2-12-2009

SR-08-09-21 APC

Marshall University

ACADEMIC PLANNING COMMITTEE
RECOMMENDATION

SR-08-09-21 APC

Recommends that the College of Health Professions' Intent to Plan statement for a Cooperative Bachelor of Science Degree in Medical Imaging be approved.

RATIONALE:

Academic programs are required to express to higher education officials an intent to plan a new baccalaureate program (section 3.7 of WV Higher Education Policy Commission Series 11: *Submission of Proposals for New Academic Programs and the Discontinuance of Existing Programs*). The College of Health Professions has presented an intent-to-plan document for the program named above, which the Academic Planning Committee has reviewed. The degree will be offered through a cooperative agreement with the St. Mary's Medical Center School of Medical Imaging.

The Committee finds that the proposed program meets the requirements of WVHEPC Series 11; will help meet the growing demand for qualified medical imaging technologists; and will be the only baccalaureate program of its kind at a West Virginia public university.

FACULTY SENATE CHAIR:

APPROVED BY THE FACULTY SENATE: Pam Brammer DATE: 2/17/09

DISAPPROVED BY THE FACULTY SENATE: _____ DATE: _____

UNIVERSITY PRESIDENT:

APPROVED: _____ DATE: 2/20/09

DISAPPROVED: _____ DATE: _____

COMMENTS: _____

_____

_____

Name of Institution:	**Marshall University**
Date:	**October 3, 2008**
Category of Action Required:	**Initial Approval**
Title of Degree:	**BS in Medical Imaging**
Location:	**Huntington**
Effective Date to Proposed Action:	**To admit students fall 2010**

Brief Summary Statement:

Cooperative Bachelor of Science Degree in Medical Imaging
St. Mary's Medical Center School of Medical Imaging/
Marshall University College of Health Professions

Marshall University's College of Health Professions and Saint Mary's Medical Center (SMMC) School of Medical Imaging (SOMI) request approval to offer a baccalaureate degree in medical imaging through a cooperative agreement beginning with the fall 2009 semester. The program will offer the first baccalaureate in medical imaging sciences program to be offered at a public university in West Virginia (WV). Two other programs of study are offered in WV, but at private schools with much higher costs for education.

Medical imaging, as other fields of health care, has a growing market demand served by too few qualified practitioners. Thus, citizens of WV and the region are forced to wait for radiographic and other medical imaging procedures. The baccalaureate in medical imaging sciences would provide the education necessary for the entry point to radiology and also prepare students to move forward in the advanced imaging role as delineated by the American Registry of Radiologic Technology (ARRT). The entire program is designed to be completed in four academic years starting from the freshman level. Regardless of entry point, all students must meet or exceed MU core requirements for graduation.

To facilitate progress through the curriculum and to assure sufficient students to match the current demand, three entry points to this 131 credit hour program will be developed.

1. Students may enter MU at the freshman level as pre-health students with an emphasis on medical imaging.
2. Students may transfer into SMMC at the sophomore level from another institution.
3. Students may transfer into SMMC at the senior level. Transfer into the senior level will be reserved for students that have attended a Joint Review Commission on Education in Radiologic Technology (JCERT) certified associate degree program of study eligible for transfer hours sufficient to satisfy MU requirements for senior status.

All non-medical imaging courses will be taught at Marshall University while all medical imaging and clinical courses will be taught at SMMC by SMMC-SOMI faculty and staff. Students completing the third year will be awarded a Certification of Completion from SMMC-SOMI which will enable the

student to sit for the ARRT primary examination in radiography (a requirement for fourth year clinical experiences). Students completing the entire program will be awarded a Bachelor of Science degree in medical imaging from MU.

Current resources are adequate to support the program. Participation by Marshall University will require no new faculty or library resources. SMMC-SOMI will be responsible for all faculty hires and financial support in the School of Medical Imaging and offer library services including accessibility of current journals.

PART I: PROGRAM DESCRIPTION

The College of Health Professions is proposing a Bachelor of Science in Medical Imaging via a co-operative affiliation with St. Mary's Medical Center (SMMC). The mission of the program is to provide a Bachelor of Science in Medical imaging which will prepare medical imaging specialists at a time of critical health care professional shortages nationally and state-wide. The program objectives are listed below:

A. Program Objectives

The Bachelor of Science in Medical Imaging will provide the opportunity to:

1. Acquire skills and knowledge required for practice at both the entry level (Radiography) and professional level (Advanced Imaging) as delineated by the American Society for (ASRT) and the American Registry of Radiologic Technology (ARRT).
2. Meet the needs of both graduates and employers.
3. Develop graduates who recognize the need for professional development and life-long learning.
4. Utilize critical thinking skills in medical imaging practice.

B. Program Identification

1. The following is the appropriate program identification as provided in the Classifications of Instructional Programs developed and published by the U.S. Department of Education Center for Educational Statistics:

   Medical Radiologic Technology/Technician *An instructional program that prepares individuals to perform diagnostic examinations, and administer therapeutic procedures, using X-Rays and related radiations, under the supervision of a radiologist. Includes instruction in conducting CAT scans (computer tomography), xeradiography, thermography and X-Ray procedures; equipment operation and maintenance; patient preparation; and record-keeping.*

C. Program Features

The Bachelor of Science in Medical Imaging program will offer the first baccalaureate program in the State of West Virginia provided by a public institution. The degree will consist of 131 undergraduate credit hours which may include up to 72 credit hours transferred from an Associate Degree program with a JCERT accredited program of study.

Students may enter the program in three ways: (1), at the freshman level, proceeding through all levels of coursework and required hours. Students pursuing a baccalaureate degree in Medical Imaging will be eligible, upon successful completion of MI 318 and MI 319, to sit for the ARRT Examination; (2), at the sophomore level with transfer credit for courses applied to the Marshall plan as appropriate; (3), at the senior level (fall semester) with ARRT certification.

Admission and Performance Standards

Prospective students who wish to apply to for admission to the Bachelor of Science in Medical Imaging program must meet the admission requirements listed below. In addition to admission to Marshall University, separate applications must be made to the Bachelor of Science in Medical Imaging Program and to SMMC School of Medical Imaging (SOMI). SMMC-SOMI has a selective admission policy separate from the University admission procedure. Admission to Marshall University does not guarantee admission to the Medical imaging program at SMMC-SOMI. The number of clinical placement positions limits enrollment. Applicants to the SMMC-SMI program are awarded points based on overall college GPA, ACT scores and GPA in pre-requisite coursework. The top 40 applicants will be offered a personal interview at SMMC. Twenty to twenty-five applicants will be offered a position in the program based on an average of academic points and an interview score.

Admission Criteria

Prospective students must meet the minimum criteria listed below to be considered for admission to the program. Admission is highly competitive and will be determined by a panel of experts in the fields of medical imaging and health care education.

Freshman Level: For students applying at the high school level, minimum qualifications include:

- Unconditional admission to Marshall University. An separate application must be completed for COHP accompanied by a $25.00 application fee.
- A high school diploma (official transcript with graduation date required).
- An overall Grade Point Average of at least 2.00 (C average) and a composite score of at least 19 on the ACT or a combined score (critical reading + math) of at least 910 on the SAT.
- Completion of the 2008 Higher Education Policy Commission (HEPC) course requirements. 2008 HEPC course requirements include:
  - 4 years of English (including courses in grammar, composition, literature)
  - 3 years of social studies (including U.S. history)
  - 4 years of math (including Algebra I and at least two higher units)
  - 3 years of science (all units must be laboratory science)
  - 2 years of the same foreign language
  - 1 year of fine arts

Sophomore Level: Admission to SMMC-SOMI. All applications must be postmarked no later than April 1 for the class beginning in July.

- Points are given for ACT of 19 or better on Math, Natural Science and Composite.
- College GPA: 2.5 (for work completed at MU or transferred in).
- Minimum grade of C in all pre-requisite coursework
- BCLS certification.

- Background and drug screening for clinical rotations (per SMMC policy/procedure).
- Completed application form.
- Official copies of transcripts for all colleges/universities attended.
- Completion of prerequisites.
- A $25 non-refundable SMMC application fee.
- Meet health and physical capability requirements as described in the Technical Standards (See Appendix D).
- Sign Rules of Ethics (see Appendix E).

Senior Level: Students progressing from SMMC-SMI

- ARRT certification.
- College GPA of 2.5.
- Selection of Advanced Practice imaging track (Cardio Thoracic Imaging; Medical Imaging Management; or Cardiovascular Imaging).
- Sign Rules of Ethics (see Appendix D).
- A $25 non-refundable SMMC application fee.
- Meet health and physical capability requirements as described in the Technical Standards (See Appendix D).

Senior Level: Students that have obtained an associate degree in Radiologic Science or have achieved Professional Standing through certification in Radiography, Nuclear Medicine or Radiation Therapy may, pending transfer of sufficient hours from AS degree program, be admitted into the SMMC-SOMI. This exception is designed to accommodate students that have achieved ARRT certification post AS degree at another university and are in need only of their specialty certification. All senior level students will take 4th year courses at SMMC and must meet MU graduation requirements for studies prior to receiving degree.

Accepted transfer credits for BSMI program

1. All radiography or medical imaging credit hours/coursework from a JRCERT accredited program in radiography provided applicant demonstrates successful completion of ARRT certification exam. Equivalent course credit will be considered on an individual basis as radiography programs vary in how the radiography curriculum is distributed. Some applicants may have received block credit. For example, MCTC offered SMMC graduates a block credit of 55 hours for students prior to 2002. Students would be required to take any general education or Marshall Plan requirements.
2. Radiographers who have passed the ARRT exam will not be required to take the specific prerequisites such as human anatomy, physiology, physics, chemistry or medical terminology as the applicant has demonstrated mastery of this material by passing the ARRT exam. All remaining coursework required as part of the general education or Marshall Plan fulfillment will be required prior to awarding the medical imaging degree.
3. Radiographers who have successfully passed the advanced practice certification in CT, magnetic resonance imaging (MRI), Cardiovascular Imaging, Interventional radiography ultrasound or mammography will be awarded the equivalent number of hours required for completing the actual classes (when US and mammography courses are added to the curriculum). The students will be required to take all professional core coursework and any general education or Marshall Plan requirements and have sufficient total credits for a bachelor's degree.

4. The program will accept in transfer prerequisite coursework: human anatomy, human physiology, college algebra, introductory physics, chemistry and medical terminology in addition to radiography coursework and electives.

D. Program Outcomes

The following outcome measures have been established for the Bachelor of Science in Medical Imaging.

A. Eighty-five percent or more of all students admitted will successfully complete the program within four years.
B. Passage rate of ≥90% on the ARRT certification exam in Radiography (national rate currently 86%; SMMC board pass rate 100% over past five years).
C. Within six months of successful completion of the ARRT exam, 90% of graduates will be employed in the health care field.
D. Employers of St. Mary's/Marshall University graduates will rank satisfaction with these graduates at 3.5 or greater (on a scale of 1 to 5 with 5 being most satisfied).
E. Program Delivery
All non-imaging didactic coursework will be offered on the MU campus. Medical Imaging specific coursework will be taught at St. Mary's Medical Center SOMI. All practicum and capstone courses will be in area healthcare facilities and are the sole responsibility of SMMC.

PART II: PROGRAM NEED AND JUSTIFICATION

A. Relationship to Institutional Goals/Objectives

This will be a collaborative program between Marshall University and St. Mary's Medical Center School of Medical Imaging (SMMC-SOMI). Marshall University will provide the degree. SMMC-SOMI will provide the imaging science program didactic and clinical education according to the accreditation requirements of JRCERT and the curriculum content required by the ARRT. SMMC-SOMI will award the Certificate that will allow the student to sit for the ARRT certification examination. SMMC-SOMI will also provide the advanced practice clinical and didactic education that will prepare the entry-level student for an advanced practice certification examination and the imaging science curriculum for the baccalaureate degree in Radiologic Technology as proscribed by the American Society for Radiologic Technologist (ASRT).

The addition of this health professions program will be beneficial to the citizens of West Virginia by providing improved health services. This program is consistent with Marshall University's current mission to provide high quality, affordable education and to enhance the quality of health care in the region. The University has expressed a commitment to improving undergraduate education with a focus on undergraduate and graduate education that is timely and appropriate for the state and the region.

B. Existing Programs

There are currently two additional baccalaureate of imaging science programs in West Virginia. Both are private universities. One program is located at the University of Charleston (UC) in Charleston, West Virginia, and the other is offered by Mountain State University (MSU) in Beckley,

West Virginia. In addition, there are three programs that offer the AAS degree, Mountain State University (Beckley), Bluefield State (Bluefield), and Southern West Virginia Community and Technical college (Logan) and four programs that offer a certificate in radiology program (United Hospital Center; WVU Hospital; Ohio Valley Medical Center; and Wheeling Hospital).

Mountain State averages 20-22 students/class as does SMMC-SOMI and UC averages 4-6 students per class. The closest out of state baccalaureate program in medical imaging in Kentucky is located at Morehead University. The closest in Ohio are located in Cincinnati and Columbus. Marshall University and SMMC-SOMI both draw from the tri-state area.

The annual tuition for radiologic sciences at UC is approximately $17,000 or over $700.00 per hour based on 12 hours per semester, making four year tuition costs approximately $68,000. Mountain State University draws from the extreme southern portion of WV and has an average tuition for the imaging program of $300/credit hour or $3600/semester for 12 to 18 semester hours. Tuition for the SMMC-SOMI medical imaging program will vary with each year. Year one tuition and fees will be paid directly to MU at the standard tuition rate. Tuition at SMMC-SOMI is charged at $250/credit hour. Students in years two and three will pay this tuition to SMMC. MU will receive a third party waiver fee for each hour students are registered at MU for courses at SMMC-SOMI. Year four students will pay tuition dollars to both MU and SMMC resulting in a combined revenue source of tuition dollars and third party waiver fees (refer to Appendix F).

C. Program Planning and Development

St. Mary's Medical Center School of Medical Imaging has been educating entry level radiography students since 1964. The radiography program at SMMC has a long tradition of producing quality graduate radiographers who exceed employer expectations. The SOMI is fully accredited by JRCERT and provides the certificate necessary for the student to sit for the ARRT certification exam and to obtain a license to practice as a Radiographer from the West Virginia Board of Radiologic Technology Examiners. The SOMI has had a 100% pass rate on the ARRT exam for the previous five years. Median scores on the exam exceeded the state and national mean by 8-10%.

Members of the healthcare community and Marshall University's College of Health Professions sit on the advisory committee that both guides program development and oversees programmatic progress. The MU Faculty Senate will review this intent to plan and can make suggestions for improvement. All colleges at MU will have the opportunity, through their college senate representative, to review and provide input into the program approval process. Additionally, all curriculum utilized in the BSMI program will be approved by the appropriate SMMC, COHP, and MU curriculum committees.

D. Clientele and Need

In 2007, The American Society of Radiologic Technologists (ASRT) House of Delegates issued a position statement endorsing the baccalaureate degree as the professional level of radiologic science education if it contains upper division coursework in radiologic science. Upper division coursework would include advanced practice imaging studies including computed tomography, magnetic resonance imaging, cardiovascular and interventional imaging and others. The cooperative baccalaureate program in medical imaging between Marshall University and SMMC SOMI would

represent the only baccalaureate program at a publicly funded university in West Virginia. Radiography managerial positions nearly always require a minimum of a baccalaureate degree. Moreover, it is anticipated that the baccalaureate degree will become the required education level for all radiographers in the future. Currently area radiographers who wish to obtain a baccalaureate degree are only able to do so via the Regent's program. The BS degree is a stronger degree option than the regent's BA and the ASRT core curriculum for the baccalaureate degree is an expression of content that enhances entry-level education and supports multiple post-primary specialty certifications as well as a transition to education in advanced clinical practice.

SMMC-SOMI receives between 75-100 applications for admission each year. Students come from the surrounding counties in West Virginia, Kentucky and Ohio. Traditionally they are Appalachian working class with a mean age of twenty-five years. Over 50% of the students in this area receive some form of financial aid through loans, grants or scholarships. There is a growing population of non-traditional students seeking a career change due to elimination of current job or voluntary change. This program will continue to offer employment opportunities and add to the economic development of the area.

Imaging science is undergoing a transformation from the traditional stand alone hospital based program to programs that not only provide graduates prepared to sit for the ARRT exam, but also graduates with a college degree. In 2007 the ASRT voted the baccalaureate degree as the professional level. Medical imaging has undergone dramatic changes within the last twenty years with the addition of new technologies and is expected to continue to do so in the future. Imaging programs must be able to provide quality graduates to meet the demands of an increasingly technologically driven profession while maintaining high levels of patient care and radiation safety.

E. Employment Opportunities

According to the U.S. Department of Labor, the employment opportunities for imaging science professionals are expected to grow faster than average for all occupations through 2012 due, in part, to an aging population who use these services extensively. Although hospitals tend to be the largest consumers of imaging technologists, employment opportunities include clinics, mobile imaging services, industry and research.
A survey by the American Society of Radiologic Technologist in 2007 noted median annual earnings of imaging technologist in West Virginia to be:

- Radiography $40,300
- Cardiovascular/interventional $48,400
- Computed tomography $44,000
- Magnetic resonance imaging $51,000
- Quality management $50,000

The same survey indicated technologist median salary for technologist with an AAS degree to be $48,000 and for a BS degree to be $55,000; an increase of 7%.

F. Program Impact

The affiliation between Marshall University's College of Health Professions and St. Mary's Medical Center School of Medical Imaging will provide a positive linkage for the university and community.

Marshall University will offer all non-imaging coursework for students and will offer some of the healthcare management and administration coursework for the advanced management tract. Students are considered to be students of both institutions. JRCERT accreditation requires that the SOMI be considered an independent institution affiliated with the University allowing the student to obtain both the required didactic and clinical competency for the ARRT exam and the academic degree awarded by the University. St. Mary's School of Medical Imaging will offer all imaging didactic and laboratory course work. Students will fulfill ARRT clinical competency requirements through rotation of community clinical agencies.

G. Cooperative Agreements

Existing affiliation agreements between Marshall University's College of Health Professions and St. Mary's Medical Center include the St. Mary's Medical Center School of Nursing and the School of Respiratory Care.

H. Alternatives to Program Development

Students wishing to pursue a baccalaureate degree in imaging sciences must leave the area or attend a private university at considerable cost.

PART III: PROGRAM IMPLEMENTATION AND PROJECTED RESOUCE REQUIREMENTS

A. Program Administration

Program administration will be accomplished by a Program Director who meets the Standards set forth by the ASRT, ARRT and JRCERT. The Program Director will organize, administer, review, develop and assure program effectiveness through on-going program assessment. This person will participate in the budget process through St. Mary's Medical Center and be responsible for a leadership role in the continued development of the program. It is expected that the Program Director will maintain current knowledge of the professional discipline and educational methodologies.

The organizational chart for Marshall University's College of Health Professions illustrates the relationship between St. Mary's Medical Center for Education and Marshall University. Further delineation of the organizational structure within Marshall University's College of Health Professions to St. Mary's Medical Center School of Medical Imaging can be noted in the organization charts in Appendix A. A copy of the proposed contract between St. Mary's Medical Center and Marshall University's College of Health Professions can be found in Appendix B. This contract mirrors the current contracts between COHP and SMMC for the ASN degree and BS in Respiratory Care degree programs.

B. Program Projections

Student/Clinical instruction ratios and requirements
Student to instructor ratios in the clinical setting are determined by the ASRT and are monitored by the JRCERT. These ratios determine the total number of students that can be scheduled for any

individual clinical rotation. The ratios vary depending on whether the student is in the entry level portion of the program (years 2-3) prior to sitting for the primary ARRT certification exam or the professional level (year 4) post-primary ARRT certification.

There are two different staffing requirements: the staff radiographer ratio and the clinical instructor ratio. JRCERT standards require that all students must perform radiography under direct supervision prior to demonstrated competency in order to assure radiation protection for both patient and student. Clinical staff works directly with the student. JRCERT requirements for Clinical staff include understanding the clinical competency system, support of the educational process and to maintain current knowledge of program policies, procedures and student progress. The staff radiographer/student ratio is 1:1. The total number of students at any given clinical facility will never exceed the number of Registered Technologists.

Clinical instructors (CI) are designated by the clinical facility to oversee and evaluate the student's progress. They must be knowledgeable of program goals, understand the clinical objectives and clinical evaluation system; provide students with clinical instruction/supervision; maintain competency in the professional discipline and instructional and evaluative techniques through continuing professional development. The Program Director submits each designated clinical instructor to JRCERT for approval. Clinical instructor/student ratio is 10:1. The CI evaluates student competency on required procedures and submits a progress evaluation to the program director or clinical coordinator at the conclusion of a student's clinical rotation.

There are no set ratios for the professional level advanced practice student. The number of students scheduled at any clinical site would be determined by the workload and the clinical site but would never exceed more than one student/scanner (CT or MRI) or laboratory (cardiac catheterization or interventional radiography). Students in the fourth year or advanced practice track may obtain their clinical education at distant locations providing the location meets approval standards. The professional level student does not require a designated clinical instructor. The student is evaluated on the completion of designated imaging procedures in accordance with ARRT advanced practice procedural requirements.

SMMC-SOMI is presently approved for up to 25 students per class. Class size is dictated by the student/technologist ratio at a particular clinical facility. JRCERT accreditation standards require a 1:1 ratio for student/technologist. This ratio applies only to the entry-level radiography student only. Students enrolled in the senior year advanced practice program are not limited to a 1:1 learning environment because of board certification to practice. SMMC-SOMI current clinical affiliations include five facilities within the Huntington area. Students in the advanced practice will be also be able to achieve the requisite clinical experience at facilities outside the Huntington area. Therefore, with the additional transfer students, it is projected that the number of students in the advanced level of the program (fourth year) will exceed the number enrolled for the second and third year.

C. Faculty Instructional Requirements

St. Mary's Medical Center will be responsible for additional faculty resources and benefits upon implementation of a BS program. All faculty will hold national certification in medical imaging or radiography.

D. Library Resources and Instructional Materials

St. Mary's Medical Center will be responsible for any additional library resources needed. As MU students, medical imaging students can access all Marshall University electronic databases and other library resources. Students will also have access to the Marshall University School of Medicine Library.

E. Support Service Requirements

All support services available to SMMC students and MU students through St. Mary's Medical Center and the COHP will be available to students in this program. Student services at both facilities will coordinate admission and graduation processes. Each student will have an advisor assigned to them from both SMMC-SOMI and COHP.

F. Facilities Requirements

St. Mary's Medical Center is currently developing a Center for Education (CFE) facility on 5th Avenue to house all programs associated with SMMC's Center for Education. The facility will have state of the art classroom facilities including a fully equipped radiography laboratory and computer lab space for virtual medical imaging instruction. Completion of the facility is projected for spring 2009. The CFE will include a separate medical library in addition to library resources available at MU.

G. Operating Resource Requirements

No additional resources are needed on the part of Marshall University. Advising will be performed through the office of student services with current staff.

H. Source of Operating Resources

Faculty, personnel and facility resources are the responsibility of St. Mary's Medical Center.

PART IV: OFFERING EXISTING PROGRAMS AT NEW LOCATIONS

Not Applicable

PART V: PROGRAM EVALUATION

I. Evaluation Procedures

A. Internal Evaluations

Evaluation is a critical component to effective programs. Marshall University has a systematic and on-going evaluation process. All departments must submit an annual evaluation and program evaluation through the Office of Program Review and Assessment. SMMC-SOMI compiles an annual report with presentation of program goals and outcome assessment. The goals and assessment plan is structured to meet the Standards set forth by the JRCERT.

All faculty members must meet JRCERT Standards as in the accreditation Standards. Faculty are employed through St. Mary's Medical Center which conducts annual evaluations. Faculty of the School of Medical Imaging are considered Marshall University faculty as non-paid, non-tenured clinical faculty. All courses will be developed utilizing ASRT and JRCERT criteria and will be submitted through the appropriate committees for approval by Marshall University. A proposed course structure can be found in Appendix C.

Student satisfaction with and effectiveness of the didactic component of the program will be assessed in a variety of ways. Each semester, students will complete computer-scored anonymous surveys for all courses in which they are enrolled. The Office of Institutional Research will compile survey results and disseminate to the Dean and Program Director.

Students will also be provided the opportunity to evaluate and comment on their clinical education. Evaluations for individual clinical sites and clinical instructors employed by the sites are submitted at the end of each semester for all clinical sites visited during the term.

Alumni surveys are sent to graduates within 6 months of graduation requesting feedback with ARRT exam preparation, professional development and program satisfaction. Employer surveys are sent to students employed within the field after six months in order to evaluate the effectiveness of the program's graduates as professional radiographers.

ARRT exam results are included in the annual report along with comparisons to the national and state-wide median scores. SMMC-SOMI had the highest median score on the 2007 ARRT exam of the seven radiography programs in West Virginia. The SMMC median score has exceeded the national mean for the previous 5 years.

Throughout the program, a variety of measures are employed to assess student learning and comprehension. Among the measures utilized in the classroom setting include, but are not limited to, written objectives and examinations. In the clinical setting, student competence will be formally evaluated by the faculty throughout the entire clinical rotation. Students will be assigned a preceptor during all clinical rotations. Seniors and those students with ARRT certification will be placed on a 1:1 preceptor ratio in the clinical setting when performing procedures to provide continuous informal evaluation and to assure patient safety with all procedures. AART and JCERT strictly enforce two students per preceptor ratios; however, as outlined above, the preceptor can have only one student performing skills at one time. As clinical instructors would not be preceptors, the student per clinical instructor ratio is 10:1. The student to staff technologist ratio, as with clinical preceptors, is 1:1. Students must demonstrate mandated competence in a variety of radiographic procedures in order to sit for the Primary exam in Radiography or the Advanced Practice exams.

Another common practice of measuring competence is through student GPA. The program policies state that a student must maintain a GPA of 2.5 throughout the program. If a student's GPA falls below a 2.5, they will be placed on academic probation and have one semester to bring it to an acceptable level or be dismissed from the program. Second year students enrolled at SMMC-SOMI will sit for a comprehensive exam in May that covers 2 of the 5 sections on the ARRT exam. Students must achieve a minimum score of 75 in order to proceed. Third year students enrolled at SMMC-SOMI will sit for a mock ARRT registry Exit Exam and achieve a

minimum score of 80 before the Program Director will approve their application to the ARRT for the Primary exam in Radiography.

B. External Evaluation

One outcome utilized to measure adequacy of entry-level graduates for radiography is the pass rate for first-time test takers on the ARRT exam. The Program goal is 92%. SMMC-SOMI five year pass rate for first-time test takers has been 100%.

The program goals are to meet or exceed the median national and state median scores for the ARRT exam. SMMC-SOMI five year median scores have exceeded national and state median scores.

The Alumni Survey, discussed above, is another method utilized to measure preparedness for practice as a radiographer. Students who complete the entry level program at SMMC and obtain employment in the field after sitting for the Primary exam at the end of the third year will be surveyed within six months for feedback on the program's effectiveness in preparing them for practice. Graduates of the BS program who sit for an advanced practice certification exam will be surveyed within six months of graduation.

Students/Graduates of the program will be asked to submit the name of their employer upon securing professional employment. Employer information will be requested from students after passing the Primary certification exam (year 3) and any Advanced Practice exam (year 4). The Employer Survey solicits information on their ability to perform in their current capacity. This provides additional feedback to enhance program content.

C. Accreditation Status

The St. Mary's Medical Center School of Medical Imaging is currently accredited by JCERT. The program was awarded the maximum accreditation of 8 years. An interim report is due in 2009. A site visit will be due in 2013. The co-operative program between SMMC-SOMI and Marshall University will undergo review by JRCERT in order to assure total compliance and assure graduates remain eligible to sit for the ARRT certification exam. ARRT requires all applicants to have completed an accredited program. ARRT will recognize applicants as eligible for the Primary exam in Radiography when they receive a certificate from SMMC-SOMI at the completion of Year Three coursework and achievement of a passing score on the Exit Examination.

The ARRT Rules and Regulations require that candidates for the primary eligibility pathway to certification in radiography, nuclear medicine technology, radiation therapy, sonography, or magnetic resonance imaging must have completed a formal educational program accredited by a mechanism acceptable to the ARRT.

An acceptable mechanism is one that is administered by an agency that is recognized by the Council for Higher Education Accreditation (CHEA) as an accrediting agency; and if such recognition is as a National Institutional and Specialized Accrediting Body, has a scope that

includes radiologic technology or allied health; and evaluates education using standards endorsed by the ARRT.

PART VI: TERMINATION OF PROGRAM

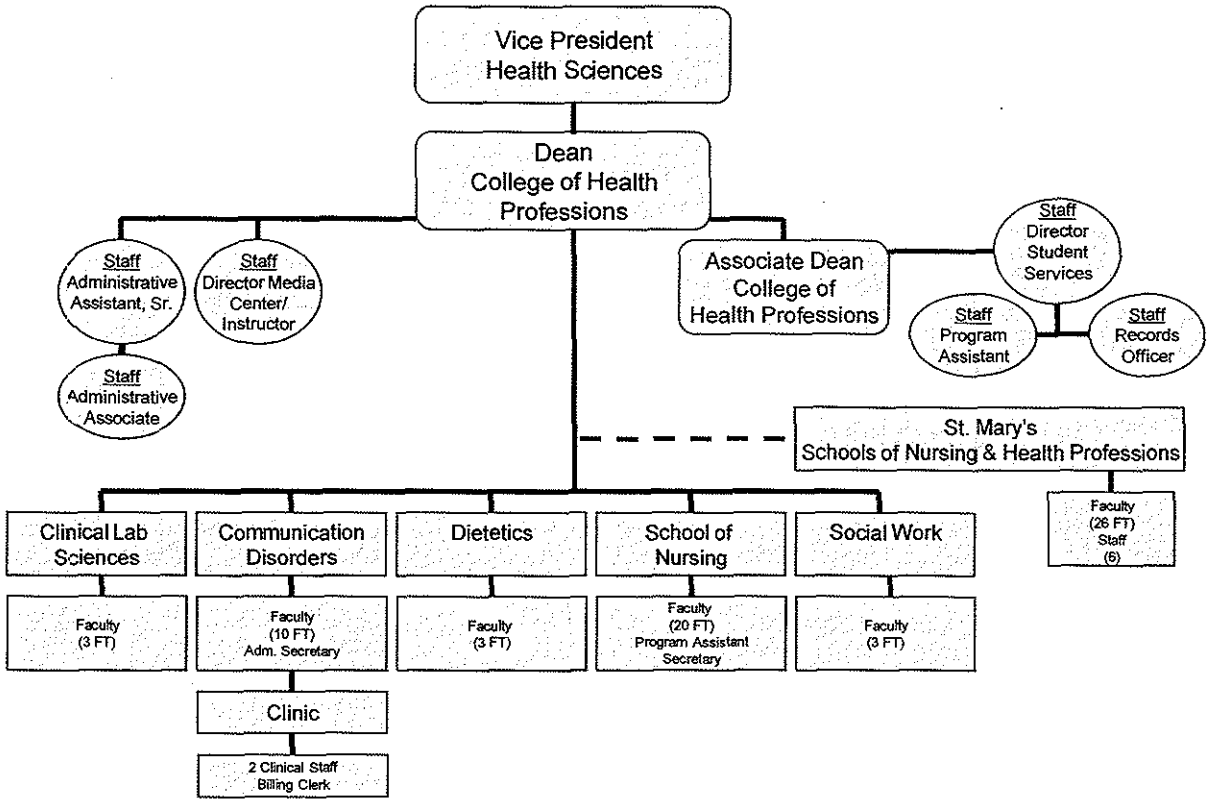
Not Applicable.

APPENDIX A

MARSHALL UNIVERSITY
COLLEGE OF HEALTH PROFESSIONS

ORGANIZATIONAL CHART

Marshall University
College of Health Professions Organizational Chart
August 2008



APPENDIX B

Agreement

MU COHP and SMMC-SOMI

Marshall University
St. Mary's Medical Center School of Medical Imaging
Co-operative Affiliation Agreement (Provisional)

THIS AGREEMENT is made and entered into this _____day of_____, by and between **ST. MARY'S MEDICAL CENTER SCHOOL OF MEDICAL IMAGING,** hereinafter referred to as "St. Mary's Medical Center School of Medical Imaging" and **MARSHALL UNIVERSITY**, hereinafter referred to as "Marshall University', with St. Mary's Medical Center School of Medical Imaging and Marshall University referred to sometimes individually as the "Party" and sometimes collectively as the "Parties."

WHEREAS, St. Mary's Medical Center operates a School of Medical Imaging, hereinafter "SMMC SOMI"; and

WHEREAS, Marshall University offers an accredited curriculum of core courses in general education and physical and behavioral sciences required for a Medical Imaging degree; and

WHEREAS, SMMC-SOMI and Marshall University have entered into successive affiliation agreements for the provision of core curricular courses in general education and physical and behavioral sciences required by SMMC-SOMI for its students pursuing a Medical Imaging degree; and

WHEREAS, SMMC-SOMI desires to expand its affiliation with Marshall University by establishing a joint Medical Imaging degree with Marshall University,

WHEREAS, SMMC-SOMI and Marshall University will appoint members to the programs Advisory Committee to monitor the quality of the program, review student selection process, evaluate faculty credentials, monitor adequacy of facilities, review curriculum and recommend revisions to the program; and

WHEREAS, Marshall University desires to expand its affiliation with SMMC-SOMI by establishing a Medical Imaging degree program with SMMC-SOMI providing students with one (1) exit point; and

WHEREAS, the affiliation of SMMC-SOMI and Marshall University for the purpose of establishing a joint Medical Imaging Degree program, hereinafter the "Program," will benefit the general public served by graduates of the Program; and

WHEREAS, the Parties desire to enter into this Agreement for the express purpose of setting forth clearly and accurately a complete and detailed statement of their respective covenants, agreements and understandings;

NOW, THEREFORE, WITNESSETH, that, for and in consideration of the premises, which are not mere recitals, but are consideration for this Agreement, and of the covenants, agreements and understandings hereinafter contained, the sufficiency of all of which is acknowledged by the Parties, it is understood and agreed by and between the Parties as follows:

1. TERMS OF AGREEMENT

A. The affiliation shall be comprised of a joint effort between Marshall University and SMMC-SOMI. The collaboration will sponsor a dual program in Medical Imaging with SMMC-SOMI providing a Certificate at the conclusion of the Third year (Primary level) and Marshall University providing the degree at the conclusion of the Fourth year (Professional level). The Certificate provided by SMMC-SOMI allows the student to sit for the American Registry of Radiologic Technology Primary certification exam in Radiography.

B. The term of this Agreement shall be for a period of one (1) year commencing July 2009 – June 2010, hereinafter the "Initial Term."

C. This Agreement shall be automatically renewed following the Initial Term for successive and (1) year terms, unless either Party give to the remaining party written notice of its desire to terminate the same not less than six (6) months prior to:

1. The expiration of the Initial Term, or

2. The expiration of any subsequent renewal

3. It is the express understanding of the Parties that the notice required by Paragraph of 1 (B) is intended to allow adequate time for the respective Parties to modify the Program for the benefit and protection of the enrolled students in the Medical Imaging program who have already been accepted into the professional component of the program.

4. Upon completion of the professional component of the program by the enrolled students, this ***AGREEMENT*** **shall** be terminated in all respects for the institution who wishes to terminate.

5. After such notice is given, no new students will be accepted into the portion of the program operated by the terminating party.

II. CONTINGENCIES

The Parties understand that the commencement of this Agreement is contingent upon the approval of the affiliation between SMMC-SOMI and Marshall University by the Joint Review Committee on Education in Radiologic Technology, hereinafter, referred to as "JRCERT" and the West Virginia council of Higher Education.

III. OWNERSHIP AND CONTROL OF THE SCHOOL OF MEDICAL IMAGING

It is the express understanding and intent of the Parties that this Agreement is purely an agreement of affiliation. Nothing in this Agreement is intended to remove the financial or managerial responsibility and control of the programs from their respective institutions or ownership of the SMMC-SOMI from St. Mary's Medical Center School of Medical Imaging.

Nothing in this Agreement shall create an employer / employee or independent contractor / agency relationship between the parties.

IV. FACULTY AND STAFF

St. Mary's Medical Center School of Medical Imaging

A. The faculty and staff of the program shall be

1. Employees of St. Mary's Medical Center School of Medical Imaging

2. St. Mary's Medical Center School of Medical Imaging shall employ a Program Director, Clinical Education Coordinator, Medical Director, and any other faculty or staff adequate to implement and maintain the accredited program.

3. Entitled to all benefits available to employees of St. Mary's Medical Center School of Medical Imaging

4. Governed by personnel policies established by St. Mary's Medical Center School of Medical Imaging.

5. Report to the Program Director of the SMMC School of Medical Imaging on issues regarding administrative matters.

6. Cooperate in maintaining accreditation with the JRCERT.

7. Responsible for the preparation of materials, self study documents and follow up reports as necessary to maintain accreditation with the JRCERT.

8. Cooperate in providing educational and student services to students enrolled in all professional components of the program.

9. Accept into all professional components of the program the appropriate number of students to ensure the appropriate student faculty ratio.

Marshall University Will:

1. Assist in determining the goals and standards of the program.

2. Appoint representatives from Marshall University to the advisory committee for the Program.

3. Provide general education faculty sufficient to teach all required general courses.

4. Ensure students enrolled in the program have access to the library, computer facilities and other educational resources.

5. Participate in the advisement of students and interested applicants. Recommend students for the professional components of the program who meet or exceed the criteria established for admission to the program.

6. Award a Bachelor of Science in Medical Imaging upon documentation of all completed coursework.

7. Cooperate in continuous assessment and quality improvement processes.

B. The Director of the SMMC-SOMI shall report to the Vice President, Center for Education of St. Mary's Medical Center who shall in turn report to the President/CEO of St. Mary's Medical Center. The Program Director of the SMMC-SOMI shall report to the Dean, College of Health Professions MU in matters of curriculum, student records and faculty credentials.

C. Faculty of the program shall have clinical, unsalaried, non-tenured appointments with Marshall University.

D. Faculty rank at Marshall University shall be determined according to the Higher Education Policy Commission and Marshall University policies and procedures.

E. Nothing in this Agreement IV shall be interpreted to imply that Marshall University is responsible for salaries or other compensation for faculty, nor to diminish St. Mary's Medical Center School for Medical Imaging responsibility of control over Program faculty.

V. CURRICULAR AND ACADEMIC POLICIES

A. Program faculty shall determine all matters related to the curricular academic policies of the Program subject to the review and approval of the Dean, College of Health Professions and the VP, Center for Education, St. Mary's Medical Center.

B. All curricular policies for the professional component, Primary certificate level and Post-primary Advanced Practice level, shall comply with curriculum standards as set by the American Society for Radiologic Technologist, the American Registry of Radiologic Technologist and the Joint Review on Education in Radiologic Technology.

C. All curricular and academic policies shall be consistent with Marshall University's academic policies and procedures and shall be subject to review by the Marshall University.

D. In the event that the Marshall University reviews an academic policy or procedure and determines that it does not conform to Marshall University's academic policies and procedures, or otherwise requires revision, correction or retraction, then Marshall University shall return the policy to the Program faculty with directions for revision.

E. St. Mary's Medical Center School for Medical Imaging shall establish disciplinary action and clinical policy and procedure according to the Standards established by the JRCERT for clinical education in radiography and will assure appropriate means of review and appeal.

VI. SUPPORT SERVICES AND FACILITIES

A. St. Mary's Medical Center School of Medical Imaging shall be responsible for providing and maintaining necessary facilities, resources and support for all curriculum activities.

B. Marshall University shall be responsible for providing and maintaining necessary facilities, resources and support for all non medical imaging core curriculum activities.

VII. ADMISSION PROCESS

A. Students enrolled in the Program must meet the admission requirements of both Marshall University and the SMMC School of Medical Imaging.

B. The admission requirements of the SMMC-SOMI shall meet all requirements for accreditation by JRCERT and shall be developed by the Admission and Progression Committee of the Program and approved by the programs Advisory Committee.

C. The Admissions and Progression Committee in conjunction with the Program Director shall be responsible for making all decisions regarding individual student admission and promotion in the program.

D. SMMC-SOMI will develop and implement all policies and procedures for student participation in the School of Medical Imaging.

E. The status of students in the Program as full-time or part-time students shall be governed by the policies of Marshall University.

VIII. TUITION AND COSTS

A. SMMC-SOMI shall be responsible for billing students and collecting monies from students for tuition for all medical imaging courses in the program, as well as fees related to participation in the Programs, including but not limited to those fees identified at Paragraph X (B).

B. Marshall University shall waive tuition fees for all medical imaging courses which are taught by St. Mary's Medical Center, Center for Education faculty.

C. SMMC-SOMI shall pay an indirect cost fee for all medical imaging courses identified at Paragraph X (B).

D. Marshall University shall be responsible for billing individual St. Mary's Medical Center School of Medical Imaging students the standard cost of MU non-medical imaging courses and

collecting monies from students for tuition and all student fees for enrollment in non-medical imaging courses.

E. Students in the Program shall be entitled to those benefits available to Marshall University students

F. Students in the Program shall be subject to all Marshall University policies regarding student financial aid.

IX. CURRICULUM

A. Marshall University shall list in its catalogue all courses, both medical imaging curriculum and core curriculum, available to students in the Program.

X. REGISTRATION

A. Students shall register at Marshall University for any and all classes provided through the Program in accordance with the registration policies and procedures at Marshall University.

B. Marshall University shall bill St. Mary's Medical Center School of Medical Imaging the standard third party fee per credit hour per semester for costs incidental to providing registration and recordkeeping services.

XI. RISK OF LOSS

Each party shall bear the risk of loss or damage to their respective equipment and property which may occur during the Initial Term and any subsequent renewals. Each party shall be responsible for the action of themselves, their employees, agents, and independent contractors, or other representatives, and shall fully indemnify and hold harmless the other party from any and all liabilities, damages, and/or injuries caused by said employees, agents, independent contractors, or other representatives.

XII. ASSIGNMENT

The Parties agree that neither Party may assign any of its rights or obligations under this Agreement without the written consent of the other Party.

XIII. BINDING AGREEMENT

This Agreement shall be for the benefit of and binding upon the Parties and their respective successors and any entity claiming under or through the respective Parties. The Parties agree to execute any instruments in writing which may be necessary or proper in the carrying out of the purposes and intent of this Agreement.

XIV. NOTICES

All notices which are required or permitted under this Agreement shall be sufficient if given in writing and delivered personally or by registered or certified United States mail, postage prepaid, and addressed as follows:

A. To St. Mary's Medical Center School of Medical Imaging

St. Mary's Medical Center School of Medical Imaging
2900 First Avenue
Huntington, West Virginia 25702
Attn: Program Director, School of Medical Imaging

B. To Marshall University

Marshall University
Attn. Dean, College of Health Professions
One John Marshall Drive
Huntington, West Virginia 25755

XV. HEADINGS

The Article and other headings contained in this Agreement are for reference purposes only and shall not in any way affect the meaning or interpretation of this Agreement.

XVI. CONTROLLING LAW

The interpretation, construction, and performance of this Agreement shall be governed by the laws of the State of West Virginia.

XVII. WAIVER

No waiver of any default under this Agreement shall be implied from any omission to take any action on account of such default in the event such default persists or is repeated. One or more waiver shall not be construed as a waiver of a subsequent breach of the same or any other covenant, term or condition.

XVIII. ENTIRE AGREEMENT

This agreement constitutes the entire agreement between the Parties. No representatives, warranties, promises, or agreements pertaining to this Agreement have been made by or shall be binding on either Party, except as expressly set forth in this Agreement.

XIX. MODIFICATION

This Agreement may not be modified or changed orally, but only by an agreement in writing signed by both Parties.

XX. COUNTERPARTS

This Agreement may be executed by any number of counterparts and all said counterparts together constitute one and the same agreement.

WHEREFORE, the corporate Parties have authorized and executed this Agreement and attached their corporate seals on the date first above written.

XXI. COMPLIANCE WITH LAWS AND REGULATIONS

The St. Mary's Medical Center School for Medical Imaging Standards of Behavior and Standards of Conduct will be provided for Marshall University by the Facility. Access to St. Mary's Medical Center School for Medical Imaging Policies and Procedures is available via the Medical Center Intranet and access may be granted under the supervision of the Program Director, St. Mary's Medical Center School for Medical Imaging.

ST. MARY'S MEDICAL CENTER
SCHOOL OF MEDICAL IMAGING

By:_____ **By:**_____
Its: **Its:**
Vice President: Center for Education

MARSHALL UNIVERSITY

By:_____ **By:**_____
Its: **Its:**
General Counsel Dean, College of Health Professions

APPENDIX C

Proposed Curriculum

BS MEDICAL IMAGING

YEAR ONE			
FALL		SPRING	
Course	CR Hours	Course	CR Hours
ENG 101	3	ENG 102	3
BSC 227	4	BSC 228	4
MTH 121	3	PHY 101	3
CHM 203	3	PHY 101L	1
Elective	3	IT 101	3
		IS elective	3
TOTAL	**16**	**TOTAL**	**17**
SUMMER			
MI 201	3		
TOTAL	**3**		
YEAR TWO			
FALL		**SPRING**	
MI 202	3	MI 207	3
MI 203	2	MI 208	2
MI 204	3	MI 209	3
MI 205	3	MI 210	4
MI 206	4	MI 211	1
TOTAL	**15**	**TOTAL**	**13**
SUMMER			
MI 301	10		
TOTAL	**10**		

YEAR THREE			
FALL		**SPRING**	
MI 302	3	MI 307	3
MI 303	3	MI 308	2
MI 304	3	MI 309	2
MI 305	4	MI 310	4
MI 306	1	Statistics (on-line Mgt. track only)	3
		Elective	3
TOTAL	**14**	**TOTAL**	**14**
SUMMER			
MI 401	1		
TOTAL	**1**		

YEAR FOUR All Students must submit proof of ARRT certification in a primary exam.			
A. CT/MRI ADVANCED PRACTICE TRACK			
FALL		**SPRING**	
MI 402	3	MI 404	3
MI 403	3	MI 405	3
Statistics	3	MI 408	4
Humanities Elective	3	MI 409 Capstone	3
Elective	3	Elective	3
TOTAL	**15**	**TOTAL**	**16**
B. CARDIOVASCULAR/INTERVENTIONAL/ ADVANCED PRACTICE TRACK			
FALL		**SPRING**	
MI 402	3	MI 406	3
MI 403	3	MI 407	3
Statistics	3	MI 408	4
Humanities Elective	3	MI 409 Capstone	3
Elective	3	Elective	3
TOTAL	**15**	**TOTAL**	**16**
C. MANAGEMENT TRACK			
FALL		**SPRING**	
MI 402	3	MGT 354	3
MI 403	3	MI 409 Capstone	3
MGT 350	3	Elective	9
Humanities Elective	3		
Elective	3		
TOTAL	**15**		**15**

APPENDIX D

Course Descriptions

Medical Imaging Courses

COURSE DESCRIPTIONS

MI 201 – Introduction to Radiography (3 Hrs)

Content is designed to provide an overview of the foundations in radiography and the practitioner's role in the health care delivery system. Principles, practices and policies of the health care organization(s) are examined and discussed in addition to the professional responsibilities of the radiographer. Students will become BCLS certified and undergo orientation required by JACHO prior to entering clinical practice. Students will be introduced to the concept of radiation protection for occupational workers, patients, family and visitors. PR: MTH 121, PHY 101, PHY 101L

MI 202 – Patient Care in Imaging Science (3 Hrs)

Content is designed to provide the basic concepts of patient care, including consideration for the physical and psychological needs of the patient and family. Routine and emergency patient care procedures are described, as well as infection control procedures using standard precautions. The role of the radiographer in patient education is identified.

MI 203 – Ethical and Legal Principals in Imaging Science (2 Hrs)

Content is designed to provide a fundamental background in ethics. The historical and philosophical bases of ethics, as well as the elements of ethical behavior, are discussed. The student will examine a variety of ethical issues and dilemmas found in clinical practice. An introduction to legal terminology, concepts and principles also will be presented. Topics include misconduct, malpractice, legal and professional standards, the ASRT scope of practice and the ARRT Code of Ethics. The importance of proper documentation and informed consent is emphasized.

MI 204 – Radiographic Anatomy (3 Hrs)

Content is designed to introduce the student to radiographic anatomy. The student will identify anatomical structures depicted on radiographs including film radiography and digital imaging. The student will be introduced to sectional anatomy as demonstrated with computed tomography, magnetic resonance imaging and sonography. Emphasis is placed on identifying structures visible on correctly performed radiographic procedures. PR: BSC 227, BSC 228: CR : MI 205

MI 205 – Imaging Procedures I (3 Hrs)

Content is designed to provide the knowledge base necessary to perform standard imaging procedures. Consideration is given to the evaluation of optimal diagnostic images. Includes a laboratory component. Students will practice imaging procedures in the laboratory prior to performing the procedure on patients. PR: BSC 227, BSC 228, MI 201: CR: MI 204, MI 206

MI 206 – Clinical Practice I (4 Hrs)

Content and clinical practice experiences are designed to sequentially develop, apply, critically analyze, integrate, synthesize and evaluate concepts and theories in the performance of radiologic procedures. Through structured, sequential, competency-based clinical assignments, concepts of team practice, patient-centered clinical practice and professional development are discussed, examined and evaluated. Clinical practice experiences are designed to provide patient care and assessment, competent performance of radiologic imaging and total quality management. Levels of competency and outcomes measurement ensure the well-being of the patient preparatory to, during and following the radiologic procedure. Students will be assigned a number of mandatory and elective competencies to be completed during each clinical practice course. PR: MI 201: CR: MI 202, MI 203, MI 205

MI 207 – Imaging Procedures II (3 Hrs)

Content is designed to provide the knowledge base necessary to perform standard imaging procedures, including basic computed tomography (CT) and special studies. Consideration is given to the evaluation of optimal diagnostic images. Includes a laboratory component. Students will practice imaging procedures in the laboratory prior to performing the procedure on patients. PR: BSC 227, BSC 228, MI 204, MI 206: CR: MI 212

MI 208 – Pharmacology and Drug Administration (2 Hr)

Content is designed to provide basic concepts of pharmacology. The theory and practice of basic techniques of venipuncture and administration of diagnostic contrast agents and/or intravenous medications is included. The appropriate delivery of patient care during these procedures is emphasized. Though regulations regarding the administration of contrast media and intravenous medications vary in different states and institutions, the official position of the American Society of Radiologic Technologists is that venipuncture falls within the profession's general scope of practice and practice standards. Therefore, it should be included in the didactic and clinical curriculum with demonstrated competencies of all appropriate disciplines regardless of the state or institution where the curriculum is taught.
PR: BSC 227, MI 202, MI 203, MI 204, proof of BCLS certification.

MI 209 – Introduction to Imaging Equipment (3 Hr)

Content is designed to establish a knowledge base in radiographic, fluoroscopic, mobile and tomographic equipment requirements and design. The content also provides a basic knowledge of quality control and to provide entry-level radiography students with principles related to computed tomography (CT) imaging.
PR: MTH 121, PHY 101, PHY 101L

MI 210 – Clinical Practice II (4 Hrs)

Students will begin clinical practice rotations in computed tomography, radiation oncology, nuclear medicine and cardiovascular procedures as well as diagnostic radiography. Emphasis is placed on achieving competency in mandatory and elective clinical procedures as required for ARRT certification.
PR: MI 206: CR: MI 208, MI 210

MI 211 – Seminar in Imaging Science (1Hr)

Students will research and make short presentations on new developments in imaging science. Emphasis is placed on developing the student's oral communication skills, research skills, and introducing the student to the concept of continuing education as mandated by the ASRT.

MI 301 – Clinical Practice III (10 Hrs) (Summer)

Students will continue clinical practice rotations in diagnostic radiography, computed tomography, radiation oncology, nuclear medicine and cardiovascular procedures. Emphasis is placed on achieving competency in mandatory and elective clinical procedures as required for ARRT certification including venipuncture. PR: MI 206, MI 209, MI 210, MI 211.

MI 302 – Principles of Radiation Physics (3 Hr)

Content is designed to establish a basic knowledge of the nature and characteristics of radiation, x-ray production and the fundamentals of photon interactions with matter. The student will be introduced to the concepts of radioactivity including half-life and radioactive decay. This course will provide basic knowledge of principles associated with diagnostic radiography, nuclear medicine imaging and radiation oncology. PR: CHM 203, PHY 101, PHY 101L, MTH 121, MI 210.

MI 303 – Image Acquisition and Processing (3 Hr)

Content is designed to establish a knowledge base in factors that govern the image production process. Film imaging with related accessories is emphasized. There is a laboratory component to this course. The student will be able to experimentally alter image acquisition factors and evaluate the effects without unnecessary exposure to the patient. PR: MTH 121, MI 210

MI 304 – Radiographic Pathology (3 Hr)

Content is designed to introduce concepts related to disease and etiological considerations with emphasis on radiographic appearance of disease and impact on exposure factor selection. PR: BSC 227, BSC 228, MI 204: CR: MI 303

MI 305 – Clinical Practice IV (4 Hr)

Students will continue clinical practice rotations in diagnostic radiography, computed tomography, radiation oncology, nuclear medicine and cardiovascular procedures. Emphasis is placed on achieving competency in mandatory and elective clinical procedures as required for ARRT certification including venipuncture. PR: MI 206

MI 306 – Seminar in Imaging Science (1 Hr)

Students will research and make short presentations on advanced practice methodologies in imaging science. Emphasis is placed on developing the student's oral communication skills, research skills, and introducing the student to the concept of continuing education as mandated by the ASRT.

MI 307 – Radiation Protection and Radiobiology (3 Hr)

Content is designed to present an overview of the principles of radiation protection, including the responsibilities of the radiographer for patients, personnel and the public. Radiation health and safety requirements of federal and state regulatory agencies, accreditation agencies and health care organizations are incorporated. The student will be introduced to the principles of the interaction of radiation with living systems. Radiation effects on molecules, cells, tissues and the body as a whole are presented. Factors affecting biological response are presented, including acute and chronic effects of radiation.
PR: BSC 227, BSC 228, CHM 203, MI 302.

MI 308 – Radiographic Image Analysis (2 Hr)

Content is designed to provide a basis for analyzing radiographic images. Included are the importance of minimum imaging standards, discussion of a problem-solving technique for image evaluation and the factors that can affect image quality. Actual images will be included for analysis.
PR: MI 204, MI 205, MI 208, MI 303, MI 304

MI 309 – Digital Image Acquisition and Display (2 Hr)

Content is designed to impart an understanding of the components, principles and operation of digital imaging systems found in diagnostic radiology. Factors that impact image acquisition, display, archiving and retrieval are discussed. Guidelines for selecting exposure factors and evaluating images within a digital system assist students to bridge between film-based and digital imaging systems. Principles of digital system quality assurance and maintenance are presented. PR: IT 101, MI 303

MI 310 – Seminar in Imaging Science (1 Hr)

Students will research and make short presentations on advanced practice methodologies in imaging science. Emphasis is placed on developing the student's oral communication skills, research skills, and introducing the student to the concept of continuing education as mandated by the ASRT.

MI 311 – Clinical Practice V (4 Hr)

Students will continue clinical practice rotations in diagnostic radiography, computed tomography, radiation oncology, nuclear medicine and cardiovascular procedures. Emphasis is placed on achieving competency in mandatory and elective clinical procedures as required for ARRT certification including venipuncture. Special emphasis is placed on surgical, mobile and emergency radiography. PR: MI 305

MI 401 – Seminar in Imaging Science (1 Hr) (Summer)

This course introduces the student to ARRT exam taking skills, mock examinations of the ARRT matrix, and self-evaluation studies. Study methods and application are also covered. A study of realistic clinical problems and situations, with emphasis on analyzing and evaluating these problems to formulate acceptable imaging modalities is included. Upon successful completion of the course, including a mock ARRT exit exam, the student will be awarded the Certificate from St. Mary's Medical Center School of Medical Imaging that will allow the student to sit for the ARRT Primary exam in Radiography.

MI 402 – Quality Management (3 Hr)

This course is a core requirement for all students regardless of the Advanced Practice track. Quality management is important to ensure the proper functioning of equipment and compliance with government and accreditation standards. Thus, technologists should have an understanding of the activities and their role in the quality management (QM) process. This content is designed to expand the QM skills of the technologist to include digital imaging systems and the application of QM principles in an imaging department. Course will include review of the ARRT Post-primary exam in QM. Students who select the management track will be expected to initiate procedures outlined in the QM exam content. Candidates for the ARRT Advanced Practice exam are required to perform the required number of repetitions for each procedure. Repetitions must be performed within the 24 month period immediately before submitting the application for certification. Repetitions may be completed in less than 24 months. PR: ARRT

MI 403 – Advanced Practice in Medical Imaging (3 Hr)

This course is a core requirement for all students regardless of the Advanced Practice track. The focus of the course will include advanced discussion of communication, human diversity including the political context of health care, health care policy formation, health care law and compliance, patient information management and teamwork. PR: ARRT

MI 404 – Advanced Sectional Anatomy (3 Hr)

The ability to locate and identify structures in the axial (transverse), sagittal, coronal and orthogonal (oblique) planes is critical in all imaging modalities. Volumetric data sets and three-dimensional reconstruction of the body structures are increasingly important to the critical diagnosis and treatment of diseases. To enhance patient care and assist physicians with the prognosis, radiologic science professionals must understand cross-sectional anatomy in each of the imaging modalities. Content will include discussion of advanced pathophysiology. PR: ARRT: CR: MI 405, MI 407

MI 405 – CT/MRI procedures and equipment (3 Hr)

This course will focus on advanced patient care skills including ACLS, imaging procedures and equipment in computed tomography and magnetic resonance imaging. PR: ARRT: CR: MI 404, MI 408

MI 406 – Cardiovascular Anatomy and Physiology (3 Hr)

This course will focus on cardiovascular anatomy and physiology including the heart anatomy and coronary, systemic, pulmonary, peripheral and cerebral circulation. Content will include discussion of advanced pathophysiology relating to the vascular system including cardiac physiology. PR: ARRT: CR: MI 407, MI 408

MI 407 – Cardiovascular/Interventional Imaging Procedures and Equipment (3 Hr)

This course will focus on advanced patient care skills including ACLS, procedures and equipment utilized in cardiovascular and vascular/interventional imaging. PR: ARRT: CR: MI 406, MI 408

MI 408 – Advanced Clinical Practice (4 Hr)

Students in advanced clinical practice tracks will be required to complete ACLS certification. Students will be responsible for arranging clinical experience in an approved clinical facility in computed tomography, magnetic resonance imaging, vascular/interventional imaging or cardiac imaging. ARRT advanced practice exams in CT, MRI, VI and CV require that all recorded clinical procedures be completed within 24 months of the exam. Students will be advised of specific exam content. PR: ARRT, ACLS

MI 409– Research in Medical Imaging (3 Hr) Capstone Course

This course is a core requirement for all students regardless of the Advanced Practice Track. Research methods and information literacy are important because the health care profession is continually changing, which requires the radiologic technologist to possess new knowledge to function competently. The radiologic technologist should contribute to the body of knowledge and be able to effectively analyze resources to promote growth in the profession. The attitude of lifelong learning enables the radiologic technologist to stay in step with the current health care environment and be prepared to help foster the future and increase awareness of the profession in the global community. This content is geared to increase and disseminate intellectual inquiry, information literacy and the use of scholarly research methods.
PR: ARRT, Statistics, MI 402, MI 403. This course will satisfy the Writing Across the Curriculum Requirement.

APPENDIX E

RULES OF ETHICS

SMMC Rules of Ethics

Acknowledgement and acceptance of the Rules of Ethics contained in the ARRT Standards of Ethics. The Rules of Ethics are standards of minimally acceptable professional conduct for all Registered Radiologic Technologists (Radiographers) and applicants. The Rules of Ethics are intended to promote the protection, safety, and comfort of patients. Registered Radiologic Technologists and applicants engaging in any of the conduct of activities noted in the Rules of Ethics, or who permit the occurrence of said conduct or activities with respect to them, have violated the Rules of Ethics and are subject to sanctions as described. One issue addressed by the Rule of Ethics is the conviction of crime, including a felony, a gross misdemeanor, or a misdemeanor with the exception of speeding and parking violations. All alcohol and/or drug related violation must be reported. Conviction as used in this provision includes a criminal proceeding where the individual enters a plea of guilty or "nolo contendere". All potential violations must be investigated by the ARRT in order to determine eligibility to take the ARRT national certification examination. Registered Technologists and applicants who violate the Rules of Ethics must provide the ARRT with a written explanation, including court documentation of the charges, with the application for examination. The court documentation must verify the nature of the conviction, the nature of the sentence imposed by the courts, and the current status of the sentence.

APPENDIX F

Proposed Budget

Marshall University
Budget for Medical Imaging Program

Revenue/Budget		AY 09-10	AY 10-11	AY 11-12	AY 12-13	AY 13-14
1st Year Students	Tuition	$57,475	$59,199	$60,975	$62,804	$64,689
2nd Year Students	Third Party	$30,590	$31,508	$32,453	$33,427	$34,429
3rd Year Students	Third Party		$20,930	$21,558	$22,205	$22,871
4th Year Students	Tuition			$52,877	$54,463	$56,097
	Third Party			$15,295	$15,754	$16,226
Total Tuition Revenue		$57,475	$59,199	$113,852	$117,268	$120,786
Total Third Party Fees		$30,590	$52,438	$69,306	$71,385	$73,527
Total Revenue		$88,065	$111,637	$183,158	$188,653	$194,312
Expenses (Promotion of program, advising, and graduation)		$2,500	$2,500	$2,500	$2,500	$2,500
Net Revenue to MU		$85,565	$109,137	$180,658	$186,153	$191,812

Assumptions:
3% increase in tuition annually

Estimated Students by Year						
Student Year		FY2010	FY2011	FY2012	FY2013	FY2014
1st year		25	25	25	25	25
2nd year		23	23	23	23	23
3rd year			23	23	23	23
4th year			23	23	23	23
	MU Tuition by year					
1st year	Full time tuition					
2nd year	none					
3rd year	none					
4th year	13 hrs					
Hours subject to Third Party Fees By Year						
3rd party Fees by Year ($35/hr)						
1st year	0					
2nd year	38 hrs/stud					
3rd year	26 hr/stud					
4th year	19 hr/stud					

APPENDIX G

Budget Justification

Medical Imaging Budget Justification

1. Net revenue for this program will come from a combination of tuition, fees, and third party fees.
2. Third party fees are per hour per student in lieu of tuition because courses listed as Marshall courses though taught by SMMC faculty. Third party fees are paid by SMMC to MU. The hourly rate of the fee is agreed upon by the Dean COHP and SMMC.
3. First year revenue will come strictly from MU tuition and fee dollars.
4. Second and third year students will pay tuition to SMMC and MU will receive income from third party fees.
5. Fourth year students will pay tuition and fees to MU and SMMC will pay additional third party fees to MU.
6. Total revenue is revenue derived from all sources for each AY.
7. Program expenses for administering the program are largely in personnel in COHP, registrar and bursar's offices. Limited additional expenses are incurred by MU and COHP for promotion of program and graduation. All expenses will be covered by third party fees.