BROWARD COMMUNITY COLLEGE
COURSE OUTLINE

LAST REVIEW: 2006-07 *(i.e. 2003-2004)* **NEXT REVIEW:** 2011-12 *(i.e. 2008-2009)* **STATUS:** A *(A, I, D)*

COURSE TITLE: Radiographic Quality Assurance

COMMON COURSE NUMBER: RTE 2473

CREDIT HOURS: 2

CONTACT HOUR BREAKDOWN *(per 16 week term)*

CLOCK HOURS: *(Voc. Course ONLY)*

Lecture: 32 Lab:

Clinic: Other:

PREREQUISITE(S): RTE 2523, RTE 2623, RTE 2782

COREQUISITE(S):

PRE/COREQUISITE(S): RTE 2385, RTE 2457, RTE 2844

COURSE DESCRIPTION *(750 characters, maximum)*:

Practices and procedures related to radiographic quality assurance, quality control and quality management.

UNIT TITLES

1. **Quality Management Concepts**
2. **Monitoring an Maintenance**
3. **State and Federal Regulations**

ASSESSMENT:

Please provide a brief description (250 characters maximum) that details how students will be assessed on the course outcomes.

1. **Assignments, comprehensive/cumulative unit exams, and comprehensive/cumulative final exam.**

****** Complete the following only if course is seeking general education status ******

GENERAL EDUCATION Competencies and Skills *:

Please highlight in green font all Competencies/Skills from the list below that apply to this course. In the box to the right of the Competency/Skill, enter all specific learning outcome numbers (i.e. 1.1, 2.7, 5.12) that apply.

1. Read with critical comprehension	
2. Speak and listen effectively	
3. Speak and listen effectively	
4. Think creatively, logically, critically, and reflectively (analyze, synthesize, apply, and evaluate)	
5. **Demonstrate and apply literacy in its various forms:** *(highlight in green ALL that apply)* (1. technological, 2. informational, 3. mathematical, 4. scientific, 5. cultural, 6. historical, 7. aesthetic and/or 8. environmental)	
6. Apply problem solving techniques to real-world experiences	
7. Apply methods of scientific inquiry	
8. Demonstrate an understanding of the physical and biological environment and how it is impacted by human beings	
9. Demonstrate an understanding of and appreciation for human diversities and commonalities	
10. Collaborate with others to achieve common goals.	
11. Research, synthesize and produce original work	
12. Practice ethical behavior	
13. Demonstrate self-direction and self motivation	
14. Assume responsibility for and understand the impact of personal behaviors on self and society	
15. Contribute to the welfare of the community	

* *General Education Competencies and Skills endorsed by '05-'06 General Education Task Force*

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UNITS

Unit 1 Quality Management Concepts

General Outcome:

1.0 The student shall: differentiate between QM, QA and QC and describe the purposes, benefits and elements involved with each.

Specific Measurable Learning Outcomes:
Upon successful completion of this unit, the student shall be able to:

1.1 Define Radiographic Quality

1.2 Define *Quality Assurance, Quality Control* and *Quality Management*

1.3 Describe factors affecting radiographic quality

1.4 Explain why determination of ***Quality*** is difficult, without specific objective criteria

1.5 List those individuals that should participate in a Quality Management program

1.6 Identify the benefits of a quality assurance program from the standpoint of the patient

1.7 Identify the benefits of a QA program from the standpoint of the radiology department

1.8 Discuss the primary goals/objectives of a QA program

1.9 Identify what should be evaluated and how often, in a QA program

1.10 Identify how the quality assurance ***standards*** are established

1.11 Describe the importance of ***developed*** quality assurance manuals

1.12 Identify the *test equipment, procedures, and training* employed in a QA program

1.13 Discuss the importance of record keeping (logs)in a QA program

1.14 Discuss the importance of standardization in a QA program

1.15 Determine how you would evaluate the effectiveness of a QA program

1.16 Differentiate between operating or control **levels** and **limits**

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Unit 2 Monitoring & Maintenance

General Outcome:

2.0 **The student shall:** accurately describe the processes involved with QC, including the responsibilities and duties of QC technologists and the testing procedures and acceptance guidelines for all radiographic equipment commonly tested.

Specific Measurable Learning Outcomes:
Upon successful completion of this unit, the student shall be able to:

2.1 Identify the technologist's responsibilities in a QA/QC program

2.2 Discuss the need for a *QA*/QC technologist

2.3 Describe the role of the *Physicist* in a QA program

2.4 Identify the role of the *Service Engineer* in a QA program

2.5 List those individuals who should participate in QA

2.6 Identify the basic equipment necessary for conducting a quality assurance program in a medium size hospital

2.7 Identify the ***basic*** QA test procedures routinely employed in a medium to large size department

2.8 Describe the test materials/equipment, the test procedures employed, the evaluation & interpretation of the test results obtained, the corrective maintenance required, the ongoing monitoring procedures and the preventative maintenance which may be performed in the following radiographic areas:

- Darkrooms
- Processors
- Radiographic units (conventional and digital)
- Cassettes/Intensifying Screens/digital image receptors
- Fluoroscopic units (conventional and digital
- Grids
- Illuminators
- Protective devices
- Tomographic units
- CT units
- MRI units
- Sonography units
- Nuclear medicine units

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Unit 2 Monitoring & Maintenance (continued)

2.9 Describe and/or perform quality control tests to include:
- Darkroom integrity
- Processor sensitometry
- SID accuracy
- Beam & light-field congruence
- Exposure time accuracy
- Exposure time reproducibility
- mAs/mA linearity
- mAs reproducibility
- mR/mAs linearity
- Focal spot size and consistency
- kVp accuracy
- Grid alignment
- Film/screen contact
- Uniformity of screen speed
- Uniformity of radiographic illuminators
- Protective device integrity

2.10 Describe the safety checks of radiographic equipment including table, tube and accessories

2.11 Report malfunctions in radiographic unit noting the difficulty, which might assist in locating cause of malfunction.

2.12 Describe method for cleaning screens and cassettes on a regular basis to remove dirt, paper or other artifact

2.13 Describe a retake/repeat analysis program including the purpose, objectives, implementation, evaluation and follow-up for such a program

2.14 Calculate % repeats, % waste, & % for each type of retake/repeat

2.15 Identify areas needing improvement when viewing retake/repeat analysis data

2.16 Perform all the calculations required with each of the various QC tests to determine whether the process is within control limits

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Unit 3 State and Federal Regulations

General Outcome:

3.0 The student shall: accurately identify the state and federal agencies involved in monitoring radiologic equipment and discuss the enforcement practices.

Specific Measurable Learning Outcomes:
Upon successful completion of this unit, the student shall be able to:

3.1 Identify the agencies involved in regulation of radiologic practices involving quality assurance

3.2 Discuss the state regulations as they relate to QA/QC/QM

3.3 Identify the agency responsible for ***testing*** at the state level

3.4 Describe the enforcement practices employed on the state level

3.5 Identify the federal agencies involved with QA/QC aspects of radiologic systems

3.6 Discuss federal regulations and enforcement/consultation services as they relate to quality assurance

3.7 Discuss the impact of federal regulations relating to the Mammography Quality Standards Act (MQSA)

3.8 Recall the specific limits set by the federal agencies regarding quality control for radiography equipment.

3.9 Identify the acceptance limit for each of the test procedures employed.

3.10 Identify the testing frequency recommended by the NCRP for each of the areas tested