

Course Description

II. Basic Science

33 credits

SCCH 102 General Chemistry

3(3-0-6)

Atomic structure, chemical bonding, gases, liquids, solids, solutions, colloids, chemical thermodynamics, chemical kinetics, chemical equilibria, ionic equilibria, electrochemistry, the periodic table.

SCCH 119 Chemistry Laboratory

1(0-3-1)

Experiments of general chemistry and basic organic chemistry, e.g., errors, significant numbers, precision and accuracy, preparation of solution, acid-base titration, use of models for stereochemistry of organic substances, chemical equilibria, rate of reaction, redox reaction, solubility classification and reactions of hydrocarbons, reactions of alcohols and phenols, reactions of aldehydes and ketones, reactions of carboxylic Acids and derivatives, reactions of amine.

SCCH 125 Basic Organic Chemistry

3(3-0-6)

Molecular structure and classification of organic compounds, reactions of organic compounds, nomenclature and stereochemistry, syntheses and reactions of alkanes, cycloalkanes, alkenes, alkynes, aromatic hydrocarbons, halides, alcohols, phenols, ethers, aldehydes, ketones, carboxylic acids, carboxylic acid derivatives, amines, carbohydrate, amino acid and lipids.

SCPY 110 General Physics Laboratory

1(0-3-1)

Basic Physics experiments relating to Physics curriculums taught to the first year students in each faculty.

SCPY 155 Basic Physics for Health Science

2(2-0-4)

Mechanics, temperature and heat, fluid, waves, sound and hearing, optics and vision, basic electromagnetism, atomic physics, nuclear physics and radioactivity.

SCPY 156 Physics for Health Science

3(3-0-6)

Mechanics: Oscillation motion, system of many particles, motion of rigid bodies,
Thermodynamics: Laws of thermodynamics, directions of thermodynamic processes, entropy
Physical Optics: Diffraction, interference, polarization.

Electromagnetism: Gauss's law, Biot-Savart's law, Ampere's law, Faraday-Henry's induction, electrical circuits containing capacitors and inductors.

Quantum mechanics: Black body radiation, photoelectric effect, Compton effect, De Broglie's hypothesis (wave-particle duality), Davisson-Germer's experiment, wave function and probability of finding particles, Schrodinger's equation, application of Schrodinger's equation to simple systems.

Atomic physics: Schrodinger's equation for single-electrons atom, possible wave function and energy level of electrons, quantum numbers, angular momentum, electron spins, electron configurations in atoms, periodic table.

Nuclear physics: structures and properties of nucleus, binding energy, nuclear model, stability of nucleus and decay, nuclear fission, principles of nuclear reactor control, nuclear fusion.

Particle physics: Elementary particles, standard model of elementary particles.

SCPY 207 Electronics**2(2-0-4)**

Introduction to electronics, inductance and transformers, capacitance, AC circuits, network analysis, semiconductors, operational amplifiers, digital electronics.

SCMA 111 Calculus**2(2-0-4)**

Functions, limits, continuity, derivatives of algebraic functions, logarithmic functions, exponential functions, and trigonometric functions, implicit differentiation, higher-order derivatives, differentials, applications of differentiation, indeterminate forms and l' Hospital's rule, functions of several variables and partial derivatives, total differentials and total derivatives, antiderivatives and integration, techniques of integration, applications of integration.

SCMA 160 Ordinary Differential Equations**2(2-0-4)**

Complex variables, introduction to ordinary differential equations, linear first order differential equation, nonlinear first order differential equations, applications of first order equations, linear second order equations, applications of second order equations, high order linear equations.

SCMA 182 Statistics for Health Science**2(2-0-4)**

Concepts and applications of probability and probability distributions to various events; interpretation of statistical values; descriptive statistics; sampling for good representatives of populations and its use in estimation and hypothesis testing.

SCMA 260 Differential Equation**2(2-0-4)**

Theory of ordinary differential equations, series solutions to ordinary differential equations, Laplace transforms systems of differential equations, Fourier series, elementary partial differential equations.

SCAN 101 Basic Anatomy**3(2-3-5)**

The basic concepts of living cells, organs and systems of human body. The relationship of human structures and functions is emphasized. The human skeleton and cadavers are utilized in the laboratory study.

SCBC 203 Basic Biochemistry**3(3-0-6)**

Structures and functions of 4 biomolecules, carbohydrate, lipid, protein and nucleic acid, metabolic processes and regulation of metabolic pathways of 4 biomolecules, flow of genetic information and gene regulation, DNA technology, role of biomolecules in normal physiological systems with some medical applications.

SCBC 204 Basic Biochemistry Laboratory**1(0-3-1)**

Basic biochemistry laboratory comprising 8 experiments, the preparation of acid-base solution and buffering system, using a basic instrument in analyzing biomolecules, determination of a physical and chemical properties of all 4 biomolecules and the study of a metabolic process, that are related to the course of Basic Biochemistry (SCBC 203)

SCPS 202 Basic Physiology**3(2-3-5)**

Basic concepts and principles of the cell function, mechanism, and functions of different organ systems such as the nervous, muscular, cardiovascular, respiratory, renal, gastrointestinal tract,

endocrine and reproductive systems. The combined mechanisms of the organ system integration and adaptations in order to keep the body in a homeostatic state.