

# DIAGNOSTIC MEDICAL IMAGING SCIENCES (Radiologic Technology)

## Curriculum Guide for Academic Year 2016-2017

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Students planning to **transfer** to a four-year college or university should refer to the ASSIST web site at [www.assist.org](http://www.assist.org) and **consult a counselor** before beginning a program of study. To meet with a counselor, please call 562-938-4561 for the LAC, or 562-938-3920 for PCC. Students may also wish to visit the Transfer Center on either campus.

### Program Admission Requirements

Applications are not accepted until the following prerequisites are met:

1. Graduation from an accredited high school, or the equivalent.
2. Before students may begin the program, the following proficiencies must be met:  
    READING:
  - a) A passing score on the reading section of the Long Beach City College assessment test **OR**
  - b) Completion READ 82 or 83 at Long Beach City College with a grade of "C" or better, **OR**
  - c) Documentation from LBCC Counseling stating proficiency has been met.    MATHEMATICS:
  - a) A passing score on the Elementary Algebra Diagnostic Test (part of the LBCC Assessment Test, **OR**
  - b) Successful completion of a math course at the level of intermediate algebra (Math 130A or 130) or higher, **OR**
  - c) Documentation from LBCC Counseling stating proficiency has been met.
3. High school grade point average or current GPA is considered.
4. Completion of AH 60, AH 61, and ANAT 41 within seven years with a letter grade of "C" or better.
5. C.P.R. for Health Care Providers (American Heart Association Only) certification is required before the practicum phase, which begins 1<sup>st</sup> Fall semester.
6. Evidence of physical and emotional fitness by medical examination and personal interview. This is submitted in the Summer of the 1<sup>st</sup> year in DMI 20.
7. Students **MUST** keep the Admissions and Records Office **AND** the School of Health and Science advised of their current e-mail address, home address, and telephone number and any name changes. All changes **MUST** be submitted in writing.
8. A current background check is required to be submitted during the 1<sup>st</sup> spring semester.

### **Selection Process**

The following is considered in the selection process:

1. Date of application
2. Number of program required science and general education courses taken (ENGL 1; PSYCH 1; COMM 10, 20, or 30; Humanities; Anatomy 41; AH 60; AH 61)
3. Applicant responses to required application procedure (i.e. attending advisement session).
4. It is suggested that applicants complete as many of the General Education courses as possible prior to admission to the program.
5. Current college grade point average (a minimum cumulative GPA of 2.0 or better is required for program admission).

**Information Session**

Students who need additional information are invited to attend an information session, held on the last Tuesday of every month from September to May (EXCEPT JANUARY) at 11:15 AM in Room N111.

**Application Procedures**

Applications are accepted on a continuous basis.

1. Apply for admission to the college through the Admissions Office (applications are available online at <http://www.lbcc.edu/admissions/> .
2. Make an appointment to take the college assessment test.
3. Submit transcripts from high school and previous college work to the Admissions Office and the School of Health and Science.
4. Complete the Diagnostic Medical Imaging Program Application form and bring the completed application form and documentation to the School of Health and Science, Room N102.
5. All applicants will be notified by e-mail regarding the status of their applications. Applicants will be invited to an Advisement Session which they MUST attend. Only those applicants who are qualified and who have attended an Advisement Session (different from and Information Session) will be considered for admission into the program.

**Prerequisite Courses**

The following courses must be completed within five years prior to the first Spring Semester of the program:

ANAT 41	Anatomy and Physiology	5		
AH 60	Medical Terminology	3		
AH 61	Integration of Patient Care	2		
<b>Subtotal Units</b>		<b>10</b>		

Program of study leading to: <b><u>Associate in Science (A.S.) Degree</u></b>				
FIRST YEAR		UNITS	In Progress	Completed Grade
<b><u>Spring Semester REQUIRED COURSES:</u></b>				
†	DMI 10	Intro to Radiologic Technology	3	
†	DMI 403	Cross-Sectional Anatomy	3	
<b>Subtotal Units</b>		<b>6</b>		
<b><u>Summer Semester REQUIRED COURSES:</u></b>				
†	DMI 20	Intro. to Radiologic Physics	3	
<b>Subtotal Units</b>		<b>3</b>		
<b><u>Fall Semester REQUIRED COURSES:</u></b>				
^	Gen. Ed. Course	See Explanation in Legend	3	
^	Gen. Ed. Course	See Explanation in Legend	3	
	Computer Class—Any class which satisfies the Information Competency-Technology requirement for graduation. Recommended course COSA 1. For a complete listing see GE Course Pattern Guide (Plan A).		1-4	
†	DMI 11	Radiographic Techniques	1	
†	DMI 12	Contrast Fluoroscope & Radiographic Procedures	3	
†	DMI 21	Applied Radiological Physics	2	
†	DMI 30	Positioning for General Diagnostic Radiography	3	
†	DMI 40A	Clinical Radiology	2.5	
<b>Subtotal Units</b>		<b>18.5- 21.5</b>		
<b><u>Spring Semester REQUIRED COURSES:</u></b>				
†	DMI 60	Radiologic Pathology	3	
†	DMI 24	Radiation: Biology & Protection	3	
†	DMI 31	Positioning for Cranial Radiography	3	
†	DMI 40B	Clinical Radiology	7.5	
<b>Subtotal Units</b>		<b>16.5</b>		

**Associate Degree requirements continue on the following page:**

**Associate Degree requirements continued from the previous page:**

**SECOND YEAR**

**Summer Session\*\* REQUIRED COURSES:**

†	DMI 40C	Clinical Radiology	8.5		
			<b>Subtotal Units</b>	<b>8.5</b>	

**Fall Semester REQUIRED COURSES:**

^	Gen. Ed. Course	See Explanation in Legend	3		
†	DMI 15	Computer Applications in Radiology	3		
†	DMI 40D	Clinical Radiology	11		
†	DMI 222	Venipuncture for Medical Imaging	.5		
			<b>Subtotal Units</b>	<b>17.5</b>	

**Spring Semester REQUIRED COURSES:**

^	Gen. Ed. Course	See Explanation in Legend	3		
†	DMI 14	Trends & Self-Assessment in Rad. Tech.	3		
†	DMI 40E	Clinical Radiology	11		
†	DMI 61	Fluoroscopy	2		
			<b>Subtotal Units</b>	<b>19</b>	
			<b>TOTAL UNITS in Program</b>	<b>89-92</b>	
			<b>TOTAL UNITS (including Prerequisites)</b>	<b>99-102</b>	

For graduation with an **Associate in Science (A.S.) Degree with a major in Diagnostic Medical Imaging:**

- Minimum Unit Requirements:** §Any course that appears on a curriculum guide and the General Education Pattern (Plan A) may fulfill both major and general education requirements (Approved by College Curriculum Committee Spring 2012). For this degree, complete a minimum of 60 units in courses numbered 1-599. Please note that additional elective units may be required to meet this minimum based upon courses selected to fulfill General Education for the Associate Degree.

<b>Diagnostic Medical Imaging Major</b>	89-92 units
<b>General Education/A.S. §</b>	19 units

- Scholarship:** Maintain an **overall grade point average (GPA) of 2.0** ("C" average) based on all accredited college work applied to the degree, no matter where completed. For this **field of concentration, complete each course above with a grade of "C" or better**, or "P" if course is graded on a P/NP basis.
- Residence for the Degree:** Complete at least 12 semester units of the required 60 semester units in residence at Long Beach City College in order for the college to grant an Associate of Arts and/or an Associate of Science Degree.
- Residence for the Field of Concentration:** Complete fifty percent (50%) or more of the unit requirements for this field of concentration in residence; this means at **least 44.5-46 units** of the required 89-92 must be **completed at Long Beach City College**. Credit earned by exam, where applicable, may be included.
- General Education and Proficiency Requirements:** Complete the required A.A./A.S. General Education and Proficiency requirements, otherwise known as "Plan A". For Plan A requirements, refer to the general catalog or view it online at <http://osca.lbcc.edu>.
- Complete and submit the degree application form to the Admissions and Records office during your final semester of course work. These forms are available in the Admissions and Records office, or online at <http://admissions.lbcc.edu/>. Refer to the Schedule of Classes (<http://schedule.lbcc.edu>) and click the "Important Dates" link to view the actual deadline for each semester.

\*The requirements for general education/proficiency and the field of concentration (major) need to be from the same catalog year. This catalog year may be any year between the year of initial enrollment to the present, provided continuous enrollment is maintained throughout. See the catalog for definition of "continuous enrollment".

For both the **Associate in Arts** and the **Certificate of Achievement**, the following courses are recommended, **BUT ARE NOT REQUIRED** to earn either.

**RECOMMENDED but not required courses:**

†	DMI 62	Mammography	3.5		
	LEARN 11	Learning and Academic Strategies	2		

**Program of study leading to:  
Certificate of Achievement**

**REQUIRED COURSES**—Complete the 90-93 units of required courses as listed in the Associate Degree requirements box on the first page.

<u>REQUIRED COURSES</u>	TOTAL UNITS	89-92	In Progress	Completed

For graduation with a **Diagnostic Medical Imaging Certificate of Achievement**:

1. Complete each of the **REQUIRED COURSES** listed above with a minimum cumulative grade point average of 2.0 ("C" average, and complete all DMI, AH, and ANAT courses with a grade of "C" or better.
2. Complete fifty percent (50%) or more of the unit requirements for this field of concentration in residence; this means at **least 44.5-46 units** of the required 89-92 must be **completed at Long Beach City College**. Credit earned by exam, where applicable, may be included.
3. Complete and submit the certificate application form to the Admissions and Records office during your final semester of course work. These forms are available in the Admissions and Records office, or online at <http://admissions.lbcc.edu/> . Refer to the Schedule of Classes (<http://schedule.lbcc.edu>) and click the "Important Dates" link to view the actual deadline for each semester.

Note: A Diagnostic Medical Imaging Sciences student must obtain a minimum of an Associate Degree, but the degree may be earned from another accredited institution. Students must have official transcripts on file in the Admissions and Records Office.

**Additional Program Information**

***Clinical Education***

The following modern medical centers in the community are used as extension campuses for the Clinical Education Courses:

Lakewood Regional Medical Center	Saint Francis Medical Center
Los Alamitos Medical Center	Saint Mary Medical Center
Long Beach Memorial Medical Center	Veterans Affairs Medical Center

***Cost of Program***

Students purchase their own books and uniforms and pay a student body fee. The college has no dormitory facilities; students must provide for their own living expenses and transportation. Limited educational grants and loan funds are available.

ESTIMATED expenses for the two year program:

Books and Supplies	\$750	C.S.R.T. Membership (optional)	\$50
Student Body Fees	\$20/sem.	Parking Fees	\$25/sem.
Uniforms	\$300	ARRT Exam	\$200
Graduation Expenses	\$500	CRT Exam	\$425
Enrollment Fees:	\$26/unit	Health Fee	\$17/sem.
A.S.R.T. Membership (optional)	\$75	Malpractice Insurance	\$20/sem.
Background Check: (Prior to beginning the clinical practicum—DMI 40A---, all students must submit a recent background check which is obtained at their own expense).			\$75

***Accreditation***

Long Beach City College is fully accredited by the Western Association of Schools and Colleges. The program is approved by the American Registry of Radiological Technologies and the AART.

\*Eligibility for the ARRT examination requires the candidate to complete an ARRT Accredited Radiology Program, possess a minimum of an Associate Degree, and be of good moral character. Conviction of a misdemeanor or felony may disqualify the candidate. An Ethics pre-application review may be pursued by contacting the ARRT at [www.ARRT.org](http://www.ARRT.org).

**Program of study leading to:  
Certificates of Accomplishment**

**Certificate: Computed Tomography 4045**

**Note:** All courses must be completed within three (3) years of starting the program

<u>REQUIRED COURSES</u>		UNITS	In Progress	Completed Grade
†	DMI 403	Cross-Sectional Anatomy	3	
†	DMI 404	MRI/CT Pathology (Spring)	3	
†	DMI 405A	MRI Clinical Practicum (Fall)	2.5	
†	DMI 405B	MRI Clinical Practicum (Spring)	2.5	
†	DMI 406	Computed Tomography Physics (Fall)	3	
†	DMI 407	Computed Tomography Procedures (Fall)	3	
<b>TOTAL UNITS</b>		<b>17</b>		

**Certificate: Magnetic Resonance Imaging Technologist 4613**

**Note:** All courses must be completed within three (3) years of starting the program.

<u>REQUIRED COURSES</u>		UNITS	In Progress	Completed Grade
†	DMI 401	Physical Principles of MRI	3	
†	DMI 402	Magnetic Resonance Imaging Procedures	3	
†	DMI 403	Cross-Sectional Anatomy	3	
†	DMI 404	MRI/CT Pathology	3	
†	DMI 405A	MRI Clinical Practicum	2.5	
†	DMI 405B	MRI Clinical Practicum	2.5	
<b>TOTAL UNITS</b>		<b>17</b>		

For graduation with a **Certificate of Accomplishment:**

1. Complete the above required courses with a minimum grade of "C", or P if course is graded on a P/NP basis.
2. Fifty percent (50%) or more of the required units must be completed in residence at LBCC.
3. Complete and submit the certificate application form to the Admissions and Records office during your final semester of course work. These forms are available in the Admissions and Records office, or online at <http://admissions.lbcc.edu/>.

**Note:** Applicants must possess a current ARRT certificate in either Radiology, Sonography, Radiation Therapy, or Nuclear Medicine prior to admission.

**Career Opportunities**

This field of concentration is designed to prepare the student for Certification by the State Department of Health Services, Radiological Health Section, and Registration by the American Registry of Radiological Technologists after testing. The AART is the national testing/registration body ([www.ARRT.org](http://www.ARRT.org)). The end objective is to prepare students for employment as practicing medical imaging professionals in Acute Care Hospitals, Medical Clinics and/or private offices.

NOTE: An applicant should contact the ARRT to determine if he or she will be disqualified due to the conviction of a felony or misdemeanor.

**Program Mission and Outcomes**

The Diagnostic Medical Imaging Program at Long Beach City College is dedicated to providing high-quality education and clinical practicum to qualified students. It is responsive to the diverse needs of the local medical community. It specializes in the education and training that lead to entry-level employment as a competent, ethical health care professional, and an Associate of Science Degree. The program emphasizes the necessity of professional development and life-long learning.

Outcomes:

- Diagram the photographic and digital process and define the technical factors utilized in medical image formation.
- Distinguish the fundamental structure of matter, diagram the production of x-rays, and examine how different radiographic techniques affect the resultant image on a radiograph.
- Assess how radiation effects body systems, differentiate between different types of radiation and their effects on human tissue, and formulate ways to decrease exposure.
- Manage proper patient positioning of the skeletal system, cranium, and viscera to achieve industry standard radiograph.
- Demonstrate ability to properly use all equipment required to produce a diagnostic radiograph, produce an industry standard and diagnostic radiograph.

## Legend

- † This course has a prerequisite. Prerequisite courses must be complete with at least a "C" or "P" grade. Refer to the General Catalog (<http://www.lbcc.edu/cat/index.html>), the Schedule of Classes (<http://schedule.lbcc.edu/>), or the online Credit Course Outline (<http://wdb-asir.lbcc.edu/coursecurriculum/coursedetails/>) for specific prerequisite information.
- ^ Specific General Education courses required: ENGL 1; COMM 10, 20 or 30; PSYCH 1; Humanities (any course that meets the Associate Degree requirement); 1 unit of Physical Education (can be two half-unit P.E. courses).
- \*\*Due to budget constraints, a summer session may not be offered. If it is not, the program will resume in the fall and courses will be shifted accordingly.