

ALLIED HEALTH | BACHELOR OF SCIENCE IN MEDICAL DIAGNOSTIC IMAGING (ULTRASOUND)

Diagnostic Medical Sonography involves the use of high frequency sound waves to image most structures within the human body. A special device, known as a transducer, is placed in contact with the patient's skin. The transducer produces pulses of ultrasound which are sent into the body. The high frequency 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 and superficial structures, obstetrics/gynecology, breast, neurosonography, ophthalmology, musculoskeletal, vascular, adult echocardiography and pediatric 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 high technology instrumentation 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 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.

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.

CURRICULUM:

The Department of Allied Health has expanded its course offerings with the addition of a dedicated ultrasound curriculum in the Medical Diagnostic Imaging Program. The dedicated ultrasound track 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. In addition, students have the opportunity to apply what they learn in the corresponding laboratory sessions prior to placement of the assigned clinical experience. Once students demonstrate competence in simulated procedures, students will spend 12 months performing ultrasound procedures at one of the clinical affiliates under the supervision of one or more registered sonographers. A significant component of the ultrasound track is the extensive clinical experience. Students will be exposed to a large volume and variation of examinations to obtain the skills necessary to perform in a specific ultrasound specialty.

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.

ADMISSION AND APPLICATION REQUIREMENTS:

Students applying for admission to the Diagnostic Medical Sonography Program must meet one of the following criteria:

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 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/math

All candidates 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:

- BIOL 100 & 102 Human Biology and Lab or Equivalent
- BIOL 230 Human Anatomy and Physiology I with Lab or equivalent
- BIOL 231 Human Anatomy and Physiology II with Lab or equivalent
- BIOL 245 Medical Terminology
- MATH 110 College Algebra
- ENG 101 English Composition I
- ENG 102 English Composition II
- COMM 100 Introduction to Oral Communication or equivalent
- MDI 428 Principles of Diagnostic Medical Sonography - only offered at FHSU, available on campus in the fall and online in the spring

The detailed sequenced curriculum begins each Summer semester:

Program Summary

Code	Title	Hours
	General Education	34
	Cognate	38
	Program (Major) Core	53

Open Electives ¹	1
Total Hours	126

¹ Open electives are the credit hours required to reach a minimum of 120 total hours and 45 upper-level hours. The number listed assumes all courses are completed at FHSU as listed. This number may vary if students transfer courses, or have individual substitutions allowed.

Students should speak with their advisor if either situation applies to determine if the number will vary, and to ensure they enroll in a minimum of 45 upper-level hours.

Students entering within 1 year of high school graduation will take UNIV 101 Freshman Seminar and may apply that hour in the open elective category.

Program Requirements

General Education

All undergraduate degrees require completion of the Kansas Systemwide General Education (<https://catalog.fhsu.edu/general-education/>).

Courses identified with ^{GE} on this page may satisfy a general education requirement in addition to the identified degree requirement. Students who apply a degree requirement to satisfy a general education requirement will typically add an equal number of hours to the the university elective category. This flexibility may allow you to complete a minor or certificate within the 120 hour degree. Transfer students and students majoring in programs with approved exceptions (<https://www.fhsu.edu/general-education/documents/fhsu-gen-ed-transfer-exceptions-explainer1.pdf>) are especially encouraged to select these courses in completing General Education requirements to maximize the likelihood of completing the degree with 120 credit hours.

Code	Title	Hours
General Education		
34-35		
Code Title Hours		
Cognate		
COMM 100	Fundamentals of Oral Communication	3
ENG 101	English Composition I	3
ENG 102	English Composition II	3
HHP 200	Personal Wellness	3
INF 101	Introduction to Computer Information Systems	3
PHYS 102	Physical Science	3
BIOL 100 & BIOL 102	Human Biology and Laboratory Experiences in Biology	4
BIOL 230 & 230L	Anatomy and Physiology I and Anatomy and Physiology I Laboratory	4
BIOL 231 & 231L	Anatomy and Physiology II and Anatomy and Physiology II Laboratory	4
BIOL 245	Medical Terminology	2
MATH 110	College Algebra	3
MDI 428	Principles of Diagnostic Medical Sonography	4
Total Hours		39

Code	Title	Hours
Program (Major) Core		
DMS 400	Diagnostic Medical Sonography I	1
DMS 401	Diagnostic Medical Sonography II	1
DMS 402	Ultrasound Physics and Instrumentation I	2
DMS 403	Ultrasound Physics and Instrumentation II	2
DMS 404	Abdominal Ultrasound Procedures I	2
DMS 405	Abdominal Ultrasound Procedures II	2
DMS 406	Obstetric/Gynecology Ultrasound Procedures I	2
DMS 407	Obstetric/Gynecology Ultrasound Procedures II	2
DMS 408	Vascular Ultrasound Procedures I	2
DMS 409	Vascular Ultrasound Procedures II	2
DMS 410	General Ultrasound Procedures I Laboratory	2
DMS 411	General Ultrasound Procedures II Laboratory	2
DMS 412	Vascular Ultrasound Procedures I Laboratory	2
DMS 413	Vascular Ultrasound Procedures II Laboratory	2
DMS 414	Breast Ultrasound Procedures	2
DMS 415	Neurosonography	1
DMS 416	Superficial Ultrasound Procedures	1
DMS 417	Clinical Sonography I	2
DMS 418	Clinical Sonography II	2
DMS 419	Clinical Sonography III	2
DMS 420	Advanced Ultrasound Seminar I	1
DMS 430	DMS Clinical Experience I	4
DMS 431	DMS Clinical Experience II	6
DMS 432	DMS Clinical Experience III	6
Total Hours		53

Degree Requirements

Code	Title	Hours
All bachelor degrees require:		
GPA of 2.0 on FHSU courses & 2.0 on all coursework (Higher program requirements prevail over the 2.0 when set)		
A minimum of 30 hours earned from FHSU with a grade of D, C, B, or A		
Successful completion of an upper division Writing and Information Literacy course (Most majors contain a course designated)		
A minimum of 45 hours of recognized upper division credit		
A minimum of 120 hours of recognized college credit		

Degree Maps

The detailed sequenced curriculum begins each Fall semester.

Course	Title	Hours
First Year		
Fall		
DMS 400	Diagnostic Medical Sonography I	1
DMS 402	Ultrasound Physics and Instrumentation I	2

DMS 404	Abdominal Ultrasound Procedures I	2
DMS 406	Obstetric/Gynecology Ultrasound Procedures I	2
DMS 410	General Ultrasound Procedures I Laboratory	2
DMS 408	Vascular Ultrasound Procedures I	2
DMS 412	Vascular Ultrasound Procedures I Laboratory	2

Hours 13

Spring

DMS 401	Diagnostic Medical Sonography II	1
DMS 403	Ultrasound Physics and Instrumentation II	2
DMS 405	Abdominal Ultrasound Procedures II	2
DMS 407	Obstetric/Gynecology Ultrasound Procedures II	2
DMS 411	General Ultrasound Procedures II Laboratory	2
DMS 409	Vascular Ultrasound Procedures II	2
DMS 413	Vascular Ultrasound Procedures II Laboratory	2

Hours 13

Summer

DMS 430	DMS Clinical Experience I	4
DMS 417	Clinical Sonography I	2

Hours 6

Second Year

Fall

DMS 431	DMS Clinical Experience II	6
DMS 418	Clinical Sonography II	2
	Ultrasound Imaging of Superficial Structures	1
DMS 415	Neurosonography	1
	Ultrasound Imaging of the Breast	2

Hours 12

Spring

DMS 432	DMS Clinical Experience III	6
DMS 419	Clinical Sonography III	2
DMS 420	Advanced Ultrasound Seminar I	3

Hours 11

Total Hours 55

Code	Title	Hours
Total Credits		
	Didactic	33
	Clinical Experience	22
Total Hours		55

Academic Degree Maps are term-by-term sample course plans that specify milestones, courses, and special requirements that are necessary for facilitating on-time completion. Degree Maps are *examples* and are not prescriptive. Individualized choices such as concentration options, transfer credits, optional minors, advisory programs (certificates), etc. can alter the recommended coursework. Course offerings are subject to change. Students should consult with their academic advisors for additional guidance on course planning.

To determine courses to take in the directed choices (often listed as Program Elective Course) and directed elective course blocks see the overview tab for courses. To locate approved courses in General Education areas (Undergraduate Programs) see the general education section (<https://catalog.fhsu.edu/general-education/>) of the catalog.

The undergraduate course maps typically advise the most efficient route for students to complete the general education requirements. Courses that are required in the major may be listed as fulfilling relevant general education requirements. This will result in more open elective course hours in some maps than is listed on the degree overview page.

Additional Admission Requirements General Admission Requirements to the College

Applicants to the Medical Diagnostic Imaging Program's Diagnostic Medical Sonography component must meet the general admission requirements to Fort Hays State University. Students may contact the admission office for an application or can apply online.

Admission and Application Requirements

Students applying for admission to the Diagnostic Medical Sonography Program must meet one of the following criteria:

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

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All candidates 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:

Code	Title	Hours
BIOL 100 & BIOL 102	Human Biology and Laboratory Experiences in Biology (or equivalent)	4
BIOL 230	Anatomy and Physiology I (with lab or equivalent)	3
BIOL 231	Anatomy and Physiology II (with lab or equivalent)	3
BIOL 245	Medical Terminology	2
MATH 110	College Algebra	3
ENG 101	English Composition I	3
ENG 102	English Composition II	3
COMM 100	Fundamentals of Oral Communication (or equivalent)	3
MDI 428	Principles of Diagnostic Medical Sonography ¹	4

¹ Only offered at FHSU, available on campus in the fall and online in the spring.

Recommended course: MDI 410 Cross-Sectional Anatomy: Normal

Accreditation Program Accreditation

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