BIRZEIT UNIVERSITY

DEPARTMENT OF PHYSICS

PHYS332: ELECTROMAGNETIC THEORY II FIRST SEMESTER 2020/2021

Instructor: Abdallah Sayyed-Ahmad.
Office: Science Building, Room 210.
Classroom: Science Building, Room 116.
Class meeting time: Saturday, Monday and Wednesday 12:50pm-14:05pm.
Office hours: Monday, Tuesday and Wednesday 9:00am-10:00am.
Email: asayyeda@birzeit.edu
Website: http://physics.home.birzeit.edu/biophysics/teaching.html

Prerequisites: Phys331.

Textbook: *Introduction to Electrodynamics*, David Griffiths, 4th Edition, Pearson, 2014.

Additional References:

- JD Jackson, *Classical Electrodynamics*, 3rd edition, John-Wiley and Sons, 1999.
- W Greiner, *Classical Electrodynamics*, 1st edition, Springer, 1998.
- WKH Panofsky and M Phillips, *Classical Electricity and magnetism*, 2nd edition, Dover Publications, 2005.
- GB Arfken and HJ Weber, *Mathematical Methods for Physicists,* 6th edition, Elsevier, 2005.

Course Description: Phys332 is a continuation of the Electromagnetic theory I course that focuses on electrodynamics and some of its applications. Main topics in this course are listed below.

Course Topics:

- Magnetostatics and magnetic field in matter (Chapter 6)
- Electrodynamics (Chapter 7): Electromotive force, electromagnetic induction.
- Conservation Laws. (Chapters 8): electric and magnetic fields store and propagate both momentum and energy.
- Electromagnetic Waves and Radiation (Chapter 9&10): Electromagnetic waves, waves guide, Absorption and dispersion, Radiation from accelerated charges, antennas
- Electrodynamics and Relativity (Chapter 11): special relativity and electromagnetic field tensors.
- Potential and Fields (Chapter 12): General solution of electric and magnetic fields for time varying charge and current densities.

Grading:

Homework and Project assignments	20%
Two hour exams	40%
Final exam	40%