Information Systems Program

FACULTY OF COMPUTER & INFORMATION SCIENCES (AIN SHAMS UNIVERSITY)

PROGRAM HANDBOOK

(2023 – 2024)

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WELCOME AND INTRODUCTION

INTRODUCTION / WELCOME FROM PROGRAM MANAGEMENT

The Faculty of Computer and Information Sciences (FCIS) is located on Ain Shams University's main campus. When FCIS was founded in 1995, three programs were initially available. The first graduating class was in 2000. Currently, the Faculty of Computer and Information Sciences (FCIS) offers ten programs. In 2019, the National Accreditation and Quality Assurance Authority of Education (NAQAAE) accredited nine of them. FCIS recently maintained its position as a top-tier educational institution by obtaining the government's Excellence award for the years 2022 and 2023. Furthermore, the Faculty of Computer and Information Sciences has numerous agreements for educational and research cooperation on a national and international level, such as the Memorandum of between Information Engineering and Computer Science of the University of Trento, Italy, and Vidzems University Applied Sciences - Erasmus + Mobility. FCIS offers a number of consulting divisions that help many partners and stakeholders with computer and information science objectives, such as automating ASU through university payroll systems and UMS (University Management System). The FCIS has active agreements for collaboration with various entities and stakeholders in the field of information systems, such as Dell Corporation, Huawei Corporation, and ITI (information technology institute), to train students.

The faculty maintains close relationships with industrial and international partners to assure leadership and provide our students with the best opportunities for advancement.

This handbook is intended for all students taking the "Bachelor of Computer and Information Sciences" with an Information Systems major. You will find it a useful information guide at the start and during your study in the Program. We are confident that you will enjoy studying with our information system program.

Sincerely,

Prof. Dr. Nagwa Badr
(Dean of Faculty of Computer and Information Sciences - Ain Shams University)

Prof. Dr. Walaa Khaled
(Head of Information System Department Faculty of Computer & Information Sciences - Ain Shams University)

INTRODUCTION TO THE PROGRAM

The first version of the Information Systems (IS) program was created in 1995. Several courses have been adjusted to meet the demands of employment prospects, ensuring a route for information systems experts to grow in their careers. The National Authority for Quality Assurance and Accreditation of Education (NAQAAE) in Egypt granted the program

accreditation in 2019. The information system program changed its Bylaws to convert from the academic year system to the credit hours system. New courses, such as social network analysis and data analytics, are now available to keep up with changes in the information systems sectors. The first class of students adopting the credit hours system is expected to graduate in 2023.

PROGRAM DURATION AND MODES OF STUDY

Students can join the information system program once they have completed the 69 credit hours to become a level 3 student. The Information Systems program has no tracks or concentrations. This program's official degree title is "Bachelor of Computer and Information Sciences" with an Information Systems major.

PROGRAM AIMS AND OBJECTIVES

Preparing Information Systems professionals with a wide range of marketable cognitive and application abilities, as well as collaborations with other institutions and organizations to satisfy the community's research and application needs and to assure continual improvement.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

The program objectives of the B.Sc. of Information Systems program at Faculty of Computer and Information Sciences are listed below:

Within a few years of graduation, graduates of the Information Systems program are expected to:

- PEO1: Face current and future challenges and be able to solve technical and industrial problems in the field of computer sciences and other related disciplines.
- PEO 2: Awareness of the impacts of technology and ethical issues involved in the software development field and when dealing with clients.
- PEO 3: Continuously develop education and practical training in the field of Information Systems with emerging knowledge and skills through formal and informal education.
- PEO 4: Consistently communicate clearly orally and in writing, demonstrate leadership, and work effectively on multidisciplinary and global teams.

STUDENT OUTCOMES

The student outcomes are listed below:

SO1: Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.

SO2: Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.

SO3: Communicate effectively in a variety of professional contexts.

SO4: Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.

SO5: Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

SO6: Support the delivery, use, and management of information systems within an information systems environment.

PROGRAM STRUCTURE & CONTENT
The program of Information Systems is adopting the credit hours system. The program offers mandatory and elective courses distributed among four levels.

Table 1. 1st Level Courses

Course	Required (R) or Selected Elective (S)	Number of Hours / Weeks			
		Credit Hours	Lecture	Exercise	Practical
CHW160 Introduction to Computer Sciences	R	3	2	-	2
BSC121 Physics I	R	3	2	1	1
BSC122 Calculus I	R	3	2	2	-
HUM110 English Language I	R	2	2	-	-
BSC123 Probability & Statistical	R	3	2	2	-
CIS150 Structured Programming	R	3	2	-	2
CIS124 Electronics	R	4	2	2	2
BSC125 Calculus II	R	3	2	2	-
BSC126 Physics II	R	3	2	1	1
HUM222 Business Administration	R	2	2	-	-
Selected Uni. Topic (1) HUM204 Psychology	S	2	2	-	-
Selected Uni. Topic (2) HUM216 Professional Ethics & Legal Aspects course	S	2	2	-	-

Table 2. 2nd Level Courses

Course	Required (R) or Selected Elective (S)	Number of Hours / Weeks			
		Credit Hours	Lecture	Exercise	Practical
HUM113 Report Writing	R	2	2	-	
CIS250 Object Oriented Programming	R	3	2	-	2
BSC221 Discrete Mathematics	R	3	2	2	-
CIS260 Logic Design	R	3	2	-	2
CIS280 Database Management Systems	R	3	2	-	2
CIS240 Statistical Analysis	R	3	2	2	-
CIS220 Computer Organization & Architecture	R	3	2	-	2
CIS270 Data Structure	R	3	2	-	2
BSC225 Linear Algebra	R	3	2	2	-
CIS230 Operations Research	R	3	2	2	-
CIS243 Artificial Intelligence	R	3	2	-	2

Table 3. 3rd Level Courses

Course	Required (R) or Selected Elective (S)	Number of Hours / Weeks			
		Credit Hours	Lecture	Exercise	Practical
CIS353 Operating Systems	R	3	2	-	2
CIS365 Computer Networks	R	3	2	-	2
CIS290 System Analysis and Design	R	3	2	2	-
INF311 Data Mining	R	3	2	-	2
INF312 Statistical Inference	R	3	2	-	2
CIS380 Software Engineering	R	3	2	-	2
CIS340 Analysis and Design of Algorithms	R	3	2	-	2
INF321 Business Intelligence	R	3	2	-	2
INF322 Web Development and Design	R	3	2	-	2
INF323 Data Security	R	3	2	-	2
Selected Topic (1) INF412 Cloud Computing	S	3	2	-	2

Table 4. 4th Level Courses

Course	Required (R) orSelected Elective (S)	Number of Hours / Weeks			
		Credit Hours	Lecture	Exercise	Practical
Selected Topics (2) INF411 Data Science 1	S	3	2	-	2
INF421Mobile Computing	R	3	2	-	2
INF423 Cyber Security	R	3	2	-	2
Selected Topics (3) INF415 Software Design Patterns	S	3	2	-	2
Selected Topics (4) INF427 Information Visualization	S	3	2	-	2
INF422 Social Media Analytics	R	3	2	-	2
PRO 400 Project	R	6	-	2	10
INF429 Enterprise Resource Planning	R	3	2	-	2
INF416 Human Computer Interaction	R	3	2	-	2
Selected Topic (5) INF426 Software Quality Assurance	S	3	2	-	2

KEY STAFF, CONTACT DETAILS AND STAFF ROLES
The Key Staff and Contact Details are correct at point of publication. You will be notified of any changes.

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PROGRAM OPERATION AND STUDENT REGISTRATION

STUDENT ADMISSIONS

Students are directed at the end of their second year to choose one of four programs, one of which is Information Systems. Students are admitted into the program based on the number of students the program will accept that year and their cumulative GPA.

There are four academic levels in the faculty which are:

1. The first level: The student is newly enrolled and before completing 30 credit hours.

2. The second level: The student is considered to be at second level after completing 30 credit hours.

3. The third level: The student is considered to be at third level after completing 60 credit hours.

4. The fourth level: The student is considered to be at fourth level after completing 94 credit hours.

ASSESSMENT REGULATIONS AND BOARDS

Course assignments, tests, quizzes, formal presentations, projects, and reports are all used to assess student achievement. Not all these evaluation items are used in every course. UMS (https://ums.asu.edu.eg/) is the university management system that tracks each student's progress and allows students to create educational programs and track their academic achievement.

GRADING STANDARDS

The letter grades of A+, A, A-, B+, B, B-, C+, C, C-, D, D- indicate passing grades; a grade of F, however, is not allowed to progress to the next level course. Table 1-2 illustrates the grading system.

Table 5. The grading system

Grade	GPA	Percentage
A+	4.0	97% and up
A	4.0	93% to 97%
A-	3.7	89% to 93%
B+	3.3	84% to 89%
B	3.0	80% to 84%
B-	2.7	76% to 80%
C+	2.3	73% to 76%
C	2.0	70% to 73%
C-	1.7	67% to 70%
D+	1.3	64% to 67%
D	1.0	60% to 64%
F	0	Less than 60%

A student will be classified in good academic standing if the cumulative grade point average is at least 2. An honor degree is granted if the student has maintained a cumulative grade point average of at least 3.3 out of 4 (very good) in each academic year and has not failed any courses.

THE HIERARCHY OF THE PROGRAM AND MANAGEMENT

Prof. Walaa Gad is a professor of information systems and has been chair of the program since 2022. The program Chair is directly responsible for monitoring the Information Systems program and supervising department members and teaching assistants. Figure 1 shows the faculty's organizational structure hierarchy. All program faculty members meet to discuss any program-related concerns.
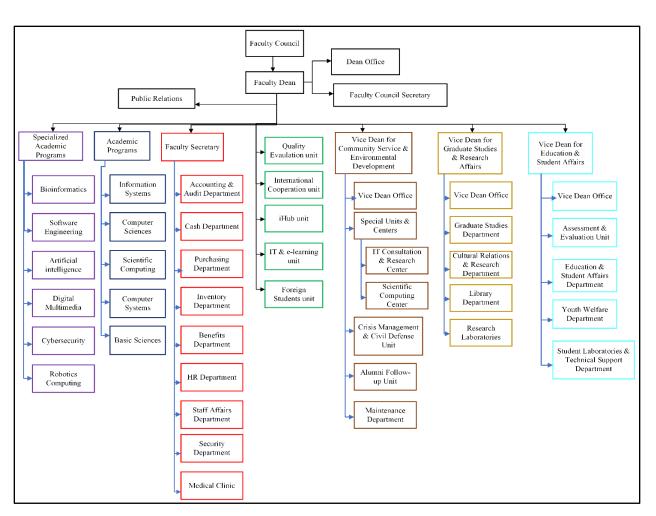
Faculty Council

Faculty Dean
- Dean Office
- Faculty Council Secretary
- Public Relations

Specialized Academic Programs
- Bioinformatics
- Software Engineering
- Artificial intelligence
- Digital Multimedia
- Cybersecurity
- Robotics Computing

Academic Programs
- Information Systems
- Computer Sciences
- Scientific Computing
- Computer Systems
- Basic Sciences

Faculty Secretary
- Accounting & Audit Department
- Cash Department
- Purchasing Department
- Inventory Department
- Benefits Department
- HR Department
- Staff Affairs Department
- Security Department
- Medical Clinic

- Quality Evaulation unit
- International Cooperation unit
- iHub unit
- IT & e-learning unit
- Foreign Students unit

Vice Dean for Community Service & Environmental Development
- Vice Dean Office
- Special Units & Centers
  - IT Consultation & Research Center
  - Scientific Computing Center
- Crisis Management & Civil Defense Unit
- Alumni Follow-up Unit
- Maintenance Department

Vice Dean for Graduate Studies & Research Affairs
- Vice Dean Office
- Graduate Studies Department
- Cultural Relations & Research Department
- Library Department
- Research Laboratories

Vice Dean for Education & Student Affairs
- Vice Dean Office
- Assessment & Evaluation Unit
- Education & Student Affairs Department
- Youth Welfare Department
- Student Laboratories & Technical Support Department

Figure 1 The faculty organizational structure hierarchy

STUDY TIMING AND REGISTRATION

The academic year is divided into two main semesters:

1. The first semester (Fall semester) starts in September and lasts for 15 weeks. Registration for courses takes place within 3 weeks before the start of the semester.
2. The second semester (Spring semester) starts in February and lasts for 15 weeks. Registration for courses takes place within a week before the start of the semester.

There may be also a summer semester which is an intensive semester. The duration of summer semester is not less than 7 weeks with a maximum of 9 credit hours per week, and the student may enroll in a maximum of three courses. The summer semester usually starts in July. Registration for courses takes place within a week before the start of the semester.

The maximum credit hours for enrollment in each semester are:

- Up to 21 credit hours for a student with a GPA greater than or equal to 3.
- Up to 18 credit hours for a student with a GPA greater than or equal to 2 and less than 3.
- Up to 14 credit hours or 5 courses for a student with a GPA of less than 2.0.
- No more than 9 credit hours per week are allowed for any student in the summer semester.

- The minimum number of credit hours for registration in the first and second semesters is 9 credit hours. The faculty council may give permission to drop below the minimum registration requirement for reasons of student graduation.
- The maximum number of credit hours for registration in the Fall and Spring semesters is 21 credit hours. The faculty Council may authorize an increase in the maximum registration limit for reasons of student graduation.

Students may substitute a course or withdraw from a course during any semester and before having been evaluated provided that the withdrawal is requested before the sixth week of the semester and the student presents an acceptable excuse for the withdrawal.

Each faculty member is assigned a group of students for whom he or she is accountable as an academic adviser at the start of each academic year, and students can refer to their advisors for any difficulties. Each semester, all students are required to identify the courses they intend to study and to meet with an Academic Advisor. Students are supposed to track their own progress; however, the Academic Advisor uses a degree flow sheet to track each student's progress at registration advising appointments.

The UMS supports registration advising. By the beginning of each semester, a list of available courses is loaded on the student profile. Students can select/unselect courses. Moreover, students can view the account information of their academic advisors. Please see details at www.ums.asu.edu.eg/

For general enquiries concerning enrolment, you must contact your local Student Support/Administrative Office or academic advisor for guidance.

EQUALITY AND DIVERSITY
- Ain Shams University (ASU) is dedicated to promoting equality and diversity on its campus. Equality is guaranteed for all students, regardless of their gender, age, color, disability, and religion.

- ASU supports a safe environment for both working and studying. The university environment must be free of bullying, harassment, and any form of discrimination. Any of the acts will not be permitted, and any complaints will be investigated thoroughly. Anyone who feels being subjected to these acts is encouraged to raise complaints.

- All students are given equal opportunities and access to facilities. Each student receives full support in developing their skills and talents. Selection for training, or other benefits shall be based on aptitude and ability.

PROGRAM MANAGEMENT
- The faculty has its own dedicated space on the University's main website which can be reached at: https://cis.asu.edu.eg/. The site provides various services for students and faculty members by presenting the internal regulations of the bachelor's degree courses.

- A welcome and induction process starts during their first week, where all students are guided to their Course studies. The purpose of induction is to introduce new students to

their peers, the academic and support staff, to familiarize them with the access to and use and of facilities and to outline the relevant policies, procedures, rules and regulations.

- Students have sufficient access to technology to make it possible for them to successfully complete the academic year. This is mostly facilitated through fully fledged IT laboratories, and free Wi-Fi facilities.

- Every student is assigned an Academic Advisor who is one of the faculty members and may continue with the student for the whole study duration. The Academic Advisor should follow-up with the student, assist him in selecting courses each semester, and request to place the student under probation for one semester.

- Students will be given a student handbook at the start of their Course study or access to the LMS where a soft copy is available.

- Student support is constantly valued and acknowledged in student end-of-term evaluation questionnaires and verbal feedback.

- Students can also use their official emails to access content, assignment information, quizzes, announcements, and grades via faculty learning management software (LMS) and the University Management System (UMS).

STUDENTS INVOLVEMENT
There are different facilities that ensure students involvement:

- **Students' Affairs Administration**
  The students' affairs administration is chaired by the Vice-Dean for Education and Students' Affairs and is located in the faculty administration building. This administration has representatives who are responsible for the following tasks:
  - Archiving of the students' files.
  - Issuing the students' identity cards.
  - Electronic recording of the students' course registration, add/drop, and withdraw.
  - Processing the students' course evaluation at the end of each semester.
  - Issuing the students' records at the end of each semester.
  - Issuing the students' graduation certificates.
  - Processing the students' appeals and requests.

- **Students' Union**
  The students' union is also under the general supervision of the Vice-Dean for Education and Students' Affairs.

- **Financial Affairs Administration**
  The financial affairs administration is located at faculty administration building, is responsible for issuing the payment orders for the students' tuition fees at the beginning of the academic year.

- **Library**

  The faculty has a library which serves students and researchers in various fields. It is on the Ain Shams campus in a separate building, besides the Digital Library to provide an online service for users. The faculty library contains around 4104 books in different computer science branches that serve students and faculty. The student library contains around 1189 English books in the student hall and 2915 English ones in the teaching staff hall. Also, it contains all BSc honors/graduation project documentation. The library keeps them for student reference.

  The faculty library enables students and staff to access and borrow the available books. They have the right to borrow one book for a week, renewable for another week if the book is available or not in demand. Students can use the library services six days a week from 9:00 AM to 5:00 PM (Saturday to Thursday).

  Students can access the Egyptian Knowledge Bank (EKB): http://www.ekb.eg/ which is an online library archive and resource that provides access to learning resources and tools for educators, researchers, students, and the Egyptians in general. Through it, they gain access to a lot of E-journals, E-books, digital libraries of many publishers such as "Wiley", "Springer", "Elsevier". Moreover, all students can access EKB remotely off-campus at anytime from anywhere on their personal devices. Moreover, all students have emails ending with @cis.asu.edu.eg which give them access to download any number of books on EKB, also any research papers from the available publishers.

ATTENDANCE AND ENGAGEMENT
Teaching Policy

- **Language**: English language should be used for lecturing and exams

- **Course Syllabus**: Each course syllabus should contain course objectives, textbook, outline, material, assessments, grading policy, and outcome. The outline should contain sections covered every week. The staff member should give the module syllabus to the students in the first class.

- **Textbook:** The staff member is free to select/recommend a textbook, but it should be international and available.

- **Attendance**: The student's attendance should not be less than 75% during the course. Otherwise, the student should not be allowed to attend the final exam.

- **Assignments\ Quizzes:** Assignments\ quizzes are given throughout the semester (spelled out in the course syllabus). Before the end of the term, assignment and quiz grades are announced.

- **Exams:** One midterm exam should be given. The midterm exam should be given during the 7th-8th week. The final exam should be a comprehensive exam covering all material.

KEY DATES

Registration for any semester occurs within two weeks of the semester's start date. The fall semester begins in early September. The spring semester begins in early February. There is also a summer semester before the academic year, which begins late June and lasts for 7 weeks. The midterm exam should be given during the 7th-8th week.

COURSE SPECIFICATIONS

1. Course number and name: HUM110 English language I
2. Credit Hours: 2   **Contact Hours:** 2 hours / Week
3.Instructor's or course coordinator's name: Dr. Marian Nabil
4.Text book: Dornan, E., "The brief English Handbook", Little Broen and Company,1984
5.Specific course information:
a. Catalog description of the content of the course: The material reflects the stylistic variety that advanced learners have to be able to deal with ; The course gives practice in specific points of grammar to consolidate and extend learner's existing knowledge; Analysis of syntax; comprehension; Skimming and scanning exercises develop the learners skills; comprehension questions interpretation and implication; the activities and games used develop listening; speaking and writing skills through a communicative; functional approach; with suggested topics for discussion and exercises in summary writing and composition.
b. co-requisite: None
c. required, elective, or selected elective: Required

1. Course number and name: BSC123 Probability and Statistics
2. Credit Hours: 3   **Contact Hours:**4 hours / Week
3.Instructor's or course coordinator's name: Prof. Hassan Ramadan -Dr. Hanan Ahmed
4.Text book: McClave, Sincich, "Statistics", 9th ed, Prentice Hall, 200

5.Specific course information:
a. Catalog description of the content of the course: Discrete probability. Continuous probability. Expectation and deviation. conditional probability. Stochastic Processes. Independence and Bayes' theorem. Random variables. Distribution functions. Moments and generating function. Probability distributions. Correlation and regression: method of least squares, multiple regression, (linear generalized and rank) correlation.
b. co-requisite: None
c. required, elective, or selected elective: Required

1. Course number and name: BSC122 Calculus I
2. Credit Hours: 3   **Contact Hours:**4 hours / Week
3.Instructor's or course coordinator's name: Dr. Doaa Ezzat - Dr. Esraa Abdel Raouf
4.Text book: Ron Larson," Calculus with analytic geometry", seventh edition, Addison Wesley, 2001

5.Specific course information:
a. Catalog description of the content of the course: The continuity and the differentiability of a real function. Techniques of differentiation. Derivatives of the trigonometric functions. Implicit differentiation. Linear approximations and differentials. Applications of the derivative: Extrema of functions, optimization problems, velocity and acceleration. Integrals: Indefinite integrals, change of variables, definite integrals, the fundamental theorem of calculus, numerical integration. Applications of definite integrals: Areas, solids of revolution, arc length and surfaces of revolution, work, moments and centers of mass. Transcendental functions: Derivative of inverse function, natural logarithm function, exponential functions, inverse trigonometric functions, hyperbolic and inverse hyperbolic functions, indeterminate forms and rule.
b. co-requisite: None

c. required, elective, or selected elective: Required

1. Course number and name:BSC121 Physics I
2. Credit Hours: 3   **Contact Hours:**4 hours / Week
3. Instructor's or course coordinator's name: Prof. Ali El-Naem - Dr. Salsabil Amin - Dr. Esraa Abdel Raouf
4. Text book: Serway R, "Physics for Engineering and Scientists" 6th edition, Thomson, 2004.
5. Specific course information:
a. Catalog description of the content of the course: Mechanics: physics and measurements, motion in one dimension, vectors, motion in two dimensions, laws of motion, circular motion and its applications, work and energy, potential energy and conservation of energy, linear momentum and collision, rotation of a rigid body, rolling motion, law of gravity. Waves: Oscillatory motions, wave motion, sound waves.
b. co-requisite: None

c. required, elective, or selected elective: Required

1. Course number and name: CIS160 Introduction to Computers
2. Credit Hours: 3   **Contact Hours:** 4 hours/week
3. Instructor's or course coordinator's name: Prof. Taymour Nazmy - Dr. Naglaa Fathy
4. Text book: Catherine Laberta, "Computers are your future", 12th edition, Prentice Hall, 2012
5. Specific course information:
a. Catalog description of the content of the course: This course provides students with terminologies and concepts of the IT field: including Computer definition, computer hardware, computer software, introduction to networks, and introduction to computer programming. In addition, students are practicing problem-solving using flowcharts, and pseudocode.
b. co-requisite: None

c. required, elective, or selected elective: Required

1. Course number and name: HUM204 Psychology
2. Credit Hours: 2   **Contact Hours:** 2 hours / Week
3.Instructor's or course coordinator's name: Prof. Moataz Ebeid - Dr. Abdelaziz Mahmoud
4.Text book: D. G. Myers, Wade, C., Tavris, C., Saucier, D., Elias, L. "Exploring Social Psychology", 3rd edition, 2003.
5.Specific course information:

a. Catalog description of the content of the course: The course aims to teach the student how to analyze and explain thoughts, feelings, and behavior in a systematic and reproducible way. Core areas of psychology. Quantitative and qualitative research methodology. To identify and recognize different psychological terms and involve the scientific study of mental functions and behaviors. Emphasis on applications of psychological knowledge and real-world, problem-solving. Know ideas about psychometry.
b. co-requisite: None
c. required, elective, or selected elective: Required

1. Course number and name: HUM222 Business Administration
2. Credit Hours: 2   **Contact Hours:** 2 hours / Week
3.Instructor's or course coordinator's name: Dr. Amira Aly - Dr. Shimaa Haridy
4.Text book: Gary Armstrong, *Marketing: an introduction*, Published by Pearson Canada (2020)

Bartol, Kathryn M., Martin, and David C., "*Management",* Boston: Irwin McGraw-Hill Publishers, 1998.
5.Specific course information:
a. Catalog description of the content of the course: This course aims to introduce basic business administration concepts. The course covers organizational and corporate structure. It also covers important business concepts such as accounting, marketing, and finance. The students get business related skills: managing themselves within an organization, starting a business, writing business plans.

b. co-requisite: None
c. required, elective, or selected elective: Required

1. Course number and name: HUM216 Professional Ethics and Legal Aspects
2. Credit Hours: 2   **Contact Hours:** 2 hours / Week
3.Instructor's or course coordinator's name: Dr. Ahmed ElAwady
4.Text book: George W. Reynolds. Ethics in Information Technology, Fourth Edition.
© 2012 Course Technology, Cengage Learning ISBN-13: 978-1-111-53412-7
5.Specific course information:
a. Catalog description of the content of the course: Computer crime and ethics, nature of computer crime, criminal and civil law overview, basis for protection against computer crimes, suitability and application of intellectual property to computers, application of patent to computers, copyright and its range of application ownership and third party rights, trade secrets and unfair competition, computer contracts and liability, privacy, viruses and other programmed threats, legal protection against viruses, global information networks and related legal aspects.
b. co-requisite: None
c. required, elective, or selected elective: Selected Elective

1. Course number and name: BSC125 Calculus II
2. Credit Hours: 3   **Contact Hours:**4 hours / Week
3.Instructor's or course coordinator's name: Dr. Mohamed AbdelAal
4.Text book: W. Briggs, L. Cochran," Calculus", international edition, Pearson
5.Specific course information:
a. Catalog description of the content of the course: Techniques of integration: Integration by parts, trigonometric integrals and substitutions, integrals of rational functions, quadratic

expressions, tables of integrals, improper integrals. Infinite series: Sequences, convergent or divergent series, positive-term series (basic comparison test, limit comparison test, ratio and root tests), alternating series and absolute convergence, power series, power series representations of functions, Maclaurin and Taylor series, applications of Taylor polynomials. Differential equations: Definition, classifications and terminology, techniques of solution of ordinary first-order first-degree differential equations (separable, reducible to separable, homogeneous, reducible to homogeneous, linear, reducible to linear, exact differential, non-exact differential-integrating factor.

b. co-requisite: BSC122. Calculus I

c. required, elective, or selected elective: Required

1. Course number and name: BSC126 Physics II
2. Credit Hours: 3   **Contact Hours:** 4 hours / Week
3. Instructor's or course coordinator's name: Prof. Hasan Ramadan - Dr. Mahmoud Mounir
4. Text book: Serway R, "Physics for Engineering and Scientists" 6th edition, Thomson, 2004.
 5. Specific course information:
a. Catalog description of the content of the course: Optics: Superposition of waves, interference, diffraction and polarization. Elect of magnetic field and Faraday's law, electromagnetic waves. Selected topics: Introduction to modern physics and applications, molecules and solids, superconductivity. Field, Gauss's law, magnetic field.
b. co-requisite: BSC121. Physics I
c. required, elective, or selected elective: Required

1. Course number and name: BSC124 Electronics
2. Credit Hours: 4   **Contact Hours:** 6 hours / Week
3. Instructor's or course coordinator's name: Dr. Mahmoud Fayez
4. Text book: JIMMIE J. CATHEY, "Basic Electronic Engineering", McGraw-Hill, 1996.
5. Specific course information:
a. Catalog description of the content of the course: Electronic components and basic laws. Principles of circuit-analysis: Dividers, equivalent sources, methods of solutions, circuits with nonlinear resistance, maximum power-transfer, sinusoidal excitation and impedance concept, magnitude and phase-shift of RLC circuits. Frequency response of linear circuits, passive filter types and characteristics. Diode-circuits: half and full-wave rectifiers, Zener regulators and limiters. Transistor circuits: BJT characteristics, types, basic configuration, biasing and load line, equivalent circuits, voltage gain, input and output impedance, coupling, practical circuits, FET circuits: Characteristics, types, basic configuration, switching modes. Operational amplifiers: Principles, basic circuits: adder, follower, differentiator, integrator, comparator, Schmitt-circuit, special circuits. Active filters: types, characteristics. Oscillators: Relaxation, feedback, RC, LC, and Voltage controlled oscillators.
b. co-requisite: BSC121. Physics I
c. required, elective, or selected elective: Required

1. Course number and name: CIS150 Structured Programming
2. Credit Hours: 3   **Contact Hours:** 4 hours/week
3. Instructor's or course coordinator's name: Dr. Salsabil Amin - Dr. Naglaa Fathy

4. Text book: M. Goodrich and R. Tamassia, M. Mount, D. Mount (2002) " Data Structures & Algorithms in C++", Wiley.

5. Specific course information:

a. Catalog description of the content of the course: Structured program development: Problem solving, decision structures, repetition structures, top-down and stepwise refinement. Subprograms: Procedures, functions. Structured data types: one-dimension arrays, two-dimension arrays. Sets. Records. Files: Text files random handling files.
Dynamic data structures (Pointers). Recursion: Recursive functions, towers of Hanoi.

b. co-requisite: CIS160. Introduction to Computer Sciences

c. required, elective, or selected elective: Required

1. Course number and name: HUM113 Report Writing

2. Credit Hours: 2   **Contact Hours:** 2 hours / Week

3.Instructor's or course coordinator's name: Dr. Hanaa Talha - Dr. Hanan Hindy

4.Text book: Raymond Greenlaw, "Technical Writing, Presentation Skills, and Online Communication: Professional Tools and Insights", Information Science Reference, 2012, ISBN 978-1-4666-0238-0.

5.Specific course information:

a. Catalog description of the content of the course: This course aims to give the student the basic rudiments of report writing. The rationale for report writing, the structure of reports, and such details as physical appearance and linguistic style will be discussed. In addition to writing reports, students will also be given supplementary exercises, as necessary, to enhance their general writing skills.

b. co-requisite: None

c. required, elective, or selected elective: Required

1. Course number and name: BSC221 Discrete Mathematics

2. Credit Hours: 3   **Contact Hours:** 4 hours / Week

3.Instructor's or course coordinator's name: Dr. Mohamed AbdelAal

4.Text book: K. H. Rosen "Discrete Mathematics and its Applications", 7th Edition, McGraw Hill , 2011

5.Specific course information:

a. Catalog description of the content of the course: Sets, sequences, algorithms and pseudo codes. Relations and Functions. Boolean Algebra. propositional logic. Proof techniques. Proof by induction. Basic of Counting. Iteration and recursion. Graph and tree representations and properties.

b. co-requisite: None

c. required, elective, or selected elective: Required

1. Course number and name:CIS250Object-Oriented Programming

2. Credit Hours: 3   **Contact Hours:** 4 hours / Week

3. Instructor's or course coordinator's name: Prof. Zaki Taha - Dr. Mohamed Mabrouk

4. Text book: Robert Lafore (2002), Object Oriented Programming in C++, Sams publisher.

5. Specific course information:

a. Catalog description of the content of the course: This course introduces the main concepts of Object-Oriented Programming paradigm: Encapsulation, inheritance, polymorphism, and

abstraction. Topics also include exception handling, virtual functions, operator overloading, template classes and functions.
b. co-requisite: CIS150. Structured Programming
c. required, elective, or selected elective: Required

1. Course number and name: CIS260 Logic Design
2. Credit Hours: 3   **Contact Hours:** 4 hours/week
3. Instructor's or course coordinator's name: Dr. Randa Mohamed - Dr. Donia Gamal
4. Text book: M.M. Mano, "Digital Design", Prentice Hall; 5th edition, 2011
5. Specific course information:
a. Catalog description of the content of the course: Basic logic concepts: Logic states, number systems, Boolean algebra, basic logical operations, gates and truth tables. Combinational logic: Minimization techniques, Multiplexers and deMultiplexers, encoders, decoders, adders and subtractors, look-ahead carry, comparators, programmable logic arrays and memories, design with MSI, logic families, tri-state devices, CMOS and TTL logic interfacing. Sequential logic: Flip-flops, monostable multi-vibrators, latches and registers, counters, shift registers. Analog to digital conversion, digital-to-analog conversion, data acquisition, microprocessors.
 b. co-requisite: BSC121. Physics I
c. required, elective, or selected elective: Required
•   Flip-flops, design and analysis of sequential circuits
•   Synchronous counters & frequency
•   Ripple counters and different registers.
•   RAM, ROM and PLA
•   Applications (digital clock)

1. Course number and name: CIS240 Statistical Analysis
2. Credit Hours: 3   **Contact Hours:** 4 Hours/Week
3. Instructor's or course coordinator's name: Dr. Hanan Ahmed - Dr. Shimaa Haridy
4. Text book: Ronald Walpole, Raymond Myers, Sharon Myers, Keying Ye (2016) "Probability and Statistics for Engineers and Scientists", Ninth Edition, Pearson.
5. Specific course information:
a. Catalog description of the content of the course: Sampling distributions. Estimation: points estimate, confidence interval estimates (for means, proportions, differences, sums, variances, and variance ratios), maximum likelihood estimates. Hypothesis tests: Null hypothesis, type I and type II errors, level of significance, special tests of significance for large or for small samples, operating characteristic curves, quality control chart, fitting theoretical distributions to sample frequency distributions, goodness of fit.
 b. co-requisite: BSC123. Probability & Statistics
c. required, elective, or selected elective: Required

1. Course number and name: CIS280 Database Management Systems
2. Credit Hours: 3   **Contact Hours:** 4 hours/week
3. Instructor's or course coordinator's name: Prof. Nagwa Badr - Dr. Huda Amin - Dr. Nivin Atef
4. Text book: Elmasri& S. B. Navathe. Fundamentals of Database Systems. Addison Wesley,6th edition, 2011, ISBN 0-321-36957-2

5. Specific course information:
a. Catalog description of the content of the course: An overview of database management, Architecture of a database system, and Relational algebra. Data manipulation: Simple queries, join queries, built-in functions, advanced features, update operations. The system catalog: Querying the catalog, updating the catalog. Database environment: Recovery and concurrence security and integrity, database product family.
 b. co-requisite: CIS150. Structured Programming
c. required, elective, or selected elective: Required

1. Course number and name: CIS220 Computer Organization & Architecture
2. Credit Hours: 3   **Contact Hours:** 4 hours/week
3. Instructor's or course coordinator's name: Prof. Said Ghoneimy - Prof. Sayed Fadel - Dr. Hanan Ahmed
4. Text book: D.A. Patterson and J. L. Hennessy "The Computer Organization and Design the Hardware/Software Interface" Fourth Edition, ELSEVIER.
5. Specific course information:
a. Catalog description of the content of the course: Basic computer organization and design: Computer instructions and their codes, timing and control, execution of instructions. Input, output and interrupt. Central processor organization, Arithmetic logic unit, stack organization, Instruction formats, Addressing modes, Data transfer and manipulation, program control. Micro-program control organization: Control memory and Address sequencing. Input/output organization: Peripheral devices, asynchronous data transfer, direct memory access. Memory organization: Auxiliary memory, virtual memory, cache memory, memory management hardware. Pipeline and vector processing. Multiprocessors.
b. co-requisite: CIS260. Logic Design
c. required, elective, or selected elective: Required

1. Course number and name: CIS270 Data Structures
2. Credit Hours: 3   **Contact Hours:** 4 hours / Week
3.Instructor's or course coordinator's name: Dr. Wedad Hussien, Dr. Hanan Hindy
4.Text book: Mark Allen Weiss, Pearson "Data Structures and Algorithm Analysis in C++" , (Fourth Edition).
5.Specific course information:
a. Catalog description of the content of the course: Abstract Data Types (ADT). Stacks: Definition and operations, implementation of stacks with array, applications of stacks. Queues: Definitions, implementation of circular queues, applications of queues. Linked lists: Singly linked lists, linked stacks, linked queues, doubly linked lists, application of linked lists. Tree structures, binary trees: Binary Search trees, binary tree traversals. Hashing: Hash functions, perfect Hash functions. Graphs: Introduction to graphs, graph traversal, shortest path.
b. co-requisite: CIS 150 Structured Programming
c. required, elective, or selected elective: Required

1. Course number and name: BSC225 Linear Algebra
2. Credit Hours: 3   **Contact Hours:**4 hours / Week
3.Instructor's or course coordinator's name: Prof. Ali ElNaem - Dr. Mohamed Hassan

4.Text book: K. H. Rosen (2011). Discrete Mathematics and its Applications, 7th Edition, McGraw Hill, Linear Algebra and its Applications, Bernard Kolman
 5.Specific course information:
a. Catalog description of the content of the course: Bases, vector spaces, and orthogonality. Inner product spaces. Matrix representations of linear systems. Matrix inversion. Linear transformations. Solution of linear systems. System transformations. Eigen systems. Gram-Schmidt procedure.
b. co-requisite: None
c. required, elective, or selected elective: Required

1. Course number and name: CIS230Operations Research
2. Credit Hours: 3   **Contact Hours:** 4 hours/week
3. Instructor's or course coordinator's name: Dr. Safaa Amin - Dr. Doaa Ezzat
4. Text book: Richard Bronson and Govindasami Maadimuthu (1197), Operations Research - Schaum's, 2nd Ed, McGraw Hill.
5. Specific course information:
a. Catalog description of the content of the course: Linear programming: Formulations and graphical solution. Algebraic solution: the simple method and dual-simplex method. Sensitivity analysis. Transportation and assignment problems. Integer programming: cutting-plane algorithms, branch and bound method. Dynamic programming: Examples of dynamic programming. Models and computations, solution of linear programs by dynamic programs. Project scheduling by PERT-CPM.
 b. co-requisite: none
c. required, elective, or selected elective: Required

1. Course number and name: CIS243 Artificial Intelligence
2. Credit Hours: 3   **Contact Hours:** 4 hours / week
3. Instructor's or course coordinator's name: Prof. Abdel Badeeh Salem - Dr. Dina ElSAyyad
4. Text book: Artificial Intelligence: Structures and Strategies for Complex Problem Solving. George Luger's AI textbook.
5. Specific course information:
a. Catalog description of the content of the course: This course aims to introduce basic concepts, principles, theories, and applications of artificial intelligence. Topics include Artificial and Human Intelligence, Domains of AI-symbolic processing: Semantic nets, modeling, model-based reasoning, and frames. Inference techniques: Implication, forward and backward chaining, inference nets, predicate logic, quantifiers, tautology, resolution, and unification. Rule-based systems: Inference engine, production systems, problem-solving, planning, decomposition, and various search techniques (state-space search, heuristic search, and probabilistic search algorithms)
b. co-requisite: CIS150. Structured Programming
c. required, elective, or selected elective: Required

1. Course number and name: CIS353 Operating Systems
2. Credit Hours: 3   **Contact Hours:** 4 hours/week
3. Instructor's or course coordinator's name: Prof. Mostafa Aref - Dr. Ahmed Salah

4. Text book: William Stallings, (2011) Operating Systems: Internals and Design Principles (2011), 6th E,Pearson.
5. Specific course information:
a. Catalog description of the content of the course: Introduction Operating system structures: System components, operating system services, system structure, virtual machines, system design and implementation, system generation. Concurrent processes: Process concept, the producer/ consumer problem, the critical section problem, semaphores, language constructs, inter-process communication. CPU scheduling: Scheduling concepts, performance criteria, scheduling algorithm. Memory management: Multi programming with fixed partitions, multiprogramming with variable partitions, paging, segmentation. Secondary storage management: Physical characteristics, device directory, free space management allocation methods, disk scheduling. File systems: File concept, access methods, directory systems, file protection.
 b. co-requisite: CIS220. Computer Organization & Architecture
c. required, elective, or selected elective: Required

1. Course number and name: CIS365 Computer Networks
2. Credit Hours: 3   **Contact Hours:** 4 hours / week
3. Instructor's or course coordinator's name: Dr. Tamer Mostafa - Dr. Dina Fawzy
4. Text book: Data and Computer Communications (9th Edition), Williams Stallings, Prentice-Hall, 2010.
5. Specific course information:
a. Catalog description of the content of the course: Introduction: The use of computer networks, network architecture, and the ISO reference model. Network topology: Connectivity analysis, delay analysis, backbone design, local access network design. The physical layer: The theoretical basis for data communication, the telephone system, transmission and multiplexing, terminal handling errors. The data link layer: Elementary data link protocols, sliding window protocols, analysis of protocols. The network layer: Virtual circuits and datagrams, routing algorithms, satellite packet broadcasting. The transport and session layers: Transport protects design issues, interconnection of packet-switching networks. The presentation and application layer.
b. co-requisite: CIS160. Introduction to Computer Sciences
c. required, elective, or selected elective: Required

1. Course number and name: CIS290 System Analysis & Design
2. Credit Hours: 3   **Contact Hours:** 4Hours/Week
3. Instructor's or course coordinator's name: Dr. Yasmine Afify
4. Text book: Jeffrey A., et. Al. (2008) Modern Systems Analysis and Design, Fifth Edition, Pearson Prentice Hall, ISBN-10: 0-13-613296-0.
5. Specific course information:
a. Catalog description of the content of the course: Fundamental concepts, system definition, user definition, the different types of users, communication gap, system analyst, system management, structure system analysis, system analysis tools data flow diagram (DFD), data dictionary, English structure, decision tables, decision trees. The system life cycle, problem definition and modules, feasibility studies. Source and destination of data, stores, development plan, analysis phase, generating alternatives. Analysts' recommendation, logic of the process, detailed design,

identifying options, system control program, screens, reports and files, test plan, implementation and maintenance.

b. co-requisite: CIS280. Database Management Systems

c. required, elective, or selected elective: Required

1. Course number and name: INF311 Data Mining
2. Credit Hours: 3   **Contact Hours:** 4 hours / Week
3.Instructor's or course coordinator's name: Prof. Tarek Gharib -Dr. Wedad Hussien
4.Text book: Data Mining: Concepts and Techniques, 2nd ed. The Morgan Kaufmann Series in Data Management Systems, Jim Gray, United States, 2006.
5.Specific course information:
a. Catalog description of the content of the course: Data mining is becoming increasingly important in many environments; a few of these include bioinformatics, advertising, banking, business, finance, security, medicine, and web page design, but there are many others. This course will introduce fundamental strategies and methodologies for data mining along with the concepts underlying them and will provide hands-on experience with a variety of different techniques. Students will learn to use a set of data mining tools.
b. co-requisite: CIS280. Database Management Systems
c. required, elective, or selected elective: Required

1. Course number and name: INF312 Statistical Inference
2. Credit Hours: 3   **Contact Hours:** 4 hours / Week
3.Instructor's or course coordinator's name: Dr. Mahmoud Mounir
4.Text book: • Bickel, P.J. and Doksum, K.A. (2015). Mathematical Statistics: basic ideas and selected topics. Chapman and Hall/CRC
•   Casella, G. and Berger, R.L. (2008). Statistical inference. Cengage Learning.
5.Specific course information:
a. Catalog description of the content of the course: This course deals with fundamental concepts and techniques of statistical inference including estimation and tests of simple and composite hypotheses. A brief revision will also be given of some basic topics in probability theory as well as single and multiple random variables. The impact that statistics has made and will continue to make in virtually all fields of scientific and other human endeavors is considered. During this course, students will develop a deeper understanding of the basis underlying modern statistical inference and equip themselves with a statistical tool kit which will enable them to apply their knowledge and skills to real world tasks.
b. co-requisite: BSC123 Probability and Statistics
c. required, elective, or selected elective: Required

1. Course number and name: CIS380Software Engineering
2. Credit Hours: 3   **Contact Hours:** 4 hours/week
3. Instructor's or course coordinator's name: Prof. Nagwa Badr - Dr. Huda Amin - Dr. Doaa Ezzat
4. Text book: Schach, S., "Object-Oriented and Classical Software Engineering", 5th Edition, McGraw Hill. Wesley.
5. Specific course information:

a. Catalog description of the content of the course: Introduction: Well-engineered software, the software process, software evolution, and software reliability. Human factors in software engineering: Human diversity, knowledge processing, group working. Software specification and system modeling: The software requirements document, requirements evolution, system contexts, viewpoint analysis, model description, real-time system modeling, data modeling. Requirements definition and specification: Requirements specification, nonfunctional requirements definition. Requirements validation and prototyping: The prototyping process, prototyping techniques. Formal specifications, algebraic specification. Model based specification. Software design: Top-down design, systems design, design decomposition, software design quality, design description languages.
 b. co-requisite: CIS150. Structured Programming
c. required, elective, or selected elective: Required

1. Course number and name: Code: CIS340 Analysis and Design of Algorithms
2. Credit Hours: 3   **Contact Hours:** 4 hours / week
3. Instructor's or course coordinator's name: Prof. Mostafa Aref - Dr. Ahmed Salah
4. Text book: Thomas Cormen, Charles Leiserson, Ron Rivest and Cliff Stein. Introduction to Algorithms, MIT press, 3rd edition, 2009.
5. Specific course information:
a. Catalog description of the content of the course: Algorithm concept. Analysis and complexity. Design methods: Divide and conquer: The general method, binary search, merge sort, quick sort, selection, matrix multiplication. Greedy method: The general method, minimum spanning Trees. Dynamic programming: The general method, shortest paths, optimal search trees, and the traveling salesman problem. Backtracking: The general method, The 8-queens Problem. NP-hard and NP-complete problems: Cook's theorem, NP-hard graph problems.
b. co-requisite: CIS150. Structured Programming
c. required, elective, or selected elective: Required

1. Course number and name: INF 321 Business Intelligence
2. Credit Hours: 3   **Contact Hours:** 4 hours / Week
3.Instructor's or course coordinator's name: Prof. Walaa Gad - Dr. Amira Aly
4.Text book: Carlo Vercellis, 2011, Business Intelligence: Data Mining and Optimization for Decision Making. John Wiley & Sons.
 Efraim Turban, Ramesh Sharda, Dursun (2010). Decision Support and Business Intelligence Systems ISBN:978-0-13-610729-3.
5.Specific course information:
a. Catalog description of the content of the course: This course aims to equip students with the knowledge and skills required to leverage business intelligence tools and techniques for effective decision-making within organizations. The course typically covers a wide range of topics related to data analysis, reporting, and decision-making processes within an organization.
b. co-requisite: INF 312 Statistical Inference
c. required, elective, or selected elective: Required

1. Course number and name: INF322 Web Development and Design
2. Credit Hours: 3   **Contact Hours:** 4 hours / Week
3.Instructor's or course coordinator's name: Dr. Eman Amin

4.Text book: Pressman R. and Lowe D. (2009) *Web Engineering: a practitioner's approach*, McGraw Hill.

5.Specific course information:
a. This Course covers technical and business aspects, systematic development of web applications, client-server web applications, requirement engineering for web applications, modelling, architectures of web applications, technology driven design, testing, operation and maintenance of web applications. After completing this course, students will learn the concepts, methods, and techniques needed for developing web-based applications and the desired quality characteristics of web applications.

b. co-requisite: CIS 150 Structured Programming
c. required, elective, or selected elective: Required

1. Course number and name: INF323 Data Security
2. Credit Hours: 3   **Contact Hours:** 4 hours / Week
3.Instructor's or course coordinator's name: Dr. Tamer Mostafa - Dr. AlShimaa Abu Alian
4.Text book: Cryptography and Network Security Principles and Practices, eighth Edition, William Stalling, Prentice Hall, New Jersey, USA, 2019.
5.Specific course information:
a. Catalog description of the content of the course: This course covers the basic knowledge of understanding and using cryptography to secure data. The course begins with an overview of the main data security objectives, various types of security attacks and threats, taxonomy of different cryptographic algorithms. Topics include classical encryption techniques, symmetric and public-key encryption techniques, number theory, block ciphers, stream ciphers and pseudorandom number generators.
b. co-requisite: CIS 365 Computer Networks
c. required, elective, or selected elective: Required

1. Course number and name: INF411 Data Science I
2. Credit Hours: 3   **Contact Hours:** 4 hours / Week
3.Instructor's or course coordinator's name: Prof. Rasha Ismail , Dr. Eman Amin
4.Text book:- Vijay Kotu, Bala Deshpande (2018), "Data Science Concepts and Practice", 2nd Edition, Morgan Kaufmann
5.Specific course information:
a. Catalog description of the content of the course: This course will focus on the essential elements of data science and the basic concepts of neural networks and deep learning. It introduces the analysis of data to perform predictions using machine learning and deep learning methods. The fundamental principles, underlying mathematics, and implementation details of deep learning. This includes the concepts and methods used to optimize these highly parameterized models such as (gradient descent and backpropagation), the modules that make them up (linear, convolution, and pooling layers, activation functions, etc.), and common neural network architectures
b. co-requisite: INF 312 Statistical Inference
c. required, elective, or selected elective: Selected Elective

1. Course number and name: INF421 Mobile Computing

2. Credit Hours: 3   **Contact Hours:** 4 hours / Week

3.Instructor's or course coordinator's name: Dr. Amira Aly

4.Text book: Mobile Computing, Second Edition by Asoke K. Talukdar, Tata MacGraw Hill, USA, 2010

 Mobile Communications, by Jochen H. Schiller, Addison-Wesley, USA, 2003

5.Specific course information:

a. Catalog description of the content of the course: Introduction: mobile technologies, devices, computing. Wireless communication technologies. Global System for Mobile communication (GSM). Short Message Service (SMS). General Packet Radio Service (GPRS). Wireless Application Protocol (WAP). IP Multimedia Subsystem (IMS).Multimedia Messaging Service (MMS).Geo-location and Global Positioning System (GPS).Architecture for mobile computing, three-tier architecture. Mobile IP, mobile TCP. Mobile operating systems, mobile databases, Mobile applications. Development environments. Programming languages and SDKs for mobile computing. Location management. Location-based services. Context-aware mobile computing. Mobile-agent middleware. Caching strategies in mobile environments. Fault tolerance and security in mobile computing environments.

b. co-requisite: CIS150. Structured Programming, CIS365. Computer networks

c. required, elective, or selected elective: Required

1. Course number and name: INF423 Cyber Security

2. Credit Hours: 3   **Contact Hours:** 4 hours / Week

3.Instructor's or course coordinator's name: Dr.Tamer Moustafa - Dr. AlShimaa Abu Alian

4.Text book: Brooks, C. J., Grow, C., Craig Jr, P. A., & Short, D. (2018). Cyber security essentials. John Wiley & Sons.

5.Specific course information:

a. Catalog description of the content of the course: This course will provide a wide overview of Cyber Security concepts and practices that are used as a tool for information security applications. The course covers various aspects of data integrity, privacy, cryptographic hash functions, user and message authentication, access control models, database security, and vulnerability assessment.

b. co-requisite: CIS365. Computer networks

c. required, elective, or selected elective: Required

1. Course number and name: INF 415 Software Design Pattern

2. Credit Hours: 3   **Contact Hours:** 4 hours / Week

3.Instructor's or course coordinator's name: Prof. Walaa Khaled

4.Text book: Patterns, D. (2016). Elements of Reusable Object-Oriented Software, Addison-Wesley Professional.

5.Specific course information:

a. Catalog description of the content of the course: The course introduces design patterns as proven solutions for recurring problems. It introduces techniques for designing classes and organizing their operations to avoid problems in maintenance and extension. The aim is to understand the most important design patterns and apply object-oriented techniques to design reusable, maintainable and modifiable software. The course covers creational, structural and behavioral patterns.

b. co-requisite: CIS 380 Software Engineering

c. required, elective, or selected elective: Selected Elective

1. Course number and name: INF427 Information Visualization
2. Credit Hours: 3   **Contact Hours:** 4 hours / Week
3.Instructor's or course coordinator's name: Dr. Nivin Atef
4.Textbook: Visual Display of Quantitative Information, Edward. R. Tufte, 2001.
5.Specific course information:
a. Catalog description of the content of the course: The course introduces the foundation and the state of the art of information visualization. It explores and reflects on the design, application, and evaluation of a diverse range of information systems. It demonstrates how a number of common types of information can be visually, intuitively and interactively represented. It provides a first-hand experience of visualizing a variety of realistic data types. Graphical perception. Visual encoding principles. Interaction principles. Single-view methods. Multiple-view methods. Item reduction methods. Attribute reduction methods. Tabular data. Visualization toolkits. Graphs and trees. Flow visualization. Geo-spatial visualization. Volume visualization. Vector visualization. High-dimensional Visualization. Visualizing relational data. Design and evaluation. Visualizing structure. Visualizing time. Scaling.
b. Co-requisite: INF321. Data Analytics
c. required, elective, or selected elective: selected elective.

1. Course number and name: INF412 Cloud Computing
2. Credit Hours: 3   **Contact Hours:** 4 hours / Week
3.Instructor's or course coordinator's name: Prof. Tarek Gharib – Dr. Eman Amin
4.Text book: Surianarayanan (2019), Essentials of Cloud Computing, 1st Edition, Springer.
5.Specific course information:
a. Catalog description of the content of the course: Key cloud computing concepts. Cloud computing properties and characteristics, service models, deployment models. Cloud computing models, techniques, and architectures. Infrastructure as a Service (IaaS): resource virtualization, server, storage, network. Platform as a Service (PaaS): Cloud platform and management: computation, storage, case studies. Software as a Service (SaaS): web services, web OS, Case studies. Cloud-based software systems. Advanced web technologies. Cloud issues: provider lock-in, security. Key cloud service providers and platforms. Creating own cloud services. Cloud deployment and service models, cloud infrastructure, migration to cloud computing environments. Traditional, virtualized, and cloud data center environments. Storage, networking, desktop, and application virtualization. Backup and recovery, security, and management of cloud computing systems.
b. Co-requisite: CIS365. Computer networks
c. required, elective, or selected elective: Selected Elective

1. Course number and name: INF422 Social Media Analytics
2. Credit Hours: 3   **Contact Hours:** 4 hours / Week
3.Instructor's or course coordinator's name: Prof. Rasha Ismail - Dr. Nivin Atef
4.Text book: Khan, G. F. (2018). Creating Value with Social Media Analytics: Mining Business Insights from Social Media Text, Actions, Networks, Hyperlinks, Apps, Search Engine, and Location Data. Create Space. ISBN: 978-1977543974..
5.Specific course information:

a. Catalog description of the content of the course: This course integrates social media, network analysis and data mining to provide a convenient and coherent platform for students to understand the basics and potential of social media analytics. It introduces basic concepts in social media analytics, metrics to characterize networks, models to explain the generation of networks, and methods to analyze networks. The students learn to use software tools to visualize and analyze real-world social network data.

b. Co-requisite: INF312 Statistical Inference

c. required, elective, or selected elective: Required

1. Course number and name:INF429 Enterprise Resource Planning
2. Credit Hours: 3   **Contact Hours:** 4 hours / Week
3.Instructor's or course coordinator's name: Dr. Shimaa Haridy
4.Text book:
Luvai F. Motiwalla and Jeff Thompson, Enterprise Systems for Management (Second Edition), Pearson Education, 2012.

5.Specific course information:
   a. Catalog description of the content of the course: This course will introduce enterprise systems and show how organizations use enterprise systems to run their operations more efficiently and effectively. The course will examine typical enterprise systems modules: materials management (MM), supply chain management (SCM), customer relationship management (CRM), financials, projects and human resource management (HRM).

   b. co-requisite: None

   c. required, elective, or selected elective: Required

1. Course number and name: INF 426 Human Computer Interaction
2. Credit Hours: 3   **Contact Hours:** 4 hours / Week
3.Instructor's or course coordinator's name: Dr. Dina Fawzy
4.Text book: Tidwell, J. (2019) *Designing interfaces: Patterns for effective interaction design*. 3rdedn. "O'Reilly Media, Inc.".
5.Specific course information:
   a. Catalog description of the content of the course: Human-Computer Interaction (HCI) is an interdisciplinary area concerned with the study of the interaction between humans and interactive computing systems. The course will provide students with methods for evaluating, designing, and developing better interfaces between humans and computer-based systems. Students will acquire an awareness of different design and evaluation methods as well as practical, effective, and cost-conscience methods for improving systems and their interfaces. Students will gain theoretical knowledge of and practical experience in the fundamental aspects of human perception, cognition, and learning as relates to the design, implementation, and evaluation of interfaces.
   c. required, elective, or selected elective: Required.

1. Course number and name: INF 426 Software Quality Assurance
2. Credit Hours: 3   **Contact Hours:** 4 hours / Week
3.Instructor's or course coordinator's name: Dr. Yasmine Afify
4.Text book:

•   Jorgensen, P.C., 2018. Software testing: a craftsman's approach. CRC press.
•   Black, R. (2017) Agile Testing Foundations, BCS Learning & Development Ltd: Swindon UK

5.Specific course information:

a. Catalog description of the content of the course: The course introduces important quality assurance approaches throughout software development lifecycle. The process improvements standards, root cause analysis and resolution techniques are introduced. The cost of quality method is presented. The software testing levels, types and techniques are comprehensively explained. The course differentiates between static and dynamic testing with its focus on functional testing, inspections, and reliability assessment. The key testing skills necessary to successfully contribute to an Agile project are presented in detail.

b. co-requisite: CIS380. Software Engineering.

c. required, elective, or selected elective: Selected elective.

AWARD CERTIFICATES

The faculty offers support to outstanding students in a variety of methods that include:

- At the end of each academic year the faculty awards students who received a GPA of 3 (B) or above a financial prize.

- Professors organize competitions within the courses and award certificates and special gifts to distinguished students like those who got the best year work grades or presented the best project.

- The faculty provides financial and moral support for students who participate in all sorts of competitions (programming contests, theater, sports, etc.). The faculty help cover the expenses of travelling and any other expenses needed for participation.