



El Camino College
COURSE OUTLINE OF RECORD – Official

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| Course Acronym: | RTEC |
| Course Number: | 93 |
| Descriptive Title: | Venipuncture and Pharmacology for the Radiologic Technologist |
| Division: | Health Sciences and Athletics |
| Department: | Radiologic Technology |
| Course Disciplines: | Radiologic Technology |
| Catalog Description: | This course provides the student with the basic concepts of pharmacology and venipuncture. The theory and practice of the basic techniques of venipuncture and the administration of diagnostic contrast agents and/or intravenous medications is included. Delivery of patient care during these procedures is also emphasized. This course provides the student with the basic concepts of pharmacology and venipuncture. The theory and practice of the basic techniques of venipuncture and the administration of diagnostic contrast agents and/or intravenous medications is included. Delivery of patient care during these procedures is also emphasized. |
| Prerequisite: | Radiologic Technology 123 with a minimum grade of C in prerequisite |
| Co-requisite: | Radiologic Technology 107 AND Radiologic Technology 124 |
| Recommended Preparation: | |
| Enrollment Limitation: | |
| Hours Lecture (per week): | 0.5 |
| Hours Laboratory (per week): | 1.5 |
| Outside Study Hours: | 1 |
| Total Course Hours: | 36 |
| Course Units: | 1 |
| Grading Method: | Letter Grade only |
| Credit Status: | Credit, degree applicable |
| Transfer CSU: | Yes |
| Effective Date: | 12/10/2001 |
| Transfer UC: | No |
| Effective Date: | |
| General Education: ECC | |
| Term: | |
| Other: | |
| CSU GE: | |
| Term: | |
| Other: | |
| IGETC: | |
| Term: | |

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| Other: | |
| Student Learning Outcomes: | <p>SLO #1 Contrast Media Reaction</p> <p>The student will analyze the current medical history of the patient and assess the safety of the patient to receive a contrast media injection and their risk level for an adverse reaction.</p> <p>SLO #2 Contrast Dose Calculations</p> <p>Students will formulate contrast dose calculations for adult and pediatric patients</p> <p>SLO #3 Proper Vein Locations</p> <p>Students will locate the common veins and sites of injection for a venipuncture injection of contrast media by demonstrating a "flash back" with a butterfly and angio catheter needle</p> |
| Course Objectives: | <ol style="list-style-type: none"> 1. Select methods used for proper patient identification and ascertain appropriate patient preparation for each radiographic imaging procedure. 2. Assess and evaluate patient's status and condition before, during, and after radiographic procedure. 3. Demonstrate the correct method of obtaining a patient's vital signs and medical history. 4. Locate the common veins and sites of injection for venipuncture injection of contrast media or drugs. 5. Compare and contrast the purposes, advantages, and disadvantages of intravenous administration versus other routes. 6. Demonstrate methods of delivery using butterfly and angiocath needles. 7. Describe and distinguish between the various categories and uses of contrast media agents and pharmacology used in radiographic imaging procedures. 8. Prepare the set up and perform the appropriate steps of venipuncture using correct venipuncture technique; and maintaining sterile precautions and aseptic technique. 9. Describe the elements of initiating and discontinuing the injection of contrast media or intravenous drug therapy. 10. Describe an appropriate response to possible associated complications, side effects, and adverse reactions to contrast media and/or intravenous drug therapy. 11. Formulate dose calculations for adult and pediatric patients utilizing the pharmacokinetic and pharmacodynamic principles of drugs and contrast media. 12. Evaluate the physicians' orders and determine the role of the radiologic technologist in following through with those orders. 13. Analyze the legal documentation procedures required by the Radiographer when performing venipuncture and contrast media injections, including informed consent. 14. Interpret the Patient's Bill of Rights as it applies to venipuncture procedures, current legal, ethical, and professional liability status applicable to the radiographer in drug administration. |
| Major Topics: | <p>I. PATIENT IDENTIFICATION AND ASSESSMENT (0.5 hours lecture)</p> <ol style="list-style-type: none"> A. Two patient identifiers B. Medical History C. Current health status indicators <p>II. VENIPUNCTURE INJECTIONS (1 hour, lecture)</p> <ol style="list-style-type: none"> A. Indications |

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| | <ul style="list-style-type: none"> B. Contraindications C. Purpose of intravenous delivery <p>III. VENOUS ANATOMY (1 hour, lecture)</p> <p>IV. CONTRAST MEDIA (1 hour, lecture)</p> <ul style="list-style-type: none"> A. Routes of administration B. Pharmacology C. Types D. Uses in radiographic procedures E. Complications <p>V. INTRAVENOUS INJECTIONS (1 hour, lecture)</p> <ul style="list-style-type: none"> A. Advantages B. Disadvantages C. Five rights of drug administration <p>VI. EMERGENCY (1 hour, lecture)</p> <ul style="list-style-type: none"> A. Medications B. Crash cart <p>VII. PRINCIPLES OF DRUGS AND CONTRAST MEDIA (1 hour, lecture)</p> <ul style="list-style-type: none"> A. Pharmacokinetic B. Pharmacodynamics <p>VIII. CONSENTS (1 hour, lecture)</p> <ul style="list-style-type: none"> A. Implied B. Written C. Patient's Bill of Rights <p>IX. STATE LAWS AND SCOPE OF PRACTICE (1 hour, lecture)</p> <ul style="list-style-type: none"> A. Documentation procedures <p>X. American Registry of Radiologic Technologists (0.5 hours, lecture)</p> <ul style="list-style-type: none"> A. (ARRT) Code of Ethics Review <p>XI. VITAL SIGNS SKILLS PRACTICE AND TESTING (12 hours, lab)</p> <ul style="list-style-type: none"> A. Pulse B. Respiration C. Blood pressure D. Recognize and respond to adverse reactions of contrast media E. Vital signs skills check-off <p>XII. VENIPUNCTURE SKILLS PRACTICE AND TESTING (12 hours, lab)</p> <ul style="list-style-type: none"> A. Sites for injection B. Methods to draw contrast into a syringe C. Methods to prepare intravenous solutions D. Venipuncture supplies and equipment E. Tourniquet placement F. Venipuncture on a phantom arm G. Aseptic and sterile techniques H. Use of butterfly and angiocath needles <p>XIII. CONTRAST MEDIA (3 hours, lab)</p> <ul style="list-style-type: none"> A. Interpretation of orders B. Dose calculations for adult and pediatric patients |
| Total Lecture Hours: | 9 |
| Total Laboratory Hours: | 27 |
| Total Hours: | 36 |
| Primary Method of Evaluation: | 3) Skills demonstration |

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| Typical Assignment Using Primary Method of Evaluation: | Demonstrate the proper position and application of a tourniquet for venous distension and prepping of the skin prior to performing a venipuncture injection with contrast media for an intravenous urogram. |
| Critical Thinking Assignment 1: | In a written report, compare and contrast the effects and adverse reactions of ionic and non-ionic iodinated contrast medium. |
| Critical Thinking Assignment 2: | Prepare a sequential flow chart of each of the steps necessary in preparing and performing a venipuncture injection for an intravenous program. |
| Other Evaluation Methods: | |
| Instructional Methods: | Lecture, Other |
| If other: | Demonstration with return demonstration using phantom model arms for venipuncture Assemble supplies and equipment for venipuncture injection Observation in the clinical environment |
| Work Outside of Class: | 1 hour/week study time and observation of patient contrast injections of by certified personnell in the radiology department. |
| If Other: | Study Answer questions Skill practice Required reading Problem solving activities Written work Observation of or participation in an activity related to course content |
| Up-To-Date Representative Texts: | Rollins, Long, Curtis. <u>Merrills Atlas of Radiographic Positions and Radiologic Procedures</u> ,15th edition - VOL II. Mosby/ Elsevier, 2023. A. Adler & R. Carlton. <u>Introduction to Radiologic and Imaging Sciences and Patient Care</u> . 8th ed. Cengage, 2022. |
| Alternative Texts: | |
| Required Supplementary Readings: | |
| Other Required Materials: | |
| Requisite: | Prerequisite |
| Category: | sequential |
| Requisite course(s): List both prerequisites and corequisites in this box. | Prerequisite: Radiologic Technology-123 Course Corequisite: Radiologic Technology-107 AND Radiologic Technology-124 |
| Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s). | When provided a list of contrast media, categorize the media by specific examinations for which they are used in routine diagnostic radiography. RTEC 123 - Assess the patient's status and condition before, during and following the radiographic procedure. RTEC 124 - Characterize the nature, safe use, and hazards associated with use of contrast media in radiographic procedures. RTEC 124 - Describe the contraindications, symptoms and medical interventions for a patient with a contrast media reaction. |

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| | <p>RTEC 124 - Compare and contrast the benefits and risks of a fluoroscopy procedure.</p> <p>RTEC 124 - Describe the patient preparation for barium and iodinated contrast studies. When provided a list of contrast media, distinguish between methods of delivery.</p> <p>RTEC 124 - Characterize the nature, safe use, and hazards associated with use of contrast media in radiographic procedures.</p> <p>RTEC 124 - Describe the contraindications, symptoms and medical interventions for a patient with a contrast media reaction.</p> <p>RTEC 124 - Compare and contrast the benefits and risks of a fluoroscopy procedure.</p> <p>RTEC 124 - Describe the patient preparation for barium and iodinated contrast studies. Identify recommended radiographic projections and procedures to examine specific portions of the urinary systems. List conditions which would contraindicate the use of contrast material in routine diagnostic radiography.</p> <p>RTEC 124 - Identify standard radiographic positions and anatomical structures on a radiographic image. Understand Physician's orders and emergency guidelines during radiographic procedures.</p> <p>RTEC 107 - Interpret doctors' orders for radiologic procedures from patient's chart. RTEC 107 - Recognize specific departmental emergency codes.</p> |
| Requisite Skill: | |
| Requisite Skill and Matching Skill(s): Bold the requisite skill(s). If applicable | |
| Requisite course: | |
| Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s). | |
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| Enrollment Limitations and Category: | |
| Enrollment Limitations Impact: | |
| Course Created by: | J. Visintainer |
| Date: | 10/01/2001 |

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| Original Board Approval Date: | 12/10/2001 |
| Last Reviewed and/or Revised by: | Dawn Charman |
| Date: | 10/15/2023 |
| Last Board Approval Date: | 06/17/2024 |
| Effective Term: | FALL 2025 |