

I. CATALOG INFORMATIONA. Discipline: RADIOLOGIC TECHNOLOGY (RADT)B. Subject Code and Number: RADT M32C. Course Title: Principles of Nuclear Medicine I

D. Credit Course units:

Units: 3Lecture Hours per week: 3Lab Hours per week : 0Variable Units : No

E. Student Learning Hours:

Lecture Hours:

Classroom hours: 52.5 - 52.5

Laboratory/Activity Hours:

Laboratory/Activity Hours 0 - 0**Total Combined Hours** in a 17.5 week term: 52.5 - 52.5

F. Non-Credit Course hours per week _____

G. May be taken a total of: 1 2 3 4 time(s) for creditH. Is the course co-designated (same as) another course: No Yes

If YES, designate course Subject Code & Number: _____

I. Course Description:

Introduces principles of basic nuclear medicine procedures, patient care, and radiation safety. Focuses on the safe operation of non-imaging instruments including monitoring equipment, dose calibrators, well counters, uptake probes, liquid scintillation systems, and the gamma probe.

J. Entrance Skills

*Prerequisite: No Yes Course(s)

*Corequisite: No Yes Course(s)RADT M30 and RADT M34ALimitation on Enrollment: No Yes

Recommended Preparation: No Yes Course(s)MATH M15 or MATH M15H and CHEM M12 or CHEM M12HOther: No Yes

K. Other Catalog Information:

II. COURSE OBJECTIVES

Upon successful completion of the course, a student will be able to:

		Methods of evaluation will be consistent with, but not limited by, the following types or examples.
1	describe the general atomic structure of an atom and atomic response to radiation.	Quizzes and Exams.
2	describe the characteristics of gamma, x-ray, beta, and alpha radiation and the body's response to each.	Quizzes and Exams.
3	discuss dose and exposure limit recommendations and regulations for technologist, patients, and the general public.	Quizzes and Exams.
4	describe the various types of nuclear medicine instruments used in imaging and non-imaging procedures.	Quizzes and Exams.
5	discuss the radiation protection programs and regulations that apply to personnel, patients, radioactive materials, waste disposal, and contamination.	Quizzes and Exams.
6	perform statistical calculations and differentiate between a Poisson and Gaussian distribution.	Quizzes and Exams.
7	discuss use and quality control of the various types of imaging systems used for gamma and positron imaging.	Quizzes and Exams.
8	describe the operation for non-imaging instruments including monitoring equipment, dose calibrators, well counters, uptake probes, liquid scintillation systems, and the gamma probe.	Quizzes and Exams.
9	discuss the configuration, functions, and application of computers in nuclear medicine.	Quizzes and Exams.
10	evaluate and discuss theories and practice of radiopharmacy, including preparation, calculations of the dose to be administered, quality control, radiation safety, and applicable regulations.	Quizzes and Exams.

III. COURSE CONTENT

Estimated %	Topic	Learning Outcomes
Lecture (must total 100%)		
10.00%	Mathematics and basic statistical applications in nuclear medicine	1, 3, 6
20.00%	Basic physics of nuclear medicine	1, 2, 4, 7, 10
		1, 2, 3, 4,

20.00%	Imaging and non-imaging instrumentation in nuclear medicine	5, 6, 7, 8, 9, 10
10.00%	Computer configuration and applications in nuclear medicine	4, 7, 8, 9, 10
10.00%	Regulations and radiation protection programs in nuclear medicine	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
30.00%	Introduction to radiochemistry and radiopharmacology in nuclear medicine	1, 2, 3, 4, 5, 6, 7, 8, 9, 10

IV. TYPICAL ASSIGNMENTS

A. Writing assignments

Writing assignments are required. Possible assignments may include, but are not limited to:

1	write answers to discussion questions in the text.
2	write essays on assigned nuclear medicine topics.
3	write essay questions on exams.

B. Appropriate outside assignments

Appropriate outside assignments are required. Possible assignments may include, but are not limited to:

1	assigned readings from professional nuclear medicine journals.
2	Internet research on specific nuclear medicine topics pertinent to the course.
3	problem solving assignments regarding nuclear medicine equations and case studies.

C. Critical thinking assignments

Critical thinking assignments are required. Possible assignments may include, but are not limited to:

1	analyze written information on the nuclear medicine exams presented and relate it to patient dose and protection protocols.
2	create a frequency table from the nuclear medicine data.
3	analyze data in the frequency tables and calculate the counting time required to achieve desired levels of statistical reliability.

V. METHODS OF INSTRUCTION

Methods of instruction may include, but are not limited to:

Distance Education – When any portion of class contact hours is replaced by distance education delivery mode (Complete DE Addendum, Section XV)

Lecture/Discussion

Laboratory/Activity

Other (Specify)
Online instruction, use of chat rooms, discussion boards, PowerPoint slides.

Optional Field Trips

Required Field Trips

VI. METHODS OF EVALUATION

Methods of evaluation may include, but are not limited to:

- | | | |
|--|---|---|
| <input checked="" type="checkbox"/> Essay Exam | <input checked="" type="checkbox"/> Classroom Discussion | <input type="checkbox"/> Skill Demonstration |
| <input checked="" type="checkbox"/> Problem Solving Exam | <input checked="" type="checkbox"/> Reports/Papers/Journals | <input checked="" type="checkbox"/> Participation |
| <input checked="" type="checkbox"/> Objective Exams | <input checked="" type="checkbox"/> Projects | <input checked="" type="checkbox"/> Other (specify) |

Students will be evaluated through problem solving, objective and essay exams, research papers, and classroom discussion and participation.

VII. REPRESENTATIVE TEXTS AND OTHER COURSE MATERIALS

Christian, Paul, and Kristen Waterstram-Rich. Nuclear Medicine and PET/CT: Technology and Techniques. 7th ed. Mosby, 2011.

Shackett, Pete. Nuclear Medicine Technology: Procedures and Quick Reference. 2nd ed. Lippincott, Williams and Wilkins, 2009.

VIII. STUDENT MATERIALS FEES

No Yes

IX. PARALLEL COURSES

<i>College</i>	<i>Course Number</i>	<i>Course Title</i>	<i>Units</i>
No comparable community college course in the state of California.			

X. MINIMUM QUALIFICATIONS

Courses in Disciplines in which Masters Degrees are not expected:
 Licensure in Nuclear Medicine Technology plus bachelor's degree and two years experience or associate's degree and six years experience in nuclear medicine technology.

XI. ARTICULATION INFORMATION

A. Title V Course Classification:

1. This course is designed to be taken either:

- Pass/No Pass only (no letter grade possible); or
 Letter grade (P/NP possible at student option)

2. Degree status:

Either Associate Degree Applicable; or Non-associate Degree Applicable

B. Moorpark College General Education:

1. Do you recommend this course for inclusion on the Associate Degree General Education list?

Yes: No: If YES, what section(s)?

- A1 - Natural Sciences - Biological Science
- A2 - Natural Sciences - Physical Science
- B1 - Social and Behavioral Sciences - American History/Institutions
- B2 - Social and Behavioral Sciences - Other Social Behavioral Science
- C1 - Humanities - Fine or Performing Arts
- C2 - Humanities - Other Humanities
- D1 - Language and Rationality - English Composition
- D2 - Language and Rationality - Communication and Analytical Thinking
- E1 - Health/Physical Education
- E2 - PE or Dance
- F - Ethnic/Gender Studies

C. California State University(CSU) Articulation:

1. Do you recommend this course for transfer credit to CSU? Yes: No:

2. If YES do you recommend this course for inclusion on the CSU General Education list?

Yes: No: If YES, which area(s)?

- | | | | | | | |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------------|-----------------------------|-----------------------------|
| A1 <input type="checkbox"/> | A2 <input type="checkbox"/> | A3 <input type="checkbox"/> | B1 <input type="checkbox"/> | B2 <input type="checkbox"/> | B3 <input type="checkbox"/> | B4 <input type="checkbox"/> |
| C1 <input type="checkbox"/> | C2 <input type="checkbox"/> | D1 <input type="checkbox"/> | D2 <input type="checkbox"/> | D3 <input type="checkbox"/> | D4 <input type="checkbox"/> | D5 <input type="checkbox"/> |
| <input type="checkbox"/> | | | | | | |
| D6 <input type="checkbox"/> | D7 <input type="checkbox"/> | D8 <input type="checkbox"/> | D9 <input type="checkbox"/> | D10 <input type="checkbox"/> | E <input type="checkbox"/> | |

D. University of California (UC) Articulation:

1. Do you recommend this course for transfer to the UC? Yes: No:

2. If YES do you recommend this course for the Intersegmental General Education Transfer Curriculum (IGETC)? Yes: No:

IGETC Area 1: English Communication

- English Composition
- Critical Thinking-English Composition
- Oral Communication

IGETC Area 2: Mathematical Concepts and Quantitative Reasoning

- Mathematical Concepts

IGETC Area 3: Arts and Humanities

- Arts
-

Humanities

IGETC Area 4: Social and Behavioral Sciences

- Anthropology and Archaeology
- Economics
- Ethnic Studies
- Gender Studies
- Geography
- History
- Interdisciplinary, Social & Behavioral Sciences
- Political Science, Government & Legal Institutions
- Psychology
- Sociology & Criminology

IGETC Area 5: Physical and Biological Sciences (mark all that apply)

- Physical Science Lab or Physical Science Lab only (non-sequence)
- Physical Science Lecture only (non-sequence)
- Biological Science
- Physical Science Courses
- Physical Science Lab or Biological Science Lab Only (non-sequence)
- Biological Science Courses
- Biological Science Lab course
- First Science course in a Special sequence
- Second Science course in a Special Sequence
- Laboratory Activity
- Physical Sciences

IGETC Area 6: Language other than English

- Languages other than English (UC Requirement Only)
- U.S. History, Constitution, and American Ideals (CSU Requirement ONLY)
- U.S. History, Constitution, and American Ideals (CSU Requirement ONLY)

XII. REVIEW OF LIBRARY RESOURCES

A. What planned assignment(s) will require library resources and use?

The following assignments require library resources:

Reading and research assignments using the Library's print and online resources on topics appropriate to the course, and the use of course reserve materials.

B. Are the currently held library resources sufficient to support the course assignment?

YES: NO:

If NO, please list additional library resources needed to support this course.

XIII. PREREQUISITE AND/OR COREQUISITE JUSTIFICATION

Requisite Justification for RADT M30

- A. Sequential course within a discipline.
- B. Standard Prerequisite or Corequisite required by universities.
- C. Corequisite is linked to companion lecture course.
- D. Prerequisite or Corequisite is authorized by legal statute or regulation.
Code Section: _____
- E. Prerequisite or Corequisite is necessary to protect the students' health and safety.
- F. Computation or communication skill is needed.
- G. Performance courses: Audition, portfolio, tryouts, etc. needed.

and

Requisite Justification for RADT M34A

- A. Sequential course within a discipline.
- B. Standard Prerequisite or Corequisite required by universities.
- C. Corequisite is linked to companion lecture course.
- D. Prerequisite or Corequisite is authorized by legal statute or regulation.
Code Section: _____
- E. Prerequisite or Corequisite is necessary to protect the students' health and safety.
- F. Computation or communication skill is needed.
- G. Performance courses: Audition, portfolio, tryouts, etc. needed.

XIV. WORKPLACE PREPARATION

Required for career technical courses only. A career technical course/program is one with the primary goal to prepare students for employment immediately upon course/program completion, and/or upgrading employment skills.

Detail how the course meets the Secretary of Labors Commission on the Achievement of Necessary Skills (SCANS) areas. (For a description of the competencies and skills with a listing of what students should be able to do, go to:

<http://www.ncrel.org/sdrs/areas/issues/methods/assment/as7scans.htm>)

The course will address the SCANS competency areas:

1. Resources: the students will identify weekly learning objectives; devise a plan to allocate adequate study time to learn weekly objectives; learn to organize the steps involved in scan procedures; identify resources available in the Health Sciences Department and college campus to assist in meeting their learning objectives; meet assignment deadlines and be prepared to participate in class discussions.
2. Interpersonal: the students will work in collaboration with other students to experience the importance of being a team player in the health care field; reinforce skills relating to a diverse population; and bring and present case studies from clinical setting to strengthen the skills of each member of the class and help gain clinical proficiency.
3. Information: the students will refer to technique charts to select the correct amount of radioactivity for imaging the body part of interest and make use of professional health care and radiography journals to keep abreast of the state-of-the-art advances in medical imaging and to stay current with continuing education requirements.
4. Systems: the students will follow hospital protocols for each exam; identify when a change in protocol is needed and communicate this to the supervising technologist for approval; and demonstrate skill when entering patient data for documentation and billing purposes.
5. Technology: the students will demonstrate skill when operating nuclear medicine equipment; be able to problem shoot equipment when needed; and be proficient when operating hospital PACS (picture archiving and communication system) and RIS (radiology information system).

The course also addresses the SCANS skills and personal qualities:

1. Basic Skills: the students will read professional journals and manuals related to new nuclear medicine techniques and equipment.
2. Thinking Skills: the students will describe how to alter nuclear medicine procedures for the pediatric, geriatric, and trauma patients and describe how to prioritize scan procedures when there are multiple procedures ordered.
3. Personal Qualities: the students will demonstrate accountability through regular attendance and punctuality in class; demonstrate reliability by completing assignments as instructed in a timely manner; and show respect for each other, others with whom they come in contact, and those in authority.

XV. DISTANCE LEARNING COURSE OUTLINE ADDENDUM

1. Mode of Delivery

- Online (course will be delivered 100% online)
- Online with onsite examinations (100% of the instruction will occur online, but examinations and an orientation will be scheduled onsite)
- Online/Hybrid (a percentage of instruction will be held online and the remaining percentage of instruction will be held onsite)
 - Lab activities will be conducted onsite
- Televideo (Examinations and an orientation will be held onsite)
- Teleconference
- Other

2. Need/Justification

Improve general student access.

3. Describe how instructors teaching this course will ensure regular, effective contact with and among students.

Online instructors will provide lesson plans that require activities such as reading course material from a mandatory textbook and participating in discussion forums or chat room topics. Instructors may also meet with students for study sessions and online office hours using an online communication tool. Instructors will provide students with feedback on the content and quality of assignments and discussion posts. Additionally, instructors may engage students using the following communication activities available in the online classroom: contact students via e-mail within the course shell, by campus e-mail, and/or MyVCCCD; use the "announcement" tool to remind students of important assignments and due dates; provide students with an online schedule of class events using the "calendar" tool in the online course shell.

4. Describe how instructors teaching this course will involve students in active learning.

Instructors may involve students in active learning with the following activities: students may view video lessons and/or text-based lessons corresponding to course content and learning objectives; students may complete homework through the online course, and/or using an interactive online homework system provided by a publishing company; students may engage in internet searches and Library online database resources on topics corresponding to course content and learning objectives; students may test their knowledge with interactive online quizzes; students may interact with the instructor and classmates using an online discussion forum to ask questions; students may submit questions to the instructor by email or ask in person in a virtual classroom; instructor may create student groups or group activities using the online course.

5. Explain how instructors teaching this course will provide multiple methods of content representation.

The following represent the methods by which content may be provided for learning: instructional videos; textbook and professional journals; links to online resources that may include videos, quizzes, text explanations and extensions,

and primary documents, and homework assignments.

6. Describe how instructors teaching this course will evaluate student performance.

Students may take objective and essay exams in an online teaching environment. Students may be required to do the following assignments: complete reflective writing assignments focused on application of course content; develop, implement, and evaluate projects; complete regular online quizzes; complete written assignments related to key course concepts; participate in online discussion forums.

XVI. GENERAL EDUCATION COURSE OUTLINE ADDENDUM

RADT M32: Not Applicable

XVII. STUDENT MATERIALS FEE ADDENDUM

RADT M32: Not Applicable

XVIII. REPEATABILITY JUSTIFICATION TITLE 5, SECTION 55041

RADT M32: Not Applicable

XIX. CURRICULUM APPROVAL

Course Information:

Discipline: RADIOLOGIC TECHNOLOGY (RADT)

Discipline Code and Number: RADT M32

Course Revision Category: Technical Course Revision

Course Proposed By:

Originating Faculty Guadalupe Aldana 03/14/2014

Faculty Peer: Guadalupe Aldana 03/18/2014

Curriculum Rep: Robert Darwin 03/21/2014

Department Chair: Carol Higashida 03/17/2014

Division Dean: Kimberly Hoffmans 03/18/2014

Approved By:

Curriculum Chair: Jerry Mansfield 05/20/2014

Executive Vice President: Lori Bennett 05/20/2014

Articulation Officer: Letrisha Mai 04/29/2014

Librarian: Mary LaBarge 04/29/2014

Implementation Term and Year: Fall 2014

Approval Dates:

Approved by Moorpark College Curriculum Committee: 05/06/2014

Approved by Board of Trustees (if applicable): _____

Approved by State (if applicable): _____

