </ul>	<b>Educator/Education*</b> <ul style="list-style-type: none"> <li>Clinical Coordinator</li> <li>Clinical Instructor</li> <li>Clinical Researcher</li> <li>College/ University Faculty</li> <li>Medical Researcher</li> </ul>
<b>Supervising Sonographer*</b> <ul style="list-style-type: none"> <li>Administrator of Imaging Services</li> <li>Director of Imaging Services</li> <li>Director of Radiology</li> <li>Lead Sonographer</li> <li>Lead Ultrasound Technologist</li> <li>Sonography Supervisor</li> </ul>	<b>Other related*</b> <ul style="list-style-type: none"> <li>Equipment Application Specialists</li> <li>Sonography Diagnostics</li> <li>Sonography Equipment Sales Representative</li> </ul>	<b>Advanced career options*</b> <ul style="list-style-type: none"> <li>Dosimetrist</li> <li>Radiation Physicist</li> <li>Radiologist</li> <li>Radiology Assistants (RA)</li> <li>Radiology Practitioner Assistant (RPA)</li> </ul>

\*Career options may require advanced education; State licensing/education requirements vary by state.

### TRANSFERABLE SKILLS

Associate degree in radiologic technology	Ability to work under stress & in emergency situations	Flexibility/adaptability
Ability to meet ethical, practice, and quality assurance standards	Communication skills to relate with patients, families, physicians, & co-workers	Leadership
Ability to work as an integral member of the health care team	Detail oriented/accuracy	Problem solving skills/critical thinking
Provide excellent patient care	Technical skills	Valid certification; where applicable, additional valid state license(s)
Strong work ethic	Understand patient's history and symptoms related to disease processes	

Attainment and demonstration of [NACE Career Readiness Competencies](#) help prepare for a successful transition into the workplace

# DIAGNOSTIC MEDICAL SONOGRAPHY

FHSU

## WHAT CAN I DO WITH A MAJOR IN...?

### CONTACT FOR ADDITIONAL INFORMATION

Department of Allied Health - Cunningham Hall 129 - 785.628.5678

### RELATED CAREER EXPLORATION LINKS

B.S. in Medical Diagnostic Imaging, emphasis in sonography: [www.fhsu.edu/alliedhealth/ultrasound/](http://www.fhsu.edu/alliedhealth/ultrasound/)

American Registry of Diagnostic Medical Sonographers: [www.ardms.org](http://www.ardms.org)

Society of Diagnostic Medical Sonography: [www.sdms.org](http://www.sdms.org)

FHSU Career Services: <http://www.fhsu.edu/career/>

Occupational Outlook Handbook: <http://www.bls.gov/ooh/>



Click to explore additional career information



# Discovery of the X-ray

In 1895, Wilhelm Conrad Roentgen (1845-1923) invented the X-ray. As a physics professor in Germany, Roentgen was conducting experiments with a Crookes tube – a sealed glass tube with two electrodes on either end. On a Friday evening in his laboratory on Nov. 8, 1895, Roentgen covered the tube with black cardboard in a dark room and supplied an electric current. He noticed that a greenish-yellow illumination appeared on a screen several feet away.

Roentgen continued the experiment, placing several different items between the tube and the screen. At one point, he held a lead pipe up to the ray and saw the bones of his fingers on the screen. Demonstrating his exciting discovery to his wife, Roentgen directed the ray at his wife's hand for 15 minutes, which resulted in the first X-ray image of a hand with a woman's ring (pictured at right).

Roentgen named his finding the "X" ray, as "X" is the algebraic term for unknown. In 1901, Roentgen was the first person to receive the Nobel Prize in physics.



## Defining the X-ray

X-rays are pictures made by passing radiant beams through an object and capturing the image on the other side. The image is recorded digitally or on film. X-rays produce pictures of inside the human body and are used to view broken bones, problems in the lungs and abdomen, tumors and dental cavities. Solid objects, like bones, absorb X-rays the most and allow less light to pass through, so they appear white on the picture. Fat and bodily organs absorb less light and look gray. Air absorbs least, so lungs appear black.

## Using the X-ray: Radiologic Technology

Before the invention of the X-ray, doctors had to poke, prod and use their sense of touch to find the source of injuries such as bullet wounds and broken bones. The term "radiology" is now used to describe functions using an X-ray. Today's radiology systems are highly sophisticated machines that can detect abnormalities, injury and illness, and in some cases provide therapeutic treatment for diseases.

## Fun Facts



X-ray crystallography, a special x-ray technique) was used to discover the double-helix shape of DNA in the early 1950s.



X-ray has been used on mummies in order to preserve the ancient artifact, yet learn about the diseases suffered by Egyptians and their medical treatments.



Dental records obtained by X-ray can be used as evidence in court proceedings and as a means of determining identification.



Sources:  
<https://www.mentalfloss.com/article/70900/9-transparently-amazing-facts-about-x-rays>  
<https://www.si.edu/spotlight/ancient-egypt/mummies>



# Celebrating Radiologic Technologists During National Rad Tech Week

## Directions

Put your search skills and imaging knowledge to the test! Circle the 27 words listed below. Words may appear horizontally, vertically, diagonally and backwards

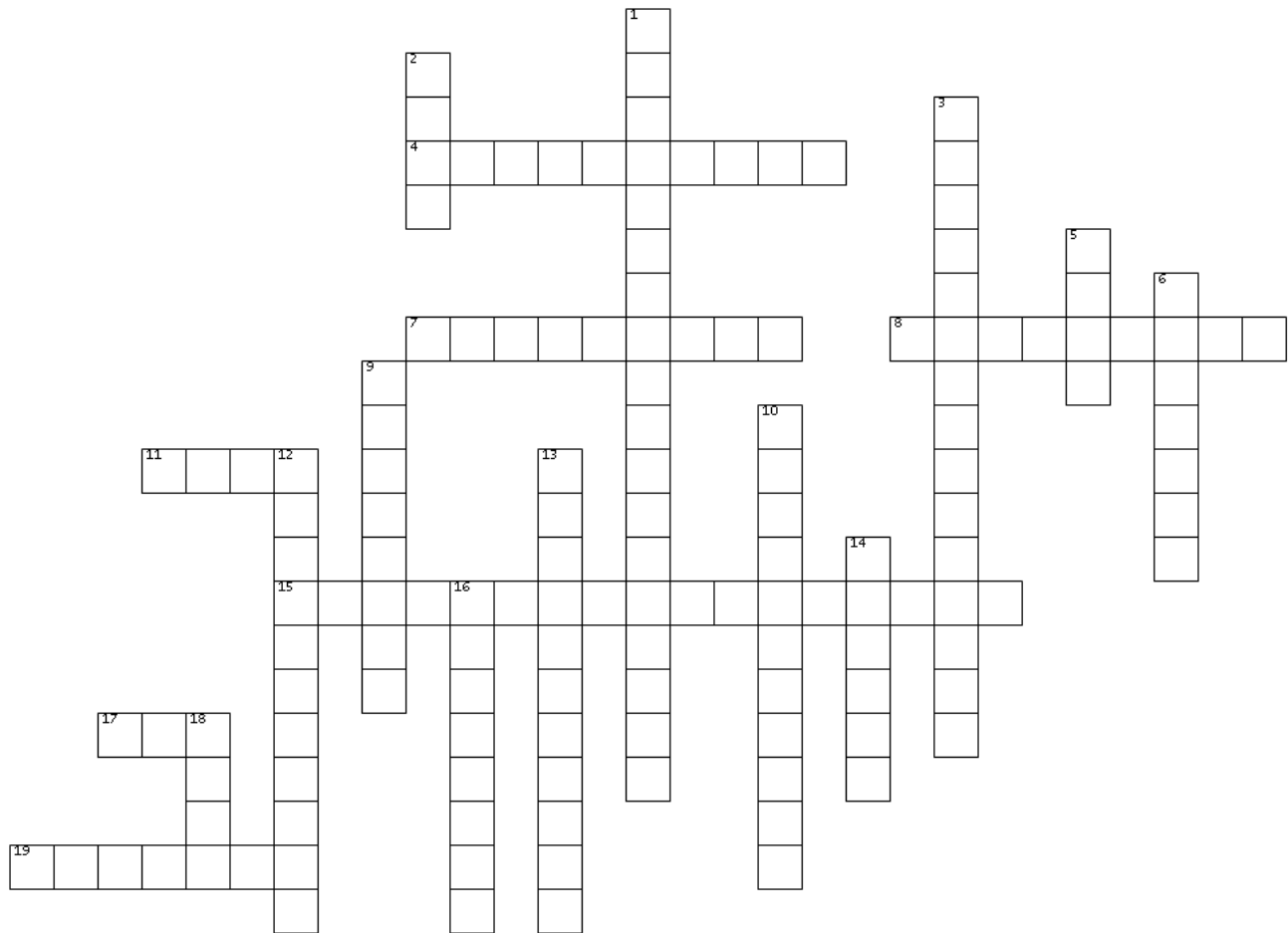
L J X H T I O Y A R J D M C E T G C B Y  
S A V P B R C P W Q T E A Q T N O J E A  
M S N O H A M B A R I U M R F M E D A R  
L A N O R G N I G A M I E T P J I R M X  
X E M U I J H I W H F V S U E V D N G K  
P R C M R T W W B D E G T N E P H H K Y  
R C U G O E N I C I D E M R A E L C U N  
A Y Q N E G L E S Y D E G R X C Y E J O  
D P J I N L R X V T H E X S I G S T Y I  
I L A G T P V A O R N P D P R C O D W T  
O O R A G T S M P C E I A E O W J A F A  
L F D M E F O S E H G T N R R S G R D I  
O T L I N G H X Y I Y E N O G A U R Y D  
G Y E L R O K H T E R P L I C O E R S A  
I E X A C I M A T A E S O D G V N F E R  
S C P C Z P L I E F L U O R O S C O P Y  
T H S I O A R L E T A N I M U L L I S X  
Y M A D S E C W N O X D M K J C A A Z X  
T R X E T U C O N T R A S T K B S N W V  
L P C M N Y W G S S Y O R X D O C P G W

## Word List

- |  |                                      |   |                                     |
|--|--------------------------------------|---|-------------------------------------|
| <input type="checkbox"/> ACCURACY            | <input type="checkbox"/> DIVERGENCE  | <input type="checkbox"/> INTERVENTIONAL   | <input type="checkbox"/> RAD TECH   |
| <input type="checkbox"/> BARIUM              | <input type="checkbox"/> DOSE        | <input type="checkbox"/> NUCLEAR MEDICINE | <input type="checkbox"/> ROENTGEN   |
| <input type="checkbox"/> BEAM                | <input type="checkbox"/> ENERGY      | <input type="checkbox"/> NUCLEAR ENERGY   | <input type="checkbox"/> SCAN       |
| <input type="checkbox"/> BONE                | <input type="checkbox"/> EXPOSURE    | <input type="checkbox"/> MAMMOGRAPHY      | <input type="checkbox"/> SIEVERT    |
| <input type="checkbox"/> CONTRAST            | <input type="checkbox"/> FLUOROSCOPY | <input type="checkbox"/> MEDICAL IMAGING  | <input type="checkbox"/> SONOGRAPHY |
| <input type="checkbox"/> COMPUTED TOMOGRAPHY | <input type="checkbox"/> ILLUMINATE  | <input type="checkbox"/> RADIATION        | <input type="checkbox"/> XRAY       |
| <input type="checkbox"/> DIGITAL             | <input type="checkbox"/> IMAGING     | <input type="checkbox"/> RADIOLOGIST      |                                     |



# Celebrating Rad Techs During National Radiologic Technology Week



## Across

- 4 The uptake of energy from radiation by the tissue or medium through which it passes.
- 7 Having something that will absorb radiation between you and the source of the radiation.
- 8 Radiant energy from waves or subatomic particles.
- 11 A unidirectional emission of electromagnetic radiation or particles.
- 15 A diagnostic radiologic modality, in which the nuclei of the hydrogen atoms in a patient are aligned in a strong, uniform magnetic field, absorb energy from tuned radio pulses, then emit radio signals.
- 17 A basic unit of absorbed radiation dose.
- 19 The personnel working in any discipline or specialty area of radiologic technology.
- 3 A medical specialty that uses radioactive tracers to assess bodily functions and to diagnose and treat disease.
- 5 A unit of measurement for absorbed dose.
- 6 The energy of an explosion that is equivalent to an explosion of 1,000 tons of TNT.
- 9 The international unit of exposure dose for X-rays or gamma rays.
- 10 The process of obtaining an image for diagnostic examination using X-rays.
- 12 A special kind of X-ray technique used to screen for breast cancer.
- 13 A physician trained in the diagnostic and/or therapeutic use of X-rays and radionuclides, radiation physics, and biology.
- 14 A naturally occurring metal; a contrast material.
- 16 A measure of ionization in air caused by X-rays or gamma rays only.
- 18 Radiation absorbed by person's body.

## Down

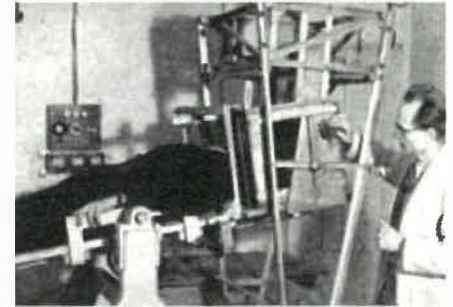
- 1 A method of examining blood vessels utilizing X-rays and injection of iodine-rich contrast material.
- 2 Beams that pass through the body to produce images of anatomical structures.



<b>Across</b>		
4	Absorption	
7	Shielding	
8	Radiation	
11	Beam	
15	Magnetic Resonance	
17	Rad	
18	Rad Tech	
<b>Down</b>		
1	Computed Tomography	
2	X-ray	
3	Nuclear Medicine	
5	Gray	
6	Kiloton	
9	Roentgen	
10	Radiography	
12	Mammography	
13	Radiologist	
14	Barium	
16	Exposure	
18	Dose	

# The History of Ultrasound

- 1826** - Swiss physicist Jean Daniel Colladon measures the speed of sound through water.
- 1842** - Christian Doppler publishes the theory of the Doppler Effect.
- 1880** - Jacques and Pierre Curie discover the piezoelectric effect, which will later transmit ultrasound.
- 1912** - The sinking of the Titanic inspires Paul Langevin and Constantin Chilowsky to invent a high frequency ultrasound machine to detect icebergs.
- 1942** - Karl Dussik, MD, is generally regarded as the first physician to use ultrasound for medical diagnosis (of brain tumors).
- 1947** - George Ludwig, MD, uses ultrasound for the detection of gallstones.
- 1968** - Articulated arm scanners are the most popular format in ultrasound imaging.
- 1973** - Computer processing revolutionizes measurements, as analog scan converters enable images to be displayed in grayscale on a standard television monitor.
- 1982** - Real-time scanner resolution surpasses static image equipment and a new trend begins.
- 1989** - First commercial 3D ultrasound scanner is used. Also, continuous wave and pulsed Doppler, including color flow, are standard.
- 2002** - Diagnostic medical sonography becomes a permanent fixture on the International Space Station (ISS).
- 2013** - With a transducer that plugs into a smartphone or tablet, sonography becomes even more portable.
- 2016** - The FDA approves the use of an ultrasound contrast agent for liver imaging complementing the more than 10 years of use of contrast in cardiac sonography.



*Dussik and his ultrasonic apparatus in 1946.*

Source: Society of Diagnostic Medical Sonography

## What is Ultrasound?

Medical ultrasound uses high-frequency sound waves that pass through the body to create images in real-time. A diagnostic medical sonographer performs an examination by moving a hand-held ultrasound transducer over the skin. The transducer both generates the sound waves and detects them as internal organs and tissues reflect the sound waves.

A computer records the reflected sound waves and a monitor displays the resulting images, which are used to view, monitor and diagnose various medical conditions. Ultrasound is not an ionizing radiation and is considered a safe medical imaging tool when used by a properly trained and certified sonographer.

## About Medical Ultrasound Awareness Month

MUAM is held annually in October to create awareness of the role diagnostic medical sonographers play in the medical community and to educate the public about medical ultrasound and its many uses in healthcare.



800-228-5462 | 402-334-5000 | [www.cassling.com](http://www.cassling.com) | 13808 F Street | Omaha, NE 68137

# Celebrating Sonographers During Ultrasound Awareness Month

## Directions

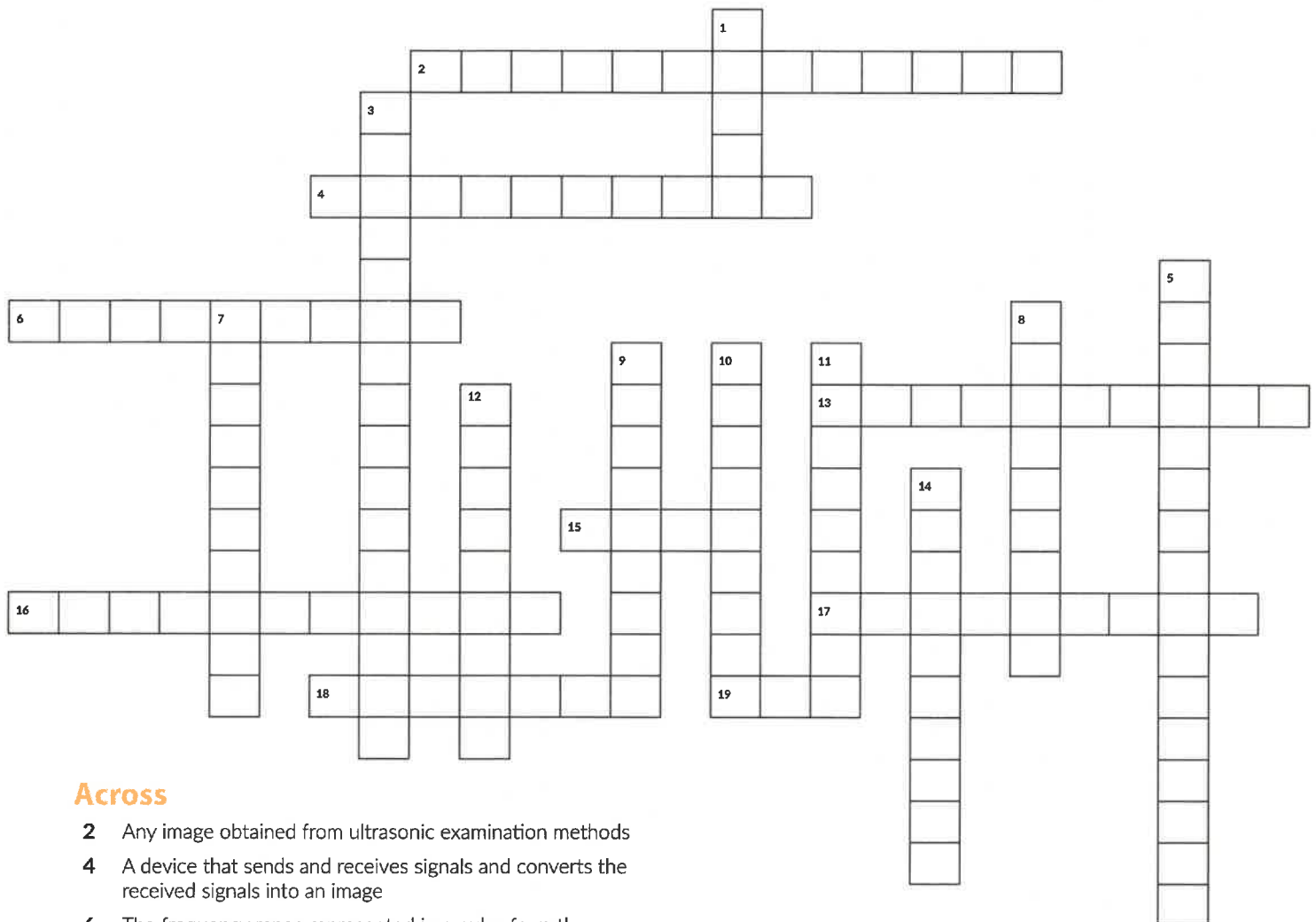
Put your search skills and imaging knowledge to the test! Circle the 19 words listed below. Words may appear horizontally, vertically, diagonally and backwards.

E C G C S L E T N E M T A E R T F Q  
F K R P H H R E W U D H E E T T C E  
E S R M R U G R K A O D C W S D I J  
D I G G U K L Y E S V U E D N N T L  
N W M A V Y I T O H D E I E K C S T  
S O N O G R A M R S P L F I P X O D  
B H R S X L J M N A J A B O D S N S  
G U B B F B V A C C S S R B R S G C  
T C E F F E R E L P P O D G O M A G  
E G A M I T Q Y G A J S U U O E I R  
T E C H N O L O G Y C I N N M N D A  
S T A X X H H F K A C D T I D G O Y  
A R R G Y X H X N Q W A T Z Q G N S  
R O D I B V C N V A M L R C U K G C  
T P I B L T E M V O A O Z U N M B A  
N J A W V R W E M E A H K N C T A L  
O C C H V N M R R J G C R J X C A E  
C K B G A Q E Y C X X E C R M S A H

## Word List

- |   |                                     |                                      |                                     |
|---|-------------------------------------|--------------------------------------|-------------------------------------|
| <input type="checkbox"/> ACCURACY       | <input type="checkbox"/> ECHO       | <input type="checkbox"/> SCANNER     | <input type="checkbox"/> TRANSDUCER |
| <input type="checkbox"/> CARDIAC        | <input type="checkbox"/> EKG        | <input type="checkbox"/> SPEED       | <input type="checkbox"/> TREATMENT  |
| <input type="checkbox"/> CONTRAST       | <input type="checkbox"/> GRAY SCALE | <input type="checkbox"/> SONOGRAPHER | <input type="checkbox"/> TECHNOLOGY |
| <input type="checkbox"/> DIAGNOSTIC     | <input type="checkbox"/> IMAGE      | <input type="checkbox"/> SONOGRAM    | <input type="checkbox"/> ULTRASOUND |
| <input type="checkbox"/> DOPPLER EFFECT | <input type="checkbox"/> REAL TIME  | <input type="checkbox"/> SOUND WAVE  |                                     |

# Celebrating Sonographers During Ultrasound Awareness Month



## Across

- 2 Any image obtained from ultrasonic examination methods
- 4 A device that sends and receives signals and converts the received signals into an image
- 6 The frequency range represented in a pulse from the transducer
- 13 Describes an area that has decreased brightness of its echoes relative to an adjacent structure
- 15 In 1980, ASUTS was renamed to this
- 16 A specialist in the use of Sonography; a person who performs sonography examinations
- 17 A lesion or tumor that produces an echo of the same strength as that of the surrounding structures or tissues
- 18 The echo pattern within an organ
- 19 A recording of the electrical activity of the heart

## Down

- 1 Artifactual echoes resulting from too much gain rather than echoes from true anatomic structures

- 3 In 1842, he published the theory of the Doppler Effect
- 5 A diagnostic test that uses ultrasound waves to make images of the heart chambers, valves and surrounding structures
- 7 Distance a wave travels in a single cycle
- 8 The number of times in a given interval of time that a particular action occurs
- 9 A wave that transmits sound
- 10 Display mode in which echo intensity is recorded as degrees of brightness or shades of gray
- 11 Failure of the sound beam to pass through an object
- 12 1,000 hertz
- 14 A non-invasive medical procedure that uses the echoes of high-frequency sound waves to construct an image of internal organs or body structures

<b>Across</b>		
2	ultrasonogram	
4	transducer	
6	bandwidth	
13	hypoechoic	
15	SDMS	
16	sonographer	
17	isoechoic	
18	texture	
19	EKG	
<b>Down</b>		
1	noise	
3	christian Doppler	
5	echocardiography	
7	wavelength	
8	frequency	
9	soundwave	
10	grayscale	
11	shadowing	
12	kilohertz	
14	sonography	