# WSU Five-Year Program Review Self-Study

Department/Program: Radiologic Sciences Undergraduate Associate of Applied Science Radiography Bachelors of Science Radiologic Sciences Diagnostic Medical Sonography/Cardiac and Medical Radiation Therapy Nuclear Medicine Magnetic Resonance Imaging Computed Tomography Cardiac Interventional Technology Women's imaging Advanced Radiography

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## **Brief Introductory Statement**

The Weber State University Radiologic Sciences Program evolved from two hospital-based radiography programs that were conducted by St. Benedict's Hospital and Dee Memorial Hospital. From 1967 to 1970, the hospital-based programs arranged to have students complete general education courses at Weber State College, while the professional courses were still being taught at the hospitals. In 1969, the Utah Board of Regents assigned the primary role for radiologic sciences to Weber State College. Beginning autumn quarter in 1970, the hospitals gave up sponsorship of the programs and Weber State College assumed responsibility of the radiography programs with all classes taught on campus. The first class of Weber State College graduates completed the program in the spring of 1973.

The Nuclear Medicine and Radiation Therapy programs were approved by the Utah Board of Regents in 1976 and the Diagnostic Medical Sonography Program was approved in 1980. As innovative technological imaging modalities were developed during the 1980s, additional programs in Computed Tomography, Magnetic Resonance Imaging, Cardiovascular-Interventional Technology and Advanced Radiography were added to the program cluster. An emphasis in Mammography was added in the early 1990s. More recently the Radiologist Assistant program was developed. Mammography was changed to Women's Imaging and in 2009 the Masters of Sciences in Radiologic Sciences was approved.

During the early 1980s, the Utah Board of Regents approved the baccalaureate degree level in allied health sciences, which allowed the advanced radiography and the medical imaging specialty areas and radiation therapy to become an educational career ladder for technologists. Adding these advanced imaging areas to the program has proven to be beneficial to the medical community by producing highly-skilled health care workers throughout the state and allows graduates to pursue upward career mobility.

Due to campus-wide budget reductions in the mid-80s, the faculty was confronted with the possibility of discontinuing the advanced specialty modalities. Rather than discontinuing the programs and leaving the medical community without a manpower source, the faculty, with the permission of the dean and WSU administration, elected to move the programs to the Division of Continuing Education. The programs have been self-sustaining programs since that time.

## **Outreach Program:**

The Weber State College Radiologic Sciences faculty was approached in 1978 to conduct a radiography program in Panguitch, UT in an effort to meet the manpower needs of the rural facility. Students were accepted into the Outreach program beginning autumn semester of 1979. Soon after, other rural hospitals in the state requested students for their facilities. In 1982, Dixie Medical Center in St. George and Valley View Hospital in Cedar City were added as clinical sites. The radiography program is designed to move into an area, educate and train students and when the need is met, the program can be moved to another site. The three main sites for the program are Price, St. George and Cedar City which provide qualified workers for the southern Utah areas and the Uintah Basin area. Locations where the radiography program has been conducted in rural areas are as follows:

Kanab	Panguitch	Tooele			
Fillmore	Delta	Tremonton			
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Nephi	Moab	Richfield
Vernal	Roosevelt	Beaver
Monticello	Blanding	Payson

In addition to the radiography program, Nuclear Medicine, Diagnostic Medical Sonography and Radiation Therapy programs have also been conducted at various rural sites as need dictates.

In an agreement between the faculty and the WSU administration in 1994, students at the St. George, Cedar City and Price, UT sites were included into the campus program as budget-related. The faculty agreed to maintain a minimum of three sites in the outreach program and the classes are considered as part of the faculty teaching load.

In 1992, the Utah State Board of Regents approved a proposal to incorporate clinical sites in surrounding states when Western Wyoming Community College in Rock Springs, WY requested that Weber State University assume responsibility for their radiography program. Permission granted by the Board of Regents allowed several clinical sites to be added. The program operates in the same manner as the Outreach program, meaning when the need is met, the program can be moved to a different site. The current sites are as follows:

Evanston, WY	Cortez, CO	Riverton, WY
Rawlins, WY	Durango, CO	Twin Falls, ID
Jackson Hole, WY	Farmington, NM	
Douglas, WY	Montpelier, ID	

In 1998, Weber State University assumed the management of a hospital-based program in cooperation with Intermountain Health Care-Utah Valley Regional Medical Center. This program is considered oncampus and budget-related. This is a shared financial agreement between WSU and Intermountain Health Care. The current sites are as follows:

Provo, Utah	Orem, Utah	American Fork, Utah
Heber City, Utah		

The Department of Radiologic Sciences conducts programs in:

Radiography	Diagnostic Medical Sonography	Radiation Therapy				
Nuclear Medicine	Magnetic Resonance Imaging	Computed Tomography				
Mammography	Advanced Radiography					
Cardiovascular-Interventional Technology						

The history Department of Radiologic Sciences dates back more than 50 years; it was developed on traditions rich in history and academic excellence: it is department founded on the guiding principle of "learning today and leading tomorrow."

## **Standard A - Mission Statement**

The mission statement for the Radiologic Sciences Program incorporates the philosophy of the program and is as follows.

The mission of the Weber State University Radiologic Sciences Program is to adhere to the mission and goals of the University and the Dumke College of Health Professions in serving the needs of the medical community and in assisting the students in the development of their potential as technologists and as human beings.

## **Goals stemming from the mission statement are:**

The primary educational goal of the Radiologic Sciences Program is to use resources to equip students with the knowledge and skills needed to live effectively and to provide the knowledge, skills and judgment needed to render quality health care services.

A second goal is to broaden the students' knowledge within the professional discipline and to maintain professional competency through a desire to participate in life-long learning.

## **Objectives to assist in attaining the mission and goals are to:**

- 1. Maintain curricula based on current practices and a competency-based clinical evaluation system.
- 2. Integrate the didactic and clinical educational components to promote effective learning.
- 3. Promote a sense of professionalism and a desire to learn through role-modeling, mentoring and teaching practices.
- 4. Instill an appreciation of racial, cultural and human diversity.
- 5. Advocate the value of human dignity and ethical conduct.

## Mission Statement Consistency:

The Radiologic Sciences Program mission statement, goals and objectives are integral to the mission statement of Weber State University (WSU) and the Dumke College of Health Professions. For example, WSU is committed to offering both vocational and professional educational programs to prepare students for immediate employment or further study. The Radiologic Sciences Program cluster is based upon a career ladder concept which provides lateral and/or vertical career mobility; the curriculum is designed Version Date: April, 2017 5

to introduce new concepts and technological advances in medical imaging and radiation therapy; transmission of values and learning in the affective domain are incorporated into the curriculum throughout the program to promote the maintenance of human dignity; critical or analytical thinking and writing are stimulated through classroom interactions, assignments, research and projects; problemsolving skills are refined in the clinical education setting, in the laboratories, as well as the classroom; students are encouraged to attend professional society meetings, lectures, study abroad programs, participate in community based learning, and cultural activities to expand their knowledge; and students are given projects which are designed to stimulate life-long education and self-development.

## Standard B – Curriculum

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The curriculum for the programs contain the content required by the national certification agencies and meets or exceeds the national educational standards established by various professional organizations. Students must complete all of the required courses in order to be eligible to sit for the certifying examinations. Courses within a program must be offered each year to enable the class of students currently enrolled to qualify for the national examinations. The following table provides information about each program. Table 1

Program	Type of Degree	General Education Courses/Maj or	Course Rotation by Year	WSU Online, Davis Campus, etc.	Unique Aspects of Curriculum
Radiography	AAS	18-19 cr hrs of gen ed. vs. 50 cr hrs in major & 25 cr hrs of elective courses 68-69 cr hrs required	All courses must be taught annually so students will qualify for the certification exam	Use of Chi Tester and e-mail for student communi- cation; taught at Price, Cedar City, St. George, Richfield, Uintah Basin and 4-Corners area, Provo IHC Campus	Allows students to remain in their rural community; also offered on the Navajo reservation, Montana, Western Wyoming, Provo and a variety of rural communities throughout Utah
Diagnostic Medical Sonography	BS	42 cr hrs of gen ed. vs. 22 cr hrs in Medical- Vascular emphasis & 19 in Cardiac emphasis with 15 cr hrs of support courses & 7- 9 in elective courses	All courses must be taught annually so students will qualify for the certification exam	Use of Chi Tester and e-mail for student communi- cation; has been taught at St. George, Cedar City, Gunnison, Provo	Accommodates students who wish to pursue a degree allows students to remain in their community.

Nuclear Medicine	BS	42 cr hrs of gen ed. vs. 29 cr hrs in major & 12 cr hrs in support courses	All courses must be taught annually	Use of Chi Tester and e-mail for student communi- cation; has been taught at Price, St. George, Vernal, Roosevelt, Provo & Cedar City	Accommodates students who wish to pursue a degree allows students to remain in their community.
Radiation Therapy	BS	42 cr hrs of gen ed. vs. 36 cr hrs in major & 12 cr hrs in support courses & 12 cr hrs of elective courses	All courses must be taught annually	Use of WSU Online, Chi Tester and e-mail for student communi- cation; taught at Provo, St. George and Salt Lake City	Accommodates students who wish to pursue a degree allows students to remain in their community
Magnetic Resonance Imaging (MRI)	BS	42 cr hrs of gen ed. vs. 14 cr hrs in major & 35 in support courses	All courses must be taught annually	Use of Chi tester & e- mail for communi- cation with students; taught at Vernal, Roosevelt, Cedar City, St. George, Provo and Salt Lake City	Accommodates students who wish to pursue a degree allows students to remain in their community

Computed Tomography (CT)	BS	42 cr hrs of gen ed. vs. 11 cr hrs in major & 35 in support courses	All courses must be taught annually	Use of Chi Tester & e- mail for communi- cation with students; taught at Price, Moab, Roosevelt, Vernal, Kanab, Provo and Salt Lake City	Accommodates students who wish to pursue a degree allows students to remain in their community
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## <u>Curriculum Map</u>

# Table shows six competencies across the top/ each program down the left side and appropriate courses under each competency:

Table 2

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SIX departmental competencies used for direct measurements of learning in ALL programs in the Department	Patient Care and Educati on	Profession al Developm ent and Research	Biologic Effects and Safety	Clinical Compete ncy and Medical Ethics	Procedures, Anatomy and Pathophysiol ogy	Instrumentat ion and Quality Control
-		Associat	te of Appl	ied Scienc	e	
Radiography	RADT 2992 Seminar	RADT 2821-2825	RADT 3043	RADT 2861- 2865	RADT 1502- 1532	RADT 1303
	RADT 2403	RADT 2942	RADT 2913	RADT 2865	RADT 1601- 1661	RADT 2403
	RADT 3003	RADT 2803		RADT 2913	RADT 2272	RADT 3443
	RADT 2913	RADT 2913		RADT 3043	RADT 2913	RADT 3463
						RADT 2913
						RADT 3463
		Bac	helors of	Science		
Advance Radiography	RADT 3003	RADT 4213	RADT 3403	RADT 3043	RADT 3123	RADT 3443
	RADT 3263	RADT 4233	RADT 3423	RADT 3863	RADT 3143	RADT 3463
	RADT 4203				RADT 3523	RADT 3563
					RADT 4303	RADT 4433
						RADT 4443
Cardiovascula r Interventional	RADT42 03	RADT 4933			RADT 3123	Notethese were obtain in the radiography program

	RADT	RADT 4943		RADT	RADT3143	RADT 3563
	DV3003			3863		
	RADT			RADT	RADT 4313	
	3203			4003		
	RADT 3253			RADT 3043	RADT 4343	
	5255			5015	D 4 D T 4000	
					RADT 4303	
					KADI 4333	
					RADT 4913	
					10101 4715	
Computed	RADT	RADT 4933	RADT	RADT	RADT 3123	RADT 3563
Tomography	DV3003		3403	3043		
	RADT	RADT 4943		RADT	RADT 3143	RADT 4663
	3253			3863		
	RADT			RADT	RADT 4613	
	4205			4003		
					RADT 4303	
					RADT 4911	
DMS Medical	RADT	RADT 4933	RADT	DMS	RADT 3123	DMS 4110
	3003		3043	4610		
	RADT	RADT 4943	DMS	DMS 4811	RADT 3143	DMS 4120
	3243 PADT	DMS 4901	4110 DMS	DMS /012	DMS 4210	DMS 4012
	3253	DM3 4001	4120	DM3 4012	DM3 4210	DM3 4912
				DMS 4813	DMS 4220	
					DMS 4310	
					DMS 4330	
					DMS 4340	
DMS Cardiac	RADT 3003	RADT 4933	RADT 3043	DMS 4620	RADT 3123	DMS 4110
	5005		5015			
	RADT 3243	KADT 4943	DMS 4110	DMS 4821	RADT 3143	DMS 4120

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	RADT 3253	DMS 4801	DMS 4120	DMS 4822	DMS 4310	DMS 4911
	5255		1120	DMS 4823	DMS 4230	
				DMS 4813	DMS 4220	
					DMS 4210	
DMS Vascular	DMS 4630, 4410. 4420		DMS 46 30, 4110	DMS 4831, 4832	DMS 4410,4420	DMS 4110
	RADT 3003	RADT 4933	RADT 3043	DMS 4630	RADT 3123	DMS 4120
	RADT 3243	RADT 4943	DMS 4110	DMS 4831	RADT 3143	DMS 4913
	RADT 3253	DMS 4801	DMS 4120	DMS 4832	DMS 4410	
				DMS 4833	DMS 4420	
MRI	RADT DV 3003	RADT 4933	RADT 4623	RADT 3043	RADT 3123	RADT 3563
	RADT 3253	RADT 4943		RADT 3863	RADT 3143	RADT 4603
	RADT 4203			RADT 4863	RADT4643	
					RADT 4633	
					RADT 4303	
					RADT 4912	
Nuclear Medicine	RADT 3243	RADT 4933	RADT 3043	NUCM486 1	RADT 3143	RADT 3563
	RADT 3263	RADT 4943	RADT 3423	NUCM 4862	NUCM 4103	NUCM 4303
				NUCM 4863	RADT 4303	MUCM 4333
					NUCM 4203	
					NUCM 4213	
					NUCM 4223	
					NUCM 4912	

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Radiation Therapy	RADT 4992	RADT 4933	RATH 4330	RADT 3563	RATH 4410	RATH SI4446
		RATH 4448	RADT 3403	RATH 4861	RATH 4412	RATH 4342
		RADT 4943		RATH 4862	RATH 4414	RATH 4444
				RATH 4863	RATH 4913	
<u>Women's</u> <u>Imaging</u>						
■ Mamm o	RADT 4563		RADT 4563	RADT 3861	RADT 4553, 4563	RADT 4583,4563
Bone Density	RADT 4543		RADT 4543		RADT 4543	RADT 4543
Breast Sonography	DMS 4510		DMS 4110		DMS 4510	DMS 4110

These grids are utilized for all direct measures of learning. All courses are step lock curriculum and are pre and post tested utilizing CHI tester and clinical competencies. The pre and posts are correlated with certification scores.

## Course titles, descriptions, and sequencing are contained on the following pages.

# Radiography

<u>FALL SEMESTER</u> - First Year	RAD'
RADT 1022 Introduction to Radiologic	
Technology2	RAD'
RADT 1303 Principles of Radiographic	RAD
Exposure I3	
RADT 1502 Radiographic Anatomy &	
Positioning I2	
RADT 1601 Laboratory Experience2	
RADT 2821 Directed Readings & Research3	
RADT 2861Clinical Education3	
RADT 2992 Seminar1	
Total Semester Credit Hours <u>16</u>	

## **SPRING SEMESTER** - First Year

RADT 1512 Radiographic Anatomy and	
Positioning II	3
RADT 1621 Laboratory Experience	2
RADT 2043 Patient Care and Assessment I	2
RADT 2272 Basic Sectional Anatomy	2
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RADT 2403 Principles of Radiographic	
Exposure II	2
RADT 2822 Directed Readings & Research	3
RADT 2862 Clinical Education	3
Total Semester Credit Hours	<u>17</u>

## **SUMMER SEMESTER** - First Year

RADT 1522 Radiographic Anatomy and	
Positioning III	2
RADT 1641 Laboratory Experience	1
RADT 2803 Independent Research	1
RADT 2823 Directed Readings & Research.	3
RADT 2863 Clinical Education	3

RADT DV3003 Psycho-Social Medicine	3
RADT 3043 Medical Ethics and Law	3
Total Semester Credit Hours	<u>16</u>

## **FALL SEMESTER** - Second Year

RADT 1532 Radiographic Anatomy a	and
Positioning IV	3
RADT 1661 Laboratory Experience.	1
RADT 2824 Directed Readings & Rea	search3
RADT 2864 Clinical Education	3
RADT 2942 Career Planning & New	
Technology	2

## **SPRING SEMESTER** - Second Year

## **COURSE DESCRIPTIONS - RADIOGRAPHY PROGRAM**

RADT 1022 INTRODUCTION TO RADIOLOGIC TECHNOLOGY		
Program orientation, elementary radiation protection and basic darkroom procedures.	2 Credit Hours	
RADT 1303 Principles of Radiographic Exposure I	2 Cradit Hours	
Theory of x-ray production; imaging production and radiographic equipment.	3 Credit Hours	
RADT 1502 Radiographic Anatomy and Positioning I	2 Cradit Hours	
Terminology, pathology and radiographic positioning.	2 creat nours	
RADT 1512 RADIOGRAPHIC ANATOMY AND POSITIONING II	2 Credit Hours	
Continuation of RADT 1502. Prerequisite: RADT 1502.	3 creat Hours	
RADT 1522 RADIOGRAPHIC ANATOMY AND POSITIONING III	2 Credit Hours	
Continuation of RADT 1512.	2 Credit Hours	
RADT 1532 RADIOGRAPHIC ANATOMY AND POSITIONING IV	2 Creedit House	
Continuation of RADT 1522. Prerequisite: RADT 1522.	3 Credit Hours	
RADT 1601 <u>Laboratory Experience</u>		
Patient positioning, darkroom experience and review of radiographic quality.	2 Credit Hours	
RADT 1621 <u>Laboratory Experience</u>		
Continuation of RADT 1601. Prerequisite: RADT 1601.	2 Credit Hours	

RADT 1641 LABORATORY EXPERIENCE	1 Cradit Hour	
Continuation of RADT 1621.	1 Creuit noui	
RADT 1661 Laboratory Experience		
Continuation of RADT 1641.	1 Credit Hour	
RADT 2043 PATIENT CARE AND ASSESSMENT I		
Patient care and management in radiology.	2 Credit Hours	
RADT 2272 Basic Sectional Anatomy	2 Crodit Hours	
The anatomical appearance of each organ system and common pathology on sectiona	al medical images.	
RADT 2403 Principles of Radiographic Exposure II	2 Credit Hours	
Radiographic imaging, instrumentation, image production and factors affecting radio	logic quality.	
RADT 2803 Independent Research	1_3 Credit Hours	
Individualized projects.	1-5 creat nours	
RADT 2821-2825 DIRECTED READINGS AND RESEARCH	2 Credit Hours	
Selected readings and/or a research project on medical imaging procedures.	5 Credit Hours	
RADT 2861 <u>Clinical Education</u>		
Experience gained in a health care facility. Prerequisite: Acceptance into the program	3 Credit Hours	
RADT 2862 <u>Clinical Education</u>	2 Credit Hours	
Continuation of RADT 2861.	5 Credit Hours	
RADT 2863 <u>Clinical Education</u>	0 Cara di ta U arraga	
Continuation of RADT 2862.	3 Credit Hours	
RADT 2864 <u>Clinical Education</u>		
Continuation of RADT 2863.	3 Credit Hours	
RADT 2865 <u>Clinical Education</u>	2 Cradit Hours	
Continuation of RADT 2864.	2 Creuit Hours	
RADI 2000 <u>FINAL COMPETENCY EVALUATION</u>	2 Credit Hours	

Demonstration of competency performing the procedures required by the certification agency.

## **RADT 2913** COMPREHENSIVE REVIEW

Review of didactic and clinical applications.

## **RADT 2921 WORKSHOP. CONFERENCES AND TELECOURCES**

## **RADT 2942 CAREER PLANNING AND NEW TECHNOLOGY**

Assistance with career planning and an introduction to specialized imaging procedures and new and future imaging procedures.

#### RADT 2992 SEMINAR

Patient case studies and critical care situations.

## RADT DV3003 PSycho-Social Medicine

Designed to prepare students to better understand their patient and the patient's family through comparison of diverse populations based on their value systems, cultural and ethic influences, communication styles, socio-economic influences, health risks and life stages. Study of factors that influence the interrelationships with patient sand professional peers. Understanding multicultural diversity assists the student in providing better patient care.

## RADT 3043 MEDICAL ETHICS AND LAW

Medical ethics and law and case studies in medical imaging and radiation therapy.

## **RADT 3403 RADIOBIOLOGY AND HEALTH PHYSICS**

Effects of ionizing radiation on the human body, patient and personnel protection, exposure monitoring health physics and oncology.

## **RADT SI3443 <b>QUALITY ASSURANCE IN RADIOLOGY**

Development of a quality assurance program and manual to meet accreditation requirements.

## RADT 3463 COMPUTERIZED IMAGING

Digital radiography, image acquisition, image processing and digital image management.

1-2 Credit Hours

# **3 Credit Hours**

#### **3 Credit Hours**

2 Credit Hours

1-3 Credit Hours

#### 2 Credit Hours

**3 Credit Hours** 

## **3 Credit Hours**

**3 Credit Hours** 

# **Bachelors of Science Specialty Certification**

# Advanced Radiologic Sciences

RADT	COURSE NAME - REQUIRED COURSES	CR. HR.	Fall	SPRING	SUMMER
DV 3003	Psycho-Social Medicine	3	$\mathbf{X}$	X	X
3043	Medical Ethics and Law	3	$\mathbf{X}$	X	X
3423	Federal Regulations	3		$\mathbf{X}$	X
4203	Patient Education in Radiology	3	$\mathbf{X}$		X
4933	Research Methods	3	$\mathbf{X}$	X	X
SI 4943	Baccalaureate Thesis	3	$\mathbf{X}$	X	X
RADT	COURSE NAME – ELECTIVE COURSES	CR. HR.	FALL	Spring	SUMMER
3123	Sectional Anatomy	3	$\mathbf{X}$		
3143	Imaging Pathophysiology	3	$\mathbf{X}$		
3243	Patient Care & Assessment II	3	$\mathbf{X}$	X	
3253	Patient Care & Assessment III	3		$\mathbf{X}$	
3263	Diagnostic Services Pharmacology	3	$\mathbf{X}$	X	
3403	Radiobiology & Health Physics	3	$\mathbf{X}$	X	
SI 3443	Quality Assurance in Radiology	3		$\mathbf{X}$	⊠RPA
3463	Computerized Imaging	3	$\mathbf{X}$		
3563	Managing Clinical Information	3	$\mathbf{X}$		
3863	Clinical Internship*	2-6	$\mathbf{X}$	X	
4213	Supervision & Staff Development	3	$\mathbf{X}$		X
4223	Promotional Strategies	3			X
4233	Fiscal Analysis in Radiology	3		$\mathbf{X}$	
4243	Quality Management	3		$\mathbf{X}$	
4253	Risk Management	3	$\mathbf{X}$		
4303	Cardiology	3			X
4403	Imaging Pathology	3	$\mathbf{X}$		
4413	Forensic Radiology	3	$\mathbf{X}$	X	
4433	PACS Administration	3	$\mathbf{X}$	X	
4443	Imaging Informatics	3		$\mathbf{X}$	
4543	Bone Densitometry	3			X
4573	The Female Patient & Medical Imaging	3		$\mathbf{X}$	X
4803	Individual Research*	1-3	$\mathbf{X}$	X	X
4833	Directed Readings & Research	3	X	$\mathbf{X}$	X
4863	Clinical Internship*	2-4	X		X
4922	Workshops, Conferences & Telecourses	2	X	X	X
4942	Current Trends & Issues	2			X
4992	Seminar* **	1-2	X	X	X

⊠ Indicates Semester Taught

\*Credit hours established with faculty advisor. \*\*Requires consultation with faculty advisor.

## **COURSE DESCRIPTIONS**

#### RADT DV3003 <u>Psycho-Social Medicine</u> 3 Credit Hours

Designed to prepare students to better understand their patient and the patient's family through comparison of diverse populations based on their value systems, cultural and ethic influences, communication styles, socio-economic influences, health risks and life stages. Study of factors that influence the interrelationships with patients and professional peers. Understanding multicultural diversity assists the student in providing better patient care.

## RADT 3043 MEDICAL ETHICS AND LAW

#### **3 Credit Hours**

Medical ethics and law and case studies in medical imaging and radiation therapy.

## RADT 3123 SECTIONAL ANATOMY

## **3 Credit Hours**

Anatomical study of the body in the sagittal, transverse and coronal imaging planes.

## RADT 3143 <u>IMAGING PATHOPHYSIOLOGY</u> 3 Credit Hours

Imaging adaptations and alterations in anatomy and physiology with variation outside of the normal range.

## RADT 3243 PATIENT CARE AND ASSESSMENT II 3 Credit Hours

System analysis and advanced level of patient care, assessment and management in radiology.

## RADT 3253 PATIENT CARE AND ASSESSMENT III 3 Credit Hours

Intravenous therapy, patient care procedures and monitoring during imaging studies.

## RADT 3263 <u>Diagnostic Services</u> <u>Pharmacology</u>

**3 Credit Hours** 

Concepts of pharmacology including modes of action, uses, modes of excretion effects, side effects and patient care required for specific pharmacologic agents.

## RADT 3403 <u>RADIOBIOLOGY AND HEALTH PHYSICS</u> 3 Credit Hours

Effects of ionizing radiation on the human body, patient and personnel protection, exposure monitoring health physics and oncology.

## RADT 3423 FEDERAL REGULATIONS

## **3 Credit Hours**

Regulations governing health care, equipment and application of ionizing radiation.

## RADT SI3443 QUALITY ASSURANCE IN RADIOLOGY 3 Credit Hours

Development of a quality assurance program and manual to meet accreditation requirements.

## RADT 3463 COMPUTERIZED IMAGING

## **3 Credit Hours**

Digital radiography, image acquisition, image processing and digital image management.

## RADT 3563 MANAGING CLINICAL INFORMATION 3 Credit Hours

Digital and volumetric imaging, emerging technologies, secure computerized management practice, and patient privacy regulations.

## RADT 3863 CLINICAL INTERNSHIP

## 2-6 Credit Hours

Experience in a radiology specialty area. Consent of instructor is required.

## RADT 4203 PATIENT EDUCATION IN RADIOLOGY

## **3 Credit Hours**

Skills necessary to assess, plan and evaluate a variety of educational programs specific to radiology patients.

## RADT 4213 <u>Supervision and Staff</u> <u>Development</u>

## **3 Credit Hours**

Federal regulations, developing department protocol, designing department's personnel supervision and quality of care assessment.

#### RADT 4223 <u>Promotional Strategies</u> 3 Credit Hours

Assessment of needs, development and implementation of promotional strategies for Radiology Departments.

## RADT 4233 <u>Fiscal Analysis in Radiology</u> 3 Credit Hours

Justification, acquisition and leasing of imaging equipment and accessories, staffing formulas and review of maintenance contracts.

## RADT 4243 <u>Quality Management in</u> <u>Radiology</u>

## **3 Credit Hours**

Concepts and principles of quality management, collection and analysis of data.

## RADT 4253 RISK MANAGEMENT

**3 Credit Hours** 

Study of management of risk associated with the delivery of health care in clinical and non-clinical settings.

## RADT 4303 CARDIOLOGY

## **3 Credit Hours**

Detailed study of the heart: anatomy, physiology, pathophysiology, pharmacology, EKGs and imaging modalities.

## RADT 4403 IMAGING PATHOLOGY

## **3 Credit Hours**

Radiographic presentation of pathological conditions, abnormalities and anomalies.

## RADT 4413 FORENSIC RADIOLOGY

## **3 Credit Hours**

This course provides a comprehensive study of medical imaging's role in forensic medicine. Forensic Radiology is used to determine identity of remains, evaluate injury or cause of death and assist in the detection of abuse. Junior or senior standing required.

## RADT 4433 PACS Administration

## **3 Credit Hours**

Digital imaging and communication standards, PACS administration, image quality, and emerging technology standards.

## RADT 4443 Imaging Informatics

## **3 Credit Hours**

Analyzing system needed, project management, quality improvement, bioinformatics, clinical informatics, and medical informatics.

## RADT 4543 BONE DENSITOMETRY

## **3 Credit Hours**

This course comprehensively covers the methods of bone density measurement (bone densitometry, DEXA), the pathogenesis of osteoporosis, quality management issues, therapies for osteoporosis and a review of additional analysis methods.

## RADT 4573 <u>The Female Patient & Medical</u> <u>Imaging</u>

## **3 Credit Hours**

This course will familiarize the student to disease processes specific to the female patient and the imaging methods that may be used in diagnosis and treatment. The clinical pathways that are commonly used, involving all radiologic imaging modalities, will be explored. Students who enroll in this course must be certified by the American Registry of Radiologic Technologists.

## RADT 4803 Individual Research

1-3 Credit Hours

Research projects developed for district, state, regional or national presentation.

## RADT 4833 <u>DIRECTED READINGS AND RESEARCH</u> 3 Credit Hours

Synthesis and analysis of journal articles resulting in a research paper for the purpose of publication.

## RADT 4863 CLINICAL INTERNSHIP

## 2-4 Credit Hours

Experience in a radiology specialty area. Consent of instructor is needed.

## RADT 4922. WORKSHOP, CONFERENCES AND TELECOURSES

## 2 Credit Hours

In consultation with Radiologic Sciences faculty advisor.

## **RADT 4933 RESEARCH METHODS**

## 3 Credit Hours

Apply research strategies in health care and clinical practice, obtain certificate for

# Cardiovascular-Interventional Technology

## FALL SEMESTER

RADT 3043 Medical Ethics and Law	3
RADT 3123 Sectional Anatomy	3
RADT 3143 Imaging Pathophysiology	3
RADT 3563 Managing Clinical Information.	3
RADT 3863 Clinical Internship	3
RADT 4313 Visceral, Pelvic and Extremity	
Angiography	<u>3</u>
Total Semester Credit Hours	<u>18</u>

## SPRING SEMESTER

RADT DV3	003 Psycho-Social Medicine	.3
RADT 325	3 Patient Care and Assessment III	.3
RADT 326	3 Diagnostic Services Pharmacology	′ 3
RADT 386	3 Clinical Internship	.3
RADT 434	3 Thoracic and Venous Procedures	.3
RADT 493	3 Research Methods	.3
	Total Semester Credit Hours <u>1</u>	8

human subject research, formulate a research proposal, and complete an institutional review board application.

## RADT 4942 <u>CURRENT ISSUES AND TRENDS</u> 2 Credit Hours

Current issues and trends in the health care industry and environment affecting radiology.

## RADT SI4943 BACCALAUREATE THESIS

## **3 Credit Hours**

Research in the health professions utilizing the scientific inquiry method.

## RADT 4992 SEMINAR

## 1-2 Credit Hours

New developments and procedures in imaging and therapy and preparing for the future.

## SUMMER SEMESTER

RADT 4203 Patient Education in Radiolo	gy 3
RADT 4303 Cardiology	
RADT 4333 Head and Neck Angiography	·
RADT 4863 Clinical Internship	3
RADT 4913 Comprehensive Review/CIT	2
RADT SI4943 Baccalaureate Thesis	3
Total Semester Credit Hours	s <u>17</u>

\*Weber State University Radiography Program graduates who completed pre-requisite courses with a passing grade do not repeat the courses in the specialty program. Students completing the program will earn a major in Cardiovascular-Interventional Technology Emphasis.

Department Bachelor of Science Degree Requirements:

Major required = 30 Credit Hours Minor required = 18 Credit Hours Total Required = 48 Credit Hours

## **COURSE DESCRIPTIONS**

#### RADT DV3003 PSycho-Social Medicine

**3 Credit Hours** 

Designed to prepare students to better understand their patient and the patient's family through comparison of diverse populations based on their value systems, cultural and ethic influences, communication styles, socio-economic influences, health risks and life stages. Study of factors that influence the interrelationships with patient sand professional peers. Understanding multicultural diversity assists the student in providing better patient care.

#### RADT 3043 MEDICAL ETHICS AND LAW

**3 Credit Hours** Medical ethics and law and case studies in

medical imaging and radiation therapy.

#### RADT 3123 SECTIONAL ANATOMY

**3 Credit Hours** 

Anatomical study of the body in the sagittal, transverse and coronal imaging planes.

#### RADT 3143 IMAGING PATHOPHYSIOLOGY

#### 3 Credit Hours

Imaging adaptations and alterations in anatomy and physiology with variation outside of the normal range.

## RADT 3253 PATIENT CARE AND ASSESSMENT III

**3 Credit Hours** Intravenous therapy, patient care procedures and monitoring during imaging studies.

#### RADT 3263 <u>Diagnostic Services Pharmacology</u> 3 Credit Hours

Concepts of pharmacology including modes of action, uses, modes of excretion effects, side effects and patient care required for specific pharmacologic agents.

#### RADT 3563 MANAGING CLINICAL INFORMATION 3 Credit Hours

Digital and volumetric imaging, emerging technologies, secure computerized management practice, and patient privacy regulations.

## RADT 3863 CLINICAL INTERNSHIP

#### 2-6 Credit Hours

Experience in a radiology specialty area. Consent of instructor is required.

## RADT 4203 PATIENT EDUCATION IN RADIOLOGY

## **3 Credit Hours**

Skills necessary to assess, plan and evaluate a variety of educational programs specific to radiology patients.

## RADT 4303 CARDIOLOGY

#### **3 Credit Hours**

Detailed study of the heart: anatomy, physiology, pathophysiology, pharmacology, EKGs and imaging modalities.

#### RADT 4313 <u>VISCERAL, PELVIC AND EXTREMITY</u> <u>ANGIOGRAPHY</u>

#### **3 Credit Hours**

Anatomy, pathology, protocols and interventional procedures of abdominal viscera, extremities and pelvis.

## RADT 4333 <u>Head and Neck Angiography</u>

**3 Credit Hours** 

Anatomy, pathology, protocols and interventional procedures of the aortic arch, brachiocephalic, thyroid and other facial and neck arteries.

#### RADT 4343 <u>THORACIC AND VENOUS PROCEDURES</u> 3 Credit Hours

Anatomy, pathology, protocols and interventional procedures of the venous and cardiac systems.

## RADT 4863 CLINICAL INTERNSHIP

2-4 Credit Hours

Experience in a radiology specialty area. Consent of instructor is needed.

## RADT 4913 <u>COMPREHENSIVE REVIEW/CIT</u> 2 Credit Hours Computed Tomography

## FALL SEMESTER

RADT 3043	Medical Ethics and Law	3
RADT 3123	Sectional Anatomy	3
RADT 3143	Imaging Pathophysiology	3
RADT 3563	Managing Clinical Information	3
RADT 3863	Clinical Internship	3
RADT 4663	CT Physics and Instrumentation	<u>3</u>
	Total Semester Credit Hours <u>1</u>	8

## SPRING SEMESTER

RADT DV3003 Psycho-Social Medicine3
RADT 3253 Patient Care and Assessment III3
RADT 3403 Radiobiology and Health
Physics 3
RADT 3863 Clinical Internship3
RADT 4613 CT Imaging of the Torso and Limbs3
RADT 4933 Research Methods3
<u>Elective</u>
RADT 4803 Individual Research1
Total Semester Credit Hours. <u>16-18</u>

Preparation for advanced certification examination.

## RADT 4933 RESEARCH METHODS

## **3 Credit Hours**

Apply research strategies in health care and clinical practice, obtain certificate for human subject research, formulate a research proposal, and complete an institutional review board application.

## RADT SI4943 BACCALAUREATE THESIS

**3 Credit Hours** 

Research in the health professions utilizing the scientific inquiry method.

## SUMMER SEMESTER

RADT 4203 Patient	Education in Radiology	3
RADT 4303 Cardiolo	)gy	3
RADT 4653 CT Imag	ing of the Central Nervous	
Syster	n	3
RADT 4863 Clinical	Internship	3
RADT 4911 Compre	hensive Review/CT	2
RADT SI4943 Baccal	laureate Thesis	3
Total Se	emester Credit Hours <u>1</u>	7

\*Weber State University Radiography Program graduates who completed pre-requisite courses with a passing grade do not repeat the courses in the specialty program.

Students completing the program will earn a major in Computed Tomography Emphasis.

Department Bachelor of Science Degree Requirements:

Major required = 30 Credit Hours Minor required = 18 Credit Hours Total Required = 48 Credit Hours

# **COURSE DESCRIPTIONS**

RADT DV3003 <u>Psycho-Social Medicine</u> 3 Credit Hours Designed to prepare students to better understand their patient and the patient's family through comparison of diverse populations based on their value systems, cultural and ethic influences, communication styles, socio-economic influences, health risks and life stages. Study of factors that influence the interrelationships with patient sand professional peers. Understanding multicultural diversity assists the student in providing better patient care.

## RADT 3043 MEDICAL ETHICS AND LAW

#### **3 Credit Hours**

Medical ethics and law and case studies in medical imaging and radiation therapy.

#### RADT 3123 SECTIONAL ANATOMY

#### **3 Credit Hours**

Anatomical study of the body in the sagittal, transverse and coronal imaging planes.

## RADT 3143 IMAGING PATHOPHYSIOLOGY

#### **3 Credit Hours**

Imaging adaptations and alterations in anatomy and physiology with variation outside of the normal range.

## RADT 3253 PATIENT CARE AND ASSESSMENT III 3 Credit Hours

Intravenous therapy, patient care procedures and monitoring during imaging studies.

#### RADT 3403 <u>RADIOBIOLOGY AND HEALTH PHYSICS</u> 3 Credit Hours

Effects of ionizing radiation on the human body, patient and personnel protection, exposure monitoring health physics and oncology.

## RADT 3563 MANAGING CLINICAL INFORMATION

**3 Credit Hours** 

Digital and volumetric imaging, emerging technologies, secure computerized management practice, and patient privacy regulations.

## RADT 3863 CLINICAL INTERNSHIP

## 2-6 Credit Hours

Experience in a radiology specialty area. Consent of instructor is required.

## RADT 4203 PATIENT EDUCATION IN RADIOLOGY

**3 Credit Hours** Skills necessary to assess, plan and evaluate a variety of educational programs specific to radiology patients.

## RADT 4303 CARDIOLOGY

## **3 Credit Hours**

Detailed study of the heart: anatomy, physiology, pathophysiology, pharmacology, EKGs and imaging modalities.

#### RADT 4613 <u>Computed Tomography of the Torso</u> <u>AND LIMBS</u>

## **3 Credit Hours**

Sectional anatomy, pathology and imaging protocols of the abdominal viscera, pelvis, thorax and extremities.

## RADT 4653 <u>Computed Tomography of the</u> <u>Central Nervous System</u>

## **3 Credit Hours**

Sectional anatomy, pathology and imaging protocols of the head, spine and central nervous system.

## RADT 4663 <u>Computed Tomography Physics and</u> <u>Instrumentations</u>

## **3 Credit Hours**

Interactions of electromagnetic waves, instrumentation, imaging sequences and computer parameters of computerized tomography imaging.

## RADT 4803 INDIVIDUAL RESEARCH

## 

Research projects developed for district, state, regional or national presentation.

## RADT 4863 CLINICAL INTERNSHIP

#### 2-4 Credit Hours

Experience in a radiology specialty area. Consent of instructor is needed.

#### RADT 4911 <u>COMPREHENSIVE REVIEW/CT</u> 2 Credit Hours

Preparation for advanced certification examination.

## RADT 4933 RESEARCH METHODS

## **3 Credit Hours**

Apply research strategies in health care and clinical practice, obtain certificate for human subject research, formulate a research proposal, and complete an institutional review board application.

#### RADT SI4943 BACCALAUREATE THESIS

**3 Credit Hours** Research in the health professions utilizing the scientific inquiry method.

# DMS/Cardiac

## FALL SEMESTER - First Year

RADT 3123 Sectional Anatomy	3
RADT 3143 Imaging Pathophysiology	3
RADT 3243 Patient Care and Assessment II.	3
DMS 4210 Cardiac Sonography I	3
DMS 4610 Cardiac Laboratory	1
Total Semester Credit Hours	<u>13</u>
CODING CEMECTED Einst Voor	

## SPRING SEMESTER - First Year

RADT 3043 Medical Ethics and Law3	
RADT 3253 Patient Care and Assessment III	3
DMS 4110 Sonography Principles and	
Instrumentation	3
DMS 4220 Cardiac Sonography II	3
DMS 4811 Cardiac Clinical I	3
Total Semester Credit Hours	. <u>15</u>
<u>ELECTIVES</u>	
RADT 3263 Diagnostic Services Pharmacolog	y 3
RADT 3423 Federal Regulations	3
RADT 4833 Directed Readings and Research.	3

Department Bachelor of Science Degree Requirements:

Major required = 30 Credit Hours Minor required = 18 Credit Hours Total Required = 48 Credit Hours

## 

## **FALL SEMESTER** - Second Year

RADT DV3003 Psycho-Social Medicine	3
RADT SI4943 Baccalaureate Thesis	3
DMS 4813 Cardiac Clinical III	3
DMS 4911 Cardiac Comprehensive Review	1
Total Semester Credit Hours	. <u>10</u>
<u>Electives</u>	
RADT 3563 Managing Clinical Information	3
RADT 4203 Patient Education in Radiology	3
RADT 4803 Individual Research	1-3
DMS 4410 Vascular Sonography	2
DMS 4801 Individualized Research	1-3

Students completing the four-semester program will earn a major in Cardiac Sonography Emphasis and a minor in Advanced Radiologic Sciences.

## **SUMMER SEMESTER** - First Year

## **COURSE DESCRIPTIONS**

## RADT DV3003 PSycho-Social Medicine

**3 Credit Hours** 

Designed to prepare students to better understand their patient and the patient's family through comparison of diverse populations based on their value systems, cultural and ethic influences, communication styles, socio-economic influences, health risks and life stages. Study of factors that influence the interrelationships with patient sand professional peers. Understanding multicultural diversity assists the student in providing better patient care.

### RADT 3043 MEDICAL ETHICS AND LAW

#### **3 Credit Hours**

Medical ethics and law and case studies in medical imaging and radiation therapy.

#### RADT 3123 SECTIONAL ANATOMY

**3 Credit Hours** 

Anatomical study of the body in the sagittal, transverse and coronal imaging planes.

#### RADT 3143 IMAGING PATHOPHYSIOLOGY

**3 Credit Hours** Imaging adaptations and alterations in anatomy and physiology with variation outside of the normal range.

#### RADT 3243 PATIENT CARE AND ASSESSMENT II 3 Credit Hours

System analysis and advanced level of patient care, assessment and management in radiology.

## RADT 3253 PATIENT CARE AND ASSESSMENT III

#### **3 Credit Hours**

Intravenous therapy, patient care procedures and monitoring during imaging studies.

## RADT 4933 RESEARCH METHODS

#### **3 Credit Hours**

Apply research strategies in health care and clinical practice, obtain certificate for human subject research, formulate a research proposal, and complete an institutional review board application.

## **RADT SI4943** BACCALAUREATE THESIS

**3 Credit Hours** Research in the health professions utilizing the scientific inquiry method.

#### DMS 4110 <u>Sonography Principles and</u> <u>Instrumentation</u>

**3 Credit Hours** 

Elementary principles, propagation through tissues, transducers, pulse echo principles and instruments, images, storage and display, Doppler, image features and artifacts, bioeffects and safety.

#### DMS SI4120 QUALITY ASSURANCE

#### **3 Credit Hours**

Developing, analyzing and evaluating a quality assurance program.

## DMS 4210 CARDIAC SONOGRAPHY I

**3 Credit Hours** 

Concepts in cardiac sonographic scanning technique and protocol to produce and evaluate diagnostic images.

## DMS 4220 CARDIAC SONOGRAPHY II

3 Credit Hours

Continuation of DMS 4210.

## DMS 4230 Cardiac Sonography III

**3 Credit Hours** 

Continuation of DMS 4220.

## DMS 4610 CARDIAC LABORATORY

#### **1 Credit Hours**

Patient position and instrumentation, transducer selection and anatomic placement, scanning protocol, and image quality are practiced for cardiac sonographic examinations.

## DMS 4811 CARDIAC CLINICAL I

**3 Credit Hours** 

A minimum of 24 hours per week in an active diagnostic cardiac sonography department.

## DMS 4812 CARDIAC CLINICAL II

Continuation of DMS 4811.

## DMS 4813 CARDIAC CLINICAL III

**3 Credit Hours** 

**3 Credit Hours** 

Continuation of DMS 4812.

## DMS 4911 CARDIAC COMPREHENSIVE REVIEW

#### **1 Credit Hour**

Review and requirements for advanced responsibilities of the cardiac sonographer.

## **ELECTIVE COURSE OFFERINGS**

Meet with your faculty advisor and develop an academic contract. Complete a minimum of 7 credit hours for a major and minor from approved department course offerings.

#### RADT 3263 <u>Diagnostic Services Pharmacology</u> 3 Credit Hours

Concepts of pharmacology including modes of action, uses, modes of excretion effects, side effects and patient care required for specific pharmacologic agents.

## **RADT 3423 FEDERAL REGULATIONS**

#### **3 Credit Hours**

Regulations governing health care, equipment and application of ionizing radiation.

## RADT 3563 Managing Clinical Information

**3 Credit Hours** Digital and volumetric imaging, emerging technologies, secure computerized management practice, and patient privacy regulations.

#### RADT 4203 PATIENT EDUCATION IN RADIOLOGY 3 Credit Hours

Skills necessary to assess, plan and evaluate a variety of educational programs specific to radiology patients.

#### RADT 4573 <u>The Female Patient and Medical</u> <u>Imaging</u>

**3 Credit Hours** 

This course will familiarize the student to disease processes specific to the female patient and the imaging methods that may be used in diagnosis and treatment. The clinical pathways that are commonly used, involving all radiologic imaging modalities, will be explored. Students who enroll in this course must be certified by

# DMS/Medical

## **FALL SEMESTER** - First Year

RADT 3123	Sectional Anatomy	3
RADT 3143	Imaging Pathophysiology	3
RADT 3243	Patient Care and Assessment II	3

the American Registry of Radiologic Technologists.

## RADT 4803 INDIVIDUAL RESEARCH

1-3 Credit Hours

Research projects developed for district, state, regional or national presentation.

## RADT 4833 <u>Directed Readings and Research</u> 3 Credit Hours

Synthesis and analysis of journal articles resulting in a research paper for the purpose of publication.

## DMS 4410 VASCULAR SONOGRAPHY I

#### 2 Credit Hours

Concepts in vascular sonographic scanning technique and protocol to produce and evaluate diagnostic images.

## DMS 4801 INDIVIDUALIZED RESEARCH

**1–3 Credit Hours** Contact with faculty advisor required.

DMS 4921 WORKSHOPS, CONFERENCES, AND

**Telecourses** 

1-3 Credit Hours

DMS 4310 Abdominal Sonography	3
DMS 4320 Superficial Structure Sonography.	1
DMS 4620 Medical Laboratory	1
Total Semester Credit Hours	<u>14</u>

## **SPRING SEMESTER** - First Year

RADT 3043 Medical Ethics and Law3
RADT 3253 Patient Care and Assessment III3
DMS 4110 Sonography Principles and
Instrumentation3
DMS 4330 Gynecologic Sonography1
DMS 4340 Obstetric Sonography3
DMS 4821 Medical Clinical I3
Total Semester Credit Hours <u>16</u>
ELECTIVES
RADT 3263 Diagnostic Services Pharmacology 3
RADT 3423 Federal Regulations3
RADT 4833 Directed Readings & Research3

Department BS Degree Requirements: Major required = 30 Credit Hours Minor required = 18 Credit Hours Total Required = 48 Credit Hours

## **SUMMER SEMESTER** - First Year

RADT 4933 Research M	ethods 3	
DMS SI4120 Quality Ass	surance 3	
DMS 4801 Individualize	ad Posoarch	
DM3 4001 IIIuiviuualize		

## RADT DV3003 PSycho-Social Medicine

**3 Credit Hours** 

Designed to prepare students to better understand their patient and the patient's family through comparison of diverse populations based on their value systems, cultural and ethic influences, communication styles, socio-economic influences, health risks and life stages. Study of factors that influence the interrelationships with patient sand professional peers. Understanding multicultural diversity assists the student in providing better patient care.

## RADT 3043 MEDICAL ETHICS AND LAW

## **3 Credit Hours**

Medical ethics and law and case studies in medical imaging and radiation therapy.

## RADT 3123 SECTIONAL ANATOMY

**3 Credit Hours** 

Anatomical study of the body in the sagittal, transverse and coronal imaging planes.

## RADT 3143 IMAGING PATHOPHYSIOLOGY

**3 Credit Hours** 

DMS 4822 Medical Clinical II
Total Semester Credit Hours <u>12</u>
ELECTIVES
RADT 4573 The Female Patient & Medical
Imaging3
RADT 4833 Directed Readings & Research 3

## FALL SEMESTER - Second Year

RADT DV3003 Psycho-Social Medicine	3
RADT SI4943 Baccalaureate Thesis	3
DMS 4823 Medical Clinical III	3
DMS 4912 Medical Comprehensive Review.	2
Total Semester Credit Hours	. <u>11</u>
Electives	
RADT 3563 Managing Clinical Information	3
RADT 4203 Patient Education in Radiology	3
RADT 4803 Individual Research	1-3
DMS 4410 Vascular Sonography	2
DMS 4801 Individualized Research	1-3

# **COURSE DESCRIPTIONS**

Imaging adaptations and alterations in anatomy and physiology with variation outside of the normal range.

## RADT 3243 PATIENT CARE AND ASSESSMENT II

#### **3 Credit Hours**

System analysis and advanced level of patient care, assessment and management in radiology.

## RADT 3253 <u>Patient Care and Assessment III</u> 3 Credit Hours

Intravenous therapy, patient care procedures and monitoring during imaging studies.

## RADT 4933 RESEARCH METHODS

## **3 Credit Hours**

Apply research strategies in health care and clinical practice, obtain certificate for human subject research, formulate a research proposal, and complete an institutional review board application.

## RADT SI4943 BACCALAUREATE THESIS

#### 3 Credit Hours

Research in the health professions utilizing the scientific inquiry method.

#### DMS 4110 <u>Sonography Principles and</u> Instrumentation

#### **3 Credit Hours**

Elementary principles, propagation through tissues, transducers, pulse echo principles and instruments, images, storage and display, Doppler, image features and artifacts, bioeffects and safety.

#### DMS SI4120 QUALITY ASSURANCE

**3 Credit Hours** 

Developing, analyzing and evaluating a quality assurance program.

## DMS 4310 ABDOMINAL SONOGRAPHY I

**3 Credit Hours** 

Concepts in abdominal intraperitoneal and retroperitoneal sonographic scanning technique and protocol to produce and evaluate diagnostic images.

## DMS 4220 Superficial Structure Sonography

**1 Credit Hours** Concepts in superficial structure sonographic scanning technique and protocol to produce and evaluate diagnostic images in the clinical setting.

## DMS 4330 Gynecologic Sonography

## **1** Credit Hours

Concepts in gynecologic sonographic scanning technique and protocol to produce and evaluate diagnostic images in the clinical setting.

## DMS 4340 OBSTETRIC SONOGRAPHY I

**3 Credit Hours** Concepts in obstetric sonographic scanning technique and protocol to produce and evaluate diagnostic images.

## DMS 4620 MEDICAL LABORATORY

**1 Credit Hours** 

Patient position and instrumentation, transducer selection and anatomic placement, scanning protocol, and image quality are practiced for medical sonographic examinations.

## DMS 4821 MEDICAL CLINICAL I

#### **3 Credit Hours**

A minimum of 24 hours per week in an active diagnostic medical sonography department.

#### DMS 4822 MEDICAL CLINICAL II

**3 Credit Hours** 

Continuation of DMS 4821.

## DMS 4823 MEDICAL CLINICAL III

**3 Credit Hours** 

Continuation of DMS 4822.

## DMS 4912 MEDICAL COMPREHENSIVE REVIEW

#### 2 Credit Hour

Review and requirements for advanced responsibilities of the medical sonographer.

## **ELECTIVE COURSE OFFERINGS**

Meet with your faculty advisor and develop an academic contract. Complete a minimum of 7 credit hours for a major and minor from approved department course offerings.

## RADT 3263 DIAGNOSTIC SERVICES PHARMACOLOGY

**3 Credit Hours** Concepts of pharmacology including modes of action, uses, modes of excretion effects, side effects and patient care required for specific pharmacologic agents.

## **RADT 3423** FEDERAL REGULATIONS

#### **3 Credit Hours**

Regulations governing health care, equipment and application of ionizing radiation.

#### RADT 3563 <u>Managing Clinical Information</u> 3 Credit Hours

Digital and volumetric imaging, emerging technologies, secure computerized management practice, and patient privacy regulations.

#### RADT 4203 PATIENT EDUCATION IN RADIOLOGY 3 Credit Hours

Skills necessary to assess, plan and evaluate a variety of educational programs specific to radiology patients.

#### RADT 4573 <u>The Female Patient and Medical</u> <u>Imaging</u>

## **3 Credit Hours**

This course will familiarize the student to disease processes specific to the female patient and the imaging methods that may be used in diagnosis and treatment. The clinical pathways that are commonly used, involving all radiologic imaging modalities, will be explored. Students who enroll in this course must be certified by the American Registry of Radiologic Technologists.

## RADT 4803 INDIVIDUAL RESEARCH

1-3 Credit Hours

Research projects developed for district, state, regional or national presentation.

#### RADT 4833 <u>Directed Readings and Research</u> 3 Credit Hours

Synthesis and analysis of journal articles resulting in a research paper for the purpose of publication.

## DMS 4410 VASCULAR SONOGRAPHY I

#### **2 Credit Hours**

Concepts in vascular sonographic scanning technique and protocol to produce and evaluate diagnostic images.

## DMS 4510 BREAST SONOGRAPHY

**1 Credit Hours** Concepts in breast sonographic scanning technique and protocol to produce and evaluate diagnostic images.

## DMS 4801 Individualized Research

**1–3 Credit Hours** Contact with faculty advisor required.

## DMS 4921 <u>WORKSHOPS, CONFERENCES, AND</u> <u>TELECOURSES</u>

1-3 Credit Hours

# DMS/Vascular

## FALL SEMESTER

RADT 3123 Sectional Anatomy	3
RADT 3143 Imaging Pathophysiology	3
RADT 3243 Patient Care and Assessment II	3
DMS 4410 Vascular Sonography I	2
DMS 4630 Vascular Laboratory	1
DMS 4831 Vascular Clinical I	3
Total Semester Credit Hours	<u>15</u>
<u>Electives</u>	
RADT DV3003 Psycho-Social Medicine	3
RADT 3563 Managing Clinical Information	3
RADT 4203 Patient Education in Radiology	3
RADT 4803 Individual Research	1-3
DMS 4801 Individualized Research	1-3

## SPRING SEMESTER

RADT 3043 Medical Ethics and Law	3
RADT 3253 Patient Care and Assessment III	3
DMS 4110 Sonography Principles and	
Instrumentation	3
DMS 4420 Vascular Sonography II	3

DMS 4832 Vascular Clinical II3
Total Semester Credit Hours <u>15</u>
<u>Electives</u>
RADT 3263 Diagnostic Services Pharmacology 3
RADT 3423 Federal Regulations3
RADT 4833 Directed Readings and Research 3
RADT 4933 Research Methods3
DMS 4801 Individualized Research1-3

## SUMMER SEMESTER

DMS SI4120 Quality Assurance	3
DMS 4833 Vascular Clinical III	3
DMS 4801 Individualized Research	3
DMS 4913 Vascular Comprehensive Review.	1
Total Semester Credit Hours	<u>10</u>
Electives	

RADT 4573 The Female Patient and Medical	
Imaging	3
RADT 4833 Directed Readings and Research	3
RADT SI4943 Baccalaureate Thesis	3

Department Bachelor of Science Degree Requirements:

Major required = 30 Credit Hours Minor required = 18 Credit Hours Total Required = 48 Credit Hours

Students completing the three-semester program will earn a major in Vascular Sonography Emphasis and a minor in Advanced Radiologic Sciences.

RADT 3043 MEDICAL ETHICS AND LAW

**3 Credit Hours** 

Medical ethics and law and case studies in medical imaging and radiation therapy.

#### RADT 3123 SECTIONAL ANATOMY

**3 Credit Hours** 

Anatomical study of the body in the sagittal, transverse and coronal imaging planes.

## RADT 3143 IMAGING PATHOPHYSIOLOGY

#### 3 Credit Hours

Imaging adaptations and alterations in anatomy and physiology with variation outside of the normal range.

## RADT 3243 PATIENT CARE AND ASSESSMENT II

**3 Credit Hours** System analysis and advanced level of patient care, assessment and management in radiology.

## RADT 3253 PATIENT CARE AND ASSESSMENT III

#### 3 Credit Hours

Intravenous therapy, patient care procedures and monitoring during imaging studies.

## DMS 4110 <u>Sonography Principles and</u> <u>Instrumentation</u>

**3 Credit Hours** 

Courses required for a major or minor in the Department of Radiologic Sciences:

F	
RADT 4933 Research Methods	3
RADT SI4943 Baccalaureate Thesis	3
Recommended course meeting Diversity	
Requirement:	
RADT DV3003 Psycho-Social Medicine	3

## **COURSE DESCRIPTIONS**

Elementary principles, propagation through tissues, transducers, pulse echo principles and instruments, images, storage and display, Doppler, image features and artifacts, bioeffects and safety.

## DMS SI4120 QUALITY ASSURANCE

#### **3 Credit Hours**

Developing, analyzing and evaluating a quality assurance program.

## DMS 4410 VASCULAR SONOGRAPHY I

#### **2 Credit Hours**

Concepts in vascular sonographic scanning technique and protocol to produce and evaluate diagnostic images.

## DMS 4420 VASCULAR SONOGRAPHY II

**3 Credit Hours** 

Continuation of DMS 4410.

## DMS 4630 VASCULAR LABORATORY

## **1** Credit Hours

Patient position and instrumentation, transducer selection and anatomic placement, scanning protocol, and image quality are practiced for vascular sonographic examinations.

## DMS 4831 VASCULAR CLINICAL I

## **3 Credit Hours**

A minimum of 24 hours per week in an active diagnostic vascular sonography department.

#### DMS 4832 VASCULAR CLINICAL II

**3 Credit Hours** 

Continuation of DMS 4831.

## DMS 4833 VASCULAR CLINICAL III

**3 Credit Hours** 

Continuation of DMS 4832.

## DMS 4913 VASCULAR COMPREHENSIVE REVIEW

**1 Credit Hour** 

Review and requirements for advanced responsibilities of the vascular sonographer.

## **ELECTIVE COURSE OFFERINGS**

## RADT DV3003 PSycho-Social Medicine

3 Credit Hours

Designed to prepare students to better understand their patient and the patient's family through comparison of diverse populations based on their value systems, cultural and ethic influences, communication styles, socio-economic influences, health risks and life stages. Study of factors that influence the interrelationships with patient sand professional peers. Understanding multicultural diversity assists the student in providing better patient care.

## RADT 3263 DIAGNOSTIC SERVICES PHARMACOLOGY

## **3 Credit Hours**

Concepts of pharmacology including modes of action, uses, modes of excretion effects, side effects and patient care required for specific pharmacologic agents.

## RADT 3423 FEDERAL REGULATIONS

## **3 Credit Hours**

Regulations governing health care, equipment and application of ionizing radiation.

## RADT 3563 MANAGING CLINICAL INFORMATION 3 Credit Hours

Digital and volumetric imaging, emerging technologies, secure computerized management practice, and patient privacy regulations.

RADT 4203 PATIENT EDUCATION IN RADIOLOGY 3 Credit Hours Skills necessary to assess, plan and evaluate a variety of educational programs specific to radiology patients.

## RADT 4573 <u>The Female Patient and Medical</u> <u>Imaging</u>

## **3 Credit Hours**

This course will familiarize the student to disease processes specific to the female patient and the imaging methods that may be used in diagnosis and treatment. The clinical pathways that are commonly used, involving all radiologic imaging modalities, will be explored. Students who enroll in this course must be certified by the American Registry of Radiologic Technologists.

## RADT 4803 INDIVIDUAL RESEARCH

#### 1-3 Credit Hours

Research projects developed for district, state, regional or national presentation.

## RADT 4833 <u>Directed Readings and Research</u> 3 Credit Hours

Synthesis and analysis of journal articles resulting in a research paper for the purpose of publication.

## RADT 4933 RESEARCH METHODS

#### **3 Credit Hours**

Apply research strategies in health care and clinical practice, obtain certificate for human subject research, formulate a research proposal, and complete an institutional review board application.

## RADT SI4943 BACCALAUREATE THESIS

#### **3 Credit Hours**

Research in the health professions utilizing the scientific inquiry method.

## DMS 4801 INDIVIDUALIZED RESEARCH

1-3 Credit Hours

Contact with faculty advisor required.

#### DMS 4921 <u>WORKSHOPS, CONFERENCES, AND</u> <u>TELECOURSES</u>

1-3 Credit Hours

(Mammography is included in Women's Imaging)

# Magnetic Resonance Imaging

## FALL SEMESTER

RADT 3043	Medical Ethics and Law	.3
RADT 3123	Sectional Anatomy	.3
RADT 3143	Imaging Pathophysiology	.3
RADT 3563	Managing Clinical Information	3
RADT 3863	Clinical Internship	.3
RADT 4603	MRI Physics and Instrumentation.	.3
	Total Semester Credit Hours <u>1</u>	.8

## **SPRING SEMESTER**

RADT DV3003 Psycho-Social Medicine	3
RADT 3253 Patient Care and Assessment III	3
RADT 3863 Clinical Internship	3
RADT 4623 Advanced MRI Procedures and	
Safety	3
RADT 4643 MRI Imaging of the Torso and	
Limbs	3
RADT 4933 Research Methods	3
Total Semester Credit Hours	<u>18</u>

## SUMMER SEMESTER

RADT 4203 Patient Education in Radiology	3
RADT 4303 Cardiology	3
RADT 4633 MRI Imaging of the Central	
Nervous System	3

\*Weber State University Radiography Program graduates who completed pre-requisite courses with a passing grade do not repeat the courses in the specialty program.

Students completing the program will earn a major in Magnetic Resonance Imaging Emphasis.

Department Bachelor of Science Degree Requirements:

Major required = 30 Credit Hours Minor required = 18 Credit Hours Total Required = 48 Credit Hours

# **COURSE DESCRIPTIONS**

## RADT DV3003 PSycho-Social Medicine

**3 Credit Hours** 

Designed to prepare students to better understand their patient and the patient's family through comparison of diverse populations based on their value systems, cultural and ethic influences, communication styles, socio-economic influences, health risks and life stages. Study of factors that influence the interrelationships with patient sand professional peers. Understanding multicultural diversity assists the student in providing better patient care.

## RADT 3043 MEDICAL ETHICS AND LAW

#### **3 Credit Hours**

Medical ethics and law and case studies in medical imaging and radiation therapy.

## RADT 3123 SECTIONAL ANATOMY

**3 Credit Hours** 

Anatomical study of the body in the sagittal, transverse and coronal imaging planes.

## RADT 3143 IMAGING PATHOPHYSIOLOGY

## 3 Credit Hours

Imaging adaptations and alterations in anatomy and physiology with variation outside of the normal range.

## RADT 3253 PATIENT CARE AND ASSESSMENT III

**3 Credit Hours** 

Intravenous therapy, patient care procedures and monitoring during imaging studies.

## RADT 3563 MANAGING CLINICAL INFORMATION 3 Credit Hours

Digital and volumetric imaging, emerging technologies, secure computerized management practice, and patient privacy regulations.

## RADT 3863 <u>Clinical Internship</u>

2-6 Credit Hours

Experience in a radiology specialty area. Consent of instructor is required.

## RADT 4203 PATIENT EDUCATION IN RADIOLOGY

**3 Credit Hours** Skills necessary to assess, plan and evaluate a variety of educational programs specific to radiology patients.

## RADT 4303 CARDIOLOGY

**3 Credit Hours** 

Detailed study of the heart: anatomy, physiology, pathophysiology, pharmacology, EKGs and imaging modalities.

## RADT 4603 <u>Magnetic Resonance Imaging Physics</u> <u>AND INSTRUMENTATION</u>

**3 Credit Hours** Physical principles and theories of magnetic resonance, instrumentation, imaging sequences and methods in normal and abnormal tissue, and computer parameters of magnetic resonance.

#### RADT 4623 <u>Advanced MRI Procedures and</u> <u>SAFETY</u>

**3 Credit Hours** Evaluation of organ function and diagnosis of disease process using advanced MRI procedures with emphasis on spectroscopy and functional MR. Includes an in-depth study of MRI safety.

## RADT 4633 <u>Magnetic Resonance Imaging of the</u> <u>Central Nervous System</u>

## **3 Credit Hours**

Sectional anatomy, pathology and imaging protocol of the head, spine and central nervous system.

## RADT 4643 MAGNETIC RESONANCE OF THE TORSO AND LIMBS

## **3 Credit Hours**

Sectional anatomy, pathology and imaging protocols of the abdominal viscera, pelvis, thorax and extremities.

## RADT 4663 <u>Computed Tomography Physics and</u> <u>Instrumentations</u>

#### **3 Credit Hours**

Interactions of electromagnetic waves, instrumentation, imaging sequences and computer parameters of computerized tomography imaging.

## RADT 4863 CLINICAL INTERNSHIP

#### 2-4 Credit Hours

Experience in a radiology specialty area. Consent of instructor is needed.

## RADT 4912 COMPREHENSIVE REVIEW/MRI

2 Credit Hours

Preparation for advanced certification examination.

## RADT 4933 RESEARCH METHODS

## **3 Credit Hours**

Apply research strategies in health care and clinical practice, obtain certificate for human subject research, formulate a research proposal, and complete an institutional review board application.

## RADT SI4943 BACCALAUREATE THESIS

**3 Credit Hours** 

Research in the health professions utilizing the scientific inquiry method.

# Magnetic Resonance Imaging/Computed Tomography

## FALL SEMESTER - First Year

RADT 3123 Sectional Anatomy3
RADT 3143 Imaging Pathophysiology3
RADT 3563 Managing Clinical Information 3
RADT 3863 Clinical Internship3
RADT 4603 MRI Physics and Instrumentation3
RADT 4663 CT Physics and Instrumentation <u>3</u>
Total Semester Credit Hours <u>18</u>
<u>SPRING SEMESTER</u> - First Year
RADT 3253 Patient Care and Assessment III3
RADT 3403 Radiobiology and Health
Physics 3
RADT 3863 Clinical Internship3
RADT 4613 CT Imaging of the Torso and Limbs3
RAD1 4623 Advanced MRI Procedures and
Safety
RADT 4623 Advanced MRI Procedures and Safety
RADT 4623 Advanced MRI Procedures and Safety3 RADT 4643 MRI Imaging of the Torso and Limbs
RADT 4623 Advanced MRI Procedures and Safety

\*Weber State University Radiography Program graduates who completed pre-requisite courses with a passing grade do not repeat the courses in the specialty program.

## **SUMMER SEMESTER** - First Year

RADT 4303 Cardiology	3
RADT 4633 MRI Imaging of the Central	
Nervous System	3
RADT 4653 CT Imaging of the Central Ner	vous
System	3
RADT 4863 Clinical Internship	3
RADT 4911 Comprehensive Review/CT	or
RADT 4912 Comprehensive Review/MRI.	2
RADT 4933 Research Methods	3
Total Semester Credit Hours.	<u>14-15</u>
Fall Semester - Second Year	
RADT DV3003 Psycho-Social Medicine	3
RADT 3043 Medical Ethics and Law	3
RADT 4203 Patient Education in Radiolog	y 3

RADT 4203 Patient Education in Radiology	3
RADT 4863 Clinical Internship	3
RADT 4911 Comprehensive Review/CT	.or
RADT 4912 Comprehensive Review/MRI	2
RADT SI4943 Baccalaureate Thesis	3
Total Semester Credit Hours	. 17

Students completing the program will earn a major in Magnetic Resonance Imaging/Computed Tomography Emphasis.

Department Bachelor of Science Degree Requirements:

Major required = 30 Credit Hours Minor required = 18 Credit Hours Total Required = 48 Credit Hours

## **COURSE DESCRIPTIONS**

Designed to prepare students to better understand their patient and the patient's family through comparison of diverse populations based on their value systems, cultural and ethic influences, communication styles, socio-economic influences, health risks and life stages. Study of factors that influence the interrelationships with patient sand professional peers. Understanding multicultural diversity assists the student in providing better patient care.

## RADT 3043 MEDICAL ETHICS AND LAW

#### **3 Credit Hours**

Medical ethics and law and case studies in medical imaging and radiation therapy.

#### RADT 3123 SECTIONAL ANATOMY

#### **3 Credit Hours**

Anatomical study of the body in the sagittal, transverse and coronal imaging planes.

## RADT 3143 IMAGING PATHOPHYSIOLOGY

## 3 Credit Hours

Imaging adaptations and alterations in anatomy and physiology with variation outside of the normal range.

## RADT 3253 PATIENT CARE AND ASSESSMENT III

**3 Credit Hours** Intravenous therapy, patient care procedures and monitoring during imaging studies.

## RADT 3403 RADIOBIOLOGY AND HEALTH PHYSICS

#### **3 Credit Hours**

Effects of ionizing radiation on the human body, patient and personnel protection, exposure monitoring health physics and oncology.

#### RADT 3563 <u>Managing Clinical Information</u> 3 Credit Hours

Digital and volumetric imaging, emerging technologies, secure computerized management practice, and patient privacy regulations.

## RADT 3863 CLINICAL INTERNSHIP

## 2-6 Credit Hours

Experience in a radiology specialty area. Consent of instructor is required.

## RADT 4203 PATIENT EDUCATION IN RADIOLOGY

## **3 Credit Hours**

Skills necessary to assess, plan and evaluate a variety of educational programs specific to radiology patients.

## RADT 4303 CARDIOLOGY

## **3 Credit Hours**

Detailed study of the heart: anatomy, physiology, pathophysiology, pharmacology, EKGs and imaging modalities.

## RADT 4603 <u>MAGNETIC RESONANCE IMAGING PHYSICS</u> <u>AND INSTRUMENTATION</u>

## **3 Credit Hours**

Physical principles and theories of magnetic resonance, instrumentation, imaging sequences and methods in normal and abnormal tissue, and computer parameters of magnetic resonance.

#### RADT 4613 <u>Computed Tomography of the Torso</u> <u>AND LIMBS</u>

## **3 Credit Hours**

Sectional anatomy, pathology and imaging protocols of the abdominal viscera, pelvis, thorax and extremities.

#### RADT 4623 <u>Advanced MRI Procedures and</u> <u>Safety</u>

## **3 Credit Hours**

Evaluation of organ function and diagnosis of disease process using advanced MRI procedures with emphasis on spectroscopy and functional MR. Includes an in-depth study of MRI safety.

## RADT 4633 <u>Magnetic Resonance Imaging of the</u> <u>Central Nervous System</u>

#### **3 Credit Hours**

Sectional anatomy, pathology and imaging protocol of the head, spine and central nervous system.

#### RADT 4643 MAGNETIC RESONANCE OF THE TORSO AND LIMBS

## **3 Credit Hours**

Sectional anatomy, pathology and imaging protocols of the abdominal viscera, pelvis, thorax and extremities.

## RADT 4653 <u>COMPUTED TOMOGRAPHY OF THE</u> <u>CENTRAL NERVOUS SYSTEM</u>

## **3 Credit Hours**

Sectional anatomy, pathology and imaging protocols of the head, spine and central nervous system.

## RADT 4663 <u>Computed Tomography Physics and</u> <u>Instrumentations</u>

## **3 Credit Hours**

Interactions of electromagnetic waves, instrumentation, imaging sequences and computer parameters of computerized tomography imaging.

## RADT 4863 CLINICAL INTERNSHIP

**2-4 Credit Hours** Experience in a radiology specialty area. Consent of instructor is needed.

#### RADT 4911 <u>COMPREHENSIVE REVIEW/CT</u> 2 Credit Hours

Prep for advanced certification examination.

## RADT 4912 <u>COMPREHENSIVE REVIEW/MRI</u> 2 Credit Hours

# Nuclear Medicine

## Fall Semester

RADT 3143 Imaging Pathophysiology3
RADT 3243 Patient Care and
Assessment II3
RADT 3263 Diagnostic Services Pharmacology 3
RADT 3563 Managing Clinical Information 3
NUCM 4103 Radiopharmaceuticals and
Dosages3
NUCM 4861 Clinical Education3
Total Semester Credit Hours <u>18</u>

## SPRING SEMESTER

<b>RADT 3423</b>	Federal	Regulations	3
10101 5425	rcucrar	Regulations	J

RADT 4303 Cardiology	3
RADT 4933 Research Methods	3
NUCM 4203 Scanning and Imaging I	3
NUCM 4303 Radionuclide Physics and	
Instrumentation	3
NUCM 4862 Clinical Education	3
Total Semester Credit Hours	s. <u>15-18</u>

## SUMMER SEMESTER

RADT SI4943 Baccalaureate Thesis3	
NUCM 4213 Scanning and Imaging II	3

Preparation for advanced certification examination.

## RADT 4933 RESEARCH METHODS

## **3 Credit Hours**

Apply research strategies in health care and clinical practice, obtain certificate for human subject research, formulate a research proposal, and complete an institutional review board application.

## RADT SI4943 BACCALAUREATE THESIS

**3 Credit Hours** 

Research in the health professions utilizing the scientific inquiry method.

NUCM 4223 Nuclear Cardiology	
NUCM SI4333 Quality Assurance	
NUCM 4863 Clinical Education	
NUCM 4912 Comprehensive Review	2
Total Semester Credit Hours	<u>17</u>

\*Students completing another program in the Department of Radiologic Sciences at Weber State University have completed this course.

Students completing the program will have earned a major in Nuclear Medicine.

Courses required for a major or minor in the	
Department of Radiologic Sciences:	
RADT 4933 Research Methods	3
RADT SI4943 Baccalaureate Thesis	3
Recommended course meeting Diversity	
Requirement:	
RADT DV3003 Psycho-Social Medicine	3
# **COURSE DESCRIPTIONS - NUCLEAR MEDICINE PROGRAM**

# RADT 3043 MEDICAL ETHICS AND LAW

#### **3** Credit Hours

Medical ethics and law and case studies in medical imaging and radiation therapy.

# RADT 3143 IMAGING PATHOPHYSIOLOGY

**3 Credit Hours** 

Imaging adaptations and alterations in anatomy and physiology with variation outside of the normal range.

# RADT 3243 PATIENT CARE AND ASSESSMENT II 3 Credit Hours

System analysis and advanced level of patient care, assessment and management in radiology.

#### RADT 3263 <u>Diagnostic Services Pharmacology</u> 3 Credit Hours

Concepts of pharmacology including modes of action, uses, modes of excretion effects, side effects and patient care required for specific pharmacologic agents.

#### RADT 3403 <u>RADIOBIOLOGY AND HEALTH PHYSICS</u> 3 Credit Hours

Effects of ionizing radiation on the human body, patient and personnel protection, exposure monitoring health physics and oncology.

# RADT 3423 FEDERAL REGULATIONS

#### 3 Credit Hours

Regulations governing health care, equipment and application of ionizing radiation.

#### RADT 3563 MANAGING CLINICAL INFORMATION 3 Credit Hours

Digital and volumetric imaging, emerging technologies, secure computerized management practice, and patient privacy regulations.

# RADT 4303 CARDIOLOGY

**3 Credit Hours** 

Detailed study of the heart: anatomy, physiology, pathophysiology, pharmacology, EKGs and imaging modalities.

# RADT 4933 RESEARCH METHODS

# **3 Credit Hours**

Apply research strategies in health care and clinical practice, obtain certificate for human subject research, formulate a research proposal, and complete an institutional review board application.

# RADT SI4943 BACCALAUREATE THESIS

**3 Credit Hours** 

Research in the health professions utilizing the scientific inquiry method.

#### NUCM 4103 <u>RADIOPHARMACEUTICALS AND DOSAGES</u> 3 Credit Hours

Radiopharmacology, characterization of radiopharmaceuticals used in performing examinations and calculation of dosages.

#### NUCM 4203 <u>Scanning and Imaging Procedures I</u> 3 Credit Hours

Organ concentration, excretion and absorption, measurements and imaging.

# NUCM 4213 <u>Scanning and Imaging Procedures II</u> 3 Credit Hours

Organ concentration, excretion and absorption, measurements and imaging.

# NUCM 4223 NUCLEAR CARDIOLOGY

#### **3 Credit Hours**

Pathology, indications for examination and procedures in nuclear cardiology.

# NUCM 4303 <u>Radionuclide Physics &</u> <u>Instrumentation</u>

# **3 Credit Hours**

Production and properties of radionuclides, decay schemes, radiation measurements and special characteristics of radiopharmaceuticals.

#### NUCM SI4333 QUALITY ASSURANCE

# **3 Credit Hours**

Nuclear Medicine departmental policies and procedures.

#### NUCM 4861 CLINICAL EDUCATION I

# **3 Credit Hours**

A minimum of 24 hours per week in an active Nuclear Medicine department.

#### NUCM 4863 CLINICAL EDUCATION III

#### **3 Credit Hours**

A minimum of 24 hours per week in an active Nuclear Medicine department.

#### NUCM 4912 COMPREHENSIVE REVIEW

**2 Credit Hours** 

Review of learned material.

#### NUCM 4991 SEMINAR

**1 Credit Hour** 

New technology, procedures and equipment.

# NUCM 4862 <u>Clinical Education II</u>

**3 Credit Hours** A minimum of 24 hours per week in an active Nuclear Medicine department.

# **Radiation Therapy**

# FALL SEMESTER

RADT 3563 Managing Clinical Information 3
RADT 4933 Research Methods3
RATH 4330 Radiation Therapy Physics
RATH 4410 Radiation Oncology I
RATH SI4446 Quality Assurance
RATH 4861 Clinical Education I
Total Semester Credit Hours <u>18</u>

# **SPRING SEMESTER**

*RADT 3403 Radiobiology and Health	
Physics 3	
RATH 4342 Introduction to Treatment	
Planning	3
RATH 4412 Radiation Oncology II	3
RATH 4448 New Technology	3
RATH 4862 Clinical Education II	3
Total Semester Credit Hours	5 <u>15</u>

# SUMMER SEMESTER

RADT 4943 Baccalaureate Thesis	3
RADT 4992 Seminar	2
RATH 4414 Radiation Oncology III	3
RATH 4444 Advanced Treatment Planning /	
Brachytherapy	3
RATH 4863 Clinical Education III	3

Elective: RADT 3043 Medical Ethics and Law...3 RADT 3423 Federal Regulations ......3 RADT 3243 Patient Care and Assessment II ........3

Department Bachelor of Science Degree Requirements: Major required = 30 Credit Hours Minor required = 18 Credit Hours Total Required = 48 Credit Hours

Students completing the program will have earned a major Radiation Therapy.

# **COURSE DESCRIPTIONS**

# RADT 3043 MEDICAL ETHICS AND LAW

#### **3 Credit Hours**

Medical ethics and law and case studies in medical imaging and radiation therapy.

#### RADT 3243 PATIENT CARE AND ASSESSMENT II 3 Credit Hours

System analysis and advanced level of patient care, assessment and management in radiology.

#### RADT 3403 <u>RADIOBIOLOGY AND HEALTH PHYSICS</u> 3 Credit Hours

Effects of ionizing radiation on the human body, patient and personnel protection, exposure monitoring health physics and oncology.

#### RADT 3423 Federal Regulations

# 3 Credit Hours

Regulations governing health care, equipment and application of ionizing radiation.

# RADT 3563 MANAGING CLINICAL INFORMATION

**3 Credit Hours** 

Digital and volumetric imaging, emerging technologies, secure computerized management practice, and patient privacy regulations.

# RADT 4933 RESEARCH METHODS

#### **3 Credit Hours**

Apply research strategies in health care and clinical practice, obtain certificate for human subject research, formulate a research proposal, and complete an institutional review board application.

# RADT SI4943 BACCALAUREATE THESIS

# 3 Credit Hours

Research in the health professions utilizing the scientific inquiry method.

# RADT 4992 SEMINAR

2 Credit Hours

New developments and procedures in imaging and therapy and preparing for the future.

# RATH 4330 RADIATION THERAPY PHYSICS

#### **3 Credit Hours**

An overview of the profession of radiation therapy. Radiation therapy physics, dosimetry, isodose distribution for isotopes and electrically-produced beams. Mechanics of Linear acceleration and Cobalt.

#### RATH 4342 <u>Introduction to Treatment</u> <u>Planning</u>

#### **3 Credit Hours**

Basic qualities and concepts in radiotherapeutic dosimetry. Current aspects of the anatomical and physical consideration involved in planning an delivery of the therapy prescription.

# RATH 4410 RADIATION ONCOLOGY I

# **3 Credit Hours**

Pathology of cancer; combined therapy and surgery; chemotherapy and radiation therapy; clinical application of treatment techniques; and case studies.

# RATH 4412 RADIATION ONCOLOGY II

#### **3 Credit Hours**

Pathology of cancer; combined therapy and surgery; chemotherapy and radiation therapy; clinical application of treatment techniques; and case studies.

# RATH 4414 RADIATION ONCOLOGY III

# **3 Credit Hours**

Pathology of cancer; combined therapy and surgery; chemotherapy and radiation therapy; clinical application of treatment techniques; and case studies.

# RATH 4444 <u>Advanced Treatment Planning</u> 3 Credit Hours

Prescription interpretation, nuclide implants, brachytherapy and treatment techniques involving hyperthermia. Beam modification devices and theory of beam placement will be discussed.

#### RATH SI 4446 QUALITY ASSURANCE

**3 Credit Hours** 

Establishment of a quality assurance program for linear accelerators, simulators and therapeutic isotopes.

#### RATH 4448 New Technology

**3 Credit Hours** 

Exploration of the emerging technology and new equipment used in Radiation Therapy.

RATH 4861 CLINICAL EDUCATION I

**3 Credit Hours** 

# Women's Imaging

Fall Semester
RADT 3863 Clinical Internship3
RADT 4553 Breast Anatomy, Physiology and
Pathology3
RADT 4563 Mammographic Positioning
Imaging Techniques3
RADT 4583 Mammographic Equipment and
Quality Assurance3
Total Semester Credit Hours <u>12</u>
<u>Spring Semester</u>
RADT 3043 Medical Ethics and Law3
RADT 4572 Patient Education and Clinical
Examination2
RADT 4573 The Female Patient and Medical
Imaging3
DMS 4110 Sonography Principles and
Instrumentation3
DMS 4510 Breast Sonography1
DMS 4841 Breast Clinical3
Total Semester Credit Hours <u>15</u>

# SUMMER SEMESTER

RADT DV3003 Psycho-Social Medicine	3
RADT 3423 Federal Regulations	3

Clinical education designed to facilitate transference of didactic instruction to practical clinical practice.

# RATH 4862 CLINICAL EDUCATION II

#### **3 Credit Hours**

Clinical education designed to facilitate transference of didactic instruction to practical clinical practice.

# RATH 4863 CLINICAL EDUCATION III

#### **3 Credit Hours**

Clinical education designed to facilitate transference of didactic instruction to practical clinical practice.

# RATH 4913 <u>COMPREHENSIVE REVIEW</u>

**3 Credit Hours** 

Review of all didactic and clinical courses and competencies. Quest lectures and multiple mock registry examinations will be presented.

RADT 4543 Bone Densitometry	3
RADT 4863 Clinical Internship	2
Total Semester Credit Hours.	<u>11</u>

# FALL SEMESTER ELECTIVES

RADT 3563 Managing Clinical Information ...... 3 RADT 4833 Directed Readings and Research ... 3

SPRING SEMESTER ELECTIVES

# **SUMMER SEMESTER ELECTIVES**

RADT	4914 Co	omprehensive	Review/WI	2
RADT	SI4943	Baccalaureate	Thesis	3

Students completing all three semesters will have earned a major in Women's Imaging Emphasis. The student may obtain a minor in Advanced Radiologic Sciences by completing the Department Requirements. Department Bachelor of Science Degree Requirements:

Major required = 30 Credit Hours Minor required = 18 Credit Hours Total Required = 48 Credit Hours

RADT SI4943 Baccalaureate Thesis ...... 3

# **COURSE DESCRIPTIONS**

#### RADT DV3003 Psycho-Social Medicine

#### **3 Credit Hours**

Designed to prepare students to better understand their patient and the patient's family through comparison of diverse populations based on their value systems, cultural and ethic influences, communication styles, socio-economic influences, health risks and life stages. Study of factors that influence the interrelationships with patient sand professional peers. Understanding multicultural diversity assists the student in providing better patient care.

#### RADT 3043 MEDICAL ETHICS AND LAW

#### **3 Credit Hours**

Medical ethics and law and case studies in medical imaging and radiation therapy.

#### RADT 3423 Federal Regulations

#### **3 Credit Hours**

Regulations governing health care, equipment and application of ionizing radiation.

#### RADT 3863 CLINICAL INTERNSHIP

# 2-6 Credit Hours

Experience in a radiology specialty area. Consent of instructor is required.

# RADT 4543 BONE DENSITOMETRY

# **3 Credit Hours**

This course comprehensively covers the methods of bone density measurement (bone densitometry, DEXA), the pathogenesis of osteoporosis, quality management issues, therapies for osteoporosis and a review of additional analysis methods.

#### RADT 4553 <u>Breast Anatomy, Physiology and</u> <u>Pathology</u>

**3 Credit Hours** 

Normal breast anatomy and physiology compared to pathological conditions.

#### RADT 4563 <u>Mammographic Positioning / Imaging</u> <u>Techniques</u>

# **3 Credit Hours**

Routine positions, risk versus benefit; tissue variations, specialized procedures and imaging modalities.

# RADT 4572 <u>PATIENT EDUCATION AND CLINICAL</u> <u>EXAMINATION</u>

#### **2 Credit Hours**

Breast disease and reconstruction methods, breast examination, rehabilitation, medical-legal considerations.

# RADT 4573 <u>The Female Patient and Medical</u> <u>Imaging</u>

#### **3 Credit Hours**

This course will familiarize the student to disease processes specific to the female patient and the imaging methods that may be used in diagnosis and treatment. The clinical pathways that are commonly used, involving all radiologic imaging modalities, will be explored. Students who enroll in this course must be certified by the American Registry of Radiologic Technologists.

#### RADT 4583 <u>Mammographic Equipment and</u> <u>Quality Assurance</u>

#### **3 Credit Hours**

Equipment operation, technical factors and quality assurance procedures in mammography.

#### RADT 4863 <u>Clinical Internship</u>

#### 2 Credit Hours

Experience in a radiology specialty area. Consent of instructor is needed.

# DMS 4110 <u>Sonography Principles and</u> <u>Instrumentation</u>

# **3 Credit Hours**

Elementary principles, propagation through tissues, transducers, pulse echo principles and instruments, images, storage and display, Doppler, image features and artifacts, bioeffects and safety.

#### DMS 4510 BREAST SONOGRAPHY

**1 Credit Hours** 

Concepts in breast sonographic scanning technique and protocol to produce and evaluate diagnostic images.

# DMS 4841 BREAST CLINICAL

**3 Credit Hours** 

A minimum of 24 hours per week performing breast sonography examinations.

# **ELECTIVE COURSE OFFERINGS**

Meet with your faculty advisor and develop an academic contract. Complete a minimum of 10 credit hours for a major and minor from approved department course offerings.

#### RADT 3563 MANAGING CLINICAL INFORMATION

**3 Credit Hours** 

Digital and volumetric imaging, emerging technologies, secure computerized management practice, and patient privacy regulations.

#### RADT 4833 <u>Directed Readings and Research</u> 3 Credit Hours

Synthesis and analysis of journal articles resulting in a research paper for the purpose of publication.

# RADT 4933 RESEARCH METHODS

#### **3 Credit Hours**

Apply research strategies in health care and clinical practice, obtain certificate for human subject research, formulate a research proposal, and complete an institutional review board application.

#### **RADT SI4943 BACCALAUREATE THESIS**

#### **3 Credit Hours**

Research in the health professions utilizing the scientific inquiry method.

#### RADT 4914 COMPREHENSIVE REVIEW/WI

2 Credit Hours

Preparation for advanced certification examination.

# Standard C - Student Learning Outcomes and Assessment

# Measureable Learning Outcomes

At the end of their study at WSU, students in this program will

- 1. Provide outstanding patient care and education
- 2. Demonstrate a working knowledge of professional development and research
- 3. Provide clinically competent and ethical patient care
- 4. Understand and utilize appropriate procedures, anatomy and pathophysiologic Information in imaging or treating patients
- 5. Use appropriate instrumentation and quality control

# Table 3 Radiography Outcomes Assessment

Objective	Internal Measurement	External	Data Collection	
		Measurement		
Upon completing the Radiologic Technology Program the student will be able to:				
Identify the biological	Successful	Utah State Practical	Yearly	

effects of radiation	Completion of: RADT 1303 RADT 3403	Technician results Examination ARRT Examination results Clinical Evaluation & Personal and Professional Growth Assessment	Yearly Every Semester
Demonstrate proper radiation protection procedures during diagnostic procedures	Successful Completion of: RADT 1022 RADT 3403 RADT 1502/1601 RADT 1512/1621 RADT 1522/1641 RADT 1532/1661 RADT 1542/1681 Clinical Evaluations: RADT 2861-2865	Utah State Practical Technician examination results ARRT Examination results Clinical Evaluation & Personal and Professional Growth Assessment	Yearly Yearly Every Semester
Demonstrate proper use and understanding of radiation exposure monitors and diagnostic radiation	Successful Completion of: RADT 1303 RADT 2403 RADT 3443	Utah State Practical Technician results Examination ARRT Examination	Yearly beginning Yearly

equipment	RADT 1502/1601 RADT 1512/1621 RADT 1522/1641 RADT 1532/1661 RADT 1542/1681 Clinical Evaluations: RADT 2861-2865	results Clinical Evaluation & Personal and Professional Growth Assessment	Every Semester
Demonstrate, select, accurately explain and produce diagnostic quality radiographs	Successful Completion of: RADT 1303 RADT 2403 RADT 3443 RADT 1502/1601 RADT 1512/1621 RADT 1522/1641 RADT 1532/1661 RADT 1542/1681 Clinical Evaluations: RADT 2861-2865	Utah State Practical Technician results Examination ARRT Examination results Employer Surveys Clinical Evaluation & Personal and Professional Growth Assessment	Yearly beginning Yearly Every 3 years Every semester
Demonstrate repeated competency in accurately explaining the proper radiographic film	Successful Completion of: RADT 1303 RADT 2403 RADT 3443	Utah State Practical Technician results Examination ARRT Examination	Yearly Yearly

processing technique	RADT 1502/1601 RADT 1512/1621 RADT 1522/1641 RADT 1532/1661 RADT 1542/1681 Clinical Evaluations: RADT 2861-2865	results Job placement rates Employer Surveys Clinical Evaluation & Personal and Professional Growth Assessment	Every 3 years Every semester
Demonstrate and accurately interpret quality assurance testing	Successful Completion of: RADT 1303 RADT 2403 RADT 3443 RADT 1542/1681 Clinical Evaluations: RADT 2861-2865	Utah State Practical Technician results Examination ARRT Examination results Clinical Evaluation & Personal and Professional Growth Assessment	Yearly Yearly Every semester
Demonstrate proper evaluation and critique of radiographic positioning, technical	Successful Completion of: RADT 1502/1601 RADT 1512/1621 RADT 1522/1641	Utah State Practical Technician results Examination ARRT Examination	Yearly Yearly

factors, anatomy, physiology and pathology	RADT 1532/1661 RADT 1542/1681 Clinical Evaluations: RADT 2861-2865	results Clinical Evaluation & Personal and Professional Growth Assessment	Every Semester
Demonstrate legal and professional responsibility	Successful Completion of: RADT 3003 RADT 3403 RADT 2043 RADT 3423 RADT 1022 Clinical Evaluations: RADT 2861-2865	Utah State Practical Technician results Examination ARRT Examination results Clinical Evaluation & Personal and Professional Growth Assessment	Yearly Yearly Every Semester
Demonstrate appropriate patient education, safety and comfort skills	Successful Completion of: RADT 1022 RADT 2043 RADT 3003 RADT 3023 RADT 2263 RADT 1502/1601 RADT 1512/1621	Utah State Practical Technician results Examination ARRT Examination results Clinical Evaluation & Personal and	Yearly Yearly Every Semester

	RADT 1522/1641 RADT 1532/1661 RADT 1542/1681 Clinical Evaluations: RADT 2861-2865	Professional Growth Assessment	
Demonstrate acceptable methods of infection control and prevention	Successful Completion of: RADT 1022 RADT 2043 RADT 3003 RADT 3023 RADT 2263 RADT 1502/1601 RADT 15121621 RADT 1522/1641 RADT 1532/1661 RADT 1542/1681 Clinical Evaluations: RADT 2861-2865	Utah State Practical Technician results Examination ARRT Examination results Clinical Evaluation & Personal and Professional Growth Assessment	Yearly Yearly Every Semester
Demonstrate proper patient monitoring during radiographic procedures	Successful Completion of: RADT 2043 RADT 3003 RADT 3023 RADT 2263	Utah State Practical Technician results Examination ARRT Examination results	Yearly Yearly

	Clinical Evaluations: RADT 2861-2865	Clinical Evaluation & Personal and Professional Growth Assessment	Every Semester
Demonstrate appropriate responses to diverse patient populations	Successful Completion of: RADT 3003 RADT 3023	Utah State Practical Technician results Examination	Yearly
	Clinical Evaluations: RADT 2861-2865	ARRT Examination results	Yearly
		Clinical Evaluation & Personal and Professional Growth Assessment	Every Semester
		Employer Surveys	Every 3 years
		Graduate Surveys	Every 3 years
Demonstrate a sense of professionalism and desire to learn	Successful Completion of: RADT 1022 RADT 3003	Utah State Practical Technician results Examination	Yearly
	RADT 2866 Student acceptance	ARRT Examination results	Yearly

	1	1		
	into specialty	Employer Surveys	Every 3 years	
	programs			
		Graduate Surveys	Every 3 years	
		Exit interviews	Yearly	
		Clinical Evaluation & Personal and Professional Growth Assessment	Every Semester	
Demonstrate continued competency through life-long	Student acceptance into specialty programs	Employer Surveys	Every 3 years	
learning	Programs	Graduate Surveys	Every 3 years	
		Exit Interviews	Yearly	
		Clinical Evaluation & Personal and		
		Professional Growth		
		Assessment		
Table 4 Advanced Radiography, Imaging Specialties and Radiation Therapy				
Advance Radiography/CORE				

Objective	Internal Measurement	External Measurement	Data Collection
Upon completing the	Program of choice, the	student will be able to:	
Identify the biologic effects of ionizing radiation	Successful completion of RADT 3403, RADT 3443	Certification examination results	Annually
Demonstrate proper radiation protection procedures during diagnostic procedures	Successful completion of: RADT 4863 – CT RADT 4861& 4862 – Mammo NUCM 4861, 4862. 4863 RATH 4861, 4862. 4863	Certification examination results Employer surveys	Annually Every 3 years
Demonstrate patient assessment, monitoring and management skills	Successful completion of: RADT 3243 RADT 3253 RADT 3263, RADT 4303 RATH 4425– Rad Therapy Clinical evaluations	Certification examination results Employer surveys	Annually Every 3 years

Demonstrate appropriate patient education, safety and comfort skills.	Successful completion of: RADT 3003, RADT 3043 RADT 4203, RADT 4223 Radt 4572 Mammography RATH 4425- Radiation Therapy Clinical evaluations	Certification examination results Employer surveys	Annually Every 3 years
Demonstrate legal, professional and ethical responsibility	Successful completion of: RADT 3003, RADT 3043 RADT 4253, RADT 4233 Clinical evaluations	Certification examination results	Annually
Demonstrate knowledge of anatomy, physiology and pathophysiology	Successful completion of: RADT 3023, RADT 3123 RADT 3143, 4423 &, 4403 All courses in the specific programs pertaining to imaging. Clinical evaluations	Certification examination results Employer surveys	Annually Every 3 years

Demonstrate appropriate responses to diverse patient populations	Successful completion of: RADT 3003, RADT 3023 RADT 4203, RADT 3243 RADT 3253, Clinical evaluations	Certification examination results Employer surveys Graduate surveys	Annually Every 3 years Every 3 years
Demonstrate knowledge and application of federal regulations	Successful completion of: RADT 3043, RADT3423 RADT 4243, RADT 4253 RADT 4213 Clinical evaluations	Certification examination results Employer surveys	Annually Every 3 years
Demonstrate a sense of professionalism and desire to learn	Successful completion of: RADT 4803, RADT 4933 RADT SI4943, RADT 4922, RADT 4922, RADT 4942, RADT 4992 Active participation in professional	Exit interviews Graduate surveys Employer surveys	Annually Every 3 years Every 3 years

	organizations; acceptance into graduate programs		
Demonstrate continued competency through life-long learning	Active participation in professional organizations	Maintenance of active certification status	Every 3 years
	Acceptance into graduate school	Employer surveys	Every three years
	Standing series	Employment rate	Every three years
		Graduate surveys	Every 3 years
Computerized Tomo	ography/Magnetic Res	sonance Imaging (CT/	(MRI)
Demonstrate proper use of imaging equipment	Successful completion of: RADT 4603.	Certification examinations results	Annually
equipment	RADT 4623 RADT4663	Employer surveys	Every 3 years
	RADT 3463 Clinical evaluations: RADT 4863	Graduate surveys	Every 3 years
Demonstrate proper selection of technical	Successful completion of: RADT 4633	Certification examination results	Annually
diagnostic images	RADT 4643 RADT 4613	Employment rate	Annually
	RADT 4653 RADT 4911,	Graduate surveys	Every 3 years

	RADT 4912 Clinical evaluations		
Demonstrate and accurately interpret quality assurance testing	Successful completion of: RADT 3443, RADT 4603 RADT 4663	Certification examination results Employer surveys	Annually Every 3 years
Demonstrate proper	Successful completion	Certification	Annually
critique of diagnostic images for accuracy of technical factors,	RADT 4633, RADT 4643, RADT 4613, RADT 4653	Employer surveys	Every 3 years
anatomy, contrast	RADT 4633, RADT 4623,	Employment rate	Annually
pathology	RADT 4911 and RADT 4912	Graduate surveys	Every 3 years
Cardiovascular-Inter	rventional Technolog	y (CIT)	
Demonstrate proper use of imaging equipment	Successful completion of: RADT 3463.	Certification examination results	Annually
equipment	RADT 4913 ARRT certification Clinical evaluations: RADT 4863	Employment rate	Annually
Demonstrate proper	Successful completion	Certification	Annually

use of technical factors to produce diagnostic images	of: RADT 4313, RADT 4333, RADT 4343 Clinical evaluations	examination results	
Demonstrate and accurately interpret quality assurance testing	Successful completion of: RADT 3443, RADT 3463 Clinical evaluations & ARRT certification	Certification examination results	Annually
Demonstrate proper evaluation and critique of diagnostic images for accuracy	Successful completion of: RADT 4313, RADT 4333, and	Certification examination results	Annually
of technical factors, patient positioning, anatomy, contrast	RADT 4343	Employment rate	Annually
injection and pathology		Employer surveys	Every 3 years
Women's Imaging M	lammography	Γ	
Demonstrate proper use of imaging equipment	Successful completion of: RADT 4563	Certification examination results	Annually
- Jashurour	Clinical evaluations: RADT 4861, RADT 4862	Employment rate	Annually Every 3 years
Demonstrate proper	Successful completion	Certification	Annually

selection of technical	of: RADT 4553,	examination results	
diagnostic images	Clinical evaluations: RADT 4861,	Employment rate	Annually
	RADT 4862	Employer surveys	Every 3 years
Demonstrate and accurately interpret quality assurance	Successful completion of: RADT 4583	Certification examination results	Annually
testing	Clinical evaluations: RADT 4861, RADT 4862	Employer surveys	Every three years
Demonstrate proper evaluation and critique of diagnostic	Successful completion of: RSDT 4553, RADT 4563,	Certification examination results	Annually
images for accuracy	RADT 4572	Employer surveys	Every 3 years
of technical factors, patient positioning, anatomy and pathology	Clinical evaluations: RADT 4861, RADT 4862	Employment rate	Annually
Diagnostic Medical	Sonography	1	1
Demonstrate proper use of imaging	Successful completion of:	Certification examination results	Annually
equipment	DMS 4103, DMS 4641,	Employer surveys	Every 3 years
	DMS 4642, DMS 4643	Exit interviews	Annually
	DMS 4644, DMS 4645 Clinical evaluations:	Employment rate	Annually

	DMS 4861, 4862, 4863, 4864, 4865, 4866, 4867		
Demonstrate proper selection of technical factors to produce	Successful completion of: DMS 4103	Certification examination results	Annually
diagnostic images	DMS 4303, DMS 4323.	Exit interviews	Annually
	DMS 4343, DMS 4403,	Employer surveys	Every 3 years
	DMS 4503, DMS 4523	Graduate surveys	Every 3 years
	Clinical evaluations	Employment rate	Annually
Demonstrate and accurately interpret quality assurance testing	Successful completion of: DMS 4103, DMS 4143 Clinical evaluations	Certification examination results	Annually
Demonstrate proper evaluation and critique of diagnostic	Successful completion of: DMS 4303,	Certification examination results	Annually
images for accuracy of technical factors,	DMS 4323, DMS 4343,	Exit interviews	Annually
patient positioning, anatomy, contrast	DMS 4403, DMS 4503,	Employer surveys	Every three years
injection and pathology	DMS 4523 Clinical evaluations	Graduate surveys	Every three years

		Employment rate	Annually
Nuclear Medicine			
Demonstrate proper use of imaging equipment	Successful completion of: RADT 3463.	Certification examination results	Annually
e desta man	NUCM 4303, NUCM 4333	Employer surveys	Every 3 years
	Clinical evaluations: NUCM 4861, 4862,	Graduate surveys	Every 3 years
	4863	Employment rate	Annually
Demonstrate proper use of radiopharmceuticals	Successful completion of: NUCM 4103.	Certification examination results	Annually
& technical factors to produce diagnostic	NUCM 4203, NUCM 4213	Employer surveys	Every 3 years
images	NUCM 4303, NUCM 4333,	Graduate surveys	Every 3 years
	NUCM 4223 Clinical evaluations	Employment rate	Annually
Demonstrate and accurately interpret quality assurance	Successful completion of: NUCM 4303,	Certification examination results	Annually
testing	NUCM 4333 ARRT certification in radiography	Employer surveys	Every 3 years
Demonstrate proper evaluation and critique of diagnostic	Successful completion of: NUCM 4103,	Certification examination results	Annually

images for accuracy of technical factors, patient positioning, anatomy, nuclide	NUCM 4203, NUCM 4213, NUCM 4223	Employer surveys Employment rate	Every 3 years Annually
pathology	Clinical evaluations	Graduate surveys	Every 3 years
Radiation Therapy			
Demonstrate proper use of treatment	Successful completion of: RATH 4330	Certification examination results	Annually
equipment	RATH 4342 RATH 4444	Employer surveys	Every 3 years
	Clinical evaluations: RATH 4861, 4862,	Graduate surveys	Every 3 years
	4863	Employment rate	Annually
Demonstrate proper interpretation of treatment	Successful completion of: RATH 4410,	Certification examination results	Annually
prescriptions, treatment fields and	RATH 4412, RATH 4414,	Employer surveys	Every 3 years
procedures	RATH 4444 Clinical evaluations:	Graduate surveys	Every 3 years
	RATH 4861, 4862, 4863	Employment rate	Annually

Demonstrate and accurately interpret quality assurance testing	Successful completion of: RATH 4330, RATH SI4446 ARRT certification in radiography	Certification examination results Employer surveys Graduate surveys Employment rate	Annually Every 3 years Every 3 years Annually
Demonstrate proper evaluation and critique of treatment simulation and delivery, patient	Successful completion of: RATH 4342, RATH 4410, RATH 4412, DATH 4414	Certification examination results Employer surveys	Annually Every 3 years
positioning and protection, anatomy	RATH 4414, RATH 4444	Graduate surveys	Every 3 years
and pathology	Clinical evaluations	Employment rate	Annually

# **Five-year Assessment Summary**

All courses in the Department of Radiologic Sciences are offered on a step lock semester basis. All courses listed under (as found in the curriculum grid) the six competencies are evaluated every semester using pre and post testing while building on the knowledge

from the previous semester. The final direct measurement of the six competencies is national certification score of all undergraduate programs.

#### Six Competencies

-Patient Care and education
-Professional Development and Research
-Biologic Effects and Safety
-Clinical Competency and Medical Ethics
-Procedures, Anatomy and Pathophysiology
-Instrumentation and Quality Control

Utilizing the pre and post testing model the following average scores has occurred over the past five years

Note--the bench mark was moved from 70% to 75% in 2016/17 to be more consistent with national certification exams

# PATIENT CARE AND EDUCATION

AAS (Radiography)	94% of all students in the Radiography program scored above 75% at the end of each course in the
	sequence.

# BS

Advance Radiography	95% of all students in the program scored above 75% at the end of each course in the sequence
Cardio Interventional	100% of all students in the program scored above 75% at the
CT	92% of all students in the program scored above 75% at the end of each course in the sequence
DMS medical	96% of all students in the program scored above 75% at the end of each course in the sequence
DMS cardiac	93% of all students in the program scored above 75% at the end of each course in the sequence
DMS vascular	94% of all students in the program scored above 75% at the end of each course in the sequence
MRI	93% of all students in the program scored above 75% at the end of each course in the sequence
Nuclear Med.	89% of all students in the program scored above 75% at the end of each course in the sequence
RA	no students currently enrolled in this program
Rad. Therapy	100% of all students in the program scored above 75% at the end of each course in the sequence

--Women's Imaging 100% of all students in the program scored above 75% at the end of each course in the sequence

#### **Outcomes, Changes and Planning**

- 1. Students overall appear to be retaining critical inform semester to semesters that is required for successful completion of the program of study and clinical practice. Additional skill sets were added by national certification standards this year. All new skills tested above the 70% bench mark.
- 2. The required courses are preparing students appropriately for clinical placement, success in gaining competencies and passing national certification and state licensing examinations.
- 3. Lab courses continue to evolve to reflect changes directly related to patient care skills that are required for certification and clinical practice. We have added closed circuit cameras to record and evaluate student's interaction with patients and verbal and non-verbal patient interactions.
- 4. Clinical education requirements for patient care and education reflect a competency and re-competency model to document continued competencies
- 5. Course and clinical competencies been added to reflect patient satisfactions scores as required by clinical education sites and compliance with federal and state healthcare laws.
- 6. Additional lab assistants have been employed to assist with more one on one instruction with students in mock clinical environments. This model is making a significant impact on simulation lab experiences.

#### **PROFESSIONAL DEVELOPMENT AND RESEARCH**

AAS (Radiography) 96% of all students in the Radiography program scored above 75% at the end of each course in the sequence on the directed readings and research courses. BS

--Advance Radiography 96% of all students in the program scored above 75% at the end of RADT 4933 (research methods course) and successfully completed a Bachelor's thesis project.

Cardio Interventional	100% of all students in the program scored above 75% at the end of RADT 4933 (research methods course) and successfully completed a Bachelor's thesis project.
CT	100% of all students in the program scored above 75% at the end of RADT 4933 (research methods course) and successfully completed a Bachelor's thesis project.
DMS medical	100% of all students in the program scored above 75% at the end of RADT 4933 (research methods course) and successfully completed a Bachelor's thesis project.
DMS cardiac	94% of all students in the program scored above 75% at the end of RADT 4933 (research methods course) and successfully completed a Bachelor's thesis project.
DMS vascular	100% of all students in the program scored above 75% at the end of RADT 4933 (research methods course) and successfully completed a Bachelor's thesis project.
MRI	93% of all students in the program scored above 75% at the end of RADT 4933 (research methods course) and successfully completed a Bachelor's thesis project.
Nuclear Med.	98% of all students in the program scored above 75% at the end of RADT 4933 (research methods course) and successfully completed a Bachelor's thesis project.
RA	No students were enrolled in this program.
Rad. Therapy	100% of all students in the program scored above 75% at the end of RADT 4933 (research methods course) and successfully completed a Bachelor's thesis project.
Women's Imaging	100% of all students in the program scored above 75% at the end of RADT 4933 (research methods course) and successfully completed a Bachelor's thesis project.

# Outcomes, Changes and Planning

- 1. Students overall appear to be retaining critical information from semester to semester on the pre and posttests related to how to complete design and execute an undergraduate research program.
- 2. Students have been required to join the appropriate professional organizations to stay current with national trend and develop lifelong learning skills.
- 3. Directed readings, research methods, and Bachelors thesis projects have become required in all programs.
- 4. Some students still struggle with conducting and writing at a publishable level with under graduate research. We are encouraging and in some cases requiring the student to utilize the WSU writing center for assistance. Peer review has also been implemented.

# **Biologic Effects and Safety**

AAS (Radiography)	91% of all students in the Radiography program scored above 70% at the end of each course in the sequence.
BS	
Advance Radiography	93% of all students in the program scored above 75% at the end of each course in the sequence
Cardio Interventional	94% of all students in the program scored above 75% at the end of each course in the sequence
CT	92% of all students in the program scored above 75% at the end of each course in the sequence
DMS medical	92% of all students in the program scored above 75% at the end of each course in the sequence
DMS cardiac	92% of all students in the program scored above 75% at the end of each course in the sequence
DMS vascular	92% of all students in the program scored above 75% at the end of each course in the sequence
MRI	94% of all students in the program scored above 75% at the end of each course in the sequence
Nuclear Med.	92% of all students in the program scored above 75% at the end of each course in the sequence
RA	No students are currently enrolled
Rad. Therapy	96% of all students in the program scored above 75% at the end of each course in the sequence
Women's Imaging	91% of all students in the program scored above 75% at the end of each course in the sequence

# **Outcomes, Changes and Planning**

- 1. On the pre and post testing this section tested very well with the student retaining critical information from one semester to another in all courses of study.
- 2. The disconnection between theory and clinical practice appears to have improved this. We have implemented closed circuit cameras in the lab and student are evaluated on simulation scenarios related to patient safety and radiation protection.
- 3. Additional information has been added to this section in digital imaging, dose reduction methods and imaging wisely.
- 4. Labs have been improved to test students understanding of safety and quality improvement measures and clinical application.

# **Clinical Competency and Medical Ethics**

AAS (Radiography)	100% of all students in the Radiography program scored above 70% at the end of each course in the
	sequence.

#### BS

Advance Radiography	100% of all students in the program scored above 75% at the end of each course in the sequence
Cardio Interventional	100% of all students in the program scored above 75% at the end of each course in the sequence
CT	100% of all students in the program scored above 75% at the end of each course in the sequence
DMS medical	100% of all students in the program scored above 75% at the end of each course in the sequence
DMS cardiac	100% of all students in the program scored above 75% at the end of each course in the sequence
DMS vascular	100% of all students in the program scored above 75% at the end of each course in the sequence
MRI	100% of all students in the program scored above 75% at the end of each course in the sequence
Nuclear Med.	100% of all students in the program scored above 75% at the end of each course in the sequence
RA	no students are currently enrolled
Rad. Therapy	100% of all students in the program scored above 75% at the end of each course in the sequence
Women's Imaging	100% of all students in the program scored above 75% at the end of each course in the sequence

# **Outcomes, Changes and Planning**

**1.** Each student must complete required competencies and re-competencies each semester (100%). Several students were unable to complete the requirements and were placed on warning or dismissed from program for failing to meet the critical levels of professional competencies and/or professional ethics.

- 2. Test retest lab procedures were also established (where appropriate) to further evaluate students ability to perform at appropriate clinical skills at a professional level.
- **3.** Critical thinking assessments assist the students with ethical and professional judgment.

# Procedures, Anatomy and Pathophysiology

AAS (Radiography) 93% of all students in the Radiography program scored above 70% at the end of each course in the sequence.

BS	
Advance Radiography	92% of all students in the program scored above 75% at the end of each course in the sequence
Cardio Interventional	92% of all students in the program scored above 75% at the end of each course in the sequence
CT	93% of all students in the program scored above 75% at the end of each course in the sequence
DMS	94% of all students in the program scored above 75% at the end of each course in the sequence
DMS cardiac	94% of all students in the program scored above 75% at the end of each course in the sequence
DMS vascular	96% of all students in the program scored above 75% at the end of each course in the sequence
MRI	94% of all students in the program scored above 75% at the end of each course in the sequence
Nuclear Med.	93% of all students in the program scored above 75% at the end of each course in the sequence
RA	No students are currently enrolled
Rad. Therapy	96% of all students in the program scored above 75% at the end of each course in the sequence
Women's Imaging	100% of all students in the program scored above 75% at the end of each course in the sequence

# **Outcomes, Changes and Planning**

- **1.** The students overall were more successful with the pre and post testing than in prior years. With the direct correlation with these courses and clinical internships these finding were expected.
- 2. Competencies were implemented to test student's ability to evaluate pathology and its relationship to imaging and patient care.
- **3.** An excellent correlation was also found with the student's final competency requirements in the clinical setting and Campus labs.

# **Instrumentation and Quality Control**

AAS (Radiography)

89% of all students in the Radiography program scored above 75% at the end of each course in the sequence.

# BS

- 73	
Advance Radiography	80% of all students in the program scored above 75% at the end of each course in the sequence
Cardio Interventional	86% of all students in the program scored above 75% at the end of each course in the sequence
CT	83% of all students in the program scored above 75% at the end of each course in the sequence
DMS	92% of all students in the program scored above 75% at the end of each course in the sequence
DMS cardiac	92% of all students in the program scored above 75% at the end of each course in the sequence
DMS vascular	92% of all students in the program scored above 75% at the end of each course in the sequence
MRI	86% of all students in the program scored above 75% at the end of each course in the sequence
Nuclear Med.	84% of all students in the program scored above 75% at the end of each course in the sequence
RA	No students are currently in this program
Rad. Therapy	91% of all students in the program scored above 75% at the end of each course in the sequence
Women's Imaging	93% of all students in the program scored above 75% at the end of each course in the sequence

# **Outcomes, Changes and Planning**

1. This is the most difficult section of the programs and is more difficult to make a direct connection to clinical practice. We have reviewed the course content at both the AAS and BS levels. We have added additional clinical, classroom and lab activities to increase the scores in this area. Although this section met the criteria the score are still lower than the department would like. We have seen significant improvement in this section with the use of new textbooks and changes in the required task analysis for certification.

#### **National Certification Scores:**

National Certification scores are also used as a direct measure of learning at the end of course of study. These score are directly correlated to the six areas of assessment for the department.

Radiography	100% pass rate with an averages score of 89%
CT	100% pass rate with an average score of 88%
MRI	100% pass rate with an average score of 84%
DMS medical	100% pass rate with an average score of 88%
DMS cardiac	100% pass rate with an average score of 91 %
Radiation therapy	100% pass rate with an average score of 87%
Nuclear medicine	96% pass rate with an average score of 86%
Mammography	100% pass rate with an average score of 94%

All national certification scores for the department are at or above national standards as reported by certification agencies.

#### The data collected is reviewed regularly in the following manner:

- 1. All assessment information is discussed at regularly Department faculty meetings.
- 2. Twice annually, the Department holds an all-day planning meeting to discuss changes and improvements to the programs within the Department.
- 3. Advisory Committee meetings are held each semester.
- 4. Individual clinical site issues are discussed regularly with clinical faculty.
- 5. Appropriate information is shared with students annually during student orientation, during the semester as warranted and/or with student organization leadership.

#### Some Implications These Results Have Had on the Department and Changes Made over the past 5 years

- 1. The Diagnostic Medical Sonography program was restructured to facilitate better clinical, lab and didactic time frames for the students and learning outcomes. Additional new sonography equipment has been purchased and the department has been able to obtain two additional machines from vendors to assist with the Lab experience. We have also hired several lab assistants to help with the load and time commitment in these labs. These changes in the program have made it easier and more efficient for student sonographers to enter clinical in the second semester of the program.
- 2. The instructor for the Radiation Therapy resigned her position without notice fall of 2011. After discussion with the faculty in the department, the Dean and the advisory committee it was decided that we would manage the program internally and adjunct faculty would be utilized to teach the program. The first year of registry scores and pass rates increased significantly. In the summer of 2012 the new adjuncts were paid development money to update all courses, course materials and tests to meet current practice and ARRT content specifications. During the last year the programs certification pass rate continued to improve and actually increased overall by 8%. Today the program has 27 student form 13 states. The national certification test scores are 5% above the national average, graduates are highly sought after and the programs reputation has returned to one of gold stands within Radiotherapy.
- 3. The Department now employs 8 adjunct Faculties and a variety of imaging professionals as lab assistants. These additions have helped with faculty load, improved clinical scanning skills and improved the quality of image production. We were also able to hire additional staff to assist with department management of student clinical placement paperwork, clinical affiliation contracts, independent study and advance practice fields of study.
- 4. The clinical competency evaluation system requiring the verification of clinical competency by the radiologist or the supervising technologist continues to be revised and streamlined to meet certification agencies requirements. Clinical paperwork now also includes soft skills relate to patient satisfaction, teamwork, and professional judgement. Over the next year or so standard of care requirements will be added to the clinical competency levels
- 5. New 3D software has been purchased by the Department to be used for the PACS and RIS system in the department. The newly obtained software is thin client (web based) and will allow student from anywhere to learn and implement this new technology

- 6. 3D technology partnerships have been developed with a variety of companies and organizations to allow student to learn 3D model, segmentation, and hard printing. These skills will be valuable for graduates to assist in the innovation labs to create pre-surgical plans, treatment plans in oncology, and custom made orthopedic devices.
- 7. The electronic bulletin board has been updated and refined to post information for students and clinical faculty. The student handbook and clinical information is also available online to the clinical faculty to assist with clinical education. Go to Meeting platforms are also be used for advisory board meetings, student advisement, conflict resolution at distant clinical sites, and student recruitment.
- 8. Student evaluations of clinical education sites continue to be reviewed with each of the clinical sites and changes made to better facilitate the clinical education for students and provide appropriate clinical education that is required by certification agencies to prove clinical competencies in hard and soft skill sets.
- 9. The independent study program has reviewed all student files and efforts are in place to assist student in completing the course required to complete the degree. The number of degree completions have gone up over the past 18 months graduating approximately 20 students. More efforts will be made to assist students that started in the program but have not complete a degree to complete the required course to advance their personal careers.
- 10. The curricula for the programs are reviewed and appropriate changes made. Information provided by the students course evaluations, exit reviews, advisory boards, certification scores, graduate follow up surveys, annual faculty reviews and changes in the work environment/industry all play a part in course development and review.
- 11. The conference room, computer lab, and clinical energized labs have been update with new technology. We have tried to keep all of the electronic on 1/3 replacement each year
- 12. Perkins funds, ARCC funds, Dumke endowed chair funds and a variety of other sources of funding are utilized to maintain, upgrade and purchase additional equipment for the department to enhance the NOVARAD PACS and RIS system. This technology assists the student in make a smoother transition from didactic to labs to clinical and finally to professional practice.
- 13. A redesign of the teaching methods used in the laboratory sessions on campus.
- 14. Office area was resigned to accommodate better work flow and utilize space. We are currently out of space for faculty and staff. However, with the construction of the new IPE building the department was able to secure two additional faculty offices.

15 The department has developed a marketing plan that includes trade/professional shows and print ad materials and digital marketing campaigns.

# Assessment of Graduating Students

- 1. Clinical competency evaluations
- 2. Personal and Professional growth evaluations
- 3. Student program exit evaluations
- 4. Clinical site evaluations
- 5. Employer surveys
- 6. Employment rates
- 7. Graduate surveys
- 8. Final competency evaluations

# **Standard D - Academic Advising**

#### **Advising Strategy and Process**

This advisement is most often taken care of by Dumke College advisement office. Faculty and staff are happy to advise students with an appointment or as walk in students to our offices. Each faculty and staff members are assigned specific geographic areas for outreach advisement and specialty (Bachelor's degree) professional advisement. We participate in a variety of health fairs, high school college recruitment nights, and applied technology careers events. Once students are admitted to the program student are advised them each semester using tool like *cat tracks* to assure that student are making progress towards degree completion and graduation.
### Effectiveness of Advising

The graduation rates are up over the past few years. We know that if a student enters our program with an associate of science or arts degree from WSU or as a transfer student they are 96% likely to finish the degree. If they transfer credits to WSU with no degree it drops to 78% percent completion.

### Past Changes and Future Recommendation

We have changed the brochure used for advisement to be more useful and professional in nature. More one on one contact with students that enter the program and do not complete a degree appears to be increasing graduation numbers and SCH's generated. A new position has been created <u>Liaison, Radiologic Sciences Student Services</u> that will assist student clinical placement, advising, recruitment and retention. Over the new 12 to 24 months the department will also continue to contact students that have not complete degrees to assist them with degree completion.

### **Standard E - Faculty**

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Name	Gender	Rank	Degree	Expertise	Teaching	Accomplishments
					experience	
Robert Walker	Male/ White	Professor/ Tenured Dept. Chair Dumke endowed chair	Ph.D.	Radiography, MRI/CT, Quality Management, patient care & assessment, patient education,	36 WSU	Held national offices, several referred publications, chaired several national committees,

Faculty Demographic Information, Diversity of Faculty

				pediatric radiography Teaches in MSRS program		served on national certification board, delegate to national organization, speaker at state, regional and national mtgs. 30 <sup>th</sup> Life Member of the American Society of Radiologic Sciences in 98 years,
Wynn Harrison	Male/ White	Professor/ Tenured	M. Ed.	Radiography, Nuclear Medicine, federal regulations	42 WSU	Held office in state and regional professional societies, delegate to professional organization, member of national committees and task force, speaker at regional and state mtgs.
Diane Kawamura	Female/ White	Professor/ Tenured Brady presidential	Ph.D.	Radiography, Sonography, imaging pathophysiology,	39 WSU	Held national offices, several referred publications,

		scholar		sectional anatomy, research methods teaches in MSRS program		served on two national boards, speaker at international, national, regional and state mtgs., delegate to national professional organization, published textbook; held office in state societies; external examiner 2x at Kuwait
RexChristensen	Male/white	Associate Professor Tenured	MHA Doctoral Candidate	Radiography, MRI CT PACS/RIS Teaches in RA and MSRS program Distant education	10 WSU	Held state office, chaired several state committees, speaker at state, regional and national mtgs., publication,
Tanya Nolan	Female White/Hispanic	Associate Professor Tenure Track	EdD	Radiography ARDMS 3 areas and instructional technology	9 WSU	Held state office, chaired several state committees, speaker at state, regional and national mtgs., publication, President of

						National educator organization
Casey Neville	Male/White	Assistant Professor Tenure Track	DHSc	Radiography, MRI CT PACS/RIS Teaches in MSRS program Manager Radiation Therapy Program	6 WSU	speaker at state, regional and national mtgs., publication
Shane Clampitt	Male/White	Assistant Professor	MSRS	Radiography MRI/CT Radiologic management Pain management and intervention MRI Safety	1 year WSU Adjunct faculty previously	National speaker, Publications
Tayor Ward	Female/white	Instructor/non tenure track	MSRS	Radiography MRI/CT Sports Medicine imaging Research Bone Density	1 year WSU Adjunct faculty previously	Elite distance run, national speaker, publications

Adjunct Fac	ulty		
Laurie Colburn	Female	MSRS	Interventional Cardiology and Radiology
Chris Marston	Male	BS	Radiation therapy
Darin Ashby	Male	MSRS	Radiation Therapy
Chery Wolzac	Female	MD/Radiologist	MSRS Advance Practice IPE
Julie Hawk	Female	MSRS	Nuclear Medicine
Ryan Hecoc	Male	MS in Radiation/medical Physics	Radiation therapy
Stephen Ishihara	Male	BS	DMS Cardiac
Jeff Jensen	Male	BS	DMS Cardiac
Nathan Campbell	Male	MSRS	DMS Cardiac
Ryan Hecoc	Male	MS in Radiation/medical Physics	Radiation therapy

### Programmatic/Departmental Teaching Standards

# The contract, adjunct and clinical faculty in the Department of Radiologic Sciences possess an appropriate level of understanding related to;

- -- Contemporary educational theories
- --Principles and models underlying the design of curricula and the value of adult learning.
- --Conceptual and theoretical foundations and principles related to health profession education and adult learning.
- --Knowledge of curriculum development which incorporates educational theories, principles and models.
- --Theories, principles and philosophies of adult education.
- -- Learning domains (cognitive, affective and psychomotor).
- -- Competency-based education.
- -- Critical and reflective thinking.
- --Show enthusiasm for teaching, learning and imaging that inspires and motivates students.
- --Foster a relationship of mutual trust and respect.
- --Content, process and outcome-based curricula.
- --Global Competencies and population Health related to Medical Imaging and Radiotherapy

### **Faculty Qualifications**

### Department of Radiologic Sciences Faculty Qualifications and Expectations

### **Description of Duties and Tasks**

- 1. Essential duties and responsibilities include the following and other duties may be assigned.
- 2. Instructs students diagnostic medical imaging and radiotherapy coursework, labs and clinical.
- 3. Provides learning activities that stimulate student involvement and encourage critical thinking.
- 4. Participates in ongoing curriculum development, implementation, and evaluation.
- 5. Assist Department Chair with program accreditation requirements.

- 6. Demonstrates creativity and innovation in the field, service, in the profession and/or the community.
- 7. Plans and organizes lesson plans, research and reference materials, syllabi, and other learning aids.
- 8. Utilizes innovative teaching strategies to meet the learning needs of a diverse student population:
- 9. Facilitates, supervises and evaluates students in a variety of clinical settings.
- 10. Participates in graduation, general assembly, and other department, college and university functions.
- 11. Responsibilities also include advising students, maintaining office hours, serving on program, college and university committees, maintaining professional competence, and participating in professional development activities.
- 12. Performs other related tasks as assigned by the Department Chair.

### <u>Knowledge</u>

- 1. Effective teaching techniques adaptable to a variety of learning styles.
- 2. Understanding the comprehensive mission and philosophy of Department, College and University.
- 3. Subject matter and related and/or relevant topics and issues in Medical imaging and Radiation Therapy.
- 4. Sensitive to issues relating to a diverse student body.

### <u>Skills</u>

- 1. Effective planning, organizing, communication, and organizational skills.
- 2. Effectively assisting student learning.
- 3. Interacting with students of diverse backgrounds.
- 4. Maintaining and established schedule, including evenings and weekends, including possible multiple campus locations, this may vary by semester.
- 5. Maintaining confidentiality of student information.

### Technology Skills

1. Demonstrated proficiency using computer applications, classroom, clinical, lab, or other current learning technologies for effective teaching in the Department of Radiologic Sciences.

### **Required Work Experience**

1. A minimum of three years clinical experience in Medical imaging and or Radiation Therapy

**Required Education** 

- 1. Bachelor of Science Degree in Radiologic Technology or related field
- 2. Must hold National Certification in Radiography and or advanced national certifications or skill sets
- 3. Master's Degree in Radiologic Sciences or related area required for tenure track
- 4. Doctoral degree and research experience preferred

### Faculty & Staff (current academic year)

	Tenure	Contract	Adjunct
Number of faculty with Doctoral degrees	3	1	1
Number of faculty with Master's degrees	2	2	5
Number of faculty with Bachelor's degrees	0	0	3
Other Faculty lab assistants 6 with Bachelors			
Total	5	3	9

### Evidence of Effective Instruction and Ongoing Review and Professional Development

All faculty are evaluate exactly the same

- i. Regular Faculty
- ii. Adjunct Faculty
- 1. Student Clinical competency evaluations
- 2. Student Personal and Professional growth evaluations
- 3. Student program exit evaluations
- 4. Course evaluations
- 5. Employer surveys

- 6. Employment rates
- 7. Graduate surveys
- 8. Final competency evaluations
- 9. National Certification Scores

The Dumke college has an annual faculty evaluation that is completed and discussed with all faculty that covers the items list above and creates an action plan for the next year.

### Faculty Scholarship

Over the past five years the faculty have chaired or served on 40 plus Master's thesis research projects. They have written textbooks in Diagnostic Medical Sonography, chapter in the Merrill's on computerize image, (this text is considered the gold standard in Radiography) faculty have published 8 peer reviewed journal article, taken 75 plus student on a Study abroad program to China. Presented more than 30 lectures locally, nationally and international. Two have completed a doctoral degree. One is a doctoral candidate and two others are enrolled in doctoral degree programs. They have obtained funding for numerous grant projects.

### **Mentoring Activities**

Faculty attends a variety of workshops or conference related to new technologies, teach strategies, clinical and technical expertise, student placement/clinical management every year.

**Standard F – Program Support** Support Staff, Administration, Facilities, Equipment, and Library

NAME	GENDER	ETHNICITY	JOB TITLE	Years of Employment	Areas of Expertise
Lori Frederiksen	Female	White	Director of independent study	25 WSU	Computer applications, dictation, office organization, administrative responsibili- ties
Francisco Ruiz	Male	Hispanic	Administrative Assistant II	3 WSU	Bachelor of Sciences program support
Cathy Wells	Female	White	Administrative Assistant II	4 months	Associate of Applied Science support
Lonnie Lujan	Male	Hispanic	Professional Staff MSRS	6 year WSU 1 year department	Advisement and MSRS

Currently recruiting for	Liaison, Radiologic	
Profession staff	Sciences Student Services	

### Adequacy of Staff

The department currently has 5 fulltime administrative and support staff. Additionally, we have two work studies every semester, a variety of on campus lab assistants and clinical faculty that are employed by each of our clinical sites.

### **Ongoing Staff Development**

Program support staff take a variety of course work from the University to complete degrees or for personal and professional growth. Staff is encouraged to take courses on training tracker to increase their knowledge and effectiveness related to university policy and procedures.

### Adequacy of Administrative Support

At the current time and with the new Liaison position, current staff, lab assistants, and work studies I believe that we have adequate staff

### Adequacy of Facilities and Equipment

Like everyone else we could all use more space, I believe we have maximized the space that we have. The equipment is state of the art and meets our current needs.

<u>Adequacy of Library Resources</u> Our students use mostly online resources

### Standard G - Relationships with External Communities

### **Description of Role in External Communities**

### **Clinical placement**

Currently placing more than 350 students every semester in a clinical internship

**Cooperate Partners** 

They are utilized to supply up to date equipment and software to teaching and learning activities Donors

Provide financial resources for scholarships and non-state funded expenditures

### Summary of External Advisory Committee Minutes

Each of the following independent advisory and clinical placement boards: Associate of Applied Science Radiography Bachelors of Science Radiologic Sciences Diagnostic Medical Sonography/Cardiac and Medical Radiation Therapy Nuclear Medicine Magnetic Resonance Imaging Computed Tomography Cardiac Interventional Technology Women's imaging Advanced Radiography Each of these board have at least one meeting each year to cover changes in policies, student placement, student success rates, strengths/weaknesses of the programs and discussion related to the changes in industry that effect the course of study.

# Standard H – Program Summary

Results of Previous Program Reviews

Problem Identified	Action Taken/Response	Progress
The Department needs to consider	All students in the Department of	With current chance in the healthcare
additional rotations to equalize the	Radiologic Sciences are required	model most hospital have a variety of
clinical educational experiences for all	to meet core clinical	clinical settings within the it system to
students. It is recommended that each	competencies for certification	provide the student with all clinical
student have a variety of experiences in	eligibility. Students complete	competencies that are need for
varying settings	original competencies in the first	certification and or to enter professional
	semester. At the onset of the	practice.
	second semester students are	
	required to re-comp	
	examinations competed initially	
	during the previous semester.	
	This pattern continues for the	
	duration of the program. In	
	adherence to certification	
	standards, all mandatory	
	competencies must be completed	
	by the end of the program with	
	both comp and a re-comp. In a	
	situation where a student is	
	placed in a clinical setting that	
	does not offer the required or	

	elective competencies (i.e. Primary Children's Medical Center or Clinics) these students are rotated to facilities that assist them in obtaining the required clinical competencies for certification. This method of clinical experience and rotation has been considered a strength of the program by our clinical advisory committees when compared to other medical imaging programs in the state.	
Because the technology is moving so quickly, it is recommended that technologies in the workplace have a prominent presence in the curriculum.	Over the past several years the Department of Radiologic Sciences has obtained state of the art digital radiographic equipment, and updated ultrasound equipment. This equipment has been linked to our PAC's and RIS system to assist the students with a clinical understanding of current standards of practices. The program also has three courses that address new technologies and practice standards, RADT 2942 Career Planning and New Technologies, RADT 2833	Over the past five years the department has aggressively moved to a fully functional DR imaging program, a PAC's and RIS system, 3D imaging, reconstruction, segmentation and modeling. As faculty have separated from WSU new faculty with a new skills related to advance imaging have been employed. Academically prepared and clinically competent clinicians have been employed as adjunct faculty to bring current practices to the classroom

	Directed Readings and RADT 4942 Current Trends and Issues. A variety of guest lecturers and adjunct faculty are used in all programs to assure that current clinical practices and standards are covered.	
	In any healthcare field there will always be a slight disconnect between industry, education, and certification. This is why the clinical internships play such an important role in introducing students the news equipment, procedures and current stand of care issues. Additionally, this why all clinicians in medical imaging have mandatory continuing education requirements to maintain certification and some have time limited certificates to practice, which will require retesting every 10 years.	
	The Department would agree that we as	The Dumke College broke ground on a
With the growth of the Radiologic	well as every other Department in the	new IPE building the fall providing 4
Sciences program there is an ongoing	Dumke College of Health Professions	new state of the art classrooms and 22
need to acquire more space. It is of note	have limited space for current teaching	new office spaces. The Department of

that large classroom space is very	and growth. However, maybe as new	Radiologic Sciences has obtained space
limited	buildings are finished on the Davis and	for two additional faculty and is
	Ogden campuses more space may	currently teach more course work in
	become available	the late afternoons and evenings when
		large space is available.

# Action Plan for Ongoing Assessment Based on Current Self Study Findings

Problem Identified	Action to Be Taken		
Issue 1 Funding need for two nine month	Current 5 Year Program Review:		
faculty to assist with clinical education.	Year 1 Action to Be Taken: Work with Deans office to secure funding		
	Year 2 Action to Be Taken: work on soft money funding		
	Year 3 Action to Be Taken:		
	Year 4 Action to Be Taken:		
Issue 2 Funding needed to move one current	Current 5 Year Program Review:		
faculty from non-tenure soft money to tenure	Year 1 Action to Be Taken: work with deans and provosts office		
track hard money funding.	Year 2 Action to Be Taken:		
	Year 3 Action to Be Taken:		
	Year 4 Action to Be Taken:		

Action Plan for Evidence of Learning Related Findings

Summary Information (as needed)

Problem Identified	Action to Be Taken	
Issue <b>1 none identified at this time</b>	Current 5 Year Program Review:	
	Year 1 Action to Be Taken:	
	Year 2 Action to Be Taken:	
	Year 3 Action to Be Taken:	
	Year 4 Action to Be Taken:	
Issue 2	Current 5 Year Program Review:	
	Year 1 Action to Be Taken:	
	Year 2 Action to Be Taken:	
	Year 3 Action to Be Taken:	
	Year 4 Action to Be Taken:	

Summary Information (as needed)

# **APPENDICES**

Appendix A: Student and Faculty Statistical Summary (Note: Data provided by Institutional Effectiveness)

	2012-13	2013-14	2014-15	2015-16	2016-17	
Student Credit Hours Total	15,280	14,063	13,747	13,341	14,083	
Student FTE Total	520.60	479.90	468.10	454.30	469.43	
Student Majors	776	679	673	448	437	
Other (2 <sup>nd</sup> or 3 <sup>rd</sup> Majors)	35	31	69	19	15	
Program Graduates						
Associate Degree	94	92	89	89	91	
Bachelor Degree	137	117	115	115	130	
Student Demographic Profile						
Female	581	521	519	350	345	
Male	195	158	154	98	92	
Faculty FTE Total	8.9	8.87	8.99	7.29	N/A	

Adjunct FTE	2.49	2.77	2.58	0.58	N/A
Contract FTE	6.41	6.1	6.41	6.71	N/A
Student/Faculty Ratio	58.49	54.10	52.07	62.32	N/A

### <u>Notable</u>

Named top educational program in the United States by Aunt Minnie in 2002 and 2012 Consistency ranked one of the top 5 programs in the Country

2th largest graduating unit at WSU

Leaders in innovation of;

-program and curriculum development

-delivery methods of education

-meeting community medical needs related to Radiologic Sciences

- And raising the standard of the quality and efficacy of patient car

98% or higher pass rates on all certification exams

Study abroad program China—Healthcare and Culture Art exhibit in the Shepard Union building

The only 3D reconstruction education programs for Technologist in the Country

51 years of Radiologic Sciences education in Utah and the Ogden Valley Currently affiliated with every hospital in the state of Utah and 550 clinical affiliations in 50 states

More than 600 thousand clinical hours every year

Largest Radiologic Sciences program in the country serving more than 400 students annually

One of 8 Masters programs in Radiologic Sciences in the Country

Currently one of the only programs offering degrees at the

-Associate of Applied Sciences

-Bachelors of Sciences -Master of Science in Radiologic Sciences

Nationally recognized faculty

2 past presidents of National professional society Served on nationally professional research and scholarship foundations Served on national accreditation and certification Many published articles and textbooks Member and Chair of Utah state licensing Board Faculty awarded fellow status by national professional organizations Brady Distinguished Presidential Scholar 4 PhD, EdD or DHSc prepared faculty and 2 faculty currently enrolled in Doctoral programs the 8 faculty represents 31 national certifications and more than 120 years of teaching experience.

### All of this is accomplished with 8 faculty, 12 adjuncts, lab assistants and 5 amazing staff members.

Appendix D: Financial Analysis Summary (This information is provided by the Provost's Office)

Program Name					
Funding	10-12	12-13	13-14	14-15	15-16
Appropriated Fund	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
Other:	00000.00	00000.00	00000.00	00000.00	00000.00
Special Legislative Appropriation					
Grants or Contracts					
Special Fees/Differential Tuition					
Total					

Summary Information (as needed)