Outcome Based Education (OBE) Curriculum

**ASSOCIATE IN COMPUTER TECHNOLOGY**

**Major in PROGRAMMING**

**Revised Curriculum**

*Academic Year 2024-2025*

1. **GENERAL EDUCATION 30**
2. **Language and Humanities 6**

* ENGLISH

English 1 Purposive Communication 3

* Humanities (Literature, Arts, Philosophy, etc.)  Humanities Art Appreciation 3

1. **Mathematics, Natural Sciences and Technology**

* MATHEMATICS **9**

Math 1 Mathematics in the Modern world 3

* ELECTIVES

Ethics Ethics 3

Science Science, Technology and Society 3

1. **Social Sciences and Communication 6**

* SOCIAL SCIENCE

Soc. Scie 1 Life and Works of Rizal 3

* HISTORY

Phil.Const. Reading in the Philippines History 3

1. **GENERAL EDUCATION ELECTIVES 9**

Mathematics, Science & Technology (Living in the IT Era) 3  
 Social Science and Philosophy (Philippine Indigenous Communities) 3

Arts & Humanities (Peace Studies and Education) 3

1. **COMMON COURSES 15**

CC 101 Introductions to Computing 3

CC 102 Fundamentals of Programming 3

CC 103 Intermediate Programming 3

CC 104 Data Structures and Algorithms 3

CC 105 Information Management 1 3

1. **PROFESSIONAL TRACK/ELECTIVES 18**

PT/Elec CN 101 Computational Science 3

PT/Elec GV 101 Graphics and Visual Computing 3

PT/Elec SDF 104 Object Oriented Programming 3

PT/Elec PD 101 Parallel and Distributed Computing 3

PT/Elec IS 101 Intelligent System 3

PT/Elec SF 101 System Fundamentals 3

1. **PROFESSIONAL ISSUES AND COMPUTING 3**

ACT- PIC 101 Professional Issues in Computing 3

1. **INTERNSHIP 6**

ACT-OJT On The Job Training 6

1. **PHYSICAL EDUCATION 8**

PE 1 (PATHFIT 1) Movement Competency Training (MCT) (2)

PE 2 (PATHFIT 2) Exercise-based Fitness Activities (2)

PE 3 (PATHFIT 3) Dance (Folk Dance) (2)

PE 4 (PATHFIT 4) Sports (Volleyball/Basketball) (2)

1. **NSTP 6**

NSTP 1 Civil Welfare and Training Service 1 (3)

NSTP 2 Civil Welfare and Training Service 2 (3)

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**PROGRAM STRUCTURE**

**FIRST YEAR**

**First Semester**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | **COURSE TITLE** | **LEC UNIT(S)** | **LAB**  **UNIT(S)** | **UNIT(S)** | **PRE-**  **REQUISITES** |
| CC 101 | Introduction to Computing | 2 | 1 | 3 | None |
| CC 102 | Fundamentals of Programming (C#) | 2 | 1 | 3 | None |
| GE-101 | English 1 (Purposive Communication) | 3 | 0 | 3 | None |
| GE-102 | Math 1 (Mathematics in the Modern World) | 3 | 0 | 3 | None |
| PT/Elec CN 101 | Computational Science | 3 | 0 | 3 | None |
| PT/Elec GV 101 | Graphics and Visual Computing | 2 | 1 | 3 | None |
| NSTP 1 | Civil Welfare and Training Service | 3 | 0 | (3) | None |
| PE 1 (PATHFIT 1) | Movement Competency Training (MCT) | 2 | 0 | (2) | None |
|  |  | 20 | 3 | 23 |  |

**Second Semester**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | **COURSE TITLE** | **LEC UNIT(S)** | **LAB**  **UNIT(S)** | **UNIT(S)** | **PRE-**  **REQUISITES** |
| CC 103 | Intermediate Programming | 2 | 1 | 3 | CC 102 |
| GE Elec. 1 | Mathematics, Science & Technology (Living in the IT Era) | 3 | 0 | 3 |  |
| GE Elec. 2 | Social Science and Philosophy (Philippine Indigenous Communities) | 3 | 0 | 3 |  |
| GE-103 | Science Technology and Society | 3 | 0 | 3 | None |
| GE-104 | Ethics | 3 | 0 | 3 | None |
| PT/Elec PD 101 | Parallel and Distributed Computing | 2 | 1 | 3 | CC 103 |
| NSTP 2 | Civil Welfare and Training Service | 3 | 0 | (3) | NSTP 1 |
| PE 2 (PATHFIT 2) | Exercise-based Fitness Activities | 2 | 0 | (2) | PE 1 (PATHFIT 1) |
|  |  | 21 | 2 | 23 |  |

*PREPARED BY: NOTED BY: REVIEWED BY: NOTED BY:*

Engr. Jay A. Dadea, MIT Ramon S.L. Moraleda, LLB Alicia M. Nieto, MIT Rachel D. Casimero

**Dean Administrator/RMO Education Supervisor II Chief Education Program Specialist**

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**SECOND YEAR**

**First Semester**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | **COURSE TITLE** | **LEC UNIT(S)** | **LAB**  **UNIT(S)** | **UNIT(S)** | **PRE-**  **REQUISITES** |
| CC 104 | Data Structures and Algorithms | 2 | 1 | 3 | None |
| CC105 | Information Management 1 | 3 | 0 | 3 | None |
| PT/Elec SDF 104 | Object Oriented Programming | 2 | 1 | 3 | CC 103 |
| PT/Elec IS 101 | Intelligent System | 2 | 1 | 3 |  |
| GE Elec. 3 | Arts & Humanities (Peace Studies and Education) | 3 | 0 | 3 |  |
| GE 105 Soc. Scie 1 | Life and Works of Rizal | 3 | 0 | 3 |  |
| History 1 | Reading in the Philippine History | 3 | 0 | 3 | None |
| PE 3 (PATHFIT 3) | Dance (Folk Dance) | 2 | 0 | (2) | PE 2 (PATHFIT 2) |
|  |  | 20 | 3 | 23 |  |

**Second Semester**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | **COURSE TITLE** | **LEC UNIT(S)** | **LAB**  **UNIT(S)** | **UNIT(S)** | **PRE-**  **REQUISITES** |
| OJT | On-the-Job Training (320 hours) | 6 | 0 | 6 | None |
| PT/Elec SF 101 | System Fundamentals | 2 | 1 | 3 |  |
| ACT-PIC 101 | Professional Issues in Computing | 3 | 0 | 3 | None |
| GE 106 | Art Appreciation | 3 | 0 | 3 | None |
| PE 4 (PATHFIT 4) | Sports ( Volleyball/Basketball) | 2 | 0 | (2) | PE 3 (PATHFIT 3) |
|  |  | 16 | 1 | 17 |  |

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**SAMPLE MEANS OF CURRICULUM DELIVERY**

The Information Technology graduates are expected to become globally competent, innovative and socially and ethically responsible computing professionals engaged in life-long endeavors. They are capable of contributing to the country’s national development goals.

The Graduate outcomes of the Associate in Computer Technology Curricula are archived through, but not limited to the following.

1. Lecture and Classroom Discussions.
2. Programming Demonstrations.
3. Guided Hands-On Programming.
4. Guided Design and Development of Project Specifications.
5. Independent Programming Assignments such as Machine Problems.
6. Case Analysis and Case Studies
7. Capstone Project which involves requirements gathering, design and implementation.
8. Mentorship and Monitored Internship.

|  |
| --- |
| **Table I: CURRICULUM** |

|  |  |  |
| --- | --- | --- |
| **COURSE**  **Bachelor of Science in Information Technology**  **(Networking)** | **Required Minimum Number of Units per CMO No. 13, Series 2021** | **Institution** |
| General Education | 15 | 30 |
| ITE Common Computing | 15 | 15 |
| Professional Track/Electives | 18 | 18 |
| Professional Issues in Computing | 3 | 3 |
| Internship (320hours) | 6 | 6 |
| PATHFIT | 8 | 8 |
| NSTP | 6 | 6 |
| Minimum Total Units | 71 | 86 |

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**COURSE DESCRIPTION**

**SUBJECT Units Lec Lab**

**Introduction to Computing 3 2 1**

This course provides an overview of the computing industry and computing profession, including research and applications in different fields; an appreciation of computing in different fields such as biology, sociology, environment and gaming, an understanding of ACM requirements, an appreciation of the history of computing and knowledge of the key components of computer systems, malware, computer security, internet and internet protocols, HTML 4/5 and CSS.

**Fundamentals of Programming 3 2 1**

This course introduces the fundamental concepts of structured programming, and

provides a comprehensive introduction to programming and technology majors. Topics include software development methodology, data types, control structures, functions, arrays, and the mechanics of running, testing, and debugging.

**Purposive Communication 3 3 0**

Purposive communication is a three-unit course that develops students’ communicative competence and enhances their cultural and intercultural awareness through multimodal tasks that provide them opportunities for communicating effectively and appropriately to a multicultural audience in a local or global context. It equips students with tools for critical evaluation of a variety of texts and focuses on the power of language and the impact of images to emphasize the importance of conveying messages responsibly. The knowledge, skills, and insights that students gain from this course may be used in their other academic endeavors, their chosen disciplines, and their future careers as they compose and produce relevant oral, written, audio-visual and/or web-based output for various purposes

**Mathematics in the Modern World 3 3 0**

The course deals with nature of mathematics, appreciation of its practical, intellectual, and aesthetic dimensions, and application of mathematical tools in daily life. It begins with an introduction to the nature of mathematics as an exploration of patterns (in nature and the environment) and as an application of inductive and deductive reasoning. By exploring these topics, students are encouraged to go beyond the typical understanding of mathematics as merely a set of formulas but as a source of aesthetics in patterns of nature, for example, and a rich language itself (and of science) governed by logic and reasoning. It also proceeds to survey ways in which mathematics provides a tool for understanding and dealing with various aspects of present-day living, such as managing personal finances, making social choices, appreciating geometric designs, understanding codes used in data transmission and security, and dividing limited resources fairly. These aspects will provide opportunities for actually doing mathematics as way of knowing, and test the students understanding and capacity.

**IT Software Solution for Business 3 2 1**

Introduces and develops foundational skills in applying essential and emerging business productivity

information technology tools. The focus of this course is on business productivity software applications,

including word processing, spreadsheets, databases, presentation graphics, data analytics, and business-oriented utilization of the internet

**Civil Welfare and Training Service 1 3 3 0**

The Civic Welfare Training Services (CWTS) as a component of the Civil Welfare and Training Service (NSTP) is a course for the first year students both male and female designed to help them understand, appreciate and eventually live by the concepts of the Students Transformation and Enrichment for Truth (STET) with the end in view of empowering them in becoming a potent resource community development.

**Physical Fitness and Gymnastics 1 2 2 0**

This course introduces the good posture and the movements of physical body. It contains information and activities the students can use throughout their lives. It also contains suggested areas for the basic physical education program which will provide the students practical and scientifically sound introduction to exercise and fitness. Topics on this course where included for better understanding of the structure and function of the body systems which lead to more appropriate and sound fitness practices.

**Intermediate Programming 3 2 1**

This course provides the transition from the functional paradigm to the object-oriented paradigm. It introduces OOP using Java as the implementation language. It emphasizes proper formulation and abstraction of the problem domain in the programming process in order to build programs that are robust, flexible, and extensible. The course also covers data structures and algorithms to manipulate them that are essential to programming, such as lists, stacks, queues, trees, tables. These structures are implemented as systems of cooperating objects using appropriate design patterns. The course will also cover both stream I/O and event-driven I/O.

**Professional Issues and Computing 3 2 1**

This module aims to raise awareness of social legal, ethical and economic implications of computing in modern society. It highlights the responsibilities and issues facing IT professionals and computer scientists in industry.

**Operating System 3 2 1**

Topics include process synchronization, inter process communication, deadlock, multiprogramming and multiprocessing, processor scheduling and resource management, memory management, overlays, static and dynamic relocation, virtual memory, file systems, logical and physical I/O, device allocation, I/O processor scheduling, process and resource protection.

**Object Oriented Programming 3 2 1**

This course emphasizes current techniques in object oriented design, analysis, and programming. Such topics as

encapsulation, information hiding, inheritance and polymorphism are studied in class assignments and programming exercises. The C++ programming language is utilized along with the UML modeling language.

**Ethics 3 3 0**

This course provides with principles of ethical behavior in modern society at the level of the person, society and interaction with the environment and other shared resources. Morality pertains to the standards of right and wrong that an individual originally picks up from the community. The course discusses the context and principles of ethical behavior in modern society and interaction with the environment and other shared resources. The course also teaches students to make moral decisions by using dominant moral frameworks and by applying a seven-step moral reasoning model to analyze and solve moral dilemmas.

**Civil Welfare and Training Service 2 3 3 0**

The Civic Welfare Training Service (CWTS 2) is a sequel to CWTS. It is designed to immerse students in activities that will arm them the capacity 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

**Individual and Team Sports 2 2 2 0**

This course introduces Individual ad Dual Sports such as Athletics, Table Tennis, badminton, Arnis and Swimming. It includes discussions of history when and where it was originated, the facilities and equipment, the players, how to play safely the said game and disseminating of rules of every individual games in order to fit the needs of the students and for them to gain a general comprehension and unified view of the entire course and also to find enjoyment. Physical activities include all movements that can contribute to improve health. Physical Education activities through sports programs improve the quality of life and the physical well-being of an individual.

**Data Structures and Algorithms 3 2 1**

An overview of data structure concepts, arrays, stack, queues, trees, and graphs. Discussion of various implementations of these data objects, programming styles, and run-time representations. Course also examines algorithms for sorting, searching and some graph algorithms. Algorithm analysis and efficient code design is discussed. At the end of the course, the students are expected to be able to incorporate algorithmic design know-how and data structures to create reliable and structured programs.

**Information Management 1 3 2 1**

The course covers the basic theories behind database, data models and database analysis and design. The course will tackle different data models but will concentrate mainly on relational databases. The course introduces learners to concepts on conceptual design of databases using then concepts of the Entity- Relationship (ER) model and normalization, relational model, relational database design and database query languages.

**Advance Database System 3 2 1**

This module builds on the introductory module in databases. It intends to introduce more advanced

topics in databases such as data mining and data warehousing, distributed databases and client

server architecture after introducing the DBMS implementation.

**Graphics and Visual Computing 3 2 1**

This course equips the students with the skills to develop interactive 2D multimedia artifacts using authoring and editing tools. Emphasis is on the different multimedia elements such as audio, video, text, animation, and still images. Topics include multimedia principles and concepts, multimedia hardware, software and project management; storyboarding and interactive applications.

**Life and Works of Rizal 3 3 0**

A course on the life, works, ideas, and ideals of Jose Rizal which aims to provide students an in-depth appreciation of Rizal’s contribution to the building of Filipino nationhood. The course involves the critical and analytical discussion of Rizal in the context of Philippine History.

**Reading in Philippine History 3 3 0**

The course analyzes Philippine History from multiple perspectives through the lens of primary sources coming from various disciplines and of different genres. Students are given the opportunities to analyze the author’s background and main arguments, compare different points of view, identify biases and examine the evidences presented in the document. The discussions will tackle traditional topics in history and other interdisciplinary themes deepen and broaden their understanding of Philippine political, economic, cultural, social, scientific and religious history. Priority is given to primary materials that could help students develop the historical and critical consciousness of the students so that they will become versatile, articulate, broad minded, morally upright and responsible citizen. This course also includes the topic on history of the Philippine constitution from 1899 Malolos Constitution to the 1987 Constitution.

This further includes the topic on the Philippine Agrarian/Land Reform under RA 6657.otherwise known as Comprehensive Agrarian Reform Law.

**Science, Technology and Society 3 3 0**

The coverage of this course in interactions between science and technology and social, cultural, political and economic contexts which shape and are shaped by them; specific example throughout human history of scientific and technological developments.

**Rhythmic and Folkdances 3 2 2 0**

This course highlights the application of the rhythmic bodily movements which have emphasis on fundamental rhythm, basic dance steps and appreciation of the country’s rich cultural heritage which strengthens the awareness on dance education as a global perspective in the 21st century. Students will be given varied rhythmic activities and experiences to develop their skills and creativity in dancing

**On-the-Job Training 6 6 0**

OJT or Practicum is a non-classroom learning environment. The objective of the said practicum program is to provide students with the opportunity to develop confidence, exercise judgment and to apply the diversified skills, knowledge and attitude learned in school and at the same time the opportunity to experience the corporate environment.

**WEB Development & Programmimg 3 2 1**

This course deals with the design and development of web pages and web sites. Emphasis is on user-interface design, aesthetics and scripts using various web technologies and services. Topics include world wide web, internet technologies, hypertext markup language (HTML), cascading style sheets (CSS) and java script.

**Recreational Sports 2 2 0**

This course introduces Recreational Activities such as Badminton, Bowling and Swimming. It includes discussion of history, facilities and equipment, the payers, how to play safely the said game and disseminating of rules every individuals games in order to fit the needs of the students and for them to gain a general comprehension and unified view of the entire course and also to find enjoyment.

**Mathematics, Science & Technology 3 0 0**This course covers the study on basic transition that began in the mid-20th century in a traditional industry characterized by Industrial Revolution to an economy based upon information technology.   
The said course provides an overview about Information Communication Technology, elements of a computer system and how ICT be used in appositive way. Thru the creation of different outputs like AVPs, digital posters and cartoons it will help teachers demonstrate how verbal and non-verbal classroom strategies.

**Peace Studies and Education 3 0 0** This course enable the students and teachers to advocate peace with training as Peace educators and students. The said course will acquire a holistic and critical understanding of the theory and practice of peace education. It will also enhance students intellectual flexibility, creativity and problem- solving capacities.

**Social Science & Philosophy 3 0 0**This course provides a study of indigenous groups in the Philippines. Their way of Life, role and contribution to Filipino society. The said course gives emphasis on the rights protection and preservation of their culture as they are the identity of our country that needs to be learned continuously.