

Science Division
Course Outcomes Assessment
Spring 2015

Course Title: PHY 106 – Radiological Physics Theory

Instructor: Donna Carroll

Expected Learning Outcomes:

- Identify and use metric units, logarithms and scientific notation to perform calculations,
- Use appropriate mathematical equations for work, force, inertia, energy, momentum and power,
- Analyze basic DC parallel and series circuits,
- Identify atomic structure and subparticles of matter, atoms, and elements,
- Utilize the principles of stationary charges, electrodynamics, laws of magnetism, and electromagnetism,
- Identify anatomy and properties of DC and AC generators, motors and transformers,
- Calculate step-up and step-down voltages and currents for transformer ratios,
- Describe production of high voltage, rectification, thermionic emission, and solid state diodes,
- Identify the principles of x-ray production and properties of x-rays, electromagnetic radiations and the interactions of x-rays with matter,
- Graph on semilog paper and determine the value of half-value layer filtration,
- Graph and analyze saturation current for various tube voltages and currents,
- Identify the various types and designs of X-ray tubes, fluoroscopic tubes,
- Read and interpret x-ray technique charts, tube cooling curves,
- Diagram complete X-ray circuits for single phase, three phase, and high frequency generator, and fluoroscopy equipment.

Assessment (How do or will students demonstrate achievement of each outcome?)

Exams, quizzes, homework assignments, comprehensive final exam.

Validation (What methods have you used or will you use to validate your assessment?)

Students will pass course with a 75% or better.

85% of students will correctly answer designated questions on final exam.

Results (What do your assessment data show?) If you have not yet assessed student achievement of your learning outcomes, when is assessment planned?

100% passed class with a minimum of 75% (26/26 students)

We provided one tutoring session and developed supplemental worksheets based on student performance.

Designated Questions:

Outcome #2 Competently perform routine imaging procedures.	Question number from Final Exam	Actual Results (# correct)	% Correct
	#1 X-ray Circuit	24/26	92%
	#2 Image Intensification Tube	24/26	92%
	# 3 tube location (Renamed question only)	26/26	100%
	# 4 Light Photons	23/26	89%
	# 8 Operational Guidelines	23/26	89%

Outcome # 3 Utilize appropriate protection and standard precautions	Question number from Final Exam	Actual Results (# correct)	% Correct
	# 17 AEC unit	22/26	85%
	# 18 Terminate Exposure	22/26	85 %
	# 20 overload (Renamed question only)	17/26	65%
	# 23 Timer 3 phase unit	18/26	69%

Question #1 Is an EXCEPT question. Both individuals stated Autotransformer instead of Rectifier

Question # 20 Individuals put Deadman switch instead of Circuit breaker

Question # 23: Another EXCEPT question. Remind students of incoming phase

Follow-up (How have you used or how will you use the data to improve student learning?)

Emphasize low and high voltages and reason for deadman switch

Budget Justification (What resources are necessary to improve student learning?)

No additional resources needed.