



Bachelor of Science in Computer Engineering
COURSE DESCRIPTION
Effective SY 2021-2022

MATHEMATICS

Course Name	M111 – Calculus 1
Course Description	An Introductory course covering the core concept of limit, continuity and differentiability of functions involving one or more variables. This also includes the application of differential calculations in solving problems on optimization, rates of change, related rates, tangents and normals, and approximations; partial differentiation and transcendental curve tracing.
Number of Units	3 units

Course Name	M121 – Calculus 2
Course Description	The course introduces the concept of integration and its application to some physical problems such as evaluation of areas, volume of revolution, force, and work. The fundamental formulas and various techniques of integration are taken up and applied to both single variable and multi-variable functions. The course also includes tracing of functions of two variables for a better appreciation of the interpretation of the double and triple integral as a volume of a three-dimensional region bounded by two or more surfaces.
Number of Units	3 units

Course Name	M122 – Engineering Data Analysis
Course Description	This course is designed for undergraduate engineering students with emphasis on problem solving related to societal issues that engineers and scientists are called upon to solve. It introduces different methods of data collection and the suitability of using a particular method for a given situation. The relationship of Probability of statistics is also discussed, providing students with the tools they need to understand how “chance” plays a role in statistical analysis. Probability distributions of random variables and their users are also considered, along with a discussion of linear functions of random variables within the context of their application to data analysis and inference. The course also includes estimation techniques for unknown parameters; and hypothesis testing is used making inferences from sample to population; inference for regression parameters and build models for estimating means and predicting future values of key variables under study. Finally, statistically based experimental design techniques and analysis of outcomes of experiments are discussed with the aid of statistical software.



Number of Units	3 units
Course Name	M211 – Differential Equations
Course Description	This course is intended for all engineering students to have a firm foundation on differential equations in preparation for their degree- specific advanced mathematics courses. It covers first order differential equations, nth order linear differential equations and systems of first order linear differential equations. It also introduces the concept of Laplace Transforms in solving differential equations. The students are expected to be able to recognize different kinds of differential equations, determine the existence and uniqueness of solution, select the appropriate methods of solution and interpret the obtained solution. Students are also expected to relate differential equations to various practical engineering and Scientific problems as well as employ computer technology in solving and verifying solutions.
Number of Units	3 units

NATURAL/PHYSICAL SCIENCES

Course Name	NPS111 – Chemistry for Engineers
Course Description	This course provides students with core concepts of chemistry that are important in the practice of engineering profession. And the fundamental laboratory designed to provide opportunity to observe and apply the principles and theories taught in chemistry for engineers.
Number of Units	4 units

Course Name	NPS121 – Physics for Engineers
Course Description	This course covers vectors; kinematics; dynamics; work, energy, and power; impulse and momentum; rotation; dynamics of rotation; elasticity; and oscillation. Fluids; thermal expansion, thermal stress; heat transfer; calorimetry; waves; electrostatics; electricity; magnetism; optics; image formation by plane and curved mirrors; and image formation by thin lenses. And the fundamental laboratory course designed to provide opportunity to observe and apply the principles and theories taught in physics for engineers.
Number of Units	4 units

BASIC ENGINEERING SCIENCES

Course Name	BES211 – Computer-Aided Drafting
Course Description	Concepts of Computer-aided drafting (CAD); Introduction to the CAD environment; terminologies; and the general operating



	procedures and techniques in entering and executing basic CAD commands.
Number of Units	1 unit

Course Name	BES212 – Engineering Economics
Course Description	This course deals with the study of concepts of the time value of money and equivalence; basic economic study methods; decisions under certainty; decisions recognizing risk; and decisions admitting.
Number of Units	3 units

Course Name	BES321 – Technopreneurship 101
Course Description	This course includes the journey into the world of entrepreneurship with introspection of a business idea into a viable venture. The focus is on unleashing the entrepreneurial spirit in each individual.
Number of Units	3 units

ALLIED COURSES

Course Name	A211 – Fundamentals of Electrical Circuits
Course Description	This course introduces the fundamental concepts, Circuit laws, theorems and techniques used in electrical circuit analysis and transient analysis, as well as its application. The course covers circuit topologies and Dc excitations, transient response, AC response, and polyphase circuits. The use of computer software for circuit simulation and design are emphasized to expose students to computer-based tools. And this course allows the students to verify the laws and theorems discussed in Fundamentals of Electrical circuits (lecture) through simulation, experimentation and project construction. The course topic include experimental determination of the characteristics of the different circuit configurations (series, Parallel, series/Parallel, delta and wye), electrical power, Ohm’s Law, Kirchhoff’s Voltage and Current Laws, Superposition Theorem, Thevenin’s equivalent circuit, and maximum power transfer. The use of computer software for circuit simulation and design are used as basis in verifying experimental results and to expose students to computer based tools.
Number of Units	4 units

Course Name	A221 – Fundamentals of Electronic Circuits
Course Description	This course discusses the construction, operation and characteristics of basic electronic devices such as junction diodes, bipolar junction transistors, Field Effect Transistors and MOS



	Field Effect Transistors and Oscillators. And this course is the laboratory component of the course Fundamentals of Electronic Circuits (Lecture) that allows students to verify theoretical concepts pertaining to the operation of electronic devices such as the PN junction diodes, BJT and FET and their subsequent applications to electronics circuits involving rectification, amplification and switching applications. The use of Laboratory equipment and Apparatus to verify the characteristics of diodes and transistor devices, and their operations in circuits such as rectifiers, voltage, regulators, amplifiers, oscillators and switches are emphasized. Such equipment includes but not limited to the curve tracer, the oscilloscope, signal generator and multi-meters.
Number of Units	4 units

PROFESSIONAL COURSES

Course Name	P111 – Computer Engineering as a Discipline
Course Description	The course discusses the Curriculum of Computer Engineering as well as how to prepare students for success through engineering design process, ethical decision-making, teamwork, and communicating to diverse audiences.
Number of Units	1 unit

Course Name	P112 – Programming Logic and Design
Course Description	This is an Introductory course in computer programming logic. The student will learn algorithms applicable to all programming languages, including: identifiers, data types, arrays, control structures, modular programming, generating reports, and computer memory concepts. The student will learn to use charts commonly used in business and information processing. Program logic will be developed using flowcharts and pseudo code. Programs will be written using any programming Language.
Number of Units	2 units

Course Name	P121 – Object Oriented Programming
Course Description	Introduces the fundamental concepts of programming from an object oriented perspective .Topics are drawn from classes and objects, abstraction, encapsulation , data types, calling methods and passing parameters, decisions, loops arrays and collections, documentation, testing and debugging, expectations, design issues, inheritance and polymorphic variables and methods. The course emphasizes modern software engineering and design principles.
Number of Units	2 units



Course Name	P122 – Discrete Mathematics
Course Description	The course deals with logic, sets, proofs, growth of functions, theory of numbers, counting techniques, trees and graph theory.
Number of Units	3 units

Course Name	P211 – Data Structures and Algorithms
Course Description	Solving Computational problems that involve manipulating collections of data, study a core set of data abstractions, data structures, and algorithms that provide a foundation for writing efficient programs.
Number of Units	2 units

Course Name	P221 – Numerical Methods
Course Description	This course covers the concepts of numerical analysis and computer software tools in dealing with engineering problems. It includes techniques in finding the roots of an equation, solving systems of linear and non-linear equations, eigenvalue problems, polynomial approximation and interpolation, ordinary and partial differential equations. The Monte-Carlo method, simulation, error propagation and analysis, the methods of least squares and goodness –of –fit tests are also discussed
Number of Units	3 units

Course Name	P222 – Software Design
Course Description	This course focuses on programming paradigms and constructs, data structures and use of standard library functions for manipulating them, object-oriented design and the use of modeling languages, testing and software quality concepts ,and tradeoffs among different software design methods. And this course also focuses on providing hands-on experience in software design.
Number of Units	4 units

Course Name	P223 – Operating Systems
Course Description	This course includes different policies and Strategies used by an operating system. Topics include operating systems structures, process management, storage management, file management and distributed systems.
Number of Units	4 units

Course Name	P224 – Introduction to HDL
Course Description	A laboratory course that introduces hardware description language as a tool for designing and testing combinational and



	sequential circuits. It covers fundamental of concepts of HDL and the basic building blocks of HDL programming
Number of Units	1 unit

Course Name	P317-23 – Fundamentals of Mixed Signals and Sensors
Course Description	This course covers operational amplifiers, signal converters, power switching devices and the construction and operation of sensors and transducers for converting physical parameters into electrical signals and vice-versa. The course focuses on the application of these devices in developing signal conversion circuits that allow measurement, processing and control of physical parameters by digital processing systems such as a finite state machine or a digital computer. Topics on actuators are also included.
Number of Units	4 units

Course Name	P311-23 – Logic Circuits and Design
Course Description	This course includes design and analysis or digital circuits. This course covers both combinational (synchronous and asynchronous) logic circuits with emphasis on solving digital problems using hardwired structures of the complexity of medium and large-scale integration. And this course also focuses on providing hands-on experience in designing digital Circuits
Number of Units	4 units

Course Name	P312 – Data and Digital Communications
Course Description	This course focuses on the fundamental concepts of digital and data communications. It also includes topics on data security and integrity.
Number of Units	3 units

Course Name	P313 – Feedback and Control Systems
Course Description	The course includes the control devices, equations of a systems and block diagram of systems.
Number of Units	3 units

Course Name	P315 – Computer Engineering Drafting and Design
Course Description	This course focuses on principles of layout of electrical, electronics, and logic drawings; stressing modern representation used for block diagrams, wiring /assembly drawings, printed circuit board layouts, and etching.
Number of Units	1 unit



Course Name	P321 – Basic Occupational Health and Safety
Course Description	This course tackles key occupational Health and Safety (OSH) Concepts, principles and practices that are foundational knowledge requirements applicable in almost all industries. Specifically, it assists learners in identifying the key elements in the OSH situation both here and abroad; determine existing and potential safety and health hazards; identify the range of control measures; discusses pertinent provisions of Philippine laws that refer to occupational safety and health; explain key principles in effectively communicating OSH; identify components of effective Osh programs and demonstrate some skills in identifying hazards and corresponding control measures at the workplace.
Number of Units	3 units

Course Name	P322-41 – Computer Networks and Security
Course Description	The course includes the basic principles of network architecture, computer network design, services, technologies and network security. And this course provides us hands-on activities on computer networking. It focuses on the configuration of TCP/IP, routers and switches network security and wireless fidelity.
Number of Units	4 units

Course Name	P323-31 – Microprocessors
Course Description	This course provides understanding of architecture of microprocessor-based systems; registers, study of microprocessor operation, assembly language, arithmetic operations, and interfacing.
Number of Units	4 units

Course Name	P324 – Methods of Research
Course Description	This course will provide in-depth understanding of research through exploration of different research methodologies and ethics. It includes qualitative and quantitative research, descriptive and other applicable research methodologies, inferential statistics and introduction to data mining.
Number of Units	2 units

Course Name	P325 – CpE Laws and Professional Practice
Course Description	This course provides the importance of the professional and ethical responsibilities of practicing computer engineers and the effects of their work on society; the importance of understanding contemporary issues, lifelong learning strategies; and applicable IT laws in the field of computer engineering.



Number of Units	2 units
-----------------	---------

Course Name	P331 – On the Job Training (240 hrs.)
Course Description	This course enables students to relate their acquired competencies to the realities and problems of industries in a multidisciplinary environment. This may include involvement in the industry’s manpower requirements, development and research concerns, trainings, applications of principles, environmental concerns, ethical and behavioral concerns, decision making, and equipment and materials concerns.
Number of Units	3 units

Course Name	P411-32 – Embedded Systems
Course Description	This course provides advanced topics in embedded systems design using contemporary practice; interrupt-driven, reactive, real-time, object-oriented, and distributed client/server embedded systems.
Number of Units	4 units

Course Name	P412-32 – Computer Architecture and Organization
Course Description	This course includes the study of evolution of computer architecture and the factors influencing the design of hardware and software elements of computer systems. The focus is on understanding of the design issues specifically the instruction set architecture and hardware architecture. And this course will also provide hands-on activities designed to focus on the computer hardware issues specifically the instruction set architecture and hardware architecture.
Number of Units	4 units

Course Name	P413 – Emerging Technologies in CpE
Course Description	This course is designed to provide flexibility in the curriculum by discussing any emerging technologies applicable to computer engineering.
Number of Units	3 units

Course Name	P414 – CpE Practice and Design 1
Course Description	This course is the first course in a two-semester sequence that constitutes the design experience for undergraduate computer engineers. It provides essential ideas, concepts and principle in engineering design process and emphasizes other design issues including engineering standards and multiple constraints as well as effective communication strategies. Students’ works in teams



	to develop project proposals for assigned open-ended problems. Students are required to make oral presentations and submit proposal for their projects.
Number of Units	1 unit

Course Name	P415 – Digital Signal Processing
Course Description	The course includes the need for and tradeoffs made when sampling and quantizing a signal; linear; time-invariant system properties; frequency as an analysis domain complementary to time; and filter design. And this course also focuses on providing hands-on activities on different applications of digital signal processing
Number of Units	4 units

Course Name	P421 – CpE Practice and Design 2
Course Description	This course is the Second of the design experience for undergraduate computer engineering students. In this course, students will expect to build/fabricate their design, test and evaluate the design against their design specifications, and demonstrate a fully functional project to their design review committee. Students make oral presentations and submit final reports documenting their projects.
Number of Units	2 units

Course Name	P422 – Seminars and Fieldtrips
Course Description	Students have the opportunity to have a short glimpse of what is stored for them after their graduation. Further, students will be exposed to relevant and information technology related industry as part of their company visit. This course is more than applying knowledge whereby it requires the thoughtful application of skills in actual conduct trainings, workshops and seminars respectively. Thus, making students have the firsthand experience on how these events are being practiced in any given field of specialization.
Number of Units	1 unit

Course Name	P212 – Information Management
Course Description	This course covers information management, database design, data modeling, SQL, and implementation using relational database system.
Number of Units	3 units

Course Name	P423 – Certification Exam Review
-------------	----------------------------------



Course Description	This course is an assessment of what students had learned. This includes review on programming and IT concepts. The students will take certification exams.
Number of Units	3 units

**COGNATES/ELECTIVE
S**

Course Name	P316-11 – Software Development 1
Course Description	This course covers basic and advanced HTML commands. It also includes discussion on cascading style sheets, java script and ajax. PHP and MySQL are also included for web-based site development
Number of Units	3 units

Course Name	P326-31 – Software Development 2
Course Description	Students learn how to develop applications for mobile devices, including smartphones and tablets. Students are introduced to the survey of current mobile platforms, mobile application development environments, mobile device input methods, as well as developing applications for two popular mobile platforms. Students will design and build a variety of Apps throughout the course to reinforce learning and to develop real competency.
Number of Units	3 units

Course Name	P416-32 – Software Development 3
Course Description	Modern software development processes and the role of testing in them. The concept of Testing as a Design Tool. Cases studies involving companies in the region. Types of tests ranging from static source code tests to acceptance tests. Refactoring and unit tests are emphases.
Number of Units	3 units

GENERAL EDUCATION CORE COURSES

Course Name	GEC01 – Understanding the Self
Course Description	This course deals with the nature and identity factors and forces that affect the development and maintenance of personal identity.
Number of Units	3 units

Course Name	GEC02- Readings in the Philippine History
Course Description	This course is all about Philippine History viewed from the lenses of selected primary sources in different periods, analysis, and interpretation.
Number of Units	3 units



Course Name	GEC03 – The Contemporary World
Course Description	This course deals with the globalization and its impact on individuals, communities and nations, challenges and responses.
Number of Units	3 units

Course Name	GEC04 – Mathematics in the Modern World
Course Description	This course deals with the nature of Mathematics, appreciation of its practical, intellectual, and aesthetic dimensions and application of mathematical tools in daily life.
Number of Units	3 units

Course Name	GEC05 – Purposive Communications
Course Description	This course deals with writing, speaking, and presenting for different audiences and for various purposes.
Number of Units	3 units

Course Name	GEC06 – Art Appreciation
Course Description	This course deals with the nature, function, and appreciation of the arts in the contemporary society.
Number of Units	3 units

Course Name	GEC07 – Science, Technology and Society
Course Description	Analyses of the past, present, and future of science and technology in society (including their nature, scope, role, and function) and the social, cultural, political, economic, and environmental factors affecting the development of science and technology, with emphasis on the Philippine setting.
Number of Units	3 units

Course Name	GEC08 – Ethics
Course Description	This course deals with the principles of ethical behavior in modern society at the level of the person, society, and interaction with the environment and other shared resources.
Number of Units	3 units

GENERAL EDUCATION ELECTIVES

Course Name	GEE01 – Philippine Popular Culture
Course Description	This three-unit course provides the students with critical perspectives in understanding and way of knowing popular culture in the Philippines. This course aims to explore new forms of art, music, and literature arising from opportunities and demands of mass audiences, markets, and mass media, and their



	social, economic and political contexts. This course also locates popular culture as a historic-spatial condition and phenomenon of Philippine modernity. It aims to investigate how the term popular culture is operationalized, circulated, re-produced, consumed and instrumentalized by the recurring social order.
Number of Units	3 units

Course Name	GEE02 – Environmental Science
Course Description	This three-unit course deals with the general concepts and principles pertaining to complex patterns of interaction between the physical environment and biological communicates on earth. Emphasis is also given on the current environmental issues and concerns as well as disaster risk management techniques.
Number of Units	3 units

Course Name	GEE03 – Gender & Society
Course Description	This three-unit course aims to analyze the role of gender in society in interdisciplinary and intersectional gender studies perspectives. Students develop an independent ability to discuss theories and analyze the role of gender in societal development. The course covers different empirical and theoretical perspectives in gender studies in relation to how gender, ethnicity, class, religion, ability, and sexuality interplay with societal institutions and the development of society, with a focus on how this interplay creates and shapes gendered bodies, subjects, identifications, gender relations, and power structures.
Number of Units	3 units

MANDATE

Course Name	RIZAL – Life and Works of Rizal
Course Description	This course is designed to orient the students about the life, works and writings of the greatest hero and martyr of our nation from the day of his birth until the day of his death.
Number of Units	3 units

Course Name	PE01 – Physical Fitness and Wellness
Course Description	This course is designed to provide students knowledge and skills in maintaining a balanced and healthy lifestyle through various physical exercises, proper posture, healthy diet, and fitness and wellness programs. Further, it also includes the basic steps in dancing, and types of Philippine and foreign dances. This course enables the students value the benefits of physical wellness and fitness and apply its principles in their life.



Number of Units	2 units
-----------------	---------

Course Name	PE02 – Self Defense
Course Description	This course is designed to familiarize the students with the various techniques and strategies in protecting oneself in harmful situations. This course also provides awareness on the students the importance of psychological awareness, alertness, physical health and endurance during difficult situations. Further, it also train students on physical and mental training in using self-defense techniques.
Number of Units	2 units

Course Name	PE03 – Swimming with Basic Life Support
Course Description	This course deals with the fundamentals of swimming and survival skills. The students are expected to learn the basic and advanced strokes and skills associated with swimming and survival techniques.
Number of Units	2 units

Course Name	PE04 – Sports
Course Description	This course deals with various indoor and outdoor activities designed to arouse the student’s interests and abilities to develop self-esteem, perseverance, courage, and sense of creativity which will be utilized and carried on to their lifetime endeavors. Covers also activities in which the emphasis is placed upon the development of physical skills through recreational sports essential for stress management.
Number of Units	2 units

Course Name	NSTP01 – Civic Welfare and Training Service 1
Course Description	This course is pursuant to Republic Act No. 9163, otherwise known as the National Service Training Act of 2001, which mandates tertiary educational institutions to incorporate in the collegiate curriculum a program aimed at “enhancing civic consciousness and defense preparedness in the youth by developing the ethics of service and patriotism”.
Number of Units	3 units

Course Name	NSTP02 – Civic Welfare and Training Service 2
Course Description	This course is sequel to NSTP 1 and is destined to immerse students in activities that will arm them the capability to contribute in the upliftment of the general welfare and the quality of life of the community and the enhancement of its facilities



	especially those that are devoted to improving the health, environment, entrepreneurship, safety, recreation, and morale of the citizen.
Number of Units	3 units

INSTITUTIONAL

Course Name	CFVE01 – Christian Foundation and Values Education 1
Course Description	This course is an introduction of the study of the Bible, the nature and being of God in the power of God’s word in one’s life, with emphasis of the life, person, and ministry of the Lord Jesus Christ. It also embraces Biblical Christian values that will inspire the students to live uprightly and to achieve excellent and honorable aspirations. This course also presents an in department study scriptural study of life of an Old and New Testament personalities using both positive and negative examples, students learn from context to face both the challenges of everyday living and overwhelming experiences and to prepare the students in real life situations.
Number of Units	3 units

Course Name	CFVE02 – Christian Foundation and Values Education 2
Course Description	This course provides instructions toward righteous living in the sight of God. One strong evidence that God truly has created humans is the “inner sense of morality” in man which means that man was made in the image of God Himself and was given the ability to choose what is good and right thing to do.
Number of Units	3 units