Description of Courses offered by the
Department of Computer Information Systems .2019/2020

11021101　　**General Physics (1)**　　　　**(Prerequisite: - none)**　　**(3) Cr. Hrs**

Vectors, Basics of Mechanics Description of Motion in one Dimension, Motion in two Dimensions, Applications of Newton's Laws, Work Energy Theorem, Collisions and Rotational Motion

11031101　　**Calculus (1)**　　　　**(Prerequisite:- none)**　　**(3) Cr. Hrs**

Functions and Limits, Continuous functions, derivative, differentiation rules, implicit differentiation, applications integrals, definite integrals, transcendental functions, inverse trigonometric functions.

06051110　　**Programming Methodology**　　**(Prerequisite: - none)**　　**(3) Cr. Hrs**

Problem-solving concepts: constants and variables, data types, problem-solving steps, expressions, problem solving tools, algorithms, flowcharts, pseudo-code, programming logic structures (sequential, decision, and loops), Arrays.

06051200　　**Discrete Mathematics**　　**(Prerequisite: - none)**　　**(3) Cr. Hrs**

Introduction to discrete structures and computing techniques concerning sets, graphs and trees, functions, relation properties, recursive definitions, solving recurrences, equivalence, partial order, proof techniques, inductive proof counting techniques and discrete probability

06051220　　**Logic Design**　　　　**(Prerequisite: -** 11021101)　　**(3) Cr. Hrs**

Fundamental concepts of numbering systems, computer codes. Boolean algebra and logic gates. Simplification of Boolean functions, Karnaugh map, combinational logic implementation including PLAs, (adders, comparators, coders, decoders, code converters, multiplexers, de-multiplexers). Sequential circuits, flip flops, counters, shift registers, memories

06051211　　**Programming Fundamentals**　　**(Prerequisite: -** 06051110)　　**(3) Cr. Hrs**

Fundamental concepts of programming using C++ or Java: classes and objects, modeling object (attributes and behaviors), algorithms, problem solving flowcharts, pseudo codes. Basic blocks of programming such as variable names, data types, control structures, functions, arrays.

06032102　　**Data Structures**　　　　**(Prerequisite: -** 06051211)　　**(3) Cr. Hrs**

Introduction to problem solving, Data Structures (static & dynamic), lists, stacks, queues, graphs, trees, sets and dictionaries). Recursion and iteration. Students are expected to do lab experiments using C# or Java.

06012232   **Information Systems Analysis & Design (Prerequisite:-**06032112**) (3) Cr. Hrs**

System Theory, information systems and information systems types, system analysis and design methods, object oriented system analysis and design methods. Study cases.

06032112   **Object Oriented Paradigm**   **(Prerequisite: -** 06051211**)**   **(3) Cr. Hrs**

Introduction to OOP, models, objects, methods, links, message passing, polymorphism, dynamic binding, classes constructors and destructors, association, generalization and specialization, inheritance, overridden methods, aggregation. Students are required to perform some lab experiments using the latest JAVA or C# language version and UML using Rational Rose software.

06012201   **Algorithmic**   **(Prerequisite: -** 06032102**)**   **(3) Cr. Hrs**

Introduction to the design and analysis of algorithms, mathematical algorithms. Greedy technique, manipulating data: sorting, searching, dynamic programming, space & time tradeoffs. The concept of algorithm efficiency, table, and information retrieval. Combinatorial problems, advancement in Java skills and techniques.

06032122   **Computer Architecture**   **(Prerequisite: -**06051220**)**   **(3) Cr. Hrs**

Hardware components of a modern computer system, history and performance, the instruction cycle, memory organization, cache memory, I/O organization, CPU, micro-programmed control, instruction formats and modes

06033113   **Visual Programming**   **(Prerequisite: -** 06032112**)**   **(3) Cr. Hrs**

Basic Visual Programming, solid foundation of the syntax and semantics of a visual Programming language used to develop both windows-based and web-based application. Coverage of Microsoft's. NET platform architecture.

06013214   **Web Design (1)**   **(Prerequisite: -** 06032112**)**   **(3) Cr. Hrs**

Basic concepts of the Internet and Internet browsers, Internet applications, web page creation tools and languages. Basic XHTML (frames, forms), cascading style sheets, scripting and scripting languages. Dynamic XHTML (object based programming and events). Students are required to do a Mini- project.

06013130   **Databases**   **(Prerequisite: -** 06012201**)**   **(3) Cr. Hrs**

An in-depth examination of relational databases, modern database technologies, conceptual design and entity relationship modeling, relational algebra and calculus, data definition and manipulation languages using SQL, schema and view management, query processing and optimization, transaction management, security, privacy, integrity, and management. Students are required to do project work.

06014115   **Web Design (2)**   **(Prerequisite: -**06013214**)**   **(3) Cr. Hrs**

This unit introduces students to design, development and implementation of server side applications, the use of multimedia and human interaction on the browser side. Students gain practical experience creating dynamic web applications that interact with a database using client side scripts, server side scripts and compiled server programs. Security, access right, financial transactions and legal issues are also covered. This unit incorporates substantial practical experience in applying theoretical concepts. Students are required to submit mini project.

06013153   **Networks Management**   **(Prerequisite: -**06082140**)**   **(3) Cr. Hrs**

Introduction to multimedia system, definition, project, multimedia types. Media types (text, graphics, sound, image, and video). Media files, multimedia programming and application. Students are required to submit multimedia mini project.

06013251   **Data Warehouse**   **(Prerequisite: -**06013130**)**   **(3) Cr. Hrs**

Data warehousing, business intelligence architecture, planning, designing, building, and populating data warehouse and business intelligence system. Business requirement analysis, dimensional modeling, physical design, extraction-transformation-load design and development, analysis service online analytical processing database, data mining, business intelligence applications

06014152   **Data Mining**   **(Prerequisite: -**06013251**)**   **(3) Cr. Hrs**

Introduction to data mining techniques,   including data preprocessing, data mining primitives, association rules, decision trees, cluster analysis, classification and machine learning (Neural networks, fuzzy logic, and genetic algorithms), Data visualization, and data warehousing.

06014157   **Electronic Transactions**   **(Prerequisite: -**06013214**)**   **(3) Cr. Hrs**

This Unit is aimed at providing the students with the basic concepts and strategies of electronic commerce and electronic government, as well as current applications, opportunities, threats, and social implications. The unit is specifically focused on delivering material to address issues in current technologies and trends enabling e-commerce and e-government. It also covers security and legal issues. And discuss the future of e-commerce and e-government.

06014155   **Distributed Systems**   **(Prerequisite: -**06013130**)**   **(3) Cr. Hrs**

Characterization of distributed systems, system models, network and internetworking. Intercrosses communication, distributed objects and remote invocation, operating system support, distributed file systems. Name services, peer-to peer systems, time and global states, coordination and agreement, concurrency control, replication, CORBA.

06014170   Decision Support Systems   (Prerequisite: -06014254**)   (3) Cr. Hrs**

Introduction to decision making, how to make them better.   Kinds of decisions, risky and competitive decisions. Considering the bounded rationality, puzzles, emotions and memory in decision making. Exercises: Rational analysis, applying some cognitive problems

06043256   Networks Security (Prerequisite: - 06042150**)   (3) Cr. Hrs**

Introduction to network security; network security requirements, security policy; cryptography and its applications to network security; network security threats; applications of cryptography; secret key and public key cryptographic algorithms; hash functions; authentication; security for electronic mail; Firewalls and intrusion detection techniques; building secure channels; hardening network systems and potential threats to network systems.

06014190   Practical Training – CIS   (Prerequisite: - Pass 90 Cr.hr.**)   (3) Cr. Hrs**

Practical training in the public or private sector for at least 8 weeks

06013256   Smart Phone Programming   (Prerequisite: - 06033113**)   (3) Cr. Hrs**

The smart phone programming course allows students to learn the fundamentals of programming for smart phones. It covers various concepts related to layouts, widgets event handling, processing JSON files, using MySQL database with php service. The course allows students to be familiar with a mainstream of today's technology

06043162   Networks & Severs Programming (Prerequisite: -06082140**)   (3) Cr. Hrs**

Introduction to networks programming advanced JAVA (covers I/O Routines, Threading Sockets, URL connections, Server-Side programming), database connectivity, distributed programming, and network security, Students are required to do lab. Assignment.

06082140   Computer Networks   (Prerequisite: - 06051220**)   (3) Cr. Hrs**

Logical and physical of computer networks, architecture and transmission alternatives. OSI-reference model, ALOHA protocol, CSMA protocols, LAN, IEEE standards and protocols (token ring, token bus and Ethernet), physical layer basics, data link layer, framing protocols, error detecting and correcting, routing algorithms, flow control, congestion control algorithms, personal computer networks.

06042150   **Information Security**   **(Prerequisite: -** 11031230**)**   **(3) Cr. Hrs**

Information security basics, basic cryptography, modern symmetric ciphers, public key cryptosystems, key management, message authentication, hash functions, digital signatures, IP and web security, firewalls and trusted systems, secured software design, application security software threats, social, legal, and ethical issues. Human factors in security.

06014191   **Graduation Project -CIS**   **(Prerequisite:-**Pass 90 Cr.hr.**)**   **(3) Cr. Hrs**

Student picks one of the projects posted by the department as part of requirements of graduation.

06013176   **Artificial intelligence**   **(Prerequisite: -**06012201**)**   **(3) Cr. Hrs**

Introduction to artificial Intelligence, symbolic reasoning and knowledge representation techniques, control strategies, heuristic search, and AI applications (expert systems, neural language processing, robotics…etc.). Introduction to neural networks, genetic algorithm and machine learning.

06034259   **Software Projects Management (Prerequisite: -**06032250**)**

Management activities, Project Planning and scheduling, Risk Management, Managing People, Software Cost Estimation, Quality Management, Software Measurement and Metrics, Process Improvement, Configuration Management.

06032250   **Software Engineering Fundamental (Prerequisite: -** 06032112**)**   **(3) Cr. Hrs**

This course provides an overview of engineering as a discipline; the course introduces student to the fundamental principles, models and methodologies of a software engineering. It covers basic knowledge about software processes. It provides minimum prerequisite knowledge for more detailed and specialized study of software engineering. Students gain experience, via a team project, about life-cycle development of software systems.

06013231   **Database Management Systems**   **(Prerequisite: -** 06013130**)**   **(3) Cr. Hrs**

Application development, integrated application, XML standards distributed database processing and view support. Data protection problems, recovery, concurrency, security and data integrity. Database administration and tuning, all practical applications shall be implemented in ORACLE.

06014254   **Information Retrieval Systems**   **(Prerequisite: -** 06013130**)**   **(3) Cr. Hrs**

Consideration of the basic principles and tools for analysis and retrieval of information in various information systems (textual and Database systems). Topics include differences between data retrieval and information retrieval, retrieval concepts, types of retrieval systems, web search architectural, tokenization, and query operations.

06033274   **Human Computer Interaction**   (**Prerequisite: -** 06033113)   **(3) Cr. Hrs**

Tools and techniques for designing, implementation, deploying and evaluation of user interfaces. Interactive systems; dialogue styles, theories of interaction and component integration, human-computer interaction frameworks.

06043273   **Advanced Programming**   (**Prerequisite: -** 06033113)   **(3) Cr. Hrs**

Advanced features of the language such as handling exceptions, Files and Database connectivity. Other major topics in this course include network programming serialization, properties, multithreading, and security.

06013175   **Simulation and Modeling**   (**Prerequisite: -** 11031230)   **(3) Cr. Hrs**

This course is an introduction to computer simulation for the modeling and analysis of complex real – world systems. Topics include review of the theory, model design and development, comparison to analytical models, input data preparation, random number generation, output statistical analysis, and model validation.

06022173   **Multimedia Systems**   (**Prerequisite: -** None)   **(3) Cr. Hrs**

Introduction to the study and creation of multimedia, using various software programs. Students will learn both the aesthetic and technical aspects of multimedia design and production. Students will be introduced to Web production and the business process behind multimedia, working in teams to produce a Web-based product for real business clients. Students will use software programs such as Macromedia Dreamweaver, Flash, Director, and Adobe Photoshop.

06014171   **Special Topics (1)**   (**Prerequisite: -** Dept. Approval)   **(3) Cr. Hrs**

To be set by the department.

06014272   **Special Topics (2)**   (**Prerequisite: -** Dept. Approval)   **(3) Cr. Hrs**

To be set by the department.

11031230   **Statistics and Probabilities**   (**Prerequisite: -** 11031101)   **(3) Cr. Hrs**

Definitions and basic elements of probability, Rules of probability, Random Variables: Discrete and continuous random variables and their probability distribution functions, the mathematical expectation. Some discrete and continues distributions: Binomal, Poisson, geometric, Hyper geometric and Normal Distributions. Point and interval estimation of the parameters of one and two populations. Tests of hypotheses concerning the above parameters, and Goodness of fit and independence tests. Simple linear Regression and inference concerning its parameters multiple linear regression: Description and estimate using matrices.

06052253   **Numerical Analysis**   **(Prerequisite: -** 11031101**)**   **(3) Cr. Hrs**

The error calculation, roots of nonlinear equations, use of numerical methods to solve systems of linear equations, approximation Functions, Find derivatives, find the values of numerical integrals by numerical methods, the use of numerical methods to solve differential equations