ROCHESTER INSTITUTE OF TECHNOLOGY
COURSE OUTLINE FORM

COLLEGE OF SCIENCE

Chester F. Carlson Center for Imaging Science

REVISED COURSE: COS-IMGS-610- Graduate Laboratory II

1.0 Course Approvals

Required course approvals:	**Approval Requested Date:**	**Approval Granted Date:**
Academic Unit Curriculum Committee	9/1/2010	9/15/2010
College Curriculum Committee	10/1/2010	10/18/2010
Optional course designation approvals:		
General Education Committee		
Writing Intensive Committee		
Honors		

2.0 Course information:

Course title:	Graduate Laboratory II
Credit hours:	1
Prerequisite(s):	None
Co-requisite(s):	COS-IMGS-633, COS-IMGS-682
Course proposed by:	Roger L. Easton, Jr.
Effective date:	September 2013

	Contact hours	**Maximum students/section**
Classroom		
Lab	3	12
Studio		
Other (specify)		

2.1 Course Conversion Designation (Please check which applies to this course)

	Semester Equivalent (SE) Please indicate which quarter course it is equivalent to:
	Semester Replacement (SR) Please indicate the quarter course(s) this course is replacing
X	New

2.2 Semester(s) offered (check)

Fall	Spring √	Summer	Other

All courses must be offered at least once every 2 years. If course will be offered on a bi-annual basis, please indicate here:

2.3 Student Requirements

Students required to take this course: Students pursuing the PhD in Imaging Science
Students who might elect to take the course: Graduate students in engineering or other science programs.

3.0 Goals of the course (including rationale for the course, when appropriate):

This course is a laboratory that illustrates the material in the required courses in Imaging Science, including Optics for Imaging and Digital Image Processing

4.0 Course description (as it will appear in the RIT Catalog, including pre- and co-requisites, and quarters offered). Please use the following format:

COS-IMGS-610 Graduate Laboratory II This laboratory course is intended to familiarize students with the concepts considered in the required Optics and Digital Image Processing courses. Students work with a variety of optical hardware in a laboratory to perform measurements and experiments in topics such as ray tracing, diffraction, optical filtering, polarization, interferometry, and holography. (Co-requisites: COS-IMGS-633, COS-IMGS-682) **Lab 3, Credit 1 (S)**

5.0 Possible resources (texts, references, computer packages, etc.)

6.0 Topics (outline):

6.1 Experiments 6.1.1 Optical imaging with lenses and mirrors, ray optics model 6.1.2 Refraction: critical and Brewster's angles 6.1.3 Optical imaging in the presence of diffraction, wave optics model and transfer functions 6.1.4 Diffraction in the Fresnel and Fraunhofer models 6.1.5 Optical Fourier transforms and imaging systems 6.1.6 Optical matched filtering 6.1.7 Division of wavefront interferometry 6.1.8 Division of amplitude interferometry, Michelson interferometer 6.1.9 Computer-generated holographic inputs to optical systems 6.1.10 Beam profiling

7.0 Intended course learning outcomes and associated assessment methods of those outcomes

Course Learning Outcome	Lab report
Demonstrate the principles of optical imaging in the ray and wave optics models	X

8.0 Program outcomes and/or goals supported by this course

Equip graduate students with tools and resources to successfully complete their graduate study and prepare them for an academic or professional career in Imaging Science.

9.0

	General Education Learning Outcome Supported by the Course	Assessment Method
Communication		
	Express themselves effectively in common college-level written forms using standard American English	
	Revise and improve written and visual content	
	Express themselves effectively in presentations, either in spoken standard American English or sign language (American Sign Language or English-based Signing)	
	Comprehend information accessed through reading and discussion	
Intellectual Inquiry		
	Review, assess, and draw conclusions about hypotheses and theories	
	Analyze arguments, in relation to their premises, assumptions, contexts, and conclusions	
	Construct logical and reasonable arguments that include anticipation of counterarguments	
	Use relevant evidence gathered through accepted scholarly methods and properly acknowledge sources of information	
Ethical, Social and Global Awareness		
	Analyze similarities and differences in human experiences and consequent perspectives	
	Examine connections among the world's populations	
	Identify contemporary ethical questions and relevant stakeholder positions	
Scientific, Mathematical and Technological Literacy		
	Explain basic principles and concepts of one of the natural sciences	
	Apply methods of scientific inquiry and problem solving to contemporary issues	
	Comprehend and evaluate mathematical and statistical information	
	Perform college-level mathematical operations on quantitative data	
	Describe the potential and the limitations of technology	
	Use appropriate technology to achieve desired outcomes	
Creativity, Innovation and Artistic Literacy		
	Demonstrate creative/innovative approaches to course-based assignments or projects	
	Interpret and evaluate artistic expression considering the cultural context in which it was created	

10.0 Other relevant information (such as special classroom, studio, or lab needs, special scheduling, media requirements, etc.)

Optical laboratory space

Programform.doc
NYSED Documentation Form

Audience
This document is intended for all department chairs and program directors.

Summary

This document includes the information and required forms for submission of program to NYSED for semester conversion.

Change Log

Responsible	Date	Version	Short description
John Kerekes	8/7/2010	1	Document originator