# Information Technology Program Student Learning Outcome Mapping

**Course (CLO), Program (PLO), Institutional (ILO)**

**Program Description**: This program is designed for individuals interested in professional careers in the information technology field. The program provides basic knowledge and skills needed for employment or for the pursuit of a higher education in the field of information technology.

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| **Program Learning Outcomes** | **Institutional Learning Outcomes** |
| 1. Plan, design, and develop a **computer program** demonstrating an understanding in the following: process of flowcharting programs, process of pseudocoding and documenting programs, process of writing computer programs using a programming language and applications, and the process of compiling and debugging programs. 2. Create various documents and files demonstrating a thorough understanding in using various **office applications** such as utilizing advance features of word processing, presentation, spreadsheet, and database applications. 3. Propose, plan/design, and create a **web-based** project to demonstrate an understanding in the process of writing project proposals, process of planning and designing web-based applications, different web supported programming languages, process of uploading and managing web applications, and an understanding in computer networking and protocols. 4. Propose, plan/design, and create a computer network to demonstrate an understanding in the process of identifying different hardware, determining hardware compatibility, process of planning and designing computer **networks**, and the process of **troubleshooting** networking and other computer related problems. 5. Propose, plan/design, and create a **database** to demonstrate an understanding in the basic principles of database design including the development of data models, establishment of entity relationships, determine appropriate degree of normalization, identify and define special keys, and addressing access and security concerns. | 1. **Critical Thinking and Problem Solving**: Analyze and solve problems by using informed judgment based on evidence, sound reasoning, and/or creativity to differentiate facts from opinions and to specify solutions and their consequences. 2. **Communication**: Effectively communicate, both orally and in writing, thoughts in a clear, well-organized manner to persuade, inform and/or convey ideas in academic, work, family and community settings. 3. **Quantitative and Technological Competence**: Use mathematical skills appropriate to our technological society by analyzing and solving problems that are quantitative in nature and use technology for informational, academic, personal and professional needs. 4. **Diversity**: Understand and appreciate differences in cultures and behaviors between the self and others by demonstrating respect, honesty, fairness, and ethical principles in both personal and professional life. 5. **Civic Responsibility**: Apply the principles of civility and morality to situations in the contexts of a healthy family, work, community, environment and world. 6. **Aesthetics**: Apply numerous means of inquiry to experience and appreciate the values of arts and nature. |

# PLO-ILO Mapping

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| **PLOs** | **ILOs** | | | | | |
| **ILO 1** | **ILO 2** | **ILO 3** | **ILO 4** | **ILO 5** | **ILO 6** |
| **PLO 1** | **X** | **X** | **X** | **X** | **X** | **X** |
| **PLO 2** | **X** | **X** | **X** | **X** | **X** | **X** |
| **PLO 3** | **X** | **X** | **X** | **X** | **X** | **X** |
| **PLO 4** | **X** | **X** | **X** | **X** | **X** | **X** |
| **PLO 5** | **X** | **X** | **X** | **X** | **X** | **X** |

**CLO-PLO-ILO Mapping**

**IT 100 - Computer Literacy**

This course covers basic information processing and uses of computer including basic application software and the Internet. Topics include basic computer concepts, navigating in a Windows Operating System, and computer software including word processing, spreadsheet, data base and PowerPoint presentations.

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| **CLO**  Students will be able to: | **PLO** | | | | |  | **ILO** | | | | | |
| **PLO 1** | **PLO 2** | **PLO 3** | **PLO 4** | **PLO 5** |  | **ILO 1** | **ILO 2** | **ILO 3** | **ILO 4** | **ILO 5** | **ILO 6** |
| 1. Name parts, both hardware and peripherals, and have a general knowledge of the history of the computer. |  |  |  | **X** |  |  | **X** | **X** | **X** |  |  | **X** |
| 2. Properly format Microsoft Word documents that include: text, graphics, columns and other supported objects. |  | **X** |  |  |  |  | **X** | **X** | **X** |  |  | **X** |
| 3. Format and use appropriate functions to create spreadsheets along with graphs for Microsoft Excel. |  | **X** |  |  |  |  | **X** | **X** | **X** |  |  | **X** |
| 4. Plan and design PowerPoint presentations that integrate texts, graphics and animations. |  | **X** |  |  |  |  | **X** | **X** | **X** |  |  | **X** |
| 5. Format Microsoft Access databases by correctly using table design, report design and query. |  | **X** |  |  | **X** |  | **X** | **X** | **X** |  |  | **X** |

**IT 105 - PC Office Applications**

This course builds on the software knowledge and skills covered in IT100. In this course, the students will have the opportunity to further develop their skills and knowledge in using common business-related applications such as word processing, spreadsheets, database, and presentation software.

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| **CLO**  Students will be able to: | **PLO** | | | | |  | **ILO** | | | | | |
| **PLO 1** | **PLO 2** | **PLO 3** | **PLO 4** | **PLO 5** |  | **ILO 1** | **ILO 2** | **ILO 3** | **ILO 4** | **ILO 5** | **ILO 6** |
| 1. Generate extensive and properly formatted Microsoft Word documents that include texts, graphics, tables, mathematical formulas, and other  supported objects. |  | **X** |  |  |  |  | **X** | **X** | **X** |  |  | **X** |
| 2. Plan and develop elaborate spreadsheets  that utilize complex built-in functions and features of Microsoft Excel. |  | **X** |  |  |  |  | **X** | **X** | **X** |  |  | **X** |
| 3. Plan, design, and generate Microsoft Access databases containing correctly structured and formatted tables, queries, forms and reports. |  | **X** |  |  | **X** |  | **X** | **X** | **X** |  |  | **X** |
| 4. Create substantial or multiple presentations that integrates texts, graphics, animations, other Microsoft Office files, and various objects supported by Microsoft PowerPoint. |  | **X** |  |  |  |  | **X** | **X** | **X** |  |  | **X** |

# IT 110 - Introduction to Programming

This course introduces students to the fundamentals of computer programming. Topics covered includes pseudocoding and flowcharting, problem solving procedures, program design, algorithm development, data structures, structured programming, modularization, debugging, and program documentation.

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| **CLO**  Students will be able to: | **PLO** | | | | |  | **ILO** | | | | | |
| **PLO 1** | **PLO 2** | **PLO 3** | **PLO 4** | **PLO 5** |  | **ILO 1** | **ILO 2** | **ILO 3** | **ILO 4** | **ILO 5** | **ILO 6** |
| 1. Plan, design, diagram, and generate a flowchart of a possible solution to a given computer-programming assignment. | **X** |  |  |  |  |  | **X** | **X** | **X** |  |  | **X** |
| 2. Identify areas where decision structures are required and plan and develop a flowchart and pseudocode for the decision structures to produce the desired output. | **X** |  |  |  |  |  | **X** | **X** | **X** |  |  | **X** |
| 3. Identify areas where looping structures are required and plan and develop flowchart and pseudocode for the looping structures to produce the desired output. | **X** |  |  |  |  |  | **X** | **X** | **X** |  |  | **X** |
| 4. Plan and develop complete pseudocode based on the solution that consists of all the procedures and components necessary to make the program run and function correctly. | **X** |  |  |  |  |  | **X** | **X** | **X** |  |  | **X** |

# IT 115 - Operating Systems and Networks

This course examines the role of Telecommunications, networks, and operating systems in management information systems. Strategies, tools, and techniques for network planning, implementation, management, maintenance, and security will be explored. Different types of networks including local area networks (LANs), wide area networks (WANs), metropolitan area networks (MANs), and enterprise-wide networks will be examined.

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| **CLO**  Students will be able to: | **PLO** | | | | |  | **ILO** | | | | | |
| **PLO 1** | **PLO 2** | **PLO 3** | **PLO 4** | **PLO 5** |  | **ILO 1** | **ILO 2** | **ILO 3** | **ILO 4** | **ILO 5** | **ILO 6** |
| 1. Identify and categorize different types of hardware and their functions. |  |  |  | **X** |  |  | **X** | **X** | **X** |  |  |  |
| 2. Identify different types of cables, capacity and speed, and their  functionality/capability. |  |  |  | **X** |  |  | **X** | **X** | **X** |  |  |  |
| 3. Identify and compare different types of  networks. |  |  |  | **X** |  |  | **X** | **X** | **X** |  |  |  |
| 4. Plan and design a computer network based on a given scenario. |  |  |  | **X** |  |  | **X** | **X** | **X** |  |  | **X** |

# IT 120 - Database Management Systems

This course introduces the file management and data structures involved in the design, implementation, and use of a database management system. Topics include file organization, data structures, program development, and security of data in creating, maintaining, and accessing a database.

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| **CLO**  Students will be able to: | **PLO** | | | | |  | **ILO** | | | | | |
| **PLO 1** | **PLO 2** | **PLO 3** | **PLO 4** | **PLO 5** |  | **ILO 1** | **ILO 2** | **ILO 3** | **ILO 4** | **ILO 5** | **ILO 6** |
| 1. Identify different types of databases and  describe their characteristics. |  |  |  |  | **X** |  | **X** | **X** | **X** |  |  |  |
| 2. Identify and label different areas or  sections of a database. |  |  |  |  | **X** |  | **X** | **X** | **X** |  |  |  |
| 3. Troubleshoot and correct database  problems. |  |  |  |  | **X** |  | **X** | **X** | **X** |  |  |  |
| 4. Plan, design, and create a relational  database. |  |  |  |  | **X** |  | **X** | **X** | **X** |  |  | **X** |

# IT 125 - Programming I

This course introduces computer programming using a high-level computer programming language. In this course, students will have the opportunity to apply the skills and knowledge acquired in IT110 within the features and capabilities and following the syntax of the high-level programming language used. This course will focus on problem solving procedures, program design, algorithm development, data structures, structured programming, modularization, debugging, and program documentation.

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| **CLO**  Students will be able to: | **PLO** | | | | |  | **ILO** | | | | | |
| **PLO 1** | **PLO 2** | **PLO 3** | **PLO 4** | **PLO 5** |  | **ILO 1** | **ILO 2** | **ILO 3** | **ILO 4** | **ILO 5** | **ILO 6** |
| 1. Design and develop a computer program by identifying and defining all needed variables. | **X** |  |  |  |  |  | **X** | **X** | **X** |  |  | **X** |
| 2. Design and develop a computer program by identifying areas where decision structures are necessary and developing the structures. | **X** |  |  |  |  |  | **X** | **X** | **X** |  |  | **X** |
| 3. Design and develop a computer program by identifying areas where looping structures are necessary and developing the structures. | **X** |  |  |  |  |  | **X** | **X** | **X** |  |  | **X** |
| 4. Plan and design a computer program by identifying areas where other programming statements are necessary and developing the statements. | **X** |  |  |  |  |  | **X** | **X** | **X** |  |  | **X** |
| 5. Develop a syntactically and functionally correct computer program by implementing the selected solution that consists of all the procedures and components necessary to make the program run and function correctly and accurately. | **X** |  |  |  |  |  | **X** | **X** | **X** |  |  | **X** |

# IT 200 - Intermediate PC Office Applications

This course provides advanced software skills used in business-related applications. Continuing with the concepts and skills from IT 105, it provides advanced functions and applications in word processing, spreadsheets, and database management systems.

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| **CLO**  Students will be able to: | **PLO** | | | | |  | **ILO** | | | | | |
| **PLO 1** | **PLO 2** | **PLO 3** | **PLO 4** | **PLO 5** |  | **ILO 1** | **ILO 2** | **ILO 3** | **ILO 4** | **ILO 5** | **ILO 6** |
| 1. Plan and develop elaborate documents utilizing built-in and custom advanced features of Microsoft Word. |  | **X** |  |  |  |  | **X** | **X** | **X** |  |  | **X** |
| 2. Plan and develop elaborate spreadsheets utilizing built-in and custom advanced functions and features of Microsoft  Excel. |  | **X** |  |  |  |  | **X** | **X** | **X** |  |  | **X** |
| 3. Plan and develop elaborate databases utilizing advanced features and functions of Microsoft Access. |  | **X** |  |  | **X** |  | **X** | **X** | **X** |  |  | **X** |

# IT 205 - Programming II

This course builds on the knowledge and skills covered in IT125. Using a high-level computer programming language, the course exposes students to advance problem solving involving more efficient and dynamic solutions and algorithms. Topics include program design, modularization, algorithm development, recursion, data structures, file handling, sorting, and object-oriented programming concepts.

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| **CLO**  Students will be able to: | **PLO** | | | | |  | **ILO** | | | | | |
| **PLO 1** | **PLO 2** | **PLO 3** | **PLO 4** | **PLO 5** |  | **ILO 1** | **ILO 2** | **ILO 3** | **ILO 4** | **ILO 5** | **ILO 6** |
| 1. Plan, design, and develop syntactically and functionally correct programs that are efficient and dynamic. | **X** |  |  |  |  |  | **X** | **X** | **X** |  |  | **X** |

# IT 215 - Web Management and Design

This course provides the tools and knowledge necessary to plan, design, and manage a web site. Students will learn web languages such as Hypertext Markup Language (HTML) and Cascading Style Sheet (CSS). Other web utilities will be explored including popular Content Management Systems (CMS).

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| **CLO**  Students will be able to: | **PLO** | | | | |  | **ILO** | | | | | |
| **PLO 1** | **PLO 2** | **PLO 3** | **PLO 4** | **PLO 5** |  | **ILO 1** | **ILO 2** | **ILO 3** | **ILO 4** | **ILO 5** | **ILO 6** |
| 1. Plan, design, and create a website completely by writing HyperText Markup Language (HTML) and Cascading Style  Sheet (CSS) codes. |  |  | **X** |  |  |  | **X** | **X** | **X** |  |  | **X** |
| 2. Plan, design, and create custom graphics  and images using Adobe Photoshop or other graphics editing software. |  |  | **X** |  |  |  | **X** | **X** | **X** |  |  | **X** |
| 3. Examine and demonstrate an understanding of various web design and networking terminologies and jargons. |  |  | **X** |  |  |  | **X** | **X** | **X** |  |  |  |

# IT 217 – Special Topics I Information Technology I

This course provides students with the opportunity to obtain knowledge and/or skills in emerging issues or specialized content that are outside the established Information and Technology Program curriculum.

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| **CLO**  Students will be able to: | **PLO** | | | | |  | **ILO** | | | | | |
| **PLO 1** | **PLO 2** | **PLO 3** | **PLO 4** | **PLO 5** |  | **ILO 1** | **ILO 2** | **ILO 3** | **ILO 4** | **ILO 5** | **ILO 6** |
| 1. Understand and apply the knowledge and/or skills in emerging issues or specialized content in the field of Information Technology. | **X** | **X** | **X** | **X** | **X** |  | **X** | **X** | **X** | **X** | **X** | **X** |

# IT 218 - Special Topics I Information Technology II

This course provides students with the opportunity to obtain knowledge and/or skills in emerging issues or specialized content that are outside the established Information and Technology Program curriculum.

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| **CLO**  Students will be able to: | **PLO** | | | | |  | **ILO** | | | | | |
| **PLO 1** | **PLO 2** | **PLO 3** | **PLO 4** | **PLO 5** |  | **ILO 1** | **ILO 2** | **ILO 3** | **ILO 4** | **ILO 5** | **ILO 6** |
| 1. Understand and apply the knowledge and/or skills in emerging issues or specialized content in the field of Information Technology. | **X** | **X** | **X** | **X** | **X** |  | **X** | **X** | **X** | **X** | **X** | **X** |

# IT 220 – Troubleshooting Microcomputer Systems

This course provides a broad overview of computer troubleshooting and maintenance. It emphasizes the use of diagnostic utilities to troubleshoot hardware and software problems as well as the importance of information backup, hardware and software maintenance, and safety. The primary objective of the course is to provide students with the opportunity to learn how to investigate, diagnose, and repair computer problems.

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| **CLO**  Students will be able to: | **PLO** | | | | |  | **ILO** | | | | | |
| **PLO 1** | **PLO 2** | **PLO 3** | **PLO 4** | **PLO 5** |  | **ILO 1** | **ILO 2** | **ILO 3** | **ILO 4** | **ILO 5** | **ILO 6** |
| 1. Identify different types of hardware and  their functions. |  |  |  | **X** |  |  | **X** | **X** | **X** |  |  |  |
| 2. Identify, diagnose, and fix computer  problems. |  |  |  | **X** |  |  | **X** | **X** | **X** |  |  | **X** |
| 3. Replace computer hardware. |  |  |  | **X** |  |  | **X** | **X** | **X** |  |  |  |
| 4. Examine and demonstrate an understanding of various troubleshooting terminologies and  jargons. |  |  |  | **X** |  |  | **X** | **X** | **X** |  |  |  |

# IT 222 - Instructor Directed Practicum

This course is designed to allow students to learn through active participation in organized services or projects that meet the needs of the community. The course is integrated into and enhances the academic curriculum. Unlike Internship, the Instructor Directed Practicum is entirely supervised by program instructors, therefore, encourages active student involvement in the learning process.

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| **CLO**  Students will be able to: | **PLO** | | | | |  | **ILO** | | | | | |
| **PLO 1** | **PLO 2** | **PLO 3** | **PLO 4** | **PLO 5** |  | **ILO 1** | **ILO 2** | **ILO 3** | **ILO 4** | **ILO 5** | **ILO 6** |
| 1. Demonstrate proper employee behaviors and work habits. | **X** | **X** | **X** | **X** | **X** |  | **X** | **X** | **X** | **X** | **X** | **X** |
| 2. Plan, design and develop IT related project(s) following processes, procedures, and guidelines learned in the information technology courses in the areas of Office Applications, Web Design, Database Design and Management, Computer Programming, Computer Networking, and/or Troubleshooting. | **X** | **X** | **X** | **X** | **X** |  | **X** | **X** | **X** | **X** | **X** | **X** |

# IT 223 – Internship

This course provides the student with practical training in information technology related fields. With the assistance of the instructor-coordinator, the student is assigned to work under a supervisor in a government department or a private business firm in order to learn through actual work experience.

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| **CLO**  Students will be able to: | **PLO** | | | | |  | **ILO** | | | | | |
| **PLO 1** | **PLO 2** | **PLO 3** | **PLO 4** | **PLO 5** |  | **ILO 1** | **ILO 2** | **ILO 3** | **ILO 4** | **ILO 5** | **ILO 6** |
| 1. Demonstrate proper employee  behaviors and work habits. | **X** | **X** | **X** | **X** | **X** |  | **X** | **X** | **X** | **X** | **X** | **X** |
| 2. Perform information technology tasks as  assigned by site supervisor. | **X** | **X** | **X** | **X** | **X** |  | **X** | **X** | **X** | **X** | **X** | **X** |