Program Handbook

Department of Computer Science

College of Engineering & Computer Science

Academic Year 2024-2025

Jazan University

PROGRAM HANDBOOK

Bachelor in Computer science

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Department Council
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DEPARTMENT OF COMPUTER SCIENCE
COLLEGE OF ENGINEERING & COMPUTER SCIENCE
JAZAN UNIVERSITY

2024-2025

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MESSAGE FROM THE DEAN OF THE COLLEGE

Production in the old economy was based on three main factors: land, labor and capital while the new economy depends solely on the technical knowledge, creativity, intelligence and information. And also intelligence embodied in the computer and technology programs across a wide range of products have become more important than capital, materials or labor. The United Nations estimates that knowledge economies now account for 7% of global GDP and growing at 10% per annum. It is worth mentioning that 50% of productivity growth in the EU is a direct result of the use and production of information and communication technology. And the economies of knowledge depend on the availability of information and communication technologies and the use of innovation and digitization. Our country's granular began to shift to the economy built on knowledge which will increase the national revenue. The quality and quantity of this transformation is accompanied by providing different programs as a College of Engineering & Computer Science at the University of Jazan so as to achieve considerable IT knowledge base in the country. With this broad objective the college is working to make a quantum leap in teaching methods, curriculum review and enhancing student support to learn the latest technologies and the newest ways to build a generation capable of achieving the plans and methodologies for the transition to the knowledge economy for economic productivity and competitiveness. As a part of this mission, our college strives to provide knowledgeable, skilled and creative personal capable of incorporating new technologies in practice. The growing need to integrate information and communication technology and creative skills are being adopted through program curricula for progressive learning. By this way we are working with the ambition to achieve technical acceleration and rehabilitation of the students to be ready to meet the labor market demands.

Dr. Mousa Khubrani
Dean (Faculty of Engineering & Computer Science)

MESSAGE FROM THE HEAD OF THE DEPARTMENT

Welcome to the Department of Computer Science, College of Engineering & Computer Science, Jazan University. Vision of the department is to be recognized for imparting quality education, conducting research, serve the industry and community for the betterment of the nation. Our Computer Science program committed to provide quality undergraduate education and focus not only on software design and programming, but also on empowering our graduates to be at the forefront of our Nations growth. We prepare students for current trends of the job market and enhance student skills through collaborative student centric teaching and learning programs. Majority of courses in our department have laboratory components which will deepen their understanding by allowing them to be exposed to theory and practice. The students exhibit their learning through mini projects and final year projects. Our graduates will be responsible for operating systems design, programming languages development, design and implementation of compilers, software modification, as well as technical consultancy and integration support. In order to provide real-time learning, the department is fully furnished with four laboratories equipped with the latest tools and technologies. Our Department has a team of highly experienced and motivated faculty members who are ready to impart quality education and train the young minds. Our graduates are highly recruited within government agencies, and private industry. On behalf of the faculty and staff of Computer Science department I am very happy to welcome you to our department and I wish you great success.

Dr. Fathe Jeribi

Head
Department of Computer Science

ABOUT THE COLLEGE

The College was established according to the approval of His Majesty the King, No. 7 / B / 24 232 dated 11/5/1425 H. It began under the umbrella of King Khalid University, the Dean of the College at that time was Dr. Abdullah Bin Yahya Al-Hussein. The College was separated from King Khalid University and joined Jazan University on 01/12/1427 H. First decision was issued by the appointment of first Dean of the college at the University of Jazan on 04/06/1429 H Dr. Omar Al Mushayt. The College began to admit students in the first semester of the academic year 1426 - 1427H. The number of students admitted in the first semester was 68 students. At the present time the number of students reached 1762, 160 of them being students at the female section. The College started with only two specializations, Information systems and Computer Sciences. The Department of Computer Networks was established at the beginning of the first semester of the academic year 1429/1430 H. The female students section was opened at the beginning of the first semester of the academic year 1431/1432 H with two departments, Information systems and Computer Science. A decision was issued for the appointment of Dr. Mohamed Bin Yahya AlSalem as the Dean of the College of Computer Sciences and Information Systems. During the 2022-2023 academic year, the Sabya branch campus merged with the female section of the main campus. As a result, the Computer Science program is now offered in two sections: one for male students and one for female students. **On September 27th, 2023 College of Computer Science and Information Technology merged with the College of Engineering. The newly formed College is now the College of Engineering and Computer Science. Before the merging the following was the Vision, Mission and Goals of the College of Computer Science & Information Technology. The College of Engineering & Computer Science is in the process of framing updated Vision, Mission & Goals for the year 2025-2026 for the merged college.**

College Vision

To building a competitive environment in education, research, innovation and entrepreneurship in the field of Computer Science and Information Technology to serve the community.

College Mission

The mission of the College of CS & IT is to provide best practices of education, research, innovation and entrepreneurship in the field of Computer Science and Information Technology to contribute in building a vibrant society.

College Goals

1. Enhance infrastructure for supporting excellent computing education.
2. Endeavor governance and proper utilization of resources.
3. Establish state-of-the-art curricula to cover the scientific knowledge and professional needs of the students.
4. Emphasis on student-centric learning to seek better career in industry, business or government sector.
5. Empower faculty development and research activities.
6. Maintain relations with industry and other academic institutes for benchmarking and technology-sharing.
7. Improve community service and quality of life.

ACADEMIC REGULATIONS AND POLICIES

Student Admission Requirements

1) The student should be a Saudi national or his mother should be a Saudi national or a non-Saudi woman married to a Saudi and have children (at least 2)
2) The student must have obtained a high school diploma or academic equivalent from inside the Kingdom or abroad.
3) Must not have received high school or its equivalent for more than five years. (Other than colleges that require the least number of years).
4) The student must not have been dismissed from the university or any other university due to academic or behavioral reasons. It is required of any student who has previously studied at any university or college to provide documentation that he has not been dismissed academically.
5) The student must obtain permission from the concerned party that he is free to study if he is employed eitherin the government sector or the private sector.
6) Successfully passed the test or interview by the University Council. Be medically fit.
7) That meets any other conditions determined by the Board of the University and at the time of submission.
8) Acceptance is based on the set percentage that is determined by the University
9) Any other conditions set by the university at the time of document submission.

Admission and Registration

1) Upon primary online nomination, applicant will see three options:

A. (Accept and Confirm)

Pressing this option means that the applicant is accepting the offered primary nomination and confirms it as final acceptance without any competition for other specialty in case seats are available.

B. (Accept and Upgrade)

Pressing this option means that the applicant is accepting the offered primary nomination with and authorizes the university to upgrade their admission to another program if a seat becomes available.

C. (Withdraw)

Pressing this option means that the applicant does not accept the offered primary nomination. This is considered a final withdrawal and a withdrawal form can then be printed online.

2) Not confirming primary nomination within the allowed time means that the applicant does not wish to join Jazan University. This will cause the applicant to lose their right to admission and as will as their access to their online account.

3) At the end of acceptance process applicant's state online is changed to (primarily accepted) or (finally accepted) and receives college, specialty, and student number online.

4) An applicant can withdraw after receiving student number by printing a Withdrawal form (a Clearance form) online. In this case the current admission will be terminated and the applicant will be eligible for admission after two academic years.

5) Accepted students should complete the final acceptance procedure by making reservation for issuing University Student card following these steps:

- *Sign in to the online account.*
- *access the University Student Card page (using student number or national id number)*
- *select a date for issuing student card*
- *print out student card issue date slip*
- *Print out notice of admission slip having met these conditions; the final admission is confirmed.*

Re-admission

A dropped-out student can apply for readmission at the Deanship of Admission and Registration according to these rules:

- *A readmission request should be submitted prior to the intended readmission semester*
- *A readmission request has to be approved by the student's college council or any third party authorized by this council.*
- *If the expulsion occurred four semesters prior to the intended readmission semester (or two academic years in colleges that follow the full year system), a student can then apply for a new admission where admission conditions apply and a new university ID is issued.*
- *Readmission is allowed only once and University Board has authority to make exceptions.*
- *Readmission is not allowed for students expelled for academic or disciplinary reasons.*

Transfer Policies

A. Transfer from National and International Universities

1. Transfer to Jazan University is allowed by acceptance of Dean of Faculty to which transfer is required according and the rules:

- *Applicant was enrolled in an approved college/university.*
- *Applicant was not dismissed for academic or disciplinary reasons from college/university of origin.*
- *Applicant meets requirements set by Faculty Board and has GPA no less than 3.0 out of 5.00.*
- *Application is made during time set for transfer during academic calendar.*
- *Applicant should have at least 60% of units left to study in Jazan University.*

2. Applicant will be denied admission in case it was revealed that he/she was dismissed foracademic or disciplinary reasons from university of origin.

3. A student is transferred in any given semester from one university to another according toannounced procedures and dates in the target university and within general transfer regulations.
4. Courses completed in university of origin and valued by Department Board and are approved byFaculty Board and added to applicant's academic record and accounted for in GPA.

B. Internal Transfer

1. Internal transfer in Jazan University is granted upon approval of Deans of both Faculties.
2. Internal transfer is allowed only once.
3. Applicant should have GPA not less than 2.00 out of 5.00.
4. Applicant should not have exceeded 4 semesters in Faculty of origin.
5. Applicant should fulfill requirements for Faculty to which internal transfer is required.
6. Applicant finished courses are added to academic record including grades and GPA.

The applicants fulfilling all the requirements are admitted in the program, the number depends on the number available seats identified on the basis of the college capacity. In 2019, "Student Guide", was published, which is a comprehensive guide for all students admitted to various programs run under Jazan University. The booklet intended to serve as a guide for students helpful to understand the regulations. The guide contains important information related to academic, student related activities and services, rights and duties of the students. It clearly describes the mechanisms of admission for male and female students. It also explains the transfer rule from other universities or colleges running bachelor in computer science program.

These regulations are available on the portal of http://deanships.jazanu.edu.sa/sites/en/adm/Pages/Default.aspx

http://edugate.jazanu.edu.sa/jazan/files/app_terms.pdf

STUDY REGULATIONS

Student Assessment

Student assessment is the process of judgment of students' skills and knowledge at course and program levels. Effective assessment helps to improve student's learning. Towards meeting the objectives of teaching and learning and improving the quality of teaching and learning it's vital to ensure effective assessment procedure throughout the program. The college of Engineering & Computer Science at Jazan University is therefore confidently assessing all students' activities at program and course levels. In Computer Science program faculty use a range of assessment measures including Case studies, Mini Projects, Assignments, Internal-exams, Lab exams and Final written examinations in order to obtain a clear picture of what students have learned; utilizing this variety of methods also avoids the potential weaknesses and give the chance for further improvement.

Student Assessment Schemes

The following assessment schemes are being guided by the current reviewed curriculum.

Scheme-1: For the courses with Lab

1	Internal Exam-1	15%
2	Assignment 1	10%
3	Assignment 2 (Group Assignment) / Mini-project /	15%
4	Final Lab Exam	20%
5	Final Written Exam	40%

Scheme-2: For the courses with Lab (Programming)

1	Internal Exam	10%
2	Assignments	10%
3	Mini Project	20%
4	Final Lab Exam	20%
5	Final Written Exam	40%

Scheme-3: For the courses without Lab

1	Internal Exam-1	10%
2	Assignments	20%
3	Internal Exam-2	10%
4	Paper / Case studies Presentation	20%
5	Final Written Exam	40%

Grade Point Average (GPA) Calculation

1. Faculty Board approves total marks for course recommended by Department Board between 40% and 50% of the total mark of the course, and the student classwork mark is determined by one of two ways:
    a. oral and practical exams, research, and curricular activities, or a selection of this n addition to one written test, or
    b. A minimum of two written exams.
2. Faculty Board approves Department Board recommendation to include oral/practical parts in final exam.
3. Department Board allows student to complete a prerequisite course on recommendation of teaching faculty.
4. General grade for GPA upon graduation is as follows:
    - (Excellent) GPA no less than 4.50 (or 3.5 out of 4.0)
    - (Very Good) GPA 3.75-4.49 (or 2.5-3.49 out of 4.0)
    - (Good) GPA 2.75-3.74 (or 1.75-2.74 out of 4.0)
    - (Pass)GPA 2.00-2.74 (or 1.00-1.74 out of 4.0)
5. Honours are granted according to GPA on conditions that:
    - Student has not failed courses in Jazan University or elsewhere.
    - Student completed graduation requirement within time frame.
    - Student completed 60% of graduation requirements in Jazan University

Absence from Classes

1. Regular student is denied attending final exam if attended less than 75% of lectures and practical/clinical lessons during semester. Course work marks are added to denied student academic record and appear as (DN). Denial is approved by Faculty Board before start of final exams.
2. Faculty Board cancels denial for acceptable reasons made in application by student who attended at least 50%.

ACADEMIC ADVISING

- Assign lecturer as academic advisor to a group of students.
- Announce reminder about the meeting between advisor and advisee
- Monitor student attendance record.
- The academic advisor is expected to deal with student's academic, career, and personal problems.
- The academic advisor helps his/her students examine the course offerings in their major and understand their graduation requirements.
- The academic advisor helps the student explore the career fields within his/her major, and obtain related career information and survey job opportunities.
- The academic advisor serves as a link between the student and the administration by counseling the student on matters of failure, on the procedures for dropping and adding courses, course scheduling, and academic progress.
- The academic advisor must alarm students of the exclusion procedure well in advance, and of any subsequent changes that might be enforced during the course of their studies.

TRANSFER POLICIES

Transfer from another University

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   - Applicant was enrolled in an approved college/university.

- Applicant was not dismissed for academic or disciplinary reasons from college/university of origin.
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- Application is made during time set for transfer during academic calendar.
- Applicant should have at least 60% of units left to study in Jazan University.

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4. Applicant should not have exceeded 4 semesters in Faculty of origin.
5. Applicant should fulfil requirements for Faculty to which internal transfer is required.
6. Applicant finished courses are added to academic record including grades and GPA.

STUDENT RIGHTS AND DUTIES

Student Rights

According to rules and regulations, the student is entitled to:

- Amicable learning environment and quality education in view of Jazan University vision 2030.
- University ID card to use on and outside campus.
- Graduation Certificate.
- Care, safety, social security, and health care.
- Use of facilities and services including accommodation, library, activities centre, restaurants, and parking.
- Security and privacy of information and academic record.
- Access to academic and administrative departments.
- Free thinking within Islamic teachings and traditions.
- Academic counselling with professional academic adviser.
- Information of study plans, curricula, and time tables.
- Easy access to course registration and learning resources.
- Clear exam regulations, time tables, and model answers.
- Access to all student facilities, events, and activities.
- Promptness of teaching staff in class and office hours.
- Special need student facilities and care.
- Membership of student committees.
- Access to incentives and rewards.
- Notification of substandard academic performance.
- Justice with disciplinary committee actions.
- Right to defend in disciplinary hearings.

Student Duties

- Comply with University rules and regulations.
- Avoid misconduct on and off the campus.

- Attendance of lectures and activities.
- Show student ID card upon demand.
- Adhere to proper traditional uniform on campus.
- Avoid cheating and plagiarism.
- Protect University property, equipment, and facilities.
- Proper use of University computing and internet.
- Abstain from unauthorized activities and associations.
- Refrain from issuing unauthorized leaflets and brochures.
- Refrain from unauthorized fund raising.
- Kind treatment of faculty, staff, and employees.
- Keep and maintain official email address.
- Follow up University announcement and information.
- Sincerity in pursuing learning activities.
- Keep time frame for academic services.
- Bring no dangerous material and weapons on campus

REQUESTS, COMPLAINTS, AND APPEALS

Requests

1. A requests is made in writing to the unit concerned.
2. A requests is examined by the relevant committee.
3. Decision is made by the Faculty Board.
4. Applicant is notified of the decision in writing.

Complaints

1. Complaints are made in writing to Dean or Vice-Dean.
2. Complaints are transferred to Academic Department.
3. Complaints are reviewed by an academic committee and decision is raised to the Dean.
4. The Dean makes decision about sanction according to committee recommendation.

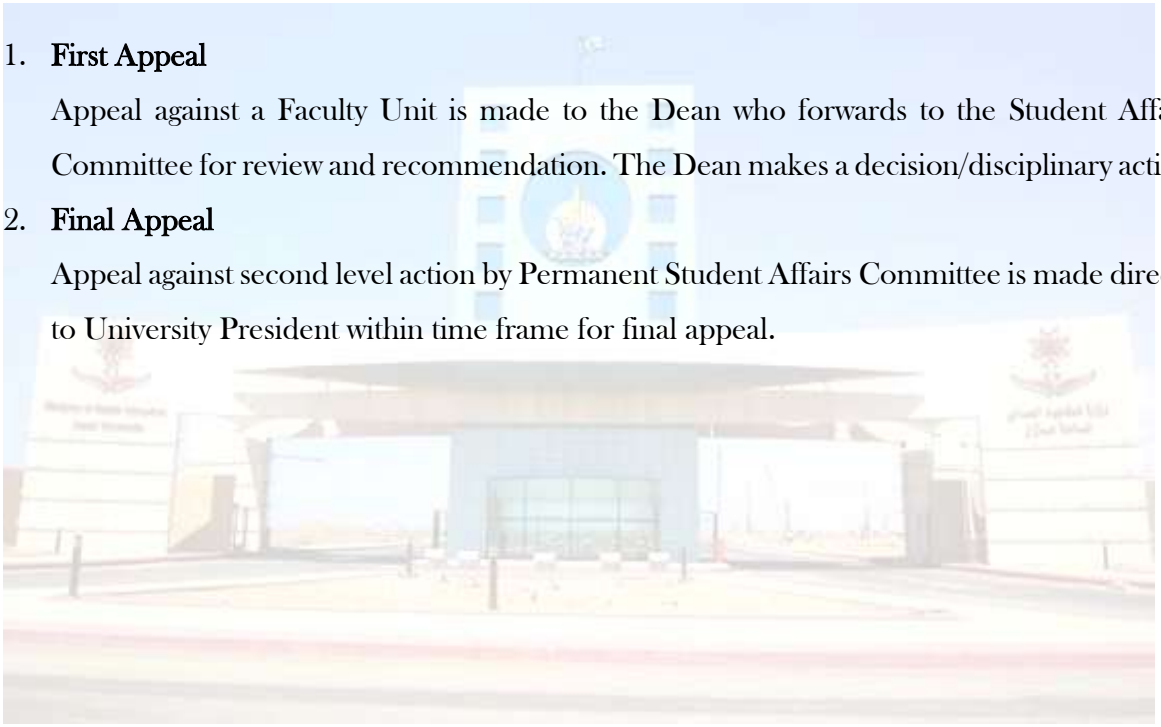
5. Malicious complaints are transferred to the University Permanent Student Affairs Committee of the University Vice-President for Academic Affairs to decide on proper action towards malicious complaints.
6. Decision about complaint becomes final when seen by University Board and the Board Meeting Minutes is approved by University President.

Appeals

Levels of Appeal

Student is entitled to appeal against disciplinary actions as follows:

1. **First Appeal**
   Appeal against a Faculty Unit is made to the Dean who forwards to the Student Affairs Committee for review and recommendation. The Dean makes a decision/disciplinary action.
2. **Final Appeal**
   Appeal against second level action by Permanent Student Affairs Committee is made directly to University President within time frame for final appeal.



CO-CURRICULAR ACTIVITIES

STUDENT CLUB

Most important and memorable experiences of a person's life is his student's life and extracurricular activities during that period makes valuable part in their personality development.

Student Club activities helps students to develop their social and interpersonal skills by getting involved in extracurricular activities organized by the club. This helps students to improve their teamwork skills, and ability to build meaningful relationship with their surrounding peoples. Responsibility, good judgment and endurance can also be developed during such activities.

EXTRA-CURRICULAR ACTIVITIES

COMMUNITY SERVICES

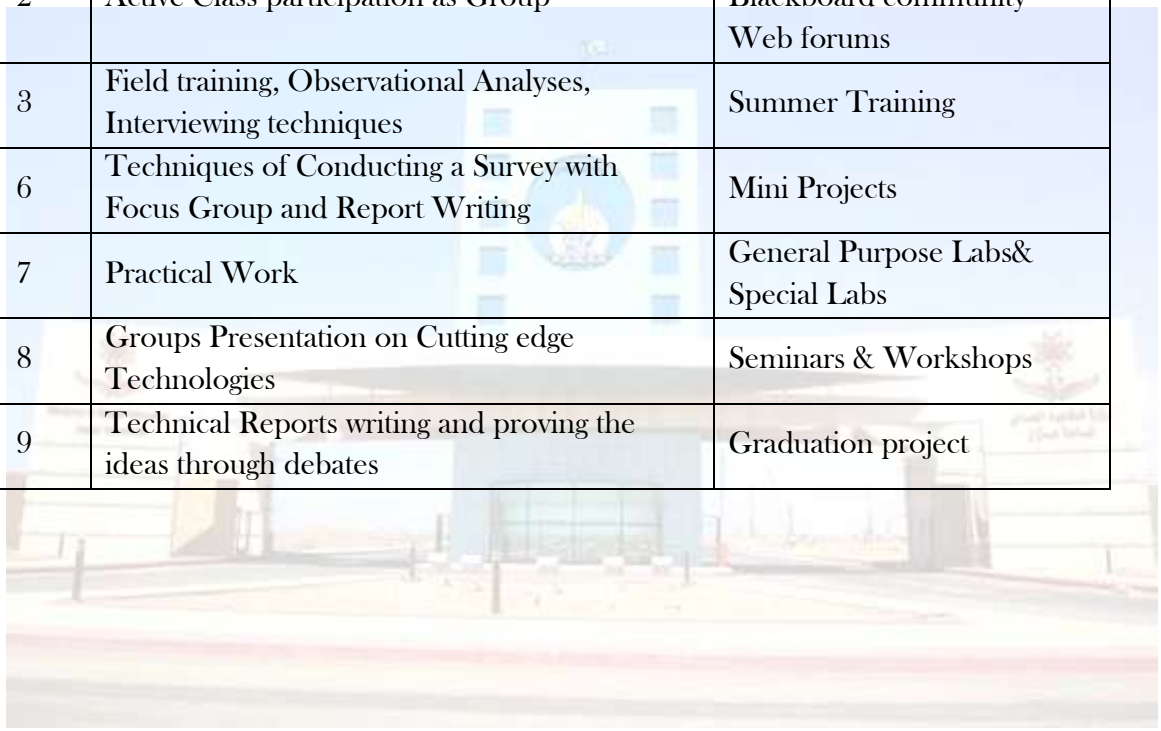
Jazan University vision, mission and objectives clearly define the commitment towards the fulfillment of the community needs. Encourage and develop the spirit of entrepreneurship in the students to maximize the return of the community service role through seminars and leaflets in coordination with the relevant committees in the Department. Set practical programs to enhance the relation between the Department and the local society and to pursue its implementation. Appreciation certificates are awarded for faculty members who are involved in community services.

COLLEGE FACILITIES

LIST OF FACILITIES FOR EDUCATIONAL PROCESS

Technologies and IT facilities used in Teaching & Learning

Sr. No.	Teaching Strategies	Learning Method
1	Visual & Verbal Lectures	White Boards, Projectors, Smart Boards
2	Active Class participation as Group	Discussion Room & Blackboard community Web forums
3	Field training, Observational Analyses, Interviewing techniques	Summer Training
6	Techniques of Conducting a Survey with Focus Group and Report Writing	Mini Projects
7	Practical Work	General Purpose Labs& Special Labs
8	Groups Presentation on Cutting edge Technologies	Seminars & Workshops
9	Technical Reports writing and proving the ideas through debates	Graduation project



CLASSROOMS: All classrooms are equipped with network and wireless internet connection, and multimedia projectors which are used to deliver class lectures and perform in class demos and presentations.

Class Room 1

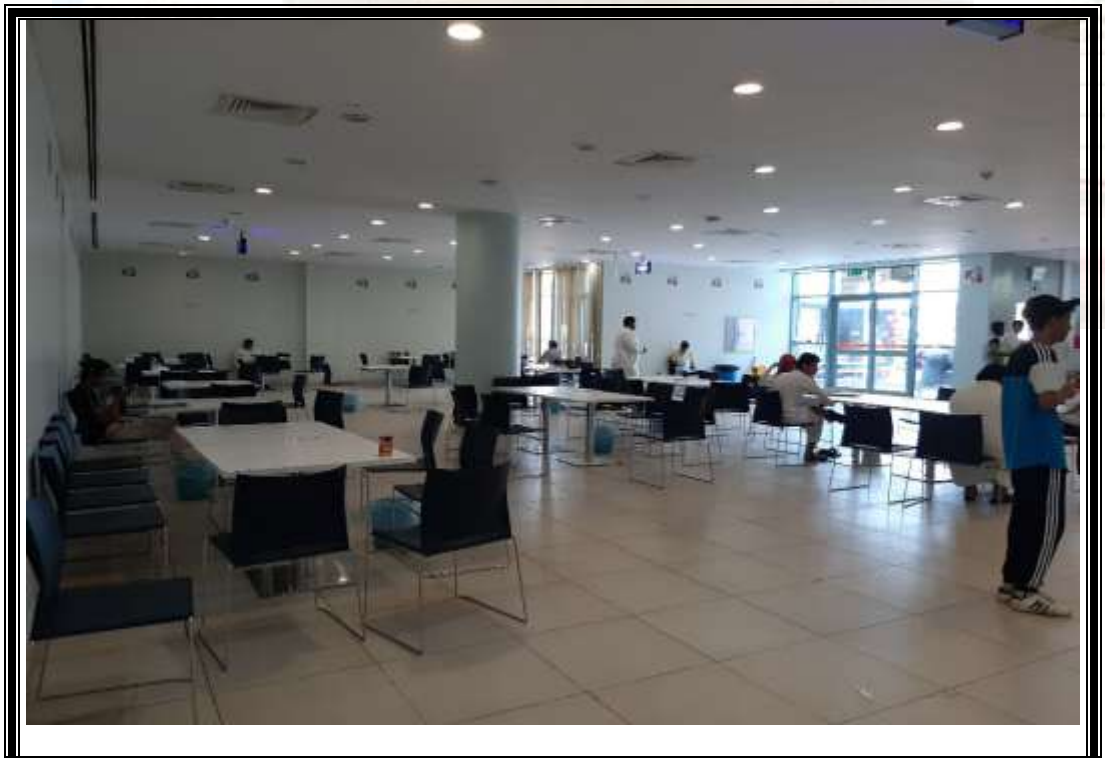
Class Room 2

GENERAL LABS: All labs are equipped with modern computing facilities and multimedia projectors in addition to hardware and software of specific areas of research.

AUDITORIUM:

DEPARTMENT MEETING ROOM:

CAFETERIA:



CORRIDOR:

HISTORY OF THE COMPUTER SCIENCE DEPARTMENT

College of Computer Science and Information Systems was established by the consent of the Royal Decree No. 7 / b / 24 232 as on 11/5/1425 H. At first it was under the patronage of King Khalid University, Abha, later in the year 1428 was under the guardianship of King Abdul Aziz University. A Royal Decree issued for the establishment of Jazan University on 12/01/1427. Several significant events have marked the university's growth. The first decision to appoint the Dean of the College was issued in 04/06/1429 AH. In 2006, the Computer Science Department was established. The Computer Science Department at Jazan University, Faculty of Computer Science and Information Systems integrates the study of important theoretical foundations in Computer Science with the study of powerful scientific methodologies that are central to the field, providing excellent preparation for under graduate (B.S.) study in computer science. In addition to offering a full program of core computer science courses, Computer Science Department offers a wide range of courses in areas relevant to advance curriculum, including Cloud Computing, Mobile Computing, Neural Computing, Computer Graphics and Visualization, and Software Engineering. The Computer Science Department is an active participant in student and staff research in collaboration with University scientific research unit and National Level King Abdulla City for Science and Technology (KACST). Currently, the department houses more than 15 specialized computer laboratories including GIS Lab, Computer Vision, Distributed systems and Advance AI Lab containing machines running the Linux, Red Hot Unix and Windows version 7 and 8 operating systems. Several on-going research projects within the department offer students and staff the opportunity to work with faculty on real problems both during the academic year and over the summer. Below are some brief highlights of the 2006s to 2014s:

- In 2006, the Computer science department was established. The first curriculum plan for BS Computer Science was developed with 146 credit hours. At that time, the total number of computer laboratory was 6.
- In 2008, the second edition of curriculum plan was developed with the same 146 credit hours. Another 5 new computer laboratories were established with three specialized labs namely Computer Vision lab, GIS Lab and advance AI lab.
- In 2010, a new research seminar series was started for students and staff members and three research grants / research funds from the University Deanship of Scientific Research.

- In 2011, the college of Computer Science and Information Systems and Department of Computer Science signed a contract / memorandum of understanding (MOM) between Oracle Corporation, USA and another contract for CICSO networking between CISCO Corporation, USA with the Department of Computer Science.
- In 2012 Second semester, the edition 2 curriculum plan was reviewed by the College Quality Assurance Unit and the CRC, department of computer science. After getting feedback and comments from them, the new curriculum committee was formed by the department in consultation with college Quality Assurance Unit with permission from the College Dean.
- In 2013 first semester, the Department of Computer Science CRC term prepared a new curriculum edition 3 with 154 credit hours. The new curriculum was prepared on par with ABET, ACM and IEEE standards.
- In 2013 second semester, the edition 3 curriculum was reviewed by the department staff, exit students, alumni and industry people and got feedback and comments from them. From 2014 onwards, the department of computer science both male and female campuses was synchronized with each other and prepared the same course specifications, program specifications, same reading materials, uniform midterm and final practical and final theory examinations.
- In 2014 first semester, the updated curriculum was sent to the office of the Vice President of Academic Affairs, Jazan University for final approval. At the same time, the Department of Computer Science has formed a new committee for ABET Accreditation Pre-SSR preparation. At the end of December 2014, UMKC, USA Computer Science department Professor Dr. Choudhury visited our college and helped us to prepare the Pre-SSR for the department of Computer Science.
- In 2018 first semester, the name of the college changed from College of Computer Science and Information Systems to College of Computer Science and Information Technology.
- In 2018 second semester, the new curriculum with 160 credits hour's proposal send to the president office after the review's from different experts. In new curriculum, papers were chosen as per the market requirements.
- In the academic year 2020-2021 the new curriculum was implemented.

- On September 27th, 2023 College of Computer Science and Information Technology merged with the College of Engineering. The newly formed College is now the College of Engineering and Computer Science.

Heads of Department of Computer Science

Chronology of Heads of the Department

S.No.	Name of the HOD	From	To
1	Mr. Mohammad Saad Mamoun	September 2006	January 2012
2	Dr. Faris Abuali	February 2012	January 2013
3	Mr. Abdu Jabbari	February 2013	November 2014
4	Mr. Ibrahim Khormi	December 2014	November 2018
5	Dr. Mousa Mohammed Khubrani	December 2018	February 2020
6	Dr. Mohammed Hameed AlHameed	March2020	March 2022
7	Dr. Yahya Muhammed Alqahtani	April 2022	February 2024
8	Dr. Fathe Jeribi	March 2024	Till Date

BACHELOR IN COMPUTER SCIENCE PROGRAM

Demand for computing professionals with scientific background has grown in the past decade as a result of increased demand for sophisticated computing environments, applications, and scientific research inside and outside of academia.

The Department of Computer Science offers a five-year academic program that provides a balanced mix of strong theory, application and practice. It incorporates the scientific foundations of computing with advanced applications which demand sophisticated knowledge of computing systems, programming and problem-solving tools and techniques.

This program builds on 15 credits of university-required course work in Islamic studies, Arabic language and communication skills, as well as a full academic year Preparatory Program shared by Science, Medical, and Engineering. It also shares 64 credits of college-required basic computing coursework with other computing programs in the college. In addition to the university and college requirements, departments require the following.

1. Completion of 60 credits listed by department as required.

2. Completion of at least 6 credits selected from department's elective course list.

Required and elective courses of program is listed under Program Courses section.

Reason of program establishment

Economic reasons

1) Development of software industries in the Kingdom of Saudi Arabia.
2) Serving the commercial, business, software, hardware and industries.
3) Supplying highly qualified software engineer's / computer programmers for research and development laboratories.
4) Shortage of qualified Software Engineers and Software Programmers /Developers.
5) Predictable demand for Software Engineers due to economic growth in and around the kingdom.

6) Solving the information technology related problems which pertain to the immediate needs of the country.
7) Creating a chance for the students to pursue their higher studies in various domains of computer science.

Social/Cultural reasons

1) To provide greater opportunity for Saudi peoples to become software engineers and participate in the growth of the Kingdom.
2) Safety awareness on computer hardware and software industries in and around the kingdom of Saudi Arabia.
3) Safety awareness on computer manufacturing industries.
4) To provide greater prospect for Saudis to become software engineers and contribute in the growth of the kingdom.
5) To provide a good platform for the students who will function in their profession with social awareness and responsibility.
6) Understand the ethical, legal, and professional responsibilities in the field of IT which has a direct impact in the society.

Technological developments

1) To develop software engineers who can serve the Kingdom by solving the ongoing real time problems in the country.
2) To create research and developments centers in various fields of computer science.
3) To help the students to choose their path in research by means of pursuing higher studies.
4) To create a software development hub where the outsourcing of work for various concerns can be carried out.
5) Graduates will be software professionals, innovators or entrepreneurs engaged in technology development with the state of the art technologies.
6) Preparing professionals empowered with the knowledge, skills, values and confidence to take a leadership role in the development of the kingdom in the field of computer science.

Graduate employment outcomes

Graduates of this program beginning Computer Specialists may pursue the following career paths but not limited to:

- Software application developer
- Computer system analyst
- Software system developer
- Web developer
- Computer Support Specialist
- System Programmer etc.

Students graduated from the college are either 100% employed or went for higher studies.

Program Vision

To build a competitive environment in education, research, innovation and entrepreneurship in the field of Computer Science to serve the community.

Program Mission

Bachelor in Computer Science program is to provide best practices of education, research, innovation and entrepreneurship in the field of Computer Science to contribute in building a vibrant society.

Program Goals

1. To impart innovative teaching to enrich students with sound computing knowledge by utilizing state of the art infrastructure.
2. To prepare students for the job market by strengthening their problem solving and professional skills.
3. To train students by providing an environment for lifelong learning and entrepreneurship.
4. To support faculty and students in multidisciplinary research.
5. To inculcate students with professional ethics and social responsibilities to contribute in society's economic growth.

Program Educational Objectives

#	BCS PEOs
1.	Students will learn **essential concepts of Mathematics, Science and Computing** to successfully apply them in BCS program.
2.	Students will be **equipped with essential skills and knowledge** to comprehend, analyze and develop computing system or components for desired needs.
3.	Students will gain independent, **critical and creative thinking**.
4.	Students will be **encouraged to have self-learning skills** and will be trained to achieve leadership and entrepreneurship traits.
5.	Students will understand the **professional and ethical considerations** in the field of Computing Science as well as identify the needs of the society.
6.	Students will be trained through specialized training programs to make them viable for IT **job market.**
7.	Students will be encouraged to **involve in scientific research and innovative** thinking in the field of Computing Science.

Program Graduate Attributes

These are the following attributes expected from the graduates of the BS Computer Science Program:

1. Proficient programming and computing knowledge.
2. Ability to think creatively and apply computational thinking to contribute to advancements in artificial intelligence, computer security, data science and other emerging areas.
3. Strong work ethics and continuous professional development in the evolving fields of computer science.
4. Competence in team leading and collaborate effectively to make informed decisions in software design and development practices.
5. Excellence in verbal, non-verbal, and digital communication for articulating technical concepts in programming and software development.

Program Outcomes

5. Program learning Outcomes*

Knowledge and Understanding

K1 **Describe** the sound knowledge of principles of Computing, Science and Mathematics required in the field of Computer Science.

K2 **Relate** recent trends and current research in the field of Computer Science.

Skills

S1 **Analyze** complex computing problems to apply principles of computing and other relevant disciplines to identify solutions.

S2 **Evaluate** problem-solving strategies to propose a large number of solutions and come up with the best possible solution.

S3 **Design** and **implement** computing-based solutions to meet a given set of computing requirements in the context of the program's discipline.

S4 **Apply** computer science theory and software development fundamentals to produce computing-based solutions.

S5 **Communicate** effectively in a variety of professional contexts for technical and non-technical audiences.

Values

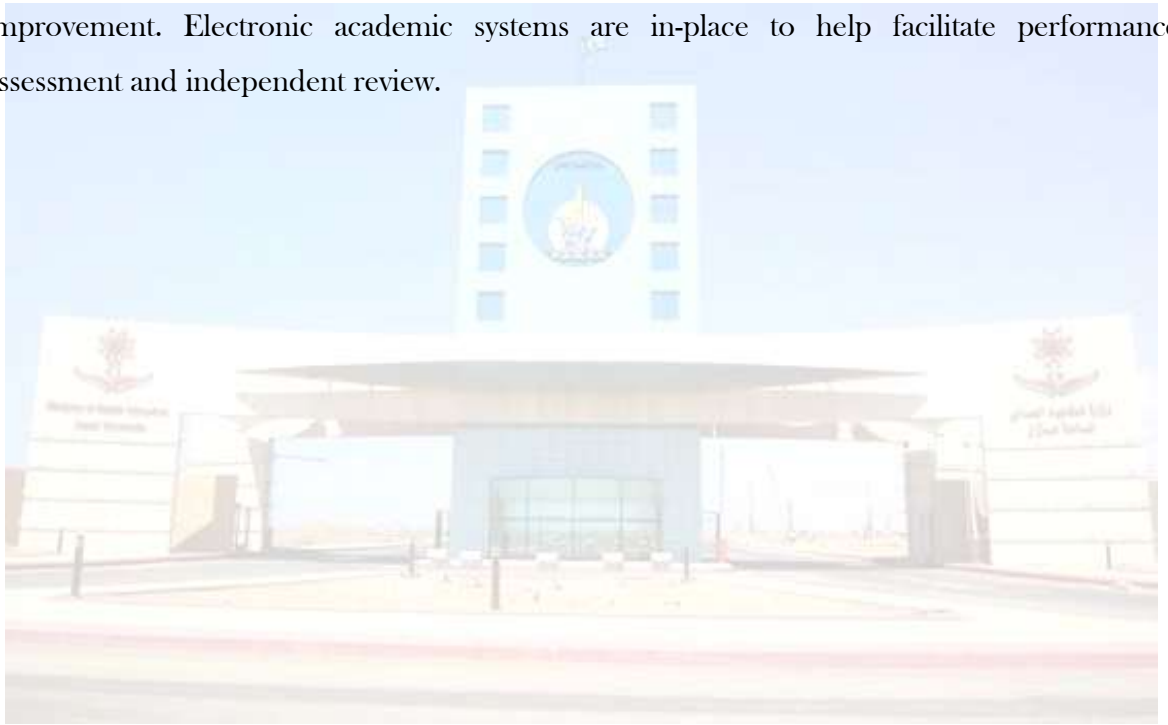
V1 **Recognize** professional and social responsibilities to make informed judgments in computing practices based on legal and ethical principles.

V2 **Demonstrate** the ability to function effectively as a member or leader of a team engaged in activities appropriate to the field of Computer Science.

V3 **Identify** the need for and an ability to engage in continuing professional development and entrepreneurship.

Program Assessment

Department of Computer Science is committed to meaningful and sustainable assessment of its bachelor's program. Department of Computer Science developed a formal assessment plan that involves a variety of direct and indirect assessments of courses, program outcomes, and overall student and faculty experiences. The plan specifies which assessments to perform and identifies data sources, frequency and stakeholders of each assessment. A robust assessment process is in place to ensure consistent results. Program Assessment Unit is responsible for administering the assessments according to plan and delivering results to their respective stakeholders. Departments, administrators, and faculty members are free to concentrate on evaluation and improvement. Electronic academic systems are in-place to help facilitate performance assessment and independent review.



DEGREE PLAN

PROGRAM STRUCTURE

All students admitted to the Jazan University take the following courses during their graduation program. Department of Computer Science delivery plan at Institutional level is given below. At Institutional University level 5 courses with 18 credits hours delivered to the students are mentioned as follows:

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Institution Requirements	Required	5	18	11.25
	Elective	-	-	
College Requirements	Required	11	35	21.88
	Elective	-	-	
Program Requirements	Required	31	89	55.63
	Elective	3	9	5.62
Capstone Course/Project	Project Phase-1 Project Phase-2	2	6	3.75
Field Training/ Internship	Cooperative Training	1	3	1.87
Residency year				
Others				
Total		53	160	100

Course Catalogue

Students admitted to the Bachelor in Computer Science program take the following courses.

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
Level 1	SLM 101	Islamic Culture – 1	Required	None	2	Institute
	MATH 105	Calculus	Required	None	4	College
	COMP 111	Introduction to Computing	Required	None	3	College
	ARB 102	Arabic Writing	Required	None	2	Institute
	ENG 101	English - 1	Required	None	6	Institute
Level 2	COMP 112	Programming – 1	Required	COMP 111	3	College
	ENG 102	English - 2	Required	ENG 101	6	Institute
	MATH 106	Matrix Algebra	Required	None	3	College
	MATH 107	Discrete Mathematics	Required	MATH 105	3	College
Level 3	COMP 213	Programming – 2	Required	COMP 112	3	College
	ITEC 211	Database Concepts and Design	Required	None	3	College

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
	PHYS 204	Principles of Physics (1)	Required	None	4	College
	MATH 262	Statistics and Probability	Required	MATH 105	3	College
	SLM 102	Islamic Culture - 2	Required	SLM 101	2	Institute
Level 4	COMP 214	Object Oriented Programming	Required	COMP 213	3	College
	PHYS 205	Principles of Physics (2)	Required	PHYS 204	3	Department
	COMP 231	Digital Design	Required	None	3	Department
	ITEC 212	Database Management System	Required	ITEC 211	3	Department
	ITEC 251	Data Communication and Computer Networks	Required	None	3	Department
Level 5	COMP 321	Data Structures and Algorithms	Required	COMP 213	3	Department
	COMP315	Web Programming	Required	COMP 214	3	Department
	COMP 332	Computer Architecture	Required	None	3	Department
	MATH 326	Linear Algebra	Required	MATH 106	3	Department
	ITEC 321	Human Computer Interaction	Required	None	3	Department
Level 6	COMP 316	Principles of Programming languages	Required	COMP 214	3	Department
	COMP 322	Design and Analysis of Algorithm	Required	COMP 321	3	Department
	COMP 324	Graph Theory and Applications	Required	None	3	Department
	COMP 333	Operating Systems	Required	COMP 332	3	Department
	COMP 323	Computer Security and Privacy	Required	ITEC 251	3	Department
	COMP 371	Software Engineering	Required	None	3	College
Level 7	COMP 441	Artificial Intelligence	Required	None	3	Department
	COMP 434	Parallel and Distributed Computing	Required	COMP 332	3	Department
	COMP 452	Cloud Computing	Required	COMP 333	3	Department
	COMP 417	Enterprise Architecture	Required	COMP 315	3	Department
	COMP 453	Data Science	Required	MATH 262	3	Department
Level 8	COMP 4*	Elective – 1	Elective	By Track	3	Department
	COMP 461	Computer Graphics	Required	MATH 326	3	Department

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
	COMP 472	Software Project Management	Required	COMP 371	3	Department
	COMP 451	Data Modeling and Simulation	Required	MATH 262	3	Department
	COMP 454	Data Mining	Required	COMP 453	3	Department
Summer Term	COMP 481	Cooperative Training	Required	None	3	College
Level 9	COMP 5**	Elective – 2	Elective	Elective-1	3	Department
	COMP 582	Project Phase - 1	Required	COMP 472	3	College
	COMP 555	Mobile Computing	Required	None	3	Department
	COMP 525	Cryptography	Required	COMP 323	3	Department
	COMP 535	Theory of Computation	Required	COMP 316	3	Department
	COMP 593	Seminar	Required	None	1	Department
Level 10	COMP 5**	Elective – 3	Elective	Elective - 2	3	Department
	COMP 583	Project Phase - 2	Required	COMP 582	3	College
	COMP591	Computer and Professional Ethics	Required	None	2	Department
	COMP 5**	Selected Topics in Computer Science	Required	None	3	Department
	COMP 592	Entrepreneurship and Innovation	Required	COMP 472	2	Department
	COMP 556	Internet of Things (IoT)	Required	COMP 333	3	Department

ELECTIVE KNOWLEDGE DOMAIN COURSES

APPLICATION DEVELOPMENT						
Level 8	COMP 418	Concurrent Programing	Elective	COMP 333	3	Program
Level 9	COMP 519	Game Programming	Elective	COMP 418	3	Program
Level 10	COMP 510	Mobile Application Development	Elective	COMP 519	3	Program

ARTIFICIAL INTELLIGENCE						
Level 8	COMP 442	Machine Learning	Elective	COMP 441	3	Program
Level 9	COMP 543	Artificial Neural Network	Elective	COMP 442	3	Program
Level	COMP 562	Computer Vision	Elective	COMP 543	3	Program

ARTIFICIAL INTELLIGENCE						
10						

CLOUD COMPUTING						
Level 8	COMP 457	Big Data	Elective	COMP 453	3	Program
Level 9	COMP 558	Cloud Architecture and Design	Elective	COMP 457	3	Program
Level 10	COMP 559	Cloud Management	Elective	COMP 558	3	Program

SOFTWARE ENGINEERING						
Level 8	COMP 473	Software Requirements Engineering	Elective	COMP 371	3	Program
Level 9	COMP 574	Software Architecture & Design	Elective	COMP 473	3	Program
Level 10	COMP 575	Software Testing and Quality Assurance	Elective	COMP 574	3	Program

LIST OF COURSES UNDER SELECTED TOPICS						
Level 10	COMP 563	Virtual Reality	Elective	None	3	Program
	COMP 594	Cyber Law & Security Policy	Elective	None	3	Program
	COMP 544	Computational Intelligence	Elective	None	3	Program
	COMP 526	Digital Forensics	Elective	None	3	Program
	COMP 545	Natural Language Processing	Elective	None	3	Program
	COMP 595	Green Computing	Elective	None	3	Program
	COMP 550	Extreme Computing	Elective	None	3	Program
	COMP 556	Soft Computing	Elective	None	3	Program
	COMP 596	Biomedical Computing	Elective	None	3	Program
	COMP 527	Ethical Hacking	Elective	None	3	Program

BRIEF COURSE DESCRIPTION

PROGRAMMING – 1 **COMP 112**

Course Description:

This knowledge area consists of those skills and concepts that are essential to programming practice independent of the underlying paradigm and programming language for the beginners. Specific topics covered include: An Overview of Computers and Programming Languages, Basic Elements of Java, Variables, Types, Operators, Branching Mechanism, Iteration and loops, Methods, and Arrays.

PROGRAMMING -2 **COMP 213**

Course Description:

This course continues the coverage of the Programming I using the Java language. The concepts of object-oriented programming and design will be introduced. Topics include the concepts of Class and object, methods, overloading, constructors, recursion, single dimensional and multidimensional arrays, inheritance and polymorphism, exception and handling. , files inputs /outputs and interfaces with inner classes.

OBJECT ORIENTED PROGRAMMING **COMP 214**

Course Description:

This course introduces the fundamental concepts of objects and classes which form the basis of all programming in object-oriented languages. It also introduces methods, object creation, fields and constructors, and some useful java libraries (collections, maps, sets, iterators, etc.) to reinforce object orientation techniques. It then talks about object orientation techniques such as abstraction and modularization, code coupling, responsibility-driven design and software refactoring. It also talks about other techniques which improves program structures such as inheritance, abstract classes and interfaces, defensive programming (error handling) and some design patterns. Students will acquire basics of how to translate problem solution into object oriented form.

DIGITAL DESIGN COMP 231

Course Description:

This course provides basic concepts of digital systems, review of core design components and circuit design principles. It covers the principles and methodology of digital logic design at the gate and switch level, including both combinational and sequential logic elements. It covers the topics of number system, Boolean algebra and switching theory, combinational circuits design using multiplexers, decoders, comparators and adders.

DATA STRUCTURES AND ALGORITHMS COMP 321

This course focuses on the study and implementation of data structures-Arrays, Stacks, Queue, Linked List, Trees, Graph and Hash Table. The course gives the introduction to Asymptotic complexity and performance measurement of simple algorithms. The topic includes the concepts of Abstract Data Type, Recursion, Implementation and Analysis of Sorting Algorithms-Bubble Sort, Insertion Sort, Selection Sort, Heap and Searching Algorithms-Linear Search, Binary Search.

COMPUTER ARCHITECTURE COMP 332

Course Description:

This course is about the structure and basic function of computers. Its purpose is to present, as clearly and completely as possible, the nature and characteristics of modern-day computer systems. This course cover all aspects of computer, from the underlying integrated circuit technology used to construct computer components, to the increasing use of parallel organization concepts. This course also focuses on different elements of Computer Organization And Major components which include processor, memory, I/O, control unit, registers, ALU, and instruction execution unit. It also discusses control signals for the operation and coordination of all processor components.

WEB PROGRAMMING COMP 315

The course covers basic construction of web page, cascading style sheet, and java script. The course provides a foundation in computer programming in Javascript: syntax and data structures, AJAX, DOM, and JS libraries.

OPERATING SYSTEMS COMP 333

Course Description:

This course introduces a detailed description about operating system objectives, functions and core concepts. Topics include operating system principles, file management systems, memory management, processes and threads, scheduling algorithms and deadlocks.

DESIGN AND ANALYSIS OF ALGORITHM COMP 322

Course Description:

This course provides the students techniques for designing and analyzing algorithms such as brute-force and divide-and-conquer. The course covers the basic design techniques and algorithms that addresses important set of well-defined problems: DFS and BFS; shortest-path algorithms (Dijkstra's and Floyd's algorithms); transitive closure (Floyd's algorithm); minimum spanning tree (Prim's and Kruskal's algorithms); topological sort. Different algorithms for a given computational task are presented and their relative merits evaluated based on performance measures In addition, the course will provide different complexity characteristics P and NP classes, NP-completeness and reduction techniques.

COMPUTER SECURITY & PRIVACY **COMP 323**

Course Description:

This course provides an integrated, comprehensive and up-to-date coverage of topics in Computer Security. The list of topics covers the basics of Computer Security, Cryptographic Tools, User Authentication, Access Control, Malicious Software, Denial-of-Service Attacks, Intrusion Detection and Message authentication.

SOFTWARE ENGINEERING **COMP 371**

Course Description:

Software engineering is a major branch of computing science that deals with the development of software systems as practical and cost-effective solutions for individuals and society. This course covers the fundamentals of software engineering like software life cycle, requirements engineering, system development paradigm, and system modeling using UML. It also covers software verification & validation, important implementation issues, open source development and concepts of software re-engineering. The course has a strong technical relation with graduation project providing the opportunity to practice software engineering knowledge, skills, and practices in a realistic development setting with a real client.

GRAPH THEORY AND APPLICATIONS **COMP-324**

Course Description:

The course covers basic of Graph theory and applications in the field of computing science. The areas that will be studied are graphs, trees and networks. Topics related to graphs will include graph models, graph isomorphism, connectivity and traversability, planarity, distance in graphs, digraphs and networks. Tree related topics will include properties of trees, tree traversal, minimum spanning trees and use of trees in sorting and prefix codes. Algorithms on networks such as shortest path algorithm, minimal spanning tree algorithm and min-flow max-cut algorithm.

PRINCIPLES OF PROGRAMMING LANGUAGES **COMP 316**

Course Description:

This course aims to present the basic principles of syntax, semantic, theory and computational behavior of programs in terms of investigating how the programming languages are. It includes the following topics: inductive sets of data, data abstraction, expression, state, continuation-passing interpreters, continuation-passing style, type checked languages, modules and OOPs.

ARTIFICIAL INTELLIGENCE **COMP 441**

Course Description:

This course offers basic concepts of the Intelligence, Innovative, achievements and advance development areas of AI. It covers modern techniques for computers to represent task-relevant information and intelligent decisions system, solving problems by searching towards the achievement of goals. It covers some advanced topics namely Machine Learning, Planning, Neural networks and Multi-Agent Systems basics.

OBJECT ORIENTED ANALYSIS AND DESIGN COMP 472

Course Description:

This course aims to provide the principles of designing models for software applications based on based on object oriented techniques. It also includes the different ways of finding objects form the requirements and constructing models such as object, class, state and activity towards the final architecture of the problem specification.

PARALLEL AND DISTRIBUTED COMPUTING COMP 434

Course Description:

This course provides an overview of distributed and parallel systems. It covers a broad range of topics related to parallel and distributed computing, including parallel and distributed architectures and systems, cloud platform architecture, parallel and distributed programming paradigms, parallel algorithms, and scientific and other applications of parallel and distributed computing.

CLOUD COMPUTING COMP 452

Course Description:

Cloud Computing is a large-scale distributed computing paradigm which drastically become a lashing force in the field of information technology over the last several years. This course covers the following topics: Complex system design and analysis; virtualization, resource management, storage systems, networking, and Cloud Application development. The student gain hands-on experience with various features of popular cloud platforms namely, Google App Engine, IBM Bluemix and Amazon Web Service. The course also covers the advanced cloud programming paradigms such as Hadoop's Map Reduce and various data mining tools and techniques for Big data analysis.

DATA SCIENCE COMP 453

Course Description:

This course will introduce students to this rapidly growing field and equip them with some of its basic principles and tools. It provides the insights about the roles of a data scientist and enable to analyse to Big Data. The course also explains the principles of Data Science for the data analysis and learn cutting edge tools and techniques for data analysis. It also provides a hand-on introduction to statistics and data science. It also includes concepts, techniques and tools they need to deal with various facets of data science practice, including data collection and integration, exploratory data analysis, predictive modeling, descriptive modeling, data product creation, evaluation, and effective communication.

ENTERPRISE APPLICATION DEVELOPMENT COMP 417

Course Description:

This course aims to introduce the development of stand-alone and dynamic web applications with respect to solve real world problems using one to many tier architectures. In order to construct the stand alone and web applications, it mainly focuses on techniques to design and implement front-end, back-end and business logics using various java-based technologies.

DATA MODELING AND SIMULATION COMP 451

Course Description:

This course provides an overview of models and simulations and of modeling and simulation techniques. Techniques include time-driven, event-driven dynamic models/simulations and Monte Carlo Simulation. Classification of models: discrete or continuous, stochastic or deterministic, static or dynamic. The course also provide thorough understanding of random number generation, Queuing models, Simulation of queuing systems, inventory systems input modeling and verification & validation of simulation models.

COMPUTER GRAPHICS COMP 461

Course Description:

This course covers Computer Graphics theory and its applications. Topics taught are classified as Fundamentals of computer graphics programming, Graphics hardware and software standards, 2D geometric primitives and raster images, 3D object representations. Data structures, algorithms, and the graphics pipeline. Graphical user interfaces. Underlying concepts in computer graphics systems including games, animation, modeling, rendering and paint systems.

SOFTWARE PROJECT MANAGEMENT COMP 473

Course Description:

This course covers the key aspects of Software Project Management. It covers software project planning and evaluation techniques. The course also teaches how to plan and manage projects at each stage of the software development life cycle. Students will study project planning, activity planning and risk management. Students will also learn project management and control, staffing in software projects, managing people, organizational behavior, best methods of staff selection, The Oldham Hackman job characteristic model.

DATA MINING COMP 454

Course Description:

This course is designed to give the students the knowledge and skills needed to Understand the data warehouse, Apply the data warehouse in different areas, Recognize different methods and algorithms of data mining. Also use data mining methods in different applications. This module builds on the introductory module in data warehouse and data mining. It intends to introduce more advanced topics in databases such as data mining and data warehousing

PROJECT PHASE 1 **COMP 582**

Course Description:

The course is the first part of a sequence of two courses that constitute the BS (Computer Science) graduation capstone project in which students will develop a complete software system. Students will work in groups of two students, each group will have a supervisor to guide them through the system development process using a specific methodology. In this first part of the graduation project, each group must identify a problem domain, define the problem statement, identify and specify the requirements, document the current system, analyze it, propose alternative systems, and design a solution. Conduct a thorough investigation of a particular CS-related problem and for research-based projects. The design must include the definitions of all the required system models, such as the data model and the functional model. At the end of the course, each group students have to give presentation till design phase and submit a formal report documenting the complete process till design phase.

MOBILE COMPUTING **COMP 555**

Course Description:

This course provides a comprehensive overview of mobile computing along with its security issues and mobility. The course will give you an understanding of mobile agent systems and platforms, multiple access schemes and about various communication satellite systems. This course broadly covers the standards issues and physical mobility including wireless LANs, mobile IP, mobile TCP, mobile ad-hoc networks as well as various routing protocols. This course focuses on the issues associated with small handheld portable devices and application development.

CRYPTOGRAPHY **COMP 525**

Course Description:

This course provides an insight of functioning and analysis of various cryptographic algorithms and protocols and their applications. The course covers the following topics: Principles of cryptography, classical ciphers and general cryptanalysis, Symmetric primitives: Modern encryption methods and secure hashing, Public key cryptography: Key exchange, asymmetric encryption and digital signatures, Advanced applications: protocols, key management and special cryptographic services, Throughout the course, commonly used encryption schemes and other services that can be provided by modern cryptography will be discussed.

SEMINAR **COMP-593**

Course Description:

This course seminar is a weekly meeting in which students discuss recent and important topics in the area of Computer Science research. The students will read and discuss any one paper chosen from recent systems, networking, or any recent area of their choice with the discussion with the concerned faculty. Papers are selected for discussion according to the relevance to the students own research interest, and /or papers from recent and imminent top-tier systems conferences / journals. Meetings may be centered on presentations of a participant's own research. Every student participating in the seminar will be required to lead at-least one meeting during the semester. This may be a "formal" research presentation. Each seminar has one or more designated "facilitators" who are responsible for leading the discussion.

THEORY OF COMPUTATION COMP 535

Course Description:

This course provides students with an understanding of basic concepts in the theory of computation. It covers a variety of issues in the mathematical development of computer science theory, particularly finite representations for languages and machines, as well as gain a more formal understanding of algorithms and procedures. The topics include introduction to the theory of computation, including models of computation such as Turing machines; theory of programming languages, including grammars, parsing, syntax and semantics.

PROJECT PHASE -2 COMP 583

Course Description:

Second phase of the graduation project is implementation phase in which students are expected to construct make acceptable progress in implementing the project. During the final phase of implementation students are expected to complete their projects according to their project proposal. They should highlight their achievement and contribution appropriately. By the end of phase 2 of graduation project students should be able to show their ability to implement and evaluate a computer-based system, process, component, or program to meet desired need of the project. Students will be spending some time in testing and validation of their projects as well as writing a comprehensive report. At the end of the semester there will be a final project presentation where students will demonstrate and presentation the final outcome and overall findings of the project work.

ENTREPRENEURSHIP AND INNOVATION COMP 592

Course Description:

This course aims to provide students with an understanding of the nature of enterprise and entrepreneurship and introduces the role of the entrepreneur, innovation and technology in the entrepreneurial process. The course will help the students to acquire the skills and know-how to develop their business idea all the way from the conceptual stage to the market place. It also helps the students to develop understanding of cultivating a business in diverse, global environments; leading and collaborating in a competitive world; developing an entrepreneurial mind for an entrepreneurial world; and industry dynamics of technological innovation.

COMPUTER AND PROFESSIONAL ETHICS COMP 591

Course Description:

This course is intended to give students a chance to reflect on the humanitarian, social, and professional impact of computer technology by focusing on ethical issues faced by and brought about by computing professionals, including those related to networking and the internet, intellectual property, privacy, security, reliability, and liability. This course also introduces student's topics of information technology ethics including: rules & policies of computer ethics, hacking, viruses, Internet ethics, and freedom of expression on the Internet, computer professionals and social responsibilities, software copyright, software piracy, cyber law and privacy & security of computerized information.

INTERNET OF THINGS **COMP 556**

Course Description:

The Internet of Things (IoT) course will teach you how to program with current and leading IoT technologies for building IoT solutions for Smart Homes, Smart Campus etc., using IoT sensor and devices. Course covers the concept of IoT and will also look at the 'things' that make up the Internet of Things, including how those components are connected together, how they communicate, and how they add value to the data generated. The course will also examine cyber security and privacy issues, and highlight how IoT can optimize processes and improve efficiencies in your business. Course covers how to capture data using sensors, and the basics of analysis and visualization of the data in the cloud and its security.

Elective Courses

CONCURRENT PROGRAMMING **COMP 418**

Course Description:

Concurrent programming with processes and threads, monitors and synchronization, and volatile variables. Traditional building blocks of concurrency, data-parallel collections using parallel and concurrent collections together. Concurrent programming with reactive extensions, software transactional memory, and working with actors.

MOBILE APPLICATION DEVELOPMENT **COMP 510**

Course Description:

This course aims to provide the fundamental concepts and techniques to develop applications for variety of mobile devices. It also discusses the mechanism for designing user interfaces and building web services to implement mobile apps to solve real-world problems and enterprise problems for the most popular devices include Android and IOS.

MACHINE LEARNING **COMP 442**

Fundamentals of machine learning, Course syllabus includes basic classification and regression techniques such as Naive Bayes', decision trees, SVMs, boosting/bagging and linear/logistic regression, maximum likelihood estimates, regularization, basics of statistical learning theory, perceptron rule/multi-layer perceptron's, backpropagation, brief introduction to deep learning models, dimensionality reduction techniques like PCA and LDA, unsupervised learning: k-means clustering, Gaussian mixture models, selected topics from natural/spoken language processing, computer vision, etc Reinforcement learning; Design and analysis of machine learning experiments.

COMPUTER VISION **COMP 562**

Course Description:

This course focuses on development of algorithms and techniques to analyze and interpret the visible world around us. This requires understanding of the fundamental concepts related to multi-dimensional signal processing, feature extraction, pattern analysis visual geometric modeling, stochastic optimization etc. Knowledge of these concepts is necessary in this field, to explore and contribute to research and further developments in the field of computer vision. Applications range from biometrics, medical diagnosis, document processing, mining of visual content, to surveillance, advanced rendering etc.

CLOUD ARCHITECTURE AND DESIGN **COMP 558**

Course Description:

This course is designed for undergraduate students to gain knowledge in Cloud architecture and design it is rapidly growing business and technology area it has been one of the most challenging technologies and has changed the way It is consumed by enterprises in providing an end end systematic study on both architectural design and implementation of cloud computing it offers a industrial and research knowledge to it professionals and researchers and helps the students to find out the key challenge of cloud worlds and explore the ways to overcome these challenges using the best industrial practices validate in real enterprise

CLOUD MANAGEMENT **COMP 559**

Course Description:

This course will equip students with skills in cloud enterprise service creation and management, and technical and business knowledge required for assessing opportunities and risks of cloud services. The course focusses on developing skills to manage cloud instances through lab assignments in the simulated environment provided by top Cloud vendors in the market today. Conceptual themes will also be presented alongside technical aspects of cloud management. This course will broaden and deepen your understanding of cloud management.

ARTIFICIAL NEURAL NETWORKS **COMP 543**

Course Description:

This course provides an introduction to artificial neural networks. It reviews biological neural networks, and presents a general framework to construct their mathematical models with a view to study their applications. It gives a historical view to the McCulloch-Pitts model, application of Rosenblatt's Perceptron learning model in both linear and non-linear classification problems and the Widrow-Hoff's ADALINE model. It discusses important issues in the design, training, troubleshooting, and testing of neural network applications.

SOFTWARE TESTING & QUALITY ASSURANCE COMP 576

Course Description:

This course will address topics in the verification and validation (V&V) of software. Verification addresses issues related to whether the system is correct (with respect to some specification), validation addresses the question whether the right system was built. An in depth study of verification and validation strategies and techniques as they apply to the development of quality software. Topics include test planning and management, testing tools, technical reviews, formal methods and the economics of software testing. The relationship of testing to other quality assurance activities as well as the integration of verification and validation into the overall software development process are also discussed.

GAME PROGRAMMING COMP 519

Course Description:

This course is intended to be a next step in computer programming. Development of programming skills using software environment of a game engine and its scripting language. 3D concepts for game play, modeling, and programming. Roles needed in software development team. Contrast creation of original 3D object models for game world with incorporation of pre-created generic models

BIG DATA COMP 457

Course Description:

Today's world is data-driven world. Increasingly, the efficient operation of organizations across sectors relies on the effective use of vast amounts of data. This course provides grounding in basic and advanced analytic methods and an introduction to big data analytics technology and tools, including MapReduce and Hadoop.

SOFTWARE REQUIREMENTS ENGINEERING COMP 474

Course Description:

The course covers how to capture software requirements and handle difficult situations in gathering data to build systems. Special emphasis is given to working with stakeholders and to learning about the needs of users who interact with a system. The course addresses elicitation, specification, and management of software system requirements. Additionally, the course examines iterative prototyping user interactions for a system along with basics of quality assurance techniques

SOFTWARE ARCHITECTURE AND DESIGN COMP 575

Course Description:

This course provides working knowledge of the terms, principles and methods of Software Architecture and Design. Aspects of Data modeling and processing, Web services-SOAP, WSDL and presentation layer JSON and JQUERY covered. The course enunciating the role of architecture and design in software assurance for dependability, including performance, reliability and security. Recent advances in design techniques, software patterns, and design refactoring introduced. The emphasis of the course is on design patterns that the working software engineer for enterprise systems can use to develop DDA, SOA, ROA and EDA for enterprise computing

SELECTED TOPICS IN COMPUTER SCIENCE **COMP 5****

Course Description:

This course presents advanced topics in Computer Science and this could be an upcoming field yet to be incorporated in the curriculum or some outstanding state of practice in a certain computer science area. It also covers topics of current interest in computer science. Courses may vary from year to year according to the recent trends/ development in the field of Computer Science. Recent courses include Soft Computing, Virtual Reality, Internet Security, Internet of Things, Image Processing, Natural Language processing, Data Science, Forensic Sciences, Extreme Computing, Computational Intelligence, Computational Geometry & Advanced Data Mining. One of the courses will be selected by the department and offered to the students as selected study based on the recent trends.

VIRTUAL REALITY **COMP – 563**

Course Description:

This course provides basic concepts of system framework and development tools in Virtual Reality. The list of topics covers the basics of Hardware and Software of Virtual Reality, Geometry of Virtual Worlds, Light and Optics, Physiology of Human Vision, Visual Perception of Depth Motion and Color, Visual Rendering and Physics in Real and Virtual World.

NATURAL LANGUAGE PROCESSING **COMP 545**

Course Description:

This course will cover the foundations of natural language processing (NLP) from textual content processing to corpus understanding. The course covers POS Tagger to understand the sentence structure to solve related issues like ambiguity. It is designed for develop the syntactic and semantic concepts of NLP and introduce the computational techniques for analyzing and understanding textual content. In addition to foundations, the course will also introduce significant application areas of NLP such as information extraction, machine translation, and question-answering/conversational agents. A strong programming background is required for the course.

GREEN COMPUTING **COMP-595**

Course Description:

To acquire knowledge to adopt green computing practices to minimize negative impacts on the environment, skill in energy saving practices in their use of hardware, examine technology tools that can reduce paper waste and carbon footprint by user, and to understand how to minimize equipment disposal requirements.

COMPUTATIONAL INTELLIGENCE **COMP – 544**

Course Description:

This course provides a strong foundation on fundamental concepts in Computational Intelligence. This course covers Problem-solving through various searching techniques. It covers the techniques in applications which involve perception, reasoning and learning, information retrieval and machine learning.

SOFT COMPUTING **COMP – 556**

Course Description:

This course covers the concepts of Soft Computing. It includes soft and hard computing, characteristics of Soft computing, neural network architectures, fuzzy logic, fuzzy sets, operation on fuzzy sets, genetic algorithm, hybrid systems, and applications of soft computing. Students will use their critical thinking to solve problems.

PROGRAM ADVISORY BOARD

Responsibilities:

- Assess the current program and ensure that it's up to date and serving the requirements of industry and following the standard guidelines of relevant professional bodies.
- Advise about required attributes, skills and suitable outcomes for the pass out students necessary for their success.
- Help the program / department in assessing the job market requirements and provide suggestion for improvement in the program based on these requirements.
- Provide advice on the technological trends and changes in industry.
- Provide advice on opportunities to introduce new programs in response to the needs of a specific profession, industry or sector.
- Promote good relationships with local community and businesses, industry and professional associations.
- Periodically (semester wise / yearly) review the outcomes, enrollment data, services and support facilities and progress of the program.
- Provide support and assistance in the development of new programs and its review process.
- Assist in training and placement of graduates.

Departmental Committees

1. Lab & Modern Technology Committee
2. Schedule & Examination Committee
3. Web Portal Committee
4. Academic Development Committee
5. Statistics & Information Committee
6. Policy & Procedures Committee
7. Planning & PMO Committee
8. Organization Excellent Committee
9. Research & Innovation Committee
10. Community Service Committee
11. Academic Advising Committee
12. Student Affairs Committee
13. Curriculum Teaching Committee
14. Professional Development Committee
15. Alumni Affairs & Employment Committee
16. Faculty Promotion and Career Counselling Committee

1) LAB & MODERN TECHONOLGY COMMITTEE

Responsibilities:

- Check the lecture requirement in term of hardware and software before the semester started.
- Identify any new and renew requirement of hardware and software and report to program coordinator.
- Manage the purchasing or license renew of hardware and software.
- Record lecture relates assets for asset management.
- Monitor the usage of lab and classroom.
- Reporting software & hardware related issues to Head of the lab administration.
- Monitoring of class rooms & labs on special instructions given by the Dean or HOD.

2) SCHEDULE & EXAMINATION COMMITTEE

Responsibilities:

- Preparation of Lecture Schedule at the start of every semester.
- Preparing exam schedule.
- Preparation of Exam duties schedule for the lab exams
- Identify the exam requirement from lecturers.
- Preparation schedule for the faculty members posted in other colleges.
- Announcement of the final exam question preparation at the beginning of the semester.
- Collect and give to the subject expert for vetting.
- Ask the lecturer to revise the final exam questions according to the expert comments.
- Proofread for the final exam.
- Submit final exam paper to HOD for final revision
- Send the question papers for printing.
- After the exam, choose a few papers for external vetting for the purpose of quality assurance.

3) WEB PORTAL COMMITTEE

Responsibilities:

- Gathering staff information in the beginning of every semester.
- Gather faculty recent activities to be published in the portal.
- Updating various staff information on the college web portal in Arabic and English.

- Revise the content from time to time.

4) ACADEMIC DEVELOPMENT COMMITTEE

Responsibilities:

- Plan a clear and practical training timeline to help faculty understand NCAAA and ABET standards, along with the steps involved in achieving accreditation.
- Increase faculty awareness of accreditation systems, criteria, and updates through planned workshops, invited speakers, and short courses inside and outside the University.
- Revise course outcomes with different program outcomes according to NCAAA systems.
- Collect course outcome assessments per semester and prepare a comprehensive assessment report.
- Develop an NCAAA SSR report for the Computer Science program for external review.

5) STATISTICS & INFORMATION COMMITTEE

Responsibilities:

- To identify the survey requirements, timeline, medium (offline or online), and stakeholders (internal and external) for each survey to be conducted.
- To design survey forms according to the requirements of the Quality Assurance Unit.
- To map each KPI with the required source, like the first-hand survey or statistical data collected from the concerned personnel.
- To plan, distribute, and Coordinate survey activities among the team members.
- To prepare a final report based on the findings as required by the QAU.
- To conduct surveys (online/offline form distribution, response collection, data punching, data cleaning, etc.)
- To collect statistical data from the required personnel like faculty affairs, student registration, examination, etc.
- Prepare the reports based on the findings from the data acquired from primary sources like surveys and secondary sources like student/faculty feedback, etc.

6) POLICY & PROCEDURES COMMITTEE

Responsibilities:

- Defining the duties and nature of jobs for all the members working in the department as per department, college, and university guidelines.
- Developing Policies and Procedures for various academic Processes covering different domains.
- Preparation of various facilitative formats for academic and administrative activities.
- Reviewing, updating, or changing the current procedures and processes to improve them to the next level, in consideration with the concerned authority and beneficiaries.
- To facilitate the department implementing the standard operating procedures (SoPs) besides addressing any of their concerns

7) PLANNING & PMO COMMITTEE

Responsibilities:

- Making recommendations to Head of Department related to the department's
- mission, vision, strategic initiatives and strategic direction
- Identify and analyze critical strategic issues being faced by department and planning for solutions.
- Development of a three to five-year strategic plan with measurable goals and time targets and monitoring strategic plan processes as well as the department's performance against measurable targets (KPIs).
- Periodically / annually reviewing the mission, vision, strategic plan and action plan and recommending changes if any to the Head of Department.
- Keeping up-to-date on industry and local market trends and advances in technology and other related issues.

8) ORGANIZTIONAL EXCELLENCE COMMITTEE

Responsibilities:

- To develop, administer and follow up the processes of Quality Control in the Department.
- To follow up and select the benchmarks of the Department Program.
- To supervise and follow up the schemes for development and future planning in the Department.
- To review and approve assessment and action plans from departments and programs.
- To verify implementation of approved assessment and action plans.
- To receive and review annual progress reports based on the progress of action plan and activities of various committees.
- Monitoring the achievements of Program Learning Outcomes (PLOs) and Program Educational Objectives (PEOs).
- Monitoring the various feedbacks received from various stakeholders and plan activities accordingly.
- Advising the department in the review process of programs (s).
- Provides assessment training and dissemination of assessment information.

- Provides support for development, implementation and evaluation of current and proposed programs.
- Ensure that the program meets its stated mission and addresses the strategic direction of the college.
- Appraisal of faculty members based on defined tasks and guidelines by the department.
- Selection of Track -Leaders and Course Coordinators for next semester.

9) RESEARCH & INNOVATION COMMITTEE

Responsibilities:

- Encourage, monitor and announce research activities
- Establish research KPI that reflects the university KPI
- Grant announcements (internal & external).
- Monitor internal and external grants application from the staff
- Organize Research Colloquium or Seminars
- Produce report on research performance among staffs in term of grants, publication, IP, professional bodies, collaboration etc.
- Establish field of expertise among the staff. It important for postgraduate mapping and research purpose.

10) COMMUNITY SERVICE COMMITTEE

Responsibilities:

- To collect and classify the projects executed by the department and its members and the results of the contributions of these projects to the community service and the development plans.
- To encourage and develop the spirit of entrepreneurship in the students to maximize the community service role's return through seminars and leaflets in coordination with the relevant committees in the department.
- To deepen communication between the college and the bodies in charge of the development plans in the Kingdom of Saudi Arabia.
- To set practical programs to enhance the relationship between the department and the local society and pursue its implementation.

11) ACADEMIC ADVISING COMMITTEEE

Responsibilities:

- Assign lecturer as academic advisor to a group of students.
- Announce reminder about the meeting between advisor and advisee
- Monitor student attendance record.
- The academic advisor is expected to deal with student's academic, career, and personal problems.
- The academic advisor helps his/her students examine the course offerings in their major and understand their graduation requirements.
- The academic advisor helps the student explore the career fields within his/her major, and obtain related career information and survey job opportunities.
- The academic advisor serves as a link between the student and the administration by counseling the student on matters of failure, on the procedures for dropping and adding courses, course scheduling, and academic progress.
- The academic advisor must alarm students of the exclusion procedure well in advance, and of any subsequent changes that might be enforced during the course of their studies.

12) STUDENT ACTIVITIES COMMITTEE

Responsibilities:

- To motivate outstanding students among students by regularly inspiring and supporting them and showcasing their achievements to encourage other students as well.
- Encouraging students to interact with the departmental and college activities by inculcating a sense of responsibility and value.
- Distributing students to different committees of departmental activities and receiving their active feedback to improve the activities and ensure student participation.
- Conduct periodic cultural and academic competitions for students in consultation with the college-level committee.
- Ensure participation of departmental students in national and international competitions/activities in the domain of Computer Science.

13) CURRICULUM & TEACHING COMMITTEE

Responsibilities

- Preparation and review of Course Descriptions & Course Specification with the help of Course Coordinators and Track leaders.
- To review and recommend to the department council on existing and proposed curricula, courses, prerequisites, co-requisites, advisories and programs.
- Periodically review and enhance the learning objective and outcomes of the program and courses to make sure that they coincide the needs of job market and accreditation bodies.
- Make sure that textbooks references, lab manuals of all courses are current and up to date and periodically reviewed.
- Development of new curriculum based on industry requirements and review of existing curriculum (if any).
- Benchmarking of courses with local and international universities while designing and reviewing the curriculum.
- Consideration of JU program designing guidelines, NCAAE, ABET and ACM Guidelines any other relevant body while reviewing the current curriculum or designing the new curriculum.
- Consideration of human, technological and learning resources availability and planning for future requirements if any.
- To solicit and review the expert opinion from different stakeholders in review and development of Curriculum plan and contents.
- Preparing documents and supports department in review and approval of current as well proposed curriculum.
- Ensure the Teaching Plan is prepared and delivered timely according to the approved academic calendar with the help of Course Coordinators and Track leaders.

14) PROFESSIONAL DEVELOPMENT COMMITTEE

Responsibilities:

- Identifying the professional development needs of faculty members or students.
- Creating and planning professional development programs, workshops, or training sessions.
- Allocating resources such as time, trainers, and materials for development programs.
- Assessing the effectiveness of professional development activities and making improvements as needed.
- Communicating the availability of professional development opportunities to faculty members or students.
- Maintaining records of participation, achievements, and certifications.
- Staying updated with industry trends and best practices to enhance professional development offerings.
- Gathering feedback from participants to improve the quality of programs

15) ALUMNI AFFAIRS & EMPLOYMENT COMMITTEE

Responsibilities:

- To collect and classify students′ personal data in the department and means of communicating with them (Particularly bachelor's Degree students).
- To collect and classify data pertaining to employers and means of communicating with them.
- To set programs for strengthening the ties between the graduates and employing bodies.
- To prepare, distribute, and collect questionnaires pertaining to this group's extent of satisfaction with their study program. The committee is to classify and organize the results statistically, upon which it offers advice to the program.
- To establish an effective mechanism to make available employment opportunities in their fields of specialization (e.g., Via the convening of employment meetings – Exploring the employers′ views on the graduates' levels from the College - Exploring the employers′ views on the important courses for the Program and the Department.
- To activate means of communication with the graduates (e.g., A Students′ Association of the Department of Computer Science).
- To explore the already employed graduates' views pertaining to their evaluation of the extent of the usefulness of the relevant program and the contents of the courses they studied previously.

16) FACULTY PROMOTION AND CAREER COUNSELLING COMMITTEE

Responsibilities:

- Review all applications of faculty promotions of academic staff (at the rank of assistant or associate professor or others).
- Provide the list of the nominated candidates to faculty dean (based on the department review and recommendation which use well-defined criteria following the regulations of the University).
- A report must be submitted regarding the decision of recommending the chosen candidate(s) to the faculty dean.
- Evaluate the promotions of member of academic staff on the basis of the regulations of the Jazan University.
- Revise and Submit report regarding the application of promotion in collaboration with relevant department and ensure that the application meets all required conditions of the Jazan University.
- The committee meets when a recruitment or promotion case is available.
- Conduct periodic career counselling sessions and mentorship to staff for professional advancement.
- Guide faculty members on career transitions and internal promotions.
- Provide guidance on pursuing higher education and professional certifications.

COMPUTER SCIENCE DEPARTMENT FACULTY

Department of Computer Science

Male Staff List for the Academic Year 2024-25, First Semester [CS Program]

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Department of Computer Science

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