BSED Science Major Course Descriptions

SCGENETICS: Genetics (Lecture)
Units: Lec: 3 Lab: 0 Pre-requisite: NONE

This course deals with the principles of heredity and variation; its application in plant and animal breeding, and problems involved in it. It also includes biometrical treatment of qualitative and quantitative characteristics of both plants and animals.

SCGENETICSL: Genetics (Laboratory)
Units: Lec: 0 Lab: 1 Co-requisite: SCGENETICS

This course deals with exercises on chromosomal basis of inheritance, structure of genetic material and Mendelian and Non-Mendelian inheritance.

SCCELLMOLBIO: Cell and Molecular Biology Lecture
Units: Lec: 3 Lab: 0 Pre-requisite:SCGENETICS,SCBIOCHEMISTRY

This course deals with the study of the structure and function of cellular organelles and inclusions including the relationship between cell and structure and biochemical reactions. It also includes basic discussions on the central dogma of molecular biology and updates on DNA technology.

SCCELLMOLBIOL : Cell and Molecular Biology Laboratory

Units: Lec: 0 Lab: 1 Pre-requisite:SCGENETICS,SCBIOCHEMISTRY
Co-requisite: SCCELLMOLBIO

This course deals with the enhancement of skills for the use of laboratory equipment in the study of the structure and function of the organelles. It includes investigations of cellular processes through chromatography, centrifugation, spectrophotometry and electrophoresis.

SCMICROBIOPAR: Microbiology and Parasitology Lecture
Units: Lec: 3 Lab: 0 Pre-requisite: NONE

This course deals with the study of bacteria, viruses, protozoan, fungi and helminthes, their general characteristics, pathogenicity, source and mode of transmission. This course also covers the principles that underlie infection, disease control and prevention, as well as immunity. The impact of microorganisms on human health and environment as well as their applications in industry are also given emphasis.

SCMICROPARL: Microbiology and Parasitology Laboratory
Units: Lec: 0 Lab: 1 Co-requisite: SCMICROBIOPAR

This laboratory course gives emphasis on activities that demonstrates major concepts of microbiology and parasitology. This course is designed to develop laboratory skills, including microscopy, aseptic techniques, staining methods, culture methods and identification of microorganisms.

SCANAPHYSIO: Anatomy and Physiology Lecture
Units: Lec: 3 Lab: 0 Pre-requisite: NONE

This 3-unit course deals with the study of fundamental structures of the human body and their corresponding functions. It emphasizes the integration of organ systems in relation to normal health and provides information on associated disorders.

SCANAPHYSIOL: Anatomy and Physiology Laboratory
Units: Lec: 0 Lab: 1 Co-requisite: SCANAPHYSIO

This 1-unit laboratory course deals with experiments involving the organ systems of the human body. It is also designed to develop the skill in the macroscopic and microscopic examinations of the tissues and organs of the human body.

SCINORGCHEM: Inorganic Chemistry Lecture and Laboratory
Units: Lec: 3 Lab: 2 Pre-requisite: 9STS

The course covers fundamental concepts of chemical kinetics, chemical equilibrium (including acid-base chemistry and solubility equilibrium), thermodynamics and electrochemistry. It also deals with solution chemistry, specifically reactions in aqueous solutions as well as group properties and reactions of elements as an introduction to qualitative analysis of cations and anions.

SCORGANICHEM: Organic Chemistry Lecture
Units: Lec: 3 Lab: 0 Pre-requisite: SCINORGCHEM

This course is designed to introduce fundamental concepts of organic chemistry including hybridization, structure, nomenclature and the application of electronic and structural effects in predicting properties and reactivity. The different classes of organic compounds are also covered.

SCORGANICHEML: Organic Chemistry Laboratory
Units: Lec: 0 Lab: 2 Pre-requisite: SCINORGCHEM/
Co-requisite: SCORGANICHEM

An organic laboratory course designed to develop skills and techniques in the separation and purification of organic compounds. The laboratory course serves as the

venue for the observation of structural effects on the physical and chemical properties of organic compounds.

SCBIOCHEMISTRY: Biochemistry
Units: Lec: 3 Lab: 0 Pre-requisite: SCORGANICHEM

This course covers the fundamental aspects of biochemistry and the structures and dynamics of important cellular components. The structure, properties, functions and metabolism of carbohydrates, proteins, lipids and other important biochemical compounds are also discussed.

SCANALYCHEM: Analytical Chemistry Lecture
Units: Lec: 3 Lac: 0 Pre-requisite: SCINORGCHEM

The course involves a study of the principles and theories important to the practice of analytical chemistry. It involves a discussion of the techniques, methods and instrumentation involved in determining the amount of constituents in samples. Particular attention is given to stoichiometric problems.

SCANALYCHEML: Analytical Chemistry Laboratory
Units: Lec: 0 Lab: 2 Pre-requisite: SCINORGCHEM
Co-requisite: SCANALYCHEM

The laboratory work covers calibration of instruments, volumetric and gravimetric methods especially those analyses encountered in industries. Emphasis is placed on correct laboratory procedures and techniques.

SCTHERMO: Thermodynamics Lecture and Laboratory
Units: Lec: 3 Lab: 1 Pre-requisite: SCFLUIDMECHS

This course includes temperature and heat, thermal properties of matter, laws of thermodynamics.

SCMODPHYSICS: Modern Physics
Units: Lec: 3 Lab: 0 Pre-requisite: SCELECMAGNET

This course covers topics including relativity, phoelectriceffect, Bohr model, wave particle duality and quantum mechanics.

SCELECMAGNET: Electricity and Magnetism Lecture and Laboratory
Units: Lec: 3 Lab: 1 Pre-requisite: NONE

This course is designed to discuss knowledge of basic relationship between electricity and magnetism. It includes topics on electrostatics and magnetism, electric and magnetic fields in matter, electrodynamics and electromagnetic waves. It provides the students the mathematical relationships between current, voltage and resistance in an electric circuit. Students must gain skills in solving problems needing high mathematical

analysis apart from the principles comprising this area of physics. Upon knowing the relationship between electricity and magnetism students must be able to apply the concepts and principles to real life situations for life-long learning.

SCWAVEOPTICS: Waves and Optics Lecture and Laboratory
Units: Lec: 3 Lab: 1 Pre-requisite: SCELECMAGNET
The course discusses the fundamental concepts of mechanical and electromagnetic waves. It describes the production and propagation of waves, its characteristics, types and properties. It also deals with simple harmonic motion. This course also gives emphasis on the nature and duality of light with emphasis on physical and geometric optics. Learning waves and optics allows the students to gain insights on the importance of waves on daily activities and applies the concepts and principles in problem solving.

SCFLUIDMECHS: Fluid Mechanics
Units: Lec: 3 Lab: 0 Pre-requisite: 9STS

This course deals with the science of fluids (liquids and gases). It discusses aerodynamics-the study of air and gases in motion; and hydrodynamics-the study of liquids in motion. It discusses principle relating speed, pressure and forces particularly Bernoulli and Pascal's principles. It allows the students to gain knowledge of how this topic is applied to daily activities and solve practical problems.

SCEARTHSCI: Earth Science
Units: Lec: 3 Lab: 0 Pre-requisite: 9STS

This 3-unit course deals with the fundamental and historical geology, Geologic process such as rock formation, minerals and soil, weathering, erosion and mass movement, seismology, volcanism and plate tectonics will be emphasized. Issues concerning the importance, exploration, utilization and conservation of mineral resources will also dealt with.

SCASTRON: Astronomy
Units: Lec: 3 Lab: 0 Pre-requisite: 9STS

This 3-unit course deals with the various motions observed in the heavens and the fundamental physical laws that govern them. This course also includes a discussion of the theories behind the formation of the solar system and other astronomical bodies.

SCENVIRON: Environmental Science
Units: Lec: 3 Lab: 0 Pre-requisite: 9STS

This 3-unit course deals with the general concepts and principles pertaining to complex pattern of interaction between the physical environment and biological communities on eath. Emphasis is also given on the current environmental issues and concerns as well as disaster risk management techniques.

SCTEACHSCIENCE: Teaching In the Specialized Field (Science)
Units: Lec: 3 Lab: 0 Pre-requisite: ETEAPROF

The course deals with the goals, materials, content, assessment, management and methods of teaching science at the secondary level; provides opportunities for class observation and demonstration teaching.

SCTTL2SCIENCE: Technology for Teaching and Learning 2 (Science Education)
Units: Lec: 3 Lab: 0 Pre-requisite: ETECHTLEARN1

TTL is a 3-unit course which focuses on the application, design, production, utilization and evaluation of Information and Communications Technology (ICT) materials for teaching and learning in Science Education Programs. The major requirement for this course is an ICT-integrated and Project-based Learning Plan aligned to the K to 12 curriculums. All the learning activities and course requirements will revolve around the student-teacher developed learning plan.

SCMETEOROLOGY: Meteorology
Units: Lec: 3 Lab: 0 Pre-requisite: 9STS

This deals with the study of fundamental atmospheric process such as weather and climate. Emphasis will be on elements of weather, cloud formation processes, seasonal winds, ITCZ and tropical cyclones. The issues of climate change, mitigation and adaptation will be discussed.

SCRSRCHTEACH1: Research in Teaching Science 1 and 2
Units: Lec: 3 Lab: 0 Pre-requisite: 3rd Year Standing
This course aims to prepare prospective science teachers to undertake an undergraduate research project. It gives prospective teachers the opportunity to conduct researches that address problems, issues, and concerns in science teaching and learning in the content or pedagogy of science in any of the four areas: Biology, Chemistry, Physics and Earth Science. It showcases their research skills through the application of diverse science content and processes learned through the years of schooling done in two stages. This is stage 1, writing the proposal with an oral proposal defense.

SCRSRCHTEACH2: Research in Teaching Science 2
Units: Lec: 3 Lab: 0 Pre-requisite: SCRSRCHTEACH1

This course aims to prepare prospective science teachers to undertake an undergraduate research project. It gives prospective teachers the opportunity to conduct researches that address problems, issues, and concerns in science teaching and learning in the content or pedagogy of science in any of the four areas: Biology, Chemistry, Physics and Earth Science. It showcases their research skills through the

application of diverse science content and processes learned through the years of schooling done in two stages. This is the stage 2, data gathering and writing the research paper and with an oral final defense.