

AL Buraimi University College



كلية البريمي الجامعية

**Department of Information Technology**

**Information Systems Program**

**Revised May, 2019**

# **Information System Program**

## **Vision**

The Program provides students with a technological and business knowledge to develop and integrate effective IS solutions that support management decision making and organizational strategies. The Program prepares graduates for a variety of IS careers in business, government, and non-profit organizations.

## **Mission**

IS program providing and equips students with all the knowledge and skills in information technology applications, computer technology applications, media network, corporation strategy, corporation executive support. The program prepares graduates with all that is required for successful careers such as program system analysts, program applications developers, networks specialists, data base executives, information Centre consultants, data analysts. Our graduates will found job opportunities in both government and private sector firms.

## **Program Objectives**

1. Our graduates demonstrate knowledge of underlying infrastructure of information systems.
2. Our graduates apply networking concepts to solve organizational problems.
3. Our graduates analyze business problems using foundational knowledge from the fields of economics, accounting, business law, and statistics.
4. Our graduates acquire knowledge of operational management to support organizations.
5. Our graduates develop software's by using different principles and practices of software design and development.
6. Our graduates show awareness of social and work ethics.
7. Our graduates show good command of language in general and specific contexts relating to the discipline.

# Structure of the Information System Study Plan

## **Diploma in Information Systems (2 years)**

Number of credit hours required for obtaining a Diploma in Computer Science is 63 hours on intense study. A Postsecondary School Diploma is designed to give students practical "hands-on" experience as well as theoretical knowledge in their chosen field. A diploma will take at least four semesters (two years) to complete and will usually include a work placement. As juniors, students take courses in combinatorial algorithms; systems analysis and design, two consequently courses in information systems, and introduction courses to database and to web development, finally a networking course

## **Advanced Diploma in Information Systems (3 years)**

Number of credit hours required for obtaining a Diploma in Computer Science is 93 hours on intense study. introduction to software engineering, database management systems and program design techniques, along with a course in business of basic business statistics and operational management. In this degree student add more practical courses related to programming languages as advanced visual programming, advanced web engineering and XML programming.

## **Bachelor Degree in Information Systems (4 years)**

Number of credit hours required for obtaining a Diploma in Computer Science is 123 hours on intense study. This IS program is typical four-year program for Bachelor of Science degree in information systems at Buraimi College. The program is designed to prepare students to assume positions in the government and private sectors, computer industry or education. It also offers them opportunities for further higher degree studies.

## **Job Opportunities**

Information Systems career opportunities are available in a variety of industries, such as: Consulting, Banking, Entertainment, Health Media, Education, Software Publishing, etc. The I.S academic program helps to prepare graduates to assume such positions as:

1. Systems analyst
2. Application program developer
3. Database Administrator
4. Network specialist
5. Information centre consultant
6. Data Analyst

## Bachelor Degree (123 Credits)

### College General Requirements (Compulsory) 21 Cr

SN	Course Number	Course Title	Credit Hours	Prerequisite
1	BCGE 001	Arabic Language	3	
2	BCGE 002	Islamic Culture	3	
3	BCGE 003	Omani Society	3	
4	COMP 100	Computers: Their Impact and use	3	-
5	ENGL 002	General English	3	-
6	BCGE 004	Study Skills	3	-
7	BCGE009	Entrepreneurship	3	-
8	IC3	IC3	0	
<b>Total</b>				<b>21</b>

### Department Requirements (Compulsory) 27 Cr

SN	Course Number	Course Title	Credit Hours	Prerequisite
1	COMP 112	Algorithms and Programming(1)	3	-
2	COMP 113	Algorithms and Programming(2)	3	Comp112
3	MATH 152	Mathematical Analysis(1)	3	-
4	ENGL 004	Technical Writing (1)	3	ENGL002
5	ENGL030	Technical Writing (2)	3	ENGL004
6	COMP 182	Data Structure and Program Design	3	COMP 113
7	COMP 123	Computer Architecture & Assembly Language	3	COMP 112
8	BCCS 490	Senior Project	3	Department Approval
9	COMP 241	Introduction to Database	3	IS 431
<b>Total</b>				<b>27</b>

**Major Requirements (Compulsory) 66 Cr**

SN	Course Number	Course Title	Credit Hours	Prerequisite
1	ACC 220	Introduction to Financial Accounting	3	MATH152
2	ECON 160	Microeconomics Principles	3	
3	BLAW 280	Business law - 1	3	
4	COMP 324	XML Programming	3	COMP242
5	COMP206	Advanced Visual Programming	3	COMP106
6	SOM 120	Basic Business Statistics	3	MATH152
7	SOM 306	Operations Management	3	SOM120
8	SOM 485	Decision Support System	3	SOM120
9	IS 497	Selected Topics In Information	3	IS431
10	ACC 300	Computer Application in Accounting	3	ACC220
11	IS 211	Introduction to Information System	3	COMP 112
12	COMP 484	Advanced Web Engineering	3	COMP 242
13	IS 311	Information Technology in Business	3	IS211
14	COMP 380	Introduction to Software Engineering	3	COMP241
15	IS 431	System Analysis and Design	3	COMP113
16	IS 435	Communication And Networking	3	COMP123
17	IS 441	Database Management System	3	COMP241
18	IS 450	Business Expert System	3	IS431
19	SOM 466	Project Management	3	SOM 306
20	BCGE 006	Research Methodology	3	BCGE004
21	COMP 106	Visual Basic	3	COMP112
22	COMP 242	Introduction to Web Development	3	COMP113
<b>Total</b>			<b>66</b>	

**Major Requirements (Elective) Select 9 Cr (Information System)**

<b>SN</b>	<b>Course Number</b>	<b>Course Title</b>	<b>Credit Hours</b>	<b>Prerequisite</b>
1	IS457	Advanced Telecommunication and networking	3	IS435
2	COMP224	Web Development and user interface design	3	COMP242
3	COMP485	Human computer Interaction	3	COMP380
4	COMP412	Machine Learning	3	SOM120
5	COMP480	Software System Development	3	IS431
6	COMP479	Neural networks	3	COMP113
7	PHIL230	Symbolic Logic	3	Math152
8	COMP282	Advanced Data Structure	3	COMP182
9	COMP410	Data Mining	3	IS441
10	Comp270	Business Programming	3	COMP241
11	COMPO350	E-commerce	3	COMP242
12	COMP381	Open Source Software Engineering	3	COMP282
13	COMP385	Graphical User Interfaces	3	COMP106
14	COMP360	Information Retrieval and Web Agents	3	COMP242
15	COMP377	Programming with Python	3	COMP113
16	COMP375	Mobile Application Development	3	COMP242
17	COMP420	Advanced Operation System Concepts	3	COMP322
18	COMP430	Language Design and Compiler	3	COMP113
19	COMP232	Concept of Programming Languages	3	Comp113

## Advanced Diploma Degree (93 Credits)

### College General Requirements (Compulsory) 18 Cr

SN	Course Number	Course Title	Credit Hours	Prerequisite
1	BCGE 001	Arabic Language	3	
2	BCGE 002	Islamic culture	3	
3	COMP 100	Computers: Their Impact and use	3	-
4	ENGL 002	General English	3	-
5	BCGE 004	Study Skills	3	-
6	BCGE009	Entrepreneurship	3	-
7	IC3	IC3	0	
<b>Total</b>				<b>18</b>

### Department Requirements (Compulsory) 24 Cr

SN	Course Number	Course Title	Credit Hours	Prerequisite
1	COMP 112	Algorithms and Programming(1)	3	-
2	COMP 113	Algorithms and Programming (2)	3	Comp112
3	MATH 152	Mathematical Analysis (1)	3	-
4	ENGL 004	Technical Writing (1)	3	ENGL002
5	ENGL030	Technical Writing (2)	3	ENGL004
6	COMP 182	Data Structure And Program Design	3	COMP 113
7	COMP 123	Computer Architecture & Assembly Language	3	COMP 112
8	COMP 241	Introduction to Database	3	IS 431
<b>Total</b>				<b>24</b>

**Major Requirements (Compulsory) 48 Cr**

SN	Course Number	Course Title	Credit Hours	Prerequisite
1	ACC 220	Introduction to Financial Accounting	3	MATH152
2	COMP 242	Introduction to Web Development	3	COMP113
3	COMP206	Advanced Visual Programming	3	Comp106
4	SOM 120	Basic Business Statistics	3	MATH152
5	COMP 380	Introduction to Software Engineering	3	COMP 241
6	IS 211	Introduction to Information System	3	COMP 112
7	COMP484	Advanced Web Engineering	3	COMP242
8	IS 311	Information Technology in Business	3	IS211
9	COMP324	XML Programming	3	COMP242
10	IS 431	System Analysis and Design	3	COMP113
11	IS 435	Communication And Network	3	COMP123
12	IS 441	Database Management System	3	COMP241
13	BCGE 006	Research Methodology	3	BCGE004
14	COMP106	Visual Basic	3	COMP112
15	ECON 160	Microeconomics Principles	3	
<b>Total</b>			<b>48</b>	

**Elective requirements (select 3 Credit Hours):**

SN	Course Number	Course Title	Credit Hours	Prerequisite
1	IS457	Advanced Telecommunication and networking	3	IS435
2	COMP224	Web Development and user interface design	3	COMP242



3	COMP485	Human computer Interaction	3	COMP380
4	COMP412	Machine Learning	3	SOM120
5	COMP480	Software System Development	3	IS431
6	COMP479	Neural networks	3	COMP113
7	PHIL230	Symbolic Logic	3	Math152
8	COMP282	Advanced Data Structure	3	COMP182
9	COMP410	Data Mining	3	IS441
10	Comp270	Business Programming	3	COMP241
11	COMPO350	E-commerce	3	COMP242
12	COMP381	Open Source Software Engineering	3	COMP282
13	COMP385	Graphical User Interfaces	3	COMP106
14	COMP360	Information Retrieval and Web Agents	3	COMP242
15	COMP377	Programming with Python	3	COMP113
16	COMP375	Mobile Application Development	3	COMP242
17	COMP420	Advanced Operation System Concepts	3	COMP322
18	COMP430	Language Design and Compiler	3	COMP113
19	COMP232	Concept of Programming Languages	3	Comp113
			<b>60</b>	

## Diploma Degree (63 Credits)

### College General Requirements (Compulsory) 12 Cr

SN	Course Number	Course Title	Credit Hours	Prerequisite
1	BCGE 001	Arabic Language	3	
2	BCGE 004	Study Skills	3	-
3	COMP 100	Computers: Their Impact and use	3	-
4	ENGL 002	General English	3	-
5	BCGE009	Entrepreneurship	3	-
6	IC3	IC3	0	
<b>Total</b>			<b>15</b>	

### Department Requirements (Compulsory) 24 Cr

SN	Course Number	Course Title	Credit Hours	Prerequisite
1	COMP 112	Algorithms and Programming(1)	3	-
2	COMP 113	Algorithms and Programming(2)	3	Comp112
3	MATH 152	Mathematical Analysis(1)	3	-
4	ENGL 004	Technical Writing (1)	3	ENGL002
5	ENGL030	Technical Writing (2)	3	ENGL004
6	COMP 182	Data Structure And Program Design	3	COMP 113
7	COMP 123	Computer Architecture & Assembly Language	3	COMP 112
8	COMP 241	Introduction To Database	3	IS 431
<b>Total</b>			<b>24</b>	

**Major Requirements (Compulsory) 24 Cr**

<b>SN</b>	<b>Course Number</b>	<b>Course Title</b>	<b>Credit Hours</b>	<b>Prerequisite</b>
1	BCSE006	Research Methodology	3	BCGE004
2	IS 431	System Analysis and Design	3	COMP123
3	IS 211	Introduction to Information System	3	COMP 112
4	IS 311	Information Technology in Business	3	IS211
5	COMP106	Visual Basic	3	COMP112
6	ECON 160	Microeconomics Principles	3	
7	IS 435	Communication & Networking	3	COMP 123
8	COMP 242	Introduction to Web Development	3	COMP 113
<b>Total</b>			<b>24</b>	

# Course Description for Information System Program

## Course Description:

### **COMP 112 Algorithms and Programming (1) (3 Hrs. Prereq: - )**

COMP112 is an introduction to the field of computer programming and algorithmic problem solving. The course will provide an understanding of fundamental How to design an algorithm that solves a computational problem? The course will present techniques that can help students to discover an efficient solution using JAVA programming concepts and constructs. Students will have the opportunity to create, compile, and execute programs in a modern programming language.

Design a computer program based on a given algorithm. Identify the various activities involved in translation a given problem into a corresponding executable program. Use windows environment to write and execute a program on a computer. Use the basic structures of JAVA programming language including data types; input/output statements, operators and expressions, control structures, strings, Predefined functions and arrays

### **MATH 152 Mathematical Analysis I (3 Hrs. Prereq: - )**

Course Description: Mathematical Analysis-1 course covers elementary concepts about sets, real numbers, relations and functions. This course includes the following topics: Basic set concepts, Universal set and empty set, Venn diagram, Set operations and their algebra, Classes of sets, power set, Real number system, Inequalities, Intervals, Relations and their types, Relation Composition, Partition, Graphs of the function and their types.

### **COMP 100 Computer: Impacts and Uses (3 Hrs. Prereq: - )**

COMP100 is an introductory course to the computer skills. Learn basic computer skills by using Microsoft office suite (including MS-Word, MS-PowerPoint ,MS-Excel, MS-Publisher) and the use of Internet & World Wide Web. The focus on this course is on the basic knowledge required to be computer literate in today's society and digital world

### **ENGL 002 General English (3 Hrs. Prereq: - )**

The course is intended for students at beginner level to upper - intermediate level. It follows an integrated multi-skills approach in developing the student's performance in English. It lays special emphasis on the productive skills and uses authentic material relevant situations and language functions which are presented throughout the course.

### **BCGE 004 Study Skills (3 Hrs. Prereq: - )**

The course helps students to improve their English and gives them skill and practice in using English as a language of instruction; in this case they can improve their study habits in English. The course stresses the fact that once the skill has been introduced, it is the student's responsibility to continue practicing it on his/her own until it is mastered efficiently. Therefore, the course deals with topics such as using an

English dictionary, learning vocabulary in English, outlining, improving your reading, using a library and preparing for examinations.

**COMP 113 Algorithms and Programming (2) (3 Hrs. Prereq: COMP 112)**

An introduction to basic and advanced concepts of object-oriented programming: inheritance; interfaces; abstract classes; polymorphism; exception handling; GUI design; and applets.

**COMP 123 Computer Architecture and Assembly Language (3 Hrs. Prereq: COMP 112)**

The course covers the following topics: Introduction to computer architecture, assembly language programming, system software and computer applications. Number systems and data representation. Internal organization of a computer. Boolean Algebra and Digital Logic. Primitive instructions and operations. Assembly language. (Integrated lecture/lab environment)

**BCGE006 Research Methodology (3 Hrs. Prereq: - None)**

This course provides knowledge about the concept, importance, benefits, and objectives of the research methods. The course provides knowledge about collection, classifying, summarizing, and analyzing of data as well as it provides the steps of conducting the basic academic research. Information related to research's report, research methodology, and exploring results are provided.

**ECON 160 Microeconomics Principles (3Hrs - Prereq - )**

The purpose of this course is to introduce the economic theory to student and to provide a basic understanding of how markets and firms function.

**ENGL 004/c Technical writing (1) (3 Hrs. Prereq: - ENGL 002)**

This is an ESP course aims at developing technical writing skills for students majoring in business areas and computer science. It focuses on promoting fluency in writing and providing language, writing models, that will be relevant to student's real needs in business affairs . Also, it enables students to practice appropriate vocabulary, grammatical structures, punctuation, spelling, style, and writing conventions. The purpose of this course is to help students utilize varied forms of technical writing to achieve success in the workplace as well as academic contexts. It covers the common types of writing that occur in the business and computer science worlds.

**BCGE009 Entrepreneurship (3 Hrs. Prereq: )**

The course aims at imparting basic knowledge about entrepreneurship and entrepreneurs. Topics covered include entrepreneurship process, business planning process, project financing and validation, business models and strategies, phases of entrepreneurial growth. An overview of business practices in the world with special emphasis on GCC and Sultanate of Oman in particular is covered.

**COMP 182 Data Structures and Program Design (3 Hrs. Prereq: COMP 113)**

This course is designed to teach you how to program efficiently. It assumes that you know the basics of programming in Java, and you can write, debug and run simple programs in Java. The purpose of this course is to provide the students with solid foundations in the basic concepts of programming: data

structures and algorithms. The main objective of the course is to teach the students how to select and design data structures and algorithms that are appropriate for problems that they might encounter. This course is also about showing the correctness of algorithms and studying their computational complexities. This course offers the students a mixture of theoretical knowledge and practical experience.

### **ENGL030 Technical Writing for IT (2) (3 Hrs. Prereq. ENGL004)**

This is an ESP course aims at developing technical writing skills for students majoring in information technology (IT). It focuses on promoting writing fluency and providing language, writing models, which will be relevant to the real needs of the students. It prepares students to produce competent technical documents for both written and digital media with special emphases on problem-solving and decision-making reports. It provides students with principles of research and documentation, drafting and revision processes, technical proposals, and research papers and technical descriptions. It covers the aspects of collaborative and individual research works to analyze and write about various forms of data in information technology (IT).

### **IS431 Systems Analysis and Design (3 Hrs.Prereq: - COMP113)**

This course covers the systems development life cycle. Topics include standard tools and techniques to analyze and design an information system from a structured as well as an object-oriented perspective. A Computer-Aided Software Engineering (CASE) tool is used to facilitate the study.

### **IS211 Introduction to Information Systems (3 Hrs. Prereq: - COMP112)**

This course provides a detailed survey of information systems. It also provides an introduction to information systems and dominant supportive technologies. Also. includes Information Systems in Organizations; Information Systems in Organizations; Organizing Data and Information; Telecommunications and Networks; The Internet, Intranets, and Extranets; Electronic Commerce; Transaction Processing and Enterprise Resource Planning Systems.

### **BCGE001 Arabic Language (3 Hrs. Prereq: - )**

1. دراسة مدخل لمفهوم وسائل الإتصال وأنواعه
2. دراسة نصوص: القرآن الحديث\_النثر\_الشعر\_مبادئ البلاغة: البيان البديع\_المعاني وأنواعها\_ الأسلوب الإنشائي: الأمر\_النهي\_التمني\_النداء\_الاستفهام\_مبادئ في النحو\_والصرف\_والإملاء\_المعربات\_والمبنيات\_المعرفة والنكرة\_المشتقات\_قواعد\_الهمزة\_وعلامات\_الترقيم\_استخدام\_المعاجم\_اللغوية.

### **COMP 106 Visual Programming (3 Hrs. Prereq: COMP 112)**

Understand and implement visual aspects of doing programs in software development with the help of graphical user interface environment. This course provides students with the knowledge needed to develop applications in Microsoft Visual Basic.NET for the Microsoft .NET platform. The course focuses on user interfaces, program structure, language syntax, and implementation details.

### **COMP 241 Introduction to Database (3 Hrs. Prereq: IS 431)**

This course provides an introduction of databases to students. Other topics include database system architecture; logical organization of databases; entity relationship model; hierarchical, network, and

relational data models; functional dependencies and normal forms. Design, implementation, and optimization of query languages.

**IS 435 Communication and Networking (3 Hrs. Prereq: COMP 123)**

This course introduces the basic components of computer networks from software and hardware point of view. The role of physical components like network interface adapters, modems, cables, hubs and switches is explained. Basic network design using structured cabling and transmission of digital data as electronic signals is presented. The layered structure of network protocols is discussed. It emphasizes on protocol and interface specifications, in particular those adhering to OSI and TCP/IP reference models. The application layer protocols of TCP/IP such as HTTP, FTP, Telnet, and SMTP will be studied. Classification of networks on the basis of IP and structure of IP address is discussed. Sub netting is covered in this course and methods to find the errors and recover them in the data transmission are studied

**IS 311 Information Technology in Business (3 Hrs. Prereq IS 211)**

This is an introductory course to the fundamentals of information technologies and to the strategic opportunities and challenges presented by these technologies. Students will have a chance to see that business opportunities and challenges are best addressed through a fundamental understanding of management and technological concepts. This understanding can be applied to your other courses and to your own experiences as an employee and manager, regardless of your area of specialization. This course is based on the fundamental premise that the major role of information technology is to provide organizations with strategic advantage.

**COMP242 Introduction to web development (3 Hrs. Prereq: - COMP113)**

Upon the successful completion of this course, a student will be able to Demonstrate basic HTML coding: create formatted text, write both absolute and relative links, write lists add visual elements and graphics, change color of text and background build tables, produce inline and embedded CSS (for formatting and page layout), insert multimedia elements, build tables, The purpose of this course is to provide students with an understanding of basic Web design and Web authoring skills in addition to the technical expertise required for creating and publishing of standards compliant HTML documents.

**COMP 206 Advance Visual Programming (3 Hrs. Prereq: COMP 106)**

Design and implement advanced visual aspects of doing programs in software development with the help of graphical user interface environment. This course provides students with the knowledge needed to develop advanced applications in Microsoft Visual Basic.NET for the Microsoft .NET Platform. The course focuses on advanced features of user interfaces, program structure, language-syntax and implementation details. It also focuses on developing data-driven applications with reports and printing features.

**SOM 120 Basic Business Statistics (3 Hrs – Prereq: Math 152)**

Basic elements of statistics for students in business and economics. Descriptive statistics, elements of probability, probability distributions (including normal), sampling distributions, statistical inference for

means and proportions (including estimation and hypothesis testing), simple linear regression and correlation. Applications of these topics in business and economics are emphasized. The course requires assignments in which students are required to explain the results of statistical computations using personal computer software.

**ACC 220 Introduction to Financial Accounting (3Hrs – Prereq – MATH 152)**

Introduces the role of accounting in business and society, a summary of the accounting process, accounting measurement issues, analyzing and recording financial transactions, accounting valuation and allocation issues, conceptual foundation for understanding financial reports, the usefulness of financial statements for decision making, and financial statement analysis and interpretation.

**IS 441 Database Management Systems (3 Hrs. Prereq: COMP241)**

The design and implementation of computerized databases. Provides background for the selection and use of database management systems. Topics include types of available systems, data independence, integrity, privacy and query. The student will design and implement a database utilizing a commercial database management system.

**Comp 484 Advanced Web Engineering (3 Hrs. Prereq: COMP 242)**

Course Description: This course is designed to introduce the student to the tools and facilities of Web design: page composition, PHP, web design and, code validation. Students will use these software technologies together to produce web design projects. Students will cover the Web design development process, with Macromedia Dreamweaver as the primary Web development tool. Topics covered include basic and enhanced site structure, local and remote site management, and optimization of Web graphics.

**COMP 380 Introduction To Software Engineering (3 Hrs. - Prereq.: IS 431)**

Concepts and techniques for systems engineering, requirements analysis, design, implementation and testing of large scale computer systems. Principles of software engineering for production of reliable, maintainable and portable software products. Emphasis on object-oriented analysis and design techniques. Topics include unit, integration and systems testing, configuration management, software quality assurance practices, and an introduction to Computer Aided Software Engineering (CASE). This is a lecture portion of a course in software engineering involving the design and partial implementation of a software system as a group project.

**SOM 306 Operations Management (3 Hrs. Prereq Som120)**

Discusses operational issues facing organizations and introduces operations management concepts and techniques. Students develop skills necessary to improve productivity and quality of operations in both manufacturing and service organizations. Topics include international competitiveness, quality assurance, forecasting, design and control of operations systems,



creating value for the customer, project management, and supply chain and inventory management.

**COMP 324 XML Programming (3 Hrs. Prereq: COMP242)**

This course introduces the basics of XML language and syntax, comparison between XML and HTML, Document type Definition (DTD), XML schema, Extensible stylesheet language (XSL) including XSL transformations (XSLT), XPath for navigating in XML documents, and XSL-FO for formatting XML documents.

**BCGE002 Islamic Culture (3 Hrs. Prereq: -)**

1. يتضمن دراسة أهمية الثقافة الإسلامية ، وأهمية الدين في حياة الإنسان ، وأثر العقيدة الصحيحة في حياة الإنسان وسلوكه ، والعقيدة الإسلامية وأركان الإسلام ونظامه التشريعي ، والمرأة ومكانتها في الإسلام ، والغزو الفكري وأهدافه ووسائله وأخطاره ، حفظ سورة من القرآن الكريم مع تفسيرها .
2. المتطلبات الأولية المساق: لا توجد
3. عدد الساعات المعتمدة: 3 ساعات

**COMP 490 Senior Project (3 Hrs. Prereq: Department Approval)**

Concurrently students will work in teams of 2 to 4 members to construct a significant software application. Students will apply concepts, techniques, and CASE Tools introduced in previous courses. Team members will give a presentation of their contribution to the project.

**ACC300.Computer Application In Accounting (Prereq. Acc220)**

In this professional level course, the student will be working with the more widely used income tax, accounting and processing, network, and spreadsheet software in the accounting profession

**SOM 466 Project Management (3Hrs . Prereq.: SOM 306)**

This course provides an overall glance of what is the meaning of the management in general and what is the project management in specific. It explained the basic concept of how to manage the Initiating and Planning System Development Projects through the System Development Life Cycle (SDLC). This course learns how the Baseline Project Plan produced. It provides skills of using Management Software tools for planning and managing projects like PERT, GANT charts and CPM.

**IS 497 Selected Topics in Information Systems (3 Hrs. Prereq. IS 431)**

Students will be able to learn the fundamentals of Neural Networks and its applications like Robotics, Character recognitions, Finger Print recognition, etc. Students will be able to acquaint themselves with the essential types of Neural Networks.

**SOM485 Decision Support Systems (3 Hrs. Prereq: COMP241)**

The course covers the issues of providing the right information critical to effective management as well as a variety of models and computer-based tools to assist management and decision-making. Demonstrate user interfaces, group DSS, and intelligent DSS. The course identifies

appropriate uses of various hardware and software tools to analyze business problems and provides a framework for the application of IT in solving them

**BCGE 003 Omani Society (3 Hrs. Prereq: -)**

*النتائج المرجوة من تدريس المقرر*

*ما الذي يجب أن يكون الطالب قد تعلمه أو أصبح قادرا على القيام به بعد دراسة هذا المقرر؟*

*يتعرف على البيئة العمانية ومكوناتها.*

*يتعرف على البعد الديموغرافي والخصائص السكانية للمجتمع العماني*

*يتعرف على التنظيم الإداري والسياسي*

*يتعرف على أبرز سمات البعد الاقتصادي قبل وبعد النهضة*

*يتعرف على خصائص المجتمع العماني من حيث: الأسرة- التعليم – الصحة- الثقافة.*

**IS 450. Business Expert Systems (3Hrs. Prereq.IS 431)**

An introduction to the uses of expert systems and the basic concepts underlying their design and construction. An overview of the issues involved in the development and implementation of business expert systems.

The goal of this course is to present a core of Business Expert System principles with which every information science student should be familiar and to study real cases that are associated with Expert System applications in order to understand the issues in Business Expert System disciplines.

**BLAW 280 Business Law -1(3Hrs. Prereq - )**

This course provides a base for the students to apprehend the significance of law in the business world. The sole purpose of this course is to inculcate knowledge to understand the general legal framework within which business operates. This course endeavors to teach the students' the many sources of law that create rights, duties and obligations.

**Elective Courses**

**COMP 224 Web Development and User Interface Design (3 Hrs. Prereq: COMP 242)**

This course provides basics of internet; different types of technologies used in internet environment and demonstrate how it works. It also covers various technologies and tools used to design a web page, particularly by using HTML, JavaScript. It also teaches how we design dynamic web pages on server side by giving dynamic effects using scripting languages like Java Script and ASP. The student will design, develop and implement a web site using what he/she has learnt from the course practically.

**COMP 485 Human-Computer Interaction (3 Hrs. Prereq: IS431)**

The information exchange between humans and computer systems will be examined. Aspects of input/output devices, software engineering, and human factors will be discussed with respect to human-computer interactions. Topics include: text and graphic display; user modelling; program design, debugging, complexity and comprehension; and current research studies and methodologies.

**COMP412 Machine Learning (3 Hrs. Prereq: SOM120)**

A study of the concepts, principles, techniques, and applications of machine learning. Topics include concept-based learning, information-based learning (decision trees and ID3 algorithms), rule-based learning (association rules, learning ordered rules, learning unordered rules, and descriptive rule learning), distance-based learning (nearest neighbor algorithms), probability-based learning (Bayesian classifiers and networks), and error-based learning (perceptron, multivariable linear regression with gradient descent, nonlinear and multidimensional models, artificial neural networks, and support vector machines). Model ensembles learning and reinforcement learning are also discussed.

**COMP 480 Software System Development (3 Hrs. Prereq: COMP384)**

The design and implementation of computerized databases. Provides background for the selection and use of database management systems. Topics include types of available systems, functions of database administration, conceptual database design, data independence, integrity, privacy, and query. The student will design and implement a database utilizing a commercial database management system.

**COMP 479 Neural Network (3 Hrs - Prereq. COMP 113)**

Overview of neural network history and types of problems: function approximation, classification, data clustering, time series, and dynamic systems, Feed forward Neural networks and radial Basis Function theory and background of neural networks nonlinear dynamic black-box modeling, classification and clustering with neural networks.

**PHIL230 Symbolic logic (3 Hrs. Prereq: - MATH152)**

In this course we will cover a natural deduction system of elementary symbolic logic. Introduction to modern deductive logic includes propositional logic and theory of quantification. We will also discuss philosophical aspects of symbolic logic whenever appropriate

**COMP282 Advanced Data Structure (3 Hrs. Prereq: - COMP182)**

Survey of the components of ADT; Implementing linked list and the Circular; Using of doubly linked list; Logical and physical representation of data; tree representation; data structure operations, matrix representations with stack and Queue.; searching techniques with Binary trees; Solve problems by using graph and explain the difference between a depth-first and a breadth-first search and to implement these searching strategies using stacks and queues, solve problems by using heap and heap sort methods.

**COMP410 Data Mining (3 Hrs. Prereq: IS441)**

A study of the concepts, principles, techniques and applications of data mining. Topics include data preprocessing, the ChiMerge algorithm, data warehousing, OLAP technology, the Apriori algorithm for mining frequent patterns, classification methods (such as decision tree induction, Bayesian classification, neural networks, support vector machines and genetic algorithms), clustering methods (such as k-means algorithm, hierarchical clustering methods and self-organizing feature map) and data mining applications (such as Web, finance, telecommunication, biology, medicine, science and engineering). Privacy protection and information security in data mining are also discussed.

**COMP 424 Computer System Security (3 Hrs. Prereq: IS435)**

The class is concerned with the fundamentals of computer security. Topics in this class can be divided into three main parts: cryptography (with a focus on single -key and public key), computer system security (database and operating systems issues including authentication, access control, malicious software); as well as network security (including intrusion prevention/firewalls, intrusion detection, Denial of Service attacks, etc.).

**COMP 350 E-Commerce (3 Hrs. Prereq: COMP 242)**

This course introduces principles of the Internet Economy; Business to business, business to consumers, and consumer to consumer; infrastructure of e-commerce; processes in building e-commerce website; outsource or hosting of e-commerce website; e-commerce payment systems; key dimensions of e-commerce security and encryption.

**COMP377 Programming with Python (3 Hrs. PreReq: COMP113)**

Python programming is a good skill to have in data science, AI IOTs and Machine Learning. Introduction to Python Programming course is intended for students with little or no programming experience. It aims to provide students with an understanding of the role computation can play in solving problems and, regardless of their major, feel justifiably confident of their ability to write small programs that allow them to accomplish useful goals.

**COMP 375 Mobile Application Development (3 Hrs. Prereq. COMP242)**

As mobile devices are becoming more everywhere, developers are now devoting significant effort to build applications for these smartphone and tablet devices. This course examines the principles of mobile application design and development. It provides students with the knowledge needed to develop mobile applications using xml and java concepts using Android platform. Topics will include introduction to mobile computing, existing approaches and available technologies, mobile application development architectures, user interface design and building, input methods, data handling, messaging, network techniques, location-based services, content providers and security issues in mobile applications.

**COMP232 Concepts of Programming Languages (3 Hrs. Prereq: - COMP113)**

In this course we will cover issues in the design, implementation, and use of high-level programming languages. Historical background. How languages reflect different design philosophies and user requirements. Technical issues in the design of major imperative (procedural) programming languages.

Other approaches to programming: functional programming, logic programming, and object-oriented programming.

### **COMP270 Business Programming (3 Credit Hours)**

This course uses the latest database tools and techniques for persistent data and object-modeling and management. Students gain extensive hands-on experience with exercises and a term project using Oracle, SQL Server, and other leading database management systems. Students learn the standards-based Structured Query Language (SQL) and the extensions to the SQL standards implemented in Oracle and SQL Server. Students learn the basics of database programming, and write simple stored procedures and triggers.

### **IS457- Advanced Telecommunication and networking (3 Hrs. PreReq: IS435)**

An advanced course in telecommunications and networks emphasizing enterprise networking topics such as: network operating systems, network analysis and design, network security, virtual private networks, collaboration, wireless networks, VLAN, multi-platform integration, voice-over Internet protocol, web server strategies and storage area networks. This course will include hands-on projects involving network design and implementation.

### **COMP381- Open Source Software Engineering (3 Hrs. PreReq: COMP 282)**

Introduction to open source software engineering concepts, principles and applications. Topics include history of open source software, open source software engineering models, open source products and software quality, strategies and business models, government policies toward open source software, work organization of open source software development, software and intellectual property rights, organizations of the open source community, and case studies. Different open source software products for various applications are also discussed and used for group projects.

### **COMP360 Information Retrieval and Web Agents (3 Hrs. Prereq: COMP242)**

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.

### **COMP420 Advanced Operating Systems Concepts (3 Hrs. Prereq: - COMP322)**

This course consists of advance level of knowledge related to operating systems. The course will introduce the classic synchronization, concurrency, Dining Philosophers, race conditions, acquiring and releasing lock, Use of Mutex, different types of memory management and re-locatable address generations, swapping and fragmentations, virtual allocation of memory logically and physically. Types of file systems, input and output device management and their controller and interrupt with driven I/O. Security, user authentication, security counter measures, protection domain, mechanism, attacks, and security approaches for mobile code.

### **COMP385- Graphical User Interfaces (3 Hrs. PreReq: COMP 106)**

The design, development and analysis of programs requiring graphical, direct manipulation and user interfaces (GUIs) will be examined. The majority of modern software includes a GUI. The development tools, environments and style guides for common GUIs will be used in course assignments and discussed in lecture. The course involves the design and development of several GUI programs. The aesthetic and human computer interaction aspects and future trends in GUIs design and development also will be reviewed.

**COMP 430 Language Design and Compilers (3 Hrs. Prereq: COMP113)**

Examination of the issues involved in the design and subsequent implementation of programming languages. Considerations of implementation difficulties, including various features in a programming language. Tools and techniques to facilitate both the processing of programming languages and the building of programming processors. Available for graduate credit.



Revised:

May 2019

## Information Technology Department

### Proposed Study Plan for Bachelor Degree in Information Systems

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Year	Course Number	Course Title	Pre-Requisite	Units	Course Number	Course Title	Pre-Requisite	Unit
<b>First Semester</b>					<b>Second Semester</b>			
1	COMP112	Algorithms and Programming (1)		3	COMP113	Algorithms and Programming (2)	COMP112	3
	MATH152	Mathematical Analysis (1)		3	COMP123	Computer Architecture and Assembly Language	COMP112	3
	COMP100	Computers: Their Impact and Use		3	BCGE006	Research Methodology		3
	ENGL002	General English		3	ECOE160	Microeconomics Principles		3
	BCGE004	Study Skills		3	ENGL004	Technical Writing (1)	ENGL002	3
					BCGE009	Entrepreneurship		3
		<b>Total</b>		<b>15</b>		<b>Total</b>		<b>18</b>
<b>Third Semester</b>					<b>Fourth Semester</b>			
2	COMP182	Data Structure and Program Design	COMP113	3	COMP106	Visual Programming	COMP112	3
	ENGL030	Technical Writing (2)	ENGL004	3	COMP241	Introduction to Database	IS431	3
	IS431	Systems Analysis and Design	COMP113	3	IS435	Communication and Networking	COMP123	3
	IS211	Introduction to Information Systems	COMP112	3	IS311	Information Technology in Business	IS211	3
	BCGE001	Arabic Language		3	COMP242	Introduction to Web Development	COMP113	3
		<b>Total</b>		<b>15</b>		<b>Total</b>		<b>15</b>
<b>Fifth Semester</b>					<b>Sixth Semester</b>			
3	COMP206	Advanced Visual Programming	COMP106	3	COMP380	Introduction to Software Engineering	IS431	3
	SOM120	Basic Business Statistics	MATH152	3		Elective		3
	ACC220	Introduction To Financial Accounting	MATH152	3	SOM306	Operations Management	SOM120	3
	IS 441	Database Management Systems	COMP241	3	COMP324	XML Programming	COMP242	3
	COMP484	Advanced Web Engineering	COMP242	3	BCGE002	Islamic Culture		3
		<b>Total</b>		<b>15</b>		<b>Total</b>		<b>15</b>
<b>Seventh Semester</b>					<b>Eighth Semester</b>			
4	COMP490	Senior Project	<i>Dept. Appr.</i>	3	SOM485	Decision Support Systems	COMP241	3
	ACC300	Computer Application In Accounting	ACC220		BCGE003	Omani Society		3
	SOM466	Project Management	SOM306	3	IS450	Business Expert Systems	IS431	3
		Elective		3		Elective		3
	IS497	Selected Topics in Information Systems	IS431	3	BLAW280	Business Law-1		3
		<b>Total</b>		<b>15</b>		<b>Total</b>		<b>15</b>
<b>Total Units</b>							<b>123</b>	

**List of Electives**

1	IS457- Advanced Telecommunication and networking	IS435	11	COMP350- E-commerce	COMP242
2	COMP224- Web Development and user interface design	COMP242	12	COMP381- Open Source Software Engineering	COMP282
3	COMP485-Human computer Interaction	COMP380	13	COMP385- Graphical User Interfaces	COMP106
4	COMP412-Machine Learning	SOM120	14	COMP360-Information Retrieval and Web Agents	COMP242
5	COMP480- Software System Development	IS431	15	COMP377- Programming with Python	COMP113
6	COMP479Neural networks	COMP113	16	COMP375- Mobile Application Development	COMP242
7	PHIL230- Symbolic Logic	MATH152	17	COMP420- Advanced Operating System Concepts	COMP322
8	COMP282- Advanced Data Structure	COMP182	18	COMP430- Language Design and Compiler	COMP113
9	COMP410-Data Mining	IS441	19	COMP232- concept of Programming Languages	COMP113
10	COMP424- Computer System Security	IS435	20	COMP270- Business Programming	COMP241

Note: the student can also choose any IT course as an elective from other study plan