RADT-2350: RADIOGRAPHIC PATHOLOGY

Cuyahoga Community College

Viewing: RADT-2350: Radiographic Pathology

Board of Trustees:
2017-01-26

Academic Term:
2017-08-24

Subject Code
RADT - Radiography

Course Number:
2350

Title:
Radiographic Pathology

Catalog Description:
Study and identification of selected pathologic conditions. Manifestations of diseases of the human body and their radiographic appearance. Adjustment of techniques due to pathologic changes and best imaging procedures will be covered.

Credit Hour(s):
3

Lecture Hour(s):
2

Lab Hour(s):
2

Other Hour(s):
0

Requisites

Prerequisite and Corequisite
BIO-1221 Anatomy and Physiology for Diagnostic Medical Imaging, and RADT-1351 Image Acquisition and Evaluation, or departmental approval: admission to program.

I. ACADEMIC CREDIT

Academic Credit According to the Ohio Department of Higher Education, one (1) semester hour of college credit will be awarded for each lecture hour. Students will be expected to work on out-of-class assignments on a regular basis which, over the length of the course, would normally average two hours of out-of-class study for each hour of formal class activity. For laboratory hours, one (1) credit shall be awarded for a minimum of three laboratory hours in a standard week for which little or no out-of-class study is required since three hours will be in the lab (i.e. Laboratory 03 hours). Whereas, one (1) credit shall be awarded for a minimum of two laboratory hours in a standard week, if supplemented by out-of-class assignments which would normally average one hour of out-of-class study preparing for or following up the laboratory experience (i.e. Laboratory 02 hours). Credit is also awarded for other hours such as directed practice, practicum, cooperative work experience, and field experience. The number of hours required to receive credit is listed under Other Hours on the syllabus. The number of credit hours for lecture, lab and other hours are listed at the beginning of the syllabus. Make sure you can prioritize your time accordingly. Proper planning, prioritization and dedication will enhance your success in this course.

The standard expectation for an online course is that you will spend 3 hours per week for each credit hour.

II. ACCESSIBILITY STATEMENT

If you need any special course adaptations or accommodations because of a documented disability, please notify your instructor within a reasonable length of time, preferably the first week of the term with formal notice of that need (i.e. an official letter from the Student Accessibility Services (SAS) office). Accommodations will not be made retroactively.
For specific information pertaining to ADA accommodation, please contact your campus SAS office or visit online at http://www.tri-c.edu/accessprograms. Blackboard accessibility information is available at http://access.blackboard.com.

III. ATTENDANCE TRACKING

Regular class attendance is expected. Tri-C is required by law to verify the enrollment of students who participate in federal Title IV student aid programs and/or who receive educational benefits through other funding sources. Eligibility for federal student financial aid is based in part on enrollment status.

Students who do not attend classes for the entire term are required to withdraw from the course(s). Additionally, students who withdraw from a course or stop attending class without officially withdrawing may be required to return all or a portion of their financial aid based on the date of last attendance. Students who do not attend the full session are responsible for withdrawing from the course(s).

Tri-C is responsible for identifying students who have not attended a course before financial aid funds can be applied to students’ accounts.

Therefore, attendance is recorded in the following ways:

- For in-person and blended-learning courses, students are required to attend the course by the 15th day of the semester (or equivalent for terms shorter than five weeks) to be considered attending. Students who have not met all attendance requirements for in-person and blended courses, as described herein, within the first two weeks or equivalent, will be considered not attending.
- For online courses, students are required to login at least two times per week and submit one assignment per week for the first two weeks of the semester, or equivalent to the 15th day of the term. Students who have not met all attendance requirements for online courses, as described herein, within the first two weeks or equivalent, will be considered not attending.

At the conclusion of the first two weeks of a semester or equivalent, instructors report any registered students who have “Never Attended” a course. Those students will be administratively withdrawn from that course. However, after the time period in the previous paragraphs, if a student stops attending a class or wants or needs to withdraw, for any reason, it is the student’s responsibility to take action to withdraw from the course. Students must complete and submit the appropriate Tri-C form by the established withdrawal deadline.

Tri-C is required to ensure that students receive financial aid only for courses that they attend and complete. Students reported for not attending at least one of their registered courses will have all financial aid funds held until confirmation of attendance in registered courses has been verified. Students who fail to complete at least one course may be required to repay all or a portion of their federal financial aid funds and may be ineligible to receive future federal financial aid awards. Students who withdraw from classes prior to completing more than 60 percent of their enrolled class time may be subject to the required federal refund policy.

If illness or emergency should necessitate a brief absence from class, students should confer with instructors upon their return. Students having problems with coursework due to a prolonged absence should confer with the instructor or a counselor.

IV. LEARNING OUTCOMES ASSESSMENT

Occasionally, in addition to submitting assignments to their instructors for evaluation and a grade, students will also be asked to submit completed assignments, called ’artifacts,’ for assessment of course and program outcomes and the College’s Essential Learning Outcomes (ELOs). The artifacts will be submitted in Blackboard or a similar technology. The level of mastery of the outcome demonstrated by the artifact DOES NOT affect the student’s grade or academic record in any way. However, some instructors require that students submit their artifact before receiving their final grade. Some artifacts will be randomly selected for assessment, which will help determine improvements and support needed to further student success. If you have any questions, please feel free to speak with your instructor or contact the Learning Outcomes Assessment office.

V. CONCEALED CARRY STATEMENT

College policy prohibits the possession of weapons on college property by students, faculty and staff, unless specifically approved in advance as a job-related requirement (i.e., Tri-C campus police officers) or, in accordance with Ohio law, secured in a parked vehicle in a designated parking area only by an individual in possession of a valid conceal carry permit.

As a Tri-C student, your behavior on campus must comply with the student code of conduct which is available on page 29 within the Tri-C student handbook, available at http://www.tri-c.edu/student-resources/documents/studenthandbook.pdf. You must also comply with the College’s Zero Tolerance for Violence on College Property available at http://www.tri-c.edu/policies-and-procedures/documents/3354-1-20-10-zero-tolerance-for-violence-policy.pdf

Outcomes
Course Outcome(s):
Perform examinations and handling of patients in various stages of pathologies.
Objective(s):
1. Define common terminology associated with the study of disease.
2. Differentiate between signs and symptoms of common diseases.
3. Distinguish between diagnosis and prognosis.

Course Outcome(s):
Perform examinations and handling of patients with various bacteria and viruses.

Objective(s):
1. Define given related terminology.
2. List requirements for bacterial growth.
3. Explain disease process.
4. Recognize the need for Standard Precautions.
5. Differentiate between congenital and acquired diseases.
6. Discuss the effects of injury on various tissues.
7. Differentiate between a virus and bacteria.
8. State signs of inflammation.
9. Describe the healing process.

Course Outcome(s):
Describe basic etiology and manifestations of pathological conditions and their relevance to radiological procedures for any of the following systems: Skeletal, Central Nervous System, Hemopoietic, Cardiovascular, Respiratory, Digestive, Hepatobiliary, Urinary, Endocrine, Reproductive.

Objective(s):
1. Define given related terminology.
2. Discuss various imaging modalities.
3. Differentiate between various congenital disorders, acute, and inflammatory conditions for each system and identify them on a radiograph.
4. Specify the etiology, pathogenesis, signs and symptoms, and prognosis of each pathology for given systems.
5. Explain changes in technical factors required to produce quality images of patients with pathological conditions.
6. Examine the radiographic pathology of various diseases in all systems listed.

Course Outcome(s):
Lab Objectives: Perform computer skills essential to the function of the Radiology department including retrieving images from a simulated Picture Archival Communication System (PACS), for each of the following systems; Skeletal, Central Nervous System, Hemopoietic, Cardiovascular, Respiratory, Digestive, Hepatobiliary, Urinary, Endocrine, Reproductive.

Essential Learning Outcome Mapping:
Information Literacy: Acquire, evaluate, and use information from credible sources in order to meet information needs for a specific research purpose.

Objective(s):
1. Examine the radiographic pathology of various diseases in all systems listed.
2. Identify imaging procedures and interventional techniques appropriate for diseases commonly used for all systems listed.
3. Present and critique radiographic pathologies and their specific etiology, pathogenesis, signs and symptoms, and prognosis for all systems; using MyPACS.

Course Outcome(s):
Perform examinations and handling of patients in various states and types of trauma.

Objective(s):
1. Explain methods of handling traumatized patients.
2. Define given related terminology.
3. Differentiate between the levels of trauma.
4. Describe the types of mechanical trauma.
5. Describe types of head trauma.
6. Identify various fracture types on given radiographs and other imaging modalities.
7. Categorize burn types.
Methods of Evaluation:
1. Quizzes, including both online and paper based
2. Midterm/final/written examination
3. Evaluation of radiographic pathology on radiographs
4. Assessment of pathologies using MyPACS
5. Completion of web-based activities for the lab portion

Course Content Outline:
1. Trauma - Assist in any examination and handling of patients in various states and types of trauma.
   a. Related terminology.
   b. Levels of trauma.
   c. Types of mechanical trauma.
   d. Types of head trauma.
   e. Identify various fracture types on given radiographs, and other imaging modalities.
      i. Simple
      ii. Compound
      iii. Comminuted
      iv. Transverse
      v. Impacted
      vi. Spiral
      vii. Greenstick
      viii. Pathologic
      ix. Pott’s
      x. Colle’s
      xi. Salter Harris I-IV
      xii. Dislocation
      xiii. Subluxation
   f. Hypothermia and hyperthermia.
   g. Describe and locate radiographic findings in a patient suffering from plumbism.
   h. Categorize burn types.
   i. Methods of handling traumatized patients.

2. Bacteria - Assist in examinations and handling of patients with various bacteria and viruses.
   a. Related terminology.
   b. Bacterial growth.
   c. Transmission, preventive precautions, and organism responsible infections.
   d. Disease process.
   e. Congenital and acquired diseases.
   f. Effects of injury on various tissues.
   g. Virus and bacteria size, classifications and characteristics.
   h. Signs of inflammation.
   i. The healing process.
   j. Standard precautions.

3. Skeletal system
   a. Scurvy
   b. Rickets
   c. Osteoarthritis
   d. Spondylosis
   e. Spondylothesis
   f. OsGood Schlatter’s disease
   g. Legg-Clave Perthes disease
   h. Congenital skeletal conditions
      i. Osteopetrosis
      ii. Osteogenesis imperfecta
      iii. Achondroplasia
      iv. Congenital hip dysplasia
   i. Inflammatory skeletal conditions
      i. Rheumatoid arthritis
      ii. Gout
iii. Neuropathic arthritis  
iv. Ankylosing Spondylitis  
v. Osteomyelitis  

j. Metabolic conditions  
i. Osteoporosis  
ii. Osteomalacia  
iii. Paget's disease  

k. Skeletal tumors  
i. Osteochondroma  
ii. Giant cell tumors  
iii. Simple bone cysts  
iv. Osteogenic sarcoma  
v. Chondrosarcoma  
vi. Ewing's tumor  

4. Central nervous system (CNS)  
a. Spina bifida  
b. Coupe and contra coupe injuries  
c. Various skull fractures  
d. Hydrocephalus  
e. Meningitis  
f. Encephalitis  
g. Thrombus  
h. Embolism  
i. Aneurysm types  
j. Degenerative diseases of CNS  
k. Cerebral vascular accidents  
i. Treatments  
ii. Prognosis  
l. Epilepsy  
m. Multiple sclerosis  

5. Hemopoietic system  
a. Acquired immune deficiency syndrome  
b. Multiple myeloma  
c. Leukemia  
d. Blood dyscrasias  
e. Anemia  
f. Hemophilia  
g. Hodgkin's disease  
h. Infarct and ischemia  

6. Cardiovascular system  
a. Primary and secondary hypertension  
b. Cardiomegaly  
c. Dextrocardia  
d. Situs inversus  
e. Congenital disorders  
i. Patent Ductus Arteriosus  
ii. Coarctation of the aorta  
iii. Atrial septal defect  
iv. Ventricular septal defect  
v. Tetralogy of Fallot  
f. Rheumatic heart disease  
g. Congestive heart failure  
h. Degenerative disorders  
i. Atherosclerosis  
ii. Coronary artery disease  
i. Aneurysms  
j. Thrombosis
k. Embolism
l. Edema

7. Respiratory system
   a. Bullae and blebs
   b. Infiltrates
   c. Congenital disorders
      i. Cystic fibrosis
      ii. Hyaline membrane disease
   d. Acute disorders
      i. Croup
      ii. Adult respiratory distress syndrome
      iii. Pulmonary edema
      iv. Atelectasis
      v. Pneumothorax
   e. Inflammatory disorders
      i. Pneumonias
      ii. Pneumocystis carinii
      iii. Bronchiectasis
      iv. Pulmonary tuberculosis
      v. Chronic obstructive pulmonary disease
      vi. Emphysema
      vii. Pneumonconiosis
      viii. Histoplasmosis
      ix. Empyema
      x. Pleural effusion
      xi. Pulmonary edema
      xii. Pulmonary embolism
   f. Neoplastic disorders
      i. Bronchogenic carcinoma
      ii. Metastases
   g. Lines and tubes
      i. Endotracheal tube
      ii. Chest tube
      iii. Central venous pressure line
      iv. Swan-Ganz
      v. Hickman
      vi. Port-A-Cath

8. Digestive
   a. Congenital disorders
      i. Esophageal atresia
      ii. Tracheoesophageal fistula
      iii. Hypertrophic pyloric stenosis
      iv. Malrotation
      v. Hirschprung’s disease
      vi. Diverticula
   b. Inflammatory disorders
      i. Varices
      ii. Gastroesophageal reflux
      iii. Ulcers
      iv. Gastroenteritis
      v. Regional enteritis
      vi. Ulcerative colitis
      vii. Appendicitis
      viii. Gastrointestinal bleeds
      ix. Peritonitis
   c. Degenerative disorders
      i. Herniations
      ii. Umbilical and inguinal
d. Mechanical obstructions  
   i. Paralytic ileus  
   ii. Small bowel obstructions  
   iii. Large bowel obstructions  
   iv. Volvulus  
   v. Intussusception  
   vi. Ascites  

e. Neurogenic disorders  
   i. Achalasia  
   ii. Esophageal diverticula  
   iii. Zenker’s  

f. Neoplastic disorders  
   i. Colon cancer  
   ii. Polyps  

g. Lines and tubes  
   i. Nasogastric tube  
   ii. Gastric lavage  
   iii. Dobhoff/Corpak  
   iv. Miller-Abbott  
   v. Cantor tube  

9. Hepatobiliary  
   a. Inflammatory disorders  
      i. Cirrhosis  
      ii. Ascites  
      iii. Hepatitis  
      iv. Cholelithiasis  
      v. Cholecystitis  
   b. Metabolic disorders  
      i. Jaundice  
   c. Neoplastic disorders  
      i. Hepatocellular carcinoma  
      ii. Metastatic liver disease  
      iii. Carcinoma of the pancreas  

10. Urinary system  
   a. Congenital disorders  
      i. Agenesis kidney  
      ii. Horseshoe kidney  
      iii. Supernumerary kidney  
      iv. Ectopia  
      v. Double ureters  
      vi. Polycystic kidney  
      vii. Ureterocele  
      viii. Diverticula  
   b. Inflammatory disorders  
      i. Urinary tract infections  
      ii. Pyelonephritis  
      iii. Glomerulonephritis  
      iv. Tuberculosis  
      v. Cystitis  
   c. Degenerative and Metabolic disorders  
      i. Renal failure  
      ii. Calcifications and calculi  
      iii. Hydronephrosis  
      iv. Reflux  
   d. Neoplastic disorders  
      i. Renal carcinoma  
      ii. Nephroblastoma  
      iii. Bladder carcinoma  

11. Endocrine system
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a. Gigantism
b. Acromegaly
c. Dwarfism
d. Hyper and hypothyroidism
e. Cretinism
f. Myxedema
g. Grave’s disease
h. Cushing’s syndrome
i. Goiters
j. Function of the following glands:
   i. Pituitary
   ii. Thyroid
   iii. Parathyroid
   iv. Adrenal
   v. Pancreas
   vi. Ovaries
   vii. Testes

12. Reproductive system
   a. Female disorders
      i. Bicornuate uterus
      ii. Endometriosis
      iii. Ovarian cysts
      iv. Ectopic pregnancy
      v. Breast carcinoma
      vi. Teratoma
   b. Male disorders
      i. Testicular carcinoma
      ii. Benign prostatic hypertrophy
      iii. Cryptorchidism
   c. Procedures
      i. Hysterosalpingogram
      ii. Mammography

Resources


Resources Other
1. MyPACS.net http://www.mypacs.net/repos/mpv3_repo/cgi/case-manager.pl
2. University Hospital http://www.uhrad.com/
3. Aunt Minnie’s http://www.auntminnie.com
5. Mayo Clinic http://mayoclinic.org
6. American Society of Radiologic Technologists http://ASRT.org
7. youtube http://youtube.com

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