



**جامعة اليرموك**  
**Yarmouk University**  
**كلية تكنولوجيا المعلومات وعلوم الحاسوب**  
**Faculty of Information Technology and**  
**Computer Sciences**



<b>Document Code</b>	<b>Courses Description</b>	<b>Document Approval Date</b>
AP01-PR06		

<b>Department: Information Systems</b>	<b>Program: Computer Information Systems</b>	<b>Official Stamp:</b>
The courses description was approved by the decision of the Department's Council no. .... on ....		

<b>Course Name:</b> Introduction to Information System	<b>Course Code and Number:</b> CIS101	<b>Number of Credit Hours:</b> 3
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**Teaching Language:** English

**Pre-requisite:**

<b>Course Description</b>	The main objective of this course is to provide students with the main concepts of information and communications technologies, Information Systems, and their applications. The course covers a range of topics including: data processing technologies, telecommunications and network technologies, social and global issues of IT, future trends, numbering systems, Problem solving techniques, Data, Information, and system concepts, information requirements in modern organizations and businesses, introducing different types of information systems, exploring the systems development life cycle, developing information systems methods, managing information systems resources, knowledge management, quality and evaluation of information systems, ethical and security issues of information systems.
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<b>Course Name:</b> Visual programming	<b>Course Code and Number:</b> CIS214	<b>Number of Credit Hours:</b> 3
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**Teaching Language:** English

**Pre-requisite:** CIS 101 and CS 210

<b>Course Description</b>	The main objective of this course is to provide students with the basic principles and technical aspects needed to design and build interfaces for different software. This course covers a range of topics including: types of graphical user interface (GUI), basic principles of event-driven programming, basic controlling elements for visual programming (windows, menus, frames, message boxes, buttons, menus and I / O boxes)operating systems support for graphical user interface, user requirements, graphical user interfaces, elements of graphical user interfaces, interact with the user interface, models and methods of design and testing graphical user interface, design and program graphical user interfaces (GUI), programming graphical user interfaces for database applications and internet applications. The practical aspect of this course involves students in developing an integrated project using a visual
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programming language such as C# to apply the concepts covered in the course.

<b>Course Name:</b> Human Computer Interaction	<b>Course Code and Number:</b> CIS227	<b>Number of Credit Hours:</b> 3
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**Teaching Language:** English

**Pre-requisite:** CS 210L

<b>Course Description</b>	This course aims to provide students with the concepts and knowledge of interaction between humans and computers with focus on presentation of data and designing suitable interfaces for the user. It covers a range of topics including: basic concepts, human information processing (cognition, perception, movement, culture, communication, human diversity, motivation for computer interaction, human performance models, etc.), user interface design principles, information presentation, visual, auditory and tactile displays, speech communication, data entry, control, tools and feedback, human factors in computer programming, workspace design, environmental and legal considerations.
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<b>Course Name:</b> Introduction to Software Engineering	<b>Course Code and Number:</b> CIS240	<b>Number of Credit Hours:</b> 3
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**Teaching Language:** English

**Pre-requisite:** CS 210 and CIS 101

<b>Course Description</b>	This course introduces the students with the basic concepts of software engineering. Topics covered including: definition and importance of software engineering, software quality features and challenges, the software development life cycle project according to the traditional sequence methodologies in there phases and the modern methodologies, modeling the systems procedures of different types and levels of detail, analysis and engineering of user needs and access to the specifications of the new software system Architectural design of the software system and its characteristics, design of interfaces, data and modules, software testing, and reuse.
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<b>Course Name:</b> Software Documentation	<b>Course Code and Number:</b> CIS241	<b>Number of Credit Hours:</b> 3
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**Teaching Language:** English

**Pre-requisite:** CIS 240

<b>Course Description</b>	This course aims to provide students with an overview of the writing methods and practices used by software engineers to create program documentations. The course covers a wide range
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	of topics, including: software process documentation, programmer documentation, and system testing documentation, types of documentations over the internet, user documentations, types of user manual, and types of system documentations
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<b>Course Name:</b> Files Structures	<b>Course Code and Number:</b> CIS256	<b>Number of Credit Hours:</b>
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**Teaching Language:**

**Pre-requisite:** CS 250

<b>Course Description</b>	This course aims to provide students with the main principles that are needed to understand and deal with different kinds of files, their structures, and techniques. It covers a range of topics including: file concepts and principles, basic file operations, file organization and compression techniques, external sorting techniques, searching techniques, sequential file structures, hashing and direct organization structures, indexed structures, list file structures (inverted, multi-key, etc.), tree structures (B trees, B+ trees,... etc.). The practical part for this course is covered through exercises and writing programs using one of the programming languages.
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<b>Course Name:</b> Database Systems	<b>Course Code and Number:</b> CIS260	<b>Number of Credit Hours:</b> 3
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**Teaching Language:** English

**Pre-requisite:** CIS101 and CS 210

<b>Course Description</b>	This course aims to provide students with the basics of databases, how to create and deal with them, and their theoretical and mathematical foundations. Topics covered by the course include: basic principles and concepts, database architecture, database users, relational algebra, the relational data model, basics of the query language (SQL), the normalization process, dependencies between relation's attributes, object-oriented database approach. This course has a practical side part that focuses on teaching students how to use a special tool for the design and creation of databases.
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<b>Course Name:</b> Database Systems Lab	<b>Course Code and Number:</b> CIS260L	<b>Number of Credit Hours:</b> 1
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**Teaching Language:** English

**Pre-requisite:** CIS260

<b>Course Description</b>	This course aims to provide students with a range of practical skills related to the contents of the Database Systems course (CIS 260). The course covers a
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	<p>wide range of topics, including: using one of the available design tools such as (ERWin or DBDesigner 4 ... etc) for database design, using SQL to create, manipulate and query databases using one of the available query tools such as (Oracle-SQL* Plus, and MySQL), practical introduction to database programming languages such (Oracle-PL / SQL), practical introduction to the techniques used for linking databases using JDBC or ODBC. The course includes exercises and practical examples that fit the topics covered by CIS 260 course.</p>
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<b>Course Name:</b> Database Management System	<b>Course Code and Number:</b> CIS265	<b>Number of Credit Hours:</b> 3
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**Teaching Language: English**

**Pre-requisite:**CIS260

<b>Course Description</b>	<p>This course aims to provide students with the intensive and deep knowledge of database system concepts. The course covers a wide range of topics, including: advanced data modeling and design tools and techniques, the normalization process, queries process and optimization, database recovery, database maintenance, transaction processing, synchronization management, database security, basic and advanced normalization models, database manager role. This course has a practical aspect that focuses on teaching the student how to apply the course topics using one of the database management systems.</p>
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<b>Course Name:</b> : Object Oriented Analysis and Design	<b>Course Code and Number:</b> CIS340	<b>Number of Credit Hours:</b> 3
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**Teaching Language: English**

**Pre-requisite:**240

<b>Course Description</b>	<p>The main objective of this course is to provide students with basic concepts, knowledge, and necessary skills in analysis and design of object-oriented systems with emphasis on the models offered by the Unified Modeling Language (UML) and the system life cycle using the Rational Unified Process (RUP). It covers a range of topics including: Object-oriented design concepts, foundations and elements of the object-oriented model, classes and objects, relationships among classes, relationships among objects, approaches to identifying classes and objects, object-oriented design and modeling methodologies using UML (class and object diagrams, interaction diagrams, state transition diagrams, component diagrams, deployment diagrams, etc.), the object-oriented software development process (analysis, design and implementation as presented in the RUP), CASE tools. This course is supplemented by a practical component covered in CIS340L (concurrently).</p>
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<b>Course Name:</b> Object Oriented Analysis and Design Lab	<b>Course Code and Number:</b> CIS340L	<b>Number of Credit Hours:</b> 1
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**Teaching Language:** English

**Pre-requisite:**340

<b>Course Description</b>	This course aims to provide the students with a set of skills needed to analyze and design object-oriented software systems using appropriate analysis and design CASE tools (such as Rational Rose). The course includes exercises and practical case studies to suit the topics covered in the object analysis and design course CIS340
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<b>Course Name:</b> System Analysis and Design	<b>Course Code and Number:</b> CIS342	<b>Number of Credit Hours:</b> 3
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**Teaching Language:** English

**Pre-requisite:** CS 240 and CIS 260

<b>Course Description</b>	The main objective of this course is to provide students with the fundamental methods, and basic methodologies used in systems development to understand the role of system analyst in the fields of information systems. The course covers a wide range of topics, including: feasibility analysis, design and alternatives strategies, prototypes, principles of user interface design, rapid application development and computer-based design tools. The system development life cycle phases (planning, analysis, design, implementation and operations). This course has a practical aspect that focuses on teaching the student how to use advanced software tools and utilities.
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<b>Course Name:</b> Developing Database Applications	<b>Course Code and Number:</b> CIS360	<b>Number of Credit Hours:</b> 3
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**Teaching Language:** English

**Pre-requisite:** CIS260

<b>Course Description</b>	The main objective of this course is to provide students with the characteristics of Database development languages, and how to use them to build Database Applications and Information Systems. The course covers a wide range of topics, including: Programming languages vs. Database Development Languages, software engineering life cycle, features of Database Development Languages (data dictionary, interactive nonprocedural queries, report generator, screen formatter, data analysis and modeling tools, macros,
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	reusable code, backup and recovery, security and privacy procedures, links to other DBMS, links to High Level languages, records and file maintenance, etc), system portability, application and program generators, examples of Database development languages like Oracle, SQL/Server, Ingress, as well as others. This course is supplemented by a practical component covered in Database Laboratory.
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<b>Course Name:</b> Data Warehousing	<b>Course Code and Number:</b> CIS367	<b>Number of Credit Hours:</b> 3
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**Teaching Language:** English

**Pre-requisite:** CIS260

<b>Course Description</b>	This Course aims to introduce the students to data warehouse basics and concepts. The course covers a wide range of topics, including: data modeling, datawarehouse design and datawarehouse access, data extraction, cleansing, transformation and loading, data cube computation, materialized view selection, OLAP query processing, star and snowflake schemes, ETL, fact tables, Multidimensional data warehouses, and Issues in data warehouses such as: planning, design, and implementation. The practical part of this course requires using a suitable language or tool (such as ORACLE) to cover the different concepts of data warehouses.
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<b>Course Name:</b> Intelligent Systems and Internet of Things	<b>Course Code and Number:</b> CIS370	<b>Number of Credit Hours:</b> 3
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**Teaching Language:** English

**Pre-requisite:** CS210 and CS 332

<b>Course Description</b>	This Course aims to provide the students with the basic concepts of intelligent systems, models and techniques for building them and a comprehensive understanding of the Internet of Things. The course covers a wide range of topics, including: Introduction to the concepts of embedded systems and intelligent systems, sensor technologies, data transmission in smart systems, data processing, introduction and the fundamental concepts that support IoT, IoT protocols, IoT architecture, IoT applications and systems that support IoT, tools and components to build intelligent systems by using IoT concepts. The practical part of this course includes case studies and will integrate the acquired technologies to build intelligent systems for different applications systems such as smart cities, smart homes, smart health systems, security systems, and robots. The course should have an applicably project to build an
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	intelligent system for specific field.
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<b>Course Name:</b> Information System Applications	<b>Course Code and Number:</b> CIS380	<b>Number of Credit Hours:</b> 3
<b>Teaching Language:</b> English		
<b>Pre-requisite:</b> CIS360		
<b>Course Description</b>	<p>This Course aims to introduce the students on how to build and construct different applications for any information system fields. The course covers a wide range of topics, including: analysis and design processes, and to implement the system with its different interfaces that fit the information system. In case of the availability of specific tools or applications, the student would be trained on these tools and applications. The field of information system will be determined by the CIS department board. The selection of the field will be mainly based on the market need. This course has a practical part at which several tools will be used in constructing information system applications.</p>	

<b>Course Name:</b> Cloud Computing	<b>Course Code and Number:</b> CIS382	<b>Number of Credit Hours:</b> 3
<b>Teaching Language:</b> English		
<b>Pre-requisite:</b> CIS260 and CS 332		
<b>Course Description</b>	<p>This Course aims to introduce the students to the general structure of cloud computing. The course covers a wide range of topics, including: cloud computing applications and infrastructure, widely used distributed systems that makes up cloud infrastructure, cloud systems, cloud computing infrastructure delivery models: software as a service (SaaS), platform as a service (PaaS), and infrastructure as a service (IaaS ), Cloud Types: General, Private, Mixed, Default. This is followed by a much deeper review of security and privacy issues related to cloud computing environments. A variety of real-world situations and tools will be identified and studied in order to provide students with a comprehensive view of cloud computing applications.</p>	

<b>Course Name:</b> Software Testing and Validation	<b>Course Code and Number:</b> CIS440	<b>Number of Credit Hours:</b> 3
<b>Teaching Language:</b> English		



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<b>Pre-requisite: CIS340L</b>	
<b>Course Description</b>	This Course aims to provide the students with the essential knowledge of software testing. The course covers a wide range of topics, including: test terminology, different types of testing performed at each phase of the software life cycle, and the main challenges involved in these types of testing. The course will discuss how to derive test cases from requirements, specifications or source code, and introduce appropriate testing tools to be used and applied in a number of exercises.

<b>Course Name: Software Quality Assurance</b>	<b>Course Code and Number: CIS441</b>	<b>Number of Credit Hours:3</b>
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**Teaching Language: English**

**Pre-requisite: CIS440**

<b>Course Description</b>	This Course aims to provide the students with a wide range of topics related to Software Quality Assurance (SQA). Topics covered: SQA activities performed by external participants; SQA extended activities to include and cover project scheduling and budget controlling, SQA implementation issues, SQA risk management considerations, SQA associated costs, quality inspection and verification techniques.
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<b>Course Name: Information Retrieval Systems</b>	<b>Course Code and Number: CIS464</b>	<b>Number of Credit Hours:3</b>
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**Teaching Language: English**

**Pre-requisite: CIS260**

<b>Course Description</b>	The main objective of this course is to provide students with the basic concepts of information retrieval systems, their types, and different techniques in storing, manipulating and retrieving data. It covers a range of topics including: Functional view of information retrieval, types of IRS, design issues of IRS (keyword-based retrieval, file structures, thesaurus construction, etc.), IR data structures and algorithms (lexical analysis, stemming, term weighting, associative indexing, Boolean operations, string searching and matching techniques, etc.), relevance feedback and query modification, applications and case studies. The practical part includes applications and exercises that suit the concepts and techniques covered in this course.
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<b>Course Name: Data Mining</b>	<b>Course Code and Number: CIS467A</b>	<b>Number of Credit Hours:3</b>
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**Teaching Language: English**

**Pre-requisite:260**

<b>Course Description</b>	<p>The main objective of this course is to provide students with the basic concepts, methods, and new techniques of extracting knowledge from data. It covers a range of topics including: Knowledge discovery fundamentals, data mining concepts and functions, data pre-processing, data reduction, mining association rules in large databases, classification and prediction techniques, cluster analysis algorithms, data visualization, mining complex types of data (text mining, multimedia mining, Web mining), data mining applications and new trends. The practical part includes applications and exercises using a data mining tools.</p>
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<b>Course Name: Data Mining Lab</b>	<b>Course Code and Number: CIS467L</b>	<b>Number of Credit Hours:1</b>
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**Teaching Language: English**

**Pre-requisite: CIS 467A (or with)**

<b>Course Description</b>	<p>This course aims to provide students with practical skills to apply various tasks in the data mining science. The course covers the practical skills of data exploration and modeling, data modeling and evaluation. The course also covers the methods, algorithms and assessments required for the following topics: descriptive data analysis, data cleaning, data conversion and normalization, extraction of properties, decision tree, Naïve Bayes, KNN, SVM, K-Means, data collection and imaging. Practical skills will be provided to the student through an appropriate programming languages or spatial data analysis software.</p>
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<b>Course Name: Big Data Management</b>	<b>Course Code and Number: CIS468</b>	<b>Number of Credit Hours:3</b>
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**Teaching Language: English**

**Pre-requisite: CIS 467A and CIS 360**

<b>Course Description</b>	<p>This course introduces students to the fundamental concepts of the techniques used for big data storage, analysis, and management. This course concentrates on dealing with horizontal databases and map reduction in order to write</p>
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	<p>efficient algorithms to manipulate large data. This course also covers concepts of different big data applications in several fields such as medical data and social networks data analysis. Another topics covered are: Introduction to Big Data problem, current challenges, trends, applications, column store, distributed database, Hadoop and MapReduce Programming Patterns, Locality Sensitive Hashing, directions reduction, stream data, processing of unsorted data, NoSQL, and NewSQL.</p>
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<b>Course Name:</b> Applied Data Mining	<b>Course Code and Number:</b> CIS472	<b>Number of Credit Hours:</b> 3
<b>Teaching Language:</b> English		
<b>Pre-requisite:</b> CIS 467A		
<b>Course Description</b>	<p>This course aims to review and discuss the applications of the new concepts, methods and techniques to patterns discovery and extract knowledge from raw data supported by examples and case studies. This course involves the following subjects: the relationship between machine learning and data mining science, the main role of the data mining in knowledge discovery and modeling based on historical data, data acquisition using web data APIs. Use modern data mining software and tools to practice common data mining methods in real-time case studies in many areas such as health care, finance, retail and security. At the end of the course, the student presents an integrated project and presents it to the students.</p>	

<b>Course Name:</b> Applications of Distributed Systems	<b>Course Code and Number:</b> CIS480	<b>Number of Credit Hours:</b> 3
<b>Teaching Language:</b> English		
<b>Pre-requisite:</b> CS 332 and BIT 381		
<b>Course Description</b>	<p>This course aims to provide students with the basic concepts, knowledge and skills related to distributed information systems, their types and how to program and evaluate these systems. This course involves the following subjects: principles of distributed systems; design and programming issues of distributed applications; enterprise client-server architectures, distributed objects architecture; Object request broker (ORB), software performance engineering and its activities; principles and techniques of distributed applications (workload, efficiency, localization, resource sharing, databases, parallelism); types of distributed applications (middleware and performance, architecture and design for high performance) (average of efficiency, high</p>	



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	structural efficiency) efficiency (performance) tools, database technologies, data replication, data warehousing, transaction monitors and managers.
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<b>Course Name:</b> Special Topics	<b>Course Code and Number:</b> CIS492	<b>Number of Credit Hours:</b> 3
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**Teaching Language:** English

**Pre-requisite:** CIS360

<b>Course Description</b>	The main objective of this course is to empower students with the hot and latest knowledge of a topic that is not covered in any of the CIS courses listed above, with the approval of the department board.
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<b>Course Name:</b> Training Certificate	<b>Course Code and Number:</b> CIS 497	<b>Number of Credit Hours:</b> 3
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**Teaching Language:** English

**Pre-requisite:** ---

<b>Course Description</b>	The course is approved if the student obtains an accredited international certificate in one of the areas of specialization approved by the department according to special foundations.
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<b>Course Name:</b> Practical Training	<b>Course Code and Number:</b> CIS498	<b>Number of Credit Hours:</b> 3
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**Teaching Language:** English

**Pre-requisite:** Passing 98 Cr. Hrs

<b>Course Description</b>	The main objective of this course is to provide students with the chance to get trained and obtain the needed experience for the market before graduation through spending an (240) hours period in one of the CIS department accredited training establishments. During the training period, students will be asked to apply whatever learned and earned skills from their study and having in mind requests by companies and establishments offering the training and in coordination with the training supervising faculty member and the training granting establishment in line with the learning outcomes set by the program in Computer Information Systems
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<b>Course Name:</b> Graduation Project	<b>Course Code and Number:</b> CIS499	<b>Number of Credit Hours:</b> 3
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**Teaching Language:** English



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**Pre-requisite: Passing 98 Cr. Hrs**

Course Description	
	This course aims to provide students with the ability to develop an information system and document it properly. The student is supposed to select a problem and apply the knowledge and skills learned from other courses so that the student can develop a complete system and write a report that documents the problem, the analysis method, the algorithms used in solving the problem, the designs used, the code, the execution, and how the system works.