Higher Diploma in Computing and Information Technology

OVERVIEW

The Higher Diploma in Computing and Information Technology provides a comprehensive education, seamlessly integrating practical skills and theoretical knowledge. It balances hands-on expertise with academic proficiency through a diverse curriculum. Graduates gain a solid foundation, analytical problem-solving skills, and a practical management focus, along with applied knowledge. The program includes a 6-month Industry Attachment for real-world experience, enhancing students' professional outlook and problem-solving abilities.

PROGRAMME OBJECTIVES

The Higher Diploma in Computing and Information Technology provides students with a well-rounded education by integrating specialized and advanced studies from both Specialist and Advanced Diplomas. It focuses on equipping students with a deep understanding of this dynamic field, combining practical skills and theoretical knowledge through a comprehensive curriculum.

This program seamlessly merges Level 4 and Level 5 qualifications, ensuring students are well-prepared for the diverse Computing and Information Technology industry. It delves into theories and emerging technologies, empowering students to craft cutting-edge solutions. Students will possess a solid foundation, applied knowledge, and relevant competencies for various sectors. They will have honed essential skills for career success. The curriculum includes subjects like Applied Finance Management in Services, Information Retrieval, Artificial Intelligence, and Business Law, offering professional-level knowledge and skills.

Beyond the classroom, Industry Attachment (IA) plays a vital role, providing students with firsthand exposure to industry intricacies during a 6-month internship. This experience enhances their professional outlook and enables them to apply innovative problem-solving approaches to the complexities of the IT and Computing industry.

ASSESSMENT METHODS:

Combination of Coursework and Examination

NUMBER OF MODULES:

18

DURATION COMPONENTS

Classroom Training Hours: Approximately 36 Hours Per Module

PROGRAMME OUTCOMES:

Upon completion of the programme, the students will be able to:

- Attain a profound grasp of computation and computer technology to navigate and utilize these technologies effectively.
- Gain fluency in programming and system development, enabling innovative software design and creation.
- Cultivate strong analytical and problem-solving abilities to address complex challenges effectively.
- Enhance collaboration and communication skills for professional settings.
- Foster appreciation for emerging technologies, staying at the forefront of advancements.
- Develop skills for managing business information systems, aligning technology with organizational needs.
- Demonstrate effective interpersonal, research, and presentation skills for clear and professional communication.
- Acquire valuable work skills and hands-on training for successful careers or further studies in computing and information technology..

AWARDING BODIES:

Global School of Technology and Management

TOTAL CONTACT HOURS:

600

MODULE SYNOPSIS

SD401 Marketing for the Services Industry

This introductory module provides students with a comprehensive understanding of marketing and its significance in the services industry. It covers the fundamental principles of marketing and offers insights into its application within organisations. By the end of this module, students will possess the ability to elucidate marketing principles, assess external business environments, gather and analyse data, critically evaluate marketing strategies, communicate effectively using various business media, and demonstrate awareness of contemporary marketing issues. This module serves as a foundational stepping stone for students embarking on their marketing journey, equipping them with essential skills and knowledge for success in the field.

SD402 Financial Accounting in the Service Industry

This module will provide opportunities for students to learn basic accounting and finance. Students will acquire the necessary accounting skills and knowledge for recording accounting transactions and preparation of financial statements for organisations. This module aims to provide students who are not majoring in accounting or finance to understand the accounting process and to develop skills necessary to evaluate an organisation’s financial position. It is operating, investing and financing activities.

SD413 Foundation of Computing I

The module focuses on building fundamental skills in logic, discrete mathematics, and computation essential for computer science and engineering. Learning objectives include introducing students to logic, set theory, mathematical functions, and proof methods, highlighting abstraction's importance in computer science. Students will also gain proficiency in using a programming environment for mathematical modeling, calculations, graph plotting, and program creation. These objectives aim to provide students with vital skills for computer science and engineering.

SD414 Programming Fundamentals

This module focuses on teaching fundamental problem-solving techniques using a modern programming language, emphasising object-oriented programming and the development of programs from high-level design diagrams. The learning objectives encompass understanding the core concepts of object-oriented programming in Java, mastering basic data types and programming structures, conducting program testing through an integrated approach, and gaining practical experience in developing Java programs based on high-level design diagrams. Additionally, students will learn to apply Java effectively in various scenarios, utilising appropriate tools and libraries to create industrial-quality applications.

SD415 Web and Database Systems

This module primarily focuses on the core technologies of the World Wide Web (WWW) and Database systems, covering tools for creating feature-rich web applications using HTML, CSS, PHP, JavaScript, JSON/XML, and related technologies. Additionally, it introduces students to fundamental concepts of database management systems, integrating databases with front-end applications (e.g., web-based content management), and addressing web security concerns. Students will receive systematic instruction on web programming tools, frameworks, and development techniques, with hands-on experience developing small-scale web applications to understand the web application development process thoroughly. The module's learning objectives include gaining knowledge about internet systems, front-end and back-end web technologies, ER/EER data modeling, enhancing analytical skills through real-world data modeling, and grasping the concepts of relational databases and database management systems.

SD416 Data Structures and Algorithms

This module delves into fundamental problem-solving techniques encompassing procedural abstraction, data abstraction, data structures, and various algorithmic approaches. The learning objectives include gaining insight into Abstract Data Types (ADTs) like lists, stacks, queues, trees, and graphs, and their practical applications, establishing a universal method for quantifying algorithm efficiency independent of computing systems or languages, comprehending diverse problem-solving strategies such as recursion, divide-and-conquer, and backtracking, exploring different sorting and searching algorithms, analysing algorithm performance, and applying ADTs and algorithms to address real-world problems.

SD417 Foundations of Computing II

This module delves into the theoretical foundations of computing, covering essential concepts such as differentiation and integration of functions, matrix manipulation for solving linear equations, and providing a basic introduction to statistics. The learning objectives include understanding the relevance of mathematical functions and their applications in the discipline, demonstrating proficiency in differentiating and integrating functions, showcasing the use of matrix manipulations to solve linear equations, and explaining how statistics can be applied for data summarisation and interpretation.

SD418 Software Engineering

This module centers on software engineering concepts and principles, encompassing the software development lifecycle, including requirements gathering, design, implementation, and testing. It also introduces practical tools, techniques, and methodologies for software engineering. Throughout the module, students will apply software engineering methods and consolidate their Java programming skills. The learning objective is to provide an understanding of software engineering and the system development lifecycle while demonstrating the practical application of software engineering principles and best practices in real software development scenarios.

AD501 Applied Financial Management in Services

This module provides students with a comprehensive understanding of finance and accounting in the services industry. Students acquire the necessary skills to ensure sustainable profits for various stakeholders. Topics covered include management accounting, costing, budgeting, corporate finance, and investment principles. The learning objectives include grasping fundamental finance and accounting concepts crucial for effective decision-making, identifying optimal investment opportunities, evaluating financial needs, analysing firm performance, and mastering the use of cost and management data for planning, decision-making, and control

AD521 Further Programming Paradigms

This module delves into three distinct programming paradigms, exploring both the theoretical foundations and practical applications of these approaches. The paradigms covered include Object-Oriented Design, Functional Programming, and Logic Programming. Learning objectives encompass grasping the principles of object-oriented methodology, software design, and implementation, as well as gaining an understanding of functional and logic programming. Students will apply these methodologies to effectively implement algorithms and programs across various contexts.

AD522 Information Retrieval

This module offers a comprehensive exploration of information retrieval, encompassing the acquisition, representation, storage, organization, and retrieval of unstructured or loosely structured data. It spans diverse data types, including text, image, video, and audio, sourced from the web and other platforms. Students will gain proficiency in fundamental techniques and strategies employed in information retrieval, relevant to applications like web-search engines, document-matching systems, and business storage and analytics. Learning objectives include comprehending information retrieval models such as the Boolean retrieval model, Vector space model, Latent semantic indexing, XML, and Image retrieval model, as well as understanding various evaluation methods for these models and data representation techniques for storage and application usage.

AD523 Web Applications Design and Development

This module centers on cutting-edge technologies for crafting interactive web applications, furnishing students with the requisite knowledge and skills for constructing dynamic web-based systems. Learning objectives encompass grasping the foundational principles of web application development, comprehending diverse technologies underpinning client-server systems and interactive web applications, adeptly designing and implementing functional web applications and online business solutions, adhering to standards-based web application design, and surveying contemporary technologies like distributed client/server computing paradigms, middleware architecture, web-based client/server computing technologies, XML, wireless communication, and intelligent Internet computing.

AD524 Artificial Intelligence

Artificial intelligence (AI) encompasses a wide range of computer software capable of emulating human-like activities, such as learning, planning, and problem-solving, leading to its rapid evolution as one of the most dynamic fields in computer science with profound impacts on our daily lives. Several mature AI techniques, including KIBO, Machine Learning, Robot Cleaning Machines, and Home Robots, have made their mark in the market. This module is instrumental in providing students with a foundational understanding of AI principles and methods, enabling them to choose the appropriate tools for system development. Motivated by applications like intelligent robots, autonomous vehicle navigation, object recognition, medical diagnosis, and language communication, it equips students with essential knowledge in building intelligent computer systems. The learning objectives encompass comprehending fundamental principles and technologies of intelligent computer systems, delineating the essential elements for future robots and intelligent machines, elucidating algorithms crucial for AI, and developing and implementing rudimentary computer vision and machine learning techniques.

AD525 Busines Law and Ethics

This module delves into e-business and information technology law, offering students a comprehensive understanding of the evolving legal framework and its developments. As businesses increasingly adopt information technology to enhance competitiveness, this module explores how traditional business law is adapted to address emerging challenges in the digital landscape. Students gain insights into the intricate relationship between business, ethics, and technology law, as well as the profound impact of technological advancements on the legal landscape. Real-world examples and case studies provide context, bridging theory and practice and enabling students to grasp the legal intricacies of contemporary businesses and technology. The module's learning objectives encompass understanding the Legal System in Business and Information Technology, elucidating contract, employment, agency, partnership, and tort law foundations, identifying key issues arising from technological advancements in e-business and business transactions and proposing resolutions, and equipping students to manage legal risks, formulate ethical strategies, and create value within the e-business context.

AD526 Computing Networking

This module serves as an introduction to the fundamental concepts spanning all levels of computer networking, with a specific focus on routing algorithms and network sensing implementation. Abundant real-world examples from the Internet are employed to illustrate abstract ideas, enabling students to gain a comprehensive understanding of computer network operations. The learning objectives encompass comprehending the interconnection of computers through diverse networking components, elucidating the challenges tied to implementing sensing and testing criteria, grasping how software protocols facilitate network access from higher-level applications, mastering network sensing and parameter assessment, and designing efficient computer networking solutions while weighing the associated advantages and disadvantages.

AD527 Software Engineering Project

The Software Engineering Project delves into the software development lifecycle through collaborative team efforts in designing and delivering a software system while substantiating the adherence to pertinent Government and industry standards through robust processes. The learning objectives encompass introducing students to project management concepts and their application in designing software systems that align with specifications, utilizing both existing and newfound knowledge, particularly in programming and software engineering, to execute software system delivery, independently conducting research and technology selection, comprehending the implementation and evaluation phases before ultimate user delivery, and conducting critical reflections on best practices, regulations, standards, and procedures relevant to specific software projects.

ADIA508 Industry Attachment

As an integral component of the Higher Diploma in Computing and Information Technology, Industrial Attachment plays a vital role in students' development. This program requires students to complete a 24-week/6-month attachment in a related industry as part of their curriculum, facilitating experiential learning outside the classroom. GSTM actively manages and supports the arrangement of these attachments, ensuring valuable real-world experiences for all students. The Industrial Attachment offers students a unique opportunity to bridge the gap between theory and practice, enriching their academic and career prospects. This immersive experience provides students with job training and real-world exposure, enhancing their decision-making, interpersonal, and communication skills. It offers a holistic education beyond academics, aiding students in refining their career paths. Additionally, it fosters teamwork and cross-cultural communication skills, enabling students to adapt quickly to the workplace upon graduating from GSTM.

ADIP509 Industry Project

In cases where students are unable to secure an industrial attachment, the Industry Project becomes an essential component. This individual project spans two months and comprises a 5000-word report. The project's topic must align with business organisation and management, receiving prior approval from the school. Within a maximum of two months from approval, students embark on this project, which serves as a platform to integrate their academic knowledge into practical, real-world scenarios. Ideally, the project revolves around identified management issues or opportunities within an organisation. Students actively engage in developing, managing, and attaining the objectives of this business management project. They apply a diverse range of theories, topics, and knowledge acquired during their studies to address real-case scenarios. This approach encourages a comprehensive exploration of managerial aspects within a corporate project, allowing students to apply multiple theories and topics they've learned throughout their academic journey.