

PHYS1.2: ELECTROMAGNETISM

I. Course description:

1. Credit points: 3 ECTS

2. Time commitment:

| Items | Lecture | Tutorial | Practical | Total |
|--------------|---------|----------|-----------|--------------|
| No. of hours | 20 | 10 | 0 | 30 |

3. Prerequisites:

Mathematical analysis, mechanics

4. Recommended background knowledge:

Basic knowledge in high school level

5. Subject description:

The course consists of the following topics: electrostatics, electric current, magnetism, electromagnetic induction, inductance, alternating current, and electromagnetic waves.

6. Objectives & Outcome:

The aim of this course is to provide fundamental knowledge on electric, magnetic and electromagnetic fields, so that the students are able to explain electromagnetic phenomena in the daily life, and understand how electromagnetism is applied to science and industry.

As a result, the students are able to out-come with solving problems related to the electromagnetism phenomena in both theory and application.

7. Assessment/ Evaluation:

| Component | Attendance | Exercises | Assignments | Lab-work | Midterm | Final |
|--------------|------------|-----------|-------------|----------|---------|-------|
| Percentage % | 10 | 10 | 0 | 0 | 30 | 50 |

8. Prescribed Textbook(s):

[1] Halliday and Resnick, Fundamentals of PHYSICS 10th Edition, Jearl Walker.

[2] Young and Freedman, Sears and Zemansky's UNIVERSITY PHYSICS with Modern Physics, 13th Edition, Pearson-Addison Wesley.

[3] Serway and Jewett, PHYSICS for Scientists and Engineers with Modern Physics, 6th Edition, Thomson-Brooks/Cole.

II. Course content & schedule:

1. Coulomb's Law Electric Fields
2. Gauss' Law Electric Potential
3. Capacitance, Current and Resistance, Circuits
4. Magnetic field
5. Magnetic Fields Due to Currents
6. Induction and Inductance

III. Reference Literature:

[1] Halliday and Resnick, Fundamentals of PHYSICS 10th Edition, Jearl Walker