

## **SECTION I**

### **Introduction and Program Description**

The Diagnostic Medical Sonography Associate in Science degree program provides the knowledge and techniques required for specialization in the field of diagnostic medical sonography. Students receiving training in producing the ultrasound images used by physicians in the diagnosis of disease and injuries and others medical conditions. The curriculum has a general education component, with a concentration in relevant science courses. Students achieve proficiency in sonographic physics and instrumentation, obstetrical, gynecological, abdominal and neurosonography. There is an extensive clinical practicum. Graduates of the program are eligible to take the American Registry of Diagnostic Medical Sonographers certifying examinations.

The Diagnostic Medical Sonography Program started in the Fall of 1979. Middlesex Community College (aka MCC) was the first program in the Boston area to be accredited in 1990 by the Committee on Allied Health Education and Accreditation (CAHEA) on recommendation by the Joint Review Committee on Education Programs in Diagnostic Medical Sonography. The program received continuing accreditation to the general concentration, and it received continuing accreditation in the general concentration in 1993, 1996, 1998, 2004, and 2012. The current curriculum model was developed in 2002 and has not undergone any significant changes. However, the classroom setting has seen many changes such as; power-point presentation, blackboard format, and recently incorporating Trajecsys Reporting System for clinical internship. The medical community has donated ultrasound machines, stretchers, and accessories for our scanning lab. Brigham & Women's Hospital donated their 1990-2000 teaching files to our library. The associate degree in science for the DMS program includes successful completion of 70 total credit hours. The program requirement includes 18 credits hours in general education courses and 52 credits hours in general sonography courses.

**Mission Statement:**

We believe that learning is an active, continuous process involving intellectual and psychomotor activities which can be measured by an observable change in behavior. Learning is best accomplished in a democratic atmosphere where open communication exists between college faculty, clinical faculty, and students. We recognize that there will be differences among learners. The learning process should provide opportunities based on didactic and clinical course objectives as well as opportunities for on-going student self-evaluation. We believe that theory taught in logical sequence will aid the learner in approaching patient centered activities relating to the production of sonograms. Anatomical, physiological and pathological information form the basis of this sequential learning process. Emphasis throughout the program centers on the effective application of acoustical physics to instrumentation and imaging techniques.

We further believe the Diagnostic Medical Sonography program must stress the importance of continuing education so that graduates are encouraged to assume responsibility for ongoing professional study and development.

**Our Faculty:**

Dr. David I. Rose  
Medical Director  
Emerson Hospital  
781-280-3983

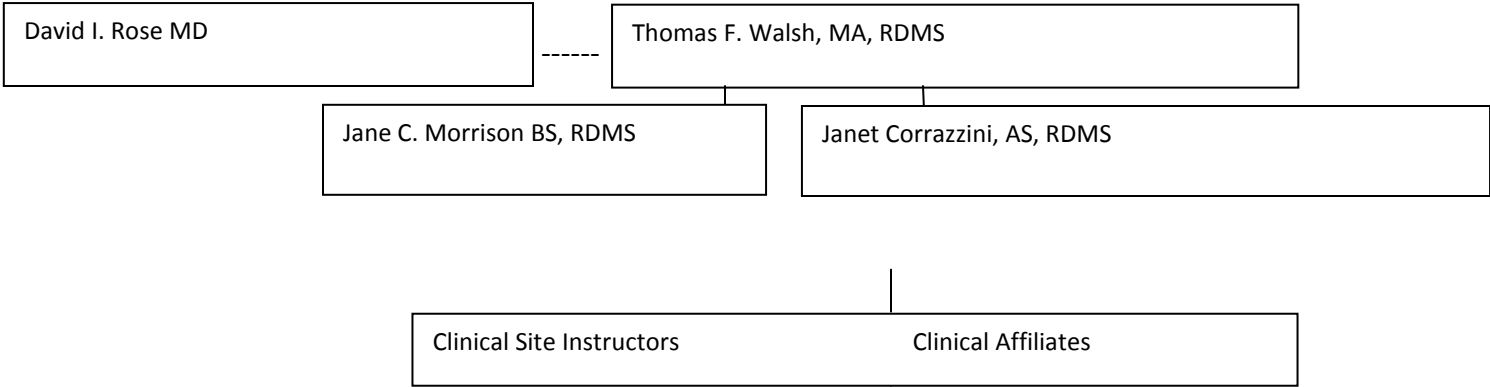
Thomas F. Walsh MA, RDMS  
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Jane C. Morrison BA, RDMS, RT. (R)  
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**DMS Program Organizational Chart**

The DMS program organizational chart identifies all faculty members involved in the student's clinical internship/training



## Our Facilities

### Dedicated

<b>Classrooms:</b>	Lecture Room	NA-109
	Scanning Laboratory	NA-111
<b>Program Director's Office</b>		NA-114
<b>Faculty Office:</b>		
Professor Jane Morrison		NA-114
Clinical Coordinator		NA-114
<b>Instructional Laboratories</b>		
Ultrasound Instructional Lab		NA-111
<b>Library:</b>		
Program Director's Office		NA-114
School Library Building		Academic Resources Center (Bldg. 1)
<b>DMS Storage Closet</b>		NA 214

## Our Clinical Site Affiliate and Clinical Instructors

Program Name: Middlesex Community College

Name of Clinical Affiliate	Location	Name of Clinical Instructor	Graduated from MCC
Anna Jaques Hospital	Newburyport, Mass.	Corinne Beaulieu	No
Beth Israel Deaconess Medical Center	Boston, Mass	Maeva Stockbridge	Yes
Beverly Hospital	Beverly, Mass	Kendra Dragon	Yes
Brigham & Women’s Hospital	Boston, Mass.	Lori Philben	Yes
Cambridge Health Alliance	Cambridge, Mass.	Andrea Anselmi	Yes
Cape Cod Hospital	Hyannis, Mass	Jeanne Hurley	Yes
Emerson Hospital	Concord, Mass.	Cynthia Irwin	Yes
Holy Family Hospital	Methuen, Mass.	Shawn Gagnon	Yes
Lawrence General Hospital	Lawrence, Mass.	Dewey Lloyd	No
Leominster Hospital	Leominster, Mass.	Kristin Reed	Yes
Lowell General Hospital	Lowell, Mass.	Kendra O’Brien	Yes
Massachusetts General Hospital	Boston, Mass.	Hanna Arellano Nicole Tardie	Yes No
Melrose –Wakefield Hospital	Melrose, Mass.	Lauren Chaurette	Yes
Metro-West Medical Center	Framingham, Mass.	Lynne Delvecchio	Yes
Mount Auburn Hospital	Cambridge, Mass.	Cheryl Dossdall	No
Newton – Wellesley Hospital	Newton, Mass.	Brenda Achilles	No
Portsmouth Regional Hospital	Portsmouth, New Hampshire	Holly Haugh	Yes
Salem Hospital	Salem, Mass.	Kevin Engrim	Yes
Southern New Hampshire Regional Medical Center	Nashua, New Hampshire	Shari Beique	Yes
Winchester Hospital	Winchester, Mass.	Lynne Taylor	Yes

## SECTION II

### LEARNING AND ASSESSMENT

#### Diagnostic Medical Sonography Program Learning Outcomes

Graduates of the Diagnostic Medical Sonography program are prepared to:

- Use critical thinking based on specialized knowledge of the profession when functioning in a variety of health care settings;
- Integrated into the sonography program are scanning competencies in both academic and technical classes/clinical internship that help to prepare the sonography student to function more effectively in college, and in the high-level technological workplace. An example applicable in the Sonography program is critical thinking competencies for example:

Critical Thinking	Competencies	Examples
	Decision Making	Correlates patient information and patient conditions with the requirements for the diagnostic ultrasound exam.
	Problem Solving	Adjust scanning techniques as needed.
	Mental Visualization	Correctly identify pathological conditions demonstrated on sonographic images and adapts exam as needed.
	Knowing How to Learn	Creates a study plan and seek assistance with educational goals as needed.
	Reasoning	Decide which formula to apply given various parameters.

## Collections of Perceptions

### Graduate Survey

Type of Survey	Year of Survey	Cognitive Domain (Critical thinking)	Score on a 1-5 Likert scale (5 is the high)
Graduate	2011	cognitive	4.57
	2010	cognitive	4.88
	2009	cognitive	4.66

The graduate survey of critical thinking has been developed by the Joint Review Committee (JRC) for DMS. The survey is extensive, and required for continuing accreditation of our DMS program. The survey is scored using the Likert scale. Graduate are very satisfied with the program. The level of critical thinking has always maintained a high Likert score.

### Employer Survey

Type of Survey	Year of Survey	Cognitive Domain (Critical thinking)	Score on a 1-5 Likert scale (5 is the high)
Employer	2011	cognitive	4.65
	2010	cognitive	4.65
	2009	cognitive	4.60

Employer responses are very favorable for the DMS program. Of the employers identified by graduates, the return percentage is very high. It is fair to note that many of the same employer hire DMS graduates year after year and so variation in responses varies little. Many of the employers are also the same hospitals that train our student interns for two full years.

## Quality of Students

Below is the range and average GPA of all students currently enrolled or graduated from the DMS program.

Spring of	(students)	Avg. GPA	Min. GPA	Max. GPA
2013	10	3.60	3.205	3.916
2012	10	3.462	3.208	3.888
2011	9	3.52	3.144	3.857
2010	10	3.11	3.703	3.00
2009	10	3.56	3.296	3.925

Looking at this data, the majority of our classes have a solid average GPA score demonstrating that our graduating students are well prepared.

The response rate for the student survey is 100%. We present the survey face to face in class since it is required by JRC-DMS each year.

- Perform a broad range of clinical skills related to pertinent diagnostic examinations safely and effectively;
- Use effective oral and written communication skills in interactions with patients and health care team members.
- Practice within the ethical and legal framework of the profession.

Based upon a didactic and clinical curriculum, our students are assessed in clinical situations on three main learning domains that align with MCC's Institutional Student Learning Outcomes as follows:

1. Cognitive (Critical Thinking)
2. Affective (Personal and Professional Development)
3. Psychomotor (Personal and Professional Development)

Additionally, our students are assessed by our Program Coordinator for additional skills and abilities that support MCC's Communication ISLO.



Next year, we will conduct a departmental assessment of our students' Communication skills. Additionally, we annually review students' national certification examination results.

### Credentialing Exam Results Middlesex Community College

Class of:

Specialties	2009		2010		2011		2012		2013		2014	
	#	%	#	%	#	%	#	%	#	%	#	%
<b>Abdomen</b>												
# Pass	1	100	2	100	8	100	2	100	NA	NA	NA	NA
# Fail	0	0	0	0	0	0	0	0				
<b>Neurosonology</b>					2	100						
# Pass												
# Fail												
<b>Obstetrics &amp; Gynecology</b>												
# Pass	1	100	6	100	9	100	0	0	NA	NA	NA	NA
# Fail												
<b>Sonography Principles Instrumentation</b>												
# Pass	6	100	16	100	5	100	6	100	8	100	11	0
# Fail												

## ARDMS Global Exam Performance Summary Report

<b>Exam Specialty</b>	<b>ARDMS Pass Rate</b>	<b>MCC Pass Rate</b>
Abdomen	61%	100%
Neurosonology	80%	100%
Obstetrics & Gynecology	72%	100%
Sonography Principles Instrumentation	68%	100%

### Employability

The following chart is a survey of the graduates that have become full-time employed in the sonography field within one year of receiving their degree.

<b>Graduating Class</b>	<b># of eligible students</b>	<b>Percentage</b>
2012 graduating class	9/10	90
2011 graduating class	9/9	100
2010 graduating class	9/10	90
2009 graduating class	9/10	90
2008 graduating class	10/12	83

- This is an exercise to create a map of what “is”, not what “should be”. It is an opportunity for faculty teaching in your program to think about and articulate which program learning outcomes their course(s) currently supports, and to what degree. Once this map of “what is” has been created, as a group you can identify gaps that you want to address to better enable student achievement of your goals for their learning (see question 7 below).
- At the Competency level, PSLOs and ISLOs should be reflected within the course outcomes on all syllabi for that cour

**Curriculum Map: WO=Written and Oral Communication, CT = Critical Thinking, QL = Quantitative Literacy, MG = Multicultural and Global Literacy, SR = Social Responsibility, and PP= Personal and Professional Development.**

PSLO	ISLO supported by PSLO	Course Abdomen	Course Obstetrics I & II	Course Gynecology	Course Physics	Course Subspecialties	Course Intro. To Scanning	Course Sonographer Role + Pt. Care
Abdomen	WO, CT, CL	D						
Obstetrics I & II	WO, MG, SR, QL, PP		I/D					
Gynecology	WO, MG, QL			D				
Physics	CT, QL				D			
Specialties	WO, CT, MG					D		

PSLO	ISLO supported by PSLO	Course Abdomen	Course Obstetrics I & II	Course Gynecology	Course Physics	Course Subspecialties	Course Intro. To Scanning	Course Sonographer Role + Pt. Care
Introduction to Scanning	WO,CT, PP						I	
Role & Pt. Care	CT, MG, SR, PP, WO							I

PSLO	ISLO supported by PSLO	Course Associated Imaging	Course Neurosonology	Course Clinical Practicum I	Course Clinical Practicum II	Course Clinical Practicum III	Course Clinical Practicum IV
Associated Imaging	MG, CT, PP	D					
Neurosonology	WO, CT, QL		D				
Clinical Practicum I	WO, CT, MG, SR, PP, QL			C			
Clinical Practicum II	WO, CT, MG, SR, PP, QL				C		
Clinical Practicum III	WO, CT, MG, SR, PP, QL					C	
Clinical Practicum IV	WO, CT, MG, SR, PP, QL						C

Additional Courses for new curriculum.

PSLO	ISLO supported by PSLO	Course Physics I + II	Course Vascular I & II	Course Breast Sonography	Course Intro. To Clinical Experience
Physics I + II	CT, QL	D			
Vascular I & II	WO, MG, SR, QL, PP		I/D		
Breast	WO, CT, QL, MG, SR, PP			D	
Introduction to Clinical Experience	CT, QL				I

PSLO	ISLO supported by PSLO	Course Clinical Practicum I	Course Clinical Practicum II	Course Clinical Practicum III	Course Clinical Practicum IV
Clinical Practicum I	WO, CT, MG, SR, PP, QL	C			
Clinical Practicum II	WO, CT, MG, SR, PP, QL		C		
Clinical Practicum III	WO, CT, MG, SR, PP, QL			C	
Clinical Practicum IV	WO, CT, MG, SR, PP, QL				C

1. Does your Curriculum Map suggest a need to make changes to the **availability** and/or **sequencing of** opportunities for students to develop and achieve any PSLO within the program? If so, please explain.  
We do not think so.

The program is not designed in a simple to complex progression. Each course stands alone as a specialty, and students are expected to reach proficiency by course completion.

## SECTION III

### FUTURE DIRECTIONS AND RATIONALE

During the Spring 2013 semester I'll be on sabbatical with the intentions of making changes to the DMS curriculum. Implementing the findings below will be considered.

#### A. PROGRAM EVALUATION SUMMARY

##### Program Strengths.

- JRC-DMS site visit report states: MCC has a proven and continued plan for administrative support. Section I
- JRC-DMS site visit report states: MCC has a strong community support and an excellent reputation within the community. Section I  
Section I
- Medical Community donating ultrasound machines. Section I
- Brigham's & Women's Hospital donating their teaching files. Section I
- Clinical Affiliations Section I
- Program Faculty Section I
- Our dedicated classroom/scanning laboratory. Section I
- ARDMS Exam Performance Summary Report Section II
- Trajecsys our on-line clinical record tracking system Section II
- Clinical Site Instructors and Medical advisor. Section I
- E-Mail communication.
- MCC Guest Lectures to the community Section II

B. Program Action Plan for Improvements, Budgetary Implications, Timelines. Program Review is both evaluative and forward-thinking, offering the opportunity to set future directions for the program.

<b>Action Items</b>	<b>Evidence Supporting Need for Item</b> (reference Section and Question # from document)	<b>Resources/Financial Needs to Make Improvements</b>	<b>Proposed Timeline for Implementation</b>
Changing our current Associate Degree to Associate in Applied Science Degree	Sabbatical Report	TBD	Fall 2014 or 2015
Enhancing our DMS curriculum to include vascular and breast sonography.	Advisory Board, Graduates, Clinical Instructors, surveys and the JRC-DMS Site visit recommendation.	Sabbatical Report	Fall 2014 or 2015
Additional ultrasound unit that performs vascular studies and breast sonography exams.	Advisory Board, Graduates, Clinical Instructors, surveys and the JRC-DMS Site visit recommendation.	\$18000.00	Fall 2013 or 2014
Adjunct Faculty to teach vascular and breast sonography courses	Advisory Board, Graduates, Clinical Instructors, surveys and the JRC-DMS Site visit recommendation.	\$12,708.00 3 courses	Fall 2014 or 2015



Secure Contracts for Vascular Clinical Sites.	Advisory Board, Graduates, Clinical Instructors, surveys and the JRC-DMS Site visit recommendation.	Open for discussions.	Fall 2014 or 2015
JRC-DMS Application Fee for Vascular Concentration	Advisory Board, Graduates, Clinical Instructors, surveys and the JRC-DMS Site visit recommendation.	\$1500.00	Fall 2014 or 2015
JRC-DMS Addition of Clinical Site Recognition	Advisory Board, Graduates, Clinical Instructors, surveys and the JRC-DMS Site visit recommendation.	\$200.00	Fall 2014 or 2015
JRC-DMS Site Visit for Vascular Concentration	Advisory Board, Graduates, Clinical Instructors, surveys and the JRC-DMS Site visit recommendation.	\$4000.00 (2 site team members; flights, hotels, meals, etc)	AY 2016