



## Course Descriptions

**CSUS 111 INTRODUCTION TO COMPUTER SCIENCE (3 units)**-This course introduces practical computing skills needed by every computer science student. It covers basic topics like hardware, software, and networking. This course is optional, and should be taken by students who want to learn computer basic skills before entering the computer science program.

**CSPR 113 LOGIC FORMULATION (3 units)** -This course introduces fundamental concepts in problem solving by developing a program with the use of flowchart and pseudo code. It is optional, and should be taken by students who need more background knowledge in programming.

**CSUS 111 CS FUNDAMENTALS (3 units Lecture & 2 units Laboratory)**-This course provides an overview of computers, number systems, data types and representations, digital logic systems, assembly and machine language, compilers and translators, operating systems, and internetworking. Students will be given practical hands on training of the user skills that are needed by a computer science student.

**CSPR 111 COMPUTER PROGRAMMING I (3 units Lecture & 2 units Laboratory)** -This course introduces the students to the fundamentals of logic formulation (programming) together with their implementation in the C programming language. The needed skills in solving problems by developing programs is also taught in this course. This course should serve as a foundation for students in the Computer Science program.

**CSPR 122 COMPUTER PROGRAMMING II (3 units Lecture & 2 units Laboratory)** - This is an advanced course for computer programming in C/C++. It covers the data structures like array, strings, and files. A basic overview of developing Graphical User Interfaces is also included in this course. This course also should serve as a foundation for students in the Computer Science program.

**CSPR 123 DATA STRUCTURES (3 units)** This course introduces the students to the design and implementation of basic and advanced data structures. Topics include basic data structures, trees, graphs and hashing.

**CSPR 214 OBJECT ORIENTED PROGRAMMING ( 3 units Lecture & 2 units)** -This course provides the students with the fundamental understanding of object-oriented programming. It introduces the different concepts that are commonly associated with object programming.

**CSTH 211 DISCRETE STRUCTURES (3 units)** - This course introduces the foundations of discrete mathematics as they apply to computer science. Topics include basic logic, functions, relations and sets, proof techniques, basics of counting and introduction to digital logic and digital systems.

**CSDI 211 DESIGN AND ANALYSIS OF ALGORITHMS (3 units)**- A study on the design and analysis of algorithms, which introduces students to the techniques in basic algorithmic analysis, algorithmic strategies, sorting and searching, graph algorithms, geometric algorithms, and algorithm complexity.

**CSPR 225 WEB PROGRAMMING (w /lab) (3 units Lecture & 2 units Laboratory)** - This course centers on the study of the basic concepts in designing and developing Web based applications. Web Server-side scripting languages (PHP, Python, Ruby), HTML, CSS, DOM, JavaScript, RDBMS software packages/standards are used. The students will be taught practical skills in solving real world problems using the Web.

**CSHA 221 DIGITAL DESIGN (3 units)** -This course provides an overview of the principles underlying number systems, logic gates, Fixed-Point Representation, Boolean Function, Boolean algebra, combinational and sequential logic circuits, flip-flops, registers, and PLAs.

**CSDI 222 DATABASE SYSTEMS (w/ lab) (3 units Lecture & 2 units Laboratory)** -This course is a study of the fundamental concepts in use, and implementation of a Relational Database Systems, which lets one collect, organize, find, display, and print related information. It provides practical knowledge of how to use database systems in solving real world problems.

**CSDE 231 INTERNAL INTERNSHIP (3 units)** -This course provides students a time to practice what they learned by creating/helping software projects being developed inside the university.

**CSTH 312 AUTOMATA AND LANGUAGE THEORY (3 units)** -This course introduces the formal models of computing and their relation to formal languages. Topics to be discussed in the course includes DFA, NFA, RE, CFG, Turing Machines, and Complexity

**CSHA 312 COMPUTER ORGANIZATION AND ASSEMBLY (3 units)** -This course provides an overview of the architecture and organization of a computer, how it is built. It includes a discussion of the CPU, memory, I/O organization and peripherals. It also gives a close-to-metal overview of how to manipulate a computer through assembly language.

**CSDI 313 OPERATING SYSTEMS (3 units)** - This course provides an introduction to the concepts, theories and components that serve as the bases for the design of classical and modern operating systems. Topics include process and memory management, concurrency, scheduling and dispatch, file systems, and security.

**CSPR 326 GUI PROGRAMMING (3 units Lecture & 2 units Laboratory)** -This course centers on the study of the basic concepts in designing and developing GUI based applications. Topics like event driven applications, Toolkits, Windows, and Cross-platform GUI development will be discussed.

**CSDI 324 PROGRAMMING LANGUAGES (3 units Lecture & 2 units Laboratory)** -This course provides students the fundamental features and concepts to different programming languages. Topics include overview of programming languages, Introduction to language translation, type systems, data and execution control, declaration and modularity, and syntax and semantics.

**CSDE 322 SOFTWARE ENGINEERING (3 units Lecture & 2 units Laboratory)** -This course teaches students correct methods of developing quality software. It explains the different stages that a software system has to undergo before it would be ready for the client to use and it also shows the various tools and techniques used during software development.

**CSDE 333 EXTERNAL INTERNSHIP (3 units)** -This course is an immersion program wherein the students will have the chance and opportunity to be with the IT industry. This program is important because the students will have the chance to apply the skills, knowledge and attitude learned in the school and at the same time the opportunity to experience the corporate environment.338

**CSDE 414 THESIS I (3 units)** -This course provides the students the opportunity of using the knowledge that they learned throughout the course of their study by creating a thesis which is focused on theories and concepts of computing. This course provides the students the time to gather the required information for their thesis.

**CSD 415 NETWORK PRINCIPLES AND PROGRAMMING (3 units)** -This course provides an in-depth discussion of computer networks. It includes a detailed discussion of the different Network Models. Concepts that have a direct effect on the efficiency of a network (e.g. collision and broadcast domains, topology) are also discussed. Concepts on different network technologies, distributed computation, networking, and communication software, and security issues are also discussed.

**CSTH 413 PROFESSIONAL ETHICS (3 units)** -The course introduces ethics and ethical theories; provides discussions on the ethical dilemmas and issues facing IT practitioners. An appreciation and discussion of the Code of Ethics of I. T. Professionals; cybercrimes and appropriate Philippine Laws are also included.

**CSDE 425 THESIS II (3 units)** -This course provides the students the opportunity of using the knowledge that they learned throughout the course of their study by creating a thesis which is focused on theories and concepts of computing. This course provides the students the time to implement the proof of concept application of their thesis.

### ***Major Electives***

**CSMA 311 MANAGEMENT INFORMATION SYSTEMS ( 3 units)** -The course talks about the methods on how to analyze, design, and create an information system suited for a specific firm or company.

**CSMA 312 MODELING AND SIMULATION ( 3 units)** - This course introduces the students to modeling and simulation concepts. Topics discussed in the course includes, system analysis and classification., abstract and simulation models, continuous, discrete, and combined models, heterogeneous models. It also covers pseudorandom number generation and testing, queuing systems, Monte Carlo method, and continuous simulation. Simulation experiment control.

**CSMA 323 COMPUTER GRAPHICS (3 units)** -This course centers on the study of how to make the computer manipulate and display graphics and animations. It also discusses the theory behind computer graphics.

**CSMA 411 ADVANCED OPERATING SYSTEMS (3 units)** -This course centers on the study of how to develop system applications. It development of operating system utilities, installation of different operating systems with different configurations, driver or module programming, kernel programming, etc.

**CSMA 412 MOBILE COMPUTING (3 units)** -This course provides practical knowledge in developing applications for the mobile computing architecture. The use of web-based and GUI based mobile applications are included in this course.

**CSMA 423 ARTIFICIAL INTELLIGENCE (3 units)** -The course explains the concepts and techniques in developing intelligent systems or expert systems and knowing the various applications of artificial intelligence in other fields of science.

**CSMA 424 COMPILER DESIGN (3 units)** -This course teaches students the concepts and techniques of developing compilers. After this course, the student will be able to create their own compiler/interpreter.

**CSMA 425 DISTRIBUTED COMPUTING (3 units)** -This course provides an in-depth discussion on the techniques of designing and implementing parallel computing, neural networks, and other kinds of distributed computing.

**CSMA 426 SPECIAL TOPICS (3 units)** -This course provides an overview of the latest trends in the computing landscape. It provides a practical overview on how to use them to solve real world problems.