

**Academic Program Review:
Radiography
August 2009**



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Section 1: Program Overview

Program History

The Ferris State University Radiography Program has been in existence since 1966. The program has had a long and successful history at the University and with our clinical partners located throughout Michigan.

Originally the program began as a 33-month associate degree program in response to the needs of the medical imaging community in the State of Michigan. At the time, a considerable amount of individuals who were working in the field of Radiography did not meet the minimum standards of education and did not have the necessary experience to be a quality Radiographer. To demonstrate the need for this program, data was collected in 1966 from a survey sent to local hospitals. Based on recommendations and data collected from these hospitals, a Radiography program was established to meet the geographical needs of the community.

The program has grown and prospered into one of the largest radiography programs in the country. The program has graduated thousands of qualified and highly trained radiographers. Nearly all the hospitals in Michigan employ radiographers that have graduated from FSU. The program's reputation is not limited to Michigan, in fact, the program is known nationally for producing quality entry level radiographers. A large number of program graduates are employed in all 50 states.

The program is accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT). The purpose of JRCERT is to ensure that radiography programs are in compliance with the standards of practice that are established by the profession. The program received the highest acknowledgement from JRCERT on their most recent site visit in 2005. The program was awarded accreditation status for 8 years and will not be visited again until 2013.

Current Program Structure

The Radiography Program is a two-year (six semesters) competency-based program. Students graduate with an Associate of Applied Science degree in Radiography. The degree program requires 81 credit hours. Following graduation, students are eligible to take the national registry. Students passing the registry are fully certified registered radiologic technologists or RT(R) and are qualified to work in any of the 50 states.

The first year of the program is completed on the Big Rapids campus while the second year of the program is completed at one of our clinical affiliates. The first year of the program includes radiography specific didactic and laboratory instruction as well as general education courses. The second year of the program includes clinical internship plus additional radiography courses delivered via Ferris Connect since students no longer reside in Big Rapids. Currently the program is affiliated with 29 hospitals across the State of Michigan that are approved and recognized by JRCERT.

A. Program Goals

1. State the Goals, Outcomes and Mission Statement of the program.

Program Goals:

1. To prepare graduates to demonstrate competencies in the essential skills of medical imaging and treatment.
2. To prepare graduates to communicate effectively and professionally in the medical environment.
3. To prepare graduates to demonstrate critical thinking, problem solving skills and life-long learning.
4. To prepare graduates with the ability to demonstrate professional values and ethical behaviors in the workplace.

5. To graduate students that will function as a competent, entry-level professional that meets the healthcare needs of the community.

Program Outcomes:

- Outcome 1-1: Students should be able to demonstrate the importance of radiation protection.
- Outcome 1-2: Students will be able to successfully perform radiographic procedures in any clinical setting.
- Outcome 2-1: Students should be able to communicate using appropriate radiographic terminology when evaluating image quality.
- Outcome 2-2: Students will develop an improvement plan for patient care in the Radiography Dept.
- Outcome 3-1: Students should be able to develop a plan for professional development.
- Outcome 3-2: Student will apply critical thinking skills in solving problems of non-routine, emergent, and trauma procedures.
- Outcome 4-1: Students will be able to demonstrate positive ethical behaviors
- Outcome 4-2: Students will demonstrate professional behavior in a diverse population.
- Outcome 5-1: Graduates will pass the registry
- Outcome 5-2: Student's will complete the radiography program in two years or less
- Outcome 5-3: Graduates will perform at entry level expectations
- Outcome 5-4: Graduates will become employed within 6 months
- Outcome 5-5: Graduates will indicate they were adequately prepared to perform as entry level technologist

Program Mission Statement:

Building upon the mission, vision, and values of the College of Allied Health Sciences, the Radiography program mission is to provide the highest quality instruction and to prepare the student to excel in the professional challenges and responsibilities of an entry-level radiographer.

2. Explain how and by whom the goals were established.

The program was required to establish an assessment plan that met the requirements set forth by the Joint Review Committee on Education in Radiologic Technology (JRCERT) in order to maintain accreditation. Faculty attended a JRCERT sponsored assessment conference that focused on assessment measures for programmatic outcomes and specific student learning outcomes. The program was directed to provide a mission statement, program goals, outcomes and specific measurements to JRCERT for approval. This final assessment plan was approved by the Leslie Winter, Director of JRCERT, and became an effective assessment plan for the program in 2007. **See Assessment Plan in Appendix A.**

3. How do the goals apply to preparing students for careers in and meeting employer needs in the community/region/marketplace?

The programs goals are established to provide the student with the highest quality of education and to prepare them to enter the workforce as a highly skilled, trained radiographer. The students are trained to provide excellent patient care and to be effective communicators and ethical decision makers. To be

successful and prepared for the future, they are able to adapt and meet the changing needs of the medical field.

The goals and outcomes established by the program are designed to measure programmatic outcomes and student learning that best meet the need of both students and employers.

4. *Have the goals changed since the last program review? If so, why, and how? If not, why not?*

Yes, in response to our specialized accreditation site visit in 2005, the goals were adapted and changed. Originally the program measured only programmatic outcomes. The new goals and outcomes now include and focus on student outcomes.

5. *Describe the relationship of the program goals to the University's mission, and the departmental, college and divisional strategic plans.*

Building upon the mission, vision and values of Ferris State University, the College of Allied Health Sciences' mission is to prepare students for successful careers in the various programs contained within the college, to foster responsible citizenship and to promote lifelong learning. The college will depend upon partnerships with health care providers and organizations for advice in the preparation of students for rapidly changing careers. Building upon this university and college mission, the Radiography Program mission is to provide the highest quality instruction and to prepare the student to excel in the professional challenges and responsibilities of an entry-level radiographer.

This is further met and enhanced by the specific program goals to prepare graduates to demonstrate competencies in the essential skills of medical imaging and treatment, to prepare graduates to communicate effectively and professionally in the medical environment, to prepare graduates to demonstrate critical thinking, problem solving skills and life-long learning, to prepare graduates with the ability to demonstrate professional values and ethical behaviors in the workplace and to prepare graduates to function as a competent, entry-level professional that meets the healthcare needs of the community.

B. *Program Visibility and Distinctiveness:*

1. *Describe any unique features or components of the program.*

The program is the one of two university based program in the State of Michigan. We provide our students the opportunity to earn a Bachelor of Science degree in Health Care Systems Administration while at Ferris in addition to their Associate of Applied Science degree in Radiography. Most schools in Michigan are hospital based programs or at the community college level and do not offer this option for their graduates. The FSU program structure allows students to complete their first year of classes on campus and attend internship in another area of the state during their second year. For example, students may complete internship in Detroit, Grand Rapids or Northern Michigan. Most other college programs have integrated their courses and internship. Their students complete internship two days a week during their first year of the program and three days a week during the second year of the program. Integrated programs must stay within a 50 mile radius of their college in order to accommodate their students.

Another unique characteristic is that the FSU program has an actual energized laboratory suite that models the imaging suites of hospitals so students can expose actual radiographs during their lab experiences on campus. This lab includes the state of the art Picture Archiving and Communication System (PACS), computed radiography, a fluoroscopy room, C-arm room and portable equipment. Most programs in the state do not provide such facilities or options for their students to practice and gain skills prior to their hospital internship.

2. Describe and assess the program's ability to attract quality students.

The Radiography program has a long history of being a quality program. It has been in existence for over 40 years and has an excellent reputation throughout the state and nation. Many employers, current students and alumni refer potential students to the program based on this reputation.

The program also recruits students through the following activities:

- Recruiting students in high schools and career technical centers
- Participating in DAWG Days and Educator's Academy on campus
- Lab Activities for community interest groups such as daycare programs, boy scouts and girl scouts

3. Identify the institutions that are the main competitors for prospective students in this program.

The competitors in the state are that are structured similar to us but require less clinical hours are:

- Baker College(Owosso, Muskegon, and Clinton Twp campuses)
- New program Northern Michigan University

Other competitors in the state are the following Community Colleges:

- Grand Rapids Community College
- Delta College
- Lake Michigan Community College
- Jackson Community College
- Henry Ford Community College
- Washtenaw Community College
- Kellogg Community College
- Lansing Community College
- Mid Michigan Community College
- Oakland Community College

Certificate Programs in the state area:

- St. Johns Hospital
- Hurley Medical Center
- Port Huron Hospital
- William Beaumont Hospital
- Providence Hospital

a. How are these programs similar and different from the FSU program?

Community College locations are integrated and hospital sites are within driving distance for their students. Students are routinely on campus for classes and have direct contact with faculty for the two years of the program. The internship sites are visited on a weekly basis maintaining good communication between the site and college. As incentive to gain clinical sites, several community colleges pay their clinical sites that take their students. In contrast, FSU radiography students are assigned to the clinical setting for a 12-month period and are visited only periodically by faculty. Currently, FSU does not pay our clinical sites or affiliate partners.

Certificate Programs are sponsored by the hospital and students complete internship and classes within the hospital. Tuition is paid to the hospital and graduates leave with a Certificate in Radiography. However

beginning this year, students with a Certificate will not be allowed to take the registry. The advantage to a certificate program is that the students work directly with faculty on a daily basis.

Baker College is the only college in the state with the same overall structure as our program. However, their students are on quarter system rather than semester system and only complete 3 quarters during their second year or internship portion of the program. Baker students are required to spend less time in clinical and graduate at the end of May. Unfortunately, this places the Baker graduate in the job market sooner than the FSU student who does not graduate until August.

b. What can be learned from them that would improve the program at Ferris?

The current clinical model for the radiography program allows internship site visits twice during the Fall and Spring Semester and once during the Summer Semester. This clinical visitation schedule and model makes it difficult for Ferris to compete for clinical sites with the community colleges that visit the site every week. Methods of communication between Ferris and the sites need to be strengthened when we are constantly compared to the community colleges that make weekly clinical visits.

Stipends for clinical sites would also be helpful when we are competing with other programs that pay for clinical sites. These stipends would help offset basic coverage of supplies and the adjunct clinical instructor's time at the hospital.

C. Program Relevance.

1. Provide a labor market demand analysis.

According to the U.S. Bureau of Labor and Statistics the Employment of radiologic technologists is expected to increase by about 15 percent from 2006 to 2016, faster than average for all occupations.

Projections data from the National Employment Matrix-U.S. BLS					
Occupational title	SOC Code	Employment, 2006	Projected employment, 2016	Change, 2006-16	
				Number	Percent
Radiologic technologists and technicians	29-2034	196,000	226,000	30,000	15

American Society of Radiologic Technologist 2008 Enrollment Trends Report:

Radiography

The BLS projects that 56,000 additional radiographers will be needed between 2006 and 2016. Given the estimate of 17,050 students entering radiography programs in 2008, together with the program directors' estimated attrition rate of 21.1% and a 90.8% pass rate for the certification exam (ARRT 2007 Annual Report of Exams), this discipline would appear to be adding new radiographers to the profession at a rate of 12,215 per year.

Michigan Job Outlook for Radiographers: Michigan.gov

Employment of Radiologic Technicians in Michigan is expected to grow faster than the average for all occupations through the year 2014. An average of 200 annual openings is expected, with 90 due to growth and 110 to replace those who retire or leave the labor force for other reasons. Additional openings will occur as workers change jobs or occupations.

MICHIGAN'S EMPLOYMENT OUTLOOK TO 2014:

EMPLOYMENT REGION	NUMBER EMPLOYED	PERCENT GROWTH	PROJECTED YEARLY JOB
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			OPENINGS
MICHIGAN - State-wide	5,825	14.7	200
Ann Arbor Area	255	24.3	11
Battle Creek Area	150	15.4	5
Benton Harbor Area	130	12.5	4
Central Michigan	195	14.8	7
Detroit Area	2,580	11.5	78
East Central Michigan	85	14.3	3
Flint Area	325	17.8	12
Grand Rapids Area	420	21.1	17
Jackson Area	160	16.1	6
Kalamazoo Area	190	10.5	6
Lansing MSA	365	13.4	12
Muskegon Area	90	15.4	3
Northeast Lower Peninsula	80	15.2	3
Northwest Lower Peninsula	275	22.0	11
Saginaw Area	215	17.5	8
Thumb Area	80	15.0	3
Upper Peninsula	275	16.2	10
West Central Michigan	60	20.3	2
*NOTE: Areas may not add up to state-wide total due to rounding, sampling or statistical errors, and/or confidentiality issues.			

2. Describe and assess how the program responds to emerging issues in the discipline, changes in labor force, changes in employer needs, changes in student needs, and other forces of change.

The Radiography program assesses emerging and workforce issues by using the following resources: employer surveys, graduate surveys, advisory board input and surveys, student surveys, and national publications and databases. Program faculty assess emerging issues within the profession by staying current and active within their professional organizations and communities.

3. Assess why students come to FSU for the program. Summarize the results of the graduate exit survey and the student program evaluation.

a. How well does the program meet student expectations?

The overall program effectiveness was ranked as fair to excellent by 98% of the graduating students. The overall academic effectiveness was ranked as fair to excellent by 98% of the graduating students. And the overall effectiveness of the clinical portion of the program was ranked as fair to excellent by 94% of the graduates. Based on these results, the program is meeting the expectations of the students.

According to an informal survey of students enrolled in the program, the students listed the following reasons for enrolling in the Radiography Program:

- Hands-on experience in lab
- Small class size
- University experience
- Ability to obtain a Bachelors Degree while waiting to get into program
- Referred by friend or family member

- Reputation of program and faculty

b. How is student sentiment measured?

According to the graduate exit survey, students felt that their needs were met with the radiography program. The students ranked the programs willingness to incorporate their ideas at 75% for fair to excellent. Students ranked instructors availability outside of class at 92% on a scale of fair to excellent. This demonstrates the instructors dedication to the students. Students felt their needs were being met and the program has prepared them for a job as a radiographer. 93% of graduates will recommend the program to a friend or family member which demonstrates that students are pleased with the program.

D. Program Value

1. Describe the benefit of the program, facilities, and personnel to the University.

The Radiography Program benefits the University by offering a unique program. The on-campus lab equipped with four energized labs, PACS, Computer Radiography, C-arm and portable training which is an incentive for students to enroll at FSU.

Faculty are highly involved in the program and the University. Faculty participates and supports the radiography club's community service events i.e. Relay for Life, Angle Tree. Students also participated in the Political Engagement Project this year.

The faculty is also involved in several university committees. Faculty have also given many presentations and attended several conferences to improve the quality of the program. The program is also the largest in the country.

2. Describe the benefit of the program facilities, and personnel to the students enrolled in the program.

The lab equipment available in the radiography program is unique to Ferris and not available to students in other Michigan programs. The students spend numerous lab hours on campus practicing radiography protocols before entering the clinical experience. The students arrive at the clinical site ready to perform well because they have had considerable practice in positioning and critical thinking on campus.

The radiography program faculty are also dedicated to the profession of radiography and to Ferris State University. This is evident by the increase number of clinical sites and partnerships, increased student enrollment and increased number of students passing the registry.

3. What is the assessment of program personnel of the value of the program to employers?

The value of the FSU Radiography Program is to provide future radiographers to meet the national shortage. On the employer survey, 100% of respondents indicated that the graduate met all the skills required of an entry level radiographer. And 100% respondents ranked the Ferris State University Radiography Program graduates as adequate or higher.

4. Describe the benefit of the program, faculty, staff and facilities to accreditation bodies, and regional, state, and national professional association; manuscript reviewing, services on editorial boards; use of facilities for meetings, etc.

The faculty participate in local, statewide and national continuing education activities. Program faculty have also participated in the review of the **ARRT "Content Specifications for Examination in Radiography", Jan. 2007**, for the American Registry of Radiologic Technologists. RADI faculty have also been chosen to speak at the Lilly North and LAND's conference. All faculty members are interested in staying current with state and national organizations. This professional participation and activity keep faculty current with issues occurring in the field.

5. What services for extra-University general public groups (e.g. presentations in schools or to community organizations) have faculty, staff or students provided? Describe how these service benefit students, program and community.

Demonstrations on how radiographs are taken, processed and evaluated are done with several area schools and day cares to help the public understand the process for getting an x-ray taken. The purpose of these events is to increase public awareness on radiation, safety, and the program.

The program has participated in the following extra-University services:

- DAWG Days
- High School lab tours
- Lab activities, demonstrations, film review for:
 - Stepping Stones Daycare
 - Tots place after school program
 - Traverse City MOISD
 - Mecosta MOISD
 - Girl Scouts
 - Boy Scouts

Section 2: Collection of Data

Survey instruments and reporting spreadsheets are designed and approved by the accrediting body JRCERT. These tools must be used for programmatic accreditation and were approved by FSU Institutional Research and by the previous faculty. The surveys used were found to meet the needs of the current faculty and have been continued to be used.

A. Graduate Survey Summary for 2005-2008 results:

Surveys were sent to all graduates from the 2005 to 2008 associate degree radiography program with a prepaid self-addressed envelope. Only 44 of the 351 surveys were returned for a response rate of 12%. This response rate is disappointing especially since the four most recent years of alumni were surveyed. A large majority of surveys were returned due to inaccurate addresses. This led the program to believe the individual did not update records with the University when they graduated. It is difficult to determine the validity of this survey due to the 88% non-response rate.

Results of graduate survey:

- 91% of graduates are employed as a radiographer.
- 91% of graduates were employed 6 months after graduating from the program.
- 5% of the respondents indicated they have not been able to find employment as a radiographer.
- 3% of the respondents are employed in a new profession.
- 7% of respondents indicated they are continuing education and this is why they are not employed as a radiographer.
- 95% of the respondents are working full-time, while 5% are working part time. 2.5% indicated part time was by their choice.
- 63% of the respondents indicated their internship site is where they were employed.
- 95% of respondents are working in diagnostic radiography. 5% have been cross trained into specialty areas.
- 42% of the respondents indicated they are making \$35,000 or more as a radiographer. 74% are making \$30,000 or more.
- 100% of respondents felt adequately or well prepared for the registry.
- 91% of respondents felt they were adequately prepared for a job as an entry level radiographer.
- Respondents indicated there was an interest in CT, MRI and Mammography registries.
- 100% of the respondents indicated a fair or higher rating on the quality of the radiography program.
- 93% of the respondents will recommend the program to a friend or family member.

Discussion:

The program response was based on an old curriculum and faculty members that are no longer in place. Several comments have already been addressed in the new curriculum and with the new faculty members. The chart summarizes the main concerns identified by the graduate survey and the action plan that has been implemented to fix the problem:

Problem Identified	Action Taken
1). Internship longer than other schools.	Based on research it was determined that overall Ferris Radiography Students are in clinical a total of 100 clinical hours more than most programs. The program has recognized the need to shorten the time the students are in clinical to allow them to compete for jobs. The summer schedule has been modified to allow students to graduate by the end of July to accommodate this

	while maintaining the clinical hours required and recommended by the internship site and advisory committee members.
2). Registry Preparation.	The program has implemented a RAD1 299 course that is for preparation for the registry.
3). Prep for obtaining employment.	The program has added in RAD1 212, resume writing and how to conduct a job search.
4). Training in portables and C-arm.	RAD1 171 was created to allow students more time in equipment usage. Students will have more extensive training in C-arm, portables, and computed radiography prior to leaving for internship.
5). Increase Program Entrance Requirements.	The program has added pre-requisites and increased the math requirement to the admission process. Students must now have BIOL 109, Math 115/ACT 24, ENG 150, MRIS 102 and a 2.75 GPA in order to apply.
6). Review class needed to help retain didactic information learned during first year.	RAD1 203, 213 and 223 were developed to give the intern additional material to help prepare them for the registry. Students are looking at old material and tying it into what they are doing at internship.

Graduate Survey:

- 1). Year of graduation: _____ 2005- 2008 _____
- 2). Are you presently employed as a radiographer? _____ 40 _____ yes _____ 4 _____ no
 If employed how long did it take you to find your first job as a radiographer?
 _____ 22 _____ Before graduation _____ 6 _____ Within a month _____ 2 _____ 1-2 months
 _____ 5 _____ 2-4 months _____ 5 _____ 4-6 months _____ 0 _____ yet to find a job
- 3). If you are not currently employed as a radiographer, please indicate your reason (s):
 _____ 2 _____ Looking, but can't find a job _____ 3 _____ Continuing Education
 _____ 1 _____ Chose another profession _____ _____ Chose not to work _____ _____ Other:
- 4). If you are working as a radiographer, is it: _____ 32 _____ full-time _____ 8 _____ part-time
- 5). If part time is it by choice? _____ 4 _____ yes _____ 4 _____ no
- 6). How did you find your job:
 _____ 25 _____ Internship site _____ 2 _____ Classified ad _____ 4 _____ Friend/family
 _____ 1 _____ Career services _____ 4 _____ Word of mouth _____ 4 _____ Other:
- 7). Which area of radiography are you primarily employed in:
 _____ 38 _____ Diagnostic Radiography _____ 1 _____ Mammography _____ 2 _____ CT
 _____ _____ Cardiac Cath _____ 2 _____ MRI _____ _____ Angiography
 _____ _____ Sonography _____ _____ Administration _____ _____ Education
 _____ _____ Nuclear Medicine _____ 1 _____ Radiation Therapy _____ 1 _____ QA/QC
- 8). What is your approximate yearly salary?
 _____ _____ under \$15,000 _____ _____ \$15,000-\$20,000 _____ _____ \$20,000 to \$25,000
 _____ 8 _____ \$25,000 to \$30,000 _____ 13 _____ \$30,000 to \$35,000 _____ 11 _____ \$35,000 to \$40,000
 _____ 4 _____ Above 40,000
- 9). Overall how well did FSU prepare you for passing the ARRT registry?
 _____ 14 _____ Very well _____ 26 _____ Adequately prepared _____ _____ Unprepared _____ _____ Very unprepared

10). Overall how well did FSU prepare you for a job as an entry-level radiographer?

__14__ Very well __25__ Adequately prepared __3__ Unprepared ____ Very unprepared

12). Which of the following ARRT advance Registries are you considering taking in the future?

__23__ CT __14__ MRI ____9__ Mammography

__4__ Quality Management ____3__ Cardiovascular

13). Would you be interested in taking a post-RT certificate in any of the following areas in the future?

____22__ CT __14__ MRI ____9__ Mammography

__4__ Quality Management ____ Cardiovascular

Only downfall is that we are on internship longer than other schools
Needed more help on physics & Math, appreciate. FSU helping find a site
Thank you!
Could have used more C-arm training before going to internship.
Thank you Lisa for being there to answer all my questions.
The majority of my didactic advancement came from my externship/clinical instructor.
The professors were great, but I have failed the registry 3 times, need more prep for registry.
I wish there were more prep for obtaining a job in Radiography, tips on interviews, etc.
There was juggling around of faculty during my time that made it hard, but overall it was good.
I work with other students and it makes me realize how well I was taught. Thank you!
FSU exceeded my expectations, Michigan has poor demand and needs state certification for RT
Chaotic and confusion of learning methods during 2006 year.
I gained most of my knowledge from my internship.
My experience at FSU was Fantastic; I am now a full time Radiation Therapist.
The program was tough at the time, but at the end it all came together and was worth it.
Good pace in the classes, great labs, and I got to put what I learned into my internship.
I feel we didn't have much training in portables or surgery in the FSU Lab.
I think the program should be stricter on who gets into the program.
Consider changing the program format so graduation occurs in May or June.
Consider a bachelors degree in Radiography, an online program would be awesome.
Ferris is a great Radiography school. I felt the vacations were to long.
I didn't feel as prepared as I thought I was, I lost knowledge on internship b/c I didn't study
Make mandatory study groups
Put more effort into finding internship sites
More sites in major cities

B. Employer Survey 2008:

Surveys were sent to employers identified by the number of interns hired at their internship sites. The program surveyed 25 clinical sites with 16 surveys returned for a response rate of 64%.

Results of Employer survey:

- 100% of Employers indicated the graduate was adequate or higher.
- 100% of employers indicated that the graduate met all skills that are necessary for an entry level radiographer.

Discussion:

The chart summarizes the main concerns identified by the employer survey and the action plan that has been implemented to fix the problem:

Problem Identified	Action Taken
1).Review of positioning	The program has made curriculum changes in the RADI 104, 105, 106, 107, 108 and 109 courses. Students should be more prepared in positioning when they enter the workforce based on these changes.
2). Self -Confidence	RADI 105, 107, and 109 Labs are reinforcing professionalism for the work place. Students are continually peer reviewed and placed role play situations to get them ready for internship. Students are also doing more presentations throughout the program to increase their confidence, and ability to speak with patients, managers and other radiographers. The changes made in RADI 212 and throughout the overall program should reflect in the student’s ability to enter the work force with self confidence.
3). Need for CR/DR	Addition of RADI 172 course will give students more knowledge of Digital Imaging. Addition of PACS and two Computed Radiography stations will give students the ability to learn CR before leaving for internship.

Employer Survey Results

Please take a few minutes to fill out the following survey. We greatly appreciate your input. Return this form in the enclosed, stamped, self-addressed envelope.

1 Below standards

2 Meets Standards

3 Exceeds Standards

		Average
1).	Patient Care Skills	2.4
2).	Ability to apply critical thinking skills for non-routine procedures	2.3
3).	Knowledge of Proper Administration of X-ray Equipment for Diagnostic Purposes	2.3
4).	Knowledge of Proper Radiation Protection Techniques	2.4
5).	Knowledge of Proper Positioning Skills	2.4
6).	Cooperativeness with Co-Workers	2.7
7).	Pride in Work	2.5
8).	Initiative	2.4
9).	Quality of work Performed	2.5
10).	Quantity of Work Performed	2.5
11).	Dependability, Reliability	2.8
12).	Willingness to Accept Responsibility	2.8
13).	Demonstrate professional behavior in a diverse population	2.8
14).	Communication skills	2.5
15).	Ability to Make Decisions	2.4
16).	Ability to Organized Assigned Work	2.4

17). The graduates overall performance rating would be:

___5___ Excellent ___9___ Very Good ___1___ Adequate _____ Would not rehire

Comments:

-The students are doing a great job and they are a pleasure to work with. They have a tough crowd sometimes so attitudes sometimes come out. However I do feel this is part of their learning and growth as a professional.

-Lack of confidence and would rather watch the tech do the exam and run films instead of positioning the patient.

You are encouraged to offer suggestions for the program in the space below:

-I think there may be a need to review positioning especially when it comes to critical thinking

- Students from Ferris come well prepared and eager to work/learn
- Offer more info, specific info, on how CR/DR works and physics behind it.
- Focus with students positive attitude and work ethic. Young ones today seem to think focus is on them and not the patient.

C. Graduating Student Exit Survey: Surveys were given to all graduating students via Web CT in the RADI 293 course. Students were sent an email and told verbally in the RADI 299 course that the survey was available for them to take. The survey was also open for 2 weeks to allow all students time to take it. The surveys were offered on-line to allow students more time to fill them out. Thirty-six of the 50 graduating students completed the survey for a return rate of 72%. The survey was based on a scale of 1-5, 1 being excellent and 5 being unacceptable.

Results of graduate survey:

- 91% of students felt the textbooks used by the program were fair to good.
- 94% of students felt that the test and quizzes given by the program were fair to good.
- 92% of the students felt the class sequence was fair to good.
- 89% of the students felt the courses were practical and were fair to good.
- 94% of the students felt the schedule of the classes and lab were fair to good.
- 93% of the students felt the availability of instructors were fair to excellent.
- 97% of the students felt instructor feedback was fair to excellent.
- 89% of the students felt the audiovisual aids were fair to excellent.
- 92% of students felt the educational resources were fair to excellent.
- 76% of students felt the quality of library resources were fair to excellent.
- 98% of students indicated the overall effectiveness of the academic portion of the program was fair to excellent.
- 92% of students indicated the organization of the clinical portion was fair to excellent.
- 89% of students felt the clinical instructor was available was fair to excellent.
- 89% of students felt the clinical coordinator was available was fair to excellent.
- 87% of students indicated the communication between the clinical staff and students was fair to excellent.
- 89% of students indicated the clinical staff was professional was fair to excellent.
- 92% of students indicated the amount of time spent in clinical was fair to excellent.
- 75% of students indicated the rotations outside the general radiography dept. were fair to excellent.
- 75% of students indicated the length of rotations were fair to excellent.
- 94% of students indicated the effectiveness of the clinical portion of the program to be fair to excellent.
- 58% of students felt there was enough time to review and complete class assignments during clinical to be fair to excellent.
- 89% of students felt program policies to be fair to excellent.
- 75% of students felt the program willingness to incorporate student ideas to be fair to excellent.
- 98% of students felt the overall effectiveness of the program to be fair to excellent.

- 98% of students felt the effectiveness of student services to be fair to excellent.
- 94% of students felt the effectiveness of leadership of college administration to be fair to excellent.

Discussion: The chart summarizes the main concerns identified by the second year survey and the action plan that has been implemented to fix the problem:

Problem Identified	Action Taken
1). Internship time	The program has recognized the need to modify the time the students are in clinical to allow them to compete for jobs. The summer schedule has been modified to allow students to graduate by the end of July to accommodate this while maintaining the clinical hours required and recommended by the internship site and advisory committee members.
2). Rotations through different modalities	The program has added a RADI 204 course that allows the student to explore Computed Tomography. Students are also encouraged once they are complete with their masters to rotate through different modalities.
3). Length of rotations	The program has discussed rotation schedules with the clinical sites and has determined the site should determine the rotation schedule for the student based on the availability of the clinical site.
4). Amount of students at clinical site	JRCERT has established the number of students allowed at each clinical site. The program will continue to monitor this.
5). Class time/review at internship site	The program feels 3 hours of release time to be reasonable for each student at each site. This allows the student to be released from the floor and study for 3 hours out of a 40 hour work week.
6). Programs willingness to incorporate student ideas	Many demands student have made cannot be incorporated due to the programs need to meet accreditation. This response has been explained to the students.
7). Library Resources	The program has worked with the library liaison and added many books to the collection.

C. Graduating Student Exit Survey 2008:

1= Excellent 2= Good 3= Fair 4=Poor 5= Unacceptable

<u>Questions</u>	N	Mean	SD	Median	Mode	1	2	3	4	5
1b. Appropriateness of Textbooks used by the program.	36	1.64	0.64	2.0	3	0	16	17	3	0
						0%	44.4%	47.2%	8.3%	0%
2b. Appropriateness of tests and quizzes	36	1.75	0.55	2.0	3	0	11	23	2	0
						0%	30.6%	63.9%	5.6%	0%
3b. Organization of classes.(Classes where in sequence and easy to follow)	36	1.69	0.62	2.0	3	0	14	19	3	0
						0%	38.9%	52.8%	8.3%	0%
4b. Practicality of required courses.	36	1.83	0.61	2.0	3	0	10	22	4	0
						0%	27.8%	61.1%	11.1%	0%
5b. Schedule of classes and labs.	36	1.61	0.60	2.0	3	0	16	18	2	0
						0%	44.4%	50%	5.6%	0%
6b. Availability of instructors outside of class.	36	1.57	0.65	1.0	2	1	18	14	3	0
						2.8%	50%	38.9%	8.3%	0%
7b. Instructor feedback.	36	1.49	0.56	1.0	2	1	19	15	1	0
						2.8%	52.8%	41.7%	2.8%	0%
8b. Use of audiovisual aids.	35	1.80	0.87	2.0	3	1	14	16	4	0
						2.8%	38.9%	44.4%	11.1%	0%
9b. Quality of educational resources.	36	1.71	0.62	2.0	3	1	13	19	3	0
						2.8%	36.1%	52.8%	8.3%	0%
10b. Quality of library resources.	35	2.03	0.95	2.0	3	1	11	15	7	1
						2.8%	30.6%	41.7%	19.4%	2.8%
11b. Overall effectiveness of academic portion of program.	36	1.54	0.56	2.0	2,3	1	17	17	1	0
						2.8%	47.2%	47.2%	2.8%	0%
12b. Organization of clinical program.	36	1.69	0.63	2.0	3	1	14	18	3	0
						2.8%	38.9%	50%	8.3%	0%
13b. Availability and professional ability of clinical instructor.	36	1.49	0.70	1.0	2	1	22	9	4	0
						2.8%	61.1%	25%	11.1%	0%
14b. Availability and professional ability of clinical coordinator.	36	1.63	0.88	1.0	2	1	19	12	3	1

1= Excellent 2= Good 3= Fair 4=Poor 5= Unacceptable

							2.8%	52.8%	33.3%	8.3%	2.8%
15b. Communication between clinical staff and students.	36	1.74	0.70	2.0	3	1	14	16	5	0	
							2.8%	38.9%	44.4%	13.9%	0%
16b. Professionalism of clinical staff.	36	1.80	0.72	2.0	3	1	12	19	3	1	
							2.8%	33.3%	52.8%	8.3%	2.8%
17b. Amount of time spent in clinical.	36	1.66	0.64	2.0	3	1	15	17	3	0	
							2.8%	41.7%	47.2%	8.3%	0%
18b. Use of rotations outside of diagnostic radiography.	36	2.00	0.73	2.0	3	1	9	17	9	0	
							2.8%	25%	47.2%	25%	0%
19b. Length of rotations.	36	2.14	0.91	2.0	3	1	9	17	8	1	
							2.8%	25%	47.2%	22.2%	2.8%
20b. Overall effectiveness of clinical program.	36	1.46	0.61	1.0	2	1	21	12	2	0	
							2.8%	58.3%	33.3%	5.6%	0%
21b. Enough time was given to review/class time during clinical program.	36	2.34	1.30	2.0		1	13	7	8	7	
							2.8%	36.2%	19.4%	22.2%	19.4%
22b. Effectiveness of program policies.	36	1.71	0.67	2.0	3	1	14	17	4	0	
							2.8%	38.9%	47.2%	11.1%	0%
23b. Enforcement of program policies.	36	1.69	0.58	2.0	3	1	13	20	2	0	
							2.8%	36.1%	55.6%	5.6%	0%
24b. Programs willingness to incorporate student ideas.	36	2.03	0.71	2.0	3	1	8	18	9	0	
							2.8%	22.2%	50%	25%	0%
25b. Overall effectiveness of the program.	36	1.51	0.56	1.0	2	1	18	16	1	0	
							2.8%	50%	44.4%	2.8%	0%
26b. Overall effectiveness of student services.	36	1.77	0.49	2.0	3	1	9	25	1	0	
							2.8%	25%	69.4%	2.8%	0%
27b. Overall effectiveness of leadership of college administration.	36	1.71	0.57	2.0	3	1	12	21	2	0	
							2.8%	33.3%	58.3%	5.6%	0%

Questions:	Additional Comments:
28b. Please tell us what were some of the positives about your clinical experiences.	<p>I believe that our clinical experience gives us the tools to be a radiographer when complete. It helps tie in the actual working aspect into the program.</p> <p>I had a really good hospital that met my needs and was suitable for me that I felt comfortable in the environment.</p> <p>My clinical experience has been wonderful. I feel Ferris has prepared me in the very best ways and I am ready for my career.</p> <p>I experienced many things in a large hospital.</p> <p>Clinical staff was easy to get along with and willing to help me learn.</p> <p>It was easier to understand some of the things that were taught once we were out in the clinical.</p> <p>Clinical helped prepare me for real world experiences.</p> <p>I liked rotation through different modalities.</p> <p>Being able to work with so many different people and learning a little from each one of them.</p> <p>Good overall experience.</p>
29b. Please tell us what were some of the negatives of your clinical experience.	<p>The number of interns at our site was excessive.</p> <p>Smaller hospitals didn't allow us to see many traumas or surgeries.</p> <p>No pay.</p> <p>It was difficult having a long winter break and then returning.</p> <p>Too much testing and homework on top of clinical.</p> <p>Not enough class time with ACI.</p>
30b. Any comments or suggestions on how to make the clinical experience better would be greatly appreciated.	<p>Less breaks and shorter clinical time.</p> <p>I wouldn't change anything.</p> <p>Rotate into different modalities more often.</p> <p>Graduate sooner for better job prospects.</p> <p>Change amount and time of breaks.</p> <p>Fewer amounts of students at clinical site.</p>

D. First year Student Survey: Surveys were given to all students in the first year of the program via Web CT in the RADI 171 course. Students were sent an email and told verbally in the RADI 108 course that the survey was available for them to take on-line. The survey was also open for 2 weeks to allow all students time to take it. Thirty one of the 50 first year students completed the survey for a return rate of 62%. The survey was based on a scale of 1-5, 5 being excellent and 1 being unacceptable.

Results of first year survey:

- 94% of student said the fall semester was good to excellent.
- 100% of students said the spring semester was good to excellent.
- 97% of students said the summer semester was good to excellent.
- 100% of students felt the textbooks were used in each course was good to excellent.
- 100% of students felt the program sequence was good to excellent.
- 100% of students felt the program syllabus followed the course was very good to excellent.
- 100% of students felt they received the syllabus in a timely matter as very good to excellent.
- 100% of students felt lab times were appropriately used as good to excellent.
- 100% of students felt lab times corresponded with lecture as very good to excellent.
- 100% of students indicated they were prepared for clinical as good to excellent.
- 100% of students indicated advising to be helpful as good to excellent.
- 100% of students felt instructors were available to help as good to excellent.

Discussion:

The chart summarizes the main concerns identified by the first year survey and the action plan that has been implemented to fix the problem:

Problem Identified	Action Taken
1). Background checks	Students would prefer one background check be done but it is necessary to have two completed. Students complete one prior to entering the program and one prior to internship to ensure patient safety.
2). On-line courses	One individual indicated struggling with on-line courses. With the second year of the program being off campus, this is the only way to facilitate the courses. The program sees no other way to conduct these courses. Program will continue to monitor.
3). More SLA for other classes	The program has not identified any other courses needing SLA at this time. Program will continue to monitor.
4). Split summer lab into shorter lab sections.	The program has completed this with the addition of RADI 171 lab.
5). More detail in physics class.	Due to the large amount of information to cover only the basics can be addressed in this course that pertains to radiography. Students may take a regular physics class through the science department if they wish to have more detail on electricity and magnetism outside the realm of radiography. However, it is not necessary to understand the concepts of how radiographs are produced.
6). Less group work.	The faculty feel more group work is necessary to build team work and communication skills with the students prior to internship.
7). Less busy work.	The program assignments are relevant to the learning and understanding of the material. The program has moved to a more learner centered environment. This change may be the reason students feel there is more busy work than other courses.

Student Program Evaluation 2008

Questions	N	Mean	SD	Median	Mode					
						1 Low	2	3	4	5 Excellent
1. How would you rate the Fall Semester?	33	4.0	0.85	4	4	0	2	5	15	9
						0%	6.5%	16.1%	48.4%	29%
2. How would you rate the Spring Semester?	33	4.29	0.52	4	4	0	0	1	20	10
						0%	0%	3.2%	64.5%	32.3%
3. How would you rate the Summer Semester?	33	4.20	0.90	4	5	0	1	6	8	14
						0%	3.4%	20.7%	27.6%	48.3%
4. How well were textbooks used in each course?	33	4.64	0.81	4	4	0	0	10	11	10
						0%	0%	32.3%	35.5%	32.3%
5. The program followed a logical sequence in all the courses?	33	4.65	0.54	5	5	0	0	1	9	22
						0%	0%	3.1%	28.1%	68.8%
6. The courses followed the syllabi?	33	4.78	0.43	5	5	0	0	0	7	25
						0%	0%	0%	21.9%	78.1%
7. You received your syllabus in a timely manner?	33	4.96	0.17	5	5	0	0	0	1	31
						0%	0%	0%	3.1%	96.9%
8. Lab times were used appropriately?	33	4.40	0.67	4	5	0	0	3	12	15
						0%	0%	10%	40%	50%
9. Labs corresponded with lectures?	33	4.81	0.39	5	5	0	0	0	6	26
						0%	0%	0%	18.8%	81.2%
10. You feel prepared for clinical?	33	4.31	0.64	4	4	0	0	3	16	13
						0%	0%	9.4%	50%	40.6%
11. You found advising to be helpful?	33	4.38	0.71	5	5	0	0	4	11	16
						0%	0%	12.9%	35.5%	51.6%
12. Instructors/staff were available to help you with your questions?	33	4.80	0.47	5	5	0	0	1	4	26
						0%	0%	3.2%	12.9%	83.9%

1a. Please share any comments you have on the Fall Semester.	I thought the Fall Semester was the hardest simply because everything was so new. It was hard getting used to the testing. Study, Study, Study. I really enjoyed the Fall Semester but it was most difficult for me. It can be overwhelming at first but you get used to it. It was tough but well worth it.
2a. Please share any comments you have on the Spring Semester.	It was easier than the first semester because we knew what to expect. The online class was nice but I don't think I learned as much as I would have in the classroom. Although lab got a bit tougher it was good for us. Spring Semester went much more smoothly partly because we were familiar with the routine.
3a. Please share any comments you have for Summer Semester.	I would have liked to have spent more time learning about the positioning for upper/lower GI's and IVU's in lab. Easier and more laid back. Very busy but tolerable. It was an appropriate pace and workload for the Summer Semester considering some work and have other responsibilities. QA class was not conducive to learning.
4a. Please share any comments you have regarding the textbooks used by the program this year.	Expensive but worth it. Papp book hardly used and waste of money. Textbooks were great. Bontrager and Carlton/Alder books very helpful.
5a. Please share any comments you have in regards to the order of the courses taken during the first year.	The order of the classes made sense. Everything built on each other. Order of courses was perfect. Please make up packets to buy for all of the PowerPoints and labs. I felt that the program followed a logical progression, building on information learned from previous semesters.
6a. Please share any comments you have in regards to the courses and syllabi.	Courses followed the syllabi perfectly. Well written, easy to follow and leaves very few questions unanswered. For the most part it went hand-in-hand.
7a. Please share any comments in regard to the manner in which the syllabus was received.	Received them before starting class. It took a long time to go over it verbally. I understand that many students probably did not read it so by going over it, instructors could say that it was covered.
8a. Please share any comments you have in	I would have liked to have had more regular lab sessions.

regards to the use of lab times.	Some labs were way too long and rushed while others had extra time. More time to practice positioning is needed. Summer labs were too long.
9a. Please share any comments you have regarding the correspondence of labs to lecture.	They went really well with labs. Once in awhile they were a little off if lecture fell behind but it really didn't affect the lab. Labs corresponded perfectly. Open labs were at the worse times for those students who had jobs.
10a. Please share any comments you have in regards to your readiness for clinical.	I am just scared to work on real patients. I feel prepared. I'm just nervous about going to OR. I think that the teachers prepared us as well as they could. I'm just nervous to start and hope that I do well during clinical. Couldn't wait to get started and feel very prepared.
11a. Please share any comments in regards to advising.	All my questions were answered. Was not informed very well about pay, job placement, and what instructors were going to be looking for. If you needed something answered they did their best to answer it.
12a. Please share any comments you have in regards to the availability of the instructors.	Very prompt responses to emails. Everyone was helpful and always provided answers whether questions were asked in class or through email. Good student/Instructor relationship. Questions answered in a timely manner.
13a. What were your feelings on the on-line learning environment?	It worked out well for my schedule. Being able to do the assignments and quizzes when you want was great. It made the other classes less stressful but I don't think that I learned as much. I would much rather be learning the material in a classroom. The set-up was very easy to follow. I liked the opportunities for self-paced learning and completion of the class.
14a. Please share what you liked best about the first year.	Everyone wanted us to be successful. Good firm understanding of radiography and what to expect on internship. Labs were smaller and taught us how to work with other people. Great relationships formed with students and teachers. Developing the skills that I will need for the job.
15a. Please share what you liked least about	It's stressful but I got used to it.

<p>your first year.</p>	<p>I didn't like the online courses during the Spring and Summer semesters. I did not like getting up in front of people during our presentations. It was a bit overwhelming at first. All the studying.</p>
<p>16a. Any suggestions you have for improvement of the program is greatly appreciated. We do take your suggestions to heart and have implemented many changes based on students past comments.</p>	<p>Less group work. Only one background check verses two. Less busy-work. More SLA's for other classes. Split Summer labs into shorter labs. Go into more detail in Physics class.</p>

E. Faculty Survey:

Surveys were given to all faculty and staff in the Radiography program. 5 out of the 5 faculty and staff members completed the survey. 100% of the surveys were completed for the program. The survey was based on a scale of 1-5, 5 being excellent and 1 being unacceptable.

Results of faculty survey:

- All areas of the faculty survey indicated a good to excellent rating except for the use of the Allied Health Sciences Library. The library was rated Fair.

Discussion:

The chart summarizes the main concerns identified by the faculty survey and the action plan that has been implemented to fix the problem:

Problem Identified	Action Taken
1). Communication between program and sites.	The program has gathered email addresses from all the clinical sites to establish a timelier means of communication with the sites. Some sites do not have access to email at work which will pose a problem for this and they will continue to need follow up phone calls or letters sent.
2). Updated equipment needed: C-arm, portable, and fluoroscopy room.	Vocational funds have been requested for these items, and sites have been contacted for donations.
3). Location of Allied Health Library.	Many staff members were unaware of the resources available at the library. A tour of the Library to identify the section for Allied Health was scheduled and all faculty and staff were required to attend.
4). Educational opportunities at each site.	Web Cams are suggested to aid the students in having equal opportunities to learn. Faculty members can conduct live sessions and have sessions from other locations sent live to the sites that do not have classroom time. Another area would be live chat sessions on assigned topics and video lectures for students to view on topics.
5). Decrease enrollment	The enrollment numbers have been dropped from 60 to 50 this year. The job market will continue to be monitored to address the concern of job placement.
6). ACI training	The program is looking at offering continuing education credits for the ACI meeting in the fall and has contacted the sites for which topics they would be interested in.
7). Full time lab assistant	The Dean and Dept. Head have been notified of the programs request for a full-time lab assistant to oversee the PACS room and continue aiding in the labs.

Faculty Survey 2008:

5-----4-----3-----2-----1
 Excellent Good Fair Poor Unacceptable

		5	4	3	2	1
1	Curriculum designed to facilitate student learning	5	4	3	2	1
2	Faculty empowerment in program development and long-term strategy	5	4	3	2	1
3	Faculty participation in program development	5	4	3	2	1
4	Organization and structure of courses	5	4	3	2	1
5	Use of course and program objectives	5	4	3	2	1
6	Use of labor market analysis	5	4	3	2	1
7	Appropriateness of student textbooks	5	4	3	2	1
8	Availability and student use of computers and the internet	5	4	3	2	1
9	Adherence to JRCERT standards and principles	5	4	3	2	1
10	Integration and use of student follow-up information	5	4	3	2	1
11	Relevance and availability of supportive courses	5	4	3	2	1
12	Administrative response to faculty input	5	4	3	2	1
13	Quality and number of available internship sites	5	4	3	2	1
14	Overall quality of clinical education	5	4	3	2	1
15	Technical and teaching ability of adjunct faculty (ACIs)	5	4	3	2	1
16	Technical, organization, and teaching ability of Clinical Coordinator	5	4	3	2	1
17	Program communication with and response to clinical sites	5	4	3	2	1
18	Program availability and accessibility to students and potential students	5	4	3	2	1
19	Program recruitment efforts	5	4	3	2	1
20	Program efforts to achieve a bias-free environment	5	4	3	2	1

21	Provisions, availability, and relevance of student advisement	5	4	3	2	1
22	Faculty participation in college and university committees	5	4	3	2	1
23	Use and timeliness of Advisory Committee	5	4	3	2	1
24	Availability and accessibility of adequate classrooms and AV equipment	5	4	3	2	1
25	Size and configuration of laboratory space	5	4	3	2	1
26	Quality and availability of teaching/learning aids	5	4	3	2	1
27	Quality and quantity of radiographic (lab) equipment	5	4	3	2	1
28	Availability of office equipment and supplies	5	4	3	2	1
29	Size and layout of office space	5	4	3	2	1
30	Quality and applicability of computer equipment for instructors	5	4	3	2	1
31	Availability and timeliness of computer support	5	4	3	2	1
32	Applicability and accessibility of library resources	5	4	3	2	1
33	Faculty and/or student use of Allied Health Sciences Library	5	4	3	2	1
34	Availability of fiscal resources sufficient to provide quality instruction	5	4	3	2	1
35	Availability of textbooks and periodicals to instructors	5	4	3	2	1
36	Overall program quality	5	4	3	2	1
37	Faculty works together as a team	5	4	3	2	1
38	College and university administration foster a positive work environment	5	4	3	2	1
39	Availability of college administration	5	4	3	2	1
40	Adequate education to meet national standards (JRCERT, etc.)	5	4	3	2	1

Additional Comments:

-Faculty and staff work well together. All are a large asset to the program.

-Communication needs to be improved between the college and the sites. Program working on access to Ferris Connect but having difficult time with HR.

-More workload needs to be generated to allow for more time with sites. Hard to compete with local colleges when we are only able to visit 2 times a semester and they can meet every week.

-Need new C-arm, Portable and Room G in lab. Equipment outdated and some controls do not work.

-PACS and CR are a huge asset to program.

-Need full-time lab assistant to help maintain PACS room and student ids for all programs.

-Where is the Allied Health Sciences Library? Do we really have one?

-While several of our ACI's are going above and beyond their requirements, I believe that a few sites are lagging behind. It would be nice to have every site on the same page with regards to the student's education during their clinical internship. This could involve making sure that student's gain the appropriate number of hours within the clinical classroom and also a set of learning objectives that are across the board for every site. I do also understand that there are a number of teachable moments that can be unique to each of our clinical sites which also serves as a valuable educational experience for our student interns.

-I'm excited about the new digital equipment and PACS room that our Allied Health programs have recently acquired. This equipment will provide our students with the latest and greatest technologies, preparing them for current industry standards. There are still several pieces of equipment, in our lab, that are in dire need of refurbishing or replacement. This includes our portable radiography machine, our surgical C-Arm and our Fluoroscopy room.

-Labor market analysis is rated fair because the current availability of jobs is so low, it will be difficult for our students to find jobs unless they are willing to relocate. We have lowered our student numbers from 60 to 50 to try and counter this however; I feel we may have to decrease even more.

-I feel some of the ACI's do a wonderful job, while others may need more training.

-The program does what it can to communicate with sites but it would be better to have the chance to visit the sites more often.

-I think it is important to have all faculty members in the program on the same floor; it doesn't make any sense to have offices so far apart.

-Most of the lab equipment is adequate however the fluoro room, c -arm and portable machine need to be replaced. PACS and CR systems are excellent.

-A full time lab assistant to help monitor the PACS room is needed.

F. Advisory Committee Survey:

Surveys were mailed out to all advisory committee members. Out of the 12 members, 8 advisory members responded to the survey. There was a 67% response rate for members providing input to the program. The survey was based on a scale of 1-5, 5 being excellent and 1 being unacceptable.

Results of Advisory Committee survey:

- All areas of the advisory committee indicated a good or higher, except for the equipment in the lab being representative of equipment being used in the clinical environment which was rated acceptable.

Discussion:

The chart summarizes the main concerns identified by the Advisory Committee Survey and the action plan that has been implemented to fix the problem:

Problem Identified	Action Taken
1). Computed Radiography	A Fuji and Kodak Computed Radiography system has been added to the lab along with PACS. RADI 172 has been added to the curriculum to train students in this system.
2). Update equipment in lab	Vocational funds have been requested for these items, and sites have been contacted for donations.
3). Expose to other modalities	The program has added a RADI 204 course that allows the student to explore CT. The program has discussed rotation schedules with the clinical sites and has determined the site should determine the rotation schedule for the student based on the availability of the clinical site.
4). Online classes	The program is offering more on-line classes to allow the students more flexibility with their schedule.
5). Length of internship	The program has discussed rotation schedules with the clinical sites and has determined the site should determine the rotation schedule for the student based on the availability of the clinical site.
6). Quality of students	The program has added pre-requisites and increased the math requirement to the admission process. Students must now have BIOL 109, Math 115/ACT 24, ENG 150, MRIS 102 and a 2.75 GPA in order to apply.
7). Skills for internship, Radiation Biology, Patient Care, and Communication	The program is continuously working on activities in lab to enhance the student's ability to work with a patient in clinical. Many lab activities have been created to address these concerns in all of the labs.

Advisory Committee Perception 2008:

	2007	2008	Change of:
The current curriculum meets the need of our graduating students.	4.3	4.375	.075
The program provides students with the necessary skills for entering the job market.	4.2	4.25	.05
The program meets the current trends in Radiography.	4	4.125	.125
Program is continually reviewed and improved to keep up with changes in the field.	4.2	4.25	.05
Students have a strong understanding of radiography concepts upon graduating.	4.2	4.25	.05
Equipment used in labs is representative of equipment being used in the clinical environment.	3.5	3.5	0
Students and sites display enthusiasm for the program.	4.3	4.625	.325

The advisory committee is utilized appropriately for input on program improvement.	4	4.125	.125
There is appropriate communication between the programs communities of interest.	4.3	4.25	-.05
The faculty is meeting the needs of the students.	4.3	4.375	.075

2008 Comments:

1. What do you feel are the future trends in Radiography in the next 10 years? CR, CT, totally filmless, all CR/DR equipment, Entry level techs much posses a variety of skills in order to be competitive with the changes in technology, emphasis on patient care and safety, Digital imaging, slice CT, PET CT combined scanners and needs to be some focus on interventional procedures and vascular anatomy.

2. What are the programs strengths? Students are personable and motivated. Continuity, consistency, obviously serving stakeholders, positioning & radiography application and knowledge is good, a leading radiography school, networks with hospitals, prepares students for future jobs, interns seem more prepared, staff stay current, clinical sites adequate, online review courses are good and handle on good practical training.

3. What areas do the program need to improve upon? CR system appears to be failing, CR is expensive so it could be a budget issue, students need to have a positive attitude, keeping up on the latest technology so it can lead the way, online classes, update equipment, basic radio bio and exposed to other modalities.

4. What important issues do you feel the program needs to address immediately? Students need to understand how important internship is and treat it like a real job, effective communication and quality patient care should be practiced repetitively, role playing so the transition from campus life to clinical is smooth, too much time off between fall and spring semesters, stay current with technology, internships should be trimmed to 12 to 8 months and continue to recruit and accept a high standard of students.

G. Adjunct Clinical Survey:

Surveys were mailed out to all adjunct clinical instructors(ACI's). Fourteen of the 25 ACI's returned the survey for a response rate of 56%. The survey was based on a scale of 1-5, 5 being excellent and 1 being unacceptable.

Results of Adjunct Clinical survey:

- All areas of the Adjunct Clinical Survey indicated a fair or higher.

Discussion:

The chart summarizes the main concerns identified by the Adjunct Clinical Survey and the action plan that has been implemented to fix the problem:

Problem Identified	Action Taken
1). Communication with Sites	The program has gathered email addresses from all the clinical sites to establish a timelier means of communication with the sites. Some sites do not have access to email at work which will pose a problem for this and they will continue to need follow up

	phone calls or letters sent.
2). Technical Factors	Students are learning Exposure Index for CR systems in RADI 172. This should help increase their knowledge on technical factors in a CR environment.
3). CR/DR	A Fuji and Kodak Computed Radiography system has been added to the lab along with PACS. RADI 172 has been added to the curriculum to train students in this system.
4). Critical Thinking	The program has moved to a learner centered teaching environment that involves several critical thinking exercises.
5). Review Course for Registry	RADI 203, 213 and 223 were developed to give the intern additional material to prepare them for the registry. Students are looking at old material and tying it into what they are doing at internship.

ADJUNCT CLINICAL INSTRUCTOR SURVEY Results 2008-2009

1. Availability of Clinical Coordinator
2. Competence and clinical ability of Clinical Coordinator
3. Communication between Clinical Coordinator and Adjunct
4. Appropriateness and timeliness of tests and quizzes
5. Appropriateness of clinical policies
6. Program's adherence to and enforcement of clinical policies
7. Program's willingness to listen to and incorporate ACI suggestions
8. Organization of clinical program
9. Program administration's leadership and communication
10. Program's response to perceived clinical needs
11. Overall impression of clinical program
12. Student's patient care skills
13. Student's psychomotor ability
14. Student's general understanding and communication
of radiographic concepts
15. Student's overall communication skills
16. Student's displays positive ethical behavior
17. Student's displays professional behavior in a diverse population
18. Anatomy and physiology
19. Technical factors
20. Radiographic physics
21. Principles of patient care and handling
22. Radiographic processing
23. Radiation protection and radiation biology
24. Radiographic equipment
25. Radiographic positioning and procedures

5 = Excellent 4 = Good 3 = Fair 2 = Poor 1 = Unacceptable

Question	5	4	3	2	1	Average score:
1	5	9				4.36
2	7	7				4.5
3	7	6	1			4.4
4	6	6	2			4.23
5	9	4	1			4.57
6	8	6				4.67
7	8	6				4.64
8	7	5	2			4.35
9	7	5	1	1		4.23
10	6	6	1	1		4.21
11	7	6	1			4.43
12	6	7	1			4.35
13	6	7	1			4.35
14	7	5	1	1		4.23
15	5	8	1			4.28
16	7	7				4.5
17	8	6				4.43
18	4	6	3	1		3.93
19	2	6	4	2		3.71
20	4	6	2	2		3.86
21	5	8		1		4.28
22	4	7	3			4.14
23	4	8	2			4.07
24	4	9	1			4.21
25	5	8	1			4.23

How would you improve the clinical program?

- The program has improved itself over the last few years.
- More emphasis on manual technique. Since so many of us have CR or Digital the students love to phototime but since you get a number to consider with appropriate techniques you should be able to technique the patient and not phototime. Too many count on the AEC system.
- The students need to more prepared with physics and anatomy and pathology
- The students have the technical understanding of adapting technique but are unable to verbalize/demonstrate the changes at the equipment
- Meet with CI's on campus twice annually, it would encourage more input from CI's
- More communication with sites

How would you improve the overall program?

- Good
- Perhaps more time spent on the physiology

What specific areas of the curriculum should be enhanced or added?

- Teach them how to use a piggy-o-stat an immobilization techniques on infants and toddlers.
- Techniques

- I would like to see students go to Ferris for review of boards. Students can learn from class interaction and experience and this would eliminate pressure from staff to teach physics and pathology.
- More emphasis on critical thinking.
- Great at teaching anatomy
- Curriculum is well developed now

What specific areas of the curriculum should be de-emphasized?

- Film processing

Comments regarding program faculty, staff, administration, and the program in general:

- You are doing a great job.
- Very strong program and well prepared students. Ferris students have been very positive experience.
- We need email communication and not through the bulldog stuff way too much of a hassle. I would also like next year's student to not visit unless very serious about it. Way too busy to make this happen 15 times.
- I am completely satisfied with the program. We have hired many Ferris grads. Excellent program.
- It would be nice to have visits scheduled with the ACI so the ACI can be there

Section 3: Program Profile

A. Profile of Students.

1. Student Demographic Profile. See below.

a. Gender, race/ethnicity, age

Pre-RADI Average Age:		RADI Average Age:	
<i>Year in Program</i>	<i>Average Age</i>	<i>Year in Program</i>	<i>Average Age</i>
2004	24	2004	27
2005	23	2005	26
2006	22	2006	25
2007	21	2007	23
2008	20	2008	22
Average age past Five Years:	22	Average age past Five Years:	25

Pre-RADI Gender:			
<i>Academic Year</i>	<i>Male</i>	<i>Female</i>	<i>Total number enrolled</i>
2004	35	79	114
2005	36	78	114
2006	38	73	111
2007	36	77	113
2008	39	108	147
Average past Five Years:	37	83	120

RADI Gender:			
<i>Academic Year</i>	<i>Male</i>	<i>Female</i>	<i>Total number enrolled</i>
2004	23	71	94
2005	19	61	80
2006	16	54	70
2007	22	57	79
2008	23	45	68
Average past Five Years:	21	58	78

Pre RADI: Race/ethnicity								
<i>Year</i>	<i>Black</i>	<i>Hispanic</i>	<i>Indian/ Alaskan</i>	<i>Asian/ Pac. Island</i>	<i>White</i>	<i>Foreign</i>	<i>Unknown</i>	<i>Total number enrolled</i>
2004	6	1	6	2	92	0	7	114
2005	7	3	2	1	96	0	5	114
2006	5	1	3	1	97	0	4	111
2007	2	2	1	1	107	0	0	113
2008	2	3	1	1	140	0	0	147
Average over past 5 years:	4	2	3	1	106	0	5	120

RADI: Race/ethnicity								
Year	Black	Hispanic	Indian/ Alaskan	Asian/ Pac. Island	White	Foreign	Unknown	Total number enrolled
2004	2	4	2	0	84	1	1	94
2005	3	1	1	1	69	1	4	80
2006	2	0	1	3	59	0	5	70
2007	3	1	2	3	69	0	1	79
2008	0	1	3	0	64	0	0	68
Average over past 5 years:	2	1	2	1	69	1	2	78

b. In-state and out-of state

Pre-Radi Residency:				Radi Residency:			
Academic Year	Resident	Midwest Compact	Non- Resident	Academic Year	Resident	Midwest Compact	Non- Resident
2004	112	1	1	2004	92	2	0
2005	113	1	0	2005	78	1	1
2006	111	0	0	2006	69	0	1
2007	113	0	0	2007	79	0	0
2008	146	0	0	2008	68	0	0
Average past Five Years:	119	.4	.2	Average past Five Years:	77	.6	.4

c. Full-time and part time

Pre RADI: Full-time vs. Part-time				RADI: Full-time vs. Part-time			
Academic Year	Full- time	Part- time	Total number enrolled	Academic Year	Full- time	Part- time	Total number enrolled
2004	103	11	114	2004	83	11	94
2005	104	10	114	2005	71	9	80
2006	98	13	111	2006	62	8	70
2007	99	14	113	2007	66	13	79
2008	128	19	147	2008	62	6	68
Average past Five Years:	106	13.4	120	Average past Five Years:	69	9	78

d. Attend classes during the day, evenings, and on weekends

No data provided on pre-radiography students. 100% Radiography students enrolled in the program attend day classes, labs and clinical internship.

e. Enrolled in classes on and off campus

Freshman pre-radi vs radi:				
Academic Year	Pre-RADI On campus	Pre-RADI off campus	RADI on campus	Off campus
2004	62	0	7	0
2005	57	0	6	0
2006	63	0	3	0
2007	60	0	4	0

2008	89	0	0	0
Average past Five Years:	66	0	4	0

Junior pre-radi vs. radi:				
Academic Year	Pre-RADI On campus	Pre-RADI off campus	RADI on campus	Off campus
2004	15	0	31	0
2005	10	0	31	0
2006	10	0	25	0
2007	9	0	22	0
2008	13	0	35	0
Average past Five Years:	11	0	29	0

Senior pre-radi vs. radi:				
Academic Year	Pre-RADI On campus	Pre-RADI off campus	RADI on campus	Off campus
2004	3	0	13	0
2005	5	0	15	0
2006	7	0	22	0
2007	9	0	23	0
2008	4	0	15	0
Average past Five Years:	6	0	18	0

f. Enrolled in 100% on-line and/or mixed delivery courses.

No data provided on pre-radiography students. 100% of students enrolled in the radiography program will complete face to face delivery enhanced with Ferris Connect during the first year of the program. During the second year of the program 100% of students enrolled in the program will complete on-line and mixed delivery courses.

g. Discuss how the information present in (a) through (f) impacts the curriculum, scheduling, and/or delivery methods of the program .

a. Gender, race/ethnicity, age: According to the data provided the average age of the pre-radi student is 22 and the average age of the student entering the program is 25. Female pre-radiography students made up an average of 66% of the students compared to 44% of male students. This number changed with students enrolled in the Radiography program to about 31% of the students being male and 69% being female. The pre-radiography students are represented by 88% Caucasian and 12% minorities. The number of radiography students enrolled in the program remained the same.

The radiography profession has typically been held by women. The trend in the current student population simply reflects that trend. The male to female ratio does not impact the curriculum, delivery or scheduling of the program. The programs ratio of ethnic students enrolled in the program are also not a concern to the program. The average age of the student is also adequate. The higher entrance requirements and pre-requisite courses prevent true freshman from entering the program from high school although it is not impossible. The prerequisite courses have been implemented not to discourage first year students but to assure a better prepared student for the program and minimize attrition rates. The prerequisite courses are also mandatory for programmatic accreditation.

b. In-State vs. Out of state: According to the data provided, the program attracts about 99% of the pre-radiography and current radiography students from in-state residents. This is not surprising due to the fact that the clinical internship sites are located within the State of Michigan. The internship portion of the program appeals to in-state students more than out-of-state students because internship sites are located within 500 hundred miles of Big Rapids. Whether students are in-state or out-of-state does not impact the curriculum, scheduling or delivery of the program due to the use of Ferris Connect and clinical site visits.

c. Full-time vs part-time: The data shows an average of 88% full time pre-radiography and enrolled radiography students. Whether students are full time or part time does not affect the curriculum, delivery, or scheduling of the program, however students must be full-time status during the second year of the radiography program in order to complete all requirements and graduate within the two year time frame.

d. Attend classes during the day, in the evenings, and on weekend: The first year professional sequence classes in the radiography program are held during the day on Monday through Friday on the Big Rapids campus. Labs are a large component to the program and students must be on campus to use the labs. RADI 121 and RADI 143 have an SLA section that is held on Friday mornings. Second year professional sequence student attend internship which is generally scheduled Monday through Friday during the daytime shift.

e. Enrolled in classes on and off campus: Pre-Radiography students and current Radiography students have a choice to enroll in core curriculum courses of CCHS 101, CCHS 102, and MRIS 102 either on-line, in person or at an off campus location. General education courses may also be done at another location. Radiography courses are only offered on campus due to the hands-on-lab.

f. Enrolled in 100% mixed delivery or on-line courses: Pre-Radiography students and current Radiography students have a choice to enroll in core curriculum courses of CCHS 101, CCHS 102, and MRIS 102 either on-line, in person or at an off campus location. Pre-Radiography students and current Radiography students may also enroll in general education courses as mixed delivery or on-line. Once in the radiography program, students will take courses enhanced with Ferris Connect and mixed delivery (RADI 122, RADI 170 and RADI 172). During the second year of the program, students will enroll in on-line and mixed delivery courses while at their internship site. The Radiography program has been able to cover material more thoroughly using Ferris Connect enhancement and students are able to receive immediate remediation of difficult material.

2. Quality of students.

- a. *What is the range and average GPA of all students currently enrolled in the program? ACT? Comment on this data.*

GPA Pre-Radiography Student			
Academic Year	Average GPA	Min. GPA	Maximum GPA
2004	2.78	1.55	3.97
2005	2.77	1.94	3.80
2006	2.79	1.55	4.00
2007	2.85	1.62	3.94
2008	2.77	.87	3.96
Average past Five Years:	2.80	1.51	3.93

<i>GPA Radiography Student</i>			
<i>Academic Year</i>	<i>Average GPA</i>	<i>Min. GPA</i>	<i>Maximum GPA</i>
<i>2004</i>	<i>3.22</i>	<i>2.031</i>	<i>4</i>
<i>2005</i>	<i>3.28</i>	<i>2.408</i>	<i>4</i>
<i>2006</i>	<i>3.26</i>	<i>2.31</i>	<i>4</i>
<i>2007</i>	<i>3.29</i>	<i>2.32</i>	<i>4</i>
<i>2008</i>	<i>3.25</i>	<i>2.53</i>	<i>4</i>
<i>ACT Pre-Radiography Student</i>			
<i>Academic Year</i>	<i>Average ACT</i>	<i>Min. ACT</i>	<i>Maximum ACT</i>
<i>2004</i>	<i>19.84</i>	<i>15</i>	<i>31</i>
<i>2005</i>	<i>20.14</i>	<i>14</i>	<i>31</i>
<i>2006</i>	<i>20.14</i>	<i>14</i>	<i>28</i>
<i>2007</i>	<i>20.74</i>	<i>15</i>	<i>29</i>
<i>2008</i>	<i>20.47</i>	<i>15</i>	<i>32</i>
<i>Average past Five Years:</i>	<i>20.26</i>	<i>14.6</i>	<i>24</i>

<i>ACT Radiography Student</i>			
<i>Academic Year</i>	<i>Average ACT</i>	<i>Min. ACT</i>	<i>Maximum ACT</i>
<i>2004</i>	<i>20.4</i>	<i>14</i>	<i>30</i>
<i>2005</i>	<i>20.74</i>	<i>14</i>	<i>31</i>
<i>2006</i>	<i>21.11</i>	<i>15</i>	<i>31</i>
<i>2007</i>	<i>21.12</i>	<i>15</i>	<i>31</i>
<i>2008</i>	<i>20.65</i>	<i>15</i>	<i>28</i>
<i>Average past Five Years:</i>	<i>20.8</i>	<i>14.6</i>	<i>30.2</i>

The minimum GPA for students currently enrolled in the professional sequence of the radiography program is 2.0. Pre-radiography students must have a 2.75 GPA in order to apply to the program. Data shows that pre-Radiography students had an average GPA of 2.80 and an ACT score of 20.26. Radiography students enrolled in the program have a GPA of 3.26 with an ACT score of 20.8. Based on this evidence, the program has made the following changes to the entrance of the radiography program.

The Radiography program implemented higher entrance requirements into the program effective fall of 2008, these requirements include:

- Math ACT score of 24 or a “C” or better in Math 115.
- BIO 109, ENGL 150, and MRIS 103
- Increase in the GPA from a 2.5 to a 2.75

These changes should not impact students from getting into the program. They simply enhance their foundation and strengthen their skills to provide better retention and increase the registry pass rates.

b. What are the range and average GPA’s of students graduating from the program? ACT? Comment on this data.

GPA Radiography Student-Graduated			
Academic Year	Average GPA	Min. GPA	Maximum GPA
2004	3.34	2.46	4.00
2005	3.45	2.74	3.99
2006	3.31	2.53	3.98
2007	3.45	2.62	4.00
2008	3.32	2.59	3.98
Average past Five Years:	3.37	2.59	3.99

ACT Radiography Student-Graduated			
Academic Year	Average ACT	Min. ACT	Maximum ACT
2004	19.39	11	25
2005	20.42	13	25
2006	21.00	15	28
2007	20.85	16	30
2008	21.37	16	31
Average past Five Years:	20.61	14.2	27.8

The average student was 20.61. Both when the good

GPA for the Graduated Radiography a 3.37. The average ACT was a the GPA and ACT are higher than student started the program. This is a indicator of the attrition problem the

program has had with students. Students with lower GPA and ACT scores starting their program are less likely to make it through the program. The increase in pre-requisites for admission to the program should alleviate this problem.

c. In addition to ACT and GPA, identify and evaluate measures that are used to assess the quality of students entering the program.

In addition to ACT and GPA scores, students entering the program must pass MRIS 102, Medical Terminology, English 150, and BIO 109 Anatomy & Physiology courses with a “C” or better as prerequisite courses before entering the professional sequence. These courses better prepare students for program courses, as well as fulfill requirements set forth by the JRCERT for programmatic accreditation standards. **See Appendix B for copy of Admission and Progression Policy.**

d. Identify academic awards (e.g. scholarships or fellowships) students in the program have earned. Comment on the significance of these awards to the program and student.

At this time there is no state or regional competition available for radiography students. Students do not compete in national radiography competitions due to proximity from campus. This does not impact the curriculum in a negative way. Students continue to complete poster and case study presentations on campus and are encouraged to engage in competitions upon completion of the program.

e. What scholarly/creative activities (e.g. symposium presentation, other presentation or awards) have students in the program participated in.

The radiography faculty highly recommend that students attend state and regional radiography meetings. Student poster debates and presentations on campus are designed to encourage students to participate in poster competitions at these meetings. Students also are encouraged to apply to the MSRT and ASRT for

scholarships. The 2006 scholarship winner from the MSRT was awarded to a 2007 graduate from the Radiography Program.

f. What are other accomplishments to the program and students.

Students in the radiography program are routinely on the honor roll. Students also participate in community service projects for a charity such as Relay for Life or adopting a family during the holidays. Students volunteer their time in helping with lab activities for tour groups and pre radiography students.

3. Employability of students.

a. How many graduates have become employed full-time in the field within one year of receiving their degree?

According to the 2008 Graduate survey, 91% of students graduating from the radiography program were employed after graduating from the program. 80% of the students reported working full-time while 20% are working part time.

b. What is the average starting salary of graduates who become employed full time in field since inception or the last program review? Compare regional and national trends.

In Michigan hospitals, annual salaries (mid 2007) of Radiologic Technicians were: (Salary range from Michigan.gov)

AREA	MIDDLE RANGE	AVERAGE
State-wide	\$39,312 - \$48,547	\$43,950
Southeast Michigan	\$42,827 - \$50,398	\$46,467
South West Central	\$43,014 - \$51,667	\$47,154
East Central	\$36,338 - \$44,179	\$40,726
Upper Peninsula	\$38,584 - \$46,883	\$42,453

According to the 2008 Graduate survey, 42% of students graduating from the radiography program reported making a salary of \$35,000 or more. 36% of students graduating from the radiography program reported making a salary of \$30,000 or more.

According to the U.S. Bureau of Labor and Statistics the median annual earnings of radiologic technologists were \$48,170 in May 2006. The middle 50 percent earned between \$39,840 and \$57,940. The lowest 10 percent earned less than \$32,750, and the highest 10 percent earned more than \$68,920. Students graduating from our program are making less than the national average.

b. How many graduates have become employed as part-time or temporary workers in the field within one year of receiving their degree?

20% of students graduating from the radiography program are working part time. 50% of the those graduates have chosen to work part-time.

c. Describe the career assistance available to the students. What is student perception of career assistance?

Career assistance is provided by the radiography program. Faculty members have a solid career with many community ties that keep them apprised of job openings. Many of the graduates are hired at their clinical affiliates before their internship ends. Ferris Radiography graduates are currently working throughout the state and across the nation. Ferris students attend university sponsored career fairs and use the employment office for resources as well as interviewing and resume writing training. Only 1% of students used career services on campus. 63% of students indicated they were hired by their internship sites. 30% of the respondents were able to find jobs through friends, family and instructors.

e. How many graduates continue to be employed in the field?

1% of the respondents from the 2008 graduate survey stated they are no longer working in the field of radiography. 99% of graduates continue to be employed in the field of radiography.

f. Describe and comment on geographic distribution of employed graduates

Ferris Students are employed throughout the State of Michigan and the nation. Many students have relocated to states that are experiencing large growth such as Texas, Arizona, Connecticut, Florida, North Carolina, Minnesota and Virginia.

g. How many students and/or graduates go on for additional educational training?

1% of the respondents from the graduate survey indicated they were continuing their educational training. However, many students are dual enrolled in Health Care Systems Administration, Applied Biology Pre-Med track or Computer Information systems while in the radiography program. These students graduate at the same time with both the Radiography Associates Degree and the Bachelors Degree. On average 80% of students complete these degrees while in the program.

h. Where do most students and/or graduates obtain their additional educational training?

Most students receive additional training on-the job (at the hospital) in areas of CT, MRI, Mammography, Quality Management and cardiovascular. Students also continue their education by receiving a Bachelors of Science degree in Health Care Systems Administration, Applied Biology- Pre Med Track, or Computer Information Systems.

B. Enrollment:

1. What is the anticipated fall enrollment for the program?

The anticipated enrollment for the Fall 2009 semester will be 50 students.

Student Enrollment for Fall 2004-2008 based on 2008 Fact Book:

			2006	2007	2008
DENTAL HYGIENE & MEDICAL IMAGING					
Dental Hygiene AAS	0	0	101	104	101
Diagnostic Medical Sonography AAS	0	0	26	26	19
Radiography AAS	0	0	70	79	68
Pre-Dental Hygiene AAS	0	0	95	131	127
Pre-Diagnostic Medical Sonography AAS	0	0	36	66	70
Pre-Radiography AAS	0	0	111	113	147
On-Campus Total	0	0	439	519	532

**ENROLLMENT BY PROGRAM
FALL SEMESTER**

COLLEGE	2004/05	2005/06	2006/07	2007/08	2008/09
ALLIED HEALTH SCIENCES					
PRE-ALLIED HEALTH*					
Pre-Dental Hygiene	112	128	0	0	0
Pre-Diagnostic Medical Sonography	25	35	0	0	0
Pre-Health Care Systems Administration	8	9	0	0	0
Pre-Medical Laboratory Technology	2	9	0	0	0
Pre-Medical Record Technology	6	11	0	0	0
Pre-Medical Record Administration	1	4	0	0	0
Pre-Medical Technology	3	10	0	0	0
Pre-Nuclear Medicine 2-Yr	51	67	0	0	0
Pre-Nuclear Medicine 4-Yr	2	0	0	0	0
Pre-Nursing	179	218	0	0	0
Pre-Radiography	114	114	0	0	0
Pre-Respiratory Care	12	21	0	0	0
<i>DEPARTMENT TOTAL</i>	515	626	0	0	0

DENTAL HYGIENE & MEDICAL IMAGING

Dental Hygiene AAS	0	0	101	104	101
Diagnostic Medical Sonography AAS	0	0	26	26	19
Radiography AAS	0	0	70	79	68
Pre-Dental Hygiene AAS	0	0	95	131	127
Pre-Diagnostic Medical Sonography AAS	0	0	36	66	70
Pre-Radiography AAS	0	0	111	113	147
On-Campus Total	0	0	439	519	532

Response: Pre-Radiography students are at an all time high with 147 students. Also, students that are dual enrolled in any BS degree are not counted in these numbers. Therefore this is not an accurate reflection of the program enrollment. The program has always been at quota for enrollment.

2. Have enrollment and student credit hour production (SCH) increased or decreased?

Enrollment in the program has been very strong since the program began over 40 years ago. The program capacity was reduced from 60 students to 50 students for the 2009 academic year due to limited clinical internship sites. Another factor that has affected our decision to decrease enrollment is the increase in the number of programs and students graduating in the field of radiography nationwide. Large numbers of graduates in the field are flooding the market causing a decrease in overall jobs.

Overall SCH/FTEF has increased from \$759.38 five years ago to \$907.11 in 2008. This shows an increase of 17% or \$147.73.

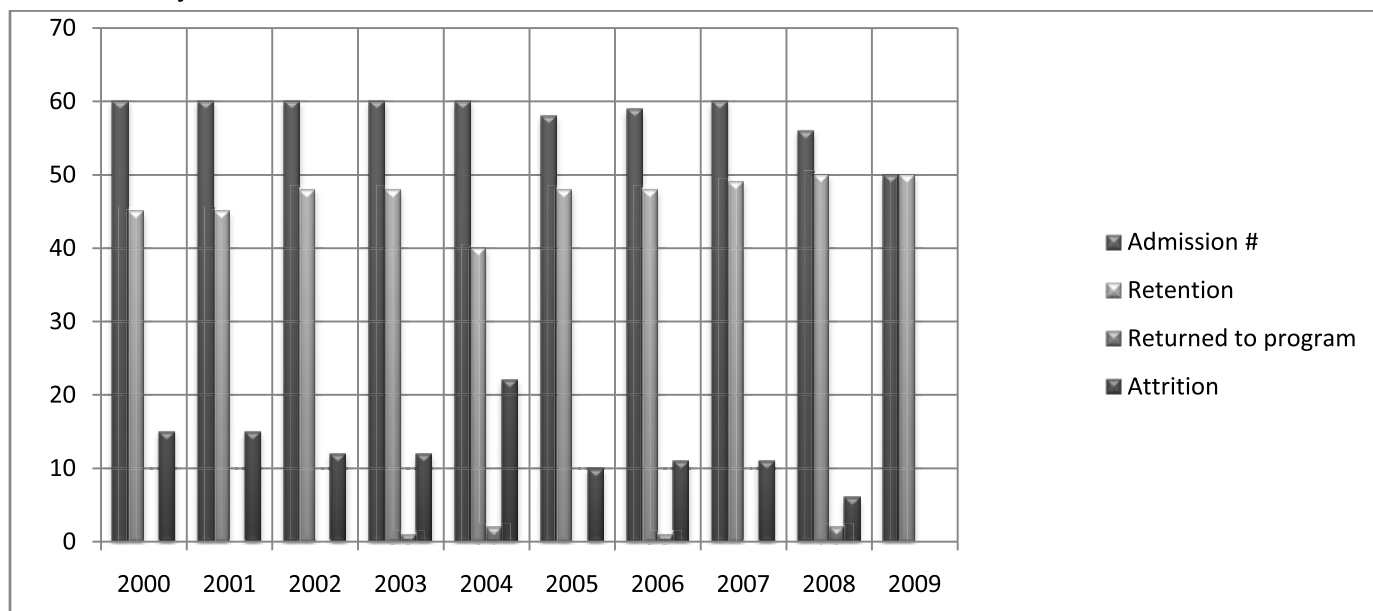
The graph shown below demonstrates that the enrollment numbers in the program have been consistent the last ten years. Graduates rates from the program have also been consistent.

Break down of Attrition/ Retention Rates: 2000 to present

class starting year	*2000	*2001	*2002	*2003	*2004	2005	2006	2007	2008	**2009
Admission #	60	60	60	60	62	58	59	60	56	50
Retention	45	45	48	48	40	48	48	49	49	50
Returned to program	0	0	0	1	2	0	1	0	2	
Attrition	15	15	12	12	22	10	11	11	7	

*prior to new faculty

**Projected number



3. Since the last program review how many students apply to the program annually?

The program had maintained a large list of students waiting to get into the program for the last ten years. The College of Allied Health Sciences switched to an application process and eliminated the wait list for the program in 2008. Last year 189 applications were collected for the program for 50 seats. 56 of these students were allowed into the program with the anticipation that the number to be admitted into the program would be dropped to 50 for the 2009 school year. Over 100 applicants have applied for the Fall 2009 school year for 50 seats.

4. Of those who apply, how many and what percentage are admitted?

Year	Students Applying to Program	Number Accepted	% accepted
2008	189	56	30%
2009	129	50	39%

*Wait list kept prior to Fall of 2008

5. Of those admitted how many and what percentage enroll?

During the admission process for the 2008 academic school year 100% of the students accepted into the program enrolled in the program. Two students dropped the program the first week of classes. 96% continued in the program after the first week.

6. What are the program's current enrollment goals, strategy, and efforts to maintain/increase/decrease the number of students in the program? Please explain.

The program has reduced the number of students accepted in the professional sequence to 50 students to meet market demands and ensure that the radiography graduates have an opportunity for employment upon completion of the program. In addition, the admission requirements were strengthened. Students must complete BIOL 109, MATH 115 or have a MATH ACT score of 24 or higher, ENGL 150 and

Medical Terminology before they can apply to the program. The GPA was increased from a 2.5 to a 2.75 college GPA . Prior to this change, students were required to have Math 110 or a MATH ACT score of 19 or higher and a 2.5 GPA. The rationale for raising admission requirements was to ensure incoming students have the necessary foundation skills to succeed in the program. The Fall 2010 radiography students will be the first class admitted under the new standards. The intention is that all 50 students will be retained and complete the program in August of 2012. Fifty students are comparable to the number of students that have been graduating from the program under the old requirements.

C. PROGRAM CAPACITY

1. What is the appropriate program enrollment capacity, given the available faculty, physical resources, funding, accreditation requirements, state and federal regulations and other factors? Which of these items limits program enrollment capacity? Please explain any difference between capacity and current enrollment.

Program enrollment capacity should remain at 50 students with lab sizes being capped at 10 per lab. Due to limited amount of clinical sites in the nation and state, it would be very difficult to increase the program capacity. The program maintains enough clinical sites to meet the accrediting agency standards for student to technologist ratio during internship. Competition for clinical sites across the nation is another problem. Hospitals are at full capacity for the number of students they are allowed to take each year. The Ferris program is not able to expand its numbers due to the limited clinical sites.

The program has enough instructors to cover the current work load. However, if the program were to expand program offerings in CT, MRI, mammography or a Bachelor of Science degree in Radiography another faculty member would be needed to cover the additional workload. Additional program offerings would increase enrollment capacity for the program but would not affect current enrollment in the associate program.

D. RETENTION and GRADUATION:

class starting year	*2000	*2001	*2002	*2003	*2004	2005	2006	2007	2008	**2009
Admission #	60	60	60	60	62	58	59	60	56	55
Retention	45	45	48	48	40	48	48	49	50	55
% of students graduating from program:	75%	75%	80%	80%	65%	83%	81%	82%	89%	100%
Attrition	15	15	12	12	22	10	11	11	6	
% of Attrition	25%	25%	20%	20%	35%	27%	19%	18%	11%	

*Prior to new faculty

**Projected number for 2009

1. Give the annual attrition rate (number and % of students) in the program.

The graph shows that 81% of the students graduated from the Radiography Program over the last ten years. The attrition rate for the program for the last ten years is 19%. Over the past five years with the attrition rate for the program dropped to 15%. Graduation rate for the past five years is 85%. This is an increase of 4% over the ten year rate.

2. What are the program's current goals, strategy and efforts to retain students in the program?

The program has increased admission requirements for students applying to the Radiography Program. Students must complete BIOL 109, Math 115 or an ACT score of 24 or higher, ENGL 150, Medical Terminology and have a 2.75 college GPA. The intent is to have a better prepared student coming into the program thus making it more likely we will retain them.

The program has also undergone a curriculum change. Classes were restructured and labs were separated from lecture. The intent of the curriculum change was to add classes in digital radiography and cross sectional anatomy and to reformat current classes to best meet the needs of the student. The emphasis is on giving the student stronger skills prior to internship.

Students in the program are also required to meet the skills based curriculum and pass basic mastery level competencies before leaving a lab or clinical for the internship course. These skills must also be achieved in the internship portion of the program. The competency list is established by the American Society of Radiologic Technologists and is a requirement for graduation and for sitting for the registry exam.

Faculty continue to improve their teaching and assessment skills to better prepare the students for both clinical and didactic testing. The following are examples of how faculty will improve retention rates:

Improve Faculty skills

- Earning Master of Science degrees in Education.
- Attending faculty transition and continuing education seminars on teaching techniques.
- Responding to course assessment surveys, SAI's, and student surveys pertaining to teaching techniques.
- Implementing innovative teaching techniques.
- Yearly surveys are reviewed and new ideas implemented.

Respond to student and graduate assessment of teaching

- Change teaching approaches based on course assessments, SAI's, student surveys, and testing scores.
- Continue to meet the employer needs in industry.

2. Describe and assess trends in number of degrees awarded in the program.

Currently, the program graduates students with an Associate of Applied Science Degree in Radiography. The program could be proactive by adding a Bachelor of Science degree with a 2 + 2 concentration in Mammography, CT, MRI, Management and Education. Nationally there are very few programs that graduate students with a Bachelor of Science degree without first complete an associate degree in radiography. The only competitor in the State of Michigan that has a Bachelor of Science degree is Henry Ford Community College. Henry Ford Community College has partnered with Wayne State University and eliminated their associate degree. An up and coming program offered at Grand Valley State University will be a Bachelor of Science degree in a 2 + 2 degree format.

**4. How many students who enroll in the program graduate from it within the prescribed time?
Comment on trends.**

Students must stay on track with their courses in order to graduate within the two year time frame. 100% of students accepted in the radiography program graduate from the professional sequence within two years if they successfully pass all of their courses on the first attempt. A student that does not pass a course

may not progress in the radiography professional sequence until the next semester the course is offered. If a student cannot progress for a semester, they may continue to make progress toward a Bachelor of Science degree. This non-progression period does not count as time in the professional sequence therefore students do complete the professional sequence with the two year time frame. This policy is typical of all radiography programs throughout the nation.

5. On average, how long does it take a student to graduate from the program? Please comment.

Once accepted in the professional sequence, students take two years to graduate from the Radiography program. However, it is not uncommon due to the demand for the program and the limited clinical sites for students to wait up to two years to start the radiography professional sequence courses.

D. ACCESS

1. Describe and assess the program's actions to make itself accessible to students. Use examples such as off-campus courses, accelerated courses or other types of flexible learning, use of summer courses, multiple program entry points, e-learning, mixed delivery courses, scheduling.

The program is structured that students must complete lab and classes on the Big Rapids campus during the first year of the program. Students practice skills in an ionized lab on phantoms prior to their internship. A few courses during the first year are offered as mix-delivery (RADI 122, RADI 170 and RADI 172) to allow the student some flexibility with their schedule and decrease drive time to Big Rapids. During the second year of the program students relocate throughout the State of Michigan to complete their internship. Second year courses are offered on-line to accommodate this relocation. Courses such as RADI 204 are completed during the internship so students can use technology in the field and practice scans on actual patients. This would not be possible to do on campus in the lab. Other courses during the second year are also set up in this format to allow the students to apply the theory in every day practice as an intern.

2. Discuss what effects the actions described in (1) have had on the program. Use examples such as program visibility, market share, enrollment, and faculty load, computer and other resources.

Since the program offers on-line courses during this second year and maintains relationships with numerous clinical affiliates and partners located throughout Michigan, we are able to recruit students from all over the state including the Upper Peninsula, Northern Michigan, Detroit and Grand Rapids. Students relocate to Big Rapids to complete the first year of the program and return to another location sometimes even their home town for the second year of the program and completion of their internship. The uniqueness of this curriculum model actually increases the program's visibility thus gaining market share from our competitors.

Administration has been very supportive of the need to train students in PACS and CR. A separate PACS room was created which allows faculty to scan and receive images and reports from actual cases. This enhances student learning and exposure with digital radiography.

The following summarizes the programs accessibility to students:

Program visibility: On campus labs set the program apart from other programs in the state. The ability to relocate for clinical is also appealing to students.

Enrollment, market share: Students choose Ferris because of the unique lab learning design. Students also choose the program based on the second year internship and reputation of the clinical sites and program.

Faculty load : No impact on teaching load of faculty.

Computer resource: On campus students have access to the library, computer labs, and imaging equipment on campus. Off-campus students are able to use computers at the internship site.

3. How do the actions described in (1) advance or hinder the program goals and priorities.

The on-line resources and classes have enhanced the communication with the program, site and student. Newer technology has allowed us to be more available to our students and Adjunct Clinical Instructors (ACI's) to meet their needs in a more timely fashion. The technology today also allows the program to better prepare students for the national registry and improve the program pass rate. On-line technology has also allowed us to be more competitive with other programs. It allows us to have more sites throughout the State of Michigan and allows us to recruit students from all areas of state.

F. Curriculum

1. Program requirements. Describe and assess the program-related courses for graduation.

The program currently requires 81 credit hours for graduation. Fifty-six out of the 81 credits are directly related to radiography courses. The program has undergone a recent curriculum change to meet the demands of the ASRT (American Society of Radiologic Technologists) and the ARRT (American Registry of Radiologic Technologists). New curriculum requirements were established for the 2008 academic school year. In order to meet these curriculum requirements established by the ASRT, the Radiography Program made extensive changes in their courses offered. All courses are now designed to meet the requirements established by the ASRT. Students must meet these requirements in order to graduate and be eligible to take the registry. **See Appendix C for a copy of Curriculum Sheet, Radiography Curriculum Analysis and Sample Syllabi.**

Courses in the RADI Program	Rationale for courses
English 150 *prerequisite to enter the RADI professional sequence	Communication competence * accreditation standard
English 250	Communication competence *accreditation standard
Comm. 105, 121, or 221	Communication competence *accreditation standard
Biol 109 *prerequisite to enter the RADI professional sequence	Scientific understanding Basic anatomy & physiology is essential to learning cross sectional anatomy and interpreting radiographic images.
PSYC 150 or SOC 121 Recommended * program does not prescribe which cultural enrichment class to be taken	Social awareness FSU associate degree standard
Humanities 220 or 320 Recommended * program does not prescribe which cultural enrichment class to be taken	Cultural enrichment Medical ethics is a vital part of the healthcare profession.
CCHS 101 Orientation to Healthcare	CAHS Core Requirement Students are introduced to the healthcare system.

CCHS 102 Safety Issues in Healthcare	CAHS Core Requirement Students are introduced and reflect upon issues affecting healthcare.
CCHS 103 Clinical skills	CAHS Core Requirement Students learn the basic skills they need as a clinical practitioner.
MRIS 102 Medical Terminology or MRIS 103 * students can take the course or demonstrate competency *prerequisite to enter the RADI professional sequence	*Requirement for accreditation
Math 115 Intermediate Algebra * students must take the course or have a MATH ACT score of 24	Math Competency *Requirement for accreditation Program revision of 2008 established Math 115 as a requirement to begin the program or student must have a Math ACT score of 24. This has limited matriculation into the professional sequence of the program to students that have a realistic chance of progression.

a. As part of the graduation requirements of the current program, list directed electives and directed general education courses. Provide rationale for these selections.

General Education courses required by the program are: Social awareness course, English 150 and 250, Core Curriculum courses (CCHS 101, 102 and 103), Communication course (COMM 105, 121 or 221), Cultural enrichment course (recommend PHIL 220 or 320) and Biology 109. All of these courses are required by the ASRT and ARRT curriculum guidelines.

b. Indicate any hidden prerequisites (instances where, in order to take a program-required course, the student has to take an additional course. Do not include extra courses taken for remedial purposes).

There are no hidden prerequisite courses in the program.

2. Has the program been significantly revised since the last review, and if so, how?

Yes. With the new curriculum standards released by the ASRT in 2008, the program was required to make curriculum changes to maintain accreditation and insure our students were eligible to take the registry exam through the ARRT. RADI 172 (Digital Imaging) and RADI 204(Principles of Computed Tomography) were added to the curriculum to meet these requirements. Other Radiography courses that were outdated were also deleted from the curriculum.

3. Are there any curricular or program changes currently in the review process? If so what are they?

No.

4. Are there plans to revise the current program within the next three to five years? If so, what plans are envisioned and why?

There are no plans to revise the current program at this time.

G. QUALITY OF INSTRUCTION

1. Discuss student and alumni perceptions of the quality of instruction.

86% of the alumni rated the quality of the Ferris Radiography Program as good and 100% rated the program fair or higher. 93% of the graduates would recommend a friend or family member to the Radiography program.

90% of students graduating the program felt that the program adequately met their needs. 90% of students rated the program adequate or higher for overall program effectiveness. 96% of the students rated instructor availability as adequate or higher.

Overall students were pleased with the education they received. Many felt the instructors were available to help them and answer their questions. Students felt the classes and instructors were tough but fair. Students reported that they were pleased with quality of instruction they received.

2. Discuss advisory committee and employer perceptions of the quality of instruction.

100% of the advisory committee felt the radiography curriculum met the needs of the graduating students. 100% of the advisory committee felt the program met the needs of students entering the job market. 100% of the advisory committee felt that faculty were meeting the needs of the student.

3. What departmental and individual efforts have been made to improve the learning environment, add and use appropriate technology, train and increase the number of undergraduate and graduate assistants, etc.

Faculty and staff have undergone the following training to ensure an increase in student learning:

- Learner Center Environment: Several training sessions on how to incorporate this practice into present curriculum.
- Training in PACS and Computed Radiography to ensure faculty skills are mastered when teaching the new technology to the students.
- Assessment training to meet requirements for JRCERT which include measuring student outcomes in the program and courses.
- Ferris Connect Training: All courses offered by the Radiography Program use Ferris Connect to transition student to the on-line learning environment.

4. Describe the types of professional development faculty have participated in, in efforts to enhance the learning environment (e.g. Writing across the curriculum; Center for teaching and learning, etc.).

- Faculty have participated in the following activities in order to enhance the learning environment:
 - *Rethinking Teaching in Higher Education*, Ferris State University, Jan. 3- 5, 2006
 - *Faculty Writing Institute*, Ferris State University, May 8-11, 2006
 - *Clinical Educators Workshop in Radiologic Sciences*, Midlands Technical College, SC, June 1-3, 2006
 - *Adult Learner and Effective Clinical Teaching*, Ferris State University, August 4, 2006
 - *Faculty Development Activities*, Ferris State University, August 23, 2006
 - *Lilly North Conference*, Traverse City, MI, Sept. 13-17, 2006
 - *RefWorks Training*, Ferris State University, October 6, 2006
 - *JRCERT Accreditation/Outcomes Assessment Workshop*, Chicago, IL, Nov. 15-17, 2006

- *Learner Centered Teaching*, Ferris State University, Jan. 3-5, 2007
- *Ferris Connect Pilot Program*, Ferris State University, Summer 2007
- *Book Discussion Group, "Art of Changing the Brain"*, Ferris State University, Jan. to April, 2007
- *Creating the Learning-Centered University*, Ferris State University, Jan. 26th, 2007
- *OSRT, Annual Conference*, Dublin, OH, April 19-21st, 2007
- *ACI Meeting, CE offerings*: Ferris State University, August 3rd, 2007
- *Organizing your Content*, Faculty Development Activity: Ferris State University, August 7th -9th, 2007
- *Lilly North Conference*, Traverse City, MI, Oct. 4-8th, 2007
- *Land's End Conference*: Lansing Community College/MSU Kellogg Conference Center, Poster Presentation and conference, Lansing, MI, Feb. 21-22, 2008
- *Faculty Developmental Activities, Spring Session*: Faculty Center for Learning, Ferris State University, March, 2008
- *Book Discussion Group, "Helping Students Learn in a Learner-Centered Environment: A Guide to Teaching in Higher Education."*, Ferris State University, Aug. to Dec., 2008
- *Lilly North Conference*, Traverse City, MI, Sept. 18-21st, 2008
- *AC CR Operator Training*, Big Rapids, MI, Dec. 16th, 2008, CE offering
- *PEP, Ferris State University, Jan. to present 2009*

5. What efforts have been made to increase the interaction of students with faculty and peers? Include such items as developmental activities, seminars, workshops, guest lectures, special events, and student participation in the Honors Program Symposium.

The program is very dedicated to increasing the interaction of students with faculty and peers. Several activities have been added to the program in order to establish this:

- Student Radiography Organization, Student elected officials from class
 - Duties include: Organizes t-shirts and photos for class along with any activities for class, President attends advisory committee meeting first and second year. Students and Faculty also participate in Relay for Life, donating items or adopting a family for the holidays. Faculty oversee all activities.
- Radiography Poster competition, Fall Semester, First Year Radiography Students, with Chili Cook-off competition/Potluck
 - Students present posters on magnetism
 - Faculty and students participate in chili-cook-off
- Radiography Poster/Debate Competition, Spring Semester with potluck
 - Students debate pro or against topics in front of faculty and staff
 - Potluck follows
- Tour Groups to local daycare providers and other educational groups: Students and faculty offer sessions with local daycare providers, ISD, etc. that would like to see what is involved in the Radiography Dept. Participants are paired with a first year student and provided a tour of the lab and walked through how an x-ray is taken reviewed. This provides more one on one time with potential students and helps ease fears with young children that may need x-rays in the future.
- Summer Final Exam-QA project presented in front of faculty and staff, BBQ at park before students leave for clinical

- Guest Speakers for Digital Radiography: Randy Robinson, Ferris Alumni, owns Radiology Imaging Solutions and Lindsey Ketner, Ferris Alumni, PACS Administrator Mercy General in Muskegon
- MSRT Conference: Michigan Conference for Radiographers, students encouraged to attend conference to interact with other programs, attend review and network. Students are given release time for clinical to attend.
- Radiography Review Sessions: Dr. Bill Mulkey presents to students to give them a review prior to registry, second year students released from clinical to attend.
- Radiography Day: Second year students return to campus to evaluate first year students

7. Discuss the extent to which current research and practice regarding inclusive pedagogy and curriculum infuse teaching and learning in this program.

The program has moved toward a learner centered environment. The classes have been restructured to include activities that will reach all learning styles. Lecture is still used but more activities have been added to the lecture periods that have helped students to identify with the material presented. Faculty are requiring more writing in the courses and have seen an improvement with the registry test scores.

7. What effects have actions described in (5) and (6) had on the quality of the teaching and learning in the program?

The program has a more dedicated group of students and faculty. Students volunteer to help in activities with the program and community. Communication is stronger between the faculty and students do to the increased activities. Students have exceeded expectations during the first and second year of the program. The program has improved the student’s ability to learn, pass the registry and perform in clinical in a matter of a few years.

H. Composition and Quality of Faculty.

1. List the names of all tenured and tenure-track faculty by rank.

Lisa L. Wall, MEd, RT (R)	Assistant Professor Program Coordinator	Tenure Track
Daniel Sleeper, B.S., RT (R)	Instructor Clinical Coordinator	Tenure Track
Gary Moore, B.S., RT (R)	Instructor	Tenure Track

a. Identify their rank and qualifications.

Lisa L. Wall, MEd, RT (R) Assistant Professor, Program Coordinator

- 12 years experience as a Radiographer
- Registered through the ARRT
- 5 years teaching experience
- 3 years lab coordinator Radiography
- 2 years Education coordinator

Daniel Sleeper, B.S., RT (R) Instructor, Clinical Coordinator

- 12 years experience as a Radiographer
- Registered through the ARRT
- 5 years teaching experience

- 3 years management experience

Gary Moore, B.S., RT (R) Instructor

- 13 years experience as a Radiographer
- Registered through the ARRT
- 2 years teaching experience at the University
- 1 year teaching experience k-12

b. Indicate the number of promotions or merit awards received by program faculty since the last program review.

All program faculty have been hired within the last four years and have not been eligible for promotion or merit awards.

c. Summarize the professional activities of program faculty since inception or the last program review (attendance of professional meetings, poster or platform presentations, responsibilities in professional organizations, etc.).

Lisa Wall:

Professional Development Activities 2006

- *Rethinking Teaching in Higher Education*, Ferris State University, Jan. 3- 5, 2006
- *Grant Writing Workshop*, Ferris State University, February, 2006
- *Faculty Writing Institute*, Ferris State University, May 8-11, 2006
- *Clinical Educators Workshop in Radiologic Sciences*, Midlands Technical College, SC, June 1-3, 2006
- *Adult Learner and Effective Clinical Teaching*, Ferris State University, August 4, 2006
- *Faculty Development Activities*, Ferris State University, August 23, 2006
 - **Presented for “*Faculty Writing Institute*”**
- *Lilly North Conference*, Traverse City, MI, Sept. 13-17, 2006
- *Refworks Training*, Ferris State University, October 6, 2006
- *JRCERT Accreditation/Outcomes Assessment Workshop*, Chicago, IL, Nov. 15-17, 2006

Professional Development Activities 2007

- *Learner Centered Teaching*, Ferris State University, Jan. 3-5, 2007
- *Ferris Connect Pilot Program*, Ferris State University, Summer 2007
- *Book Discussion Group, “Art of Changing the Brain”*, Ferris State University, Jan. to April, 2007
- **Reviewed ARRT “*Content Specifications for Examination in Radiography*”, Jan. 2007**
- *Creating the Learning-Centered University*, Ferris State University, Jan. 26th, 2007
- *OSRT, Annual Conference*, Dublin, OH, April 19-21st, 2007
- *ACI Meeting, CE offerings*: Ferris State University, August 3rd, 2007
- *Organizing your Content*, Faculty Development Activity: Ferris State University, August 7th -9th, 2007
- *Lilly North Conference*, Traverse City, MI, Oct. 4-8th, 2007
 - **Presented “*Putting Creativity into Your Curriculum*”**

Professional Development Activities 2008

- *Land's End Conference*: Lansing Community College/MSU Kellogg Conference Center, Poster Presentation and conference, Lansing, MI, Feb. 21-22, 2008
 - **Poster Presentation: “The Student Portfolio.”**
- *Faculty Developmental Activities, Spring Session*: Faculty Center for Learning, Ferris State University, March, 2008
- *ACI Meeting*: Ferris State University, August 1st, 2008
 - **Conducted Computer Training for ACI's: “Ferris Connect Training for the ACI.”**
- *Assessment Conference*: Oct. 2008, Indianapolis, IN
- Book Discussion Group, “*Helping Students Learn in a Learner-Centered Environment: A Guide to Teaching in Higher Education.*”, Ferris State University, Aug. to Dec., 2008
- *Lilly North Conference*, Traverse City, MI, Sept. 18-21st, 2008
 - **Poster Presentation “Student Portfolio's as an Assessment Tool”**
- *AC CR Operator Training*, Big Rapids, MI, Dec. 16th, 2008, CE offering

Professional Development Activities 2009

- *PACS Training*, Ferris State University, Jan. 19th, 2008
- *PEP training*, Ferris State University, Jan. 2009 to Present

Dan Sleeper:

Professional Development Activities 2007

- Enrolled in Master of Science in Career and Technical Education Program at FSU.
- Attended Lilly North conference in Oct 2007
- Faculty Development training
- Ferris Connect training
- Radiography Advisory Meetings

Professional Development Activities 2008

- Enrolled in the Master of Science in Education in Career and Technical Program at FSU.
- Attended Lilly North conference in Sept 2008
- Presented a poster at the Lilly North conference in Sept 2008 on Portfolios as an Assessment Tool
- Faculty Development training
- Ferris Connect training
- Radiography Advisory Meetings
- Group book discussion on learner centered teaching
- *AC CR Operator Training*, Big Rapids, MI, Dec. 16th, 2008, CE offering

Professional Development Activities 2009

- Enrolled in the Master of Science in Education in Career and Technical Program at FSU. (currently at 18 credit hours)
- *PACS Training*, Ferris State University, Jan. 19th, 2008

Gary Moore:

Professional Development Activities 2008

- Enrolled in the Master of Science in Education in Career and Technical Program at FSU.

- Ferris Connect Training Block for Faculty
- New Faculty Transition Program
- *AC CR Operator Training*, Big Rapids, MI, Dec. 16th, 2008, CE offering
- Volunteer Mace Bearer (December Commencements)

Professional Development Activities 2009

- Enrolled in the Master of Science in Education in Career and Technical Program at FSU.
- *PACS Training*, Ferris State University, Jan. 19th, 2008
- Online Digital Imaging Academy, Jan.20th, 2009
- HOSA Judge(Medical Photography), Feb. 5th, 2009
- Volunteer Mace Bearer (May Commencements)

See Appendix D for copies of Faculty and Staff Vitae

2. Workload

a. What is the normal, annualized teaching load in the program or department? Indicate the basis of what determines a “normal load”. On a semester-by-semester basis, how many faculty have accepted an overload assignment?

Faculty has 18 contact hours for a normal teaching load. Gary Moore, a new faculty member, is at load for his first year.

The following shows the workload over the past 5 years:

Year	Faculty Position	Load	Reason
2004-2005	Tenure Track Program Coordinator TT Clinical Coordinator	Overload	By Choice
2005-2006	TT Program Coordinator TT Clinical Coordinator	Overload	By Choice
2006-2007	TT Program Coordinator TT Clinical Coordinator	Overload	By Choice
2007-2008	TT Program Coordinator TT Clinical Coordinator	Overload	Only program faculty
2008-2009	TT Program Coordinator TT Clinical Coordinator	Overload	By Choice

b. List the activities for which faculty receive release time.

Program faculty receive release time each semester for the following activities:

Program Coordination: .25 release time
Clinical Coordination: .19 release time

Other projects are evaluated by the dean and release time is given when appropriate. For example, coordinators will receive an additional .12 release time for the two semesters of APR document preparation.

3. Recruitment

a. What is a normal recruiting process for new faculty?

Advertisements are placed in the “*Advance Imaging for Medical Imaging*” and “Grand Rapids Press”. Letters are sent out nationally to all Radiography Programs encouraging anyone to apply.

b. What qualifications (academic and experiential) are typically required for a new faculty?

New faculty requirements include:

- 3 years of Radiography experience
- Appropriate ARRT credentials
- Prior Teaching Experience
- A minimum of a Bachelors Degree (Program Coordinator must hold Masters Degree)
 - Must obtain Masters Degree to be eligible for tenure

c. What are the program’s diversity goals for both gender and race/ethnicity in the faculty?

The program does not have a goal for gender or mix of ethnic backgrounds. The best qualified applicant who meets the hiring standard will be employed.

d. Describe and assess the efforts being made to attain goals in (c).

The Radiography program is currently fully staffed and not seeking a faculty member at this time. The best qualified applicants will be sought out regardless of gender or ethnic background

4. Orientation

New faculty attend the faculty transition program through the university and are also oriented within the CAHS. New faculty select a tenure committee chair who act as a mentor to the employee for the first 4 years at the university. Additional CAHS orientation sessions and “best practices seminars” have been incorporated for the 2008-2009 school year. Faculty from the Radiography Program are always willing to assist new faculty members.

5. Reward Structure

a. Describe the reward structure in place in the program/department/college as it relates the program faculty. Indicate the type of reward and eligibility criteria.

In addition to salary, the faculty are rewarded with departmental and college funds to offset travel to professional meetings. Faculty are encouraged to apply through the Faculty Affairs Committee for CAHS funding. The reward is limited to \$500 for faculty member per year. Faculty members are also encouraged to apply for Timme funding. Departmental incentive funds have been available on a limited basis to offset the cost of travel for professional development.

b. Does the existing salary structure have an impact on the programs ability to recruit and retain quality faculty?

Yes. According to the 2007 survey from the ASRT, the mean salary for a program director is \$74,013 and the median salary is \$68,215. Salaries for program directors in radiography are an average of \$20,000 higher than salaries of radiography instructors employed at FSU. The report also showed that in the State of Michigan, radiographers with less experience than a faculty member and with an associate degree are making a higher salary than faculty.

All Full-Time Respondents (32 hours or more per week)

	N	Mean	Median	5th Percentile	95th Percentile
TOTAL	7974	\$58,673	\$56,158	\$35,988	\$89,984

POSITION	N	Mean	Median	5th Percentile	95th Percentile
Staff technologist/therapist	4576	\$52,812	\$51,500	\$35,320	\$76,819
Senior/lead technologist/therapist	1308	\$61,082	\$59,818	\$40,629	\$86,213
Assistant chief technologist/therapist	48	\$58,862	\$57,056	\$35,293	\$81,019
Chief technologist/therapist	353	\$65,202	\$63,003	\$37,522	\$99,911
Supervisor/manager	751	\$69,824	\$66,771	\$45,352	\$102,655
Administrator	194	\$88,600	\$85,114	\$56,005	\$124,919
Instructor/faculty	103	\$55,315	\$55,034	\$34,890	\$79,180
Program director	97	\$74,013	\$68,215	\$45,670	\$102,745
Corporate representative	66	\$83,506	\$78,622	\$56,183	\$131,210
Other position	369	\$70,985	\$66,738	\$35,953	\$109,123
Multiple titles specified	12	\$64,816	\$61,800	\$57,233	\$83,612
No title specified	97	\$58,924	\$55,384	\$36,089	\$93,777

EDUCATION	N	Mean	Median	5th Percentile	95th Percentile
High school + certificate(s)	2078	\$57,703	\$55,862	\$37,158	\$84,106
Associate degree	3530	\$55,684	\$53,106	\$35,268	\$83,723
Bachelor's degree	1910	\$62,457	\$60,187	\$37,454	\$95,303
Master's degree	293	\$74,523	\$69,675	\$43,135	\$116,355
Doctoral degree	16	\$96,580 ^a	\$77,308	\$53,822	\$293,060
Other highest level of education	96	\$58,909	\$56,909	\$37,928	\$91,302
Education not specified	51	\$55,462	\$54,461	\$35,568	\$82,395

Michigan					
SPECIALTY	N	Mean	Median	5th Percentile	95th Percentile
Radiography	85	\$53,508 ^b	\$44,450	\$34,778	\$79,040
Radiation Therapy	17	\$63,412	\$65,520	\$49,748	\$73,949
Nuclear Medicine	18	\$61,744	\$60,632	\$44,862	\$87,600
Mammography	19	\$52,341	\$51,709	.	\$67,294
Cardiovascular/Interventional Technology	18	\$60,749	\$59,062	\$49,263	\$88,200
Computed Tomography	25	\$51,898	\$52,000	\$36,733	\$63,956
Magnetic Resonance Imaging	18	\$55,885	\$57,179	\$42,783	\$67,974
Quality Management	1	\$40,000	\$40,000	.	.
Sonography	11	\$62,722	\$59,523	\$53,133	\$82,990
Medical Dosimetry	4	\$73,252	\$76,544	.	.
Other	6	\$67,384	\$55,750	.	.
TOTAL	202	\$55,526	\$51,383	\$37,036	\$79,490

c. Is the reward structure currently in place adequate to support faculty productivity in teaching research, and service?

The reward structure to support faculty productivity in teaching, service, and research is in place. Promotion and Merit is based on these items.

d. Is enhancing diversity and inclusion part of the reward structure?

No

6. Graduate Instruction

Not applicable, there are no graduate students in the Radiography Program.

7. Non-Tenure Track and Adjunct Faculty

a. Please provide a list for the last academic year of full-time non-tenure track and adjunct faculty who taught in the program.

Donna David, part-time adjunct faculty

b. What % of program courses is taught by the faculty in (a)? What courses are they teaching?

Donna David taught two sections of RADI 142 (Principles of Radiographic Imaging I Lab) for a total of 4 contact hours. Four out of 61 contact hours are taught by Donna David or 1% of the program courses. The remaining 99% of courses are taught by full-time faculty in the Radiography Program.

c. Describe the required qualifications (academic and experiential) for faculty listed in (a). Indicate if all faculty have met the criteria, and if not, what is being done to resolve the situation?

Since RADI 142 is a lab course, the qualifications for teaching this section is an associate degree and ARRT(R) registration. Donna David is currently teaching these lab sections and has almost completed her B.S. degree.

d. Does the program consider the current use of non-tenure track faculty to be appropriate?

Yes. Donna David does an exceptional job in the lab and has been an asset to the program. Hiring Donna David teach a course cuts down on overload for the full time faculty.

e. If the program is accredited, what position if any does the accrediting body have regarding the use of non-tenured and adjunct faculty?

The use of non-tenured track and adjunct faculty is only appropriate to fill part-time positions when needed. However the coordination roles must be held by full-time employees.

I. Service to Non-Majors.

a. Identify and describe the General Education service courses provided by the program faculty for other departments at FSU.

The RADI program does not provide service courses to other majors other than teaching FSUS 100.

b. Identify and describe any non-General Education service courses or courses required for other programs. Comment on your interaction with the departments or programs for which the courses are provided.

The RADI program does not provide service courses to other majors.

c. Discuss the impact of the provision of General Education and non-General Education courses has on the program.

The RADI program does not provide service courses to other majors.

d. Does the program plan to increase, decrease, or keep constant the level of service courses?

The RADI program does not provide service courses to other majors.

J. DEGREE PROGRAM COST AND PRODUCTIVITY DATA.

Radiography Student Tuition Cost based on 2008-2009 Tuition Cost:

Semester	Credits	Cost per Credit	Cost for Semester	Total Cost for year:
Fall-1 st year	15	\$300	\$4,500	
Spring-1 st year	16	\$300	\$4,800	
Summer -1 st year	10	\$300	\$3,000	\$12,300
Fall-2 nd year	12	\$300	\$3,600	
Spring- 2 nd year	12	\$300	\$3,600	
Summer-2 nd year	9	\$300	\$2,700	\$9,900
Total Tuition Cost for 2 years:				\$22,200

Fact Book 2008:

GENERAL INFORMATION

STUDENT COSTS

The average annual cost for a Michigan resident to attend Ferris (based upon 2008-09 rates) including tuition, room and board, fees, estimated academic and personal expenses, is \$20,208.

2008-09 Costs	Semester	Year
Undergraduate (Michigan resident)		
Tuition (15 credit hours)	\$4,500	\$9,000
Room and Board (19 meal plan)	\$3,972	\$7,944
Sub Total	\$8,472	\$16,944
Books and Supplies (estimate)	\$550	\$1,100
Personal Expenses (estimate)	\$1,001	\$2,002
Refundable Fees*	\$81	\$162
Total Expenses (estimated)	\$10,104	\$20,208

*If requested, the Racquet Facility fee, Student Activity fee and Health Center fee will be deleted from the student's account. Cash refunds will only be granted for the Racquet Facility fee and the Student Activity fee if the student's account is paid in full.

Undergraduate (non-resident)		
Tuition	\$7,950	\$15,900
Undergraduate (non-resident MSEP)*		
Tuition	\$6,750	\$13,500

Part-time Student	
Michigan Resident	\$300 per credit hour
Non-Resident	\$530 per credit hour
Non-Resident MSEP*	\$450 per credit hour

Graduate Student	
Michigan Resident	\$403 per credit hour
Non-Resident	\$604 per credit hour
Non-Resident MSEP*	\$604 per credit hour

Professional Tuition	Resident	Non-Resident
Pharmacy Tuition	\$478 per credit hour	\$718 per credit hour
Optometry Tuition	\$488 per credit hour	\$732 per credit hour

Family Apartments	12 month contract
One Bedroom	\$8,254
Two Bedroom	\$9,202
Two Bedroom (townhouse)	\$10,050
Three Bedroom (townhouse)	\$10,972

Optional Meal Plan
 Room and Board (12-meal plan) \$7,570
 Other meal plans available for non-traditional and deluxe halls.

*Students are eligible for the MSEP (Midwest Student Exchange Program) rate if they live in one of the following states: Illinois, Indiana, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota & Wisconsin. This tuition-reduction program is not available for students enrolled in Doctor of Optometry, and Doctor of Pharmacy programs.

Response to Tuition Cost: The degree program costing is relative to the equipment intensive labs, required instructor to student ratio and required lab/class size.

Student Credit Hours (SCH), Full Time Equated Faculty, Productivity Report 2008:

Student Credit Hours:				
Year	Summer	Fall	Spring	F +W(a)
2007-08	682.00	1,129.00	1,039.00	2,168.00
2006-07	633.00	1,153.00	1,035.00	2,188.00
2005-06	607.00	1020.00	972.00	1,992.00
2004-05	No data	1,068	936.00	2,004.00

Full Time Equated Faculty:				
Year	Summer	Fall	Spring	Average F+W(b)
2007-08	1.83	2.00	2.78	2.39
2006-07	2.30	3.29	3.56	3.43
2005-06	.83	3.07		1.54
2004-05	No data	2.81	2.48	2.64

SCH/FTEF:				
Year	Summer	Fall	Spring	Average F+W(a/b)
2007-08	372.92	564.50	373.74	907.11
2006-07	275.22	350.01	290.73	638.44
2005-06	731.33	332.14	379.69	664.29
2004-05	No data	380.67	377.42	758.29

SCH/FTEF University wide top Five:	
Course Des.	SCH/FTEF
Social Sciences	1,047.00
Professional Golf Man.	990.91
Pharmaceutics	946.55
Radiography	907.11
Film	905.14

College of Allied Health	SCH/FTEF
Radiography	907.11
HCSA	616.43
Nuc. Med.	532.16
Dental Hyg.	531.37
Clinical Lab.	493.98
Nursing	482.24
Respiratory Care	368.25
Sonography	361.9

College	Amount SCH/FTEF	RADI minus College SCH/FTEF
College of Allied Health	512.68	394.43
College of Business:	591.07	316.04
College of Arts/science:	587.32	319.79
University College:	457.29	449.82
College of Pharmacy:	388.63	518.48
College of Ed.	359.47	547.64
College of Tech.	343.32	563.79
College of Prof-Tech.	325.66	581.45
Kendall College	270.57	636.54
Optometry	253.71	653.4
Average Cost. Diff.	408.97	498.14

Response: SCH/FTEF will not change significantly for the Radiography program due to the limited class size and number of internship sites. Radiography is one of the top 5 SCH/FTEF earnings University wide. It is also the top SCH/FTEF in the College of Allied Health Sciences. The data also indicates Radiography on average is 498.14 higher than any college average.

K. ASSESSMENT AND EVALUATION.

1. List and describe what variables are tracked and why when assessing the effectiveness of the program (e.g. mastery of essentials of subject area, graduation rates, employment rates, pass rates on professional exams).

See Appendix A for copy of Assessment Plan

The following is measured by the program following the guidelines established by JRCERT:

Did the program meet the following goals?

1. To prepare graduates to demonstrate competencies in the essential skills of medical imaging and treatment.
2. To prepare graduates to communicate effectively and professionally in the medical environment.
3. To prepare graduates to demonstrate critical thinking, problem solving skills and life-long learning.
4. To prepare graduates with the ability to demonstrate professional values and ethical behaviors in the workplace.
5. To graduate students that will function as a competent, entry-level professional that meets the healthcare needs of the community.

Did the program meet the following outcomes?

Outcome 1-1: Students should be able to demonstrate the importance of radiation protection.

Outcome 1-2: Students will be able to successfully perform radiographic procedures in any clinical setting.

Outcome 2-1: Students should be able to communicate using appropriate radiographic terminology when evaluating image quality.

Outcome 2-2: Students will develop an improvement plan for patient care in the Radiography Dept.

Outcome 3-1: Students should be able to develop a plan for professional development.

Outcome 3-2: Student will apply critical thinking skills in solving problems of non-routine, emergent, and trauma procedures.

Outcome 4-1: Students will be able to demonstrate positive ethical behaviors

Outcome 4-2: Students will demonstrate professional behavior in a diverse population.

Outcome 5-1: Graduates will pass the registry

Outcome 5-2: Student's will complete the radiography program in two years or less

Outcomes 5-3: Graduates will perform at entry level expectations

Outcomes 5-4: Graduates will become employed within 6 months

Outcome 5-5: Graduates will indicate they were adequately prepared to perform as entry level technologist

What is the ARRT PASS RATE for the PROGRAM?

Data reported on students completing the program and taking the national registry (ARRT) demonstrate a sharp increase in the passing rate. Registry scores are monitored every year from Jan. to Dec. for pass/fail rates.

Survey Cycle:

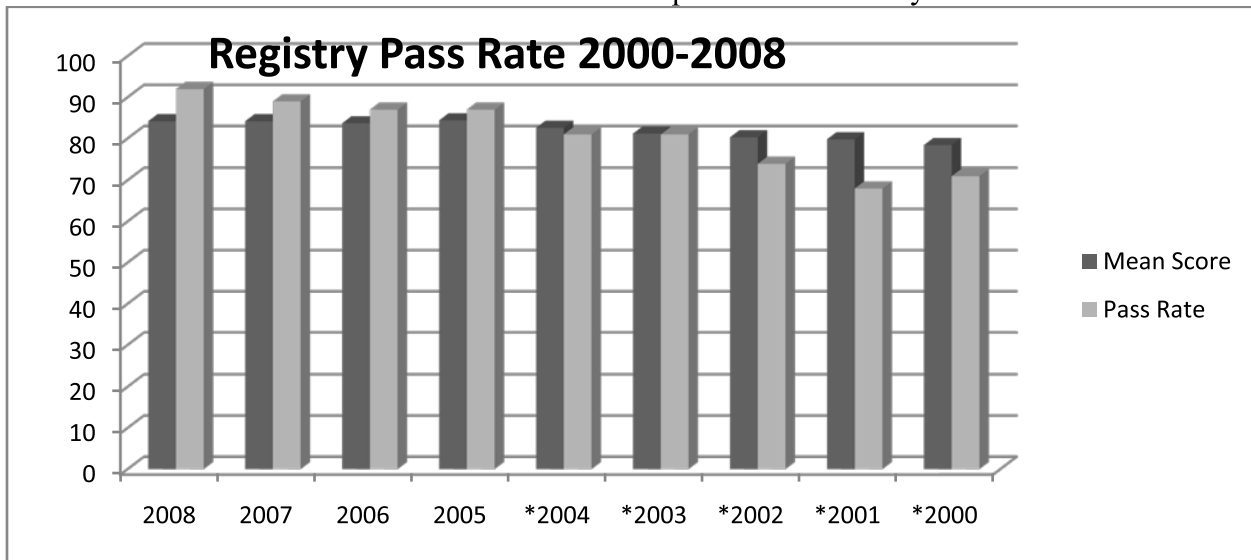
Tool	Date of Data Measurement
First Year Survey	Annually: Distribute on campus in August
Program Evaluation	Annually: End of Internship (August)
Clinical Instructors Survey	Annually: August
Clinical Staff Survey	Annually: August
Advisory Committee Survey	Annually: August
Faculty Program Evaluation	Annually: August
Retention/Attrition Rates	Annually: August
Program Completion Rates	Annually: August
Analysis of ARRT Scores	Annually: December
Graduate Survey	Annually: August
Employer Survey	Annually: August

2. Provide trend data for the variables listed in (1). Compare the data to accreditation benchmark standards if applicable, or provide some other type of assessment data.

Data demonstrates students have increased the mean score on the registry from a 78.4 in 2000 to an 84.2 in 2008. The number of students passing the registry has risen significantly from a 71% in 2000 to 92% in 2008.

Registry Pass Rate for Radiography Students 2000 to Present:		
Year	Mean Score	% passing
2008	84.2	92
2007	84.2	89
2006	83.7	87
2005	84.4	87
*2004	82.6	81
*2003	81.2	81
*2002	80.3	74
*2001	79.8	68
*2000	78.4	71
Average	81.8454545	80.45455

*indicates scores prior to new faculty



National Comparison of the FSU Radiography Program with all USA Radiography Programs:

Scaled Scores

Calendar Year	Group	Number Candidates	Section Means					Total Mean	Percentile Rank	% Pass
			A	B	C	D	E			
2007	Program	47	8.6	8.4	8.3	8.3	8.6	84.2	53	90
2007	USA	14142	8.7	8.3	8.3	8.4	8.8	84.7	-	90.8
2008	Program	48	8.5	8.3	8.5	8.3	8.5	84.2	53	92
2008	USA	-	-	-	-	-	-	-	-	-

**Report shows that the programs scores and pass rates are comparable to programs throughout the U.S.

In addition to board pass rates the Radiography program also tracks:

- Attrition and or Retention rates – Attrition rates are expected to decrease with implementation of new curriculum and program admission requirements. The average attrition per professional sequence co-hort is 10 students . With the implementation of the new curriculum, the program is expecting to retain more students.
- Survey results (graduate, employer, ACI, advisory board) – survey results have shown increases in effectiveness of the program.

3. Describe how trend data in (2) is used to assess the rigor, breadth, and currency of the degree requirements and curriculum.

Activity	How trend is used
Graduation rate (ability to learn and use material)	Rigor and Breadth- If graduation rates fall; the program will update the curriculum to meet the student's needs. Currency – What worth is the RADI program to the community and employers?
Survey graduates (are graduates successful)	Rigor and breadth – Did we provide correct skill level and curriculum needed for graduates to be successful? If graduates are not successful, the program will change the curriculum to meet the graduate's needs. Currency – Are graduates demonstrating terminal outcomes? Are graduates entry level Radiographers?
Survey employers (are graduates employable)	Rigor and breadth – Did we provide correct skill level and curriculum needed for graduates to be successful? If we are not meeting the employers need, the program will change the curriculum to be more relevant for the community. Currency – Are graduates demonstrating terminal outcomes? Are graduates entry level radiographers?
Clinical faculty evaluate student's preparation (are graduates employable)	Rigor and breadth – Did we provide correct skill level and curriculum needed for graduates to be successful in the clinical rotation? Currency – Are graduates demonstrating terminal outcomes? Are graduates entry level radiographers?
Students evaluate clinical experience (are students effective radiographers)	Rigor and Breadth- We can asses if the equipment and resources provided are satisfactory for teaching new radiographers. The program will change the curriculum to meet the need if the students demonstrate the clinical experience is not effective. Currency – Are students learning course stated outcomes? Do students recognize they are learning the outcomes? Can they demonstrate the skills?
Certification exam evaluation (are students able to use the information taught)	Rigor – How accurately can our student demonstrate skills? Breadth – How many skills can the students demonstrate? How much material can be used critically by the student? Currency – We can measure if the program is providing the skills necessary to fulfill terminal and course outcome goals.
Survey current students (are students needs being met)	Currency – Are students learning course stated outcomes? Do they recognize they are learning the outcomes? Can they demonstrate the skills?
Adjunct instructor survey (are students developing the mastery skills they	Rigor and breadth – Did we provide correct skills level and curriculum needed for graduates to be successful? Currency – Are graduates demonstrating terminal outcomes? Are graduates

need)	entry level radiographers? Do graduates demonstrate professional and ethical behaviors?
Advisory committee meeting (is the program meeting the need of the community)	Rigor and breadth – Did we provide correct skills level and curriculum needed for graduates to be successful? Currency – are graduates demonstrating terminal outcomes? Are graduates entry level radiographers?
Monitor program attrition (leavers) (Is the program meeting the needs of the students)	Rigor and breadth-Is the program serving the needs of the student population? If graduation rates fall; the program will update the curriculum to meet the student’s needs. Do entrance requirements need to be increased to make incoming students more successful? Currency –Are students learning course stated outcomes? Can they demonstrate the skills?

4. Describe how the data in 2 is being used to assess the extent to which program goals are being met.

Based on the results of the data above, the following changes have been made to the curriculum and teaching pedagogy in the Radiography program:

- Lecture and teaching techniques have been improved.
- Ferris Connect enhancement has been implemented.
- Communication between students and faculty have improved.
- Communication between faculty and clinical sites have improved.
- More critical thinking has been introduced into the curriculum.
- More technical writing has been introduced into the curriculum.
- Lab and didactic courses have been separated.
- Professional and behavioral traits are assessed on campus and in the clinical internship.
- Additional image critiquing has been implemented.
- Registry pass rates have improved.

L. ADMINISTRATION EFFECTIVENESS

1. Discuss the adequacy of administrative and clerical support for the program.

The administrative and clerical support for the Radiography program is excellent. The program has a dedicated department head and secretary for the Dental Hygiene and Imaging Programs. The dean has been open to many ideas and demonstrates a willingness to work with the department on meeting its needs.

2. How does the condition of the current facilities impact program delivery.

The facilities in the building are excellent. The recently remodeled classrooms have state of the art technology that enhances the learning environment. The radiography lab was recently remodeled which helps in the recruitment of new students. Funds for new pieces of equipment have been secured by the dean and a new PACS reading room has been set up to aid the student’s understanding of computer radiography.

3. Are the teaching and class schedules effectively and efficiently prepared?

Yes. The labs and lectures meet the needs of the student and faculty members.

4. Are students able to take the courses they need in a timely manner?

The professional courses are sequential and offered once a year. All Radiography students are able to take the courses they need in a timely manner.

Section 4: Facilities and Equipment

A. INSTRUCTIONAL ENVIRONMENT

1. *Are current classrooms, labs, and technology (both on-campus and at off-site locations) adequate?*

All classrooms have been updated and now have “smart stations”. This has been a wonderful addition to the classroom thus allowing many new functions and delivery methods to be used when teaching. The lab was recently remodeled and has new paint, carpet, desk and chairs. The addition of the PACS room allows students to be trained on the newest technology prior to leaving the campus.

2. *How does the condition of current facilities impact program delivery?*

Current conditions in the classrooms are excellent and enhance program delivery.

3. *Describe the program’s projected needs with respect to instructional facilities.*

Instructional facilities in the college meet the needs of the program.

4. *Describe current plans for facilities improvements and indicate their status.*

Currently the program has no plans for facilities improvements.

5. *Describe how proposed changes or improvements to facilities would enhance program delivery.*

Conditions in the instructional environment meet the needs of the program.

B. COMPUTER ACCESS AND AVAILABILITY

1. *Outside of computers in faculty and staff offices, identify the computing resources (hardware and software) that are allocated to the program.*

The following are the computing resources for the Radiography Program:

- 2 Computer stations radiography lab
- 1 printer radiography lab
- 1 lab top computer with presenter
- 5 computer workstation for PACS
- 1 computer for Cobra Scanner
- 1 Server
- 1 T.V. Monitor with wireless keyboard

2. *Discuss how these resources are used.*

The radiography lab utilizes a lap top computer to facilitate lecture presentations. The radiography lab also has two computers available for student, faculty and staff use. A printer is also available in lab but

due to the expense of printing, students are not allowed to use this unless it is an emergency. The PACS room has been installed and will be used for viewing of films, presenting case studies and interdisciplinary projects with the other imaging programs. The CAHS computer lab is also available for students to access their Ferris Connect. Ferris Connect is utilized in all of the on-campus radiography program courses. In the first year radiography courses it is used to:

- Track grades and attendance
- Post weekly lectures and assignments
- E-mail, chat or use discussion board with the instructor or other students
- Take quizzes and exams.
- Post supplemental material

3. Discuss the adequacy of these resources and identify needed additional resources.

The computer stations are in need of additional software programs used in radiography education. The program would like to see the purchase of radiographic images for critique purposes that can be added to the PACS system. The program would also like to add a system for interactive test questions during the lecture period.

4. Does an acquisition plan to address the needs currently exist? Describe the plan. Has it been included in the department or college's planning document?

There is no written acquisition plan for these equipment needs. However, the program is eligible for vocational funding and annually updates their request for equipment. The program has been successfully with this process and was fortunate to purchase the PACS and CR equipment through this funding procedure.

5. Discuss the efficiency of on-line services (including Ferris Connect) available to the program.

Ferris Connect has been a very efficient means for the program to enhance the delivery of every course in the radiography program.

6. Discuss the adequacy of computer support, including the support for on-line instruction if applicable.

The program has received adequate computer support and has experienced no difficulties with the on-line system.

C. OTHER INSTRUCTIONAL TECHNOLOGY

1. Identify other types of instructional technology resources that are allocated or available to the program.

The Radiography lab has the following technology:

- (4) energized x-ray rooms
- (2) computed radiography stations

- (1) processor
- (1) portable
- (1) C-arm
- (1) mammography unit
- *Quality Assurance Equipment:*
 - Dosimeter
 - Sensitometer
 - Densitometer
 - Spinning Top Test

2. Discuss how these resources are used.

The program uses the above resources to train students on equipment they will be using in the field of Radiography. All items are essential in training students for their careers.

3. Discuss the adequacy of these resources and identify needed additional resources.

The programs greatest needs are:

- New or refurbished C-arm
- New or refurbished Portable
- New Room G or Fluoroscopy Equipment

The outdated equipment listed above is technology from the 80's and has been greatly abused by the students over the years. Many of the locks and control settings do not work and finding replacement parts is becoming very difficult. Students need training on all three pieces of equipment prior to leaving for internship and it is becoming more difficult to demonstrate positioning, radiation protection and safety precautions on this outdated equipment.

Students should be trained on state of the art technology for their field. Since this outdated equipment student train with in lab is primarily used during surgery and care of critical patients while on internship, students are expected to know immediately where key locks and safety mechanisms are located on the machine. Training on newer equipment will enhance their transition from campus to internship. Students will be able to better meet the needs of the patient and physician by training on newer equipment.

4. Does an acquisition plan to address these needs currently exist? Has it been included in the department or colleges planning documents?

The program is continuously looking for donations from hospitals for old equipment to replace our outdated equipment. All items remain a priority on the vocational fund "wish list" with the hope that the items will be replaced in the next few years.

5. Discuss the impact of adequacy of other types of instructional technology resources and support of these resources on the program.

The program relies heavily on the equipment functioning in the lab. Students miss out on many opportunities when this happens in the lab. Many items are 30 year old electronic devices that have many broken controls and locks which pose a danger to the students. Students are at a disadvantage especially in surgery where portables and c-arm equipment are heavily used. The fluoroscopic unit also has many broken buttons. The instructors and students often become frustrated when they attempt to use the equipment and it does not work. The outdated equipment is also noticed by student tour groups that often comment on the poor condition.

New technology, computers and software are incorporated into newer equipment that our students are not learning prior to internship. This lack of knowledge and experience is a disadvantage for our students and reflects poorly on the program. Although many items have been provided to the program, the program is still in need of more updated equipment.

D. LIBRARY RESOURCES

1. Discuss the adequacy of the print and electronic and other resources available through FLITE for the program.

The library is fully stocked with material on Radiography. New book purchases are shared with the faculty and staff for input and meet the needs of the faculty and students.

2. Discuss the service and instruction availability provided by the Library faculty and staff with respect to the needs of the program.

The services provided by the library faculty and staff have been wonderful.

3. Discuss the impact of the budget allocation provided by FLITE to your program. Is the budget allocation adequate? Explain.

The library has met all the needs of the program

Section 5: Conclusions

A. Relationship to FSU Mission

The Radiography program strives to uphold the University and Program Mission Statement. The program uses the most innovative teaching and learning techniques available to remain competitive in the field. The program also continually assesses and makes improvements upon the current curriculum and program structure.

B. Program Visibility and Distinctiveness

The Radiography program is unique in the respect that students complete their first year on campus and may branch out to all areas in Michigan for their second year of clinical internship. The program offers the student the ability to take classes on-line. Students may also complete a Bachelors of Science degree at Ferris which is appealing to employers. Ferris graduates are sought after because of their demonstrated skill level upon graduation as compared to other program graduates in the state. The program has a very good reputation nationwide and Ferris Radiography graduates are often hired over other program graduates.

C. Program Value

The value of the Ferris Radiography Program is to provide high quality radiographers to meet the national shortage of technologist. Employer surveys reflect that Ferris Radiography graduates are filling the needs of their community.

D. Enrollment

Enrollment in the Radiography Program is very strong. The number of pre-radiography students has increased over the past five years.

E. Characteristics, Quality and Employability of students

Ferris graduates are very well prepared. Radiographers also have a high job placement rate. Ferris graduates fair very well against graduates from other programs. Employers rate Ferris Radiography students as very well prepared for the job market. One hundred percent of employers responding are very happy with the FSU graduate they have employed. Graduates are also scoring higher and a larger number are passing the national registry.

The FSU RADI students and graduates:

- Display ethical and professional behavior
- Demonstrate strong psychomotor skills
- Demonstrate strong critical thinking skills
- Practice around the country

F. Quality of Curriculum and Instruction

The program continuously assesses the program goals, outcomes and curriculum and makes the necessary changes based on their assessment results. Faculty are confident that the recent program revisions will increase retention in the program and increase the pass rates on the registry.

G. Composition and Quality of the Faculty

The Ferris State University Radiography program employs three dedicated radiographers with each having over ten years of radiography experience and one lab assistant. Each faculty member has prior teaching experience and has worked in a variety of areas within the field of radiography. The faculty members are dedicated and determined to make this program a national leader in radiography education.

Appendix A
Assessment Plan For Ferris State University Radiography Program

Mission Statement:

It is the mission of the Ferris State University Radiography Program to provide the highest quality instruction and to prepare the student to excel in the professional challenges and responsibilities of an entry-level radiographer.

Goal 1: To prepare graduates to demonstrate competencies in the essential skills of medical imaging and treatment

Outcome: 1-1	Measurement Tool	Benchmark	Time Frame	Responsible Party
Students should be able to demonstrate the importance of radiation protection	Rad. Protection Rubric	Students will score a 3 or higher on their radiation protection brochure.	First year (May)	Faculty
	Film badge reports	Students will have film badge readings under 5m Rem	Jan., May, August	Clinical Coordinator
Outcome: 1-2	Measurement Tool	Benchmark	Time Frame	Responsible Party
Students will be able to successfully perform radiographic procedures in any clinical setting.	Competency evaluation form	Students will pass 100% of their competencies	Second year August	Program Coordinator Clinical Coordinator
	Final Clinical evaluations	End of the semester clinical evaluations will indicate an average of 3.0 or above for questions #1-6 in regards to performing diagnostic radiography procedures.	Second year August	Program Coordinator Clinical Coordinator

Goal 2: To prepare graduates to communicate effectively and professionally in the medical environment

Outcome: 2-1	Measurement Tool	Benchmark	Time Frame	Responsible Party
Students should be able to communicate using appropriate radiographic terminology when evaluating image quality.	Case Study Rubric	Students will score a 3.0 or higher on their case study	Second year Fall, Spring,	Clinical Coordinator Faculty
	Final Clinical evaluations	100% of clinical evaluations will indicate average #15 and 16.	Second year August	Program Coordinator Clinical Coordinator
	ACI Evaluation	100% of the end of the year ACI evaluations will indicate an average score of 3.0 or higher in regards to communication skills for questions #14 and 15	Second year August	Program Coordinator
Outcome: 2-2	Measurement Tool	Benchmark	Time Frame	Responsible Party

Students will develop an improvement plan for patient care in the Rad. dept.	Patient Care Rubric	Students will score a 3.0 or higher on their patient care newsletter.	Second year Spring	Clinical Coordinator Faculty
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Goal 3: To prepare graduates to demonstrate critical thinking, problem solving skills and life-long learning

Outcome: 3-1	Measurement Tool	Benchmark	Time Frame	Responsible Party
Students should be able to develop a plan for professional development.	Professional Plan Rubric	Students will score a 3.0 or higher on their professional development plan.	Second year (August)	Program Coordinator Clinical Coordinator Faculty
Outcome: 3-2	Measurement Tool	Benchmark	Time Frame	Responsible Party
Student will apply critical thinking skills and solve problems for non-routine procedures	trauma competency evaluation	Students will score 100% on their trauma competency evaluation. (Pass or Fail)	Second year spring and fall	Program Coordinator Clinical Coordinator
	Employer survey	Students will score a 3.0 or higher on critical thinking skills question #2	August	Program Coordinator

Goal 4: To prepare graduates with the ability to demonstrate professional values and ethical behaviors in the workplace

Outcome: 4-1	Measurement Tool	Benchmark	Time Frame	Responsible Party
Students will be able to demonstrate positive ethical behaviors	Ethical Rubric	Students will score a 3.0 or higher on their ethical issues assignment.	Second year Spring	Program Coordinator Clinical Coordinator
	Final Clinical Evaluation	Students will score a 3.0 or higher on their final evaluation question # 13	Summer	Program Coordinator Clinical Coordinator
	ACI evaluation	100% of the end of the year Adjunct clinical instructors evaluations will indicate acceptable in regards to ethical behavior on question #16	August	Program Coordinator Clinical Coordinator
Outcome: 4-2	Measurement Tool	Benchmark	Time Frame	Responsible Party
Students will demonstrate professional behavior in a diverse population	ACI evaluation	100% of the end of the year Adjunct Clinical(ACI) instructors evaluations will indicate acceptable in regards to working in a diverse	August	Program Coordinator Clinical Coordinator

		population Question # 17		
	Employer Survey	Of the employer surveys that are returned, 100% of the employer surveys will indicate meets standards in regards to professional behavior in a diverse population question # 13.	August	Program Coordinator Clinical Coordinator

Goal 5: To graduate students that will function as a competent, entry-level professional that meets the healthcare needs of the community.

Outcome: 5-1	Measurement Tool	Benchmark	Time Frame	Responsible Party
Graduates will pass the registry.	Analysis of ARRT Scores	75% of graduates will show scores consistent with the average registry score	Annually (August)	Program Coordinator
Outcome: 5-2	Measurement Tool	Benchmark	Time Frame	Responsible Party
Student's will complete the radiography program in two years or less	Sequence of progression in program (attrition rates)	90% of students who successfully progress throughout the Radiography Program will complete the program in 2 years or less.	December, May, August	Program Coordinator
Outcome: 5-3	Measurement Tool	Benchmark	Time Frame	Responsible Party
Graduates will perform at entry level expectations	Employer Survey: Question: 17	Of the employer surveys that are returned 80% of employers will indicate grads were adequately prepared.	Annually (August)	Program Coordinator
Outcome: 5-4	Measurement Tool	Benchmark	Time Frame	Responsible Party
Graduates will become employed within 6 months	Graduate Surveys Question: 2	75% of graduates seeking employment will be employed within 6 months	Annually (August)	Program Coordinator
Outcome:5-5	Measurement Tool	Benchmark	Time Frame	Responsible Party

<p>Graduates will indicate they were adequately prepared to perform as entry level technologist.</p>	<p>Graduate Surveys Question: 10</p>	<p>75% of graduates will indicate they were prepared for entry level work.</p>	<p>Annually (August)</p>	<p>Program Coordinator</p>
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Appendix B
FERRIS STATE UNIVERSITY
COLLEGE OF ALLIED HEALTH SCIENCES
RADIOGRAPHY PROGRAM
PROGRESSION POLICY

ADMISSION PROCEDURE:

First year enrollment is limited to 50 students. The following qualifiers must be met for the student to apply to the program:

- MATH 115, equivalency or proficiency (Math ACT subscore of 24 or higher), BIOL 109, English 150, and MRIS 102/103 or competency are required for admission to the program
- Applicants will be considered ineligible for the program with **two unsuccessful**(less than a letter grade of “C”) attempts in ENG 150, MATH 115, MRIS 102, and BIOL 109 .
- A student must maintain a college GPA of 2.75 (or a High School GPA of 3.0).
- Group Advising will be offered Fall and Spring Semester. Notices will be posted on campus for the dates and times for group advising. It is the student’s responsibility to attend a group advising session each semester. Updates regarding the program will be announced during these meeting times so it is crucial that the student attend.
- **It is the student’s responsibility to notify the advisor of any changes in status that would affect entry into the radiography program.**
- Admission to the program is determined by priority date (Application date to the program) and completion of the student’s qualifiers (see above).

PROGRESSION INTO THE RADIOGRAPHY PROGRAM:

- A grade of “C” or higher is required for all Radiography program requirements.
 - Any student that receives less than a “C” in one radiography course must stop the radiography program sequence. They **must** re-apply to the program to repeat the course the next time it is offered(**if a seat is available**).
 - A student receiving a grade of less than a “C” in any two radiography courses (or two unsuccessful attempts in the same RADI course) will be dismissed from the program.
- If at any time a student’s college GPA falls below a 2.5 they will be dismissed from the Radiography program.
- All general education requirements must be completed before internship. Any student not completing all general education requirements will not be allowed to enter internship.
- *If a student is dismissed from the program, he/she may not return to radiography program for a minimum of 5 years.*
- *Any student with a conviction record is advised to contact the American Registry of Radiologic Technologist at 651-687-0048 or www.arrt.org in regards to his/her ability to take the registry upon completion of the program.*
- *Students may need to relocate for clinical internship during the second year of the program.*
- *Information in regard to status are mailed to last address provided. It is the student’s responsibility to maintain current contact information with the college. Contact the Timme Center to update records.*

- *No course in the professional sequence may be taken more than twice. If on the second attempt of a professional sequence of the course, a student receives a grade of lower than a “C”, the student will be dismissed from the program*

Appendix C
FERRIS STATE UNIVERSITY- Form D
College of Allied Health Sciences
ASSOCIATE DEGREE RADIOGRAPHY PROGRAM

NAME: _____ ID# _____

REQUIRED		COURSE TITLE – PRE/CO-REQUISITES IN ()	CRED	GRADE	R E Q U I R E D
RAD MAJOR: 57 CREDITS REQUIRED					
RADI	104	Radiographic Procedures I (Program Admission)	2		
RADI	105	Radiographic Procedures I Lab(Program Admission)	1		
RADI	106	Radiographic Procedures II (RADI 104, 105, 121, 141, and 142)	2		
RADI	107	Radiographic Procedures II Lab (RADI 104, 105, 121, 141, and 142)	1		
RADI	108	Radiographic Imaging Procedures (RADI 106, 107, 122, 143, 144)	2		
RADI	109	Radiographic Imaging Procedures Lab (RADI 106, 107, 122, 143, 144)	1		
RADI	121	Radiographic Physics and Image Production (Program Admission)	3		
RADI	122	Radiographic Protection and Biology (RADI 104, 105, 121, 141, and 142)	3		
RADI	141	Principles of Radiographic Imaging I (Program Admission)	2		
RADI	142	Principles of Radiographic Imaging I Lab (Program Admission)	1		
RADI	143	Principles of Radiographic Imaging II (RADI 104, 105, 121, 141, 142)	2		
RADI	144	Principles of Radiographic Imaging II Lab (RADI 104, 105, 121, 141, 142)	1		
RADI	170	Radiographic QA and Processing (RADI 106, 107, 122, 143, and 144)	1		
RADI	171	Image Processing Lab (RADI 106, 107, 122, 143, and 144)	1		
RADI	172	Digital Imaging (RADI 106, 107, 122, 143, and 144)	1		
RADI	202	Radiographic Pathology (RADI 108, 109, 170, 171 and 172)	1		
RADI	203	Advance Concepts in Radiography I (RADI 108, 109, 170, 171, and 172)	1		
RADI	204	Principles of Computed Tomography (RADI 202, 203, 211, and 291)	2		
RADI	211	Pharmacology for Radiographers (RADI 108, 109, 170, 171, 172)	1		
RADI	212	Radiology Management (RADI 204, 213, and 292)	1		
RADI	213	Advance Concepts in Radiography II (RADI 202, 203, 211, and 291)	1		
RADI	223	Advance Concepts in Radiography III (RADI 204, 213, and 292)	1		
RADI	291	Clinical Practicum 1(RADI 108, 109, 170, 171, 172)	9		
RADI	292	Clinical Practicum 2 (RADI 202, 203, 211, and 291)	9		
RADI	293	Clinical Practicum 3 (RADI 204, 213, and 292)	6		
RADI	299	Radiography Review (RADI 204, 213, and 292)	1		
COMMUNICATION COMPETENCE – 9 CREDITS REQUIRED					
ENGL	150	English 1 (none)	3		
ENGL	250	English 2 (ENGL 150)	3		
COMM	105 121 221	Interpersonal Communication (none) or Fundamentals of Public Speaking or Small Group Decision-making (none) or	3		
SCIENTIFIC UNDERSTANDING – 4 CREDITS REQUIRED					
BIOL	109	Human Anatomy and Physiology (None)	4		
QUANTITATIVE SKILLS – PROFICIENCY or COURSE REQUIRED					
		ACT – Math Sub score of 24 or higher or MATH 115			

SOCIAL AWARENESS – 3 CREDITS REQUIRED					
		Social Awareness Elective (SOC121 or PSYC 150 recommended)			
CULTURAL ENRICHMENT – 3 CREDITS REQUIRED					
		Cultural Enrichment Elective (HUMN 220 or 320 recommended)	3		
CAHS CORE CURRICULUM REQUIREMENTS – 5 CREDITS REQUIRED					
CCHS	101	Orientation to Health Care (none)	3		
CCHS	102	Safety Issues in Health Care (none)	1		
CCHS	103	Clinical Skills (none)	1		
		Computer Competency – course or proficiency demonstrated			
		Med. Term. Competency-MRIS 102 or equivalency or proficiency			
RADIOGRAPHY PROGRAM REQUIREMENTS FOR PROGRESSION / GRADUATION					
<ul style="list-style-type: none"> • A GPA of 2.75 must be maintained for the Radiography Program. • Eng. 150, Med. Terminology, BIOL 109 and Math 115 or an ACT score of 24 or higher is required for admission to the professional sequence of the program. • A grade of C or better is required for all RADI program requirements. • All general education requirements must be completed before internship. • <i>Students must maintain a C or higher in all RADI Courses.</i> • <i>Application into the Radiography Program will not be accepted if a student has two unsuccessful attempts in MATH 115 and BIOL 109.</i> • Total Program Credits = 81 					

Radiography Curriculum Analysis		
Professional Curriculum	Prerequisite Course(s)	Program Course(s)
Basic Principles of Computed Tomography		
Computed Tomography Generations	RADI: 202, 203, 211, 291	RADI 204
Components, Operations and Processes	RADI: 202, 203, 211, 291	RADI 204
Radiation Protection	RADI: 202, 203, 211, 291	RADI 204
Clinical Practice		
Clinical Practice	RADI: 108, 109, 170, 171, 172	RADI: 291
	RADI: 202, 203, 211, 291	RADI: 292
	RADI: 204, 213, 292	RADI: 293
Procedural Performance	RADI: 108, 109, 170, 171, 172	RADI: 291
	RADI: 202, 203, 211, 291	RADI: 292
	RADI: 204, 213, 292	RADI: 293
Clinical Competency	RADI: 108, 109, 170, 171, 172	RADI: 291
	RADI: 202, 203, 211, 291	RADI: 292
	RADI: 204, 213, 292	RADI: 293
Digital Image Acquisition and Display		
Basic Principles of Digital Radiography	RADI: 106, 107, 122, 143, 144	RADI: 172
	RADI: 204, 213, 292	RADI: 299
Image Acquisition	RADI: 106, 107, 122, 143, 144	RADI: 172
	RADI: 204, 213, 292	RADI: 299
Image Acquisition Errors	RADI: 106, 107, 122, 143, 144	RADI: 172
	RADI: 204, 213, 292	RADI: 299
Software (Default) Image Processing	RADI: 106, 107, 122, 143, 144	RADI: 172
	RADI: 204, 213, 292	RADI: 299
Fundamental Principles of Exposures	RADI: 106, 107, 122, 143, 144	RADI: 172
	RADI: 204, 213, 292	RADI: 299
Image Evaluation	RADI: 106, 107, 122, 143, 144	RADI: 172
	RADI: 204, 213, 292	RADI: 299
Quality Assurance and Maintenance Issues	RADI: 106, 107, 122, 143, 144	RADI: 172
	RADI: 204, 213, 292	RADI: 299
Display	RADI: 106, 107, 122, 143, 144	RADI: 172
	RADI: 204, 213, 292	RADI: 299
Ethics and Law in the Radiologic Sciences		
Ethics and Ethical Behavior	RADI: 204, 213, 292	RADI: 212
	RADI: 204, 213, 292	RADI: 299

Ethical Issues in Health Care	RADI: 204, 213, 292	RADI: 212
	RADI: 204, 213, 292	RADI: 299
Legal Issues	RADI: 204, 213, 292	RADI: 212
	RADI: 204, 213, 292	RADI: 299
Patient Consent	RADI: 204, 213, 292	RADI: 212
	RADI: 204, 213, 292	RADI: 299
Fundamentals of Radiologic Science and Health Care		
The Health Science Professions	Program Admission	RADI: 141
	No pre-reqs	CCHS: 101
The Health Care Environment	Program Admission	RADI: 141
	No pre-reqs	CCHS: 101
Hospital Organization	Program Admission	RADI: 141
	No pre-reqs	CCHS: 101
Radiology Organization	Program Admission	RADI: 141
Accreditation	Program Admission	RADI: 141
Regulatory Agencies	Program Admission	RADI: 141
Professional Credentialing	Program Admission	RADI: 141
Professional Organizations	Program Admission	RADI: 141
Professional Development and Advancement	Program Admission	RADI: 141
Human Structure and Function		
Anatomical Nomenclature	No pre-reqs	BIOL: 109
Chemical Composition	No pre-reqs	BIOL: 109
Cell Structure and Genetic Control	No pre-reqs	BIOL: 109
Metabolism	No pre-reqs	BIOL: 109
Tissues	No pre-reqs	BIOL: 109
Skeletal System	No pre-reqs	BIOL: 109
Muscular System	No pre-reqs	BIOL: 109
Nervous System	No pre-reqs	BIOL: 109
Sensory System	No pre-reqs	BIOL: 109
Endocrine System	No pre-reqs	BIOL: 109
Digestive System	No pre-reqs	BIOL: 109
Cardiovascular System	No pre-reqs	BIOL: 109
Lymphatic System and Immunity	No pre-reqs	BIOL: 109
Respiratory System	No pre-reqs	BIOL: 109
Urinary System	No pre-reqs	BIOL: 109
Reproductive System	No pre-reqs	BIOL: 109
Sectional Anatomy	RADI: 202, 203, 211, 291	RADI: 204

Image Analysis		
Imaging Standards	Program Admission	RADI: 141
	Program Admission	RADI: 142
	RADI: 104, 105, 121, 141, 142	RADI: 143
	RADI: 104, 105, 121, 141, 142	RADI: 144
	RADI 202, 203, 211, 291	RADI: 213
	RADI: 204, 213, 292	RADI: 299
Image Appearance Characteristics	Program Admission	RADI: 141
	Program Admission	RADI: 142
	RADI: 104, 105, 121, 141, 142	RADI: 143
	RADI: 104, 105, 121, 141, 142	RADI: 144
	RADI 202, 203, 211, 291	RADI: 213
	RADI: 204, 213, 292	RADI: 299
Procedural Factors	Program Admission	RADI: 141
	Program Admission	RADI: 142
	RADI: 104, 105, 121, 141, 142	RADI: 143
	RADI: 104, 105, 121, 141, 142	RADI: 144
	RADI 202, 203, 211, 291	RADI: 213
	RADI: 204, 213, 292	RADI: 299
Corrective Action	Program Admission	RADI: 141
	Program Admission	RADI: 142
	RADI: 104, 105, 121, 141, 142	RADI: 143
	RADI: 104, 105, 121, 141, 142	RADI: 144
	RADI 202, 203, 211, 291	RADI: 213
	RADI: 204, 213, 292	RADI: 299
Imaging Equipment		
X-ray Circuit	RADI: 104, 105, 121, 141, 142	RADI: 143
	RADI: 202, 203, 211, 291	RADI: 213
	RADI: 204, 213, 292	RADI: 299
Radiographic Equipment	RADI: 104, 105, 121, 141, 142	RADI: 143
	RADI: 202, 203, 211, 291	RADI: 213
	RADI: 204, 213, 292	RADI: 299
Diagnostic X-ray Tubes	RADI: 104, 105, 121, 141, 142	RADI: 143
	RADI: 202, 203, 211, 291	RADI: 213
	RADI: 204, 213, 292	RADI: 299
Image Intensified Fluoroscopy	RADI: 106, 107, 122, 143, 144	RADI: 108
	RADI: 106, 107, 122, 143, 144	RADI: 171
	RADI: 204, 213, 292	RADI: 223
	RADI: 204, 213, 292	RADI: 299

Linear Tomography	RADI: 106, 107, 122, 143, 144	RADI: 108
	RADI: 204, 213, 292	RADI: 223
	RADI: 204, 213, 292	RADI: 299
Quality Management	RADI: 106, 107, 122, 143, 144	RADI: 170
	RADI: 204, 213, 292	RADI: 223
	RADI: 204, 213, 292	RADI: 299
Medical Terminology		
The Word Building Process	No pre-reqs	MRIS: 102
Medical Abbreviations and Symbols	No pre-reqs	MRIS: 102
	RADI: 204, 213, 292	RADI: 299
Radiologic Technology Procedures and Terminology	Program Admission	RADI: 104
	Program Admission	RADI: 105
	RADI: 104, 105, 121, 141, 142	RADI: 106
	RADI: 104, 105, 121, 141, 142	RADI: 107
	RADI: 106, 107, 122, 143, 144	RADI: 108
	RADI: 106, 107, 122, 143, 144	RADI: 109
	RADI: 204, 213, 292	RADI: 299
Understanding Orders, Requests, and Diagnostic Reports	Program Admission	RADI: 104
	Program Admission	RADI: 105
Patient Care in Radiologic Sciences		
Radiographer and Health Care Team	Program Admission	RADI: 104
	Program Admission	RADI: 105
	RADI: 104, 105, 121, 141, 142	RADI: 106
	RADI: 104, 105, 121, 141, 142	RADI: 107
	RADI: 106, 107, 122, 143, 144	RADI: 108
	RADI: 106, 107, 122, 143, 144	RADI: 109
Attitudes and Communication in Patient Care	Program Admission	RADI: 104
	Program Admission	RADI: 105
	RADI: 104, 105, 121, 141, 142	RADI: 106
	RADI: 104, 105, 121, 141, 142	RADI: 107
	RADI: 106, 107, 122, 143, 144	RADI: 108
	RADI: 106, 107, 122, 143, 144	RADI: 109
Patient/Radiographer Interactions	Program Admission	RADI: 104
	Program Admission	RADI: 105
	RADI: 104, 105, 121, 141, 142	RADI: 106
	RADI: 104, 105, 121, 141, 142	RADI: 107
	RADI: 106, 107, 122, 143, 144	RADI: 108
	RADI: 106, 107, 122, 143, 144	RADI: 109

Safety and Transfer Positioning	No pre-reqs	CCHS: 102
	No pre-reqs	CCHS: 103
	Program Admission	RADI: 104
	Program Admission	RADI: 105
	RADI: 104, 105, 121, 141, 142	RADI: 106
	RADI: 104, 105, 121, 141, 142	RADI: 107
	RADI: 106, 107, 122, 143, 144	RADI: 108
	RADI: 106, 107, 122, 143, 144	RADI: 109
Evaluating Physical Needs	Program Admission	CCHS: 101
	Program Admission	CCHS: 103
Infection Control	Program Admission	CCHS: 101
	Program Admission	CCHS: 103
	RADI: 108, 109, 170, 171, 172	RADI: 203
	RADI: 204, 213, 292	RADI: 299
Medical Emergencies	Program Admission	CCHS: 101
	Program Admission	CCHS: 103
	RADI: 106, 107, 122, 143, 144	RADI: 108
	RADI: 106, 107, 122, 143, 144	RADI: 109
	RADI: 108, 109, 170, 171, 172	RADI: 203
	RADI: 204, 213, 292	RADI: 299
Unique Situations and Trauma	Program Admission	CCHS: 101
	Program Admission	CCHS: 103
	RADI: 106, 107, 122, 143, 144	RADI: 108
	RADI: 106, 107, 122, 143, 144	RADI: 109
	RADI: 108, 109, 170, 171, 172	RADI: 203
	RADI: 204, 213, 292	RADI: 299
Contrast Studies	RADI: 106, 107, 122, 143, 144	RADI: 108
	RADI: 106, 107, 122, 143, 144	RADI: 109
	RADI: 108, 109, 170, 172	RADI: 211
	RADI: 108, 109, 170, 171, 172	RADI: 203
	RADI: 204, 213, 292	RADI: 299
Tubes, Catheters, Lines, and Collection Devices	Program Admission	CCHS: 103
	RADI: 106, 107, 122, 143, 144	RADI: 108
	RADI: 106, 107, 122, 143, 144	RADI: 109
	RADI: 108, 109, 170, 172	RADI: 211
	RADI: 108, 109, 170, 171, 172	RADI: 203
Mobile and Surgical Radiography	RADI: 106, 107, 122, 143, 144	RADI: 108
	RADI: 106, 107, 122, 143, 144	RADI: 109
	RADI: 106, 107, 122, 143, 144	RADI: 171
	RADI: 108, 109, 170, 171, 172	RADI: 203

Pharmacology and Drug Classification		
Drug Nomenclature	RADI: 108, 109, 170, 172	RADI: 211
Methods of Drug Classification	RADI: 108, 109, 170, 172	RADI: 211
General Pharmacologic Principles	RADI: 108, 109, 170, 172	RADI: 211
Five Rights of Drug Safety	RADI: 108, 109, 170, 172	RADI: 211
Drug Categories of Relevance to Radiography (Side	RADI: 108, 109, 170, 172	RADI: 211
Effects, Uses, and Impacts on Medical Imaging)	RADI: 204, 213, 292	RADI: 299
Classification of Contrast Agents	RADI: 108, 109, 170, 172	RADI: 211
	RADI: 204, 213, 292	RADI: 299
Routes of Drug Administration	RADI: 108, 109, 170, 172	RADI: 211
Intravenous Drug Therapy	RADI: 108, 109, 170, 172	RADI: 211
Current Practice Status	RADI: 108, 109, 170, 172	RADI: 211
Informed Consent	RADI: 108, 109, 170, 172	RADI: 211
Radiation Biology		
Introduction	RADI: 104, 105, 121, 141, 142	RADI: 122
	RADI: 204, 213, 292	RADI: 293
	RADI: 204, 213, 292	RADI: 299
Molecular bonds	RADI: 104, 105, 121, 141, 142	RADI: 122
	RADI: 204, 213, 292	RADI: 293
	RADI: 204, 213, 292	RADI: 299
Review of cell biology	RADI: 104, 105, 121, 141, 142	RADI: 122
	RADI: 204, 213, 292	RADI: 293
	RADI: 204, 213, 292	RADI: 299
Types of ionizing radiation	RADI: 104, 105, 121, 141, 142	RADI: 122
	RADI: 204, 213, 292	RADI: 293
	RADI: 204, 213, 292	RADI: 299
Sources of medical radiation exposure	RADI: 104, 105, 121, 141, 142	RADI: 122
	RADI: 204, 213, 292	RADI: 293
	RADI: 204, 213, 292	RADI: 299
Biophysical Events	RADI: 104, 105, 121, 141, 142	RADI: 122
	RADI: 204, 213, 292	RADI: 293
	RADI: 204, 213, 292	RADI: 299
Radiation Effects	RADI: 104, 105, 121, 141, 142	RADI: 122
	RADI: 204, 213, 292	RADI: 293
	RADI: 204, 213, 292	RADI: 299
Radiosensitivity and Response	RADI: 104, 105, 121, 141, 142	RADI: 122
	RADI: 204, 213, 292	RADI: 293
	RADI: 204, 213, 292	RADI: 299

Radiation Production and Characteristics		
Structure of the Atom	Program Admission	RADI: 121
	RADI: 104, 105, 121, 141, 142	RADI: 143
	RADI: 202, 203, 211, 291	RADI: 213
	RADI: 204, 213, 292	RADI: 299
Nature of Radiation	RADI: 104, 105, 121, 141, 142	RADI: 143
	RADI: 202, 203, 211, 291	RADI: 213
	RADI: 204, 213, 292	RADI: 299
X-ray Production	RADI: 104, 105, 121, 141, 142	RADI: 143
	RADI: 202, 203, 211, 291	RADI: 213
	RADI: 204, 213, 292	RADI: 299
Interactions of Photons with Matter	RADI: 104, 105, 121, 141, 142	RADI: 143
	RADI: 202, 203, 211, 291	RADI: 213
	RADI: 204, 213, 292	RADI: 299
Radiation Protection		
Introduction	RADI: 104, 105, 121, 141, 142	RADI: 122
	RADI: 204, 213, 292	RADI: 293
	RADI: 204, 213, 292	RADI: 299
Justification for radiation protection	RADI: 104, 105, 121, 141, 142	RADI: 122
	RADI: 204, 213, 292	RADI: 293
	RADI: 204, 213, 292	RADI: 299
Potential biologic damage potential of ionizing radiation	RADI: 104, 105, 121, 141, 142	RADI: 122
	RADI: 204, 213, 292	RADI: 293
	RADI: 204, 213, 292	RADI: 299
Objectives of a radiation protection program	RADI: 104, 105, 121, 141, 142	RADI: 122
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	RADI: 204, 213, 292	RADI: 299
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	RADI: 204, 213, 292	RADI: 299
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	RADI: 204, 213, 292	RADI: 293
	RADI: 204, 213, 292	RADI: 299
Units, Detection, and Measurement	RADI: 104, 105, 121, 141, 142	RADI: 122
	RADI: 204, 213, 292	RADI: 293
	RADI: 204, 213, 292	RADI: 299

Surveys, Regulatory/Advisory Agencies and Regulations	RADI: 104, 105, 121, 141, 142	RADI: 122
	RADI: 204, 213, 292	RADI: 293
	RADI: 204, 213, 292	RADI: 299
Personnel Monitoring	RADI: 104, 105, 121, 141, 142	RADI: 122
	RADI: 204, 213, 292	RADI: 293
	RADI: 204, 213, 292	RADI: 299
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	RADI: 204, 213, 292	RADI: 293
	RADI: 204, 213, 292	RADI: 299
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	RADI: 204, 213, 292	RADI: 299
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Classifications (Definition, Examples, Sites, Complications, Prognosis)	RADI: 108, 109, 170, 171, 172	RADI: 202
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Causes of Disease (Process, Examples)	RADI: 108, 109, 170, 171, 172	RADI: 202
	RADI: 204, 213, 292	RADI: 299
Radiologic Pathology (Definitions, Etiology, Examples, Sites, Complications, Prognosis,	RADI: 108, 109, 170, 171, 172	RADI: 202
	RADI: 204, 213, 292	RADI: 299
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	Program Admission	RADI: 105
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	RADI: 104, 105, 121, 141, 142	RADI: 107
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	Program Admission	RADI: 105

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	Program Admission	RADI: 105
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	RADI: 104, 105, 121, 141, 142	RADI: 107
	RADI: 106, 107, 122, 143, 144	RADI: 108
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	Program Admission	RADI: 105
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	RADI: 104, 105, 121, 141, 142	RADI: 107
	RADI: 106, 107, 122, 143, 144	RADI: 108
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	RADI: 104, 105, 121, 141, 142	RADI: 143
	RADI: 108, 109, 170, 171, 172	RADI: 213
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	RADI: 108, 109, 170, 171, 172	RADI: 213
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	RADI: 104, 105, 121, 141, 142	RADI: 143
	RADI: 108, 109, 170, 171, 172	RADI: 213
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	RADI: 108, 109, 170, 171, 172	RADI: 213
	RADI: 204, 213, 292	RADI: 299
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	RADI: 108, 109, 170, 171, 172	RADI: 213
	RADI: 204, 213, 292	RADI: 299
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	RADI: 104, 105, 121, 141, 142	RADI: 143
	RADI: 108, 109, 170, 171, 172	RADI: 213
	RADI: 204, 213, 292	RADI: 299
Beam-limiting Devices	Program Admission	RADI: 141
	RADI: 104, 105, 121, 141, 142	RADI: 143
	RADI: 108, 109, 170, 171, 172	RADI: 213
	RADI: 204, 213, 292	RADI: 299
Beam Filtration	Program Admission	RADI: 141
	RADI: 104, 105, 121, 141, 142	RADI: 143
	RADI: 108, 109, 170, 171, 172	RADI: 213
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Scattered and Secondary Radiation	Program Admission	RADI: 141
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Artifacts	RADI 106, 107, 122, 143, 144	RADI: 170
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Silver Recovery	RADI 106, 107, 122, 143, 144	RADI: 170
	RADI: 204, 213, 292	RADI: 299
Required Post-secondary General Education Credit		
Course Title	Number	Hour
Mathematical/Logical Reasoning (required)		
Intermediate Algebra	Math 115	3
Written/Oral Communication (required)		
Interpersonal Communication	Comm 105	3
Fund. Of Pubic Speaking	Comm 121	3
Small Group Decission Making	Comm 221	3
English Composition 1	ENGL 150	3
English Composition 2	ENGL 250	3
Total Hours for Required Post-secondary =	12 Required Credits	
General Education		
Social/Behavioral Sciences		
Sociology	SOC: 121	3
Psychology	PSYC: 150	3
Natural Sciences		
Basic Human Anatomy and Physiology	BIOL: 109	4
Arts and Humanities		
Ethics in Healthcare	HUMN 220	3
Biomedical Ethics	HUMN 320	3

Information Systems		
Intro to Micro. Systems	ISYS 105	3
Computer Competency	CLEP TEST	CLEP TEST
Core Curriculum: Required by College of Allied Health Sciences		
Orientation to Healthcare	CCHS 101	3
Safety Issues in Healthcare	CCHS 102	1
Clinical Skills	CCHS 103	1
Intro to Medical Terminology	MRIS 102	1
Total Hours for Additional Post-Secondary General Education Courses: 19 credits		



FERRIS STATE UNIVERSITY

RADIOGRAPHY PROGRAM COURSE SYLLABUS

COURSE NUMBER:	RADI 141
COURSE TITLE:	Principles of Radiographic Imaging I
CREDIT HOURS:	3
INSTRUCTOR NAME:	Lisa L. Wall
LECTURE HOURS:	Monday/Wednesday 8:00 a.m. to 8:50 a.m.
PREREQUISITES:	Admission to the Radiography Program
REQUIRED TEXTBOOK(S):	<u>Principles of Radiographic Imaging</u> by: Carlton and Adler 4th Edition
ADDITIONAL MATERIAL(S):	3 ring binder Scientific Calculator- No GRAPHING CALCULATORS ALLOWED.
OFFICE LOCATION:	VFS: 304B
OFFICE HOURS:	Monday 1:00 PM to 3:00 PM Wednesday 10:00 PM to 12:00 PM
OFFICE PHONE:	231-591-2326
FAX NUMBER:	231-591-2325
E-MAIL:	walll@ferris.edu
PROGRAM POLICIES:	Policy: Attendance, Tardy and Early Dismissal

Students are expected to be present and on time for all scheduled class, laboratory, clinical, and test session. Absences/tardies/early dismissals hinder the student's learning experience and can be a distraction for fellow classmates.

It is the student's responsibility to notify an instructor of an absence or tardy issues a minimum of 30 minutes prior to the scheduled start time of the class or lab and no later than 12 hours following the missed class period. It is also the student's responsibility to contact the instructor to review work missed. Remember, professionalism is a determination with site placement for clinical internship.

A). Attendance:

- 1 day = with out penalty
- 2 day = 1 % deduction in the final grade
- 3 day = 2 % deduction in the final grade
- 4 day = 3% deduction in the final grade
- more than 4 days = 1% additional deduction of final grade for each day missed

Excused Absences:

Documentation must be provided with 24 hours of the student returning to class.

An excused absence will not result in a deduction to the students' grade.

- a). University Sponsored Event in which an excused form from the University is provided to the instructor.
- b). Death in the family. Appropriate verification will be needed such as obituary, or funeral card.
- c). Extended Hospitalization. Appropriate verification from physician and hospital. (Doctors appointments are not considered excused.)
- d). Students who are commuters- dangerous weather conditions in which driving is considered unsafe by local police authorities. Schools must be closed.
- e). Being called to testify in a court case. (Not your own or for being arrested.) Verification is required.
- f). Jury duty. Verification is required.
- g). Active military duty. Verification required.
- h). Clinical site visits with prior approval.

Unexcused Absences:

- a). Childcare problems
- b). Incarceration/jail
- c). Employment
- d). Lack of sleep, motivation, etc.

B). Tardy: A student is considered tardy if he/she arrives after the doors for the classroom have been closed. This includes any breaks that may occur during the class time.

2 tardies = 1 absence
4 tardies = 2 absences
6 tardies = 3 absences
etc.

C). Leave Earlyies:

A student must authorize leaving class early with the instructor. If a student chooses to leave class early it will be counted as a tardy.

D). Cell Phone Usage:

A student should turn the ringer off of his/her cell phone while in class. If a cell phone rings during class time the student will receive a tardy for the class.

Policy on Labs:

A). The lab policy for absences, tardies and leave earlyies follows the same policy as lecture. It is highly encouraged that students arrive to lab 5 min. early. Lab is to begin on time as there is much content to cover. Any student who is 10 min or more late for lab will not be allowed to participate in the scheduled lab and will need to make arrangements for a make-up lab. If a student is tardy (arriving after the lab door has been closed) to lab they will lose 25% of the total points for that weeks lab.

B). Missed Lab: Because labs are vital to the students learning all labs must be completed. If a student fails to make up a lab the student will receive an "F" for his/her lab grade.

C). Make-up Labs: A student will receive a 50% deduction in the total number of points for a make-up lab. A student will not be penalized if prior arrangements have been made for a missing lab. Any make up lab must be done within a week of your normally scheduled lab time or a missed lab will be recorded, which will result in a lab grade of "F".

D). Out-of-uniform: If a student arrives to lab out of uniform the student will be sent home and required to make-up the lab. See make-up lab policy and dress code policy.

Policy on Homework, Test and Quizzes:

A). Homework: Homework is expected to be turned in on time. If any homework assignments are turned in after the assigned time the student will lose ½ the point value. A student has up to 24 hours to submit a late assignment. If an assignment is turned in past the 24 hours it will not be accepted and the student will receive a “0” for their score.

B). Quizzes: Students will not be allowed to make up a quiz unless they have an excused absence. A quiz must be taken within 48 hours upon the student returning back to campus or a score of “0” will be recorded.

- Quizzes will be returned to the student.
- Students may also argue questions on a quiz. This must be done via WEB CT within 48 hours of the quiz being returned for consideration. Students must show documented proof to support their argument.

C). Test: Students will not be allowed to make up a test unless they have an excused absence. Test must be made up within 48 hours upon the student returning back to campus or a score of “0” will be recorded.

- Testing Center Answer Keys will be returned to the students in the Radiography Lab. Scantrons will be returned to the student upon request. The instructor will bring a copy of the test to lab that week for students to view. The test will be housed in the instructor’s office for the student to view at later dates.
- Students may also argue questions on a test. This must be done via WEB CT within 48 hours of the test being returned for consideration. No credit will be given to students who ask other instructor’s or faculty members for help when arguing a question. Students must show documented proof to support their argument. This means the student must show the page number and statement in the book in order to earn credit.

Policy on Uniforms:

Students are required to wear proper uniform attire in the lab at all times. Students will be asked to leave the lab if they are not in uniform or are unprepared. This will follow the Demerit Policy for the Radiography Program.

Proper Uniform consists of:

- Tennis Shoes (Closed toe and heel)
- Scrubs: Cleaned and pressed
- Film badge (Must be at collar)
- Ferris ID Badge
- No hats/bandanas etc.
- No gum
- Long hair must be pulled back
- Equipment for lab:
 - Markers
 - Sharpie
 - Calculator
 - Lab Assignment
 - Text books

A professional career requires a personal attitude of responsibility and commitment. This career responsibility will be reflected through academic and clinical courses.

GRADING SCALE:

RADIOGRAPHY GRADING SCALE:

PERCENTAGE OF POSSIBLE POINTS	GRADE
95 – 100	A

92 – 94	A-
89 – 91	B+
86 – 88	B
83 – 85	B-
80 – 82	C+
77 – 79	C
74 – 76	C-
71 – 73	D+
68 – 70	D
65 – 67	D-
BELOW 65	F

GRADING:

The final grade for this course will be determined using the following points:

Four unit tests @ 50 points each	200
Final examination (cumulative)	150
Chapter Quizzes @ 20-30 points each	120
Assignments @10 points each	80

COURSE DESCRIPTION:

An analysis of the technical factors and specialized devices necessary to produce diagnostic radiographs. An emphasis is placed on the effect and control of the primary technical factors of density, contrast, detail, and distortion. Radiographic tools and techniques are employed to produce quality radiographic images in the laboratory setting.

COURSE OBJECTIVES:

After successful completion of this course including all reading, written assignments, and laboratory exercises, the student will be able to:

1. Analyze quality of diagnostic medical images consistent with established standards.
2. Apply basic exposure and technical factors to produce diagnostic images.
3. Define and utilize terminology associated with medical imaging.
4. Demonstrate competence in the understanding of radiographic prime image parameters and the relationships of exposure or other influencing factors to medical imaging.
5. Establish awareness of exposure latitude and range of diagnostic image quality.
6. Develop or utilize technical or reference charts to determine correct radiographic exposure.
7. Utilize basic radiographic equipment and tools to produce diagnostic medical images.
8. Apply standardized rules and consistent methods to maximize diagnostic image quality.
9. Calculate compensations for changes in technical factors or patient limitations to maintain image quality.
10. Demonstrate a general awareness of image receptors and their application.
11. Utilize electronic (computer) resources to complete learning activities and explore and research current radiographic imaging, technical factors, and radiographic equipment topics.
12. Know, understand, and follow basic principles of radiation protection and lab safety.

COURSE SCHEDULE:

Week: 1	Introduction
2	Overview of imaging terminology and equipment
3	Overview of radiographic quality Prime radiographic factors
4	Test #1
5	Scatter radiation and beam restriction
6-7	Radiographic grids
8-9	Filtration

	Test #2
10	Radiographic film
11	Film/screen combinations
12	Optical density
	Distortion / Test #3
13	
14	Test #4 Math Test
15	FINAL EXAMINATION

*See Calendar in Web CT for up to date course schedule

DISABILITIES SERVICES:

Students with a documented disability (physical, learning, mental, emotional) requiring a classroom accommodation should contact the Disabilities Services Office, located in Arts & Sciences Commons 1017K (phone # 591-3772) or ASC 1021 (phone # 591-5039).

DISCLAIMER

This syllabus is a guide and may be changed at anytime per the program or instructors discretion. In case of a dispute with the syllabus the Radiography Student Handbook will take precedence.

Appendix D: CV's on Staff and Faculty

Lisa L. Wall

Education:

- Washtenaw Community College, Ann Arbor, MI, Associates in Radiography, 1991
- Cleary College, Ypsilanti, MI Bachelors in Business Management, 1994
- Ferris State University, Big Rapids, MI, Masters in Education, 1999

Work Experience:

- ***Ferris State University: 2004 to Present***
 - ***Interim Program Coordinator***
 - Review/revise and develop Radiography curriculum.
 - Self-study and preparation for JRCERT.
 - Establish and maintain cooperative relations with the clinical affiliates.
 - Develops the program's master plan of education, designating short and long term goals and objectives.
 - Develops methods of program evaluation to ensure ongoing effectiveness through outcomes assessment and corresponding revisions.
 - Evaluates plans for educational delivery of didactic, laboratory, and clinical experiences to facilitate the achievement of program goals.
 - Conducts periodic assessment of program effectiveness, through evaluations and surveys of graduates, alumni and other individuals involved in the program.
 - Actively coordinates and conducts the procedures required to achieve and maintain the radiography program accreditation.
 - Participates in faculty/staff meetings and serves on committees.
 - ***Baker College: 2003 to 2004***
 - ***Department Head:***
 - Review/revise existent curriculum.
 - Develop the Radiographer curriculum.
 - Establish and maintain cooperative relations with individuals responsible for the self-study process.
 - Establish and maintain cooperative relations with the clinical affiliates.
 - Develops the program's master plan of education.
 - Evaluates plans for educational delivery of didactic, laboratory, and clinical experiences to facilitate the achievement of program goals.
 - Conducts periodic assessment of program effectiveness, through student evaluation and peer review of faculty, exit interviews, and surveys of graduates.
 - Supervise faculty.
 - Actively coordinates and conducts the procedures required to achieve and maintain the radiography program accreditation.
 - Participates in faculty/staff meetings and serves on committees.
 - Facilitates and documents accurate communication of program policies and procedures to students.
 - ***Ferris State University: 2001 to 2003***
 - ***Lab Assistant:***
 - Demonstrates knowledge of program goals, clinical objectives, and clinical evaluation systems.

- Evaluates students on a regularly scheduled basis.
- Participates with program officials in periodic review, outcomes assessment, and revision of course materials.
- Participates in faculty meetings and advisory committees.
- **Other:** ASRT & MSRT Member, ARRT Registered.

Daniel A. Sleeper BS RT(R)

Education

2007 – Present	Ferris State University – Masters Program Career and Technical Education/Instructor Concentration Big Rapids, Michigan 49307
1990 - 1992	Saint Josephs College – Bachelors degree Radiologic Technology Major Biology minor Windham, Maine 04062
1988 - 1990	Central Maine Medical Center - Certificate School of Radiologic Technology Lewiston, Maine 04240
1984 - 1988	Gardiner Area High School - Diploma Gardiner, Maine 04345

Work Experience

2007 – Present	Ferris State University – Clinical Coordinator Big Rapids, Michigan 49307
2006 – 2007 Professor	Ferris State University – Temporary Instructor/Assistant Big Rapids, Michigan 49307
2004 -2006 Coordinator	Kennebec Valley Community College – Clinical Fairfield, Maine 04937
2002 - 2004	St. Andrews Hospital – Radiology Manager Boothbay Harbor, Maine 04538
2001 - 2002	Aureus Medical Group – Travel Radiologic Technologist Omaha, Nebraska 68101
1999 - 2001	Symphony MobileX – Supervisor Emergency X-ray and EKG Service Horsham, Pennsylvania 19044
1992 - 1999	Radiologic Technologist – Diagnostic, CT and Angiography Maine General Medical Center

Gary Moore

Education

- 2000-2003 Ferris State University
Bachelors Degree in Allied Health Education
Major: Allied Health Education (Radiography)
Minor: General Science (DX endorsement)
-Maintained a 3.6 or above cumulative GPA
-Gained experience in a variety of teaching methods
- 1992-1995 Ferris State University
Associates Degree in Applied Science: Radiography

Work-Related Experience

- 05/2007-present Adjunct Faculty Ferris State University/Tenure Track Full-Time
- 11/2005 -present Mecosta County Medical Center
-Coordinates and performs routine and fluoroscopic procedures, computed tomography, portable x-rays, trauma, and surgery procedures
- 12/2005-06/2006 Mecosta-Osceola Career Center: Allied Health Para educator
-Assist Allied Health Instructor with curriculum, grading, student advising and placement, etc
- 02/04-12/05 Spectrum Health United Memorial (Kelsey Campus)
-Effective written and verbal communication skills and ability to maintain strictest levels of confidentiality
- 04-06/2002 Evart Middle School (6th grade Special Education)
-Long-term substitute position
-Gained experience with RTP program
-Utilized Evart grading system
-Active Involvement in talent show and Medieval Festival
-Experienced warm and friendly environment from all students and staff
Member

To: Members of Program Review Committee

From: Theresa A. Raglin, Department Head

Date: July 20, 2009

Re: Radiography Program

Health of the Program

The Radiography Program is a vital program within the College of Allied Health Sciences. It continues to meet the Mission of Ferris State University by providing an innovative career-oriented and unique educational experience. Students spend three semesters on campus refining their clinical skills prior to three semesters of internship at a clinical affiliate. Employer surveys reflect the high level of clinical skills achieved by the graduates. Graduates are in demand and employers consistently rank them high. Graduates continue to experience a one hundred percent employability rate especially if they are willing to relocate. The Bureau of Labor Statistics projects an increased consumer demand for radiologic technologists. This growth is expected to increase by about 15 percent from 2006 to 2016.

There continues to be a high demand and interest for enrollment in the Radiography Program. The program received 129 applications for the 50 seats available in the professional sequence courses for Fall 2009. The program continually utilizes their assessment data to make ongoing changes to the curriculum, admission criteria and progression policies. Data revealed that pre-Radiography students had an average GPA of 2.80 and an ACT score of 20.26. Attrition rates averaged 19% over the last ten years. The number of students passing the American Registry for Radiologic Technologists credentialing exam has risen significantly from a 71% in 2000 to 92% in 2008. To further enhance their student's foundation, strengthen their skills, provide better retention and increase the registry pass rates, the Radiography program revised their curriculum in 2008 and implemented higher admission requirements for Fall 2010. The intention is that all 50 students will be retained and pass the registry at rates above the national average.

The faculty members in the Radiography program are highly qualified and credentialed radiologic technologists. Student and graduate surveys express satisfaction with the quality of faculty. The faculty continues to demonstrate dedication to this program through their commitment to student success.

Adequacy of Resources

Resources are adequate to support and meet the needs of the existing program, faculty and students. However, competition for clinical sites remains a problem. Even though there is a high demand and interest in the program, we cannot expand the enrollment in the program due to the limited number of clinical sites.

Graduate surveys support and reflect the strength of the on-campus laboratory experience but continually note the outdated equipment in the lab. There are three large pieces of equipment that were manufactured in the 1980's in need of replacement in the radiography lab. Many of the locks and control settings do not work and finding replacement parts is becoming very

difficult. Students need training on all three pieces of equipment prior to leaving for internship and it is becoming more difficult to demonstrate positioning, radiation protection and safety precautions on this equipment. Each new or refurbished piece of equipment would cost approximately \$60,000 to \$155,000. It is challenging in these tough economic times to allocate funds or secure donations for these expensive pieces of equipment.

Future Goals

Since the associate degree program has limited enrollment, the radiography program could only increase their enrollment by offering certificates in CT, MRI and mammography. The program will conduct a feasibility study to determine if there is a need for online post graduate certificates in CT, MRI and mammography within the profession and determine the financial implications to the program and college.

The radiography program will continue to monitor and assess the strength of their program and enhance their curriculum as necessary to meet the needs of the students, graduates and the radiography profession.



COLLEGE OF ALLIED HEALTH SCIENCES

July 23, 2009

TO: Members of the Academic Program Review Committee

FROM: Ellen J. Haneline, Ph.D. Dean-College of Allied Health Sciences

RE: Radiography Program

Health of the program

The mission of the radiography program is in congruence with the university mission. Both espouse dedication to the preparation of students for successful careers and cite the importance of life-long learning. Graduates demonstrate the adherence of the program to its mission as evidenced by comments from employers, clinical supervisors and graduates. Graduates are perceived as being competent practitioners.

The Radiography program at Ferris enjoys a unique position among its competitors because of the strong hands-on and theoretical foundation that is provides to students prior to their assignment to the clinical setting. Interns from the program at Ferris are able to operate equipment and deal with patient issues because of the foundation provided in the laboratory on campus prior to the clinical assignment. Other programs in the state do not have energized laboratory settings wherein students can learn skills prior to their internship assignment. One measure of the program's ability to prepare students for the clinical setting is the fact that the University of Michigan has limited the internship spots available to students to those enrolled in the radiography program at Ferris State University.

There are approximately 2 applicants for each available seat in the program's professional sequence, demonstrating the visibility of the program among prospective students. Employment rate for graduates is 100% attesting in part to the visibility of the program and the demand for graduates.

Pre-radiography students had an average gpa of 2.8 and an average ACT composite score of 20.26. The quality of students entering the professional sequence is assured by the more stringent entrance requirements. Student pass rates on the national certification examination has increased by 21% between 2000 and 2008 (71% to 92%).

All faculty members within the program are credentialed as radiologic technologists. One of the faculty members has an earned masters degree and the other two are enrolled in a masters program. Faculty are dedicated to student success and program quality. Evidence of the faculty's dedication to program quality is provided by the recognition that they received from the Assessment Committee for their work in demonstration of student learning. During the past three years, the program faculty have struggled to maintain a full complement of faculty. However, beginning in the Fall, 2008 all faculty positions were full. Lisa Wall, program coordinator has been very instrumental in assuring that the faculty work together to assure a high quality program. She should be commended for her efforts.

Future Goals

Programmatic faculty will continue to enhance their efforts in demonstration of student learning through programmatic and course level assessment. As indicated by the results of those efforts changes will be made. Due to the physical limitations imposed by the size of the laboratory, the availability of equipment and the presence of clinical placement sites, the number of students enrolled in the program will remain constant. Efforts to decrease the attrition rate will continue with the overall goal of maintaining a level of attrition below 10% each year.

Although there is little possibility of increasing the enrollment in on-campus sections, there is a possibility that the program's enrollment could be increased through the formation of advanced modality certificates. Preliminary investigation of these options will begin within the next year.

Adequacy of Resources

Laboratory space is sufficient to meet the demands of the currently enrolled students. The program's laboratory was remodeled within the past five years resulting in a more pleasant learning environment for students. In addition, a digital system was installed to allow students access to state of the art imaging devices. Acquisition of up-to-date equipment is a challenge for the program. Currently, there are several pieces of equipment that are in need of replacement, however, the budget has not allowed allocation of \$60,000 to \$160,000 to do so. The college will continue to seek donations and/or Perkins funding to facilitate their purchase.

Increased enrollment in the radiography program, along with others in the CAHS has resulted in additional stressors placed on courses in the College of Arts and Sciences, especially in the Biology and Physical Sciences department. The end result is that students have difficulty fulfilling their qualification requirements.