



Program Planning Guide

Medical Sonography, Associate in Applied Science Degree (A45440)

Program Length: 5 semesters

Program Sites: Keller Health Sciences Center

Career Pathway Options: Associate in Applied Science Degree in Medical Sonography

The Medical Sonography curriculum provides knowledge and clinical skills in the application of high frequency sound waves to image internal body structures.

Course work includes physics, cross-sectional anatomy, abdominal, introductory vascular, and obstetrical/gynecological sonography. Competencies are attained in identification of normal anatomy and pathological processes, use of equipment, fetal growth and development, integration of related imaging, and patient interaction skills.

Graduates of accredited programs may be eligible to take examinations in ultrasound physics and instrumentation and specialty examinations administered by the American Registry of Diagnostic Medical Sonographers and find employment in clinics, physicians' offices, mobile services, hospitals, and educational institutions.

Preparing for the Medical Sonography Program:

Pre-medical sonography students will be enrolled as General Occupation Technology Medical Sonography – A55280MS prior to application and acceptance to the Medical Sonography program.

Students that complete the minimum requirements can submit a Limited Enrollment Program (LEP) application via their Student Success Hub. Minimum Requirements Include:

1. Completion of all health science General education courses.
2. Complete science courses with a B or better, all other courses completed with a C or better.
3. Health Sciences GPA of 3.0 for all required General Education courses listed below:
4. The following General Education courses are required for graduation.

Course Number	General Education Core	Term/Planning Notes	Credits Required	Pre- / Co-Requisites
ACA 122	College Transfer Success	1st Semester	3	None
BIO 163 or BIO168/169	Human Anat. & Physiology I w/Lab	1 st Semester	4	Pre-Req: ENG 002 (Need P1 Grade or better)
ENG 111	Writing and Inquiry	1st Semester	3	Pre-Req: RISE Placement
PSY 150 or SOC 210		Flexible	3	Can Sub PSY 150 & SOC 210 PSY 150 Preferred option
PHY 110/110A	Conceptual Physics I/Conceptual Physics I Lab	Flexible	4	
PHI 240	Introduction to Ethics	2 nd Semester	4	Pre-Req: ENG 111
COM/ENG Elective (Choose One)	COM 110, 120, or 231; ENG 112 or ENG 114	Flexible	3	* Pre-Req:ENG 111 for ENG 112 & ENG 114
MAT 143 or MAT 152 or MAT 171		2 nd Semester	3-4	Pre-Req: RISE Placement

Communications Elective Options: (Refer to college catalog for course details)

Humanities/Fine Arts Elective Options: (Refer to college catalog for course details.)

Students accepted via the Limited Enrollment Process will then complete the Medical Sonography degree (A45440) using the plan below:



Suggested Course Schedule		Class	Lab	Clinical	Credits	Notes:
1st Semester (fall)						
ACA 122	College Transfer Success	0	2	0	1	
PSY/SOC	PSY 150 or SOC 210	3	0	0	3	
SON 110	Introduction to Sonography	1	3	3	3	
SON 111	Sonogram Physics	3	3	0	4	
SON 130	Abdominal Sonography I	2	3	0	3	
	Total Semester Hours	9	11	3	14	
2nd Semester (spring)						
BIO 163	Basic Anatomy & Physiology	4	2	0	5	
SON 120	SON Clinical Education I	0	0	15	5	
SON 131	Abdominal Sonography II	1	3	0	2	
SON 140	Gynecologic Sonography	2	0	0	2	
SON 241	Obstetrical Sonography I	2	0	0	2	
	Total Semester Hours	9	5	15	16	
3rd Semester (summer)						
SON 121	SON Clinical Education II	0	0	15	5	
PHY 110	Conceptual Physics	3	0	0	3	
PHY 110A	Conceptual Physics Lab	0	2	0	1	
	Total Semester Hours	3	2	15	9	
4th Semester (fall)						
Elective	Communications	3	0	0	3	
ENG 111	Writing & Inquiry	3	0	0	3	
SON 220	SON Clinical Education III	0	0	24	8	
SON 242	Obstetrical Sonography II	2	0	0	2	
SON 250	Vascular Sonography	1	3	0	2	
	Total Semester Hours	9	3	24	18	



5th Semester (spring)						
Elective	Mathematics	2/3	2	0	3/4	
PHI 240	Introduction to Ethics	3	0	0	3	
SON 221	SON Clinical Education IV	0	0	24	8	
SON 225	Case Studies	0	3	0	1	
SON 289	Sonographic Topics	2	0	0	2	
Total Semester Hours		7/8	5	24	17/18	
Total Semester Hours Credit Required to Graduate: 74						

Communications Elective Options: Pick one: COM 110, COM 120, COM 231 (Refer to catalog for course details.)

Mathematics Elective Options: Pick one: MAT 143, MAT 152, MAT 171 (Refer to catalog for course details.)

¹Or PHY 151 with MAT 171



Course Descriptions

ACA 122 College Transfer Success

This course provides information and strategies necessary to develop clear academic and professional goals beyond the community college experience. Topics include the CAA, college policies and culture, career exploration, gathering information on senior institutions, strategic planning, critical thinking, and communications skills for a successful academic transition. Upon completion, students should be able to develop an academic plan to transition successfully to senior institutions. This course has been approved for transfer under the CAA/ICAA as a premajor and/or elective course requirement.

BIO 163 Basic Anat & Physiology

This course provides a basic study of the structure and function of the human body. Topics include a basic study of the body systems as well as an introduction to homeostasis, cells, tissues, nutrition, acid-base balance, and electrolytes. Upon completion, students should be able to demonstrate a basic understanding of the fundamental principles of anatomy and physiology and their interrelationships. This course has been approved for transfer under the CAA/ICAA as a premajor and/or elective course requirement.

COM 110 Introduction to Communication

This course provides an overview of the basic concepts of communication and the skills necessary to communicate in various contexts. Emphasis is placed on communication theories and techniques used in interpersonal group, public, intercultural, and mass communication situations. Upon completion, students should be able to explain and illustrate the forms and purposes of human communication in a variety of contexts. This course has been approved for transfer under the CAA/ICAA as a general education course in Communication.

COM 120 Intro Interpersonal Com

This course introduces the practices and principles of interpersonal communication in both dyadic and group settings. Emphasis is placed on the communication process, perception, listening, self-disclosure, speech apprehension, ethics, nonverbal communication, conflict, power, and dysfunctional communication relationships. Upon completion, students should be able to demonstrate interpersonal communication skills, apply basic principles of group discussion, and manage conflict in interpersonal communication situations. This course has been approved for transfer under the CAA/ICAA as a general education course in Communication.

COM 231 Public Speaking

This course provides instruction and experience in preparation and delivery of speeches within a public setting and group discussion. Emphasis is placed on research, preparation, delivery, and evaluation of informative, persuasive, and special occasion public speaking. Upon completion, students should be able to prepare and deliver well-organized speeches and participate in group discussion with appropriate audiovisual support. This course has been approved for transfer under the CAA/ICAA as a general education course in Communication.

ENG 111 Writing and Inquiry

Prerequisite: Take One Set: DRE-097, ENG-002, or BSP-4002

Corequisite: ENG-011

This course is designed to develop the ability to produce clear writing in a variety of genres and formats using a recursive process. Emphasis includes inquiry, analysis, effective use of rhetorical strategies, thesis development, audience awareness, and revision. Upon completion, students should be able to produce unified, coherent, well-developed essays using standard written English. This course has been approved for transfer under the CAA/ICAA as a general education course in English Composition.

MAT 143 Quantitative Literacy

Prerequisite: Take One Set: Set 1: DMA-010, DMA-020, DMA-030, and DRE-098, Set 2: DMA-010, DMA-020, DMA-030, and ENG-002, Set 3: DMA-010, DMA-020, DMA-030, and BSP-4002, Set 4: DMA-025, and DRE-098, Set 5: DMA-025, and ENG-002, Set 6: DMA-025, and BSP-4002, Set 7: MAT-003 and DRE-098, Set 8: MAT-003 and ENG-002, Set 9: MAT-003 and BSP-4002, Set 10: BSP-4003 and DRE-098, Set 11: BSP-4003 and ENG-002, or Set 12: BSP-4003 and BSP-4002

Corequisite: MAT-043

This course is designed to engage students in complex and realistic situations involving the mathematical phenomena of quantity, change and relationship, and uncertainty through project- and activity-based assessment. Emphasis is placed on authentic contexts which will introduce the concepts of numeracy, proportional reasoning, dimensional analysis, rates of growth, personal finance, consumer statistics, practical probabilities, and mathematics for citizenship. Upon completion, students should be able to utilize quantitative information as consumers and to make personal, professional, and civic decisions by decoding, interpreting, using, and communicating quantitative information found in modern media and encountered in everyday life. This course has been approved for transfer under the CAA/ICAA as a general education course in Mathematics (Quantitative).

**MAT 152 Statistical Methods I**

Prerequisite: Take One Set: Set 1: DMA-010, DMA-020, DMA-030, and DRE-098, Set 2: DMA-010, DMA-020, DMA-030, and ENG-002, Set 3: DMA-010, DMA-020, DMA-030, and BSP-4002, Set 4: DMA-025, and DRE-098, Set 5: DMA-025, and ENG-002, Set 6: DMA-025, and BSP-4002, Set 7: MAT-003 and DRE-098, Set 8: MAT-003 and ENG-002, Set 9: MAT-003 and BSP-4002, Set 10: BSP-4003 and DRE-098, Set 11: BSP-4003 and ENG-002, or Set 12: BSP-4003 and BSP-4002

Corequisite: MAT-052

This course provides a project-based approach to introductory statistics with an emphasis on using real-world data and statistical literacy. Topics include descriptive statistics, correlation and regression, basic probability, discrete and continuous probability distributions, confidence intervals and hypothesis testing. Upon completion, students should be able to use appropriate technology to describe important characteristics of a data set, draw inferences about a population from sample data, and interpret and communicate results. This course has been approved for transfer under the CAA/ICAA as a general education course in Mathematics (Quantitative).

MAT 171 Precalculus Algebra

Prerequisite: Take One Set: Set 1: DMA-010, DMA-020, DMA-030, DMA-040, DMA-050, Set 2: DMA-010, DMA-020, DMA-030, DMA-045, Set 3: DMA-025, DMA-045, Set 4: DMA-025, DMA-040, DMA-050, Set 5: MAT 121, Set 6: MAT-003, or Set 7: BSP-4003

Corequisite: MAT-071

This course is designed to develop topics which are fundamental to the study of Calculus. Emphasis is placed on solving equations and inequalities, solving systems of equations and inequalities, and analysis of functions (absolute value, radical, polynomial, rational, exponential, and logarithmic) in multiple representations. Upon completion, students should be able to select and use appropriate models and techniques for finding solutions to algebra-related problems with and without technology. This course has been approved for transfer under the CAA/ICAA as a general education course in Mathematics.

PHI 240 Introduction to Ethics

Prerequisite: ENG-111

This course introduces theories about the nature and foundations of moral judgments and applications to contemporary moral issues. Emphasis is placed on moral theories such as consequentialism, deontology, and virtue ethics. Upon completion, students should be able to apply various ethical theories to moral issues such as abortion, capital punishment, poverty, war, terrorism, the treatment of animals, and issues arising from new technologies. This course has been approved for transfer under the CAA/ICAA as a general education course in Humanities/Fine Arts.

PHY 110 Conceptual Physics

This course provides a conceptually-based exposure to the fundamental principles and processes of the physical world. Topics include basic concepts of motion, forces, energy, heat, electricity, magnetism, and the structure of matter and the universe. Upon completion, students should be able to describe examples and applications of the principles studied. This course has been approved for transfer under the CAA/ICAA as a general education course in Natural Science.

PHY 110A Conceptual Physics Lab

Corequisite: PHY-110

This course is a laboratory for PHY 110. Emphasis is placed on laboratory experiences that enhance materials presented in PHY 110. Upon completion, students should be able to apply the laboratory experiences to the concepts presented in PHY 110. This course has been approved for transfer under the CAA/ICAA as a general education course in Natural Science.

PHY 151 College Physics I

Prerequisite: MAT-171 or MAT-271

This course uses algebra- and trigonometry-based mathematical models to introduce the fundamental concepts that describe the physical world. Topics include units and measurement, vectors, linear kinematics and dynamics, energy, power, momentum, fluid mechanics, and heat. Upon completion, students should be able to demonstrate an understanding of the principles involved and display analytical problem-solving ability for the topics covered. This course has been approved for transfer under the CAA/ICAA as a general education course in Natural Science.

PSY 150 General Psychology

This course provides an overview of the scientific study of human behavior. Topics include history, methodology, biopsychology, sensation, perception, learning, motivation, cognition, abnormal behavior, personality theory, social psychology, and other relevant topics. Upon completion, students should be able to demonstrate a basic knowledge of the science of psychology. This course has been approved for transfer under the CAA/ICAA as a general education course in Social/Behavioral Sciences.

SOC 210 Introduction to Sociology

This course introduces the scientific study of human society, culture, and social interactions. Topics include socialization, research methods, diversity and inequality, cooperation and conflict, social change, social institutions, and organizations. Upon completion, students should be able to demonstrate knowledge of sociological concepts as they apply to the interplay among individuals, groups, and societies. This course has been approved for transfer under the CAA/ICAA as a general education course in Social/Behavioral Sciences.

**SON 110 Intro to Sonography**

This course provides an introduction to medical sonography. Topics include applications, sonographic terminology, history, patient care, ethics, and basic skills. Upon completion, students should be able to define professionalism and sonographic applications and perform basic patient care skills and preliminary scanning techniques.

SON 111 Sonographic Physics

This course introduces ultrasound physical principles, bioeffects, and sonographic instrumentation. Topics include sound wave mechanics, transducers, sonographic equipment, Doppler physics, bioeffects, and safety. Upon completion, students should be able to demonstrate knowledge of sound wave mechanics, transducers, sonography equipment, the Doppler effect, bioeffects, and safety.

SON 120 SON Clinical Ed I

Prerequisite: Take SON-110

This course provides active participation in clinical sonography. Emphasis is placed on imaging, processing, and technically evaluating sonographic examinations. Upon completion, students should be able to image, process, and evaluate sonographic examinations.

SON 121 SON Clinical Ed II

Prerequisite: Take SON-120

This course provides continued active participation in clinical sonography. Emphasis is placed on imaging, processing, and technically evaluating sonographic examinations. Upon completion, students should be able to image, process, and evaluate sonographic examinations.

SON 130 Abdominal Sonography I

This course introduces abdominal and small parts sonography. Emphasis is placed on the sonographic anatomy of the abdomen and small parts with correlated laboratory exercises. Upon completion, students should be able to recognize and acquire basic abdominal and small parts images.

SON 131 Abdominal Sonography II

Prerequisite: Take SON-130

This course introduces abdominal and small parts sonography. Emphasis is placed on the sonographic anatomy of the abdomen and small parts with correlated laboratory exercises. Upon completion, students should be able to recognize and acquire basic abdominal and small parts images.

SON 140 Gynecological Sonography

Prerequisite: Take SON-110

This course is designed to relate gynecological anatomy and pathology to sonography. Emphasis is placed on gynecological relational anatomy, endovaginal anatomy, and gynecological pathology. Upon completion, students should be able to recognize normal and abnormal gynecological sonograms.

SON 220 SON Clinical Ed III

Prerequisite: Take SON-121

This course provides continued active participation in clinical sonography. Emphasis is placed on imaging, processing, and technically evaluating sonographic examinations. Upon completion, students should be able to image, process, and evaluate sonographic examinations.

SON 221 SON Clinical Ed IV

Prerequisite: Take SON-220

This course provides continued active participation off campus in clinical sonography. Emphasis is placed on imaging, processing, and technically evaluating sonographic examinations. Upon completion, students should be able to image, process, and evaluate sonographic examinations.

SON 225 Case Studies

Prerequisite: Take SON-110 or CVS-163

This course offers the opportunity to present interesting cases found during clinical education. Emphasis is placed on presentation methods which integrate patient history, laboratory results, and sonographic findings with reference to current literature. Upon completion, students should be able to correlate information necessary for complete presentation of case studies.

SON 241 Obstetrical Sonography I

Prerequisite: Take SON-110

This course covers normal obstetrical sonography techniques, the normal fetal environment, and abnormal first trimester pregnancy states. Topics include gestational dating, fetal anatomy, uterine environment, and first trimester complications. Upon completion, students should be able to produce gestational sonograms which document age, evaluate the uterine environment, and recognize first trimester complications.



SON 242 Obstetrical Sonography II

Prerequisite: Take SON-241

This course covers second and third trimester obstetrical complications and fetal anomalies. Topics include abnormal fetal anatomy and physiology and complications in the uterine environment. Upon completion, students should be able to identify fetal anomalies, fetal distress states, and uterine pathologies.

SON 250 Vascular Sonography

This course provides an in-depth study of the anatomy and pathology of the vascular system. Topics include peripheral arterial, peripheral venous, and cerebrovascular disease testing. Upon completion, students should be able to identify normal vascular anatomy and recognize pathology of the vascular system.

SON 289 Sonographic Topics

Prerequisite: Take SON-110

This course provides an overview of sonographic topics in preparation for certification examinations. Emphasis is placed on registry preparation. Upon completion, students should be able to demonstrate a comprehensive knowledge of sonography and be prepared for the registry examinations.