A. **Academic Division:** Health Sciences

B. **Discipline:** Radiological Science

C. **Course Number and Title:** RADS2540 Radiologic Procedures/Seminar 5

D. **Course Coordinator:** Dorie Ford R.T. (R) (M), BSPA, M. Ed.  
    **Assistant Dean:** Melinda Roepke, MSN, RN

**Instructor Information:**
- Name: Click here to enter text.
- Office Location: Click here to enter text.
- Office Hours: Click here to enter text.
- Phone Number: Click here to enter text.
- E-Mail Address: Click here to enter text.

E. **Credit Hours:** 3
   - Lecture: 1
   - Seminar: 1
   - Laboratory: 3

F. **Prerequisites:** RADS2420  
   **Co-requisites:** RADS2520 (m)

G. **Syllabus Effective Date:** Fall, 2017

H. **Textbook(s) Title:**

   *Merrill’s Atlas of Radiographic Positioning and Radiologic Procedures 3- volume Set*
   - Author: Long, Rollins, & Smith
   - Copyright Year: 2015
   - Edition: 13th
   - ISBN #: 9780323263412

   *Quick and Easy Medical Terminology*
   - Author: Leonard
   - Copyright Year: 2017
   - Edition: 8th
   - ISBN #: 9780323359207

   *Radiographic Pathology for Technologists*
   - Author: Mace-Kowalczyk
   - Copyright Year: 2017
   - Edition: 7th
   - ISBN: 978032341632
Radiologic Science for Technologists
- Author: Bushong
- Copyright Year: 2017
- Edition: 11th
- ISBN: 9780323353779

I. Workbook(s) and/or Lab Manual:

Merrill’s Pocket Guide to Radiography
- Author: Frank
- Copyright Year: 2015
- Edition: 13th
- ISBN #: 9780323311960

Merrill’s Atlas of Radiographic Positioning and Procedures Workbook
- Author: Long, Rollins, Smith & Curtis
- Copyright Year: 2015
- Edition: 13th
- ISBN #: 9780323263382

J. Course Description: This course is a capstone to all previous radiographic procedure courses. Students will be creating a radiographic case study and presenting the case to their peers. In addition, students will be required to complete final lab simulations to assess entry-level positioning skills. Some new information will continue to be presented such as radiographic procedures of the urinary and reproductive system. Pathology of the urinary and reproductive system will also be included to help students correlate the use of specific radiographic projections and their influence on the diagnosis of diseases. Laboratory exercises in an energized lab provide the student with practical application of the classroom material. Radiation biology will be discussed and its influence on radiation protection protocols. Medical terminology is correlated with the content of the course. American Registry of Radiologic Technologies (ARRT) certification exam review will be conducted. A one-hour seminar will include various clinical topics.

K. College-Wide Learning Outcomes:

<table>
<thead>
<tr>
<th>College-Wide Learning Outcome</th>
<th>Assessments - - How it is met &amp; When it is met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication – Written</td>
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<td>Communication – Speech</td>
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<tr>
<td>Intercultural Knowledge and Competence</td>
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<tr>
<td>Critical Thinking</td>
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<tr>
<td>Information Literacy</td>
<td>Information Literacy VALUE Rubric Chernobyl</td>
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<tr>
<td></td>
<td>presentation week 12</td>
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<tr>
<td>Quantitative Literacy</td>
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</table>

L. Course Outcomes and Assessment Methods:

Upon successful completion of this course, the student shall:

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Assessments – How it is met &amp; When it is met</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Position the body for radiographic procedures of the urinary system on a person or phantom in a laboratory setting.</td>
<td>Lab exercises and lab simulations weeks 1-3</td>
</tr>
<tr>
<td>2. Manipulate the radiographic equipment correctly for radiographic procedures of the skull, sinuses, facial bones and trauma procedures.</td>
<td>Lab exercises and lab simulations weeks 1-3</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Assessments – How it is met &amp; When it is met</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
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<tr>
<td>3. Demonstrate correct radiation protection practices.</td>
<td>Lab exercises and lab simulations weeks 1-3,</td>
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<tr>
<td>4. Use appropriate and effective oral, written and nonverbal communications.</td>
<td>Information Literacy VALUE Rubric Chernobyl presentation rubric week 12 Literature review rubric week 4, exams week 6,8,10 and 15, homework assignments week 6,8,8,9 10. Medical terminology test weeks 4 and 9. Lab exercises and simulations weeks 1-3, final lab simulations weeks 7-9, 10-12, 13-15, poster board presentation rubric week 9</td>
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<tr>
<td>8. Explain the four primary dose response relationships</td>
<td>Class discussion and homework week 7</td>
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<tr>
<td>9. Classify radiation-induced diseases as either stochastic or deterministic</td>
<td>Class discussion and homework weeks 10 and 11. Chernobyl presentation week 12</td>
</tr>
<tr>
<td>10. Differentiate between direct and indirect effects of radiation interaction with the human body</td>
<td>Class discussion and homework week 10 and 11</td>
</tr>
<tr>
<td>11. Discuss the principles of the target theory</td>
<td>Class discussion and homework week 10 and 11</td>
</tr>
<tr>
<td>12. Demonstrate retention of skills by performing radiographic procedures of any selected body part on a person or phantom in the laboratory setting</td>
<td>Final lab simulation rubric weeks 6-8, 9 and 10. ARRT Code of Ethics integration into clinical practice discussion (rubric) weeks 6-8</td>
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<tr>
<td>13. Demonstrate retention of all didactic and clinical information presented throughout the program by passing ARRT exam review tests</td>
<td>ARRT review tests weeks 12, 13, 14, and 15</td>
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M. Topical Timeline (Subject to Change):

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
</tr>
</thead>
</table>
| 1    | Urinary system imaging  
Seminar Topic: Skull and Facial Radiography Problem-solving (weeks 1-5) |
| 2    | Urinary system imaging continued |
| 3    | Hysterosalpingogram |
| 4    | Pathology of the urinary system  
Seminar Topic: Literature review |
| 5    | Pathology of the reproductive system |
| 6    | Structure of matter/final lab simulations |
Seminar Topic: Integration of ARRT Code of Ethics into Clinical Practice (weeks 6-8)

Week 7    Human biology/final lab simulations
          Principles of radiobiology

Week 8    Molecular and cellular radiobiology/final lab simulations

Week 9    Molecular and cellular radiobiology/final lab simulations
          Radiation Roulette video
          Seminar Topic: Poster board presentation

Week 10   Stochastic effects/final lab simulations
          Seminar Topics: ARRT Review (weeks 10-15)

Week 11   Deterministic effects
          Health physics

Week 12   Chernobyl presentation

Week 13   Case study presentation

Week 14   Review for ARRT exam

Week 15   Review for ARRT exam

Week 16   Final Exam

N. Course Assignments:

Lecture/PowerPoint presentations
Lecture note outlines
Student worksheets/homework
Small group activities
Class discussions
Lab simulations and exercises
Role playing
Supervised practice in the college lab
Independent practice in the college lab
Computer assisted instruction (Evolve modules, radiography essentials)
Written assignments
Canvas utilization for instruction and communication
Assigned readings
Review of medical images
Class presentations

O. Recommended Grading Scale:

<table>
<thead>
<tr>
<th>NUMERIC</th>
<th>GRADE</th>
<th>POINTS</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>93–100</td>
<td>A</td>
<td>4.00</td>
<td>Superior</td>
</tr>
<tr>
<td>90–92</td>
<td>A-</td>
<td>3.67</td>
<td>Superior</td>
</tr>
<tr>
<td>87–89</td>
<td>B+</td>
<td>3.33</td>
<td>Above Average</td>
</tr>
<tr>
<td>83–86</td>
<td>B</td>
<td>3.00</td>
<td>Above Average</td>
</tr>
<tr>
<td>80–82</td>
<td>B-</td>
<td>2.67</td>
<td>Above Average</td>
</tr>
<tr>
<td>77–79</td>
<td>C+</td>
<td>2.33</td>
<td>Average</td>
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<tr>
<td>73–76</td>
<td>C</td>
<td>2.00</td>
<td>Average</td>
</tr>
<tr>
<td>70–72</td>
<td>C-</td>
<td>1.67</td>
<td>Below Average</td>
</tr>
<tr>
<td>67–69</td>
<td>D+</td>
<td>1.33</td>
<td>Below Average</td>
</tr>
<tr>
<td>63–66</td>
<td>D</td>
<td>1.00</td>
<td>Below Average</td>
</tr>
<tr>
<td>60–62</td>
<td>D-</td>
<td>0.67</td>
<td>Poor</td>
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<tr>
<td>00–59</td>
<td>F</td>
<td>0.00</td>
<td>Failure</td>
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P. Grading and Testing Guidelines:

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<thead>
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<tbody>
<tr>
<td>Exams</td>
<td>65% of grade</td>
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<tr>
<td>Lab</td>
<td>15% of grade</td>
<td></td>
<td></td>
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<tr>
<td>Homework</td>
<td>15% of grade</td>
<td></td>
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<tr>
<td>Participation</td>
<td>5% of grade</td>
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The Radiological Department believes that a grade below C- indicates lack of mastery of essential skills. Therefore, any student who receives less than C- in any Radiological Science sequence course cannot continue in Radiologic Technology.

Q. Examination Policy:

Students will receive a detailed course calendar. Class exams and lab simulations will be scheduled on the course calendar.

Policy for a missed test or oral or written presentation:

A student will receive a zero for a missed test or an oral or written assignment if the student has not contacted the instructor prior to the event. Contact may be made through a phone call to the office (may leave message) or through an e-mail to dford@ncstatecollege.edu. A follow up message will occur later that same day from the instructor to the student’s ncstate e-mail address informing the student about make up testing, lab and/or homework. The instructor will not call the student to arrange make up.

In addition, student absences on test days are tracked. For each test in the course that a student misses the following deductions are taken assuming the student has notified the instructor prior to the test.

- The 1st missed test/event: No deduction from score
- The 2nd missed test/event: Minus 5% from earned score
- The 3rd missed test/event: Minus 8% from earned score
- Additional missed test/event: Zero

Depending on the type of test missed and the time constraints students will make-up tests either in the Health Science Building or in the Make-Up Proctoring Service offered by the college in Kee Hall.

Lab Grading Policy

There is a close correlation between lab performance and clinical performance. When a student successfully completes a lab simulation it demonstrates that the student is ready to perform the procedure on a patient at the clinical site.

When a lab simulation is scheduled in the lab, students are expected to come to lab prepared to perform the lab simulation. A student must receive 80% (24/30) or higher to pass a lab simulation. When a student fails a lab simulation these assumptions can be made:

1. The student did not prepare for the lab simulation in advance by reviewing and practicing
   - OR –
2. The student has weaknesses that must be identified and corrected so that these weaknesses do not degrade clinical performance.

Students who do not pass a lab simulation will be required to perform a repeat simulation. On a repeat simulation 10% will automatically be deducted from the final score. Students must pass the repeat simulation with **80% (24/30) after the 10% deduction.** If the student fails the repeat simulation, the student will receive a zero for that simulation but will be required to simulate until the student has demonstrated satisfactory skills on the exam. Additional make up labs will be scheduled by the instructor to accommodate repeat simulations.

R. **Class Attendance and Homework Make-Up Policy:**

Most classes include homework assignments. If a student misses a class, it is the student’s responsibility to find out from the instructor what the homework assignment was and to obtain homework papers if applicable. Students are given full credit for homework only if it is completed and in class on time. If a student would like partial credit for homework it is the student’s responsibility to present the finished homework to the instructor in the next class. The instructor will not chase down or ask for missed homework. A zero is assigned for all missing homework.

**Lab Attendance and Practice Expectations**

Students are required to attend their assigned lab each week. If a student misses an assigned lab, he/she is required to attend another lab the same week or two labs the following week to stay current with practicing and simulating the material. Arrangements with the instructor must be made in advance.

It is the responsibility of the student to master the skills that are necessary to successfully complete the assigned simulations. This usually means that the student will need to come in to the radiology lab outside of their scheduled lab times to gain additional practice. Students may spend additional time practicing in the labs on weekdays until 6:45 PM and weekends from 12:00 – 4:00 PM.

S. **Classroom Expectations:**

Look at the course calendar and read assigned material before class to have a general understanding of the information presented.

Read lab assignments prior to lab. Know the material before coming to lab to avoid having to read the material during lab when hands-on practicing should occur.

Complete homework on time.

Come to class with the required material: textbooks, class notes, workbooks, notebooks, homework, assignments, etc.

Participate in class discussions, ask and answer questions.

Demonstrate professional behavior and use language appropriate for classroom learning experience.

Stay on task when given in-class activities and group assignments. If a group finished early the members should read and review material presented in class, update class notes or any other educational activity. Ask the instructor if there are any questions.

Treat other class members with respect at all times.
Cell phone use is not permitted during class unless the instructor asks you to use your cell phone for learning activities. Any student’s cell phone that rings, vibrates loudly, or is used for texting during class will result in a $1.00 fine from that student. Monies collected from cell phone fines will be donated to the Robert L. Garber Scholarship for radiology students.

**Policy on Social Media**

All course material (lectures, slides, documents, worksheets, tests, lab activities, and all other material from this course and on Evolve) is presented with a non-written copyright which prohibits students from using the material without the instructor’s permission. Students are not permitted to post course material or take pictures of lab procedures and post the information on ANY webpage or social media device. The use of the faculty name or course name is prohibited.

T. **College Procedures/Policies:**

**Attendance Requirements:** All students are required to attend all scheduled classes and examinations. Each faculty member has the right to establish regulations regarding attendance that he/she considers necessary for successful study.

Students who do not attend classes may be administratively withdrawn from those classes. However, failure to attend classes does not constitute withdrawal, and students are expected to process a formal withdrawal though the Student Records Office in Kee Hall.

**Student engagement requirements:**

Student engagement is based on the “active pursuit” of learning which can be measured by class attendance, class participation (in class or online), taking required quizzes/examinations, and submission of work assignments or papers. Student engagement consists of a student attending at least 60% of the class sessions (there should be attendance throughout the term) and/or completing 75% of the assignments listed on the syllabus at the midpoint in the term. Exceptions can be made when there is on-going communication between the student and faculty member. The communication must be documented and the faculty member and student must be in agreement regarding the exception. Students not meeting the expectation will be administratively withdrawn from class. If a student believes he/she was administratively withdrawn in error, he/she may file an appeal. Being administratively withdrawn may have program and financial aid implications.

**Academic Misconduct** is any activity that tends to compromise the academic integrity of the college, or subvert the educational process. Examples of academic misconduct include, but are not limited to:

1. **Violation of course or program rules** as contained in the course syllabus or other information provided to the student; violation of program requirements as established by departments and made available to students.

2. **Plagiarism** including, but not limited to, submitting, without appropriate acknowledgment, any written, visual or oral material that has been copied in whole or in part from the work of others (whether such source is published or not) even if the material is completely paraphrased in one’s own words. This includes another individual’s academic composition, compilation, or other product, or a commercially prepared paper. Plagiarism also includes submitting work in which portions were substantially produced by someone acting as a tutor or editor.

   Such practices constitute plagiarism regardless of motive. Those who deny deceitful intent, claim not to have known that the act constituted plagiarism, or maintain that what they did was inadvertent are nevertheless subject to penalties when plagiarism has been confirmed.

3. **Cheating** and dishonest practices in connection with examinations, papers and projects, including but not limited to using unauthorized notes, study aids or information on an examination; obtaining help
from another student during an examination; taking an exam or doing work for another student; providing one’s own work for another student to copy and submit as his/her own; or allowing another student to do one’s work and then submitting the work as one’s own. Also included would be altering a graded work after it has been returned, then submitting the work for re-grading; or submitting identical or similar papers for credit in more than one course without prior permission from the course instructors.

4. **Fabrication** including but not limited to falsifying or inventing any information, data or citation; presenting data that were not gathered in accordance with defined appropriate guidelines, and failing to include an accurate account of the method by which data were collected.

5. **Obtaining an Unfair Advantage** including, but not limited to stealing, reproducing, circulating, or otherwise gaining access to examination materials prior to the time authorized by the instructor; unauthorized collaborating on an academic assignment; taking, hiding or altering resource material; or undertaking any activity with the purpose of creating or obtaining an unfair advantage over another student’s academic work.

6. **Aiding and Abetting Academic Dishonesty** including, but not limited to providing material, information or other assistance to another person with the knowledge that such aid could be used in any of the violations stated above, or providing false information in connection with any inquiry regarding academic integrity.

7. **Alteration of Grades or Marks** including but not limited to, action by the student in an effort to change the earned credit or grade.

In addition, cases of academic dishonesty may involve photocopied materials. Materials used may fall under the Copyright Act. Violations of said Act may subject the user and/or the College to sanctions.

**Statement on Disabilities:** Any student who requires reasonable accommodations related to a disability should inform the course instructor and the Coordinator of Specialized Services (Room 138 in Kee Hall; phone 419-755-4727).

Students who encounter difficulty in any of their courses are encouraged to visit the Tutoring Resource Center (Room 119 in Fallerius Technical Education Center) for tutoring assistance, and the Student Success Center (Room 136 in Kee Hall) for academic assistance, advising services, referrals for personal counseling and Learning Disability (LD) Testing.

**Statement on Withdrawals:** As a student, you are expected to attend class. If you are unable or choose not to attend class, or if for whatever reason you are unable to keep up with the requirements of a course, you need to officially drop the class at the Student Records Office. Refund dates and withdrawal dates will vary slightly from term to term. Contact the Student Records Office for applicable dates. Additionally these dates are posted on the academic calendar available on the college’s website, [www.ncstatecollege.edu](http://www.ncstatecollege.edu), under the Academics heading on the home page and are available at the Student Records Office in Kee Hall. Students should go to the Student Records Office (Room 142 in Kee Hall) to process their withdrawal from any class.

If you choose to walk away from your class without officially withdrawing from it, the faculty member teaching the class must grade your classroom performance on the material available to him or her. This normally results in an "F" grade. An "F" grade can lower your grade point average considerably depending on the total credits accumulated.