

RADIOLOGY TECHNOLOGY-AS

Program Overview

Associate of Science in Radiologic Sciences

Student Learning Outcomes

The Radiologic Sciences program graduate will be able to:

- Demonstrate clinical competency.
- Position patients for diagnostic quality images.
- Integrate ALARA practices for self, patients, and others.
- Evaluate the final radiology image for essential criteria.
- Communicate effectively.
- Manipulate techniques to accommodate a patient's condition.
- Demonstrate critical thinking skills.
- Describe professional avenues available to them.
- Discuss ASRT, JRCERT, licensure, and different modalities.
- Exhibit professionalism in the clinical setting.
- Demonstrate professional interaction with patients.

The above student learner outcomes are measured throughout the program.

The mission of the Great Basin College Associate of Science in Radiologic Sciences program is to continually provide a high quality, accessible, and affordable undergraduate radiography program that will graduate competent entry level radiographers for the local and national healthcare community. Furthermore, graduates will acquire problem solving, communication, and critical thinking skills through a program that focuses on patient care, professionalism, and ethical conduct, enhancing the healthcare experience of the patients and communities they serve.

Great Basin College, offers a two-year, five-semester program, to include the summer semester. The Associate of Science in Radiologic Sciences program is accredited by the JRCERT (Joint Review Committee on Education in Radiologic Technology) and recognized by the American Registry of Radiologic Technologists (ARRT) The JRCERT has awarded GBCV with the maximum accreditation cycle of 8 years.

JRCERT

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The curriculum integrates courses in radiologic sciences with general education requirements. Clinical experiences are offered at affiliated hospitals throughout Nevada.

This is a limited admissions program. Student selection is made using a point system, ranking students based on completed courses, grades, and work experience in the health-care field. Year of admission to the Associate of Science in Radiologic Sciences program determines the catalog year and course requirements. Lab experiences are offered in the Elko and Pahump areas.

Students may need to complete math placement tests to meet requirements for some prerequisite courses. Placement tests are available at the Academic Success Center free of charge. For more information, call 775.327.2247.

Students must obtain a C (76%) or higher grade in each class used toward the AS degree, including general education classes.

GBC uses clinical sites that are more than 60 miles from GBC campuses. Students are financially responsible for housing and travel expenses for all clinical rotations. All students must rotate at a minimum of two separate clinical sites, at least one of which will likely be outside of the student's city of residence. Clinical placement will be equitable for all students.

A certified nursing assistant (CNA) class is a prerequisite for the program. It is not required to take the CNA course for credit through a regional institution or sit for the licensing board exam. If a CNA course is not on the student's transcripts, the student must submit documentation of completion of the course during the application process.

Admission Process

Admission to the AS in Radiologic Sciences program is a separate process from admission to Great Basin College. Enrollment to the program is limited. Please see the application guide, link to the online application, selection criteria and program outcomes on the GBC website. https://gbcnv.edu/programs/health_sciences/as_rad/index.html

Applications must be submitted by May 1 to be considered for the next fall start. Students may apply if they have completed or are currently enrolled in all prerequisites.

Transferred college courses will be evaluated by the admissions and records office for acceptance. The application and transcripts will be reviewed by the radiologic sciences program director and the admissions and progressions committee to ensure all prerequisites have been met prior to considering a student for the program.

Students accepted into the radiology program are designated radiologic science students. Only radiologic science students can enroll in courses with the RAD designation (with the exception of RAD 101) unless previously approved by a radiologic science instructor.

Credentialing

Radiologic Sciences graduates are eligible to apply to take the registry with American Registry of Radiologic Technologists (ARRT). It is the student's responsibility to schedule and cover costs associated with the ARRT exam. Students must declare any previous felony or misdemeanor convictions, program dismissals, and academic sanctions to the ARRT. Students who have previous convictions and wish to apply to the program are encouraged to contact the ARRT at 651.687.0048 to establish testing eligibility status. The ARRT has the right to withhold ethical clearance for violations which would prevent the student from becoming registered.

Some states require additional licensures and testing beyond ARRT credentialing. Specific state licensing requirements can be found at: <https://www.arrt.org/pages/about-the-profession/state-licensing>.

Additional Fees

Radiology students follow GBC's fee schedule and refund policy. In addition to tuition there are other costs specific to the Radiology program. These fees are subject to change. A differential fee is an additional fee for students enrolled in all AS Radiology courses. Students in this program will also have a distance education fee that applies to IAV, online, and hybrid classes. An approximation of the additional expenses include:

Scholarships and financial aid opportunities are available to all eligible GBC students. Please contact the student financial services office for more details.

Prerequisite Requirement

BIOL 223 Human Anatomy & Physiology I 4 Credits
The morphology and physiology of cells, tissues, and the integumentary, skeletal, muscular, and nervous systems in a laboratory and lecture class. Designed for all life science majors but specifically for students in allied health programs. Concurrent enrollment in a corresponding lab section is required for this course.

MATH 126 Precalculus I 3 Credits
A third course in algebra that stresses polynomial, quadratic, rational, exponential, and logarithmic functions, including their graphs and applications; complex numbers; systems of equations; and basic operations with matrices and determinants, including Cramer's rule. It is recommended that students have completed prerequisites within two years of enrolling in this course.

RAD 101 Exploration of Radiology .5 Credits
For students who are interested in becoming a radiological technologist. Designed to give basic knowledge of what a radiological technologist does and what careers are available in this field. The major learning outcome of this course is to help students determine if this is the right career choice for them.

NURS 130 Nursing Assistant 6 Credits
Provides students with classroom, laboratory, and clinical experience. Successful completion fulfills requirements for eligibility to take the Nevada State Board of Nursing Certified Nursing Assistant examination. Offered winter and summer semesters in a condensed four-week class. Offered fall and spring semester as an eight-week class. Students must purchase a package through Complio to track clinical compliance. Clinical Compliance includes, students must be BLS certified, have health insurance, current two-step TB screening and fulfill other vaccine requirements as described in Complio. A background check and drug screening will also be performed as part of the required package. Students are encouraged to complete the Complio package before class begins to ensure you are eligible to attend clinicals.

BIOL 224 Anatomy & Physiology II 4 Credits

A continuation of Biology 223 with consideration of the circulatory, respiratory, digestive, excretory, endocrine, and reproductive systems; increased emphasis on body chemistry. Concurrent enrollment in a corresponding lab section is required for this course.

Must be able to place into ENG 101 if accepted into the program.

Note: Some of the above courses meet both prerequisite and general education requirements.

For additional information or advisement, please contact the School of Health Sciences and Behavioral Health at 775.327.2317.

Program Requirements All Radiology courses are internet enhanced, clinical, or online.

General Education Requirements**Communications and Expressions****Written Communications (one course required)**

ENG 100 Composition-Enhanced 5 Credits

Allows students to fulfill their first semester of English while completing the remediation process. Designed for students who did not place into ENG 101 on the placement test/writing sample, but did not score so low that they need ENG 95. Allows a student to refine specific skill deficiencies while completing the first semester of freshman composition (ENG 100 is equivalent to ENG 101). Students will have additional Academic Success Center requirements. Although it is a five-credit course, it does not replace ENG 102. After successful completion of ENG 100, a student must take ENG 102 to complete the general education requirement.

ENG 101 Composition I 3 Credits

Critical reading and writing of the expository essay. Emphasizes pre-writing, strategies for organization, and revision.

Oral Communications (one course required)

COM 113 Fund Speech Communication 3 Credits

Principles and theories of speech communication. Participation in public speaking and interpersonal communication activities.

THTR 221 Oral Interpretation 3 Credits

Introduction to and practice of oral interpretation of literary and dramatic works from Shakespeare to contemporary writers and poets.

Evidence-Based Communications

ENG 102 Composition II 3 Credits

Continuation of English 101. Emphasizes writing from sources, argument, the investigative paper, and research techniques.

Fine Arts (one course required)

ART 100 Visual Foundations 3 Credits

A beginning art class that includes a survey of art and the basic components of design. The class explores visual concepts as they relate to the history of art through class presentations, discussions, and a variety of media. Students should plan for three hours of studio work outside the class.

ART 101 Drawing I 3 Credits

A disciplined foundation in drawing concepts based on visual observation skills.

ART 107 Design Fundmntls I (2-D) 3 Credits

Explores the fundamentals of design using various media focusing on 2-D design.

ENG 205 Intro to Creative Writing 3 Credits

A creative writing course designed to introduce students to the production of fiction and poetry.

MUS 101 Music Fundamentals 3 Credits

Notation, terminology, intervals, and scales. Designed to furnish a foundation for musicianship. Recommended for teachers in public schools and all others desiring a basic music background.

THTR 100 Introduction to Theatre 3 Credits

A survey of the basic principles, facts, and theories providing an understanding of the art of theatre. Course also includes a special focus on the practical technical aspects of the theatre and on live theatre experiences.

THTR 105 Introduction to Acting I 3 Credits

Examines acting fundamentals and focuses on development of vocal, physical, and creative tools to be used on stage.

THTR 121 Stage Makeup 3 Credits

This course focuses on the history of makeup and basic approaches to applying make-up for the stage and screen. Make-up supplies will be studied, as well as techniques for corrective, old-age, character, stylized, and special effects makeup.

THTR 204 Theatre Technology I 3 Credits

Lecture and discussion encompassing the philosophy and techniques of technical theatre.

WELD 200 **Metal Art** **3 Credits**

This course is designed to give the student the basic understanding of two dimensional 2D and three-dimensional 3D metal art. Also covered in this course we will discuss different Cutting, Welding and metal finishing techniques that are used in this discipline as it relates to metal art.

Logical and Scientific Reasoning

Mathematical Reasoning (one course required): Choose from the courses listed below or any higher-level math course. Excludes MATH 389

MATH 126 **Precalculus I** **3 Credits**

A third course in algebra that stresses polynomial, quadratic, rational, exponential, and logarithmic functions, including their graphs and applications; complex numbers; systems of equations; and basic operations with matrices and determinants, including Cramer's rule. It is recommended that students have completed prerequisites within two years of enrolling in this course.

MATH 126E **Precalculus I Expanded** **3 Credits**

Precalculus I Expanded with Co-requisite support: Includes equations, relations, functions, graphing; polynomial, rational, exponential, logarithmic, and circular functions with applications; coordinate geometry of lines and conics; analytic trigonometry; matrices and determinants; and binomial theorem. It is recommended that students have completed prerequisites within two years of enrolling in this course.

STAT 152 **Intro to Statistics** **3 Credits**

Includes descriptive statistics, probability models, random variables, statistical estimation and hypothesis testing, linear regression analysis, and other topics. Designed to show the dependence of statistics on probability. It is recommended that students have completed prerequisites within two years of enrolling in this course.

Scientific Reasoning

BIOL 223 **Human Anatomy & Physiology I** **4 Credits**

The morphology and physiology of cells, tissues, and the integumentary, skeletal, muscular, and nervous systems in a laboratory and lecture class. Designed for all life science majors but specifically for students in allied health programs. Concurrent enrollment in a corresponding lab section is required for this course.

Scientific Data Interpretation

BIOL 190 **Intro Cell/Molecular Biology** **4 Credits**

Structure and function of cells. Major molecules of life; composition and physiology of cellular organelles; cell metabolism, reproduction, motility, and gene function of both plant and animal cells. Required for biology majors. Concurrent enrollment in a corresponding lab section is required for this course.

Human Societies and Experience

American Constitutions and Institutions: HIST 101 and 102 or PSC 101

HIST 101 **U.S. History to 1877** **3 Credits**

Survey of U.S. political, social, economic, diplomatic, and cultural development from colonial times through Reconstruction. When taken with HIST 102 satisfies the GBC General Education American Constitutions and Institutions Requirement. HIST 101 and 102 need not be taken sequentially. Either class may be taken alone.

HIST 102 **U.S. History Since 1877** **3 Credits**

Survey of U.S. political, social, economic, diplomatic, and cultural development from 1877 to the present. Course satisfies the Nevada Constitution Requirement. When taken with HIST 101 satisfies the GBC General Education American Constitutions and Institutions Requirement. Can be used to satisfy the Nevada Constitution Requirement for out-of-state transfer students who have previously satisfied the United States Constitution Requirement. HIST 101 and 102 need not be taken sequentially. Either class may be taken alone.

PSC 101 **Intro American Politics** **3 Credits**

A survey of United States, national, state, and local governments with emphasis on the cultural aspects of the governing process. Satisfies the legislative requirement for the United States and Nevada Constitutions.

Structure of Societies

HMS 200 **Ethics in Human Services** **3 Credits**

Real life applications for personal and professional boundaries, beliefs, ethics, values, morals, and codes of conduct in human relationships using ethical decision-making, problem-solving, and critical-thinking activities are emphasized. This course may be repeated up to three times for continuing education credit. (Check with individual licensing boards prior to registering).

Humanities (one course required)

ART 160 **Art Appreciation** **3 Credits**

Introduction to the visual arts, illustrating the place of art in its social and cultural setting.

ENG 203 **Intro to Literary Study** **3 Credits**

Introduction to the elements of fiction, poetry, and drama used in the analysis of literature.

ENG 223	Themes of Literature	3 Credits
Themes and ideas significant in literature.		
FIS 100	Introduction to Film	3 Credits
Introduction to the historical development of film as art. Considers the development of cinematic techniques (i.e., cinematography, editing, sound, etc.), cinematic genres (i.e., the western, romantic comedy, etc.) and narrative elements (i.e., plot, character, conflict, etc.) as exemplified by the work of major American and international directors.		
FREN 111	First Year French I	3-4 Credits
Development of language skills through practice in listening, speaking, reading, writing, and structural analysis. Language practice required.		
FREN 112	First Year French II	3-4 Credits
A continuation of FREN 111. Language practice required.		
HIST 208	World History I	3 Credits
Survey of world civilizations to 1600. Examines societies, cultures, and issues relative to Africa, the Americas, Asia, Europe, the Middle East and Oceania.		
HIST 209	World History II	3 Credits
Survey of world civilizations since 1600. Examines historical societies, cultures, and issues relative to Africa, the Americas, Asia, Europe, the Middle East, and Oceania.		
HUM 101	Intro to Humanities I	3 Credits
An introduction to humanities through a study of seven major arts including film, drama, music, literature, painting, sculpture, and architecture. Each of these arts is considered from the perspective of historical development, the elements used in creating works of art, meaning and form, and criticism and critical evaluation.		
HUM 210	Communicating Diversity	3 Credits
Communicating Diversity is a lower division course designed to familiarize students with the fundamentals of diversity and how those are expressed through communication. Students will develop a deep understanding of the way in which we communicate race, gender, class, sexual orientation, nationality, religion, and physical/mental ability and how it impacts our daily lives. This course will take an intersectional approach to understanding diversity and seek communication strategies for inclusivity. Emphasis will be placed on defining and developing the critical thinking skills necessary to push past oppression, marginalization, and other issues centralized around diverse populations. Students will be encouraged to investigate and discover diversity issues, solutions, and concepts at the local and global level using case studies, current events, and other significant moments in history.		
MUS 121	Music Appreciation	3 Credits
The historical and cultural background of music and origins to the twentieth century.		
PHIL 101	Intro to Philosophy	3 Credits
Basic problems in different areas of philosophy such as ethics, political theory, metaphysics, and epistemology.		
PHIL 102	Critical Thinking	3 Credits
Covers non-symbolic introduction to logical thinking in everyday life, law, politics, science, advertising; common fallacies; and the uses of language, including techniques of persuasion.		
PHIL 135	Introduction to Ethics	3 Credits
Introduction to Ethics: critical introduction to classical and modern ethical theories such as utilitarianism, deontology, and virtue ethics. Emphasis throughout on applying the theories in various contexts such as social, political, or interpersonal. The ultimate goal will be to allow students to clarify their own thinking and positions on important ethical issues confronting society today.		
SPAN 111	First Year Spanish I	3 Credits
Development of language skills through practice in listening, speaking, reading, writing, and structural analysis. Language practice required.		
SPAN 112	First Yr Spanish II	3 Credits
A continuation of SPAN 111. Language practice required.		
SPAN 211	Second Year Spanish I	3 Credits
Considers structural review, conversation and writing, and readings in modern literature.		

Technological Proficiency (embedded into radiology curriculum)

Foundations

Mathematics (one course required): Choose from the courses listed below or any higher-level math course. Excludes MATH 389

MATH 127 **Precalculus II** **3 Credits**

Topics include circular functions, their graphs, and applications; trigonometric identities and equations; conic sections; vectors; sequences and mathematical induction. It is recommended that students have completed prerequisites within two years of enrolling in this course.

STAT 152 Intro to Statistics 3 Credits
 Includes descriptive statistics, probability models, random variables, statistical estimation and hypothesis testing, linear regression analysis, and other topics. Designed to show the dependence of statistics on probability. It is recommended that students have completed prerequisites within two years of enrolling in this course.

Sciences
BIOL 224 Anatomy & Physiology II 4 Credits
 A continuation of Biology 223 with consideration of the circulatory, respiratory, digestive, excretory, endocrine, and reproductive systems; increased emphasis on body chemistry. Concurrent enrollment in a corresponding lab section is required for this course.

Program Requirements
RAD 101 Exploration of Radiology .5 Credits

For students who are interested in becoming a radiological technologist. Designed to give basic knowledge of what a radiological technologist does and what careers are available in this field. The major learning outcome of this course is to help students determine if this is the right career choice for them.

RAD 112 Patient Care & Med Term 2 Credits

Covers procedures and practices related to radiological technology with an emphasis in patient care, patient safety, and communication. Aseptic techniques and procedures used to maintain a sterile field is explained. The use of prefixes, suffixes, roots, and medical terms will be covered. Previous Medical Terminology course is recommended but not required.

RAD 116 Radiography I 3 Credits

Learn radiology positioning and anatomy. Identify the anatomic structures that will be on an x-ray examination, pathology noted, and radiation safety measures that should be used.

RAD 118 Radiology Physics/Circuitry 3 Credits

Provides knowledge of x-ray terminology and structure of x-ray circuitry, radiation production, radiation characteristics, and the photon interactions.

RAD 124 Rad Photography/Technique 3 Credits

Covers processing of the radiographic image, from darkroom to computerized radiography. The principles and practices with manipulation of exposure factors to obtain acceptable image quality will be discussed at length.

RAD 126 Radiography II 3 Credits

A continuation of RAD 116. Reviews advanced radiology procedures, pathology noted on images, radio-pharmacology, and film critique.

RAD 128 Imaging Equipment 3 Credits

Review all the radiographic equipment used in imaging departments and the equipment works.

RAD 225 Clinical Radiology I 5 Credits

A planned clinical experience. Gives the student the opportunity to apply didactic education to work-related examinations under the supervision of a registered technologist. The student must demonstrate clinical competency to continue in the program.

RAD 226 Clinical Radiology II 10 Credits

A continuation of RAD 225. The student will continue to apply knowledge gained in the classroom to work experience.

RAD 227 Clinical Radiology III 10 Credits

A continuation of RAD 226. Further clinical experiences will take place in order to achieve required competency.

RAD 238 Radiation Safety/Protect 2 Credits

Course covers the ALARA (as low as reasonable achievable) concept. It also includes the definitions and significance of radiation protection and the biological effects of radiation. National and state requirements will be discussed. Offered online.

RAD 243 Medical Imaging Pathology 3 Credits

This online course will cover medical imaging pathology. The student will study disease utilizing medical imaging processes. It is critical for medical imaging professionals to understand the basic pathologic processes, therefore, this course will review pathological terms, etiology of disease, disease manifestation, and the role medical imaging plays in the diagnosis of disease.

RAD 240 Culmination Radiography Topics 1 Credits

This course builds on knowledge and experience gained from previous radiology courses to develop a deeper understanding of radiographic physics, positioning, anatomy, image production and evaluation and anatomy, physiology and pathology topics.

Suggested Course Sequence

1st Semester - Fall

Course	Credits
Written Communications*	3-5

Course	Credits
RAD 112	2
RAD 116	3
RAD 118	3
RAD 238	2
TOTAL	13-15

*Choose with advisor

2nd Semester - Spring

Course	Credits
ENG 102	3
HMS 200	3
RAD 124	3
RAD 126	3
RAD 128	3
PSC 101	3
TOTAL	18

3rd Semester - Summer

Course	Credits
RAD 225	5
TOTAL	5

4th Semester - Fall

Course	Credits
RAD 226	10
RAD 243	3
Fine Arts*	3
TOTAL	16

*Choose with advisor

5th Semester - Spring

Course	Credits
PHIL 102	3
RAD 227	10

Course	Credits
RAD 240	1
TOTAL	14