

# DIAGNOSTIC MEDICAL SONOGRAPHY (DMS)

**Program Goals:** To prepare competent entry-level sonographers in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains for the abdominal-extended and obstetrics and gynecology sonography concentrations.

**Program Learning Outcomes:**

- Students demonstrate essential knowledge, technical skills, analytical skills, interpersonal skills, and diagnostic abilities within the scope of practice for diagnostic medical sonography.
- Students demonstrate essential knowledge and values related to professional demeanor, including the implementation of confidentiality and privacy in the practice of diagnostic medical sonography.

## DMS 50A • DIAGNOSTIC MEDICAL SONOGRAPHY PRINCIPLES & PROTOCOLS

<b>Units:</b>	4
<b>Hours:</b>	4 lecture, 1 laboratory per week (60 total per quarter)
<b>Prerequisite:</b>	BIOL 40A, 40B and 40C.
<b>Corequisite:</b>	DMS 50B, 60A and 72A.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

An intensive course about fundamentals of ultrasound principles, protocols, and scanning involving the major abdominal organ structures, gynecology, obstetrics, and vessels. Sonographic terminology, orientation and descriptions of normal and abnormal structures. It is assumed the student has a thorough knowledge of gross and sectional anatomy. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

## DMS 50B • SONOGRAPHY & PATIENT CARE

<b>Units:</b>	2
<b>Hours:</b>	2 lecture per week (24 total per quarter)
<b>Prerequisite:</b>	AHS 52 or equivalent medical terminology course.
<b>Corequisite:</b>	DMS 50A, 60A and 72A.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

Defines the student sonographer's role on the medical team. It prepares the student to enter the clinical environment, including instruction in sonographer safety and ergonomics. Legal, ethical, legislative and regulatory issues, including scope of practice and standards. Patient care techniques, clinical assessment, diagnosis and treatment. Interacting with cultural, age, and the special needs populations. Professionalism, competency-based education and leadership. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

## DMS 51A • SECTIONAL ANATOMY

<b>Units:</b>	3
<b>Hours:</b>	3 lecture per week (36 total per quarter)
<b>Prerequisite:</b>	BIOL 40A, 40B and 40C or equivalent.
<b>Advisory:</b>	Not open to students with credit in R T 75.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable
<b>Cross-Listed:</b>	R T 75

Human anatomy of the head and body cavities is presented for the health care professional in transverse, sagittal and coronal imaging planes, with specific correlation to sonographic, computed tomographic and magnetic resonance imaging modalities. Anatomic reference points, intersecting planes and medical terminology are used to identify relationships of organs as well as pathologic alterations. DMS 51A and R T 75 deliver the same content: DMS 51A is intended for students in the Diagnostic Medical Sonography Program, and R T 75 is intended for students in the Radiologic Technology Program; enrollment is limited to students accepted in these programs.

## **DMS 52A • PHYSICAL PRINCIPLES OF DIAGNOSTIC MEDICAL SONOGRAPHY I**

**Units:** 2  
**Hours:** 2 lecture per week (24 total per quarter)  
**Prerequisite:** DMS 50A.  
**Degree and Credit Status:** Degree-Applicable Credit Course  
**Foothill GE:** Non-GE  
**Transferable:** CSU  
**Grade Type:** Letter Grade Only  
**Repeatability:** Not Repeatable

Principles of diagnostic ultrasound, wave characteristics, propagation, acoustic variables, and review of mathematical skills. Additional emphasis on transducers, pulsed waves, intensities, beam shaping, Huygens' principle, resolution, and display modes. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

## **DMS 52B • PHYSICAL PRINCIPLES OF DIAGNOSTIC MEDICAL SONOGRAPHY II**

**Units:** 2  
**Hours:** 2 lecture per week (24 total per quarter)  
**Prerequisite:** DMS 52A.  
**Degree and Credit Status:** Degree-Applicable Credit Course  
**Foothill GE:** Non-GE  
**Transferable:** CSU  
**Grade Type:** Letter Grade Only  
**Repeatability:** Not Repeatable

A continuation of DMS 52A with an emphasis on transducer types, 2-D imaging, pulse echo instrumentation, image processing, dynamic range as well as harmonic imaging. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

## **DMS 52C • PHYSICAL PRINCIPLES OF DIAGNOSTIC MEDICAL SONOGRAPHY III**

**Units:** 2  
**Hours:** 2 lecture per week (24 total per quarter)  
**Prerequisite:** DMS 52B.  
**Degree and Credit Status:** Degree-Applicable Credit Course  
**Foothill GE:** Non-GE  
**Transferable:** CSU  
**Grade Type:** Letter Grade Only  
**Repeatability:** Not Repeatable

A continuation of DMS 52B with an emphasis on advanced principles in medical ultrasound instrumentation, artifacts, quality assurance, bioeffects, volume rendering, use of doppler imaging and sonographic quality control procedures. Preparation for national examinations. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

## **DMS 53A • DIAGNOSTIC MEDICAL SONOGRAPHY I**

**Units:** 2  
**Hours:** 2 lecture, 1 laboratory per week (36 total per quarter)  
**Prerequisite:** DMS 50A.  
**Degree and Credit Status:** Degree-Applicable Credit Course  
**Foothill GE:** Non-GE  
**Transferable:** CSU  
**Grade Type:** Letter Grade Only  
**Repeatability:** Not Repeatable

Anatomy and physiology related to the major abdominal organs and major abdominal vessels. Assessment including physical, clinical symptoms, and laboratory findings. Related pathology and its sonographic appearance involving these structures. Scanning protocols, technical factors and image quality. One hour per week will be spent in completing online exams and working on patient case studies. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

## **DMS 53B • DIAGNOSTIC MEDICAL SONOGRAPHY II**

**Units:** 2  
**Hours:** 2 lecture, 1 laboratory per week (36 total per quarter)  
**Prerequisite:** DMS 53A.  
**Degree and Credit Status:** Degree-Applicable Credit Course  
**Foothill GE:** Non-GE  
**Transferable:** CSU  
**Grade Type:** Letter Grade Only  
**Repeatability:** Not Repeatable

Anatomy and physiology related to major and superficial structures and organs, including sonography of abdominal organs and superficial structures. Assessment including physical, clinical symptoms, laboratory findings, and pathology, including the sonographic appearances. Scanning protocols, technical factors and image quality. One hour per week will be spent in completing online exams and working on patient case studies. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

## **DMS 53C • DIAGNOSTIC MEDICAL SONOGRAPHY III**

**Units:** 2  
**Hours:** 2 lecture, 1 laboratory per week (36 total per quarter)  
**Prerequisite:** DMS 53B.  
**Degree and Credit Status:** Degree-Applicable Credit Course  
**Foothill GE:** Non-GE  
**Transferable:** CSU  
**Grade Type:** Letter Grade Only  
**Repeatability:** Not Repeatable

Anatomy, physiology and pathology of abdominal organs not yet covered, neurosonography, superficial structures, transplant, and the pediatric patient. Use of sonography in the operating room with a review of aseptic technique. Discussion of related medical ethics and legal issues. One hour per week will be spent in completing online exams and working on patient case studies. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

## **DMS 54A • GYNECOLOGY**

**Units:** 2  
**Hours:** 2 lecture, .5 laboratory per week (30 total per quarter)  
 Laboratory meets every other week (1 hour per laboratory meeting).  
**Prerequisite:** DMS 50A.  
**Degree and Credit Status:** Degree-Applicable Credit Course  
**Foothill GE:** Non-GE  
**Transferable:** CSU  
**Grade Type:** Letter Grade Only  
**Repeatability:** Not Repeatable

Anatomy and physiology of the nongravid pelvis. Pathology, sonographic appearance, and clinical symptoms of the female patient. Sonographic protocols and measurements with correlations to accepted standards. One hour per week will be spent in completing online exams and working on patient case studies. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

## **DMS 54B • GYNECOLOGY & OBSTETRICS**

**Units:** 2  
**Hours:** 2 lecture, .5 laboratory per week (30 total per quarter)  
 Laboratory meets every other week (1 hour per laboratory meeting).  
**Prerequisite:** DMS 54A.  
**Degree and Credit Status:** Degree-Applicable Credit Course  
**Foothill GE:** Non-GE  
**Transferable:** CSU  
**Grade Type:** Letter Grade Only  
**Repeatability:** Not Repeatable

Anatomy and physiology of the nongravid pelvis and first trimester pregnancy. Pathology, sonographic appearance, and clinical symptoms of the female patient. Sonographic protocols and measurements with correlations to accepted standards. One-half hour per week will be spent in completing online exams and working on patient case studies. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

## **DMS 55A • OBSTETRICS I**

**Units:** 2  
**Hours:** 2 lecture, .5 laboratory per week (30 total per quarter)  
 Laboratory meets every other week (1 hour per laboratory meeting).  
**Prerequisite:** DMS 54B.  
**Degree and Credit Status:** Degree-Applicable Credit Course  
**Foothill GE:** Non-GE  
**Transferable:** CSU  
**Grade Type:** Letter Grade Only  
**Repeatability:** Not Repeatable

Normal fetal growth and sonographic measurements with correlation to accepted standards. Development of the placenta, amniotic fluid and cord. Abnormalities, pathology and maternal complications. One-half hour per week will be spent in completing online exams and working on patient case studies. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

## **DMS 55B • OBSTETRICS II**

<b>Units:</b>	2
<b>Hours:</b>	2 lecture, .5 laboratory per week (30 total per quarter) Laboratory meets every other week (1 hour per laboratory meeting).
<b>Prerequisite:</b>	DMS 55A.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

Advanced obstetrical sonography. Abnormal second and third trimester fetal growth and sonographic measurements with correlations to accepted standards. Abnormalities, pathology and maternal complications. One-half hour per week will be spent in completing online exams and working on patient case studies. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

## **DMS 56A • VASCULAR SONOGRAPHY**

<b>Units:</b>	3
<b>Hours:</b>	3 lecture per week (36 total per quarter)
<b>Prerequisite:</b>	DMS 50A.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

Vascular terminology, principles including doppler physics. Interpretation of frequency spectral analysis. Intracranial, cerebrovascular and peripheral venous applications related to vascular technology. Normal, abnormal and pathologic states of the human vascular system. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

## **DMS 56B • ADVANCED APPLICATIONS OF VASCULAR TECHNOLOGY**

<b>Units:</b>	2
<b>Hours:</b>	2 lecture per week (24 total per quarter)
<b>Prerequisite:</b>	DMS 56A.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

A continuation of DMS 56A for the advanced principles and theory of noninvasive vascular technology. Comprehensive study of arterial and venous applications, including peripheral arterial, abdominal vascular, and assessment of the reproductive tract. Designed to help prepare individuals for the National Board for credentialing as a Registered Vascular Technologist. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

## **DMS 60A • CRITIQUE & PATHOLOGY I**

<b>Units:</b>	2
<b>Hours:</b>	2 lecture per week (24 total per quarter)
<b>Prerequisite:</b>	BIOL 40A, 40B and 40C.
<b>Corequisite:</b>	DMS 50A, 50B and 72A.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

Interpretation and critique of normal and abnormal anatomy with correlation of didactic, clinical and image information. Emphasis on communication skills via written and oral case presentations and critiques. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

## **DMS 60B • CRITIQUE & PATHOLOGY II**

<b>Units:</b>	2
<b>Hours:</b>	2 lecture per week (24 total per quarter)
<b>Prerequisite:</b>	DMS 60A.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

Interpretation and critique of normal and abnormal anatomy with correlation of didactic, clinical and image information. Written and oral case presentations with emphasis on abdominal subjects. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

**DMS 60C • CRITIQUE & PATHOLOGY III**

<b>Units:</b>	2
<b>Hours:</b>	2 lecture per week (24 total per quarter)
<b>Prerequisite:</b>	DMS 60B.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

Interpretation and critique of normal and abnormal anatomy with correlation of didactic, clinical and image information. Written and oral case presentations with emphasis on gynecological and abdominal subjects. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

**DMS 60D • CRITIQUE & PATHOLOGY IV**

<b>Units:</b>	2
<b>Hours:</b>	2 lecture per week (24 total per quarter)
<b>Prerequisite:</b>	DMS 60C.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

Interpretation and critique of normal and abnormal anatomy with correlation of didactic, clinical and image information. Written and oral case presentations with emphasis on obstetrical subjects. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

**DMS 60E • CRITIQUE & PATHOLOGY V**

<b>Units:</b>	2
<b>Hours:</b>	2 lecture per week (24 total per quarter)
<b>Prerequisite:</b>	DMS 60D.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

Interpretation and critique of normal and abnormal anatomy with correlation of didactic, clinical and image information. Written and oral case presentations with emphasis on superficial parts, pediatric, neonatal and vascular subjects. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

**DMS 60F • CRITIQUE & PATHOLOGY VI**

<b>Units:</b>	2
<b>Hours:</b>	2 lecture per week (24 total per quarter)
<b>Prerequisite:</b>	DMS 60E.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

Interpretation and critique of normal and abnormal anatomy with correlation of didactic, clinical and image information. Written and oral case presentations with emphasis on additional subjects in superficial parts, pediatric, neonatal and vascular subjects. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

**DMS 70A • CLINICAL PRECEPTORSHIP I**

<b>Units:</b>	11.5
<b>Hours:</b>	416 laboratory per quarter (416 total per quarter) This is a 13 week course - 32 hours laboratory per week.
<b>Prerequisite:</b>	DMS 72A.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

This course builds on the clinical competencies of DMS 72A. Preceptorship to obtain the technical expertise with emphasis on mastery of knowledge, skills, and abilities required performing sonographic studies and procedures. Emphasis is on elementary level for abdominal and gynecological examinations as to delineate complete anatomic and functional information for interpretation. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

**DMS 70B • CLINICAL PRECEPTORSHIP II**

<b>Units:</b>	10.5
<b>Hours:</b>	32 laboratory per week (384 total per quarter)
<b>Prerequisite:</b>	DMS 70A.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

Second course in the DMS 70 series. Preceptorship in a medical setting allows the student to obtain the technical expertise with emphasis on mastery of knowledge, skills, and abilities required performing sonographic studies and procedures. The student is exposed to varied methodologies and practice philosophies in a variety of clinical settings. Major emphasis is on the knowledge and performance for abdominal, obstetrics, and gynecology examinations. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

**DMS 70C • CLINICAL PRECEPTORSHIP III**

<b>Units:</b>	9.5
<b>Hours:</b>	352 laboratory per quarter (352 total per quarter) This is an 11 week course - 32 hours laboratory per week.
<b>Prerequisite:</b>	DMS 70B.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

Third course in the DMS 70 series. Preceptorship in a medical setting that allows the student to obtain the technical expertise with emphasis on mastery of knowledge, skills, and abilities required performing sonographic studies and procedures. Major emphasis is on intermediate-advanced level of knowledge and competency for abdominal, gynecology, obstetrics, and vascular sonography. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

**DMS 70D • CLINICAL PRECEPTORSHIP IV**

<b>Units:</b>	11.5
<b>Hours:</b>	416 laboratory per quarter (416 total per quarter) This is a 13 week course - 32 hours laboratory per week.
<b>Prerequisite:</b>	DMS 70C.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

Fourth course in the DMS 70 series. Preceptorship in a medical setting that allows students to obtain the technical expertise with emphasis on the advanced mastery of knowledge, skills, and abilities required performing all types of sonographic studies and procedures. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

**DMS 70E • CLINICAL PRECEPTORSHIP V**

<b>Units:</b>	10.5
<b>Hours:</b>	32 laboratory per week (384 total per quarter)
<b>Prerequisite:</b>	DMS 70D.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

Final course in the DMS 70 series. Preceptorship in a medical setting that allows students to obtain the technical expertise with emphasis on the advanced-graduate mastery of knowledge, skills, and abilities required performing all types of sonographic studies and procedures. Major emphasis is on terminal competencies leading to program completion. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

## **DMS 72A • DIAGNOSTIC MEDICAL SONOGRAPHY PROCEDURES & APPLICATIONS**

<b>Units:</b>	11.5
<b>Hours:</b>	1 lecture, 32 laboratory per week (396 total per quarter)
<b>Prerequisite:</b>	BIOL 40A, 40B and 40C.
<b>Corequisite:</b>	DMS 50A, 50B and 60A.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

Instruction to develop the fundamental skills, procedures and applications for sonographic image acquisition. Includes instruction in establishing technical quality, interpretation, analysis, and case presentation. Includes hands-on participation in a structured lab setting with emphasis on simulation and live scanning exercises plus clinical preceptorship. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

## **DMS 80A • ADVANCED SONOGRAPHIC PRINCIPLES**

<b>Units:</b>	4
<b>Hours:</b>	3 lecture, 3 laboratory per week (72 total per quarter)
<b>Prerequisite:</b>	DMS 60D.
<b>Degree and Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

Continuation of all courses as well as new developments with advanced analysis of current sonographic practice. Final preparation for completion and participation of national registry examinations. Student presentation and critique of neoplastic cases. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.