Division/School Approval:	05/01/15	OP
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Curriculum Committee Approval:	5/6/15	JA-4
Faculty Approval:	Date 5/15/15	Initial]
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# SCHENECTADY COUNTY COMMUNITY COLLEGE Course Outline

ACADEMIC DIVISION/SCHOOL: Mathematics, Science, Technology and Health				
PREPARED BY: Ben Placek				
COURSE CODE: PHY 154 COURSE TITLE: Physics II				
LECTURE HOURS/WEEK: 3 LAB HOURS/WEEK: 3 CREDIT HOURS:	4			
PREREQUISITE/S: MAT 118 or MAT 154 or higher or eligible to enroll in MAT 167 PREREQUISITE or CONCURRENT COURSE: COREQUISITES:				
FINAL EXAM REQUIRED: YES X NO				
COURSE DESCRIPTION:  This course uses algebra, trigonometry and geometry to describe fluids, electricity, magnetism and optics. The following topics are covered: electric force and field, potential, capacitance,				

current, resistance, DC circuits, magnetic force and fields, AC circuits, reflection, refraction,

SCCC Core Principle Course SUNY General Education Course

mirror lenses and gratings.

yes no

#### **STUDENT LEARNING OUTCOMES:**

Students who have successfully completed this course will:

- test scientific hypotheses by obtaining and analyzing experimental data using statistical and computational techniques;
- demonstrate scientific communication and analysis skills through written lab reports;
- use appropriate mathematical principles to analyze the laws of electricity and magnetism, and apply them to real-world examples; and
- use the basic laws of electromagnetism to think critically and qualitatively in order to describe phenomena observed in nature.

#### **REPRESENTATIVE TEXT/S:**

Giambattista, A., Richardson, B.M., & Richardson, R.C. (Current Edition) *College Physics*. New York, NY: McGraw-Hill.

Loyd, D.H. (Current Edition) *Physics Laboratory Manual*. Boston, MA. Cengage Learning.

### **SUPPLEMENTARY MATERIALS/REFERENCES:**

Other materials as needed.

**EVALUATION METHODS:** Examinations and laboratory reports are required. Additional assessment methods may include, but are not limited to, research papers, oral reports, homework and quizzes.

NOTE: Grading and assessment criteria may appropriately differ. Grades focus on what individual students have learned while assessments focus on entire cohorts of students. Each instructor will determine his/her grading criteria for the course and state on the course syllabus.

#### **REQUIRED ASSESSMENT METHODS:**

Assessment results from these methods will be used for course-level assessment and, where applicable, for SCCC core principles and SUNY General Education Knowledge and Skills areas. This information will be incorporated in program reviews.

Student Learning Outcome	Method(s)
Test scientific hypotheses by obtaining and	Lab Report
analyzing experimental data using statistical and	
computational techniques	
Demonstrate scientific communication and	Lab Report
analysis skills through written lab reports	
Use appropriate mathematical principles to analyze	Examination
the laws of electricity and magnetism, and apply	
them to real-world examples	
Use the basic laws of electromagnetism to think	Examination
critically and qualitatively in order to describe	
phenomena observed in nature	

NOTE: College policy requires a final exam or final week activity.

## **Course Outline**

# PHY 154 Physics II

<u>WEEK</u>	<u>TOPICS</u>
1	Electric Force
2	Electric Field
3	Electric Potential and Capacitance
4	Electric Current, Resistance, DC Circuits
5	Magnetic Force
6	Magnetic Field
7	Magnetic Induction and Inductance
8	Electric Generators and Motors
9	Resistor, Capacitor and Inductor in AC Circuits
10	Electromagnetic Waves
11	Light Rays - reflection and refraction
12	Mirrors, Lenses and Optical Instruments
13	Light Waves
14	Light Interference and Diffraction
15	Review
16	Final Exam

## **Laboratory Outline**

## PHY 154 Physics II

LAB	<u>TOPICS</u>	<u>LAB #</u>
1	Equipotentials and Electric Fields	26
2	Measurement of Electrical Resistance	28
3	The Wheatstone Bridge	29
4	Potentiometer and EMF	32
5	Parallel and Series DC Circuit	Handout
6	Magnetic Field inside a Coil	35a
7	Magnetic Induction	Handout
8	Oscilloscope Measurement	38
9	Alternating Current - LR Circuit	36
10	Alternating Current - LRC Circuit	37
11	Reflection and Refraction	40
12	Focal Length of Lenses	41
13	Interference and Diffraction of light	Handout
14	Diffraction Grating	42