

# RADIOLOGIC TECHNOLOGY (526)

Information provided includes course descriptions by subject only. For complete 2024-2025 programs/academic plans, please refer to Academic Programs (<http://catalog.blackhawk.edu/academics/>).

## 526-130 Introduction to Diagnostic Medical Sonography

**Credits:** 1-2

This course introduces the student to the history of ultrasound and the evolution of its medical applications. Topics include licensure, use and maintenance of ultrasound equipment, ergonomics, communication and critical thinking skills, and the responsibilities of Diagnostic Medical Sonographers in the workplace. Program policy and procedures, program curriculum and student rights and responsibilities are also included in this course.

**Aid Code:** 10 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** 501-101 and 801-136 and 804-134 and 806-139 and 806-177

Complete Course Listing

## 526-131 DMS General Procedures 1

**Credits:** 1-4

This course prepares the Diagnostic Medical Sonography/Vascular Technology student to perform ultrasound evaluations of the liver, gallbladder, biliary tree. The abdominal portion of this course will cover the anatomy, physiology, and the sonographic appearance of the peritoneal space and chest, prevertebral vessels, biliary, liver and pancreas, spleen, adrenal glands and kidneys. Thyroid and male pelvis (scrotum, penis and prostate) normal and abnormal anatomy, physiology and sonographic appearance is also within this course. The laboratory portion of this course permits the student to simulate ultrasound examinations of the abdomen, thyroid and male pelvis for the purposes of identification of structures, and to reinforce scanning technique in preparation for performing these examinations in the clinical setting.

**Aid Code:** 10 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** (526-130)

**Co-requisites:** (526-132) and (526-134) and (526-136) and (526-205)

Complete Course Listing

## 526-132 DMS Clinical 1

**Credits:** 2

In the first clinical course for the Diagnostic Medical Sonography Program, students become acclimated to a simulated clinical environment. Patient care is reviewed in both the classroom and simulated scenarios. Students begin the performance of Diagnostic Medical Sonography procedures under the direction of program faculty in accordance with all program and institutional requirements.

**Aid Code:** 10 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** (526-130)

**Co-requisites:** (526-131) and (526-134) and (526-136) and (526-205)

Complete Course Listing

## 526-133 DMS General Procedures 2

**Credits:** 1-4

This course prepares the Diagnostic Medical/Vascular Technology student to perform ultrasound evaluations of the female pelvis and gravid uterus. The gynecological portions of this course will cover normal anatomy and physiology of the female pelvis including the bony pelvis, vascular anatomy, muscles, and ligaments, physiology of the menstrual cycle and normal anatomy and pathology of the pediatric and postmenopausal pelvis. The obstetrics portion will cover the physiology of pregnancy, embryology, spermatogenesis, oogenesis, and the development of the fetus as visualized on ultrasound. This course will give the sonography student obstetrical ultrasound protocols and familiarize the student with normal fetal anatomy as demonstrated on ultrasound. The laboratory portion of this course permits the student to simulate ultrasound examinations of obstetric and non-gravid female pelvis for the purposes of identification of structures, and to reinforce scanning technique in preparation for performing these examinations in the clinical setting.

**Aid Code:** 10 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** (526-131) and (526-134) and (526-136) and (526-205)

**Co-requisites:** (526-139) and (526-137)

Complete Course Listing

## 526-134 DMS Clinical 2

**Credits:** 1-2

The second clinical course for the Diagnostic Medical Sonography Program builds on the knowledge and skills acquired during the first clinical course. Students continue to perform basic sonographic examinations of the abdomen, pelvis, OB/GYN, and vascular structures under the direct supervision of a registered sonographer, and begin to perform examinations with increased independence.

**Aid Code:** 10 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Co-requisites:** (526-131 and 526-132 and 526-136 and 526-205)

Complete Course Listing

### 526-135 DMS General Procedures 3

**Credits:** 1-3

This course prepares Diagnostic Medical Sonography/Vascular Technology student to continue learning obstetrics by expanding into abnormal pregnancies. The obstetrical portion will cover fetal anomalies as visualized on ultrasound during the first trimester, second trimester, and third trimester. This course will cover abnormal fetal development to include discussion of pathology, pathophysiology, measurements, sonographic appearances and technique, Doppler patterns in disease processes and teratogens. The laboratory portion of this course permits the student to simulate ultrasound examinations of anatomical structures for the purposes of identification of structures and pathology, and to reinforce scanning technique in preparation for performing these examinations in the clinical setting.

**Aid Code:** 10 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** (526-133) and (526-137) and (526-139)

**Co-requisites:** (526-140)

[Complete Course Listing](#)

### 526-136 DMS Physics I

**Credits:** 1-3

This course explores the principles of general wave physics as they apply to the application of Diagnostic Medical Sonography. The student will learn the physical factors that make the production necessary for the performance of diagnostic sonographic examinations. Topics also include transducer construction and operation, components of the ultrasound machine, display modes, image recording systems.

**Aid Code:** 10 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** (526-130)

**Co-requisites:** (526-131) and (526-132) and (526-205)

[Complete Course Listing](#)

### 526-137 DMS Clinical 3

**Credits:** 0.5-2

In the third clinical education course for the Diagnostic Medical Sonography Program, students continue the process of performing routine examinations of the abdomen, pelvis, small parts, OB/GYN, and vascular structures more independently, continuing the process of attaining clinical competency in these various procedures.

**Aid Code:** 10 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** (526-131) and (526-134) and (526-136) and (526-205)

**Co-requisites:** (526-133) and (526-139) and (526-206)

[Complete Course Listing](#)

### 526-138 DMS General Procedures 4

**Credits:** 1-4

This final general DMS procedure course permits the student to attain mastery of all sonographic anatomy, physiology, and pathophysiology of all anatomical parts and systems of the abdomen. The anatomy, physiology, pathology and pathophysiology of the breast will be discussed along with sonographic visualization and protocol. The abdomen and abdominal vasculature pathology and pathophysiology will be studied including the gastrointestinal tract and abdominal wall. The laboratory portion of this course permits the student to attain mastery of scanning techniques of all ultrasound examinations of anatomical structures, to include abdomen, breast, small-parts and ob/gyn.

**Aid Code:** 10 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** (526-135) and (526-140)

**Co-requisites:** (526-245) and (526-142)

[Complete Course Listing](#)

### 526-139 DMS Physics 2 Instrumentation

**Credits:** 1-2

This course continues building on the principles of general wave physics as they apply to the application of Diagnostic Medical Sonography. Topics include Doppler applications, imaging artifacts, and performance & safety. Biological effects of ultrasound energy are also explored. SPI registry review is the final component of this course.

**Aid Code:** 10 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** (526-131) and (526-134) and (526-136) and (526-205)

**Co-requisites:** (526-133) and (526-206) and (526-137)

[Complete Course Listing](#)

### 526-140 DMS Clinical 4

**Credits:** 0.05-1

In the fourth clinical education course for the Diagnostic Medical Sonography Program, students work towards attaining mastery of all ultrasound procedures of the abdomen, pelvis, small parts, OB/GYN, and vascular structures by performing these examinations with increased independence.

**Aid Code:** 10 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** (526-133) and (526-137) and (526-139) and (526-206)

**Co-requisites:** (526-135)

[Complete Course Listing](#)

**526-142 DMS Clinical 5****Credits:** 1-2

In the fifth clinical education course for the Diagnostic Medical Sonography Program, students continue the process of performing routine examinations of the abdomen and pelvis, small parts, OB/GYN, and vascular structures. Students continue the process of exam competency while under the supervision of a registered sonographer.

**Aid Code:** 10 - undefined.**Restrictions:** Restricted to students admitted to Program.**Pre-requisites:** (526-135) and (526-140)**Co-requisites:** (526-138) and (526-245)

Complete Course Listing

**526-144 DMS Clinical 6****Credits:** 1-2

In this final clinical education course for the Diagnostic Medical Sonography Program, the student completes the process of becoming competent in all abdominal, small parts, pelvis, OB/GYN, and vascular sonographic procedures, and can perform all examinations required for graduation independently.

**Aid Code:** 10 - undefined.**Restrictions:** Restricted to students admitted to Program.**Pre-requisites:** (526-138) and (526-142) and (526-245)**Co-requisites:** (526-145) and (526-246) and (526-247)

Complete Course Listing

**526-145 DMS Registry Review****Credits:** 1-2

This course is a review of all program curricula and musculoskeletal ultrasound, preparing the student to successfully sit for the certification examinations in Diagnostic Medical Sonography prepared by the American Registry of Diagnostic Medical Sonographers (ARDMS,) or the examination in Ultrasound prepared by the American Registry of Radiologic Technologists (ARRT). Various methods of preparation, including the use of mock examinations will be utilized.

**Aid Code:** 10 - undefined.**Restrictions:** Restricted to students admitted to Program.**Pre-requisites:** (526-138) and (526-142) and (526-245)**Co-requisites:** (526-144) and (526-246) and (526-247)

Complete Course Listing

**526-149 Radiographic Procedures 1****Credits:** 1-5

Prepares radiography students to perform routine radiographic procedures of the chest, abdomen, upper and lower extremities, and pelvis. Course includes considerations for mobile and trauma procedures. Students apply knowledge of human anatomy to position the patient correctly to achieve and evaluate optimal diagnostic quality images which includes identifying radiographically significant anatomy.

**Aid Code:** 10 - undefined.**Restrictions:** Restricted to students admitted to Program.**Pre-requisites:** (526-158)**Co-requisites:** (526-159) and (526-192)

Complete Course Listing

**526-158 Introduction to Radiography****Credits:** 1-3

Introduces students to the role of radiography in health care. Students apply healthcare communication techniques. Students are introduced to legal and ethical considerations, patient interactions and management, patient and provider safety, and pharmacology.

**Aid Code:** 10 - undefined.**Restrictions:** Restricted to students admitted to Program.**Pre-requisites:** (801-136 and 806-177 and 501-101 and 806-179)**Co-requisites:** (526-168)

Complete Course Listing

**526-159 Radiographic Imaging****Credits:** 1-3

Introduces radiography students to the process and components of imaging. Students determine the factors that affect image quality including contrast, receptor exposure, spatial resolution and distortion.

**Aid Code:** 10 - undefined.**Restrictions:** Restricted to students admitted to Program.**Pre-requisites:** (526-158)**Co-requisites:** (526-149) and (526-192)

Complete Course Listing

**526-168 Radiography Clinical 1: Introduction****Credits:** 1-2

This on-campus laboratory-based course prepares the student for placement at a clinical affiliate in the following semester. The course provides expanded hands-on instruction and assessment of many of the topics taught concurrently in Introduction to Radiography including patient history and assessment, patient lifting and moving, infection control practices, and radiation safety practices. Students also receive instruction in the use of radiographic equipment available on campus.

**Aid Code:** 10 - undefined.**Restrictions:** Restricted to students admitted to Program.**Co-requisites:** (526-158)

Complete Course Listing

**526-174 ARRT Certification Seminar****Credits:** 1-2

Provides preparation for the for the national certification examination prepared by the American Registry of Radiologic Technologists. Emphasis is placed on the weak areas of the individual students. Simulated registry examinations are utilized.

**Aid Code:** 10 - undefined.**Restrictions:** Restricted to students admitted to Program.**Pre-requisites:** (526-194)**Co-requisites:** (526-189) and (526-197) and (526-198)

Complete Course Listing

#### **526-189 Radiographic Pathology**

**Credits:** 0.05-1

Prepares radiography students to determine the basic radiographic manifestations of pathological conditions. Students classify trauma related to site, complications, and prognosis and locate the radiographic appearance of pathologies.

**Aid Code:** 10 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** (526-231)

**Co-requisites:** (526-197) and (526-174) and (526-198)

Complete Course Listing

#### **526-190 Radiography Clinical 5**

**Credits:** 1-2

The fifth clinical course further prepares radiography students to perform radiologic procedures on patients increasing amounts of indirect supervision with evolving critical thinking skills in independent judgement. Students apply radiation protection and standard precautions in the production of radiographs in a health care setting while adhering to legal and ethical guidelines. Students are encouraged to demonstrate independent judgment in the performance of clinical competencies.

**Aid Code:** 10 - undefined.

**Pre-requisites:** (526-199)

**Co-requisites:** (526-231) and (526-195)

Complete Course Listing

#### **526-191 Radiographic Procedures 2**

**Credits:** 1-5

Prepares radiography students to perform routine radiographic procedures of the skull, facial bones, sinus, spine, bony thorax, gastrointestinal, urological, and special studies. Course includes considerations for contrast, mobile, surgical and trauma procedures. Students apply knowledge of human anatomy to position the patient correctly to achieve and evaluate optimal diagnostic quality images which includes identifying radiographically significant anatomy.

**Aid Code:** 10 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** (526-149)

**Co-requisites:** (526-230) and (526-193)

Complete Course Listing

#### **526-192 Radiography Clinical 2**

**Credits:** 1

The second radiography clinical course is the first placed at one of the program's clinical affiliates. Students begin to perform radiologic procedures on patients with considerable direct and limited indirect supervision. Students apply radiation protection and standard precautions in the production of radiographic images in a health care setting while adhering to legal and ethical guidelines. An emphasis of the course is the development of communication and critical thinking skills appropriate to the clinical setting.

**Aid Code:** 10 - undefined.

**Pre-requisites:** (526-168)

**Co-requisites:** (526-149) and (526-159)

Complete Course Listing

#### **526-193 Radiography Clinical 3**

**Credits:** 1

The third radiography clinical continues the process of student performance on radiologic procedures on patients with varying degrees of direct and indirect supervision. Students apply radiation protection and standard precautions in the production of radiographic images in a health care setting while adhering to legal and ethical guidelines. An emphasis of the course is the demonstration of communication and critical thinking skills appropriate to the clinical setting.

**Aid Code:** 10 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** (526-192)

**Co-requisites:** (526-191) and (526-230)

Complete Course Listing

#### **526-194 Imaging Equipment Operation**

**Credits:** 1-3

Introduces radiography students to the principles and application of x-ray technology. Students analyze how x-rays are produced and determine the corrective actions necessary for common equipment malfunctions.

**Aid Code:** 10 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** (526-230 or 526-170)

**Co-requisites:** (526-195) and (526-190)

Complete Course Listing

#### **526-195 Radiographic Image Analysis**

**Credits:** 1-2

Prepares radiography students to analyze radiographic images for quality. Students apply quality control tests to determine the causes of image problems including equipment malfunctions and procedural errors.

**Aid Code:** 10 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** (526-191)

**Co-requisites:** (526-231) and (526-190)

Complete Course Listing

**526-197 Radiation Protection and Biology****Credits:** 1-3

Prepares radiography students to protect themselves and others from exposure to radioactivity. Students examine the characteristics of radiation and how radiation affects cell biology. Students apply standards and guidelines for radiation exposure.

**Aid Code:** 10 - undefined.**Restrictions:** Restricted to students admitted to Program.**Pre-requisites:** (526-194)**Co-requisites:** (526-189) and (526-174) and (526-198)

Complete Course Listing

**526-198 Radiography Clinical 6****Credits:** 2

The final radiography clinical course requires students to integrate and apply all knowledge learned in previous courses to the production of high-quality images in the clinical setting primarily under indirect supervision. Students apply radiation protection and standard precautions in the production of images in a health care setting while adhering to legal and ethical guidelines. Students are encouraged to demonstrate independent judgment in the performance of clinical competencies.

**Aid Code:** 10 - undefined.**Restrictions:** Restricted to students admitted to Program.**Pre-requisites:** (526-190)**Co-requisites:** (526-189) and (526-197) and (526-174)

Complete Course Listing

**526-199 Radiography Clinical 4****Credits:** 1

The fourth clinical radiography marks the first as second year students and continues the process of student performance on radiologic procedures on patients. There is continued transition from amounts direct and indirect supervision as competency performance increases. Students apply radiation protection and standard precautions in the production of radiographic images in a health care setting while adhering to legal and ethical guidelines. Students are encouraged to demonstrate independent judgment in the performance of clinical competencies.

**Aid Code:** 10 - undefined.**Restrictions:** Restricted to students admitted to Program.**Pre-requisites:** (526-193)

Complete Course Listing

**526-205 DMS Vascular 1****Credits:** 1-2

This course introduces the Diagnostic Medical Sonography student to the principles of vascular sonographic imaging. Topics include vascular physics, terminology, hemodynamics, and cerebrovascular applications of ultrasound, and normal, abnormal and pathologic sonographic presentation of vascular anatomy. The laboratory portion of this course permits the student to simulate ultrasound examinations of anatomical structures for the purposes of identification of structures and pathology, and to reinforce scanning technique in preparation for performing these examinations in the clinical setting.

**Aid Code:** 10 - undefined.**Restrictions:** Restricted to students admitted to Program.**Pre-requisites:** (526-130)**Co-requisites:** (526-132) and (526-131) and (526-134) and (526-136)

Complete Course Listing

**526-206 DMS Vascular 2****Credits:** 1-2

This is the second vascular course designed to prepare the Diagnostic Medical Sonography student to perform ultrasonic evaluation of vascular sonographic structures. Topics include vascular anatomy, physiology, and terminology related to imaging of arterial, venous peripheral vascular structures. The laboratory portion of this course permits the student continued and advanced opportunity to simulate ultrasound examinations of anatomical structures for the purposes of identification of structures and pathology, and to reinforce scanning technique in preparation for performing these examinations in the clinical setting.

**Aid Code:** 10 - undefined.**Restrictions:** Restricted to students admitted to Program.**Pre-requisites:** (526-131) and (526-134) and (526-136) and (526-205)**Co-requisites:** (526-133) and (526-137) and (526-139)

Complete Course Listing

**526-230 Advanced Radiographic Imaging****Credits:** 1-2

Explores the factors that impact image acquisition, display, archiving and retrieval. Guidelines for selecting exposure factors and evaluating images within digital systems are discussed. Principles of digital system quality assurance and maintenance are presented.

**Aid Code:** 10 - undefined.**Restrictions:** Restricted to students admitted to Program.**Pre-requisites:** (526-159)**Co-requisites:** (526-191) and (526-193)

Complete Course Listing

**526-231 Imaging Modalities****Credits:** 1-2

Introduces radiography students to imaging modalities with an emphasis in computed tomography and cross-sectional anatomy.

**Aid Code:** 10 - undefined.**Restrictions:** Restricted to students admitted to Program.

Complete Course Listing

### **526-245 DMS Vascular 3**

**Credits:** 1-3

This is the third vascular course designed to prepare the Diagnostic Medical Sonography student to perform ultrasonic evaluation of vascular sonographic structures. Topics include and continuation of peripheral vascular structures and vascular anatomy, physiology, and terminology related to imaging of abdominal vascular structures. The laboratory portion of this course permits the student continued and advanced opportunity to simulate ultrasound examinations of anatomical structures for the purposes of identification of structures and pathology, and to reinforce scanning technique in preparation for performing these examinations in the clinical setting.

**Aid Code:** 10 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** (526-135) and (526-140)

**Co-requisites:** (526-138) and (526-142)

Complete Course Listing

### **526-246 DMS Vascular 4**

**Credits:** 0.5-1

This is the fourth vascular course designed to prepare the Diagnostic Medical Sonography student to perform ultrasonic evaluation of vascular sonographic structures. Topics include US guided procedures, surgery, QA, statistical testing and lab accreditation. This courses will also cover VT registry review and board preparation.

**Aid Code:** 10 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** (526-138) and (526-245) and (526-142)

**Co-requisites:** (526-144) and (526-247) and (526-145)

Complete Course Listing

### **526-247 DMS Capstone Seminar**

**Credits:** 0.5-1

A capstone course that prepares the student for the transition from student to staff sonographer. Current issues that challenge the entry-level sonographer along with new and future sonographic techniques will be discussed. Other topics covered include resume writing, job interviewing, networking and professional development.

**Aid Code:** 10 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** (526-138) and (526-245) and (526-142)

**Co-requisites:** (526-144) and (526-246) and (526-145)

Complete Course Listing