# [A-3]COURSE SYLLABUS

## 1. Course Description (Approximately 100 words)

It is necessary to know how to use physical, sophisticated measuring devices, modern information exchange systems and technologies in carrying out scientific researches and experiments. This is what science and magnetism are supposed to be.
"Electrical and magnetism" is one of the general professional subjects taught in the 3rd semester. To be able to master this subject, you must have sufficient knowledge and skills in the curriculum such as Mathematical Analysis, Algebra and Geometry, Mechanics, and Molecular Physics. The knowledge gained from this discipline is widely used in laboratory and laboratory work on the disciplines of "Optics", "Atomic Physics" and "Fundamentals of Radioelectronics", which plays an important role in developing skills and skills for future professionals.The purpose of the course is to understand the basic laws, the analytical formulas, and the meaning of physical processes. Graphical analysis of electrical and

## 2. Course Goals and Objectives (Approximately 100 words)

The purpose of the course is to understand the basic laws, the analytical formulas, and the meaning of physical processes. Graphical analysis of electrical and magnetic phenomena. Meaning, units and their relation to physical sizes. Physical experiments, demonstrations, and events teach us to describe physical laws and principles.
Tasks of teaching science:
Solving and analyzing general demand issues. Easy knowledge of mathematical methods of calculation in various measuring systems of physical problems and experimental results and their application to non-standard problems is the study of laws and their comparison.
The skills required for science students are the following: Student
- Meaning, units, and comparison of physical quantities. Have an idea of the basic physical laws and principles for applying electrical circuits to electrical circuits;

## 3. Textbook (Title, Author, Publisher, Year of Publication, etc.)

1. Kalashnikov S.G. Umumiy fizika kursi. Elektr. Oliy o'quv yurtlarining fizika ixtisosi bo'yicha darslik. O'qituvchi, Toshkent-1979, 615 bet
2. Сивухин Д.В. Курс общей физики. т.Ш, Электричество, Учебное пособие для студентов физических специалностей высших учебных заведений. Наука, М.-1977, 687 стр.
3. Volkenshteyn V.S.Umumiy fizika kursidan masalalar to'plami. Oliy texnika o'quv yurtlari uchun o'quv qo'llanma. O'qituvchi. Toshkent 1969, 440 bet.
4. Сивухин Д.В. Электричество, Курс общей физики М.2004
5. Nurmatov N.A. "Elektr va magnetizm" fanidan o'quv-uslubiy majmua. O'zMU, 2011

## 4. Reference

1. J.Kamolov, I.Ismoilov, U.Begimqulov va boshqalar. Elektr va magnetizm. T.: IQTISOD MOLIYA, 2007 y.
2. Волкенштейн В.С Сборник задач по общэму курсу физики. М.2004
3. Savelev I.V. Umumiy fizika kursi. II qism. Oliy texnika o'quv yurtlari uchun qo'llanma. O'qituvchi, Toshkent-1976 450 bet
4. Зисман Г.А. Тодес О.М. Курс общэй физики. т.II, Электричество, Учебное пособие для студентов физических специалностей высших учебных заведений. Наука, М.-1972, 360 стр.
5. Матвеев А.Н. Электричество и магнетизм. Высшая школа. М.-1983
6. Buribaev I. Elektr va magnetizm Ma'ruzalar matni. Universitet. 2000y.
7. «Fizikadan praktikum». Elektr va optika. Iveronova taxriri ostida. T.1968 y.

## 5. Course Requirements and Grades

Course prerequisites:
Students should have some background in Chemistry, Mathematics, Natural sciences.
Grading System:
Homework 15%
Design Project 15%
Mid-term Exams 35%
Final Comprehensive Examination 35%
Total 100%
5=86-100

## 6. Course Calendar

| Week | Main Content |
|---|---|
| 1 | 1.1.Introduction. The purpose and function of science. 1. 2. Interaction of ele |
| 2 | 21. Electric field. 2.2.Electric dipole. |
| 3 | 3.1.Calculation of electric field. 3.2.Electric capacity. |
| 4 | 4.1. Polarization vector. 4.2. Characteristics of electric current. |
| 5 | 5.1 Differential view of Ohm's law. 52. Kirchhoff's rules. |
| 6 | 6.1. The work of electric current. 6.2. Electrical conductivity in metals. |
| 7 | 7.1. Electric current in vacuum. 7.2. Semiconductors. |
| 8 | 8.1. The magnetic interaction of currents. 8.2. Bio-Savar-Laplace law. |
| 9 | 9.1. Magnetic flux. 9.2.Lorentz power. |
| 10 | 10.1. Magnetic properties of substances. 10.2. Ferromagnets. |
| 11 | 11.1. Electromagnetic induction phenomenon. 11.2. Private electrical vibrati |
| 12 | Forced electric vibrations. 12.2. Resonance of voltages and currents. |
| 13 | 13.1. Resonance of voltages and currents. 13.2. Shear current. Maxwell's ec |
| 14 | 14.1. Discharges in gases. 14.2. Electric current in electrolytes |