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APPLICATION FOR CHANGE IN EXISTING COURSE: MAJOR & MINOR

1. Submitted by College of Lexington Community College Date 10-10-03

   Department/Division offering course
   Nuclear Medicine Technology / Natural Science & Health Technologies

2. Changes proposed:

   (a) Present prefix and number NMT 240 Proposed prefix and number No change

   (b) Present Title Nuclear Medicine Technology IV

   New Title No change

   (c) If course title is changed and exceeds 24 characters (including spaces), include a sensible title (not to exceed 24 characters) for use on transcripts:

   No change

   (d) Present credits: 7 Proposed credits: 8

   (e) Current lecture:laboratory ratio 1:6 Proposed: no change

   (f) Effective Date of Change: (Semester & Year) Fall 2005

3. To be Cross-listed as NA NA
   (Prefix and Number) (Signature: Dept. Chair)

4. Proposed change in Bulletin description:
   (a) Present description (including prerequisite(s):

NMT 240 Nuclear Medicine Technology IV (7)

Radionuclide organ concentration and excretion studies and hematologic measurements, the therapeutic use of radionuclides, and the radionuclide imaging procedures for oncologic / inflammatory processes and the endocrine system are studied. Lecture, 3 hours, laboratory; 24 hours. Prerequisites: CPR recertification and NMT 230.

   (b) New description:

NMT 240 Nuclear Medicine Technology IV (8)

Radiopharmaceutical preparation and quality control, the therapeutics applications of radionuclides, as well as endocrine system radionuclide imaging procedures are studied. Lecture: 4 hours, clinic: 24 hours.

   (c) Prerequisite(s) for course as changed: Current CPR certification and NMT 230

5. What has prompted this proposal?

There are three major reasons for revising the NMT curriculum. (1) The last revision of this curriculum was implemented in 1995. (2) The Academic Committee of the Society of Nuclear Medicine Technologist Section published a revised Curriculum Guide in early 2003 to assist programs to update curriculum content. (3) The Nuclear Medicine Technology Certification Board has published revised competencies and will finish a revision of the examination matrix in 2004.

6. If there are to be significant changes in the content or teaching objectives of this course, indicate changes:

Radionuclide excretion studies and hematologic measurements content have been moved to the last course of the curriculum. Students in this program receive very little exposure to these types of studies although the certification examination continues to test this content. It appears to be helpful to the students to have these topics as some of the last to be taught in the curriculum.

Radiopharmacy content has been placed here because the second-year students begin clinical assignments at the commercial radiopharmacy in Lexington. Having this content just prior to this clinical assignment will introduce aspects of radiopharmacy that will not have been experienced in the hospitals but will most probably be on the certification examination.

Current:
Upon completion of this course, the student can:

A. describe the full range of routine, nonimaging procedures and perform those procedures available to the student during clinical assignments;
B. observe and assist in the therapeutic use of radionuclides under the direct supervision of a technologist and nuclear medicine physician; and
C. perform radionuclide imaging studies related to oncologic / inflammatory processes and the endocrine system under the supervision of a nuclear medicine technologist.

Proposed:
Upon completion of this course, the student can:

A. explain aspects of radiopharmacy practice in regards to the preparation and quality control of ^{99m}Tc-labeled radiopharmaceuticals;
B. describe radiopharmaceuticals used in PET imaging;
C. perform radionuclide imaging and non-imaging studies related to the endocrine and exocrine systems under the supervision of a nuclear medicine technologist; and
D. participate in therapeutic patient procedures as available under the supervision of a nuclear medicine technologist or nuclear medicine physician.

7. What other departments could be affected by the proposed change?

Nuclear Medicine Technology (NMT) has no dedicated classroom space in the college. Physics lab space (OB 331) and PHY lecture space (OB 319) are also used by NMT courses. The addition of 1 credit hour of lecture to 4 of the 5 NMT courses has the potential to overlap with PHY lecture and lab space. After contacting the Division Chair of the Physical Sciences and Engineering Technology Division and the Physics Area Coordinator, it appears that class room space will be available for additional NMT lecture assuming the PHY schedule of classes remains the same as 2002-2003. This will be addressed annually as Division Chairs schedule classroom space.

8. Will changing this course change the degree requirements in one or more programs?
X No ❑ Yes (If yes, attach an explanation of the change.)*

9. Is this course currently included in the University Studies Program? **X** No ❑ Yes (If yes, please attach correspondence indicating concurrence of the University Studies Committee.)

10. If the course is a 100-200 level course, please submit evidence (e.g. correspondence) that the Community College System has been consulted.

This course change has been forwarded to Aloris Owens, Nuclear Medicine Technology program coordinator, Jefferson Community College, and Dr. Carolyn O'Daniel, Executive Director for Academic Affairs at KCTCS. (see attached)

11. Is this a minor change? **X** No ❑ Yes (NOTE: See the description on this form of what constitutes a minor change. Minor changes are sent directly from the Dean of the College to the Chair of the Senate Council. If the latter deems the change not to be minor, it will be sent to the appropriate Council for normal processing.)

12. Within the Department, who should be consulted for further information on the proposed course change?

Name: Charles H Coulston, NMT Program Coordinator Phone Extension: 257-4872 x 4099

Signatures of Approval:

Department Chair:_____ Date:

Dean of the College: :_____ Date:

Date of Notice to the Faculty: :_____

**Undergraduate Council: :_____ Date:

**Graduate Council: _____ Date:

*Academic Council for the Med. Ctr:_____ Date:

**Senate Council:_____ Date of Notice to Univ. Senate:_____

ACTION OTHER THAN APPROVAL:_____

*NOTE: Approval of this change will constitute approval of the program change unless other program modifications are proposed.

**If applicable, as provided by the Rules of the University Senate.

The Minor Change route for courses is provided as a mechanism to make changes in existing courses and is limited to one or more of the following:

a. change in number within the same hundred series;
b. editorial change in description which does not imply change in content or emphasis;
c. editorial change in title which does not imply change in content or emphasis;
d. change in prerequisite which does not imply change in content or emphasis;
e. crosslisting of courses under conditions set forth in item 3.0;
f. correction of typographical errors. [University Senate Rules, Section III - 3.1]

Signatures of Approval:

Department Chair: _____ Date: 10-17-03

President
~~Dean~~ of the College: : _____ Date: 10-21-03

Date of Notice to the Faculty: : _____

**Undergraduate Council: : _____ Date: _____

**Graduate Council: : _____ Date: _____

**Academic Council for the Med. Ctr: _____ Date: _____

*Senate Council: _____ Date of Notice to Univ. Senate: _____

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APPLICATION FOR CHANGE IN EXISTING COURSE: MAJOR & MINOR
Additional Information on CCS Forms

1. Course Outline: (Two-level outline required)

Current Course Outline

Organ Concentration / Excretion and Hematologic Measurements
- A. Thyroid Uptake
- B. Renal Function Procedures
- C. GI Absorption (Schilling) Test
- D. Blood Volume (red blood cell mass / plasma volume)
- E. Red Cell Survival and Sequestration
- F. GI Blood Loss Quantitation
- G. Fibrinogen Uptake
- H. P-32 Eye Tumor Localization
- I. Xe-133 Regional Blood Flow
- J. Hepatobiliary Function Testing
- K. Cardiac Function Testing (covered with NEF studies)

II. Therapeutic Use of Radionuclides
- A. Introduction to Radionuclide Therapy
- B. Specific Pathology
- C. Radiopharmaceuticals
- D. Dose Calculations
- E. Administration of Therapeutic Dose

III. Oncologic / Inflammatory Process Imaging
- A. Indication for Study
- B. Radiopharmaceutical
- C. Contraindications / Adverse Reactions
- D. Patient Preparation
- E. Equipment
- F. Procedure
- G. Alterations to / Interventions in the Procedure
- H. Scan Patterns (image analysis)

IV. Endocrine System Imaging
- A. Indication for Study
- B. Radiopharmaceutical
- C. Contraindications / Adverse Reactions
- D. Patient Preparation
- E. Equipment
- F. Procedure
- G. Alterations to / Interventions in the Procedure
- H. Scan Patterns (image analysis)

Proposed Course Outline

Radiopharmacy and Interventional Pharmaceuticals
- A. Introduction

B. Radiation Protection and Regulations for Radiopharmaceuticals
C. FDA Control of Pharmaceuticals
D. Effects of Reimbursement on the Use of Radiopharmaceuticals
E. Radiopharmacy Design
F. Radiation Exposure to Nuclear Medicine Patients
G. Adverse Reactions
H. Radiochemistry
I. Radionuclide Generators
J. Quality Control
K. Preparing ^{99m}Tc-labeled Reaction Vials (Kits)
L. Preparing Positron-Emitters
M. Dosage Determination
N. Biorouting of Radiopharmaceuticals
O. Individual Radiopharmaceuticals (See NMTCB Pharmacy list)
P. Interventional Pharmaceuticals

II. Endocrine / Exocrine Gland Imaging
A. Review of Anatomy & Physiology of Systems
B. Pathology
C. Thyroid Uptake / Function (non-imaging)
D. Thyroid Gland Imaging
E. Parathyroid Gland Imaging
F. Adrenal Gland Imaging (cortical)
G. Adrenal Gland Imaging (medullary)
H. Lacrimal Duct Imaging (dacryoscintigraphy)

III. Radionuclide Therapy Procedures
A. Introduction to Radionuclide Therapy
B. Review of Anatomy & Physiology
C. Pathology
D. Intracavitary Palliation
E. Bone Marrow Palliation
F. Ablation for Hyperthyroidism
G. Ablation for Thyroid Carcinoma
H. Palliation of Metastatic Bone Pain
I. Radiolabeled Antibody Therapies

2. List of Experiments/Activities: (If laboratory or clinic is involved)

Current Clinical Activities

The student will:

A. observe, assist, and perform the following nonimaging procedures as available during clinical assignments: thyroid uptake, renal function procedures, GI absorption (Schilling) test, blood volume, red cell survival and sequestration, GI blood loss quantitation, fibrinogen uptake, P-32 eye tumor localization, Xe-133 regional blood flow, hepatobiliary function testing, and cardiac function testing;
B. observe and assist with the therapeutic use of radionuclides under the direct supervision of the nuclear medicine technologist and the nuclear medicine physician;
C. assist the nuclear medicine technologist with oncologic / inflammatory processes radionuclide imaging procedures as well as to perform procedures under the direct supervision of the technologist; and

D. assist the nuclear medicine technologist with endocrine system radionuclide imaging procedures as well as to perform procedures under the direct supervision of the technologist.

Proposed Clinical Activites

The student will:

A. participate in the preparation of routine radiopharmaceuticals under the supervision of the nuclear medicine technologist or radiopharmacist through clinical assignments;
B. observe and demonstrate appropriate quality control procedures for routine radiopharmaceuticals;
C. evaluate quality control data of radiopharmaceuticals;
D. demonstrate the proper administration of radiopharmaceuticals under the supervision of a technologist where permitted by the memorandum of agreement with the clinical affiliate;
E. record the dispensation of routine radiopharmaceuticals accurately for department records; and
F. assist the nuclear medicine technologist with endocrine system and oncologic / inflammatory-infectious process radionuclide imaging procedures as well as to perform procedures under the direct supervision of the technologist.

3. Changes in Suggested Learning Resources:

Bernier, Donald R., Paul E. Christian, James K. Langan. *Nuclear Medicine: Technology and Techniques*, 4th ed. St Louis MO: Mosby-Year Book, Inc., 1997.

Chandra, Ramesh. *Nuclear Medicine Physics: The Basics*, 5th ed. Baltimore, MD: Williams & Wilkins, 1998.

Early, Paul J. and, D. Bruce Sodee. *Principles and Practice of Nuclear Medicine*, 2nd ed. St Louis MO: Mosby-Year Book, Inc., 1995.

English, Robert J. *SPECT Single-Photon Emission Computed Tomography: A Primer.* Reston VA: The Society of Nuclear Medicine, 1995.

Harkness, Beth, Paul Christian, Katherine L. Rowell. *Clinical Computers in Nuclear Medicine.* New York, NY: The Society of Nuclear Medicine - Technologist Section, 1992.

Lee, Kai. *Computers in Nuclear Medicine: A Practical Approach.* New York, NY: The Society of Nuclear Medicine, 1991.

Lombardi, Max H. *Radiation Safety in Nuclear Medicine.* Boca Raton FL: CRC Press, 1999.

Mettler, Fred A., Jr. and Milton J. Guiberteau. *Essentials of Nuclear Medicine Imaging*, 4th ed. Philadelphia, PA: W.B. Saunders Company, 1998.

Saha, Gopal B. *Fundamentals of Nuclear Pharmacy*, 4th ed. New York, NY: Springer, 1998.

Tortorici, Marianne. *Administration of Imaging Pharmaceuticals.* Philadelphia, PA: W.B. Sanders Company, 1996.

The Journal of Nuclear Medicine. Reston, VA: The Society of Nuclear Medicine, Inc.

The Journal of Nuclear Medicine Technology. Reston, VA: The Society of Nuclear Medicine, Inc.

4. Impact of Change on Enrollment:

No impact is anticipated.

5. For Inclusion on LCC General Education List: Not applicable
   A. Degree Area (AA/AS or AAS or both)
   B. Competency Area
   C. General Education Competency Statement (List and provide examples of implementation methods/activities)
   D. Across the Curriculum Competencies (List and provide examples of implementation methods/activities)

6. For Removal from General Education List: Not applicable
   A. Competency Area
   B. Rationale

7. For Inclusion on University Studies List: (A syllabus must be attached.) Not applicable
   A. Area
   B. Course Competencies
   C. Description of Writing Component

If a course has not been revised during the last five (5) years, the major change route must be used.