

# The Islamia University of Bahawalpur

## Department of Physics

### Course Plan

Class: BS

Semester- III

Session: 2019-2023

Instructor	Faisal Iqbal	Email:faisal_1615@yahoo.com
Course Title	Electricity & Magnetism-I	BS- III semester
Course Code	<b>Phy-01301</b>	Credit Houre 3
Resource Material	1) Physics by Holiday, Resnick and Krane Volume 2, 5 <sup>th</sup> edition. 2) University Physics by Hugh D. Young and Roger A. Freedman 12 <sup>th</sup> edition. 3) Electricity and magnetism Edward M. Purcell and David J. Morin	
Helping Hour	Monday- Thursdays 11:00 am to 12:00 noon	

### Sequence of topics to be covered

Topics (outline of main topics and sub topics)	Chapter#
Introduction of course	
Electric field and The electric field of point charge	Chapter # 26
Point charge in an Electric field, field due to continuous charge distribution i.e ring of charge, disc of charge	
Infinite line of charge	
Electric dipole, dipole in an electric field	
Torque and energy of a dipole in uniform field	
Electric flux: Gauss's law; (Integral and differential forms) and its application	
<b>Exercise</b>	
Electric flux: Gauss's law; (Integral and differential forms) and its application	Chapter #27
Charge in isolated conductors, conductor with a cavity	
field near a charged conducting sheet, Field of infinite line of charge, field of infinite sheet of charge	

of spherical shell and field of spherical charge distribution.	
Exercise	
due to point charge, potential due to collection of point charges	Chapter #28
potential due to dipole, Electric potential of continuous charge distribution	
Poisson's and Laplace equation without solution, Field as the gradient or derivative of potential	
Potential and field inside and outside an isolated conductor	
Exercise	
Capacitance, calculating the electric field in a capacitor, Capacitors of various shapes	Chapter #30
cylindrical, spherical etc. and calculation of their capacitance	
Energy stored in an electric field, Energy per unit volume	
Capacitor with dielectric, Electric field of dielectric	
An atomic view, Application of Gauss's Law to capacitor with dielectric	

**Students Evaluation criteria participating online activity 20%**

Mid Term Exam	30%
Final Term Exam	50%