Course Syllabus

Instructor: Dan Bernard 305-9005  
Office hours: By appointment.

Prerequisites: Acceptance to V.I. School and in good standing with A.R.R.T.

Course Description
This course will present to the student essential types of equipment used in a vascular & interventional imaging suite. The student will be presented with emergency patient care procedures that arise from complications associated with this type of imaging. Patient monitoring and medication will be discussed.

Hours per class: 1  
Number of classes per week: 2  
Term: March - November

Course Objectives – The student will be able to:
- Describe the digital image characteristics
- Define the steps involved in image production.
- Define and describe the parts, function and operation associated with the pressure injector.
- Define and describe the parts, function and operation associated with the imaging unit.
- List and explain the types, construction and indications for use of catheters, guide wires, needles, sheaths and closure devices.
- Describe the normal location of and deployment of caval filters, central venous catheters, embolic materials, stents and stent grafts.
- Explain patient education and informed consent.
- Define, list and describe implications of normal and abnormal patient assessment values.
- Describe the equipment used in patient assessment and monitoring.
- List and describe types of contrast agents.
- Describe indications and contraindications of contrast agent use.
- State the five-rights of medication.
- Identify routes of medication administration.
- Describe indications and contraindications of analgesics, IV sedatives, anticoagulants, thrombolytics, vasoconstrictors and vasodilators.
- Describe preparation and dosage of medications.
- Define sterile technique and surgical scrub technique.
- Describe standard and transmission-based precautions.
- Relate complications associated with contrast agents and medications used in the treatment of these complications.
- List the symptoms and the treatment of medical emergencies.
- Describe basic life support and the application of defibrillation.

**Grading Scale**

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<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
<th>Letter</th>
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<tbody>
<tr>
<td>A</td>
<td>90 – 100</td>
<td>80 – 89</td>
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<tr>
<td>B</td>
<td>70 – 79</td>
<td>60 – 69</td>
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<td>C</td>
<td>≤ 59</td>
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Excessive absenteeism will reduce the student’s final course grade. If you are not present when role is taken, you will be marked absent. If absent from class, the student will be responsible for getting lecture notes from fellow classmates. Make up tests and quizzes are at the discretion of the instructor.

Course progression is contingent upon the student maintaining at least 2.0 course average.

The course instructor has the flexibility to modify or change the syllabus/schedule during the course of the semester. If changes are made, the student will be notified in advance.

**Required Text**

- *Vascular & Interventional Radiography 2nd Ed.*
- *Fundamentals of Special Radiographic Procedures 5th Ed.*
Vascular & Interventional Radiography I

I. Essential Concepts of Digital Imaging
   1 Class period
   a. Introduction
   b. Lecture (Schwartz 30-34 & Snopek 17-42)

II. Pressure Injectors
    1 Class period
    a. Quiz over digital
    b. Lecture (Schwartz 33-34 & Snopek 42-58)

III. Catheters, Guide Wires, Sheaths, Interventional & Closure Devices
     1 Class period
     a. Quiz over pressure injectors
     b. Lecture (Schwartz 35-62 & Snopek 59-66 & p141)

IV. Caval Filters, Central Venous Catheters, Embolic Materials, Stents & Stent Grafts
    1 Class period
    a. Quiz over Catheters, Guide Wires, Sheaths, Interventional & Closure Devices
    b. Lecture (Schwartz 58-61 & Snopek 133)

V. Patient Education & Informed Consent
   1 Class period
   a. Quiz over Caval Filters, Central Venous Catheters, Embolic Materials, Stents & Stent Grafts
   b. Lecture (Schwartz 2-3 & Snopek 116-127)

VI. Patient assessment & Monitoring Normal and Abnormal Values
    1 Class period
    a. Quiz over patient education and informed consent
    b. Lecture (Schwartz 4-7 & Snopek 120-135)

VII. O2, Chest Tubes, Catheters & Drainage Bags
     1 Class period
     a. Quiz over Patient assessment & Monitoring Normal and Abnormal Values
     b. Lecture (Adler)
VIII. **Contrast Agents**  
**1 Class period**  
a. Quiz over O2, Chest Tubes, Catheters & Drainage Bags  
b. Lecture (Schwartz 10-11 & Snopek 100-116)

IX. **Medications Types, Routes Indications & Contraindications, Prep & Dosage**  
**1 Class period**  
a. Quiz over contrast agents  
b. Lecture (Schwartz 12-20 & Snopek 73-111)

X. **Asepsis & Sterile Technique**  
**1 Class period**  
a. Quiz over Medications Types, Routes Indications & contraindications, Prep & Dosage  
b. Lecture (Schwartz 8 & Adler 199-247)

XI. **Emergency Care: Contrast Reactions**  
**1 Class period**  
a. Quiz over Asepsis & Sterile Technique  
b. Lecture (Snopek 102-112)

XII. **Emergency Care: Medications Symptoms & Treatment**  
**1 Class period**  
a. Quiz over Emergency Care: Contrast Reactions  
b. Lecture (Snopek 73-138)

XIII. **BLS**  
**1 Class period**  
a. Provide Instructor with current BLS/ACLS card.

XIV. **Final**  
**1 Class period**  
a. Cumulative Test
Vascular & Interventional Procedures II

I. Neurologic Intracranial
   1 Class period
   a. Arterial and Venous interventions including Aneurysms, and AVM’s
   b. Lecture

II. Neurologic Intracranial
    1 Class period
    a. Arterial and Venous cont. including Tumor Embolization an AV fistulas
    b. Lecture

III. Neurologic Interventions
     1 Class period
     a. Quiz
     b. Interesting cases Image Review

IV. Neurologic interventions
    1 Class period
    a. Extracranial procedures including AVM, Tumor Embolization and epixstasis
    b. Spinal intervention including arteriography, kypho/vertebroplasty, and steroid injection
    c. Lecture

V. Neurologic Interventions
   1 Class period
   a. Quiz
   b. Interesting cases Image Review

VI. Thoracic Interventions
    1 Class period
    a. Pulmonary and Bronchial angiography and interventions
    b. Superior vena Cava angiography and interventions
    c. Thoracic Aortagrapy
    d. Lecture

VII. Thoracic Interventions
     1 Class period
     a. Quiz.
     b. Drainage, Biopsy, and RFA
     c. Lecture
VIII. Abdominal Visceral
   1 Class period
   a. Abdominal Aortagraphy including interventions of organs rising from Celiac
   b. Lecture

IX. Abdominal Visceral
   1 Class period
   a. Quiz
   b. Abdominal Aortagraphy and intervention of IMA and SMA
   c. Lecture

X. Abdominal Visceral
   1 Class period
   a. Quiz
   b. Aortagraphy and interventions of Renal, Adrenal and Abdominal Aorta
   c. Lecture

XI. Abdominal Visceral
    1 Class period
    a. Quiz
    b. Aortagraphy and interventions of pelvic and reproductive system
    c. Lecture

XII. Abdominal Visceral
    1 Class period
    a. Quiz
    b. Venography and interventions of IVC, Renal, Adrenal, and Gonadal
    c. Filter placement, thrombectomy, embolization and Vein sampling
    d. Lecture

XIII. Abdominal Visceral
    1 Class period
    a. Quiz
    b. Venography and interventions including portal and hepatic interventions(TIPS)
    c. Lecture

XIV. Final
    1 Class period
Vascular & Interventional Procedures III

I. Abdominal Visceral
   1 Class period
   a. Quiz
   b. Interesting cases Image Review

II. GastroUrinary Procedures Non Vascular
    1 Class period
    a. GU procedures including PCN, Ureteral interventions, Renal Stone extraction, Biopsy and Drainage
    b. Lecture

III. GastroInestinal Procedures.
     1 Class period
     a. Quiz on GU
     b. GI procedures including Biliary Stone extraction, Percutaneous Cholangiogram Drainage, Gtubes, RFA, and Biopsy
     c. Lecture

IV. GI Procedures
    1 Class period
    a. Quiz
    b. Interesting cases Image Review for GU and GI procedures

V. Peripheral
   1 Class period
   a. Upper and lower extremity arteriography and interventions
   b. Lecture

VI. Peripheral
    1 Class period
    a. Quiz
    b. Upper and lower extremity Venography
    c. Lecture

VII. Peripheral
     1 Class period
     a. Quiz
     b. Interesting case Image Review over arterial and venous extremities
Vascular & Interventional Procedures III

VIII. Dialysis Management
1 Class period
a. Dialysis management and interventions of Fistula Grafts
b. Lecture

IX. Venous Access
1 Class period
a. Quiz over Dialysis management
b. Venous access including Picc Lines, Central Lines, Tunneled Lines and Dialysis catheters
c. Lecture

X. Registry Review
1 Class period
a. Mock Registry

XI. Registry Review
1 Class period
a. Mock Registry

XII. Final Exam
1 Class period