

PLANNING NOI Cover for:
Bachelor of Science in Magnetic Resonance Technology

Program Information

Program Name: BS in Magnetic Resonance Technology

Institution Name: University of Washington, Seattle

Degree Granting Unit: School of Medicine
(e.g. College of Arts and Science)

Degree: BS in Magnetic Resonance Technology Level: Bachelor Type: (of) Science
(e.g. B.S. Chemistry) (e.g. Bachelor) (e.g. Science)

Major: Magnetic Resonance Imaging Technology CIP Code: 51.0999
(e.g. Chemistry)

Minor: N/A Concentration(s): N/A
(if applicable) (if required by the major)

Proposed Start Date: Autumn 2009

Projected Enrollment (FTE) in Year One: 15 At Full Enrollment by Year 2: 25
(fte) (fte)

Proposed New Funding: TBD

Funding Source: State FTE Self Support Other

Scheduling

Day Classes Evening Classes Weekend Classes Other (Describe)

Attendance Options

Full-Time

Part-Time

Total Credits: 90 Quarter credits _____ Semester credits

Mode of Delivery

Single Campus Delivery Seattle, classroom, clinic

Off-campus Delivery N/A

Distance Delivery N/A

Substantive Statement of Need

See Attached

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 10/1/08
Endorsement by Chief Academic Officer Date

Substantive Statement of Need

I. Degree Program Description and Rationale

MR technologists (MRTs) are medical personnel who operate high tech, multimillion-dollar equipment to acquire MR images of regions of the body from patients in hospitals and clinics. Physicians use the images to diagnose medical conditions and to assess the progress of therapy. As with any other medical imaging techniques—conventional x-ray, computed tomography, nuclear medicine, or sonography—the quality of the images depends critically on the skill and training of the person performing it. An image of poor quality can mean that illness and disease go undetected or that patients are misdiagnosed, possibly leading to delays in treatment and tragic consequences. With the current emphasis on controlling medical costs, imaging technologists are often under pressure to complete scanning sessions quickly. Well-trained, competent MR technologists, who can expeditiously generate high quality images, are considered valuable assets in hospitals and clinics and they are generally rewarded with good salaries and premium benefits.

A number of skills are required of MRTs. They personally interact with patients in a variety of roles, ranging from explaining procedures and preparing patients for exams to scheduling appointments and managing a clinic. At the same time, they must exercise considerable attention to detail, following exam orders precisely and abiding by confidentiality regulations. The technical aspects of the work require that MRTs possess a thorough knowledge of the physics of magnetic resonance technology, human anatomy, and pathology. This enables them to set the imaging parameters properly so that informative images—with the proper orientation and with sufficient contrast and resolution—are acquired in an efficient manner. At the same time, the best MRTs are compassionate, as they often have to comfort patients who are distraught or disabled. In short, they have to be competent, organized, responsible and pay meticulous attention to the safety and comfort of the patients. Good communications skills are required to interact professionally with physicians and other medical personnel.

Until recently the only way to become certified as an MR Technologist was via the post-primary route, in which the individual first had to be trained and certified in another medical imaging specialty such as x-ray or sonography, receive on-the-job clinical training as an MR Technician and then pass the MR certification exam offered by the American Registry of Radiologic Technologists (ARRT). In January 2006 ARRT began offering primary certification in MR Technology. This change created a sudden increase in demand for MR Technology educational programs because interested individuals can now complete an accredited MR program that includes a clinical internship and then be eligible to sit for the ARRT certification exam. Educational institutions have not yet responded to this increased demand. As discussed below, there are currently only a handful of accredited MR Technology programs in the country, compared to well over a hundred accredited sonography programs and approximately 100 Nuclear Medicine Technology programs. Hence, the time is ripe for the UW to establish this new program.

The ARRT's decision to offer primary certification in MR also created a more attractive training mechanism for institutions, such as UW, that have an interest and the means to offer on-the-job-training. Because MR Technicians are in such high demand, even newly hired, inexperienced technologists can command high salaries. It is quite common for the UW Hospital to hire an inexperienced technologist at a salary of \$50,000 per year or so, train them for 6 to 12 months only to have them leave when they are offered a 20 to 30% increase in salary to work in another clinic. By offering a BS-MRT program the UW will still provide the state with this valuable educational service, which is directly in line with its mission, but it will eliminate the expenses required to support the current on-the-job-training program.

Creating a Bachelor of Science in Magnetic Resonance Technology at the UW would take as its primary goal training students in the technical, clinical, and communicative skills required by MRTs in their work lives. While not yet common, such a program is also ideally suited to the UW, given the university's strengths in medical teaching and scientific research, as well as the opportunities afforded by UW Medicine and other area hospitals. Such a program would take into consideration matriculation and progress requirements for the UW as well as the requirements for accreditation by the Joint Review Committee on Education in Radiologic Technology (JRCERT). The curriculum will be designed to prepare students to sit for the ARRT certification exam, as well as flesh out the training with the appropriate educational and clinical experiences. The demand for MRTs (as detailed below) also makes it incumbent upon the UW, as the only medical school in WWAMI region, to provide such a program, since certification requirements that are increasing throughout medicine and allied health fields are also increasing in magnetic resonance technology as well.

The proposed curriculum for the BS-MRT program will be modeled closely after successful imaging technology programs at comparable institutions. During the first two years students would take their general studies courses and the necessary prerequisites for entering the MRT program. During their junior year, students would take 6 courses on physical and mathematical principles of MR and 6 courses on administration, ethics, procedures, anatomy and pathology. The senior year would primarily be devoted to internships.

II. Demand

Workforce Demand

As with a number of professions in allied health, the demand for MRTs is strong and is expected to grow rapidly for the foreseeable future. According to the Bureau of Labor Statistics at the US Department of Labor, job opportunities are expected to grow at a rate of 18 to 26% through 2014, as the general population grows and ages. For reference, the average growth rate for all careers is about 12%. Some employers report difficulty hiring sufficient number of MRTs and this will likely lead to higher compensation and improved working conditions. Technologists who are skilled in more than one imaging modality (e.g. sonography and MRI) are expected to have even better

employment opportunities as employers try to control costs by hiring multiskilled employees.

The demand for qualified MRTs is reflected by the high salaries and the high number of job listings published by national employment services. The median national salary (\$59,250) is essentially the same as that of Nuclear Medicine technologists (\$60,600) and Sonographers (\$60,200) and slightly higher than that of CT technologists (\$54,800). All of these salaries are among the highest obtainable for people with a BS degree. Compared to the top national median salaries for people with BS degrees, MR technologist salaries fall between School Psychologists at number 6 (\$60,800) and Registered Nurses at number 7 (\$58,900). For reference, CT technologist salaries rank just below RNs and just above Editors at number 8 (\$53,200).

The number of job listings for MRTs also reflects high demand. A search of several career-related websites shows that the number of nationwide job listings for MRTs is about the same as for computed tomography techs and higher than for nuclear medicine techs. While all three of these specialties lag substantially behind the number of listings for sonographers, they confirm the high demand for medical imaging technologists in general and for MRTs in particular. Coupled with this demand are the increasing requirements for training and, in some cases, bachelor degrees in order to be employed as an MRT. Legislation now pending in Congress may further increase the demand for formally trained MRTs. Current law (the Consumer-Patient Radiation Health and Safety Act, 1981) sets minimum standards for certification and licensure of radiologic technologists in all imaging modalities, but makes adoption of the standards discretionary at the state level. As a result, only 35 states have developed regulatory guidelines for radiologic personnel, and standards vary dramatically from state to state. In the remaining 15 states and the District of Columbia, individuals are permitted to perform radiologic procedures after only a few weeks' training. The Consistency, Accuracy, Responsibility and Excellence in Medical Imaging and Radiation Therapy (CARE) bill that is now being considered in Congress would require that nearly all MRTs graduate from an accredited training program and pass a certification exam, such as that currently administered by ARRT. The impact of the bill would be felt mostly in the 15 states that currently do not enforce accreditation and certification standards and would have the effect of increasing the demand for high quality training programs.

Student Demand

The increasing desirability of a career as an MRT is evident from the increase in the number of people seeking certification. Since 2001 the number of people sitting for the ARRT certification exam has doubled to more than 2000. This rapid increase is comparable to the increase in people taking the ARRT certification exam in CT technology. If current trends continue, within a few years the number of people taking both exams will surpass the number taking the ARDMS certification exams in Sonography, which has remained constant at about 3500. Yet the number of training programs for MRTs still lags behind other forms of imaging technology.

Even though a formal certificate in MR is not required in all states, the preferences of employers are for certified technologists who have graduated from an

accredited training program. A variety of training programs are available, ranging from 1 year certificate programs to graduate level programs. Again, such certificate programs are generally designed for technologists who are already certified in another imaging modality or have been trained in some other health occupation and wish to become skilled in MR. These programs also typically award an Associate of Science degree; only one JRCERT accredited program currently offers a BS degree in MRT. (Thomas Jefferson University in Philadelphia). Prior to January 2006 primary certification by ARRT had previously only been available for radiography (x-ray), nuclear medicine, and radiation therapy. To qualify for primary MR certification, candidates must complete a formal education program approved by ARRT. They must also meet the same requirements for clinical experience as those traveling the post-primary route. Candidates must then pass the ARRT exam, which assesses the knowledge and cognitive skills they have obtained.

While there are quicker options available to become a certified MRT, many students would choose a 4 year program leading to a BS degree because it would provide them with a wider array of lucrative career options. It's also unclear, given the amount of training that ARRT would require, whether a 4-year bachelor degree would appear to be significantly burdensome to an 18-25 year old. (In fact, the circuitous route to MRT certification perhaps has deterred students from pursuing it.) Additionally, advancement to administrative or management positions is difficult for those with an Associate's degree. The advantage of coupling such a program with a bachelor degree is in the clarity of the path. As with Sonography, and practically any other field, more doors are open to those with a BS degree. Motivated MRTs can wind up managing the clinic in which they work. They can move up to teaching positions or they can continue on to graduate school, medical school or obtain some other professional level of education.

Community

Despite the high demand for competent MRTs, there are strikingly few training programs available. This, again, is likely a consequence of the fact that, until January 2006, there was no primary certification route available for MRTs. According to the Joint Review Committee on Educational Programs in Nuclear Medicine Technology (JRCNMT) web site, there are about 100 accredited training programs for nuclear medicine technologist, including those at the certificate, Associate's and Bachelor's level. In contrast there are only 6 ARRT-approved MRI programs. As discussed above, approximately 2000 people sat for the ARRT exam in 2006 and the number is rapidly increasing. Yet, the current ARRT-approved training programs are capable of producing only about 100 graduates every year.

The dearth of MRI programs is even more apparent if only JRCERT-accredited programs are included because, as of December 2007, there are only 2; Thomas Jefferson University in Philadelphia and Ogeechee Technical College in Statesboro, GA. The program at Thomas Jefferson University awards a BS-MRT degree and the program at Ogeechee Technical College awards a certificate. There is currently only one other program that is in the process of receiving JRCERT accreditation, University of Hartford in West Hartford, CT, which will offer a BS degree in Radiologic Technology with an option for an MRI concentration certificate. In addition, there are 4 non-accredited—and

non-ARRT-approved—programs that offer a BS-MRT. The two JRCERT-accredited programs and the program that is pending accreditation are all located on the east coast of the US. The closest ARRT-approved program that offers an Associate's degree is in Chicago. There is only one BS-MRT program within 1500 miles of Seattle, the one offered by Weber State University in Ogden UT.

Two related educational programs are currently offered in the Seattle area. Bellevue Community College offers an AA degree in Radiologic Technology (after completing the AA degree, students are eligible to take additional courses leading to a certificate in MR technology) and Seattle University offers a BS degree in Diagnostic Ultrasound. With acceptance rated of around 25%, both programs have far more applicants than they can accept, reflecting the high demand for medical imaging programs in general. The proposed BS-MRT program at UW would complement these highly successful programs.

There are two communities, then, that this proposal would serve. One is the general community of imaging technology education, since there is clearly a need for more programs in the field. That it would be offered at a highly regarded university such as the UW is a bonus, but the simple fact is that more opportunities for this training need to be provided. At the same time, the medical community in Seattle-King County region and the state in general would benefit from this program, since training opportunities in the state are sparse. The recent example of Bellevue Community College's successful proposal for a bachelor degree in Radiologic Technology suggests that they agree that students with credentials in imaging technology eventually need a four-year degree. The combination of training in magnetic resonance technology at the same time as awarding a four-year degree may never become the rule for the profession, but it should not be as exceptional as it is.

III. Conclusion

The HECB's master plan directs the state and its universities to provide more opportunities for degrees at the same time that it also asks them to help the economy and provide service to the public. Providing opportunities for training in allied health sciences in general does all three, but magnetic resonance technology provides a special case of this. Clearly, more opportunities in this field are needed and are in demand from students. It is equally clear that successful completion of the program will lead to a relatively high-wage career in a secure profession, since health care is by most measures a growing area of the economy. At the same time, anyone going into health care on the clinical side realizes that service is also the heart of the profession. It stands to reason that the state, the HECB, and the UW should all wish to see that training done well and rigorously. By providing a Bachelor of Science in Magnetic Resonance Technology, this can be accomplished.