Admission to Fall 2011
**Application Deadline** May 1, 2011

ALLIED HEALTH & HUMAN SERVICES DEPARTMENT

# RADIOLOGIC TECHNOLOGY PROGRAM

Associate in Applied Science Degree
Curriculum Code: 0196

## ***GENERAL INFORMATION***

Radiologic Technologists, also called radiographers, operate X-ray equipment under the direction of a physician, taking radiographs of internal parts of the body. Most often radiologic technologists are employed in hospitals, clinics and physician offices.

The Radiologic Technology Program is a 21-month (five sequential semesters) course of study. Students are accepted into the program every fall semester. Graduates will be eligible to take the national registry examination administered by the American Registry of Radiologic Technologists (ARRT). Not all courses in this program transfer to all colleges. Students planning to transfer should see an academic advisor or counselor before enrolling in any courses.

***The Radiologic Technology Program has been accredited by the following organization since 1975:***

*Joint Review Committee on Education in Radiologic Technology (JRCERT).*
*20 N Wacker Drive, Suite 2850*
*Chicago IL 60606-3182*
*www.jrcert.org*

## ***PROGRAM MISSION STATEMENT:***

The Radiologic Technology Program and its curriculum are intended to provide qualified students with the educational experiences and practical skills required to function competently in the field of radiologic technology as an entry-level radiographer.

## ***OBJECTIVES***

1. To prepare the student to competently perform the procedures associated with entry-level Radiologic Technologist employment responsibilities.

2. To prepare the student for successful completion of the certification examination in radiography, administered by the American Registry of Radiologic Technologists (ARRT).

3. To provide graduate radiographers with resources that will contribute to successful job placement as an entry-level radiologic technologist upon graduation.

4. To develop a radiographer who has the ability to establish effective professional relationships with colleagues, patients and their families.

The Associate Degree Program in Radiologic Technology is conducted by Lansing Community College as a contribution to the health education needs of the community whom it serves.

Resources provided by the College, cooperating community hospitals, and other health agencies are utilized in the basic Radiologic Technology Program. The qualified student is provided with educational opportunities in a college environment, and shares the intellectual and social responsibilities, privileges, and experiences with college students in other disciplines.

Within this framework, the faculty and administrators assumes responsibility for planning, supervising, and evaluating selected learning experiences. These experiences are developed to meet established objectives, College requirements for the Associate Degree in Applied Science, and eligibility to write the registry examination as established by the American Registry of Radiologic Technologists along with the American Society of Radiologic Technologists who establish curriculum guidelines.

Further, the Faculty believes that Radiologic Technology is a health service, shared with other health disciplines, which has a basic responsibility for promoting health, conserving life, and assisting the individual to achieve an optimum health status and self sufficiency. As a member of the patient oriented team, the radiologic technologist utilizes basic knowledge and skills which contribute to patient care and diagnostic needs.

***PHYSICAL GUIDELINES FOR STUDENTS:*** Students must be able to meet the following guidelines regarding:

1. STRENGTH: perform physical activities requiring ability to push/pull objects/persons more than 100 pounds and to transfer objects of more than 100 pounds.

2. MANUAL DEXTERITY: perform simple motor skills such as standing, walking, handshaking; manipulative skills such as writing and typing, setting up exposure factors on x-ray control panel; manipulating the x-ray tube, bucky tray and x-ray table; injecting contrast, catheterizing patients, calibrating x-ray equipment, adjusting film processors, loading/unloading film magazines, etc.

3. COORDINATION: perform body coordination such as walking, filing, retrieving equipment; eye-hand coordination such as aligning x-ray beam with body part and film tray; computer/keyboard skills; arm-hand steadiness such as taking blood pressures, performing venipuncture, catheterizing, calibration of tools and equipment, etc.

4. MOBILITY: perform mobility skills such as walking, standing, bending; pushing portable equipment throughout hospital; prolonged standing while wearing leaded aprons during invasive x-ray exams/procedures; manipulate equipment in a sterile setting, such as surgery or special studies; manipulate x-ray equipment 40" above recumbent patients, etc.

5. VISUAL ABILITY: see objects far away and to discriminate colors, and to see objects closely as in reading faces, dials, monitors, etc.

6. HEARING: hear normal sounds with background noise from x-ray generators, computers, etc., and to distinguish sounds.

7. CONCENTRATION: concentrate on details with moderate amount of interruptions such as patient requests, doctor and staff requests, etc.

8. ATTENTION SPAN: attend to task/functions for periods up to 60 minutes in length and periods exceeding 60 minutes in length.

9. CONCEPTUALIZATION: understand and relate to specific ideas, concepts, and theories generated and simultaneously discussed.

10. MEMORY: remember task/assignments given to self and others over both short and long periods of time; duplicate settings/exposure factors of x-ray machine.

11. STRESS: work with patients who may be very young or old, critically ill or injured, or mentally or physically deficient/impaired; work in other departments such as surgery and emergency room, work with a constantly changing group of staff and resident physicians, medical students, etc.

12. CRITICAL THINKING: ability to make clinical judgments when working independently to obtain diagnostic images.

13. COMMUNICATION: use sufficient communication for interaction with others in verbal and written form.

14. SUBSTANCE ABUSE: not use a Schedule 1 drug; does not use amphetamines, narcotics, or any other habit-forming drug unless prescribed by a licensed medical practitioner.

15. INTERPERSONAL: interact with individuals, families, and groups from a variety of social, emotional, cultural, and intellectual backgrounds. Ability to establish rapport with patients, colleagues, faculty, and professional staff.

## ***PREGNANCY POLICY***

Dear Female Applicant,

The Radiologic Technology Program of Lansing Community College requests that you read our policy pertaining to pregnancy. The policy is designed to inform female applicants/students of the program guidelines for radiation protection of an unborn child.

The sponsorship of the program adheres to the stated rule (#R325.5205.) of the "Ionizing Radiation Rules" provided by the Michigan Department of Consumer & Industry Services, and Regulatory Guide 8.13 provided by the U.S. Nuclear Regulatory Commission. A copy of this policy is provided to all female applicants prior to their admittance to the program.

If at any time during the program the student decides to voluntarily declare a pregnancy she must provide written notification to the Program Director or Clinical Coordinator. In order for a pregnant student to fully ensure compliance with the lower radiation exposure limit and dose monitoring requirements, the student should declare her pregnancy to the Program.

In the event of a declared pregnancy, the following course of action shall be implemented:

1. The Program Director will review with the student NCR Regulatory Guide #8.13, "Instruction Concerning Prenatal Radiation Exposure." The student will sign a declaration indicating receipt of this regulation.

2. The student will receive counseling regarding minimizing radiation exposure to the embryo/fetus.

3. In an effort to closely monitor the radiation dose to the fetus, a fetal dosimeter will be ordered for the student, to be worn at the student's waist, under the lead apron, if applicable-for College lab purposes.

4. The student will be given the option of taking a leave of absence from the program, but may continue with proper precautions. If a leave is chosen, the Program will work with the student for planned re-entry at the next appropriate semester.

5. If the student continues in the program, and the student feels physical restrictions are applicable, she must obtain documentation from her physician attesting to that fact. The Program will attempt to reasonably accommodate this request.

6. In reference to the radiation dose limits applicable to the embryo/fetus, the stated published federal and state standards document limits less than 500mR during the entire pregnancy.

At any time a student may retract their declaration of pregnancy by providing written documentation to the Program Director or Clinical Coordinator.

## ***ENVIRONMENTAL CONDITIONS***

The charter of OSHA (Occupational Safety and Health Administration) is to prevent work-related injuries, illnesses, and deaths. Since OSHA was created in 1971, work-related deaths have decreased by approximately 62% and work-related injuries have decreased by 42%.

As a radiology student you may be exposed to a variety of substances within the work environment and hospital sites. You can expect exposure to blood, body tissues, and fluids. There is the potential of exposure to electrical hazards, hazardous waste materials, radiation, poisonous substances, chemicals, loud or unpleasant noises and high stress emergency situations.

**Upon acceptance into the Radiologic Technology Program students will be notified regarding mandatory online OSHA Blood-Borne Pathogen and Universal Precautions training sessions.**

## ***CRIMINAL BACKGROUND CHECK AND DRUG SCREENING***

The Radiologic Technology Program requires students to have criminal background and drug screenings done prior to their starting clinical rotations. Background checks and drug screenings are the responsibility of the student. Background checks can be done by going to the Michigan State Police ICHAT website at http://apps.michigan.gov/ichat/home.aspx the cost is presently $10.00. Drug screenings can be done through many different sources, the clinical coordinator will provide additional information during orientation. Cost for drug screenings are approximately $30.00. Any positive results from criminal background checks and/or drug screenings may prevent the student from being placed in a clinical setting, and/or admitted to the program.

Due to Michigan State Law, admission into the Radiologic Technology Program will be denied if an individual can't be placed in a clinical setting pursuant to MCL 333.20173a. If you have a misdemeanor or felony on your record, please consult with an attorney before applying to this program.

Any applicant who has been charged or convicted of a misdemeanor or felony should complete a pre-application to the ARRT (American Registry of Radiologic Technologists). Additional information can be provided by the Radiologic Technology Program personnel or by contacting the American Registry of Radiologic Technologists at www.arrt.org.

## ***CLINICAL ROTATIONS***

Delivery of imaging services has undergone significant changes over the past several years and these services are indeed a 24/7 service. Because of our program's nine clinical education centers being located in six different counties around the Lansing area, students must have dependable transportation to any assignment. Students will be assigned to two (2) different clinical education centers during their time in the program. During the student's summer and 2nd year fall and spring semesters a maximum of 25% of their total clinical hours may be spent in an evening and/or weekend assignments. A student's combined didactic and clinical contact hours will not exceed 40 hours per week. Additional information regarding clinical rotations will be given to students during their program orientation.

## ***CORE EDUCATION REQUIREMENTS FOR GRADUATION*** **- Total: 13 Credits**

***The CHOICES listed below are recommended by the program, however, other core courses can be chosen as listed in the college catalog. Complete the indicated number of credits from each choice listed below.**

***NOTE:*** *The requirements explained in this section are not required for ADMISSION but these courses are required for GRADUATION from the program and the College. If these courses are taken by the time of admission to the program (IRXT) courses, the grades WILL be calculated into the admission grade point average. Each course chosen from this list must be completed with a 2.0 grade or better.*

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|---|---|
| CHOICE 1 (3 credits): | Writing Core Area (WRIT 121, WRIT 124, WRIT 127, WRIT 131, WRIT 132) |
| CHOICE 2 (3 credits): | Communication Core Area (SPCH 110 or SPCH 120) |
| CHOICE 3 (3 credits): | Global Perspectives & Diversity Core Area [MGMT 234, ADMN 275 (previously OADM 275), SOCL 120] |
| CHOICE 4 (4 credits): | Science Core Area (student will meet requirement with BIOL 202) |
| CHOICE 5 (3-4 credits): | Mathematics (student will meet requirement with MATH 112) |

# SELECTIVE ADMISSION REQUIREMENTS

## May 1st Application Deadline

* This deadline is contingent upon availability of space in the program. If seats are still available after the May selective admission review, applications will still be accepted; contact Enrollment Services.

This is a selective admission program. In order to be considered as a candidate for this program, students must meet Selective Admission Requirements, as well as those required for admission to the College. Many of the courses for this program are open only to students officially admitted to the Radiologic Technology Program.

All admission procedures are coordinated through the Enrollment Services Office, which has responsibility for distributing, receiving, and dating application forms. Therefore, any student desiring admission into this program should contact the Enrollment Services Office, Gannon Building-Suite 203 (517/483-1200, or e-mail **selective_admissions@lcc.edu**) to receive an application. The student may then contact the program advisor for further information.

Students meeting Phase I Admission Requirements will be ranked for admittance into the program using the Phase II Admission Ranking point system. Points will only be awarded to students who meet the Phase I Admission Requirements at the time selection for students for admission is made.

The student applicant is responsible for providing verification of other information not contained in the current Lansing Community College official transcript.

**Students who are accepted into the program are normally notified by or before July 4th.**

## *PHASE I - ADMISSION REQUIREMENTS*

1. An application for selective admission must be submitted to the Enrollment Services Office by the May 1st deadline.
2. Applicants must be 18 years of age by the 8th week of the first Fall Semester of the professional program.
3. Send official transcripts from all colleges attended if you wish to transfer courses toward the radiology program at Lansing Community College. If you are sending an official transcript, it must be mailed directly from the college to: 1121-Enrollment Services, P. O. Box 40010, Lansing, MI 48901-7210. All transcripts must be received by **May 23, 2011** in order to be considered for fall admission.
4. Evidence of good physical and mental health.
5. Applicants must complete all courses required for admission with a minimum grade of 2.0.
6. Applicants transferring mathematics from another college must have equivalent credit to Lansing Community College's MATH 112 - Intermediate Algebra with a 2.0 or better. The proficiency test is available in Gannon Building-Suite 2100. Applicants with an associate's degree or higher will have LCC Core Education requirements waived, but must show proficiency in MATH 112 and BIOL 201 and 202.

**REQUIREMENTS - Total: 8-12 Credits**

| COURSE CODE & TITLE | CREDITS | PREREQUISITE(S) |
|---|---|---|
| BIOL 201 - Human Anatomy (previously ANAT 201) | 4 | Reading Level 5 and Writing Level 6 and Math Level 4 and; CHEM 120 w/ 2.0 minimum **or**, BIOL 121 or BIOL 127 w/2.0 minimum, **or** passing score on Health Biology Proficiency Test. |
| BIOL 202 – Human Physiology | 4 | BIOL 201 w/2.0 minimum and Reading Level 5 and Writing Level 6 and Math Level 5; BIOL 121 and Chemistry recommended. |
| MATH 112 - Intermediate Algebra **or** Pass the Math Proficiency Exam for MATH 112 **(Exam may be taken only once, at a $50.00 cost)** | 0-4 | MATH 107 w/2.0 min within 2 yrs, or Math Level 5; and Reading Level 5 and Writing Level 4. |

## ***PHASE II - ADMISSION RANKING (update effective Fall 2011)***

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|---|---|
| 1. Residency **(Points are based on student's residency status at the start of spring semester of the year of application. See http://www.lcc.edu/schedule/pdfs/8_steps_brochure.pdf for residency policy.)**<br>⇒ Residency within the LCC district<br>⇒ All others (out-of district, out-of-state, and international students) | <br>10 pts.<br>5 pts. |
| 2. All general core education courses required for graduation completed. **(See college catalog for list of approved courses.)**<br>⇒ Any one of the Global Perspectives & Diversity Core classes (3-4 credits);<br>⇒ Any of the Communication Core classes<br>⇒ Any one of the Writing Core classes (3-4 credits);<br>⇒ Science Core: Student will meet requirement with BIOL 202 (4 credits)<br>⇒ Mathematics Core: Student will meet requirement with MATH 112 or proficiency exam (4 credits) | 10 pts. |
| 3. Points will be given for **Overall GPA** in courses required for admission (BIOL 201, 202, and MATH 112) as follows:<br>⇒ 4.0 – 3.6<br>⇒ 3.5 – 3.1<br>⇒ 3.0 – 2.6<br>⇒ 2.5 – 2.0 | <br>15 pts.<br>12 pts.<br>6 pts.<br>3 pts. |
| 4. Overall GPA of 3.0 or better in all required Core general education courses. | 5 pts. |
| 5. Any one of the following courses or course sequences of college level math or science with a grade of<br>⇒ 2.0 – 2.9<br>⇒ 3.0 or higher<br>**MATH** 119 or above<br>**BIOL** 203, 265, 270, 275, 276<br>**CHEM** 130, 151 & 161, 152 & 162, 182 & 192, 251, 252, 262, 272<br>**PHYS** 200, 221, 222, 251, 252<br>**ISCI** 121, 122, 131<br>***OR***<br>**CHSE** 120 (Medical Terminology) | <br>2 pts.<br>5 pts. |
| 6. Experience<br>Applicant must provide all work, observation and volunteer experience, with written documentation on employer letterhead, for points to be awarded.<br>⇒ Documented 4 - 8 hours of observation/job shadowing experience in a Radiology Department. **(all job shadowing must be documented by May 15th).**<br>⇒ Documented work or volunteer experience (**with direct patient care**) in the health care field stating start/end dates.<br>⇒ 10 years or more<br>⇒ 5 – 9 years<br>⇒ 1 – 4 years<br>⇒ less than one year<br>⇒ Documented work experience in a Radiology Department of 1 year or more<br>⇒ less than one year | <br>10 pts.<br>10 pts.<br>5 pts.<br>3 pts.<br>1 pt.<br>10 pts.<br>5 pts. |

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# Radiologic Technology Program
# Master Curriculum and Cost Information
## FALL SEMESTER 2011 ADMISSION

| SEMESTER | COURSE CODE | COURSE TITLE | Credit Hours | Billing Hours | Lecture Hours/ Wk | Lab Hours/ Wk | Clinical Hours/ Wk | Course Fees |
|---|---|---|---|---|---|---|---|---|
| PREREQS | MATH 112 | Intermediate Algebra or Proficiency Exam | 0-4 | 0-4 | 0 | 0 | 0 | $ 7.00 |
| | BIOL 201 | Human Anatomy | 4 | 6 | 3 | 2 | 0 | $ 40.00 |
| | BIOL 202 | Human Physiology | 4 | 5 | 3 | 2 | 0 | $ 40.00 |
| FALL 2011 | IRXT 100 | Intro to Imaging/Patient Care Principles | 4 | 4 | 1.5 | 2 | 12 | $ 308.00 |
| | IRXT 111 | Radiographic Positioning I | 5 | 5 | 4 | 2 | 0 | $ 389.00 |
| | IRXT 121 | Radiographic Exposure I | 3 | 3 | 2 | 2 | 0 | $ 294.00 |
| | | ♦CORE REQUIREMENT | 3 | 3 | | | | |
| SPRING 2012 | IRXT 112 | Radiographic Positioning II | 5 | 5 | 4 | 2 | 0 | $ 400.00 |
| | IRXT 122 | Radiographic Exposure II | 3 | 3 | 2 | 2 | 0 | $ 293.00 |
| | IRXT 202 | Clinical Practice I | 4 | 4 | 0 | 0 | 16 | $ 308.00 |
| | | ♦CORE REQUIREMENT | 3 | 3 | | | | |
| SUMMER 2012 | IRXT 204 | Clinical Practice II-S | 5 | 5 | 0 | 0 | 40 | $ 485.00 |
| FALL 2012 | IRXT 114 | Cross Sectional Anatomy | 3 | 3 | 3 | 0 | 0 | $ 402.00 |
| | IRXT 131 | Radiologic Physics | 3 | 3 | 3 | 0 | 0 | $ 362.00 |
| | IRXT 214 | Comprehensive Experience I | 6 | 6 | 0 | 0 | 24 | $ 485.00 |
| | | ♦CORE REQUIREMENTS | 3 | 3 | | | | |
| SPRING 2013 | IRXT 132 | Radiobiology and Protection | 2 | 2 | 2 | 0 | 0 | $ 362.00 |
| | IRXT 200 | Introduction to Radiologic Pathology | 2 | 2 | 2 | 0 | 0 | $ 368.00 |
| | IRXT 215 | Comprehensive Experience II | 6 | 6 | 0 | 0 | 24 | $ 491.00 |
| | CHSE 117 | Health Law and Ethics | 2 | 2 | 2 | 0 | 0 | $ 15.00 |
| | | TOTALS | 70-74 | 73-77 | 31.5 | 14 | 116 | $5049.00 |

Approximate Additional Costs (textbooks, uniforms, supplemental kits): ..... $ 850.00

♦ Although not prerequisites for program admission, it is strongly recommended that students take CORE REQUIREMENTS prior to the first year of the program.

**Current College Tuition Rates**

In-district..... $ 79.00
Out of district..... $158.00
Out of state..... $237.00
International..... $276.00

$5.00 per billing hour Facilities Fee

1. (Billing Hours x Tuition Rate) + (Billing Hours x $5.00 Facilities Fee) + Course Fees = Tuition Due
2. Tuition is payable at the time of registration for each semester.

**NOTE:** *Tuition rates, credit hours, billing hours, clinical hours, sequencing and course fees are subject to change by action of the Board of Trustees.*

Lansing Community College does not discriminate on the basis of race, religion, age, national origin, sex, marital status, color, height, weight, handicap or sexual orientation in its employment, educational programs or activities. If you feel you have been discriminated against, contact the Equal Opportunity Office at (517) 483-1030.

# BIOL 201 – HUMAN ANATOMY
# Course Prerequisites

- Minimum 2.0 in BIOL121 or BIOL127 or CHEM120 or passing score on Health Biology Proficiency Test) and Reading Level 5 and Writing Level 6 and Math Level 4

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- If you need to take the Health Biology Proficiency Test, you must take it in the Assessment Center BEFORE you register for BIOL 201.
- This test may be taken only ONE time.
- To prepare for the Health Biology Proficiency Test, read and study Chapters 2-6, 8-11, and 14 in *Cell Biology and Genetics*, 10th ed., (Starr, Cecie), and the *Biology 121 Supplement* (Solomon), both on reserve in the LCC Library and in the LSARC, Room 455, Arts and Sciences Building.
- A review of topics sheet is available on the next page.

For more information contact the Science Department at (517) 483-1092.

# REVIEW TOPICS TO PREPARE FOR THE HEALTH BIOLOGY PROFICIENCY EXAM

A. Basic Chemistry
   1. Inorganic
      a. atomic structure
         elementary particles (protons, neutrons, electrons), atomic number, atomic mass, isotopes, chemical symbols.
      b. atoms and molecules
         ionization, anions, cations, bonding: ionic covalent (polar, non-polar), hydrogen
      c. acids, bases, pH, buffers

   2. Organic
      a. functional groups, example: amino group, carboxyl group, hydroxyl group
      b. biologically important molecules: carbohydrates, lipids, proteins, nuleic acid

B. Cell Structure and Function
   1. structure of the cell membrane

   2. movement of molecules: osmosis/diffusion/active transport

   3. cell organelles, example: structure and function of mitochondria, nucleolus, lysosme, ribosome, endoplasmic reticulum, vesicle, nucleus, Golgi apparatus, etc.

   4. energetics
      a. synthesis and hydrolysis of ATP
      b. aerobic metabolism (cell respiration), example: Krebs cycle, electron transport system, etc.)
      c. anaerobic metabolism (glycolysis)

   5. protein synthesis
      a. role of DNA, RNAs
      b. genes

   6. mitosis/meiosis

C. Chemical Composition of the Body
   1. osmolarity
      a. hyper-, hypo-, isotonic solutions and how they relate to osmosis
   2. acids, bases, buffers

To prepare for the Health Biology Proficiency Test, read and study Chapters 2-6, 8-11, and 14 in *Cell Biology and Genetics*, 10th ed., (Starr, Cecie), and the *Biology 121 Supplement* (Solomon), both on reserve in the LCC Library and in the LSARC, Room 455, Arts and Sciences Building.