



**Colorado Mesa University, Bachelor of Science in Radiologic Sciences  
Radiography – Interim Report – September, 2018**

**Standard One: Integrity**

**Objective 1.10** - Makes the program's mission statement, goals, and student learning outcomes readily available to students, faculty, administrators, and the general public.

**Narrative**

The Colorado Mesa University Bachelor of Science in Radiologic Sciences (CMU BSRS) program makes the mission statement, goals, and student learning outcomes available to students, faculty, administrators, and the general public from a link on the Colorado Mesa University Radiologic Sciences website. The program's mission statement, goals, and student learning outcomes are published in the BSRS Student Handbook and the BSRS Information Packet. Both documents are available on the website. Administrators have additional access to the BSRS Student Handbook and the BSRS Information Packet via the CMU intranet storage. The program faculty and students have an additional access to the Student Handbook through the CMU secured OneDrive cloud-based storage. Each program syllabus contains the student learning outcomes.

**Supporting Documentation**

[Objective 1.10 BSRS Mission Goals SLO.pdf](#)  
[Objective 1.10 BSRS Handbook Mission Goals SLO.pdf](#)  
[Objective 1.10 BSRS Information Packet.pdf](#)  
[Objective 1.10 Sample Syllabus SLO.pdf](#)  
[Objective 1.10 BSRS Student Handbook.pdf](#)  
[Objective 1.10 Student Handbook Signature Page.pdf](#)

**Standard Two: Resources**

**Objective 2.9** - Has sufficient ongoing financial resources to support the program's mission.

**Narrative**

Income for the CMU budget comes from the institution's general fund and student fees. Funding from the general fund is based on full time equivalent students (FTES). The president allocates funds to the office of academic affairs, who then distributes the funds among departments. The department head allocates monies to each program based on fiscal projections of the program's needs. This budget may be further increased by special initiative funds and grant dollars.

Total budget revenues have been adequate to meet current program expenditures. Salaries compare to other institutions of similar size and support recruitment and retention of qualified faculty and staff.

The department funds for the program adequately cover continuing costs such as dosimeters (personal radiation monitoring devices), equipment repair, annual fees for equipment inspection, JRCERT fees and ACERT dues.

In 2017, CMU provided a new energized laboratory for the program. The laboratory is equipped with a new digital radiography system which features a wireless digital detector and PACS software package. A high definition 80 inch monitor was installed in the laboratory to enhance students' learning experience in radiographic image analysis. The cost of the new laboratory was not included in the program budget and was paid out of the university's capital construction funds.

### **Supporting Documentation**

[Objective 2.9 Budget for Radiologic Sciences Program.pdf](#)

## **Standard Four: Health and Safety**

**Objective 4.1** - Assures the radiation safety of students through the implementation of published policies and procedures that are in compliance with Nuclear Regulatory Commission regulations and state laws as applicable.

### **Narrative**

All radiation safety policies and procedures are contained in the Student Handbook. The Student Handbook is accessible to students on the CMU BSRS website and through the CMU secured OneDrive cloud-based storage. Students confirm that they read, understood and agreed to adhere to the CMU BSRS policies as stated in the Student Handbook by filling out and signing the Student Handbook Signature Page.

Prior to beginning clinical, the program instructs students in basic radiation safety protocols. The lecture and quiz on basic radiation safety included in RADS 320 Lab course (Intro to Radiologic Technology and Patient Care). Instructors discuss the concepts of ALARA, time, distance, and shielding, and the purpose of radiation monitors.

Each month (within thirty days following receipt of data), the radiation safety officer posts the dosimetry reports. The report does not contain any personally identifiable information. Students self-select a code that the radiation safety officer puts on the report so a student can identify his/her information.

### **Supporting Documentation**

[Objective 4.1 BSRS Handbook Radiation Safety.pdf](#)

[Objective 4.1 RADS 320L Syllabus Unit 6 Radiation Safety.pdf](#)

[Objective 4.1 Radiation Dosimetry Report.pdf](#)

[Objective 4.1 Declaration of Pregnancy.pdf](#)

[Objective 4.1 Student Handbook Signature Page.pdf](#)

**Objective 4.3** - Assures that students employ proper radiation safety practices.

### **Narrative**

During the first eight weeks of the program (before entering the clinical setting) students are instructed in the utilization of imaging equipment, accessories, optimal exposure factors, and basic patient positioning to minimize radiation exposure to patients, selves, and others. Prior to entering the clinical facility, instructors introduce basic concepts of radiation protection and safety in the RADS 320 lab (Intro to Radiologic Technology and Patient Care). Instructors discuss the concepts of ALARA, time, distance, and shielding, and the purpose of radiation monitors. Students' knowledge and understanding of the radiation safety practices is assessed with a graded assignment.

In RADS 322 (Principles of Radiographic Exposure) of the first semester, instructors discuss imaging equipment, accessories, and optimal exposure factors. In the laboratory component of the course, students conduct experiments on how these factors affect radiation safety practices. In the RADS 321

lab (Radiographic Anatomy and Positioning I Laboratory), the instructor reiterates radiation safety by requiring students to monitor the possibility of pregnancy and to use area (gonadal, thyroid, breast) shielding according to the standard of care when performing simulated procedures.

In the second semester in RADS 335 (Radiation Biology and Protection), the principles of radiation safety are reinforced and researched deeper. In RADS 333 lab (Imaging Equipment & QA Laboratory) of the second semester, students perform radiation protection experiments to review and practice radiation safety. Instructors emphasize and assess radiation safety in the clinical setting in all rotations. Instructors discuss radiation safety during the final three semesters in RADS 449, 459, and 469 (Radiographic Clinical Experience III, IV and V). Final review of radiation safety included in RADS 464 (Senior Capstone).

The Radiation Safety Policy in the Student Handbook precludes students from holding an image receptor during any radiographic procedure or holding patients during any radiographic procedure when an immobilization method is the appropriate standard of care. Students must wear protective lead aprons during all fluoroscopic, C-Arm, or mobile procedures conducted in the clinical setting.

The energized laboratory door remains locked when a faculty member is not in the room. Exposure controls in the energized laboratory remain locked anytime a faculty member is not present in the room. Personal dosimeters must be worn during all energized laboratories. Consequences for every failure to wear the dosimeter during an energized laboratory will result in a 1% reduction in the final grade.

### **Supporting Documentation**

[Objective 4.3 BSRS Handbook Radiation Safety.pdf](#)

[Objective 4.3 Curriculum Sequence.pdf](#)

[Objective 4.3 Radiographic Procedure Form.pdf](#)

[Objective 4.3 RADS 322Lab Course Schedule Fall 2017.pdf](#)

[Objective 4.3 RADS 333Lab Course Schedule Spring 2018.pdf](#)

[Objective 4.3 RADS 335 Course Schedule Spring 2018.pdf](#)

[Objective 4.3 Simulated Procedure Assessment Form.pdf](#)

[Objective 4.3 Student Handbook Signature Page.pdf](#)

**Objective 4.4** - Assures that medical imaging procedures are performed under the direct supervision of a qualified radiographer until a student achieves competency.

### **Narrative**

Before a student can perform a procedure on a patient under indirect supervision in the clinical setting, she/he must demonstrate competency. The program distributes and discusses the Competency Based Clinical Education System for Radiography with students during the first week of the program and restates it during the first clinical meeting. The Student Handbook defines the direct/indirect supervision policy. Students acknowledge that they read, understood and agreed to adhere to the policies by signing the Student Handbook Signature Page.

A student cannot perform any procedure under direct or indirect supervision in the clinical setting until they have gained instruction from the lecture and lab for the unit under study. For each unit in the first and second semester of anatomy and positioning lab (RADS 321L and RADS 331L) courses, the student must successfully execute a simulated procedure randomly drawn from a given unit of study.

In the clinical setting, following the lecture and lab of a specific radiographic procedure, the student must complete a procedure observation form. After completion of the simulated procedure assessment in the lab (for a given unit of study) and the completion of the procedure observation, the student may perform the procedure under the direct supervision of a radiologic technologist (RT).

The clinical clearance to perform a procedure under the direct supervision is documented with the graded Simulated Procedure Assessment form, the graded Procedure Observation Form, and the Preparation for Clinical Competency Record under the Procedure Observation section.

To demonstrate clinical competency to perform a procedure under the indirect supervision, the student must perform a complete radiographic procedure listed on the Preparation for Clinical Competency Record form under the direct supervision of a RT. The RT will provide written feedback on the Procedure under Direct Supervision Feedback form, but not grade the procedure. The student will submit the Procedure under Direct Supervision form to the clinical instructor. If the form approved, the clinical instructor will sign and date the section under Procedure under Direct Supervision.

The clinical competency to perform a procedure under the indirect supervision is documented with the Procedure under Direct Supervision Feedback form and the Preparation for Clinical Competency Record under the Procedure under Direct Supervision section.

After receiving documentation of competency, the student may opt to perform that procedure under the indirect supervision. The student cannot perform radiographic procedures without the direct supervision of a qualified radiographer without documentation of competency.

The direct supervision requirements are made known to the clinical instructors and enrolled students through the indirect/direct supervision policy in the Student Handbook posted on the BSRS web site. The requirements also defined in the Clinical Education Competency Evaluations document. The clinical instructors and students have an access to the Student Handbook and the Clinical Education Competency Evaluations document through the CMU secured OneDrive cloud-based storage.

The direct supervision requirements are made known to the affiliate clinical instructors and clinical staff through the indirect/direct supervision policy in the Student Handbook posted on the BSRS web site. In addition, the program distributes a copy of indirect/direct supervision policy to all clinical sites. The policy is discussed at the program advisory meetings. The clinical sites are asked to have the affiliate clinical instructors and all staff technologists sign and date the Clinical Supervision of Students document annually. The program keeps signed copies of the documentation.

The responsibilities for ensuring students are under direct supervision prior to documentation of competency lies with the student, clinical coordinator, clinical instructors, and affiliate clinical instructors. The clinical instructors and affiliate clinical instructors enforce and monitor completion of competency documentation. The first year clinical instructors and affiliate clinical instructors are given the anatomy and positioning schedule so they are aware of the units of study that students have completed. If a student does not pass a simulated lab procedure, the anatomy and positioning instructor notifies the clinical instructor. Most students have all competencies completed by the end of the third semester.

### **Supporting Documentation**

[Objective 4.4 BSRS Handbook Clinical Supervision.pdf](#)

[Objective 4.4 Student Handbook Signature Page.pdf](#)

[Objective 4.4 Competency System.pdf](#)

[Objective 4.4 Simulated Procedure Assessment form.pdf](#)

[Objective 4.4 Clinical Competencies Instructions.pdf](#)

[Objective 4.4 Preparation for Clinical Competency Record.pdf](#)

[Objective 4.4 Procedure Observation Form.pdf](#)

[Objective 4.4 Procedure under Direct Supervision Feedback Form.pdf](#)

[Objective 4.4 Radiographic Procedure Evaluation Form.pdf](#)

[Objective 4.4 Clinical Supervision of Students.pdf](#)

## [Objective 4.4 Advisory Meeting Minutes Clinical Supervision of Students.pdf](#)

**Objective 4.5** - Assures that medical imaging procedures are performed under the indirect supervision of a qualified radiographer after a student achieves competency.

### **Narrative**

Until students demonstrate competency, all clinical assignments are performed under the direct supervision of a qualified radiographer. To demonstrate clinical competency, the student must successfully perform a complete radiographic procedure listed on the Preparation for Clinical Competency Record form. The qualified radiographer will provide written feedback on the Procedure under Direct Supervision Feedback form. The student will submit the Procedure under Direct Supervision form to the clinical instructor. If the form approved, the clinical instructor will sign and date the section under Procedure under Direct Supervision. After receiving documentation of competency, the student may opt to perform that procedure under the indirect supervision.

The indirect supervision requirements are made known to the clinical instructors and enrolled students through the indirect/direct supervision policy in the Student Handbook posted on the BSRS web site. The requirements also defined in the Clinical Education Competency Evaluations document. The clinical instructors and students have an access to the Student Handbook and the Clinical Education Competency Evaluations document through the CMU secured OneDrive cloud-based storage. Students acknowledge that they read, understood and agreed to adhere to the policies by signing the Student Handbook Signature Page.

The indirect supervision requirements are made known to the affiliate clinical instructors and clinical staff through the indirect/direct supervision policy in the Student Handbook posted on the BSRS web site. In addition, the program distributes a copy of indirect/direct supervision policy to all clinical sites. The policy is discussed at the program advisory meetings. The clinical sites are asked to have the affiliate clinical instructors and all staff technologists sign and date the Clinical Supervision of Students document annually. The program keeps signed copies of the documentation.

The clinical instructors and affiliate clinical instructors enforce and monitor the indirect supervision requirement. The clinical coordinator reinforces the policy at the beginning of the semester in student clinical meetings and clinical instructors reinforce the policy during the semester at clinical sites.

### **Supporting Documentation**

[Objective 4.5 BSRS-Handbook Clinical Supervision.pdf](#)

[Objective 4.5 Student Handbook Signature Page.pdf](#)

[Objective 4.5 Competency System.pdf](#)

[Objective 4.5 Clinical Competencies Instructions.pdf](#)

[Objective 4.5 Preparation for Clinical Competency Record.pdf](#)

[Objective 4.5 Procedure under Direct Supervision Feedback Form.pdf](#)

[Objective 4.5 Radiographic Procedure Evaluation Form.pdf](#)

[Objective 4.5 Clinical Supervision of Students.pdf](#)

[Objective 4.5 Advisory Meeting Minutes Clinical Supervision of Students.pdf](#)

**Objective 4.6** - Assures that students are directly supervised by a qualified radiographer when repeating unsatisfactory images.

### **Narrative**

The Student Handbook defines the repeat policy in the Clinical Supervision of Students section. The Student Handbook is accessible to students on the CMU BSRS website and through the CMU secured OneDrive cloud-based storage. Students confirm that they read, understood and agreed to adhere to the CMU BSRS policies as stated in the Student Handbook by filling out and signing the Student Handbook Signature Page.

During the first clinical meeting, the clinical coordinator reviews the repeat policy. The clinical coordinator reinforces the policy at the beginning of each section of clinical experience during student clinical meetings. Clinical instructors reinforce the policy during the semester at clinical sites. For images submitted for evaluations, students are required to document the qualified radiographer who reviewed and approved the image, and provided the direct supervision if images were repeated.

The direct supervision requirement for repeat images is made known to the affiliate clinical instructors and clinical staff through the repeat policy in the Student Handbook posted on the BSRS web site. In addition, the program distributes a copy of the repeat policy to all clinical sites. The policy is discussed at the program advisory meetings. The clinical sites are asked to have the affiliate clinical instructors and all staff technologists sign and date the Clinical Supervision of Students document annually. The program keeps signed copies of the documentation.

#### **Supporting Documentation**

[Objective 4.6 BSRS Handbook Clinical Supervision.pdf](#)

[Objective 4.6 Student Handbook Signature Page.pdf](#)

[Objective 4.6 Image Evaluation Form.pdf](#)

[Objective 4.6 Clinical Supervision of Students.pdf](#)

[Objective 4.6 Advisory Meeting Minutes Clinical Supervision of Students.pdf](#)

### **Standard Five: Assessment**

**Objective 5.1** - Develops an assessment plan that, at a minimum, measures the program's student learning outcomes in relation to the following goals: clinical competence, critical thinking, professionalism, and communication skills.

#### **Narrative**

The program currently collects data for the new 2018-2019 assessment plan. In order to improve efficiency of the assessment process, the program utilizes an assessment cycle. Following the recommendations of the CMU Assessment Committee, each student learning outcome is evaluated every two to three years based on the assessment cycle. In 2018, CMU adapted two new categories for student learning outcomes, Social and Personal Responsibility, and Information Literacy. The program new assessment plan reflects this change.

#### **Supporting Documentation**

[Objective 5.1 BSRS Assessment Plan 2018-2019.pdf](#)

[Objective 5.1 BSRS SLO Rotations Plan 2018-2024.pdf](#)

**Objective 5.4** - Develops an assessment plan that, at a minimum, measures the program's student learning outcomes in relation to the following goals: clinical competence, critical thinking, professionalism, and communication skills.

#### **Narrative**

All CMU associate graduates are expected to demonstrate proficiency in applied learning, specialized knowledge, quantitative fluency, communication fluency, and critical thinking. In addition to these

campus-wide student-learning outcomes, the AAS Radiologic Technology program has defined five program outcomes to assess students learning in the areas of clinical competence, critical thinking, professionalism and communication skills:

1. Utilize broad-based knowledge and skills to become competent entry-level radiographers (specialized knowledge/applied learning; clinical competence).
2. Demonstrate value-based behaviors as the foundation for professional practice (specialized knowledge; professionalism).
3. Demonstrate proficiency in using mathematics for technique selection and radiation protection measures (quantitative literacy; critical thinking).
4. Demonstrate effective oral and written communication in the radiologic sciences (communication fluency).
5. Demonstrate error recognition and the ability to interpret analytical data to determine a course of action to solve problems (critical thinking).

The program continuously collects and analyzes the assessment data to evaluate how successful students are in achieving these outcomes. The annual assessment plan includes a curriculum map, which specifies what outcomes are measured in the corresponding courses of the program. Over the last four cycles of assessment, each outcome was assessed every year. In many cases, the data was collected for the first-year students and for the second-years students separately. The program faculty discuss the results of assessment during the program meetings. The results and conclusions are used to implement program improvement.

The assessment process, its effects and resulting changes in the program are shared with the Advisory Committee at least once a year. The program continuously asks the Advisory Committee to provide feedback on the program assessment and to recommend areas that they find important to assess in the future. Significant changes resulted from such discussions. Based on the recommendation from the Advisory Committee and assessment data from the graduate surveys, the program provided students with additional opportunities in the areas of fluoroscopy and surgery. The change had a positive impact on students' performance in these areas. The program updated image analysis and radiographic procedure evaluation forms after the results of assessment indicated that similarity in students' scores may be attributed to misinterpretation of points awarded for each section on the forms. The members of the Advisory Committee collaborated with the program faculty to improve the forms. The members of the committee later reported that the new forms better reflect points awarded and are easier to use.

In didactic courses of the program, several changes were made based on the results of assessment. To address students' poor performance in certain areas of written communication, the program faculty developed "Program Guide for Style, Format, and Submission Errors" which identifies common errors in spelling, grammar, and APA style format. Students' proficiency in these areas of written communication still requires an improvement, however, the assessment results following the changes demonstrated higher scores. Prompted by conclusions from assessment on quantitative fluency outcomes, the program faculty added practice exercises and online resources to the courses, and provided opportunity for a small group tutoring. The improvement from the changes is reflected in the assessment plans for the following years. In some cases, student learning outcome data influenced changes in the course schedules. For example, Image Analysis course was restructured to provide more time at the beginning of the course to discuss image analysis criteria, and additional lecture time was spent on fundamental error recognition.

In the fall of 2017, the program made a change from a two-year associate's degree to a four-year bachelor's degree. The program established seven new outcomes to correlate with the institutional

outcomes for a baccalaureate degree. A new assessment plan for the BSRS program was developed in the same year. In 2018, CMU added two new categories of the student learning outcomes. The program outcomes have been updated to align with the new institutional outcomes.

1. Combine academic theory with practitioner experience and skills (specialized knowledge/applied learning; clinical competence).
2. Demonstrate skills to reason and solve quantitative problems in the radiologic sciences (quantitative fluency; critical thinking).
3. Demonstrate written communication skills (communication).
4. Assess oral communication techniques used in professional practice (communication).
5. Develop critical thinking and problem solving skills that demonstrate a professional level of expertise in the radiologic sciences (critical thinking).
6. Relate ethical principles to real-life problems in professional practice (personal and social responsibility; professionalism).
7. Find relevant sources of information, evaluate information critically, and apply the information appropriately and effectively to professional practice in the radiologic sciences (information literacy; critical thinking).

The student learning outcomes rotations and the assessment plan for 2018-2019 reflect these changes.

#### **Supporting Documentation**

[Objective 5.4 Assessment Plan with Evaluation 2014 2015.pdf](#)

[Objective 5.4 Assessment Plan with Evaluation 2015 2016.pdf](#)

[Objective 5.4 Assessment Plan with Evaluation 2016 2017.pdf](#)

[Objective 5.4 Assessment Plan with Evaluation 2017 2018.pdf](#)

[Objective 5.4 Assessment Plan Table 2014-2018](#)

[Objective 5.4 BSRS Assessment Plan with Evaluation 2017 2018.pdf](#)

[Objective 5.4 BSRS SLO Rotations Plan 2018-2024.pdf](#)

[Objective 5.4 Fall Advisory Committee Minutes 2015.pdf](#)

[Objective 5.4 Spring Advisory Committee Minutes 2015.pdf](#)

[Objective 5.4 Fall Advisory Committee Minutes 2016.pdf](#)

[Objective 5.4 Spring Advisory Committee Minutes 2016.pdf](#)

[Objective 5.4 Fall Advisory Committee Minutes 2017.pdf](#)

[Objective 5.4 Evaluation of Professionalism Form.pdf](#)

[Objective 5.4 Ethical Reasoning Assessment Data Sample and Rubric.pdf](#)

[Objective 5.4 X-ray Circuit Paper Rubric.pdf](#)

[Objective 5.4 Radiographic Procedure Evaluation Form.pdf](#)

[Objective 5.4 Image Evaluation Form.pdf](#)

**Objective 5.5** - Periodically evaluates its assessment plan to assure continuous program improvement.

#### **Narrative**

The program faculty evaluates the assessment plan annually. The assessment results are discussed and analyzed during the program meetings. Depending on the assessment cycle and the data collected, assessment tools and methods are frequently changed to provide new information about an outcome. The program faculty promptly reviews any assessment related suggestions and feedback provided by the Advisory Committee.

#### **Supporting Documentation**

[Objective 5.5 Spring RT Program Meeting 2015.pdf](#)

[Objective 5.5 Spring RT Program Meeting 2016.pdf](#)



[Objective 5.5 Spring RT Program Meeting 2017.pdf](#)  
[Objective 5.5 Spring RT Program Meeting 2018.pdf](#)

## **Standard Six: Institutional/Programmatic Data**

**Objective 6.1** - Documents the continuing institutional accreditation of the sponsoring institution.

### **Narrative**

Colorado Mesa University (CMU) is accredited by the Higher Learning Commission (HLC). Next reaffirmation of accreditation is in 2023 – 2024. Verification of CMU's status can also be found on the HLC web site.

### **Supporting Documentation**

[Objective 6.1 HLC Statement of Accreditation CMU.pdf](#)

**Objective 6.2** - Documents that the program's energized laboratories are in compliance with applicable state and/or federal radiation safety laws.

### **Narrative**

Documentation for two energized radiographic machines is provided.

### **Supporting Documentation**

[Objective 6.2 GE Certification Evaluation Report.pdf](#)  
[Objective 6.2 Quantum Certification Evaluation Report.pdf](#)

**Objective 6.5** - Documents that clinical settings are in compliance with applicable state and/or federal radiation safety laws.

### **Narrative**

Documentations for the affiliated clinical agencies are included. Glenwood Medical Associates Clinic, Kokopelli Clinic and Rangely District Hospital are not currently used as clinical agencies for the program.

### **Supporting Documentation**

[Objective 6.5 St. Mary's Hospital and Medical Center TJC.pdf](#)  
[Objective 6.5 Community Hospital TJC.pdf](#)  
[Objective 6.5 VA Medical Center TJC.pdf](#)  
[Objective 6.5 Delta County Memorial Hospital DNV.pdf](#)  
[Objective 6.5 Colorado Canyons Hospital CDPHE.pdf](#)  
[Objective 6.5 Valley View Hospital TJC.pdf](#)  
[Objective 6.5 Grand River Medical Center Room 1.pdf](#)  
[Objective 6.5 Grand River Medical Center Room 2.pdf](#)  
[Objective 6.5 Grand River Medical Center Specialty Clinic.pdf](#)  
[Objective 6.5 Montrose Memorial Hospital TJC.pdf](#)  
[Objective 6.5 Memorial Hospital at Craig DNV.pdf](#)  
[Objective 6.5 Rocky Mountain Orthopaedics Room 1.pdf](#)  
[Objective 6.5 Rocky Mountain Orthopaedics Room 2.pdf](#)  
[Objective 6.5 Rocky Mountain Orthopaedics Room 3.pdf](#)  
[Objective 6.5 Rocky Mountain Orthopaedics State Inspection.pdf](#)  
[Objective 6.5 Western Orthopedics State Inspection.pdf](#)