

B. PHYSICS

Messrs. Fisher, Partlo, Harrington, Sermon, Longacre, Knaebel and Owens

The aim in the Department of Physics, as in that of Mathematics, is to select such subjects as have, directly or indirectly, a bearing on the practical work of an engineer, and to treat these in as practical a manner as possible. The instruction is given by the laboratory method. The student goes at once into the laboratory and there under the direction of instructors, experiments for himself. The experiments are mostly quantitative.

So far as possible mere mechanical following of direction is excluded, and intelligent thinking is made necessary to the accomplishment of the work. Every effort is put forth to have the student clearly develop and fix in his mind the principles of Physics which he will afterwards use, and also to lay the foundation for that skill in accurate determination of quantity and care of delicate apparatus which are needed by the practical engineer. Accuracy and order are insisted on from the first. Each student receives individual attention, and, with the exception of a few experiments requiring more than one observer, he does his work independently of all other students.

The work of the laboratory is accompanied with illustrated lectures, and with textbook and recitation work.

The department is equipped with a good assortment of modern apparatus for lecture illustration and individual experiment.

B1-B2-B3. Physics – Mechanics – Light and Heat – Electricity - 363 hours

Messrs. Fisher, Partlo, Harrington, Sermon, Gaffney, Longacre and Owens

Eleven hours a week, three hours in classroom, five hours in laboratory, and three hours in preparation, thirty-three weeks, fall, winter and spring terms.

Lecture, recitation and laboratory work proceed together throughout the course. The geometrical side of light is developed mostly in the laboratory and the wave theory in the lecture room with the aid of the optical lantern.

Prerequisites: A minimum of one year of class and laboratory work in high school physics. Must be preceded by A4 (Analytic Geometry).

Textbooks: Kimball – College Physics and Laboratory Physics issued by the Department.

B4. Sound - - - - - 44 hours

Messrs. Partlo and Harrington

Four hours a week, two hours in class and two hours in preparation, eleven weeks, winter term.

This course is designed to take up material of particular interest to electrical engineering students. It will include such subjects as general principles of sound, propagation of sound in different media, acoustics, etc.

To be accompanied with or preceded by B1-B2-B3 (Physics).

B5. Light - - - - - 72 hours

Messrs. Partlo, Gaffney and Longacre

Six hours a week, three hours in classroom and three hours preparation, twelve weeks, fall term.

This course is offered to those who are making electrical engineering their principal subject, to those who intend taking up electrolytic or electro-

metallurgical work, and to any other who wish to become familiar with those modern methods of electrical measurements necessary where there is made any practical application of this agent.

In the course are included the precise measurement of resistance, inductance and capacitance.

To be preceded or accompanied by A6 (Differential Equations) and preceded by B1-B2-B3 (Physics).

Text book: Terry – Advanced Laboratory Practice in Electricity and Magnetism.

B7. Physical Measurements - - - - - 120 hours

Messrs. Partlo and Harrington

Ten hours a week, three hours in the classroom, five hours in the laboratory and two hours in preparation, twelve weeks, fall term.

A more advanced course in measurements of precision, open to those who have taken B1-B2-B3 (Physics). The work offered will be mainly in the determination of densities, moments of inertia, calorimetry, photometry, and optics. Each student will work independently of all others and to a considerable extent the choice of the line of work he is to pursue will lie with him.

Prerequisites: A5 (Calculus) and B1-B2-B3 (Physics).

B8. Elementary Optics - - - - - 40 hours

Messrs. Fisher, Partlo and Sermon

Four hours a week, two hours in classroom and two hours in preparation, ten weeks, spring term.

A course in elementary optics and optical instruments more advanced than that taken up in B2 (Light and Heat) and of particular interest to electrical engineering students.

To be preceded by B1-B2-B3 (Physics).

B58. Elementary Optics Laboratory - - - - - 50 hours

Messrs. Partlo, Sermon and Longacre

Five hours a week, four hours in the laboratory and one hour in preparation, ten weeks, spring term.

This course is designed to accompany B8 (Elementary Optics) and will include measurements of wave length, index of refraction, interference phenomenae, diffraction, etc.

To be preceded or accompanied by B8 (Elementary Optics).

B102. Elementary Mathematical Physics - - - - - 72 hours

Mr. Partlo

Six hours a week, two in classroom, four in preparation for twelve weeks.

Mathematical analysis of physical problems arising in engineering and geophysics. This course may be devoted to any particular branch of mathematical physics, according to the needs of the students.

To be preceded by A5 (Calculus) and B1-B2-B3 (Physics).

Textbook: Library references.

B106. Electrical and Magnetic Measurements - - - - - 147 hours

Messrs. Partlo, Gaffney and Longacre

Seven hours a week, two hours in the classroom, four hours in the laboratory, and one hour in preparation, twenty-one weeks, winter and spring terms.

The work of this course is a continuation of that begun in B6 (Electrical Measurements) and is intended for those who wish to pursue further the theory and practice of precise electrical measurements. In the class room the theory is developed and the applications pointed out. In the laboratory the student applies the theory to the experiment.

The course includes the study of circuits containing inductance, capacitance, resistance and electromotive forces; alternating currents; the vacuum tube and circuits containing it; measurements of current, potential difference, electromotive force, magnetic field, permeability, etc.

Examples of all the principal instruments used in modern electrical methods are owned by the institution and are available for work in this course.

To be preceded by A6 (Differential Equations) and B6 (Electrical Measurements).

Textbook: Same as in B6.

B201. Physics Research - - - - Maximum – 1000 hours per year

Mr. Fisher

Minimum of ten hours a week, maximum of thirty hours a week during any one term.

Fundamental research in applied physics and geophysics.

To be preceded by A5 (Calculus) and B1-B2-B3 (Physics).

C. MECHANICS

Messrs. Fisher and Harrington

An attempt is made in Mechanics to develop the essential principles, and to render the student proficient in applying them to practical rather than theoretical problems. To this end a large number of problems are solved which so far as possible, are selected from machines or structures with which the student is already familiar or the study of which he is subsequently to take up.

C1. Analytic Mechanics - - - - - 147 hours

Messrs. Fisher and Harrington

Seven hours a week, two hours in classroom, five hours in preparation, twenty-one weeks, winter and spring terms.

This course includes work in statics, flexible cords, rectilinear motion and curvilinear motion. The text is supplemented with special problems having a direct bearing on the student's future work in engineering.

To be preceded by B1 (Physics) and preceded by or accompanied with A5 (Calculus).

Textbook: Hancock – Applied Mechanics for Engineers.

C2. Analytic Mechanics - - - - - 108 hours

Messrs. Fisher and Harrington

Nine hours a week, three hours in classroom and six hours in preparation, twelve weeks, fall term.

Subject C2 continues the work begun in C1 and includes moments of inertia,

dynamics of rotating bodies, transmission of power and friction of belts and pivot bearings.

To be preceded by C1 (Mechanics).

Textbook: Same as in C1.