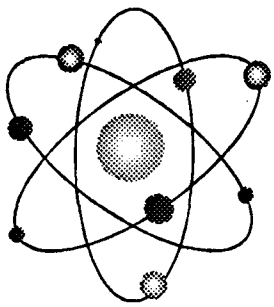
Nuclear Medicine Technology

APRC 1996-1997

Section 1 of 2

PROGRAM REVIEW



NUCLEAR MEDICINE TECHNOLOGY

Program Review Panel:

Sheila Squicciarini, Chair
William Barnes, Program Faculty
Julian Easter, HRP Department Head
Marie Sickelsteel, Faculty Member, CAHS
Brad Brew, Faculty Member, outside of CAHS
Jack Clemente, Individual with Special Interest in NMT

January 1997

TABLE OF CONTENTS

Section One: Overview of the Program

Introduction

The Nuclear Medicine Technology Programs at Ferris State University include curricula in the Bachelor of Science and Associate in Applied Science degrees. Both degrees serve students whose goal is to work in the field of Nuclear Medicine Technology. Ferris State University currently offers the only college-based Nuclear Medicine Technology Program in the State of Michigan.

Students in both degree programs basically complete the same course work during the first two years. Three semesters of didactic courses are followed by two semesters of clinical internship at an affiliated hospital. Students wishing to pursue a Bachelor of Science degree return to campus for their remaining courses. At the completion of either degree, the student is able to sit for one or both national certification/registry examinations, the ARRT and the NMTCB.

Professional courses on-campus include health physics, nuclear medicine instrumentation, and clinical procedures in nuclear medicine technology. Students pursuing the Associate of Applied Science degree need to complete specified courses in biology, chemistry, mathematics, medical terminology, English, computer science, and cultural enrichment and social awareness electives. Bachelor of Science degree students need additional courses in biology, chemistry, physics, communication, management, statistics, English, mathematics, and cultural enrichment and social awareness electives. Additional professional courses are also required.

Clinical internship is completed at one of sixteen affiliated hospitals in Michigan. Students and hospitals participate in a matching system to determine where the student will intern. Internship begins the first day of fall semester classes and ends on the Friday prior to graduation in May. Students do not follow the academic calendar during internship. It is mandatory, however, for the students to have the week between Christmas and New Year's Day off.

Affiliate sites:

HOSPITAL	LOCATION
Bay Medical Center	Bay City, MI
Blodgett Memorial Medical Center	Grand Rapids, MI
Butterworth Hospital	Grand Rapids, MI
W.A. Foote Memorial Hospital	Jackson, MI
Henry Ford Hospital	Detroit, MI
Michigan Capital Medical Center	Lansing, MI
Mid Michigan Regional Medical Center	Midland, MI
Henry Ford-Oakwood Hospital	Dearborn, MI
Saginaw General Hospital	Saginaw, MI
St. Joseph Mercy Hospital	Ann Arbor, MI

St. Luke's Hospital	Saginaw, MI
St. Mary's Health Services	Grand Rapids, MI
University of Michigan Medical Center	Ann Arbor, MI
Veterans Administration Medical Center	Ann Arbor, MI
Veterans Administration Medical Center	Detroit, MI
Wyandotte Hospital	Wyandotte, MI

Curriculum checksheets and program information sheets for the Bachelor of Science and the Associate of Applied Science Degrees are included at the end of Section One.

Mission and Goals

The mission of the Nuclear Medicine Technology Programs is to prepare graduates for entry-level positions in the field of nuclear medicine.

The goal of the program is for graduates to meet the terminal relevant educational tasks as defined by The Joint Review Committee on Educational Programs in Nuclear Medicine Technology and the Nuclear Medicine Technology Certification Board.

These tasks are as follows:

Imaging Procedures

1. Administrative
   a. Schedule patient studies, ensuring appropriateness, interact with hospital staff to effect proper and timely arrangements for patient studies.
   b. Determine the most appropriate sequence for multiple procedures.
   c. Inform patient and nursing staff of appropriate standing and special orders to include medication.
   d. Maintain all appropriate records at patient imaging procedures as required.
2. Patient Care
   a. Receive patient and provide proper nursing care during imaging procedure.
   b. Provide patient comfort before, during, and after the procedure, and reassure the patient to relieve any apprehension.
   c. Maintain good communication with patient, explain procedure, answer questions, and listen to patient's comments.
   d. Provide functionally safe and sanitary conditions for patient.
   e. Recognize emergency conditions.
3. Patient Preparation
   a. Verify patient identification and written orders for imaging procedures.
   b. Check procedural contraindications and obtain pertinent history.
   c. Obtain informed consent when necessary.
   d. Check patient clothing for objects that may attenuate radiation.
   e. Prepare patient premedications and instruct patient to void, etc. Include any necessary preparation for the imaging procedure required.

f. Transfer patient from the wheelchair/stretcher to the imaging table.
g. Administer the appropriate radiopharmaceutical using proper technique.
h. Observe the patient for possible reactions, following radiopharmaceutical administration.
I. Discard contaminated materials in appropriate waste containers.
j. Wait appropriate length of time after administration of radiopharmaceutical to begin imaging procedure.

4. Imaging Procedures
   a. Select proper instrument and auxiliary equipment necessary to perform imaging procedure as indicated by protocol.
   b. prepare instrument for procedure.
   c. Select appropriate patient positions for procedures.
   d. Place patient in correct position using supportive materials and immobilizers to obtain image for each view.
   e. Determine correct detector to patient distance for imaging procedures.
   f. Indicate the appropriate anatomical landmarks for each view of a procedure.
   g. Perform imaging procedure.
   h. Collect specimens according to imaging protocol, if applicable.
   I. Process film according to manufacturer's specifications and film processor optimum operation.
   j. Record information relative to any special circumstance affecting the procedure as needed.
   k. Maintain quality control/quality assurance in all aspects of the imaging procedure.
   l. Monitor the performance of the film processor system.

Instrumentation

5. Scintillation Camera
   a. Select radionuclide source of appropriate activity and energy for camera uniformity check.
   b. Perform field uniformity check on the scintillation camera on a routine basis.
   c. Analyze field uniformity image.
   d. Differentiate source of non-uniformities using proper procedures.
   e. Perform line distortion check on the camera on a routine basis.
   f. Identify any line distortion on the image.
   g. Utilize a high resolution phantom compatible with the specified resolution of the camera.
   h. Compare obtained resolution images with prior resolution images.
   I. Conduct sensitivity checks on the camera.
   j. Maintain records of camera quality control - uniformity, linearity, resolution, sensitivity, and chi-square testing.
   k. Maintain records for quality control checks on imaging recording devices.
6. Scintillation Counters

a. Evaluate scintillation counter performance on a routine basis.
b. Calibrate a scintillation counter.
c. Determine percent full width of half maximum energy resolution on the scintillation counter.
d. Conduct sensitivity checks on the counter.
e. Determine cause for higher than normal background obtained on a counter.
f. Conduct a chi-square test on the counter.
g. Maintain records of scintillation counter performance.

7. Gas-Filled Detectors
   a. Operate gas-filled detectors.
   b. Perform reference check source tests on survey instruments and compare with previous results.
   c. Maintain records on survey instruments as required.
   d. Calculate the activity linearity of the dose calibrator over the entire range of radionuclide activity to be measured. sensitivity, and chi-square testing.
   k. Maintain records for quality control checks on imaging recording devices.

6. Scintillation Counters
   a. Evaluate scintillation counter performance on a routine basis.
   b. Calibrate a scintillation counter.
   c. Determine percent full width of half maximum energy resolution on the scintillation counter.
   d. Conduct sensitivity checks on the counter.
   e. Determine cause for higher than normal background obtained on a counter.
   f. Conduct a chi-square test on the counter.
   g. Maintain records of scintillation counter performance.

7. Gas-Filled Detectors
   a. Operate gas-filled detectors.
   b. Perform reference check source tests on survey instruments and compare with previous results.
   c. Maintain records on survey instruments as required.
   d. Calculate the activity linearity of the dose calibrator over the entire range of radionuclide activity to be measured.
   e. Test accuracy of dose calibrator for commonly used radionuclides that have adequate reference standards available.
   f. Maintain records of dose calibrator quality control procedures.

8. Computers
   a. Maintain temperature and humidity levels for proper computer operation.

Radiation Protection and Radiopharmacy

9. Compliance with Regulations
   a. Maintain required radiation records to comply with the NRC, state, FDA, and JCAH regulations and standards.

10. Protection Procedures
    a. Employ personnel monitoring devices.

b. Employ patient monitoring devices, if necessary.
c. Review monthly personnel exposure records in regard to maximum permissible dose limit.
d. Take appropriate measures to reduce radiation exposure when necessary.
e. Keep radiation exposure as low as is reasonable achievable using appropriate protection parameters continuously.
f. Notify the appropriate authority of excessive radiation exposure.
g. Notify the appropriate authority of misadministration, when applicable.
h. Use proper shielding and inverse square law to reduce radiation exposure.
I. Use proper methods for the storage of radioactive drugs.
j. Instruct the patient, family, and hospital staff in radiation safety precautions after administration of diagnostic and therapeutic radiopharmaceuticals.

11. Radiation Surveys
    a. Perform radiation surveys.
    b. Use proper survey meters for each type and level of radiation.
    c. Follow regulations regarding personnel surveys and record results.
    d. Perform wipe tests for surface contamination.
    e. Record data obtained from radiation surveys and quality control on survey instruments in some standard format.
12. Radiopharmaceutical Laboratory
    a. Perform required procedures for maintenance of the radiopharmacy lab.
    b. Log receipts and wipe test results of radioactive materials for maintenance of the radiopharmaceutical laboratory.
    c. Deface radiation symbols on boxes, etc. before discarding.
    d. Store non-radioactive supplies, including kits, appropriately.
13. Generator Elution (Mo-99/Tc-99m generators only)
    a. Assemble generator and shield with lead.
    b. Elute generator using aseptic technique.
    c. Assay the generator eluate using a dose calibrator or whole vial assay.
    d. Record the generator eluate assay results and time of assay in a log book.
    e. Check the eluate for radionuclide and chemical contamination and record results.
14. Radiopharmaceutical Compounding
    a. Review daily work schedule and prepare appropriate radiopharmaceutical compounds.
    b. Determine within activity limits, the total volume and radioactivity to be added to a radiopharmaceutical kit and record the volume of the generator eluate used.
    c. Prepare radiopharmaceutical assay form for each lot of material.
    d. Check total activity in radiopharmaceutical reaction vials with a dose calibrator.
    e. Calculate the concentration of radioactivity of a radioactive compound, and label vial as to date and time of preparation, lot number, concentration, and volume.
    f. Check all radiopharmaceutical preparations for proper pH, color, clarity,

and particle size, if appropriate, and record on radiopharmaceutical assay form.

g. Determine the radiochemical purity of radiopharmaceutical preparation by chromatography.

15. Radiopharmaceutical Dispensing
    a. Verify and label radiopharmaceutical vial, including concentration, specific activity, total activity, lot number, assay time and date.
    b. Determine lapsed time between initial and required assay of a radiopharmaceutical for quantification of activity.
    c. Calculate activity remaining using the appropriate decay factor for time elapsed.
    d. Calculate activity to administered for diagnostic and therapeutic procedures.
    e. Calculate the volume or number of capsules of the radiopharmaceutical required for diagnostic and therapeutic procedures.
    f. Draw up the correct volume of the radiopharmaceutical into the syringe, using aseptic technique and using proper radiation safety precautions.
    g. Verify, using a dose calibrator, the activity to be administered in the dispensed preparation.
    h. Record the patient name, examination, radiopharmaceutical activity, volume, lot number, time, date and prescription number, if applicable.
    I. Maintain appropriate radiopharmaceutical record for each lot of material and for the dispensed preparation.
16. Radiopharmaceutical Administration
    a. Determine proper method and route of administration.
    b. Assemble proper materials for intravenous, gaseous, or oral administration.
    c. Dispose of radioactive material when appropriate.
17. Waste Disposal
    a. Monitor all radioactive vials and determine if acceptable to discard.
    b. Monitor alumina column from generators to determine if acceptable to discard.
    c. Maintain long-term storage area to allow for the decay of radioactivity.
    d. Maintain log of radiopharmaceutical disposal.
18. Decontamination
    a. Perform decontamination procedure as required.
    b. Notify persons in the area that a spill has occurred.
    c. Cover the spill with absorbent paper to prevent spread.
    d. Check the area around the spill, hands, and clothing for contamination.
    e. Survey area to determine if contamination has been removed.
    f. Report the radioactive spill to the radiation safety officer.
    g. Record details of radioactive spill and corrective action on correct form.

Non-Imaging Procedures

19. Administrative Procedures
    a. Schedule patient for non-imaging procedure.

b. Maintain all appropriate records of patient's non-imaging procedure.

20. Patient Preparation
    a. Verify patient identification and written orders for non-imaging studies.
    b. Inform patient and nursing staff of appropriate standing and special orders to include medications and specimen collection.
    c. Check procedural contraindications for non-imaging study and obtain pertinent patient history.
    d. Obtain informed consent for non-imaging study when necessary.
21. Laboratory Equipment
    a. Check accuracy and operation of pipetting devices.
    b. Maintain constant temperature of water bath and refrigerator.
    c. Compute relative centrifugal force, operate centrifuge, and maintain routine tachometer checks.
    d. Calibrate and use laboratory scales and balances.
    e. Operate vortex mixers and shakers, maintaining constant conditions.
    f. Maintain quality control records of all non-imaging equipment.
22. Specimen Collection and Handling
    a. Select proper equipment for blood collection.
    b. Choose proper anticoagulant or preservative for specific procedure.
    c. Perform venipuncture at appropriate time intervals.
    d. Add hemolyzing components when necessary.
    e. Place blood on ice as required.
    f. Determine hematocrit.
    g. Centrifuge blood and separate blood components as required.
    h. Store aliquot of patient sample as dictated by protocol.
    I. Add a preservative to urine container.
    j. Aliquot urine sample and measure total urine volume.
    k. Collect additional urine if volume collected is insufficient.
    l. Label cells with a radiopharmaceutical according to protocol for non-imaging procedure.
23. Standard of Controls
    a. Choose appropriate volumetric glassware for dilution of the standard.
    b. Add a portion of solvent to glassware and a solution to prevent sticking.
    c. Add an amount of activity similar to that given to the patient and dilute up to calibration mark.
24. Counting Equipment
    a. Set pulse height analyzer on scintillation detector and center photopeak within analyzer settings chosen for procedure.
25. Calculations
    a. Reduce data to net counts by subtracting room background.

Program History

The Nuclear Medicine Technology curriculum was activated in September 1974 as a seven (7) quarter Associate of Science degree program in response to the needs voiced by the nuclear medicine community. At that time, a considerable number of individuals were working in the field who did not meet minimum standards of education and experience. Data obtained from the American Hospital Association revealed there was indeed a need for a college-based program for nuclear medicine technology in Michigan. Since that time, the curriculum has been expanded to include a four year Bachelor of Science degree program. The primary program objective was and still is to educate fully qualified nuclear medicine technologists.

Impact of the Program on the University, the State, and the Nation

The Nuclear Medicine Technology Programs offer Ferris State University students the opportunity to complete a college-based program with very good employment potential. Students interested in a health care profession that involves technical skills, patient contact, computer proficiency, and radiation handling are drawn to this field. Many of our students come from other curricula such as pre-medicine, pre-pharmacy, biotechnology, and applied biology. The Nuclear Medicine Technology Program offers these students an option without having to leave Ferris State University.

Enrollment has not been a problem. There is currently a "waiting list" to enter the program. Students waiting to enter the program are designated as Pre-Nuclear Medicine. Entry to the program is determined by priority date (application date) and eligibility criteria.

The Ferris State University Nuclear Medicine Technology Program is the only college-based program in the state. Ferris State University offers one of the few Nuclear Medicine Technology programs with an on-campus laboratory.

Ferris State University supplies Michigan with the majority of its Nuclear Medicine Technologists. There are many Ferris State University Nuclear Medicine Technologists working throughout the United States. Representation can be seen at national professional meetings and seminars. Telephone calls are received routinely from throughout the United States seeking Ferris State University Nuclear Medicine Technologists.

The employment demands for Nuclear Medicine Technologists have always been cyclic. The past several years, however, have seen a rise in employment opportunities due to the opening of cardiac and oncology clinics. Hospitals have also been reopening "frozen" positions. As the age of the general population rises and with the advent of new technologies, the services of nuclear medicine departments are expected to increase.

Expectations

Nuclear Medicine Technologists will continue to be in demand both in Michigan and nationally. The demand for multi-competent health care professionals may change the focus of the job description slightly. More emphasis will be placed on patient care as a whole (i.e. vital signs, patient records, phlebotomy). With new technology on the horizon in nuclear medicine, particularly with monoclonal antibodies and therapy, the demand for qualified nuclear medicine technologists should increase. Nuclear Medicine Technologists willing to continue their education and to be flexible in their job duties will be sought.

Plans for Improvement

Our plans for improvement have been primarily derived from our 1996 self-study and site visit by the Joint Review Committee on Educational Programs in Nuclear Medicine Technology. These plans include curriculum revision, particularly for the Bachelor of Science degree, expansion of laboratory space, and acquiring state-of-the-art equipment.

The current curricula has not been evaluated in-depth since semester transition occurred. The program hopes to devise a curriculum that will provide students with the skills needed in order to succeed as an entry level nuclear medicine technologist in today's health care environment.

Expansion of laboratory space would help provide a "clinical" and professional setting for the nuclear medicine technology students. Our adjunct clinical instructors and graduate surveys both indicated a need for simulated studies in the laboratory on-campus. In order to achieve this efficiently, additional space is required. State-of-the-art equipment is also needed. The program acknowledges that new equipment (i.e. scintillation cameras) is expensive and probably not feasible. It would, however, be desirable to have used equipment more in keeping with that being used at our affiliate sites. Current equipment is more than several camera generations old.

NAME_____

FERRIS STATE UNIVERSITY
COLLEGE OF ALLIED HEALTH SCIENCES
NUCLEAR MEDICINE TECHNOLOGY
BACHELOR OF SCIENCE DEGREE

FIRST YEAR

1st Semester

MATH 115	Intermediate Algebra	0	____
CHEM 114	Intro. to Gen. Chem.	4	____
ENGL 150	English 1	3	____
MRIS 102	Orient. to Med. Vocab.	1	____
NUCM 105	Health Physics - Nuc. Med.	3	____
NUCM 115	Instrument of Nuclear Med.	4	____
		15	

2nd Semester

BIOL 205	Human Anatomy & Physiology	5	____
ENGL 250	English 2	3	____
MRIS 210	Fund. of Med. Sciences	3	____
NUCM 225	Imaging Proc. in Nuc. Med.	4	____
		15	

1st Summer Session

**Cultural Enrichment Elective		3	____
**Social Awareness Elective		3	____
		6	

2nd Summer Session

***Computer Course		3	____
NUCM 235	Nuc. Med. Non-Imaging Procedures	3	____
		6	

SECOND YEAR

1st Semester

NUCM 291	Clin. Appl. of NMT 1	12	____

2nd Semester

NUCM 391	Clin. Appl. of NMT 2	12	____

Second year courses are taken off campus

THIRD YEAR

1st Semester

COMM 105 or COMM 121		3	____
**Cultural Enrichment Elective		3	____
MATH 120	Trigonometry	3	____
PHYS 211	Intro. Physics 1	4	____
CHEM 214	Fund. of Organic Chem.	4	____
		17	

2nd Semester

****Social Awareness Elective		3	____
MATH 130	Adv. Alg. & Analy. Trig.	4	____
PHYS 212	Intro. Physics 2	4	____
Free Elective		3	____
		14	

FOURTH YEAR

1st Semester

ENGL 311, ENGL 321 or ENGL 323		3	____
****Cultural Enrichment Elective		3	____
MATH 220	Analy. Geometry & Calculus	5	____
PHYS 311 or CHEM 324		3	____
NUCM 415	Advanced Instrumentation	2	____
		16	

2nd Semester

**Social Awareness Elective		3	____
CAHS 410	Intro. Epidemiology & Stat.	3	____
BIOL 442 or BIOL 300		3	____
HCSA 403	Hum. Res. Mgt. in Health Care Facilities	4	____
NUCM 497		1-3	____
NUCM 499	Capstone for Nuclear Med. Tech.	1	____
		15-17	

Total Credits = 128-130

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* MATH 115 may be obtained through proficient examination
** See University requirements for graduation
*** Approved by faculty advisor
**** Must be at 300 or 400 level

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Name _____

FERRIS STATE UNIVERSITY
COLLEGE OF ALLIED HEALTH SCIENCES
NUCLEAR MEDICINE TECHNOLOGY
ASSOCIATE IN APPLIED SCIENCE DEGREE

FIRST YEAR

1st Semester

*MATH 115	Intermediate Algebra	0	____
CHEM 114	Intro. to Gen. Chem.	4	____
ENGL 150	English 1	3	____
MRIS 102	Orient. to Med. Vocab.	1	____
NUCM 105	Hlth. Physics-Nuc. Med.	3	____
NUCM 115	Instru. of Nuc. Med.	4	____
		15	

2nd Semester

BIOL 205	Human Anat. & Physio.	5	____
ENGL 250	English 2	3	____
Cultural Enrichment Elective		3	____
NUCM 225	Imaging Procedures in Nuclear Medicine	4	____
		15	

1st Summer Session

Social Awareness Elective	3	____
**Computer Related Course	3	____
	6	

2nd Summer Session

MRIS 210	Fund. of Med. Sciences	3	____
NUCM 235	Nuc. Med. Non-Imaging Procedures	3	____
		6	

Total Credits = 66

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* MATH 115 or MATH 115 proficiency needed for graduation
** Approved by faculty advisor

SECOND YEAR

1st Semester

NUCM 291	Clinical Application in NMT 1	12	____

2nd Semester

NUCM 391	Clinical Application in NMT 2	12	____.

All second year courses are off campus

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FERRIS STATE
UNIVERSITY

College of Allied Health Sciences

Nuclear Medicine Technology

Bachelor of Science Degree

What is nuclear medicine?

Nuclear medicine is a field of health care involving the use of radioactive materials in the diagnosis and treatment of patients.

It is a dynamic field that is expected to continue growing and sustaining the demand for well-trained nuclear medicine technologists.

What do nuclear medicine technologists do?

Nuclear medicine technologists are professionals who work in a hospital or laboratory. They operate, or assist a physician in operating, imaging equipment used to detect radiation. They work with patients, get information from patient records, make dose calculations for patient studies and conduct laboratory studies on specimens.

Technologists also are greatly concerned with safety and are responsible for disposal of radioactive waste, safe storage of radioactive material and the inventory and control of radiopharmaceuticals.

Nuclear medicine technologists who hold a bachelor of science degree have the training to move easily into new or associated fields, including magnetic resonance imaging or diagnostic medical sonography.

A four-year degree in nuclear medicine technology, depending on the student's course work, also can be good preparation for graduate work in radiologic safety, medical physics or health physics.

What does Ferris offer?

The Ferris State nuclear medicine program, leading to a bachelor of science degree, gives students an in-depth understanding of the basic principles and applications in the field of nuclear medicine.

In addition, the program meets the requirements established by the American Medical Association Council on Medical Education.

Admission to the upper division program of nuclear medicine technology is open to graduates of the two-year associate degree program in nuclear medicine technology from FSU, and to college transfer students who have earned at least 66 hours of college credit from an accredited college or university.

For the graduate of the associate degree program, the third and fourth years will feature added emphasis on higher level mathematics and sciences.

Transfer students will complete the technical phase of the curriculum in the third and fourth years while completing all other course requirements toward the baccalaureate degree.

More information

For more information about the program, write: Nuclear Medicine Technology, College of Allied Health Sciences, Victor F. Spathelf Center Room 209, Ferris State University, 200 Ferris Drive, Big Rapids, MI 49307-2740; or call (616) 592-2266.

General Information

Ferris State University is in its second century as one of the nation's premier technical and professional universities, providing career-oriented education to more than 12,000 students.

Approximately 100 educational programs — including two doctorates, three master's, bachelor's and associate degrees — are offered through the colleges of Allied Health Sciences, Arts and Sciences, Business, Education, Optometry, Pharmacy and Technology.

A wide variety of student organizations are active on campus, encompassing social, athletic, political, performing arts and religious activities and interests. Arts and cultural events, varsity athletics and an extensive intramural sports program further enrich student life.

The University has on-campus residential facilities for about 50 percent of its students.

Founded in 1884 by Michigan educator and statesman Woodbridge N. Ferris, the University has developed a modern, 600-acre campus in Big Rapids, in west central Michigan's vacation-recreation country.

How to enroll

Student applications may be obtained by writing to: Office of Admissions, Ferris State University, 420 Oak St., Big Rapids, MI 49307-2020.

Applications are also available at the offices of Michigan high school and community college counselors.

The completed application must be returned to the admissions office well in advance of the semester in which the student expects to enroll.

Further information may be obtained by calling the admissions office at (616) 592-2100.

Financial aid

At Ferris, students may qualify for some form of financial aid including scholarships, grants-in-aid, long-term loans or part-time employment.

The University awards more than $28 million in total student aid annually.

For more information, write: Office of Financial Aid, Ferris State University, 420 Oak St., Big Rapids, MI 49307-2020, or call: (616) 592-2110.

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FERRIS STATE
UNIVERSITY

College of Allied Health Sciences

Nuclear Medicine Technology

Associate in Applied Science Degree

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Technologist also are greatly concerned with safety and are responsible for disposal of radioactive waste, safe storage of radioactive material and the inventory and control of radiopharmaceuticals.

What does Ferris offer?

The Ferris State nuclear medicine technology program requires five academic semesters and leads to an associate in applied science degree.

The first three semesters are spent on the Big Rapids campus.

The program includes courses in human anatomy, physiology, radiation and nuclear physics, nuclear medicine theory and methods, and in general education.

Students spend the final two academic semesters in a hospital practicing theories and skills learned in class.

Graduates are eligible to take the national certifying examination for registry in nuclear medicine technology.

They may also enter the Ferris bachelor of science degree program in nuclear medicine.

Who may apply?

To apply for admission to the nuclear technology program, high school graduates must have a 3.0 grade point average with one year of algebra and physics or chemistry.

Transfer students must have a 2.0 average. In addition, students must be 18 by the second semester of the first year of the program.

More information

For more information about the program, write: Nuclear Medicine Technology, College of Allied Health

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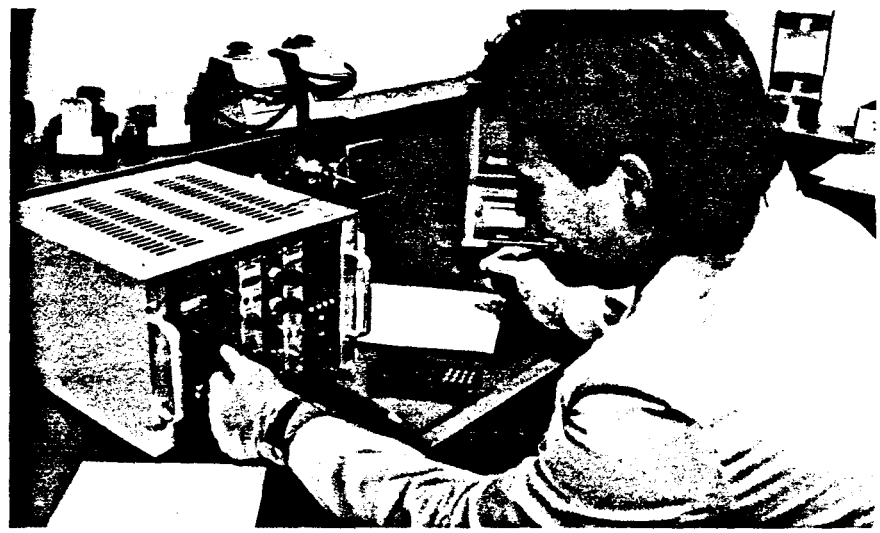

Section Two: Surveys of Program Graduates

Information for this survey was gathered from graduates within the state of Michigan. A survey form was sent to fifty-two hospitals in Michigan. The program admits that graduate surveys have not been used extensively in the past. The August 1996 Joint Review Committee site visitor informally recommended that the program use graduate surveys more extensively. With this encouragement, the program has made graduate surveys part of its unit action plan.

Information gathered from graduates of the Bachelor of Science and Associate of Applied Science Degrees in Nuclear Medicine Technology, as well as the survey form used, are included.

Survey of Graduates
Nuclear Medicine Technology

In November 1996 a survey was sent to fifty-two hospitals in Michigan. Graduates of the Ferris State University Nuclear Medicine Technology Programs were asked to complete the survey. No differentiation between degree programs was made. Twenty-six surveys were returned for a response rate of 50%. A copy of the survey form and complete results are included.

Results

The majority of the respondents (73%) are employed as Staff Nuclear Medicine Technologists. The remainder are in administrative positions (Chief Technologist, Supervisor, Coordinator, and Diagnostic Imaging Manager). The average length of employment at their current site is 4.8 years. *Starting* salaries averaged $12.56. Many reported higher current salaries.

The most popular hours worked were 7:00 am - 3:30 pm (26 %) followed by rotating shifts (11.5%). Other hours reported were 6:30 am - 3:00 pm (3.8%), 7:00 am - 5:00 pm (7.7%), 7:00 am - 5:30 pm four days a week (7.7%), 7:30 am - 4:00 pm (3.8%), 7:30 am - 5:00 pm four days a week (3.8%), 8:00 am - 4:30 pm (3.8%), 8:00 am - 5:00 pm (7.7%), 8:30 am - 5:00 pm (3.8%), 9:00 am - 5:30 pm (3.8%), 9:30 am - 6:00 pm (3.8%), and 3:00 pm - 9:00 pm (3.8%).

Ninety-two percent of graduates do not work evenings or week-ends. Seventy-three percent are required to be on-call as part of their job description. The majority (21%) of the Nuclear Medicine Technologists take call one week-end every five weeks. Sixteen percent take call one week-end every five weeks plus one day each week. Sixteen percent take call once a month. Other on-call reported were once a month (10.5%), two weeks every month (10.5%), once a week and every fourth week-end (10.5%), and once a week and every third week-end (10.5%), no set schedule (10.5%), and nine times a year (5%).

Eighty-one percent of graduates responded that they did not have difficulty finding employment after graduation. Graduates that answered yes to this question had the following comments: (a) Did not have a choice of where to go unless I waited a long time; (b) As a new graduate hospitals would not respond because I didn't have enough experience. If they did respond, you may not want to work there.; (c) There are way too many new technologists flooding the market. The way hospitals are cutting back and cross training employees, it will only get worse for new students. I feel the number of students should be cut in half or even less.; (d) It took 6 months to find a technologist job. I worked as an x-ray technologist in the mean time.; and (e) I had to relocate.

Graduates employed at the following hospitals in Michigan responded to the survey:

American Diagnostic Medicine
Blodgett Memorial Medical Center (2)
Bronson Methodist Hospital
Chelsea Community Hospital
Marquette General Hospital
Mecosta County General Hospital
Metropolitan Hospital (2)
Mid Michigan Regional Medical Center (4)
Northern Michigan Hospital
Oakwood Hospitals Beyer Center
Pennock Hospital
St. Luke's Hospital
St. Mary's Health Services (2)
Saginaw General Hospital
Sparrow Hospital (2)
Veterans Administration Medical Center - Ann Arbor
W.A. Foote Memorial Hospital (2)
No response

The following comments were made in response to the question "Which areas of your on-campus education best prepared you for work as a NMT?":

1. The classes in the lab. I think hands-on helps people to understand what they are learning.
2. Lab situations; pretending to perform the study.
3. Summer class.
4. Summer laboratory.
5. Summer semester - clinical interpretation.
6. Basic overview of nuclear medicine; learned rest on the job.
7. Nuclear medicine classes.
8. My nuclear medicine classes as well as anatomy and physiology.
9. NMT program, anatomy, and management.

10. Anatomy and physiology.
11. Anatomy and physiology.
12. Anatomy and physiology class, pathology class, and chemistry.
13. A year of physiology.
14. Anatomy and physiology, medical terminology, and summer classes.
15. Anatomy, medical terminology, and computers.
16. My textbook.
17. Individual organ studies with possible diagnosis.
18. Case studies and procedure review.
19. Those areas dealing with radiopharmaceuticals.
20. I was on-campus 19 years ago. I doubt any archaic information I offered would be of any value today!
21. Not much of it. More emphasis should be placed on actual current studies in practice.
22. Not much!

The question, "Which area(s) of your on-campus education need(s) improvement? How can they be improved?", generated the following comments:

1. Need more lab situations.
2. First year; needs to deal more with clinical.
3. NM labs - make more patient oriented. Practice injections, making kits, positioning patients, taking blood pressures, etc.
4. Labs for nuclear medicine. They need to be more realistic.
5. The labs when working with the cameras. It helps us to understand the workings of the equipment, but wasn't really relevant.
6. Need to get students more educated on the hows and whys of all exams before entering clinicals.
7. The nuclear medicine classes and labs. The equipment is way out of date which gives you a misunderstanding of the actual field of nuclear medicine.
8. The nuclear medicine lab needs to be updated with more current equipment.
9. Areas dealing with theory. Adopt ways to make it easier to learn; find ways in which these theories and ideas can be grasped by students before they reach their clinical site and say "Oh, that's how that comes together".
10. Body systems and the particular scans associated with them. Physiology of these systems and how radioactivity/radiopharmaceuticals are trapped/travel through, etc.
11. Labs and books need updating. More clinical interaction. For example, visit area hospitals a number of times in each semester, concentrating on current materials. If studying gastric emptying, try to observe some related exams. I feel that is VERY important.
12. Class work and update labs and books!!! Needs to be more understandable. Felt like never understood what was going on. More worksheets and dittos.
13. At the time, both lectures and labs seemed outdated. However, I understand there have been changes since I was there in '93 -'94.

14. Math 220 changed to Math 135.
15. Computer classes. Need to know how computers work. The entry level data processing class is not enough.
16. Worry less about history and geography and concentrate purely on technical training.
17. Stop pushing so many students in the program.
18. RIA portion; not much done in nuclear medicine departments.
19. At the time I was there RIA was overly stressed. I have seen students, myself included, come out with little education on how the nuclear scan is correlated with the patient's disease (why is the patient having the exam).
20. It's hard to say now. I'm not currently aware of the core classes being taught. So much is learned at the clinical setting.

The following comments were expressed in regards to the questions "Which areas of your clinical internship best prepared you for your current position?" and "Should any portion of the clinical internship be changed?":

1. The experience of working and dealing with people of all different backgrounds and different problems.
2. You pick up so much at the clinical setting - patient care and interaction especially. Also time management and budgets.
3. I was prepared after internship. There shouldn't be so many students accepted in the programs.
4. More student/professor situations during internship (more case studies). I miss them now. They kept me on my toes to constantly be on the edge of new studies and isotopes.
5. All of it.
6. All of it.
7. All of the clinical prepared me for my current position.
8. Question the shortened internship.
9. All areas because I was involved in a wide variety of studies. Yes, should implement some type of class to take throughout the semester for certification purposes.
10. Working at a large hospital helped me learn alot (making me confident to go on to a large hospital with enough knowledge to work alone). Possible wages might help being on internship.
11. I feel that I had an excellent internship site which gave me a broad knowledge of the field. I do not feel anything should be changed with the actual internship sites.
12. I can't narrow it down to one area, the whole experience prepared me. I could have been given a little more time off, especially since I became ill and burned up most of my sick days.
13. Nuclear pharmacy, rotations through different cameras, rotating through different hospitals in the area.
14. Best prepared: hands-on and quizzes - how, what, why, where questions. Changes: hours per week/month dedicated to library time to research special

subjects/areas of interest, answers to questions.

15. Best prepared: Masteries. No, the program is fine, maybe not accept as many students into the program.
16. My internship was very good, all the techs really knew their stuff. Maybe rotating through different hospitals would be good. Spend a week at a hospital that has different specialties.
17. I had a great internship. I learned so much and the techs were very helpful. If I hadn't had the intern part I never would have learned much.

In response to the question "Have you continued your education since leaving FSU? What are you plans in that area?" the following comments were gathered:

1. Yes, pursuing an MSA from CMU.
2. Yes, pursuing degree in Health Systems Management.
3. Yes, have been taking classes toward an MBA. Not sure presently my exact plans upon completion.
4. Yes, B.S. in NMT and MPA.
5. Yes, finish B.S. in NMT and use that degree to gain acceptance into PA school.
6. Possibly medical school.
7. Plan on medical school.
8. I may possibly try to obtain a bachelor's, but I am currently taking an ICS course in computer repair, so I am not sure which direction I will head.
9. Hopeful to earn a master's degree in a related field someday.
10. Looking into computer related areas.
11. No.
12. No, plans are unsure.
13. No formal "college" type education past or planned. Current trends, procedures, and safety practices maintained.
14. Continuing education credits only.
15. Continuing education credits.
16. No.
17. I have a Bachelor's Degree and I see no purpose of getting a Master's Degree in Healthcare Administration when those are the jobs hospitals are cutting now.
18. Not at this time! I do plan on continuing once everything in health care settles down.
19. No continuing education due to late working hours and stress of the job - "very busy - very stressed". Plans - continue nuclear medicine, possible degree in another medical area such as physical therapy or nursing.
20. No, but plan on getting my bachelors or going on to nursing school.
21. No, but plan to go back and finish bachelor degree in Health System Management.

These additional comments were written on the surveys:

1. Mainly the lab being updated (it may have been already) - not just in equipment but in the lab assignments as well; more patient scanning experience, not details

on how to process using an obsolete program. There were actually many people early on who hadn't the foggiest clue as to what nuclear medicine is all about. Any introductory films detailing the job experience shown in maybe the first week of class may be appropriate.

2. The labs should be more patient oriented, such as practice injecting, positioning patients, taking blood pressures, etc.
3. More clinical interaction during class and on related subjects. So much time is wasted with the students feeling lost.
4. EKG interpretation. CPR training. IV training. Hands-on - pass criteria for each test. More training to specifics of tests - more hands-on in labs and less with counting radioactivity. Teaching radioactivity in easier terms to understand better to get on with more of the "true" things done with the hospital nuclear medicine department.
5. I really feel that more hospital interaction would be very beneficial to the program. It's hard to make sense of all the nuclear information without seeing it all put together.
6. I went to work with other Ferris graduates once I finished my internship and the techs that interned at smaller hospitals didn't seem confident at all and I ended up training them.
7. Do not accept so many students in program. The job field is saturated.
8. Once again, stop pushing the high number of students to increase FSU revenue.
9. I really have no comments to make. When I was in training, we couldn't inject but could take call. We had no classes - did lots of macramé and played cards! We put xenon in big balloons and squished it out the window! Things have changed tremendously.

FERRIS STATE UNIVERSITY
NUCLEAR MEDICINE TECHNOLOGY PROGRAMS

SURVEY OF GRADUATES

Where are you currently employed?_____

_____

How long have you been employed at this institution?_____

What is your present position?_____

What was your starting salary?_____

What hours do you usually work?_____

Do you work evenings? _____ Yes _____ No How frequently?_____

Do you work week-ends? _____ Yes _____ No How frequently?_____

Do you take call? _____ Yes _____ No How frequently?_____

Where else have you worked as a Nuclear Medicine Technologist?_____

_____

_____

Was it difficult to find employment as a NMT when you graduated? _____ Yes _____ No
Please explain._____

_____

_____

Which areas of your on-campus education best prepared you for work as a NMT?_____

_____

_____

Which area(s) of your on-campus education need(s) improvement? How can they be improved?

_____

_____

_____

At which clinical affiliate did you intern?_____

Which areas of your clinical internship best prepared you for your current position? Should any portion of the clinical internship be changed?_____

_____

_____

_____

Have you continued your education since leaving Ferris State University? What are your plans in this area?_____

_____

_____

Please make any other comments which you believe would be helpful in evaluating and improving the Nuclear Medicine Technology Programs.

Thank you.

Please feel free to duplicate this survey if multiple FSU graduates would like to participate. All responses are very welcome and important to this survey process.

Section Three: Surveys of Employers of Graduates

Surveys were mailed to employers of graduates after the program was informed that it had been selected for program review. Employers have not been surveyed since 1989. The new program unit action plans call for surveying employers annually.

Survey of Employers of Graduates
Nuclear Medicine Technology

Thirty-two hospitals in Michigan were randomly selected for the employer surveys. Surveys were sent in December 1996. Eight surveys were returned for a 25% response rate. Total responses per item as well as a copy of the survey form is included.

Results

One hundred percent of the employers surveyed felt that Nuclear Medicine Technology graduates from Ferris State University were adequately prepared to assume their duties as nuclear medicine technologists. Comments regarding this area are as follows:

1. Yes prepared but - alot of students know the "mechanics" of a scan, but lack pathophysiology of what is "showing up" on scans. They can perform routine bone scan, but alot don't understand what the scan/disease state is if abnormal. Also, have nine technologists, five of which are FSU grads, tried to generalize them all together in responses. Some show stronger in some areas, weak in others. Answers to questions are more of a weighted "average".
2. Most of the time the new hires are ready to jump in and offer alternate technique.
3. For the past 13 years I feel that compared to Wm. Beaumont, Henry Ford, and St. John's students, the Ferris grads interface into their new departments far more smoothly than the students from the other programs; they are more competent with their injections, and seem to have better patient interaction skills.
4. My experience with FSU grads have always been good - 4 out of 6 techs in our department are FSU grads.

Comment in response to the question "What are some emerging skills or tasks that you foresee for employees in your department in the next five years?":

1. Major changes in computer usage and programming. High energy physics usage and administration. Additional myocardial perfusion processing steps (new quantification, ejection volume, etc.).

The following additional comments were gathered:

1. I have recently had the opportunity to interview 8 recent FSU graduates. Maybe a short class on interviewing skills would be helpful. A few things that I noticed was a lack of professionalism skills (i.e. showing up without an appointment, knowing the difference between being pushy and persistent).
2. You need to cut back on the number of students accepted. The field is really flooded. Driving down pay scales, because "new grads" can be hired at a lower salary.

NUCLEAR MEDICINE TECHNOLOGY PROGRAMS
COLLEGE OF ALLIED HEALTH SCIENCES
FERRIS STATE UNIVERSITY

SURVEY OF EMPLOYERS OF GRADUATES

Do you currently have Ferris State University Nuclear Medicine Technology graduates employed at your institution?

___8___ Yes ___0___ No

If no, have you had Ferris State University Nuclear Medicine Technology graduates employed at your institution in the past?

___NA__ Yes ___NA__ No

In what capacity were the graduates employed? (Check all that apply)

___8___ Staff Nuclear Medicine Technologist, Full Time
___2___ Staff Nuclear Medicine Technologist, Part Time
___0___ Staff Nuclear Medicine Technologist, On-Call Only
___0___ Staff Nuclear Medicine Technologist, Temporary
___1___ Staff Nuclear Medicine Technologist, Per Diem
___1___ Other: ___Department Manager_____

Do you feel that the employees were adequately prepared to assume their duties?

___8___ Yes ___0___ No

Please circle the response that best describes the employees overall:

1. Rate at which assigned tasks are completed.
   - A. From time of employment has completed assigned tasks quickly and often assists others. (6; 75%)
   - B. Slow to begin with but in a short time progressed to an adequate level of speed. (2; 25%)
   - C. Seldom finishes assigned tasks in a reasonable amount of time. (0; 0%)

2. Organization
   - A. Organizes work without waste of time. (6; 75%)
   - B. Performs some procedures with good organization, but has difficulty handling two or more tasks simultaneously. (2; 25%)
   - C. Wastes motions; neglects to think ahead; cannot perform in an organized fashion. (0; 0%)

3. Attitude toward change
   - A. Willingly learns new procedures. (7; 88%)
   - B. Avoids learning new procedures, and will try to change assignments with others to avoid contact with new developments. (1; 12%)
   - C. Reluctant to learn new procedures; thinks that only methods used at Ferris or on clinical internship are the right methods. (0; 0%)

4. Skills
   A. Learns equipment with ease and confidence at first exposure. (3; 38%)
   B. Appears unsure at first exposure to equipment, but soon develops ease in operation. (5; 62%)
   C. Handles equipment with difficulty; has a high level of failure, need to rerun images, or other problems. (0; 0%)

5. Orientation time
   A. Moved ahead with initiative after initial orientation to the department. (4; 50%)
   B. Needed some repetition of directions, but soon became familiar with the department. (4; 50%)
   C. Behaved like a stranger in the department and had to be shown repeatedly what to do and how to do it. (0; 0%)

6. Relationships with co-workers and professional colleagues
   A. Sensitive and considerate of the feelings of others; seeks opportunities to help others. (7; 100%)
   B. Is pleasant enough to others, but rarely offers help. (0; 0%)
   C. Antagonizes and irritates those with whom he/she works. (0; 0%)

7. Leadership qualities
   A. Can successfully give as well as follow directions; shows potential. (6; 75%)
   B. Too timid to offer suggestions even if more capable than others. (1; 12.5%)
   C. Offers suggestions often, but his/her "know it all" attitude creates resentment. (1; 12.5%)

8. Confidence
   A. Approaches procedures with assurance and reports results with confidence. (5; 71%)
   B. Overconfident; tends to "skimp" on quality control, image parameters, etc. (2; 29%)
   C. Lacks confidence in his/her work. Checks results with others often. (0; 0%)

9. Initiative - willingness and ability to function independently.
   A. Sees things to be done and acts without being specifically directed. (4; 50%)
   B. Checks with supervisor when done with work and asks for additional assignments. (2; 25%)
   C. Assumes responsibility for his/her own assignment/rotation but seldom assumes any for the overall function of the department. (2; 25%)

10. Judgment
   A. Recognizes discrepancies in work and proceeds to correct the difficulty. (3; 37.5%)
   B. Recognizes discrepancies in work and reports the problems to his/her supervisor. (4; 50%)
   C. Performs procedures mechanically with no attention to detail. (1; 12.5%)

11. Problem solving skills
    A. Recognizes problems and attempts solutions in an organized and purposeful manner. (5; 62.5%)
    B. Recognizes problems but uses shotgun approach to solutions. (3; 37.5%)
    C. Fails to recognize problem. (0; 0%)

12. Interest in professional development
    A. Regularly participates in continuing education activities. (6; 67%)
    B. Rarely participates in continuing education and is not supportive of those that do. (3; 33%)
    C. Does not participate and actively discourages others from participating. (0; 0%)

13. Adherence to safety regulations
    A. Adheres strictly to federal, state, and department guidelines and regulations. (5; 62.5%)
    B. Adheres to regulations and guidelines when reminded; is careless about some areas of safety. (3; 37.5%)
    C. Extremely careless in the department and ridicules those who adhere to the regulations and guidelines. (0; 0%)

14. Tidiness
    A. Extremely neat; keeps everything clean and in proper place. (6; 67%)
    B. Keeps work area in a sloppy condition, but cleans up at end of day. (2; 22%)
    C. Keeps sloppy work area and fails to assume responsibility for clean up. (1; 11%)

Based on your experience with current and past employees, would you consider hiring another Ferris State University graduate?

___8___ Yes ___0___ No

Have you experienced difficulty in the last two years in hiring capable Nuclear Medicine Technologists?

___3___ Yes ___4___ No 1 No response

Would you be interested in hiring graduates with multiple competencies (i.e. radiography and nuclear medicine, nuclear medicine and exercise physiology)?

___3___ Yes ___3___ No 1 No response, 1 Maybe

Section Four: Student Satisfaction Surveys of the NMT Programs

Survey

Student satisfaction surveys were distributed to Nuclear Medicine Technology students on-campus in November 1996. Surveys were mailed to Nuclear Medicine Technology interns in November 1996 at their clinical sites and mailed back to Ferris State University. Twenty-seven of 30 (90%) of the on-campus students returned the survey and 14 out 31 (45%) of the interns returned the survey. Combined 41 of 61 (67%) students responded.

The survey form was designed to evaluate the student's perceived satisfaction with their educational experience to date at Ferris State University. The forms asked for responses to many areas including teaching methods, placement services, instructors, instructional materials, and support services.

Results

The results of the student satisfaction survey were broken into two groups - the on-campus students and the interns.

The questions regarding the Nuclear Medicine Technology Program (courses, objectives, teaching methods, related courses, internship, and instructors) showed on-campus responses at an average of "Excellent". The interns responses averaged "Good"

Instructional equipment was rated as "Acceptable" by both groups. Instructional materials (textbooks and reference books) averaged an "Excellent" response by both groups.

Support services (tutoring, library resources, career planning, and placement services) responses averaged "Good" for the on-campus students and "Acceptable" for interns. Many students in both groups answered "Don't Know" in response to these questions.

Comments from each group are listed below.

Summary of On-Campus Student Comments about the NMT Programs

Response by question number:

1. *Courses in NMT Program*
   Parking is not near classes, especially for students living on-campus.
2. *Written objectives for courses*
   No comments.
3. *Teaching methods*
   The teachers and lab instructors are excellent this year.
   I appreciate the up-to-date methods shown.
   Excellent, in NUCM classes.

4. *Related courses*
   Not convinced that MATH 220 is really necessary.
5. *Work experience (internship)*
   Need more sites.
   Faculty needs to agree on a better way of placing people such as placement.
   Hoping for placement.
   Wish we had more locations so everybody could guarantee a location.
   Need placement for internship sites.
   The locations are limited.
6. *Career Planning*
   Never used this.
7. *Placement services*
   no comments
8. *Instructors in the program*
   Lecture and lab instructor are both great; keep both.
   Lecture and lab instructor do an excellent job.
   All the instructors are doing a very good job.
   Could not be better.
9. *Instructional support services*
   I have never tried to obtain one, therefore I cannot really say.
   Library facilities are less than adequate; information available is pretty old; needs to be updated.
10. *Instructional equipment*
    Would like to see more modern equipment in the lab.
    New equipment would be nice, since donated equipment is pretty old and has problems.
    Old and needs repairs.
    Equipment is expensive so I know it is difficult to obtain it.
11. *Instructional materials*
    All books are expensive regardless of class or subject.
    They are expensive.
    I think the Saha book needs to be rewritten so that students can understand what he is talking about.
    Saha is a little overboard.
12. *Additional comments*
    Program director does an excellent job as well as lab instructor.
    This program is moving in a definite positive direction.

Summary of Interns' Comments About the NMT Programs

Responses by question number:

1. *Courses in NMT Program*
   No comments
2. *Written objectives for courses*
   No comments
3. *Teaching methods*
   Realistically it is hard to have up to date cameras to position. Also each hospital has different protocols.
   Need more practice with operating cameras and patient positioning at FSU.
4. *Related courses*
   Medical terminology really helped.
   Most courses do not relate to job skills.
5. *Work experience (internship)*
   I barely knew anything about nuclear medicine until I came on internship.
6. *Career planning*
   No comments.
7. *Placement services*
   Would like to know.
8. *Instructors in the program*
   Instructor needs to be more aware of students needs.
   Teach us things we need to know not things that make it more complicated than needed. e.g. math problems.
   Need to be more updated.
   Not very understandable.
   Very helpful.
9. *Instructional support services*
   Tutoring would have been a big help. I hope I can tutor when I come back up.
10. *Instructional equipment*
    Very old and outdated.
11. *Instructional materials*
    Good books on nuclear medicine.
    Books are way overpriced.
    My internship wanted text to have on hand and Ferris wouldn't even donate one. What does our tuition go towards?
    $210. for 3 books!!
12. *Additional comments*
    No comments

STUDENT PERCEPTIONS OF
FERRIS STATE UNIVERSITY
NUCLEAR MEDICINE TECHNOLOGY PROGRAM

INSTRUCTIONS: Rate each item using the following guide:

E = **EXCELLENT** means nearly ideal, top 5 to 10%;
G = **GOOD** is a strong rating, top one-third;
A = **ACCEPTABLE** is average, the middle-third;
BE = **BELOW EXPECTATIONS** is only fair, bottom one-third;
P = **POOR** is seriously inadequate, bottom 5 to 10%;
DK = Don't know

ON-CAMPUS STUDENTS

A comment column has been provided if you wish to explain your rating.

Please Rate Each Item Below	E	G	A	BE	P	DK	Comments
1. Courses in the Nuclear Medicine Program are: Available and conveniently located.	18	8			1		
Based on realistic prerequisites.	16	7	2				
2. Written objectives for courses in your program: are available to students.	17	7	2			1	
Describe what will be covered in the course.	16	5	5			1	
3. Teaching methods, procedures and course content: Meet your occupational needs, interests, and objectives.	19	7	1				
Provide practice for developing job skill.	15	8	2			2	
4. Related courses (such as English, Mathematics, Medical Terminology, etc.) are: Pertinent to occupational instruction.	9	17		1			
Current and meaningful to you.	6	15	5	1			
5. Work Experience (internship) is: Readily available at convenient locations.	1	4	6	3		13	
Coordinated with faculty.	3	5	2			17	
Considered by you to be a valuable introduction to a nuclear medicine field.	19	2				6	
6. Career planning information or assistance: Meets your needs and interests.	7	10	3	1		6	
Helps you make career decisions and choices.	6	9	4	1		7	
7. Placement services are available to: Help you find employment opportunities.	4	5	3			14	
Prepare you to apply for a job.	4	6	3			14	
8. Instructors in the program: Know the subject matter and occupational requirements.	27						
Are available to provide help when you need it.	26	1					
Provide instruction so it is interesting and understandable.	26	1					

Please Rate Each Item Below	E	G	A	BE	P	DK	Comments
9. Instructional support services (such as tutoring, library resources) are:	4	10	3	1		4	
Available to meet your needs and interests. Available to all students on an equal basis.	8	9	3		1	4	
10. Instructional equipment is: Current and representative of industry.	2	8	11	6			
In sufficient quantity to avoid long delays in use.	2	9	14	1			
Current and in good condition.	2	6	11	7	1		
11. Instructional materials (e.g., textbooks and reference books) are: Available and conveniently located for use as needed.	14	10	2		1		
Current and meaningful to the subject.	12	13	2				
Not biased toward "traditional" sex roles.	17	8	1			1	
Available at reasonable costs.	1	10	9	2	5		

STUDENT PERCEPTIONS OF
FERRIS STATE UNIVERSITY
NUCLEAR MEDICINE TECHNOLOGY PROGRAM

INSTRUCTIONS: Rate each item using the following guide:

E = **EXCELLENT** means nearly ideal, top 5 to 10%;
G = **GOOD** is a strong rating, top one-third;
A = **ACCEPTABLE** is average, the middle-third;
BE = **BELOW EXPECTATIONS** is only fair, bottom one-third;
P = **POOR** is seriously inadequate, bottom 5 to 10%;
DK = Don't know

INTERNS

A comment column has been provided if you wish to explain your rating.

Please Rate Each Item Below	E	G	A	BE	P	DK	Comments
1. Courses in the Nuclear Medicine Program are: Available and conveniently located.	5	7	1				
Based on realistic prerequisites.	2	11					
2. Written objectives for courses in your program: are available to students.	4	10					
Describe what will be covered in the course.	4	8	1				
3. Teaching methods, procedures and course content: Meet your occupational needs, interests, and objectives.	1	3	9	1			
Provide practice for developing job skill.	2	3	5	1	2		
4. Related courses (such as English, Mathematics, Medical Terminology, etc.) are: Pertinent to occupational instruction.	3	10		1			
Current and meaningful to you.	3	6	4				
5. Work Experience (internship) is: Readily available at convenient locations.	7	4	3				
Coordinated with faculty.	5	4	3	1			
Considered by you to be a valuable introduction to a nuclear medicine field.	10	4					
6. Career planning information or assistance: Meets your needs and interests.	1	4	3	2		4	
Helps you make career decisions and choices.	1	3	3	2		4	
7. Placement services are available to: Help you find employment opportunities.	2		2	1	1	8	
Prepare you to apply for a job.	2	1	3	1	1	5	
8. Instructors in the program: Know the subject matter and occupational requirements.	3	7	2	1	1		
Are available to provide help when you need it.	6	6	1	1			
Provide instruction so it is interesting and understandable.	4	1	6	2	1		

Please Rate Each Item Below	E	G	A	BE	P	DK	Comments
9. Instructional support services (such as tutoring, library resources) are:	2	2	3	3			
Available to meet your needs and interests. Available to all students on an equal basis.	1	5	2	3	1	1	
10. Instructional equipment is: Current and representative of industry.	1	2	4	2	2		
In sufficient quantity to avoid long delays in use.		3	6	1			
Current and in good condition.	1	2	5	1	2		
11. Instructional materials (e.g., textbooks and reference books) are: Available and conveniently located for use as needed.	6	5		1		1	
Current and meaningful to the subject.	7	3	1			1	
Not biased toward "traditional" sex roles.	7	3				2	
Available at reasonable costs.	1	1	3	1	5	1	

Section Five: Faculty Perceptions of the NMT programs

The Nuclear Medicine Technology Program were each given a perception survey. The survey was completed and returned by one of the two faculty members. The data was compiled and the report written by a faculty member outside of the Nuclear Medicine Technology Program.

The survey instrument and data are attached. The comments from each question are provided below:

Comments:

3. Not much information is available from professional organizations.

9. Not in regards to students; faculty only.

12. Antiquated cameras.

13. Currently use Adjunct Clinical Instructors for our advisory committee.

Nuclear Medicine Technology

APRC 1996-1997

Section 2 of 2

FACULTY PERCEPTIONS OF
FERRIS STATE UNIVERSITY
NUCLEAR MEDICINE TECHNOLOGY PROGRAM

INSTRUCTIONS: Rate each item using the following guide along with the explanations accompanying each question:

E = EXCELLENT
G = GOOD
A = ACCEPTABLE
BE = BELOW EXPECTATIONS
P = POOR
DK = Don't know

A comment column has been provided if you wish to explain your rating.

Please Rate Each Item Below	E	G	A	BE	P	DK	Comments
1. Participation in Development of Program *Excellent*- Administrators and others involved in developing and revising the college plan for this occupational program seek and respond to faculty, student and community input. *Poor*- Development of the program does not take into consideration needs or requirements outside of the immediate programmatic needs.		1					
2. Course Objectives *Excellent*- Objectives have been developed for the courses in the Nuclear Medicine Program and are used to plan and organize instruction. *Poor*- No objectives have been developed for the courses in the Nuclear Medicine program.			1				
3. Use of Information on Labor Market Needs: *Excellent*- Current data on labor market needs and emerging trends in the job market are used in developing and evaluating this program. *Poor*- Labor market data is not used in planning or evaluation.			1				
4. Use of Joint Review Committee Standards *Excellent*- JRC standards are used in planning and evaluating this program and content of its courses. *Poor*- No recognition is given to JRC standards in planning and evaluating this program and content of its courses.	1						
5. Use of Student Follow- Up Information *Excellent*- Current follow-up on graduates and those who do not complete all of the program are consistently used in evaluating this program. *Poor*- Student follow-up information has not been used in evaluating this program.				1			
6. Relevance of Supportive Courses *Excellent*- Applicable supportive courses (such as medical terminology, microbiology, etc.) are relevant to program goals and current to the needs of students. *Poor*- Supportive course content reflects no planned approach to meeting needs of students in this program.			1				

Please Rate Each Item Below	E	G	A	BE	P	DK	Comments
7. Provision for Work Experience/ Internship *Excellent*- Ample opportunities are provided for related work experience is available for students. *Poor*- Few opportunities are provided to students for related work experiences.	1						
8. Program Availability and Accessibility *Excellent*- Students and potential students desiring enrollment in this program are identified through recruitment activities, treated equally in enrollment selection, and not discouraged by unrealistic prerequisites. The program is readily available and accessible at convenient times and locations. *Poor*- The program is not available or accessible to most students seeking enrollment. Improper discriminatory selection procedures are practiced.	1						
9. Efforts to Achieve a Bias Free Environment *Excellent*- Emphasis is given to assuring that no illegal or improper bias (whether it be sex, race, or other) occurs in this program. *Poor*- Improper bias appears to be the norm.				1			
10. Provision for Program Advisement *Excellent*- Instructors in the program advise students on program and course selection. Registration procedures facilitate course selection and sequencing. *Poor*- Instructors make no provision for advising students on course and program selection.	1						
11. Provision for Career Planning and Guidance *Excellent*- Students in this program have ready access to career planning and guidance services. *Poor*- Little or no provision is made for career planning and guidance services for students enrolled in this program.		1					
12. Adequacy of Instructional Facilities *Excellent*- Instructional facilities and equipment meet the program objectives and student needs. *Poor*- Facilities and equipment for this program generally are restrictive, dysfunctional, or overcrowded.			1				
13. Use of Advisory Committees *Excellent*- The advisory committee for this program is active and representative of the occupation. *Poor*- The advisory committee for this program is not representative of the occupation and is not functional.		1					
14. Perception of Students Who Go On for a B.S. Degree *Excellent*- Nuclear Medicine students going on for a B. S. degree are some of the better students in C.A.H.S. *Poor*- Nuclear Medicine students going for a B.S. degree are generally poor students	1						

Section Six: Advisory Committees' Surveys

The Nuclear Medicine Technology Programs have utilized in the past the adjunct clinical instructors from the clinical affiliates as our advisory committee. The program is in the process of establishing a new advisory committee. Members have been invited to serve and are from a wide spectrum of the nuclear medicine field.

Since the establishment of the new advisory committee is in process (three members have accepted at this time), a survey form was not sent.

The majority of the adjunct clinical instructors at our clinical affiliates answered surveys as graduates of the program or as employers of graduates of the program. Their responses are of importance in these areas.

The minutes of the adjunct clinical instructors meetings are available. These meeting minutes document the valuable input the adjunct clinical instructors have to the program.

Section Seven: Labor Market Analysis

Overview

The Nuclear Medicine Technology Program contacted the professional organization representing Nuclear Medicine Technology, The Society of Nuclear Medicine, for information regarding labor market analysis. Very little written information is available from this group. The primary focus in the past several years of the Technologist Section has been defining "nuclear medicine technologist" and discussing job duties.

Nuclear Medicine Census

Technology Marketing Group, located in Des Plaines, Illinois, conducted a Nuclear Medicine Census in 1991. The study identified 3871 hospital sites performing nuclear imaging. Of these sites, 3515 completed the survey. This census reviewed nuclear medicine staffing, equipment, procedure volume, and budgets. Findings of this census are as follows:

1. Procedure Volume: Comparison of data reported by respondents to the Census indicates an annual growth rate of approximately 10% in Nuclear Medicine procedure volume.
2. Staffing Levels: For the average hospital, a minimum of 3 FTE employees are required to start a nuclear imaging department. The average hospital with a nuclear imaging department performing 1,000 or more procedures and a base staff of 4, staff are added at the following rates - 1 FTE tech per 1,786 procedures.
3. Equipment Compliment: For the average hospital performing 1,000 or more nuclear imaging procedures with one to two installed cameras, cameras are added at the rate of one per additional 2,150 procedures. The average number of procedures per camera in hospitals over 200 beds is 1,219. This can be compared to an average of 4,430 procedures per CT unit, and 2,366 per MRI.
4. Equipment Budgets: Budgets for nuclear imaging equipment increased 23%.
5. Radiopharmaceutical Budgets: Hospital budgets for radiopharmaceuticals increased 9%.

Ferris State University's Career Planning and Placement Services

"A Study of 1994-95 Graduates and their Beginning Salaries" by Ferris State University's Career Planning and Placement Services provides a composite of information on placement gathered over a six month period from degree recipients. The data was

gathered through a combination of mail surveys, follow-up telephone calls, and faculty data.

Of the 34 1994-95 Nuclear Medicine Technology graduates, 17 (50%) were employed in their chosen field. It should be noted, however, that there were 11 "unknowns". Five graduates were continuing their education. Only one graduate reported that they were seeking employment at the time of the survey.

Eight Associate of Applied Science Degree graduates responded to the survey regarding salaries. They reported an average annual salary of $25,697 (Range $33,000 - $15,000). This annual salary is very close to the mean salary of $25,901 reported by all Associate of Applied Science Degree graduates in the College of Allied Health Sciences.

advance for Radiologic Science Professionals

In the December 23, 1996 (Vol. 9/No. 26) edition of advance for Radiologic Science Professionals, there were ten positions listed for Nuclear Medicine Technologists. These employment opportunities were throughout the United States and represented a wide range of opportunities for graduates.

Many hospitals do not perform a nationwide search for nuclear medicine technologists. They rely on local or regional newspapers and "word of mouth" advertising. Some hospitals employ recruiters to fill available positions.

The January 12, 1997 editions of the Detroit News and Free Press had two job postings and the Grand Rapids Press had one job posting for Nuclear Medicine Technologists.

Section Eight: Evaluation of Facilities and Equipment

The Nuclear Medicine Technology Programs laboratory facilities are located in the Victor F. Spathelf (VFS) Center for Allied Health in Rooms 100 and 101. The labs occupy 1,396 square feet of space. VFS 100A is located within VFS 100 and is designated as the "Hot Lab". Radioactive materials are stored within this room which has restricted access.

VFS 100 contains primarily scintillation counters and auxiliary equipment. VFS 101 houses gamma scintillation cameras and computers.

Classroom instruction is provided within the VFS building. Students are encouraged to use the computer laboratory within the building.

The Department Head for Hospital Related Programs' office is located on the fourth floor of VFS and occupies approximately 200 square feet. The offices of the faculty occupy 100 square feet each and are located on the third and fourth floors of VFS. Each faculty has their own computer and printer. Adequate space is provided for confidential student advising.

The major pieces of scientific instrumentation dedicated to student use are two (2) gamma scintillation cameras with computers, one (1) computer display station, five (5) Ortec counting systems, one (1) Cobra liquid scintillation counter, two (2) dose calibrators, one (1) multiformatter, and two (2) uptake systems. Other equipment includes survey meters, ECG monitors, I.V. arms, cardiac phantoms, thyroid phantoms, centrifuge, microscopes, and thin layer chromatography systems.

The equipment and facilities must be adequate in order ensure compliance with national and state standards (i.e. NRC, OSHA). Compliance with national and state standards are monitored by individuals and committees within the College of Allied Health Sciences. Nuclear Regulatory Commission (NRC) and State of Michigan Radiologic Health Division compliance is monitored by the Radiation Safety Officer and the Radiation Safety Committee. OSHA compliance is monitored by the Safety Committee within the College of Allied Health Sciences. MSDS sheets are stored in the Dean's Office within the College.

The equipment and facilities at Ferris State University as well as at each clinical affiliate must comply with the Joint Review Committee on Educational Programs in Nuclear Medicine's Essentials and Guidelines.

The goal of the Program is to introduce students to the clinical procedures being performed at hospitals today. The students need to be able to simulate the procedures that they will be expected to perform during their clinical internship. The addition of "new" equipment would greatly enhance their didactic education. The Nuclear Medicine Technology Program depends upon vendors, hospitals, etc. for equipment donations.

Section Nine: Curriculum Evaluation

The evaluation of curricula for the Nuclear Medicine Technology Programs was accomplished through discussion. The following areas were discussed:

1. Nuclear Medicine Technology courses
2. Computer courses
3. Mathematics courses
4. Science courses
5. Required courses in English, medical terminology, management, statistics, and general education.

The Nuclear Medicine Technology Program has been discussing curriculum revision during the fall semester and hopes to submit these revisions for approval before fall semester 1997.

Nuclear Medicine Technology Courses

There was overall satisfaction with the Nuclear Medicine Technology courses. The faculty, however, would like to see the addition of a NUCM course entitled "Cross-Sectional Anatomy in Diagnostic Imaging". Cross-sectional anatomy is used extensively in SPECT imaging in nuclear medicine as well as CT and MR. This course could be added to the summer semester. It would be beneficial for the students to take this course prior to internship.

Course objectives need to be clearly written for all the Nuclear Medicine Technology courses and available for all faculty. Course objectives, syllabi, etc. will be available through the College of Allied Health Sciences' word processing office.

Computer Courses

All students are required to complete one computer science course. ISYS 105, Microcomputer Applications, is usually recommended. The faculty is finding, however, that students are reporting that they are not "getting anything out of this course". Many students feel that this course is too elementary.

The Nuclear Medicine Technology students may not need to enroll in a computer course based on their level of competence. A method of evaluating this competence may be implemented.

Mathematics Courses

Students in the Associate of Applied Science degree program are required to complete MATH 115, Intermediate Algebra. Students in the Bachelor of Science degree program

are required to complete MATH 115 (Intermediate Algebra), MATH 120 (Trigonometry), MATH 130 (Advanced Algebra and Analytical Trigonometry), and MATH 220 (Analytical Geometry and Calculus I).

The students need to have an understanding of problem-solving using computation, scientific notation, graphing, logarithms, and equations. MATH 115 fulfills these requirements to a degree. Program faculty, however, have noted that the Associate of Applied Science degree students have more difficulty in logarithms and equations than do the Bachelor of Science degree students who have had higher levels of mathematics.

The need for MATH 220 was discussed. MATH 220 is the first of a series of calculus courses. The Nuclear Medicine Technology Program does not require a continuation of this series beyond MATH 220. MATH 135, Calculus for the Life Sciences, may be a better option for the Nuclear Medicine Technology students.

Science Courses

Students in the Associate of Applied Science degree program are required to complete the following science courses: BIOL 205 (Anatomy and Physiology), CHEM 114 (Introduction to General Chemistry), and MRIS 210 (Fundamentals of Medical Science). The program faculty feel that these courses fulfill the basic requirements for Nuclear Medicine Technology.

Students in the Bachelor of Science degree program are required to take the same classes as the Associate of Applied Science degree students plus the following: CHEM 214 (Fundamentals of Organic Chemistry), PHYS 211 (Introductory Physics 1), PHYS 212 (Introductory Physics 2), CHEM 324 (Fundamentals of Biochemistry) or PHYS 311 (Introduction to Modern Physics), and BIOL 300 (Pathophysiology) or BIOL 442 (Ecology).

The program feels that the courses required for the Bachelor of Science degree are too rigid. The courses are often canceled due to low enrollment (i.e. PHYS 311) or are unavailable the semester the student needs to take them. Several of the courses seem redundant (i.e. MRIS 210 and BIOL 300). A better method would be to require a set number of upper level science courses and the student may choose the class they would like to take. An advantage of this system would be that it allows the student to select classes that would help them toward advanced degrees. For example, many nuclear medicine technology students go on to medical school or physician assistants school and there are required courses needed for admission. Other students would like to become health physicists or radiochemists.

Medical Terminology

All students are required to complete MRIS 102, Orientation to Medical Terminology. This one credit course teaches students to divide medical terms into their component parts

thus enabling the student to work out their meaning. MRIS 102 is of benefit to the Nuclear Medicine Technology Program.

English Courses

Students in the Associate of Applied Science and Bachelor of Science degree programs complete ENGL 150 (English 1) and ENGL 250 (English 2). The Bachelor of Science degree students also are required to take ENGL 311 (Advanced Technical Writing), ENGL 321 (Advanced Composition), or ENGL 323 (Creative Writing). ENGL 311 has been the most popular of the three and is usually recommended by the program faculty. It is desirable to take this upper level English after the student has some experience in the field of nuclear medicine. The writing assignments dealing with their chosen profession are difficult to write without at least one course in that field. This class is seen by the program faculty as beneficial.

Communications Courses

Students in the Bachelor of Science degree program are required to complete COMM 105 (Interpersonal Communication) or COMM 121 (Fundamentals of Public Speaking). Additional communications classes are recommended but not required. No changes are foreseen in these courses.

Statistics Course

Bachelor of Science degree program students complete CAHS 410 (Introduction to Epidemiology). An understanding of statistics as they relate to the health care industry are of importance to the Nuclear Medicine Technology students. Statistics as they relate to Nuclear Medicine Technology specifically are taught in the Nuclear Medicine Technology courses and are of benefit to both Associate of Applied Science and Bachelor of Science degree students.

Management Course

HCSA 403 (Human Resource Management in Health Care Facilities) is required of all Bachelor of Sciences degree program students. This course allows students to understand hospital and departmental management issues. Although most students' first jobs are as Staff Nuclear Medicine Technologists, there is the potential to become supervisor or chief technologist after a few years of experience.

The program faculty would like to explore the possibility of allowing students the choice of HCSA 403 or MGMT 301 (Applied Management). Some students have reported that they feel unprepared for HCSA 403 without having taken a lower level management course.

General Education Courses

There was overall satisfaction with the general education courses. The program faculty agreed that Biomedical Ethics (HUMN 220 or HUMN 320) should be a requirement rather than a recommendation for students. Whether able to do this or not will be discussed in greater detail.

The program faculty also agreed that recommended courses should be listed at the bottom of the course worksheets to aid the students in their choices.

Section Ten: Enrollment Trends over the Past Five Years

Enrollment in the Nuclear Medicine Technology Programs are strong and are expected to continue to be so. There is currently a "wait list" for admission to the programs. Students waiting for admission to the programs are considered Pre-Nuclear Medicine.

Although enrollment is very good, the program faculty continues to educate high school and college students regarding nuclear medicine technology. High school visits on career days, inviting high school chemistry classes to simulated lab sessions, tours, and presentations have been done during the past several years.

Retention is also important to the programs. The faculty maintains an interest in all students, both during didactic and clinical courses. Although there is no formal class such as FSUS 100 or SLA at this time, the small number of students in the programs allow the faculty to monitor potential problems. The excellent adjunct clinical instructors at our affiliate sites are also relied upon for retention purposes.

The Nuclear Medicine Technology Programs have produced the following number of graduates in recent years:

	1991-92	1992-93	1993-94	1994-95	1995-96
B.S.	11	13	5	4	6
A.A.S.	14	18	15	26	22
TOTAL	25	31	20	30	28

Section Eleven: Program Productivity / Costs

The productivity and costs data below is derived from documentation provided by the Office of Institutional Studies and is the most current data available. Data from 1992-93 was based on academic quarters while 1993-94 data was based on the semester system. A comparison, therefore, of data between 1992-93 and 1993-94 was not feasible.

Student Credit Hours

Year	Summer	Fall	Winter	F and W
1993-94	0	595	451	1046
1994-95	96	616	510	1126

Student Credit Hours / FTEF

Year	Summer	Fall	Winter	F and W
1993-94	0	595	451	523
1994-95	525.74	616	510	563

In the ranked listing of Student Credit Hours / Full Time Equated Faculty (aggregated by course prefix) for Fall + Winter Semesters 1994 - 1995, the Nuclear Medicine Technology Programs were ranked as number 61 of all programs. It ranked second, however, within Hospital Related Programs.

Personnel

	1991-92	1992-93	1993-94	1994-95	1995-96
Tenure Track FTE	2	2	2	2	2
Supplemental FTE	0	0	0	0	0
Adjunct Clinical Instructors (Unpaid)	18	18	18	18	18

The Nuclear Medicine Technology Program is comprised of two full-time faculty members. One of the faculty members is also the program coordinator.

The program also has eighteen adjunct clinical instructors who work with the Nuclear Medicine Technology interns at the clinical sites. The program is fortunate to have these volunteers that provide the daily supervision of the interns throughout their clinical education.

Financial

Expenditures*	FY92	FY93	FY94	FY95	FY96
Supply & Expense	$12,834	$18,940	$13,381	$13,109	$12,800
Equipment**	0	590	0	500	0
Gifts & Grants	5,267	1,199	42	2,643	325

*Use end of fiscal year expenditures.

**Does not include Voc-Ed and General Fund dollars.

The Nuclear Medicine Technology Programs depend upon the donation of equipment and supplies by hospitals and radiopharmaceutical companies. Funding is also provided through Vocational Education grants and alumni contributions.

Section Twelve: Conclusions

The results of the surveys of the employers of graduates, students, faculty, and graduates have provided useful information that can be used by the Nuclear Medicine Technology Program. The following conclusions have been reached:

Curriculum

1. The curriculum needs some revision particularly in the Bachelor of Science degree program. Upper level science courses are of particular importance. Computer courses also need to be evaluated.
2. The courses of the most benefit, other than the Nuclear medicine Technology courses, as indicated by the surveys are BIOL 205 (Anatomy and Physiology) and MRIS 102 (Orientation to Medical Terminology).
3. Of the Nuclear Medicine Technology courses, the summer semester course (NUCM 235) is seen to be of the most benefit to the student.
4. Graduates and students surveyed feel that the curriculum should include more simulated clinical procedures and less dealing with instrumentation not currently used.
5. Skills such as venipuncture, ECG interpretation, positioning, and patient care were listed as important to graduates and employers of graduates.

Program Faculty

1. Students of the programs agree that faculty is helpful and understanding of their needs. Updating of skills and being more understandable were several comments, however, that were made by interns.
2. Program faculty feel that the use of student follow-up information is below expectations.
3. Program faculty recognize that current data on labor market needs and emerging trends in the job market need to be used to develop and evaluate the program.

Facilities and Equipment

1. Surveys of students and graduates express concern regarding the equipment on-campus. The equipment is not, of course, as state-of-the-art as the equipment used at our clinical affiliates and is not expected to be. It is, however, in need of updating. The program has to depend upon the donation of cameras from hospitals.
2. Lack of laboratory space is of concern by the program faculty. In order to simulate clinical procedures efficiently and safely, additional laboratory space is needed.

Students

1. Enrollment is currently strong. There are, however, concerns regarding students on the wait list. The program faculty would like to retain these students and make sure they are using their time wisely while waiting to enter the program.
2. Surveys of graduates and employers of graduates reflect that they would like to see a reduction of the number of students enrolled in the program. They comment that new graduates are willing to take positions at a lower salary than experienced Nuclear Medicine Technologists.
3. Surveys of students indicate that they are particularly pleased with the clinical portion of their education.

Other Conclusions

1. Employment opportunities for Nuclear Medicine Technologists may be on the upswing.
2. Ferris State University Nuclear Medicine Technology graduates indicated on their surveys that they are not having difficulty finding employment.
3. Changes in health care as well as in the Nuclear Medicine Technology field itself may change the focus of our profession. Ferris State University needs to be aware of these changes and be seen as a leader.
4. The adjunct clinical instructors are valuable members of the program.
5. The new Advisory Committee is looked forward to as a source of valuable information regarding current trends in Nuclear Medicine Technology.

Section Thirteen: Recommendations

The Nuclear Medicine Technology (NMT) Program Review Panel would like to propose the following recommendations:

1. The NMT programs need to implement and maintain a system for surveying graduates and employers of graduates.

2. The NMT program needs to use the new Advisory Committee as a tool for program planning.

3. The curriculum, particularly for the Bachelor of Science Degree, needs revision to reflect the changing role of the Nuclear Medicine Technologist. Revisions should be submitted for approval no later than Fall of 1997.

4. The NMT program needs to actively seek donations of equipment and supplies.

5. The NMT program should implement simulated clinical procedures in all laboratory courses so students are introduced to current practices in the field of Nuclear Medicine Technology.

6. The program needs to monitor employment trends and keep records of these trends. Enrollment should reflect these trends.

7. The NMT program faculty should continue to update skills and knowledge of current practices in the field of nuclear medicine technology.

Appendix

PROGRAM REVIEW PANEL EVALUATION FORM

Program Nuclear Medicine Technology

Instructions: Circle the number which most closely describes the program you are evaluating.

1. Student Perception of Instruction

Average Score 4.3

5	4	3	2	1
Currently enrolled students rate instructional effectiveness as extremely high				Currently enrolled students rate the instructional effectiveness as below average

2. Student Satisfaction with Program

Average Score 4.0

5	4	3	2	1
Currently enrolled students are very satisfied with the program faculty, equipment, facilities, and curriculum				Currently enrolled students are not satisfied with program faculty, equipment, facilities, or curriculum

3. Advisory Committee Perceptions of Program

Average Score NA

5	4	3	2	1
Advisory committee members perceive the program curriculum, facilities, and equipment to be of the highest quality				Advisory committee members perceive the program curriculum, facilities, and equipment needs improvement

4. Demand for Graduates

Average Score 3.0

5	4	3	2	1
Graduates easily find employment in field				Graduates are sometimes forced forced to find positions of their field

5. Use of Information on Labor Market

Average Score 2.7

5	4	3	2	1

The faculty and administrators use current data on labor market needs and emerging trends in job openings to systematically develop and evaluate the program

The faculty and administrators do not use labor market data in planning or evaluating the program

6. Use of Profession/Industry Standards

Average Score 4.3

5	4	3	2	1

Profession/industry standards (such as licensing, certification, accreditation) are consistently used in planning and evaluating this program and content of its courses

Little or no recognition is given to specific profession/industry standards in planning and evaluating this program

7. Use of Student Follow-up Information

Average Score 2.7

5	4	3	2	1

Current follow-up data on completers and leavers are consistently and systematically used in evaluating this program

Student follow-up information has not been collected for use in evaluating this program

8. Relevance of Supportive Courses

Average Score 4.0

5	4	3	2	1

Applicable supportive courses are closely coordinated with this program and are kept relevant to program goals and current to the needs of students

Supportive course content reflects no planned approach to meeting needs of students in this program

9. Qualifications of Administrators and Supervisors Average Score 4.0

5	4	3	2	1

All persons responsible for directing and coordinating this program demonstrate a high level of administrative ability

Persons responsible for directing and coordinating this program have little administrative training and experience

10. Instructional Staffing Average Score 4.0

5	4	3	2	1

Instructional staffing for this program is sufficient to permit optimum program effectiveness

Staffing is inadequate to meet the needs of this program effectively

11. Facilities Average Score 3.3

5	4	3	2	1

Present facilities are sufficient to support a high quality program

Present facilities are a major problem for program quality

12. Scheduling of Instructional Facilities Average Score 4.3

5	4	3	2	1

Scheduling of facilities and equipment for this program is planned to maximize use and be consistent with quality instruction

Facilities and equipment for this program are significantly under-or-over-scheduled

13. Equipment Average Score 3.0

5	4	3	2	1

Present equipment is sufficient to support a high quality program

Present equipment is not adequate and represents a threat to program quality

14. Adaption of Instruction

Average Score 3.3

5	4	3	2	1

Instruction in all courses required for this program recognizes and responds to individ- student interests, learning styles, skills, and abilities through a variety of instructional methods (such as, small group or individualized instruction, laboratory or "hands on" experiences, credit by examination)

Instructional approaches in this program do not consider individual student differences

15. Adequate and Availability of Instructional Materials and Supplies

Average Score 4.0

5	4	3	2	1

Faculty rate that the instructional materials and supplies as being readily available and in sufficient quantity to support quality instruction

Faculty rate that the instructional materials are limited in amount, generally outdated, and lack relevance to program and student needs

Appendix One: Curricula Vitae

The curricula vitae for the Department Head of Hospital Related Programs and the faculty for the Nuclear Medicine Technology Programs are in this appendix.

JULIAN F. EASTER
17260 Valley Drive
Big Rapids, MI 49307

Home (616) 796-1650
Work (616) 592-2312

SUMMARY:

Over 15 years of progressively responsible positions in health care. Enjoy patient care and didactic duties. Good combination of practical and theoretical experience. Motivated. Hard working. Well organized.

EDUCATION:

Western Michigan University, Kalamazoo, Michigan
Doctoral Degree Program, Winter, 1994 - anticipated graduation, January, 1998
Education Administration and Supervision - Higher Education

Pittsburgh State University, Pittsburgh, Kansas
Master of Science Degree: 1986
Major: Community College Teaching

Biosystems Institute, Tempe, Arizona 1980-1981
Graduate AMA accredited Respiratory Therapist Program

University of Notre Dame, Notre Dame, Indiana 1970-1974
Bachelor of Arts Degree in Music Education

Lorain Catholic High School, Lorain, Ohio 1966-1970
Graduate

PROFESSIONAL CERTIFICATION:

Registered Respiratory Therapist (RRT) - June, 1983
Certified Respiratory Therapy Technician (CRTT) - June, 1982
Advanced Cardiac Life Support Instructor (ACLS)
Basic Cardiac Life Support Instructor

PROFESSIONAL AFFILIATIONS:

American Association for Respiratory Care
National Board for Respiratory Care
Michigan Society for Respiratory Care
American Heart Association

PROFESSIONAL EXPERIENCE:

Ferris State University, Big Rapids, Michigan
Department Head, Hospital Related Programs, May 1992 - Present
Responsible for the administrative management of the Respiratory Care, Radiography and Nuclear Medicine programs

Program Director, Respiratory Care, August, 1991-Present

Responsible for the management of the Respiratory Care program. Duties include supervising of personnel and program/curriculum development.

PROFESSIONAL EXPERIENCE: (Continued)

Firelands College, Huron, Ohio
Director of Clinical Education, August, 1988-July 1991

Responsible for supervising the clinical instruction of the Respiratory Care students. Assist in didactic/lab instruction. Assist the Program Director with program and curriculum development.

Labette County Medical Center, Parsons, Kansas
Director of Respiratory Care, July 1985 - August, 1988

Responsible for managing the Respiratory Care Department and formal training programs for students, nursing personnel and medical staff.

Labette Community College, Parsons, Kansas
Didactic/Clinical Instructor, July 1983 - July 1985

Primary Instructor of the technician program. Assisted in teaching advanced respiratory therapy theory in the therapist program. Extensive involvement in program and curriculum development for the Joint Review Committee for Respiratory Therapy Education Accreditation.

Biosystems Institute, Tempe, Arizona
Didactic/Clinical Instructor, February 1981-June 1983

Served as didactic instructor teaching the basic sciences, math, pharmacology, EKG, basic and advanced theory in the technician and therapist program.

Primary instructor of five month accelerated therapist program.

As a clinical instructor, worked with students supervising and instructing them on practical applications of RT techniques. Served as a clinical evaluator of students in the external technician and therapist programs. Assisted in program development.

St. Joseph Hospital of Phoenix Arizona
Staff technician (part-time) November 1980 - February 1981

Performed general and critical care duties.

Central Michigan Community Hospital, Mt. Pleasant, MI
Staff Technician, January 1978 - September 1980
Responsibilities in general and critical care. Performed basic pulmonary function testing, basic cardiography and a full range of respiratory technician procedures.

RELATED PROFESSIONAL EXPERIENCE:

American Heart Association of Michigan, Mecosta County Division
Board Member - 1992-Present
Michigan Society for Respiratory Care
Chairman - Awards and Scholarships Committee - 1995-1996
Sandusky/Medical College of Ohio Health Education Committee Advisory Board Member - 1990-91
Easter Seal Society of Northwest Ohio - Board of Trustees - 1989-91
American Lung Association of Ohio's South Shore Board of Trustees - 1990-91
Ohio Consortium for Blacks in Higher Education State Treasurer - 1989-91
President, Kansas Respiratory Care Society (Section VIII) - 1986-1987
Chairman of Advisory Board for the Labette Community College Respiratory Care Program - 1985-1988
National Board of Respiratory Care Entry Level and Advanced Practitioner Examinations Item Writer - 1985-Present
Clinical Facilitator for "Freedom From Smoking" clinics sponsored by the American Lung Association

PERSONAL: Birth Date: November 28, 1952 - Lorain, Ohio
Health: Excellent
Marital Status: Married
Children: Four

REFERENCES: Available on request.

NAME: William Barnes

How many years with this program: 21

RANK or TITLE
Faculty, Assistant Professor

EDUCATION:

	Years	Degree	Certification Years	Board
Ferris State University	1979	B.S.		
Nuclear Medicine Training (Institution):				
University of MI Medical Center	1967		1965	ARRT(R)
E.W. Sparrow Hospital	1967 - 1969	OJT	1969	ARRT(N)
			1978	NMTCB

Prior Appointments and Titles:

Chief Nuclear Medicine Technologist, E.W. Sparrow Hospital 1969 - 1975

Principal Current Appointment:

Assistant Professor, Nuclear Medicine Technology Program

Organizations and Societies:
The Society of Nuclear Medicine
Central Chapter, The Society of Nuclear Medicine
ATAWM, Local Branch of the Society of Nuclear Medicine
Ferris Nuclear Medicine Association
ASRT

Publications relevant to Nuclear Medicine (preferable from this program):

None

Narrative description of responsibilities in NMT training program:

One of two faculty responsible for the on-campus instruction of courses in Nuclear Medicine Technology at Ferris State University.

NOTE: Do not send a comprehensive curriculum vitae. Use this form.

December 1996

CURRICULUM VITAE

PERSONAL DATE:

Name:	Sheila Squicciarini, CNMT
Birthdate:	January 31, 1960
Marital Status:	Married
Spouse's Name:	Thomas G. Squicciarini
Child's Name:	Laura Ann, 1989

EDUCATION:

High School:	Evart Public, Evart, Michigan, 1974 - 1978.
College:	Ferris State University, Big Rapids, Michigan, 1994 - Present, Pursuing Master of Science Degree in Career & Technical Education.
	Western Michigan University, Kalamazoo, Michigan, 1992 - 1994, 18 credits toward Master of Public Administration - Health Care Services.
	Ferris State University, Big Rapids, Michigan, 1982 - 1984, Bachelor of Science Degree in Nuclear Medicine Technology.
	Northwestern Michigan College, Traverse City, Michigan, 1979 - 1981, Associate of Science Degree in Dental Assisting.

TRAINING:

Internship:	Saint Mary's Health Services, Department of Nuclear Medicine, Grand Rapids, Michigan, 1983 - 1984.

POSITIONS HELD:

1994 - Present	Assistant Professor Program Coordinator Nuclear Medicine Technology Programs Department of Hospital Related Programs College of Allied Health Sciences Ferris State University Big Rapids, Michigan

1995 - Present	Radiation Safety Officer Ferris State University Big Rapids, Michigan
1990 - 1994	Supervisor Department of Nuclear Medicine Diagnostic Imaging Services Blodgett Memorial Medical Center Grand Rapids, Michigan
1985 - 1990	Clinical Coordinator, Cardiovascular Research Senior Clinical Nuclear Medicine Technologist Cardiovascular Nuclear Medicine Division of Nuclear Medicine Department of Internal Medicine University of Michigan Hospitals Ann Arbor, Michigan
1984 - 1985	Senior Clinical Technologist Department of Nuclear Medicine Upstate Medical Center / State University of New York Syracuse, New York

CERTIFICATION/LICENSURE:

The American Registry of Radiologic Technologists, 1984
Nuclear Medicine Technology Certification Board, 1990

MEMBERSHIPS IN PROFESSIONAL SOCIETIES:

Member, The Society of Nuclear Medicine, 1983 - Present
Member, Central Chapter SNM, 1983 - Present
Member, Associate and Technical Affiliates of Western Michigan, 1990 - Present
Member, Southeastern Michigan Technologist Association, 1985 - 1990

SELECTED APPOINTMENTS:

Chair, Program Review, Nuclear Medicine Technology Programs, College of Allied Health Sciences, Ferris State University, August 1996 - January 1997.

Author and Chair, Nuclear Medicine Technology Self-Study and Site Visit, Joint Review Committee for the Accreditation of Educational Programs in Nuclear Medicine Technology, Ferris State University, 1996.

Advisor, Ferris Nuclear Medicine Association, Ferris State University, 1995 - Present.

Appointed, Ad Hoc Committee, Student Affairs Committee, College of Allied Health Sciences, Ferris State University, August 1996 - Present.

Appointed, Radiation Safety Committee, College of Allied Health Sciences, Ferris State University, August 1996 - Present.

Appointed, Faculty Research Committee, Ferris State University, August 1996 - Present.

Appointed, Safety Committee, College of Allied Health Sciences, Ferris State University, August 1995 - Present.

Volunteer, Solicitor, United Way Campaign, Ferris State University, 1996.

Appointed, Publications Committee, Central Chapter, The Society of Nuclear Medicine, March 1993 - Present.

Appointed, Continuing Education Committee, Central Chapter, The Society of Nuclear Medicine, March 1994 - Present.

Appointed, Radiation Users Group, College of Allied Health Sciences, Ferris State University, January 1995 - August 1996.

Appointed, Recruitment and Retention Committee, College of Allied Health Sciences, Ferris State University, November 1994 - August 1996.

Program Coordinator, Central Chapter, The Society of Nuclear Medicine, Symposium entitled "Radiation Safety: Guidelines and Regulations Update", Ferris State University, Big Rapids, Michigan, March 16, 1996.

Immediate Past President, Central Chapter, The Society of Nuclear Medicine, March 1995 - March 1996.

Member, Alumni Association Board of Directors, College of Allied Health Sciences, Ferris State University, January 1991 - January 1996.

Elected, Secretary, Alumni Association Board of Directors, College of Allied Health Sciences, Ferris State University, January 1995 - January 1996.

Volunteer, Solicitor, United Way Campaign, Ferris State University, Big Rapids, Michigan, 1995.

Elected, President, Central Chapter, The Society of Nuclear Medicine, April 1994 - March 1995.

Appointed, Board of Governors, Central Chapter, The Society of Nuclear Medicine, March 1993 - March 1995.

Elected, Vice-President, Alumni Association Board of Directors, College of Allied Health Sciences, Ferris State University, January 1992 - January 1995.

Chairperson, Radiation Safety Committee, Blodgett Memorial Medical Center, Grand Rapids, Michigan, July 1990 - August 1994.

Adjunct Clinical Instructor, Nuclear Medicine Technology Program, College of Allied Health Sciences, Ferris State University, July 1990 - August 1994.

Radiation Safety Consultant, Grand Valley Cardiology Specialists, Grand Rapids, Michigan, July 1994 - August 1994.

Appointed, REACT Team, Radiation Disaster Plan, Blodgett Memorial Medical Center, Grand Rapids, Michigan, April 1994 - August 1994.

Consultant (Set-up, Implementation, and Development of Nuclear Cardiology Program), Grand Valley Cardiology Specialists, Grand Rapids, Michigan, February 1994 - August 1994.

Elected, President-Elect, Central Chapter, The Society of Nuclear Medicine, March 1993 - April 1994.

Elected, President, Associates and Technical Affiliates of Western Michigan, The Society of Nuclear Medicine, March 1993 - January 1994.

Member, Hazardous Materials Task Force, Blodgett Memorial Medical Center, Grand Rapids, Michigan, August 1992 - January 1994.

Member, Communications Subcommittee, Hazardous Materials Task Force, Blodgett Memorial Medical Center, Grand Rapids, Michigan, August 1992 - January 1994.

Member, All University Alumni Association Board of Directors, Ferris State University, July 1992 - January 1994.

Volunteer, Campaign Consultant, The United Way Campaign Fund, Blodgett Memorial Medical Center, Grand Rapids, Michigan, 1990 - 1994.

Program Coordinator, Central Chapter, The Society of Nuclear Medicine, Symposium entitled Tumor Imaging, Blodgett Memorial Medical Center, Grand Rapids, Michigan, April 17, 1993.

Elected, Secretary, Central Chapter, The Society of Nuclear Medicine, March 1992 - March 1993.

Elected, By-Laws Committee, Central Chapter, The Society of Nuclear Medicine, March 1991 - March 1992.

Program Coordinator, Central Chapter, The Society of Nuclear Medicine, Symposium entitled Cardiovascular Nuclear Medicine Puts a Glow in Your Heart: An Update on Cardiac Nuclear Medicine, May 11, 1991, Blodgett Memorial Medical Center, Grand Rapids, Michigan.

SELECTED CONTINUING EDUCATION:

Attend numerous professional meetings/presentations for purpose of continuing education in nuclear medicine technology, healthcare, and education.

Attended, Continuing Growth in a Multi Imaging Profession, W.A. Foote Hospital, Jackson, Michigan, October 5, 1996.

Certificate of Completion, Radiation Safety Officer Training (40 hours), Kensington, Maryland, December 4 - 8, 1995.

Attended, Principles of Clinical Instruction for Educators In Radiologic Sciences, Phoenix, Arizona, July 20 - 22, 1995.

Certificate of Completion, Management Fundamentals, American Healthcare Radiology Administrators, Kodak Eastman, Grand Rapids, Michigan, November 1993.

Completed, Drug-Free Work Place Training, Blodgett Memorial Medical Center, Grand Rapids, Michigan, April 1993.

Certificate of Completion, Diversity Training, Blodgett Memorial Medical Center, Grand Rapids, Michigan, April 1993.

Certificate of Completion, Franklin's Project Management Seminar, Grand Rapids, Michigan, March 1993.

Certificate of Completion, OSHA's Hazard Communication Standard, Muskegon, Michigan, November 1992.

Certificate of Completion, Interaction Management Program, Blodgett Memorial Medical Center, Grand Rapids, Michigan, January - May 1992.

Certificate of Completion, Supervising for Employee Excellence Program, Blodgett Memorial Medical Center, Grand Rapids, Michigan, January - May 1992.

Certificate of Completion, Franklin's Time Management Seminar, Grand Rapids, Michigan, 1991.

SELECTED PRESENTATIONS:

"Breast Imaging in the 90's", Presented at Personal Improvement Seminar, The Northwest Michigan Health Information Management Association, The Falcon Head Golf Club, Big Rapids, Michigan, November 6, 1996.

"Time Management", Presented at Personal Improvement Seminar, The Northwest Michigan Health Information Management Association, The Falcon Head Golf Club, Big Rapids, Michigan, November 6, 1996.

"Radiation Safety", Annual In-Service for the Welding Technology Program, Ferris State University, September 1996.

"Radiation Safety Regulations and Guidelines", Presented to the Radiography students, Ferris State University, June 1996.

"Nuclear Cardiology", Presented at the Annual Meeting of the Mecosta American Heart Association Meeting, Holiday Inn, Big Rapids, Michigan, May 16, 1996.

"Time Management", Presented at Leadership Development Seminar, College of Allied Health Sciences, Ferris State University, Big Rapids, Michigan, November 14, 1995.

"Multi-Tasking", Presented at Seminar entitled Radiologic Technology: Now and the Future, Borgess Medical Center, Kalamazoo, Michigan, October 30, 1995.

"Radiation Safety", Annual In-Service for the Welding Technology Program, Ferris State University, September 1995.

"Instrument and Patient Technical Set-Up Artifacts", Presented at Central Chapter Continuing Education Road Show, April 22, 1995, St. Mary's Health Services, Grand Rapids, Michigan.

SELECTED EDUCATIONAL VIDEOS, BROCHURES, ETC:

Cable TV, Ferris Focus, "Nuclear Medicine Technology Program", Ferris State University, October 1996.

Cable TV, Ferris Focus, "Nuclear Medicine Technology Program", Ferris State University, February 1995.

Magazine Interview, M.D. News, Premier Issue 1994, Grand Rapids, Michigan.

Radio Interview, WOOD Radio AM 1300, "Health Matters", Grand Rapids, Michigan, April 13, 1993.

Script, Picker International, "PRISM 3000, PRISM 2000, and PRISM 1000", Presented at The Society of Nuclear Medicine Annual Meeting, Toronto, Canada, June 1993.

Brochure, Picker International, "Clinical Perspective", Distributed Internationally, 1993.

Video, Picker International, "PRISM 2000...Advanced Whole Body, SPECT, and Planar Imaging", 1992.

BIBLIOGRAPHY

Numerous Abstracts and Publications written prior to 1995. Not listed in Program Review due to length.

Appendix Two: Administrative Program Review Reports

The Administrative Program Review Reports for the Bachelor of Science and Associate of Applied Science Degrees in Nuclear Medicine Technology are included in Appendix Two.

ADMINISTRATIVE PROGRAM REVIEW

Program/Department: Nuclear Medicine 2-year/Hospital Related

Date Submitted: October 18, 1996 **Dean**: Isabel J. Barnes

Please provide the following information:

Enrollment/Personnel

	Fall 1992	Fall 1993	Fall 1994	Fall 1995	Fall 1996
Tenure Track FTE (a)	2	2	2	2	2
Overload/Supplemental FTEF (a)	0	0	0	0	
Adjunct/Clinical FTEF (unpaid)	18	18	18	18	18
Enrollment on-campus total*	44	49	36	37	34
Freshman		12	2	4	2
Sophomore		13	13	13	11
Junior		8	9	9	8
Senior		16	12	11	8
Pre-Nuclear Medicine		30	32	23	31
TBD					5
Enrollment off-campus*	0	0	0	0	0

*Use official count (7-day count for semesters, 5-day count for quarters).
(a) Shared personnel with 4-year program.

Financial

Expenditures* (b)	FY92	FY93	FY94	FY95	FY96
Supply & Expense	$12,834	$18,940	$13,381	$13,109	$12,800
Equipment**	0	590	0	500	0
Gifts & Grants	5,267	1,199	42	2,643	325

*Use end of fiscal year expenditures.
**Does not include Voc-Ed and General Fund dollars.
(b) Shared budget with 4-year program.

Other

	AY 91-92**	AY 92-93**	AY93-94	AY 94-95	AY 95-96
Number of Graduates * - Total	14	18	15	26	22
- On campus	14	18	15	26	22
- Off campus	0	0	0	0	0
Placement of Graduates	100%	100%	93%	70%	N/A
Average Salary	$26,785	$27,679	N/A	$25,697	N/A
Productivity-Academic Year Average (c)	814	879	523	563	559
- Summer (c)	183	157	0	115	92
Summer Enrollment	16	21	N/A	N/A	32

* Use total for academic year (F,W, S)
**Represents productivity on quarter system.
(c) Productivity indential for 2 and 4 year programs.

ADMINISTRATIVE PROGRAM REVIEW

Program/Department: Nuclear Medicine 4-year/Hospital Related

Date Submitted: October 18,1996 **Dean**: Isabel J. Barnes

Please provide the following information:

Enrollment/Personnel

	Fall 1992	Fall 1993	Fall 1994	Fall 1995	Fall 1996
Tenure Track FTE	2	2	2	2	2
Overload/Supplemental FTEF	0	0	0	0	
Adjunct/Clinical FTEF (unpaid) (a)	18	18	18	18	18
Enrollment on-campus total*	21	13	27	26	32
Freshman					0
Sophomore		1	5	2	1
Junior		4	8	7	4
Senior		8	14	24	26
Pre-Nuclear Medicine			5		10
TBD					1
Enrollment off-campus*	0	0	0	0	0

*Use official count (7-day count for semesters, 5-day count for quarters).
(a) Personnel shared with 2-year program.

Financial

Expenditures* (b)	FY92	FY93	FY94	FY95	FY96
Supply & Expense	$12,834	$18,940	$13,381	$13,109	$12,800
Equipment**	0	590	0	500	0
Gifts & Grants	5,267	1,199	42	2,643	325

*Use end of fiscal year expenditures.
**Does not include Voc-Ed and General Fund dollars.
(b) Shared budget with 2-year program.

Other

	AY 91-92**	AY 92-93**	AY93-94	AY 94-95	AY 95-96
Number of Graduates * - Total	11	13	5	4	6
- On campus	11	13	5	4	6
- Off campus	0	0	0	0	0
Placement of Graduates	100%	100%	100%	N/A	N/A
Average Salary	$31,920	N/A	N/A	N/A	N/A
Productivity-Academic Year Average (c)	814	879	523	563	559
- Summer (c)	183	157	0	115	92
Summer Enrollment	13	7	N/A	N/A	32

* Use total for academic year (F,W, S)
**Represents productivity on quarter system.
(c) Productivity identical for 2 and 4 year programs.