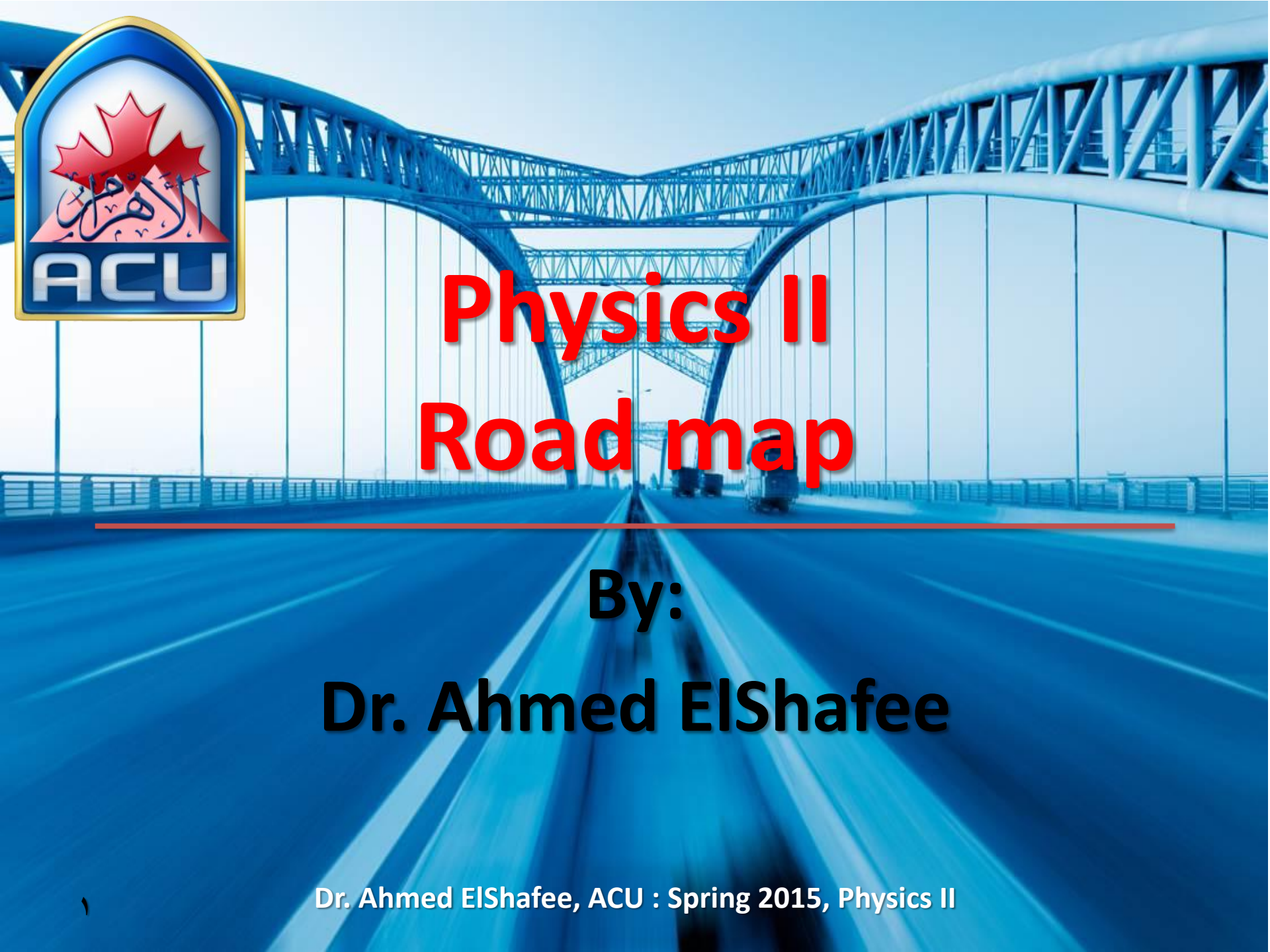

Physics II
Road map

By:

Dr. Ahmed ElShafee

About physics II

- Physics II is a calculus-based introductory physics course covering electricity and magnetism
- It is the second part of the required Engineering curriculum.
- The third course in this sequence is Physics III, a modern physics course that is a technical elective for engineering students. It is also calculus based

Place and time

- **Location**:
  - Lectures : G27, ground floor, 1st year, engineering Building
  - Tutorial : F121
  - Lab : G22
- **Instructor**: Dr. Ahmed ElShafee, Room G05, ground floor, 1st year, engineering Building,
- Teaching Assistant : Eng. Ayman Elsadek
  - e-mail : ahmed.elshafee@acu.edu.eg.
  - Web: www.aelshafee.net
  - Lecture notes : http://draelshafee.net/Spring2015.html
  - Lecture notes : http://ACUFOE.net

Resources

- **Required text**:
  Author: Douglas C. Giancoli
  Title: Physics for Scientists and Engineers
  Publisher: Prentice-Hall
  Edition: 4

Volume 2		
	CHAPTER 21: ELECTRIC CHARGE AND ELECTRIC FIELD	1
	CHAPTER 22: GAUSS'S LAW	2
	CHAPTER 23: ELECTRIC POTENTIAL	3
	CHAPTER 24: CAPACITANCE, DIELECTRICS, ELECTRIC ENERGY STORAGE	4
	CHAPTER 25: ELECTRIC CURRENTS AND RESISTANCE	5
	CHAPTER 26: DC CIRCUITS	6
	CHAPTER 27: MAGNETISM	7
	CHAPTER 28: SOURCES OF MAGNETIC FIELD	8
	CHAPTER 29: ELECTROMAGNETIC INDUCTION AND FARADAY'S LAW	9
	CHAPTER 31: MAXWELL'S EQUATIONS AND ELECTROMAGNETIC WAVES	10

Course Objectives

- Students should be able to apply the basic laws of electricity and magnetism to solve simple problems concerning
  - electric field,
  - Gauss' law,
  - electric potential, the
  - magnetic field,
  - Ampere's law,
  - Faraday's law,
  - electric circuits,
  - alternating currents,
  - Maxwell's equations and electromagnetic waves.

Grading system

class participation	10%
laboratory	10%
Homework	10%
Midterm exams	20%
Laboratory Exam	10%
Final exam	40%

science

- Natural science (Physics, Chemistry, Biology,…)
- Social sciences (humanities, psychology, sociology, …)
- Formal sciences (Mathematics, Statistics,…)
- Applied science (engineering and medicine)

physics

- the branch of science concerned with the nature and properties of matter and energy.
- The subject matter of physics, distinguished from that of chemistry and biology, includes mechanics, heat, light and other radiation, sound, electricity, magnetism, and the structure of atoms.

Physics Vs Engineering

- Pure science is science that yields theories and predictions, as in natural sciences such as chemistry, biology, geology and physics
- Applied science is a field of science that uses existing knowledge to create practical applications, such as for technology or education.


Thanks,..
See you next week (ISA),...