

# Nuclear Medicine Technology Baccalaueate (BSNMT)

## *Expanded Statement of Institutional Purpose*

### **Institutional Mission Reference**

The Nuclear Medicine Technology (NMED) program is a nationally accredited program that offers undergraduates an opportunity to earn a Bachelors of Science degree in Nuclear Medicine Technology. The NMED program supports the stated mission of the College of Health Sciences by preparing competent, qualified nuclear medicine technology professionals with practice, management, research and teaching skills to address the changing health needs of the region, state and nation. The College of Health Sciences Mission Statement states that the College will: "provide leadership in healthcare by offering excellent educational experiences in a quality learning environment to facilitate the development of competent, caring health professionals."

The NMED program also supports the stated mission of the university which is to "enhance the quality of the educational experience, both on campus and through distance learning". The NMED program does this by offering a course via TELETECHNET within the BSHS program.

### **Institutional Goal(s) Supported**

The Nuclear Medicine Technology program supports the University goals of (a) serving a culturally diverse undergraduate population, (b) quality undergraduate programs, (c) discovery of new knowledge, (d) quality teaching and (e) distance education. (See pages 8 and 9 from the Old Dominion University Strategic Plan: 2000 - 2005)

## *Intended Educational (Student) Outcomes, Methods for Assessment, Criteria for Success, Assessment Results, and Use of Results*

### **Intended Outcome 1**

Graduates of the NMED program will pass either the Nuclear Medicine Technology Certification Board (NMTCB) or American Registry of Radiologic Technologists (ARRT) national registry exams.

**Method for Assessing Outcome 1 and Criterion for Success:** All NMED program graduates will achieve a rating of "Pass" on the Nuclear Medicine Technology Certification Board (NMTCB) national registry exam (85% on their first attempt). Comparisons will be made between program and national pass rates and mean examination subgroup scaled scores.

**Summary of Assessment Data Collected for Outcome 1:** Twenty-one Old Dominion University Nuclear Medicine Technology Program Graduates took the NMTCB (first time attempt) in 2001 and 2002. Eighteen passed on their first attempt for a first time pass rate of 85.7%.

1. Results: [2001] 10 out of 12 passed on first attempt (83.3%) National Pass Rate (81.9%)
2. Results: [2002] 8 out of 9 passed on first attempt (88.9%) National Pass Rate (78.7%)
3. ODU Mean Score [2001]: 77.67 National Mean Score: 77.9
4. ODU Mean Score [2002]: 79.5 National Mean Score: 78.0

**Alternate Method for Assessing Outcome 1 and Criterion for Success:** All NMED program graduates will achieve a rating of "Pass" on the American Registry of Radiologic Technologists (ARRT) national registry exams (85% on their first attempt). Comparisons will be made between program and national pass rates and between program and national subgroup scores.

**Summary of Assessment Data Collected, Alternate Method for Outcome 1:** No graduates took the ARRT Nuclear Medicine Technology Registry Examination in 2001 or 2002.

**Use of Assessment Results from Intended Outcome 1 to Improve Academic Program:** The program met it's criterion for success for Outcome 1.

Old Dominion NMED graduates continue to pass the NMTCB Registry at or just above the national average level. Of the 21 graduates who took the NMTCB: three achieved a "Fail" score, fifteen achieved a score of "Pass", two "Passed With Distinction" and one passed with "Highest Distinction".

A review of the results by registry category (Instrumentation, Radiation Safety, Clinical Procedures and Radiopharmacy) reveals that students did best in 2001 in Clinical Procedures and Radiopharmacy and the class of 2002 did best in Radiopharmacy and Radiation Safety, so improvements made in the Clinical area have resulted in improved scores on the NMTCB. New instructors were hired to teach NMED 332, Nuclear Instrumentation (2001) and NMED 335, Radiation Health (2003), further refinements to those courses will occur in 2004. A new instructor is also being sought for NMED 403 - Radiopharmacy. The program director is attending a PET seminar in Summer 2003 and teaching modules from that training will be added to NMED 331 and 401/402 (Clinical Nuclear Medicine Technology I and II) in Fall 2003 to improve clinical theory.

### **Intended Outcome 2**

Students will demonstrate entry-level knowledge and skills representative of the profession of nuclear medicine technology.

**Method for Assessing Outcome 2 and Criterion for Success:** Senior NMED students will take and pass a Mock Registry Examination designed as a capstone measure of the field of nuclear medicine technology. The exam is given as part of the NMED 410 course. Student scores on the Mock Exam and their actual NMTCB scores are correlated to determine the degree to which the Mock exam predicts actual registry performance. It is expected 75% of student will achieve a score of 65% (passing score) or higher on the Mock Registry each cycle.

### **Summary of Assessment Data Collected for Outcome 2:**

Mock Registry Scores [2001] :

1. Mean Mock Examination Score: 61.9
2. Three of 10 (30%) students achieved a Mock Registry Score of 65 or greater. Range of scores: 51 - 72

Mock Registry Scores [2002]:

3. Mean Mock Examination Score: 62.11.
4. Two of 9 (22.2%) students achieved a Mock Registry Score of 65 or greater. Range of scores: 56 - 75

**Use of Assessment Results from Intended Outcome 2 to Improve Academic Program:** A review of Mock Registry results revealed similar results from 1996 - to date. The exam is quite difficult and a realistic means by which to test student knowledge and skills in nuclear medicine technology. Although scores on the Mock Registry are low- it continues to be a good predictor of success on the NMTCB. The "Criterion for Success" on the next Assessment Plan will reflect a more realistic percentage of 55% and not the current 65%. Using the current criterion for success, only 24% of student passed the Mock registry with a score of 65 or greater. Had the new criterion been used (55% as "pass") for 2001 and 2002, 18 out of 21 or 85.7% would have passed the Mock Registry - the exact number and percentage that passed the real NMTCB registry.

### **Intended Outcome 3**

Students completing the baccalaureate program in nuclear medicine technology will be well prepared for their first position in the field of nuclear medicine technology.

**Method for Assessing Outcome 3 and Criterion for Success:** Graduates of the NMED program will complete a "Graduate Evaluation of Readiness for Job Performance" Survey. 85% of the graduates responding will rate their preparation for job readiness as "Very Good" or "Excellent" (4.0 or greater on a 5 point scale) within eleven content areas: (1) Clinical skills, (2) Patient Care, (3) Radiation Safety, (4) SPECT Imaging skills, (5) Problem solving skills, (6) Computer skills, (7) Quality Assurance, (8) Adaptability, (9) Theoretical knowledge (10) Radiopharmaceutical skills, and (11) Overall preparation to work in the field.

**Summary of Assessment Data Collected for Outcome 3:**

The program met this criterion for success, with 85.8% of the 21 students rating their preparation as "very good" to "excellent":

Graduates from the last two years (2001-2002) rated preparation in all 10 areas as good to excellent. Using a 5.0 scale [ 5.0 = Excellent, 4.0 = Very Good, 3.0 = Good, 2.0 = Below Average, 1.0 = Poor]

Results of the Survey revealed the 2001-2002 Graduates perceptions of their preparedness for job performance in 11 areas (Mean rating) n= 9 students responding):

- 1) Clinical Imaging Skills (4.60)
- 2) Patient Care (4.61)
- 3) Radiation Safety Skills (3.95)
- 4) SPECT Imaging Skills (4.00)
- 5) Problem Solving Skills (4.50)
- 6) Computer Skills (4.11)
- 7) Quality Assurance Skills (3.94)
- 8) Adaptability (4.78)
- 9) Theoretical Knowledge (4.39)
- 10) Radiopharmaceutical Skills (3.89)
- 11) Overall Preparedness (4.40)

The average rating in all 11 areas surveyed for this group is 4.29

The average ratings for the past 14 years is 4.36.

**Alternate Method for Assessing Outcome 3 and Criterion for Success:** Qualitative data on student employment will be obtained annually. Data concerning graduate employment will include; (a) Place of employment, (b) Level of employment (staff, senior, chief technologist), and (c) Location (Local, State, Nationally). Where applicable, quantitative data comparing local versus out of state employment will be extracted.

**Summary of Assessment Data Collected, Alternate Method for Outcome 3:** Students continue to obtain employment in nuclear medicine at a 100% rate. For the past two years (2001-2002, n=21 students):

15 of 21 (71.4%) work in Virginia (13 in Hampton Roads, 2 in Northern Virginia).

6 of 21 (28.6%) work out of state (Florida (3) and North Carolina (3)).

**Use of Assessment Results from Intended Outcome 3 to Improve Academic Program:** None necessary. Students are finding employment in their chosen field, usually immediately upon graduation. Good starting salaries and sign-on bonuses have been the norm since 2001.

The criterion for success was met with 85.6% of students ratings of their job preparedness being "Very Good" to "Excellent".

**Intended Outcome 4**

Graduates of the NMED program will be well prepared for their first position in the field of nuclear medicine technology.

**Method for Assessing Outcome 4 and Criterion for Success:** The Employers of graduates of the NMED program will complete a "Graduate Evaluation of Readiness for Job Performance" Survey. 85% of the employers responding will rate the students' preparation for job readiness as "Very Good" or "Excellent" (4.0 or greater on a 5 point scale) within eleven content areas: (1) Clinical skills, (2) Patient Care, (3) Radiation Safety, (4) SPECT Imaging skills, (5) Problem solving skills, (6) Computer skills, (7) Quality Assurance, (8) Adaptability, (9) Theoretical knowledge (10) Radiopharmaceutical skills, and (11) Overall preparation to work in the field.

**Summary of Assessment Data Collected for Outcome 4:** Employer ratings for 2001-2002 rated preparation in all 10 areas as good to very good to excellent.

The top three areas, according to the employers of graduates were: (#8) Adaptability = 4.44, (#1) Clinical Skills = 4.44, (#2) Patient Care = 4.44, (#3) Radiation Safety Skills = 4.44.

They rated the "Overall Preparation" of NMED program graduates as 4.36, or between Very Good and Excellent. The average rating (out of a 5 point scale) for this group in all 11 areas is 4.45. The average ratings for the past 14 years is 4.26.

**Alternate Method for Assessing Outcome 4 and Criterion for Success:** Qualitative data on student employment will be obtained annually. Data concerning graduate employment will include; (a) Place of employment, (b) Level of employment (staff, senior, chief technologist), and (c) Location (Local, State, Nationally). Where applicable, quantitative data comparing local versus out of state employment will be extracted. There are no objective criterion for this outcome and it is only used as an indicator of where and what graduates are doing professionally.

**Summary of Assessment Data Collected, Alternate Method for Outcome 4:** See Graduate Employment summary for 2001-2002 in Outcome 3.

**Use of Assessment Results from Intended Outcome 4 to Improve Academic Program:** None necessary. Students are working in their chosen field and are advancing to higher levels, supervisory and specialty positions. To date (1989 - 2002, 14 years of data), 100% of students are working in medical imaging (Nuclear Medicine), or in a related healthcare field. Fourteen of 115 graduates (12.2%) have gone on to graduate/professional schools (2 - M.D., 2 PharmD, 3 Physicians Assistants, 8 Master's degrees).

The criterion for success was met for Outcome 4 with 95.1% of Employer's ratings being "Very Good" or "Excellent".

**Intended Outcome 5**

Students will receive a high quality education in the field of nuclear medicine technology.

**Method for Assessing Outcome 5 and Criterion for Success:** Eighty percent of the seniors from the NMED program (on the Senior Student Satisfaction Survey) will rate that they are "Satisfied or Very satisfied" with the NMED program in the areas of: (a) quality of program faculty, (b) quality of curriculum (including internships), (c) quality of instruction in the major, (d) quality of advising, (e) faculty attitudes and interactions with students, and (f) clarity and attainment of program goals.

**Summary of Assessment Data Collected for Outcome 5:** Results of the Senior Survey (2001 and 2002) revealed the following data on the NMED seniors completing the survey:

The program exceeded expectations on each of the areas under review. The table below describes the percent of students rating their satisfaction as "Very satisfied or Satisfied"

	2001 (n=12)	2002 (n=8)
1. Quality of Faculty:	92%	88%
2. Quality of Curriculum/Internships	92%	88%
3. Quality of Instruction:	92%	88%
4. Quality of Advising:	100%	88%
5. Faculty Attitudes/Interactions:	92%	88%
6. Clarity of Program Goals:	100%	88%

**Use of Assessment Results from Intended Outcome 5 to Improve Academic Program:** Student overall satisfaction with the program, its instructors, advisors and internships exceeds the criterion for success for 2001 and 2002. Changes in faculty and curriculum are forthcoming (2003/2004) so every effort will be made to continue the quality of the program and its faculty.