New Course Request

Indiana University

School of Medicine

1. School/Division

2. Academic Subject Code RAON

3. Course Number D 607 (must be cleared with University Enrollment Services)

4. Instructor DesRosiers, C, PhD & Ewing, M, CMD

5. Course Title Clinical Practicum II - Intermediate Planning in Medical Dosimetry

Recommended Abbreviation (Optional) Clinical Practicum II Interned

(Limit to 32 characters including spaces) Fall Semester 2010

6. First time this course is to be offered (Semester/Year):

7. Credit Hours: Fixed at __________ or Variable from __________ to __________

8. Is this course to be graded S-F (only)? Yes X No __________

9. Is variable title approval being requested? Yes __________ No X

10. Course description (not to exceed 50 words) for Bulletin publication:

This course will provide the student with both simple and complex planning skills. Clinical rotations at various clinical sites will provide a broad experience in 2D, 3D, and IMRT planning; as well as experience in Brachytherapy planning and physics quality assurance tasks. Demonstration of competency will be required.

11. Lecture Contact Hours: Fixed at __________ or Variable from __________ to __________

12. Non-Lecture Contact Hours: Fixed at __________ or Variable from __________ to __________

13. Estimated enrollment: __________ of which __________ percent are expected to be graduate students.

14. Frequency of scheduling: once/year Will this course be required for majors? Yes, certificate program

15. Justification for new course: establishment of new certificate program in medical dosimetry

16. Are the necessary reading materials currently available in the appropriate library? Yes

17. Please append a complete outline of the proposed course, and indicate instructor (if known), textbooks, and other materials.

18. If this course overlaps with existing courses, please explain with which courses it overlaps and whether this overlap is necessary, desirable, or unimportant.

19. A copy of every new course proposal must be submitted to departments, schools, or divisions in which there may be overlap of the new course with existing courses or areas of strong concern, with instructions that they send comments directly to the originating Curriculum Committee. Please append a list of departments, schools, or divisions thus consulted.

Submitted by:

Department Chairman/Division Director

Date 9/6/2009

Dean of Graduate School (when required)

Approved by:

Date 7/24/09

Dean

Chancellor/Vice-President

University Enrollment Services

After School/Division approval, forward the last copy (without attachments) to University Enrollment Services for initial processing, and the remaining four copies and attachments to the Campus Chancellor or Vice-President.

UPS 724

University Enrollment Services Final—White; Chancellor/Vice-President—Blue; School/Division—Yellow; Department/Division—Pink; University Enrollment Services Advance—White
NEW COURSE REQUEST

I. Title: Clinical Practicum II - Intermediate Planning in Medical Dosimetry  
Course # RAON-D607  
Course Director: Colleen DesRosiers, Ph.D.  
Course Coordinator/Instructor: Marvene M. Ewing, B.S., CMD  
Prerequisite: Clinical Practicum I – General Dosimetry Introduction

Suggested Course Abbreviation: Clinical Practicum II Intermed  
Fall Semester 4 credit hours 32 days (7 hrs each) = 224 hours (13,400 minutes)

II. Course Description and Rationale
This course will provide the student with both simple and complex planning skills. Clinical rotations at various clinical sites will provide a broad experience in 2D, 3D, and IMRT planning; as well as experience in Brachytherapy planning and physics quality assurance tasks. Demonstration of competency will be required.

During this rotation the student will rotate at 3-4 different clinical sites, including Indiana University Hospital Department of Radiation Oncology, Methodist Hospital Department of Radiation Oncology in Indianapolis, The Veteran’s Administration Hospital Department of Radiation Oncology in Indianapolis and Arnett Clinic Department of Radiation Oncology in Lafayette, Indiana. Specific assignments will be made for each site and competencies for those must be completed during that rotation. By the end of the semester the student will have acquired basic planning skills that would enable them to perform a variety of planning types for conventional and IMRT radiotherapy. In addition they will have been exposed to physics quality assurance tasks such as machine calibrations and electron field measurements. All competences will be evaluated by a certified medical dosimetrist or medical physicist.

III. Educational Objectives
Upon completion of this rotation the student will be able to:

1. Assess, evaluate and formulate priorities in daily clinical practice.

   Assessment: Clinical competency, checklist of items which must be performed successfully under direct supervision by a medical dosimetrist. This task builds upon skills learned in RAON D606 (3% total grade)

2. Establish concepts of team practice that focus on organizational theories of goal setting, establishing priorities, roles of team members, and conflict resolution.
Assessment: Clinical competency, checklist of items which must be performed successfully under direct supervision by a medical dosimetrist. This task builds upon skills learned in RAON D606 (3% total grade)

3. Apply and demonstrate the principles of radiation protection standards

Assessment: Clinical competency, checklist of items which must be performed successfully under direct supervision by a medical physicist. This task builds upon skills learned in RAON D606 (4% total grade)

4. Demonstrate competency in creating 2D plans, including the fabrication of any needed treatment devices such as blocks and bolus.

Assessment: Clinical competency, checklist of items which must be performed successfully under direct supervision by a medical dosimetrist. Successful completion of simple 2D plan and fabrication of treatment devices required to pass competency. (5% total grade)

5. Complete an irregular field plan for both a central axis calculation and at least one off-axis point.

Assessment: Clinical competency, checklist of items which must be performed successfully under direct supervision by a medical dosimetrist. Successful completion of irregular field plan and validation of calculation required to pass this competency. (5% total grade)

6. Demonstrate competency in 3D planning for sites including pelvis, chest, breast tangents, chestwall and supraclavicular nodes, and pancreas.

Assessment: Clinical competencies. The student must successfully design 3D plans for all of the above listed sites under direct supervision by a medical dosimetrist or medical physicist. A total of 5 competencies will be administered. The student is expected to design standard fields, identify critical structures and treatment volume(s). (20% total grade)

7. Plan a cranial spinal setup including calculation of the gap between fields, couch and collimator rotation for matching divergence of fields.

Assessment: Written examination. Performing a cranial spinal setup, determining gaps between fields, collimator and couch rotation angles will be tested as part of a written examination.

8. Create single phase IMRT plans for prostate and pancreas, and display understanding of the dose volume histogram data.

Assessment: Clinical competency and written examination. The student is expected to perform single phase IMRT plans for the prostate and pancreas (2 competencies) under the direct supervision of a medical dosimetrist. The student is expected to be able to evaluate the plan based on DVH data. (10% total grade) A written examination will test the
students knowledge of tolerance doses and problem solving skills required to improve plan dose distributions.

9. Perform the planning for a low dose rate gynecologic brachytherapy procedure.

Assessment: Clinical competency. The student will be allowed to observe at least 2 and not more than 4 brachytherapy implant procedures, from simulation to post-implant survey, prior to performing the implant procedure independently under the direct supervision of a medical physicist. The student will need to successfully 1) evaluate the implant imaging, 2) input imaging and isotope data into planning system 3) optimize plan 4) communicate with physician 5) prepare and load sources 6) complete post implant activities including room survey, documentation and billing. (10% total grade)

10. Perform an electron plan on the treatment planning system, fabricate the field cutout, and measure the output for the cutout.

Assessment: Clinical competency and written examination. The student is expected to perform the above activities under the direct supervision of a medical dosimetrist and a medical physicist. The student will be administered a written examination which will test the student’s ability to identify dosimetric properties/limitations, advantages and disadvantages of electron beams. (10% total grade)

11. Create a simple proton therapy plan with one to two beams.

Assessment: Clinical competency and written examination. The student is expected to construct a simple proton therapy plan under the direct supervision of a medical dosimetrist. The student will be administered a written examination which will test the student’s ability to identify dosimetric properties/limitations, advantages and disadvantages of proton beams. (10% total grade)

12. Demonstrate expertise in using the electronic medical record system, accessing forms as needed and setting up the radiation therapy electronic treatment chart.

Assessment: Homework assignment. The student will be given a list of documents accessible in the EMR and will write a flow chart describing how to access the documents, steps required to approve documents, who needs to authorize documents, etc. (10% total grade)

IV. Course Content – Syllabus
The student will rotate through multiple clinical sites as assigned and will be supervised by a CMD or medical physicist. They will both observe planning by a professional and complete competency exams as assigned.

1. Two Dimensional Planning
   a. Standard whole brain plan for metastatic disease
   b. Metastatic spine plan for cervical or thoracic spine
   c. Irregular field planning for central axis calculations and off axis points.
d. Fabrication of treatment devices including but not limited to blocks and bolus.

2. Three Dimensional Planning
   a. Standard pelvis plan for cervical patient
   b. 3D chest planning for both lung and esophagus
   c. Breast tangents with electron boost; wedges, field in field, electronic compns
   d. Chest wall with supraclavicular field
   e. 3D pancreas plan
   f. Cranial spinal, including setup of fields with gap calculation for matching fields, collimator and couch rotation for matching field divergence and feathering of borders.
   g. 3D CNS plan – for posterior fossa boost or other malignancy in brain
   h. Conventional 3 field head and neck plan.
   i. Fabrication of treatment devices including but not limited to blocks, bolus and compensators.

3. IMRT Planning
   a. Single phase prostate planning
   b. Single phase pancreas planning

4. Brachytherapy Planning – Gynecological
   a. Low Dose Rate – manually loaded plan
   b. Low Dose rate – remote afterloading system

5. Introduction to Proton Planning.
   a. Single beam plan, including the fabrication of treatment devices.
   b. Two beam plan, including the fabrication of treatment devices.

6. Clinical Physics
   a. Basic measurements on the linear accelerator
   b. Electron cutout measurements for shaped electron field

7. Electronic Medical Record
   a. Accessing, correctly using radiation therapy dosimetry forms.
   b. Treatment data entry for implementing the radiation therapy plan.

* Students may also be required to attend seminars or conferences at each clinical site, including but not exclusive to: Peer Review, Chart Rounds and Didactic lectures. No additional credit is given for attendance but a written report will be required from each conference that is attended.

V. Required and Recommended Texts
   No text requirement.
   Suggested: Radiation Therapy Planning: Including Problems and Solutions, not yet released (projected Oct 2009), Bentel, G.
   Treatment Planning in Radiation Oncology, 2nd edition. Khan, Faiz M.
VI. Evaluation and Grading

Successful completion of all clinical assignments will be evaluated using competency tests. Each competency test will be graded by the clinical instructor. The student will also be administered a written examination worth 10% of the final grade to reinforce and expand on knowledge gained in the successful completion of selected clinical competencies. Weighting of homework and individual competencies are given in the Educational Objectives section.

<table>
<thead>
<tr>
<th>Grading Scale</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exceeds expectations</td>
<td>88-100%</td>
</tr>
<tr>
<td>Meets requirements</td>
<td>75-87.99%</td>
</tr>
<tr>
<td>Failing</td>
<td>&lt;75%</td>
</tr>
</tbody>
</table>

The Indiana University grading scale will be applied.

A failure must be repeated and the student will be placed on probationary status. More than one failure of a specific task may result in termination from the program.

VII. Cheating and Plagiarism:

Students are instructed to make themselves aware of University regulations concerning plagiarism, the maintenance of academic honesty and the definitions of unacceptable behavior and cheating. Academic misconduct of any sort will not be tolerated and will be dealt with as outlined in the IU/PUI Code of Student Rights, Responsibilities, and Conduct, which can be viewed at:

http://www.iupui.edu/code/

Examples of misconduct include but are not limited to:

1. Cheating
   A student must not use or attempt to use unauthorized assistance, materials, information, or study aids in any academic exercise.

2. Fabrication
   A student must not falsify or invent any information or data in an academic exercise including, but not limited to, records or reports, laboratory results, and citations to the sources of information.

3. Plagiarism
   A student must not adopt or reproduce ideas, words, or statements of another person without appropriate acknowledgment. A student must give credit to the originality of others and acknowledge an indebtedness whenever he or she does any of the following:
   a. Quotes another person's actual words, either oral or written.
   b. Paraphrases another person's words, either oral or written.
c. Uses another person's idea, opinion, or theory, or
d. Borrows facts, statistics, or other illustrative material, unless the information
   is common knowledge.

4. Interference
   a. A student must not steal, change, destroy, or impede another student's work.
   b. A student must not give or offer a bribe, promise favors, or make threats with
      the intention of affecting a grade or the evaluation of academic performance.

Potential consequences for academic misconduct:

If the instructor has information that one of his/her students committed an act of
academic misconduct, the faculty member will hold an informal conference with the
student. The conference will be prompt and private. If the faculty member concludes
that the student is responsible for the misconduct, then the faculty member will impose
an appropriate academic sanction (i.e., lower or failing grade on the assignment, assessing
a lower or failing grade for the course).

VIII. Americans with Disabilities Act:
If you need any special accommodations due to a disability, please contact Adaptive
Educational Services at (317)-274-3241. The office is located in CA 001E.