

## Program Planning Guide

### Medical Sonography

Credential: Associate in Applied Science in Medical Sonography (A45440)

(Fall start, 5 Semesters)

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.

**See the College Catalog and the Health Science Programs Admissions packet for details regarding:** Limited Enrollment Curriculum; Entrance Standards; Required Admissions Criteria and Requirements for Acceptance.

(<http://www.cccc.edu/curriculum/majors/medicalsonography/pdfs/medicalsonographyRatingSheet.pdf>)

**Program Length:** 5 semesters

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

**Program Site(s):** Lee Campus: Day Program

Suggested Course Schedule		Hours				Grade	Semester	Notes
		Class	Lab	Clinical	Credit			
<b>1st Semester (Fall)</b>								
ACA 122	College Transfer Success	0	2	0	1			
BIO 163	Basic Anatomy and Physiology	4	2	0	5			
ENG 111	Expository Writing	3	0	0	3			
PHY 110 <sup>1</sup>	Conceptual Physics	3	0	0	3			
PHY 110A <sup>1</sup>	Conceptual Physics Lab	0	2	0	1			
SON 110	Introduction to Sonography	1	3	3	3			
		11	9	0	16			
<b>2nd Semester (Spring)</b>								
Elective	(Communications)	3	0	0	3			
Elective	(Mathematics)	2/3	2	0	3/4			
SON 111	Sonogram Physics	3	3	0	4			
SON 120	SON Clinical Education I	0	0	15	5			
SON 130	Abdominal Sonography I	2	3	0	3			
		10/11	8	15	18/19			
<b>3rd Semester (Summer)</b>								
SON 121	SON Clinical Education II	0	0	15	5			
SON 131	Abdominal Sonography II	1	3	0	2			
SON 140	Gynecologic Sonography	2	0	0	2			
		3	3	15	9			

**4th Semester (Fall)**

PHI 240	Introduction to Ethics	3	0	0	3			
SON 220	SON Clinical Education III	0	0	24	8			
SON 241	Obstetrical Sonography I	2	0	0	2			
SON 250	Vascular Sonography	1	3	0	2			
		6	3	24	15			

**5th Semester (Spring)**

PSY/SOC	(PSY 150 or SOC 210)	3	0	0	3			
SON 221	SON Clinical Education IV	0	0	24	8			
SON 225	Case Studies	0	3	0	1			
SON 242	Obstetrical Sonography II	2	0	0	2			
SON 289	Sonographic Topics	2	0	0	2			
		7	3	24	16			

Total Semester Hours Credit: 74/75

**Communications Elective Options:** Pick One: COM 110, COM 120, COM 231, ENG 112, ENG 114 (Refer to college catalog for course details)

**Mathematics Elective Options:** Pick One: MAT 143, MAT 152, MAT 171 (Refer to college catalog for course details)

<sup>1</sup>Or PHY 151 with MAT 171

**Course Descriptions:**

**ACA 122 College Transfer Success**

0-2-0-1

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 and ICAA as a premajor and/or elective course requirement.

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 and ICAA as a general education course in Communications.

**BIO 163 Basic Anatomy and Physiology**

4-2-0-5

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 and ICAA as a premajor and/or elective course requirement.

**COM 231 Public Speaking**

3-0-0-3

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 and ICAA as a universal general education transfer component (UGETC) course in Communications.

**COM 110 Introduction to Communication**

3-0-0-3

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 and ICAA as a general education course in Communications.

**ENG 111 Writing and Inquiry**

3-0-3

*Prerequisites: Take one set: RED 090 and ENG 090, ENG 095, DRE 098, or appropriate placement test scores; or Multiple Measures waiver.*

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 and ICAA as a universal general education transfer component (UGETC) course in English Composition.

**COM 120 Introduction to Interpersonal Communication**

3-0-0-3

**ENG 112 Writing/Research in the Disciplines** 3-0-0-3

*Prerequisite: ENG 111*

This course, the second in a series of two, introduces research techniques, documentation styles, and writing strategies. Emphasis is placed on analyzing information and ideas and incorporating research findings into documented writing and research projects. Upon completion, students should be able to evaluate and synthesize information from primary and secondary sources using documentation appropriate to various disciplines. This course has been approved for transfer under the CAA and ICAA as a universal general education transfer component (UGETC) course in English Composition.

**ENG 114 Professional Research and Reporting** 3-0-0-3

*Prerequisite: ENG 111*

This course, the second in a series of two, is designed to teach professional communication skills. Emphasis is placed on research, listening, critical reading and thinking, analysis, interpretation, and design used in oral and written presentations. Upon completion, students should be able to work individually and collaboratively to produce well-designed business and professional written and oral presentations. This course has been approved for transfer under the CAA and ICAA as a general education course in English Composition.

**MAT 143 Quantitative Literacy** 2-2-0-3

*Prerequisite: Appropriate test scores or Multiple Measures waiver or take one set: Set 1: DMA 010, DMA 020, DMA 030, DMA 040, DMA 050, and DRE-098 Set 2: DMA 010, DMA 020, DMA 030, DMA 040, DMA 050, and ENG-095 Set 3: DMA 010, DMA 020, DMA 030, DMA 040, DMA 050, and ENG-090 and RED-090*

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 and ICAA as a universal general education transfer component (UGETC) course in Mathematics.

**MAT 152 Statistics I** 3-2-0-4

*Prerequisite: Appropriate test scores or Multiple Measures waiver or this set: DMA 010, DMA 020, DMA 030, DMA 040, DMA 050, and DRE 098*

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 and ICAA as a universal general education transfer component (UGETC) course in Mathematics

**MAT 171 Precalculus Algebra** 3-2-0-4

*Prerequisite: Appropriate test scores or Multiple Measures waiver or take one set: Set 1: DMA 010, DMA 020, DMA 030, DMA 040, DMA 050, DMA 060, DMA 070, DMA 080 Set 2: DMA 010, DMA 020, DMA 030, DMA 040, DMA 050, and DMA 065 Set 3: MAT 121*

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 and ICAA as a universal general education transfer component (UGETC) course in Mathematics.

**PHI 240 Introduction to Ethics** 3-0-0-3

*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 utilitarianism, rule-based ethics, existentialism, relativism versus objectivism, and egoism. Upon completion, students should be able to apply various ethical theories to individual moral issues such as euthanasia, abortion, crime and punishment, and justice. This course has been approved for transfer under the CAA and ICAA as a universal general education transfer component (UGETC) course in Humanities/Fine Arts.

**PHY 110 Conceptual Physics** 3-0-0-3

*Corequisite: PHY 110A*

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 and ICAA as a universal general education transfer component (UGETC) course in Natural Sciences.

**PHY 110A Conceptual Physics Laboratory** 0-2-0-1

*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 and ICAA as a universal general education transfer component (UGETC) course in Natural Sciences.

**PHY 151 College Physics I** 3-2-0-4

*Prerequisite: MAT 171*

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 and ICAA as a

universal general education transfer component (UGETC) course in Natural Sciences.

**PSY 150 General Psychology** 3-0-0-3

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 and ICAA as a universal general education transfer component (UGETC) course in Social/Behavioral Sciences.

**SOC 210 Introduction to Sociology** 3-0-0-3

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 and ICAA as a universal general education transfer component (UGETC) course in Social/Behavioral Sciences.

**SON 110 Intro to Sonography** 1-3-3-0-3

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** 3-3-0-4

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** 0-0-15-0-5

Prerequisite: 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** 0-0-15-0-5

Prerequisite: 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** 2-3-0-3

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** 1-3-0-2

Prerequisite: SON 130

This course covers abdominal and small parts pathology recognizable on sonograms. Emphasis is placed on abnormal sonograms of the abdomen and small parts with correlated sonographic cases. Upon completion, students should be able to recognize abnormal pathological processes in the abdomen and on small parts sonographic examinations.

**SON 140 Gynecological Sonography** 2-0-0-2

Prerequisite: 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** 0-0-24-0-8

Prerequisite: 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** 0-0-24-0-8

Prerequisite: 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** 0-3-0-1

Prerequisite: SON 110

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** 2-0-0-2

Prerequisite: 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** 2-0-0-2

Prerequisite: 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**

1-3-0-2

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**

2-0-0-2

Prerequisite: 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.