Handbook

Information Systems Program

DEPARTMENT OF INFORMATION SYSTEMS

NAJRAN UNIVERSITY

Message from the Coordinator of Department of Information Systems

Thank you for your interest in the Department of Information Systems. It is our pleasure to see you visiting our website. As a coordinator of Information System Department, I welcome you on behalf of my colleagues.

The department of Information Systems was founded in the academic year 1427/1428 to contribute in the development of region with qualified students providing them theoretical knowledge of computing combined with practical skills.

One of the most distinctive features of the department is a qualified and diverse academic environment to provide l information and requisite skills by the most up-to-date methods.

Additionally, the department is seeking to obtain the accreditation of Education Evaluation Council (EEC), beside the Accreditation Board for Engineering and Technology (ABET).

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Overview

The major of information systems aims to provide students with the necessary knowledge for a career in the fields of Computer Information Systems (CIS) and programming project management, which involve the development and integration of multi-purpose systems. The importance of this major stem from the fact that development of systems builds on a combination of theory and practice, which have to be founded on sound background and methods in the fields dealing with IT.

Department Goals

1) To establish a scientific, research-oriented environment that helps develop the knowledge and skills of the faculty of the department.

2) To encourage high-quality scientific research in the field of information systems.

3) To create qualitative and quantitative standards to assess the quality of the educational process and ensure the accomplishment of departmental goals.

4) To perform periodical assessment of departments and programs using global quality standards in order to obtain academic accreditation for the department.

5) To create an educational system that keeps pace with the continuous developments in the field of IT.

Program Offered and Name of Degree

Currently the Information Systems program is offered by the department and the name of degree is Bachelor of Science in Information Systems (B.Sc. in IS)

Overview of IS Program

Information systems program is a modern discipline that has emerged with the spread of computer use in various humanitarian activities. With the increasing widespread use and applications of information and communication technology in the world, the new sections are developed in information systems to qualify specialists in these areas. Information systems is one of the important disciplines indispensable to build modern societies with strong economies that put the state in the ranks of the industrially and technically advanced in the twenty-first century. Information systems program is updated regularly to suit the spirit of the recent changes and new skills.

Program Vision

To be a leader in the field of information systems through seeking excellence in education, research, and community services.

Program Mission

To provide quality education through a well-designed information systems curriculum that equips students with the requisite technical knowledge, communication and interpersonal skills.

Program Educational Objectives (PEOs)

After graduation, the graduates of the Information Systems Program are expected to:

- Be a leader in the job market for information systems
- Follow-up life-long learning in the course of higher education, research, and professional development.
- Function professionally within a team and respect ethical values.
- Function actively in community services.

Program Learning Outcomes

(a) An ability to apply knowledge of computing and mathematics appropriate to the discipline

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(d) An ability to function effectively on teams to accomplish a common goal

(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(f) An ability to communicate effectively with a range of audiences

(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society

(h) Recognition of the need for and an ability to engage in continuing professional development

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) Understand the processes that support the delivery and management of information systems within a specific application environment.

The IS mission statement is considered as the main driving force for program's planning and activities. Therefore after the formulation and the approval of IS mission statement according to the procedures described above. It was sent to the strategic planning

committee, which was working on developing a strategic plan for the college, to use it for the formulation of the main goals and objectives. The goals and objectives of the college were then adopted by the program's council. In addition to that a set of educational objectives were formulated in light of the IS program mission and passed through the same procedures of revision and approval.

Alignment between the main elements of IS Mission and Mission of CSIS

Main Elements of the Mission of IS Program	**The Mission of the College of Computer Science and Information Systems (CSIS)**		
	Prepare high quality graduates through well-chosen and continuously developed programs.	Conduct consistent high quality scientific research for the academic and community development	Provide high quality training and consultation services to meet the community needs.
To provide quality education through a well-designed information systems curriculum	√	√	√
To equip students with the requisite technical knowledge	√	√	√
To equip students with communication and interpersonal skills.		√	√

Alignment between the main elements of IS Mission and mission of NU

Main Elements of the Mission of IS Program	Main Elements of the Mission of Najran University		
	Distinctive education that meets the needs of society and the labor market	Contribute effectively to the sustainable development through applied research, the optimal use of modern technologies	The active partnership at the local, regional and global levels
To provide quality education through a well-designed information systems curriculum	√	√	
To equip students with the requisite technical knowledge	√	√	
To equip students with communication and interpersonal skills.			√

Alignment between the PEO of IS Program and Mission of NU

Program Educational Objectives (PEOs) of the IS Program	Main Elements of the Mission of Najran University		
	Distinctive education that meets the needs of society and the labor market	Contribute effectively to the sustainable development through applied research, the optimal use of modern technologies	The active partnership at the local, regional and global levels
Be a leader in the job market for information systems	√	√	√
Follow-up life-long learning in the course of higher education, research, and professional development.		√	√
Function professionally within a team and respect ethical values.	√	√	√
Function actively in community service.	√		√

Relationships of Program Education Objectives and Student Outcomes

The following table shows the mapping of the Program Educational Objectives (PEOs) and Student Outcomes (SOs).

ABET point of view:

IS Student Outcomes (SOs)	Program Educational Objectives (PEOs)			
	PEO_1: Be a leader in the job market for information systems	**PEO_2:** Follow-up life-long learning in the course of higher education, research and professional development.	**PEO_3:** Function professionally within a team and respect ethical values.	**PEO_4:** Function actively in community service.
a) An ability to apply knowledge of computing and mathematics appropriate to the discipline	√	√		
b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution	√	√		
c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs	√	√		

d) An ability to function effectively on teams to accomplish a common goal	√	√	√	
e) An understanding of professional, ethical, legal, security and social issues and responsibilities			√	√
f) An ability to communicate effectively with a range of audiences		√	√	√
g) An ability to analyze the local and global impact of computing on individuals, organizations, and society			√	√
h) An ability to recognize the need for and to engage in continuing professional development	√	√		
i) An ability to use current techniques, skills, and tools necessary for computing practice	√	√		
j) An understanding of processes that support the delivery and management of information systems within a specific application environment.	√	√		

Coordinator of the Department

Name of teacher: Dr.Ghassan Ahmed Ali		
Last degree name and year of passing: Ph.D - 2011		
Specialization	General: Information Systems	
	Specific: Digital Forensics	
University name as per last degree: University Technology Malaysia (USM)		
Teaching experience: 7 Years		
Research Interest : Information Systems, Information Security, Digital Forensics		
Nu-e-mail: **gaabdulhabeb@nu.edu.sa**		

Contact Information

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Coordinator of the Department of Information Systems

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Faculty Members Short Biodata

Name of teacher: Abdullah Ahmed Alghamdi		
Last degree name and year of passing: Ph.D. 2018		
Specialization	General: Information System	
	Specific: : Information System	
University name as per last degree: Tennessee State University		
Teaching experience: 9		
Research Interest: Interdisciplinary Applications, Cybersecurity, Networking, and IoT.		
Nu-e-mail: aaalghamdi@nu.edu.sa		

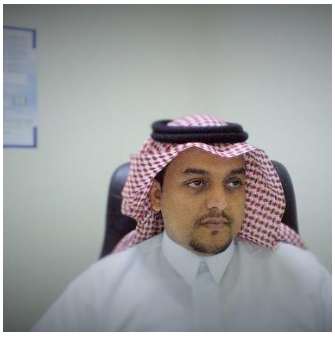
Name of teacher: Dr. Mohammed Abdulatef Ali		
Last degree name and year of passing: Ph.D - 2011		
Specialization	General: Computer Science	
	Specific: Computer Network	
University name as per last degree: University Technology Malaysia (UTM)		
Teaching experience: 8 Years		
Research Interest: Network Quality of Service, Optical Burst Switching Network.		
Nu-e-mail: **mashargabi**@nu.edu.sa		

Name of teacher: Dr. Mohd Abdelgadir Mohd Khairi		
Last degree name and year of passing: Ph.D.in IS, University of Phoenix , USA		
Specialization	General: Information system	
	Specific: Project management	
University name as per last degree: University of Phoenix , USA		
Teaching experience:		
Research Interest:		
Nu-e-mail: makhairi@nu.edu.sa		

Name of teacher: Dr. Asadullah Shaikh		
Last degree name and year of passing: PhD and 2013		
Specialization	General: Software Engineering	
	Specific: Software Model Verification and Validation	
University name as per last degree: University of Southern Denmark, Odense, Denmark		
Teaching experience: 9 years		
Research Interest : Software Verification, Service Oriented Architecture, Formal Methods, Tele-Health, and Health Informatics		
Nu-e-mail: asshaikh@nu.edu.sa		

Name of teacher: Dr.Fekry Olayah		
Last degree name and year of passing: PHD-2010		
Specialization	General: Information System Technology	
	Specific: Information System Management	
University name as per last degree: University of Banking and Financial Scienc,Jordan,2010		
Teaching experience: 9 years		
Research Interest: Information retrieval, NLP, ERP, Information system -Cloud Computing ,CRM,E-business.		
Nu-e-mail: Faahmed@nu.edu.sa		

Name of teacher: Dr. Omar Abdul Rahman ALi		
Last degree name and year of passing: Ph.D. - 2017		
Specialization	General: Information Technology	
	Specific: E-government security	
University name as per last degree: Sudan University of Science and Technology, Sudan		
Teaching experience: 10 years		
Research Interest :Information security, Database (DBA , Developing),		
Nu-e-mail: oaesmail@nu.edu.sa		

<table>
<tr><td colspan="2">Name of teacher: Mazen Ali Muhammed Gazzan</td><td rowspan="5">  </td></tr>
<tr><td colspan="2">Last degree name and year of passing: MSc. Software System Engineering,.2012</td></tr>
<tr><td rowspan="2">Specialization</td><td>General: Information System</td></tr>
<tr><td>Specific: Information System</td></tr>
<tr><td colspan="2">University name as per last degree:
University of Regina, Regina, SK, Canada</td></tr>
<tr><td colspan="2">Teaching experience: 4 years</td></tr>
<tr><td colspan="3">Research Interest : Software System Engineering, Computer Ethics, E-Government, Mobile E-learning</td></tr>
<tr><td colspan="3">Nu-e-mail: MZGAZZAN@NU.EDU.SA</td></tr>
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<tr><td colspan="2">Name of teacher: Shah Murtaza Rashid Al Masud</td><td rowspan="5"> 
Specialization</td></tr>
<tr><td colspan="2">Last degree name and year of passing: M.Sc. in Computer Engineering, 2001</td></tr>
<tr><td rowspan="2">Specialization</td><td>General: Computer Systems Engineering</td></tr>
<tr><td>Specific: Computer Intellectual Systems</td></tr>
<tr><td colspan="2">University name as per last degree: Kharkov National University of Radio Electronics, Ukraine.</td></tr>
<tr><td colspan="2">Teaching experience: 11 years</td></tr>
<tr><td colspan="3">Research Interest: Optical computing, Reversible and Quantum computing, Digital systems design, Microprocessor, Special processor, Fuzzy logic, Neural Networks, and Artificial Intelligence.</td></tr>
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Name of teacher: Mr.Yahya Ali Abdelrahman Ali		
Last degree name and year of passing: MSc. Master of Computer Science 2007		
Specialization	General: Computer Science	
	Specific: Computer Science (Database)	
University name as per last degree: University Technology Malaysia U.T.M		
Teaching experience: 9 years		
Research Interest : Database (DBA , Developing) , Software Engineering ,Information Retrieval ,artificial intelligent (Genetic Algorithm),Multimedia essentially		
Nu-e-mail: Yaali@nu.edu.sa , Yahyaali@gmail.com		

Name of teacher: MOHAMMED BASIT KAMAL		
Last degree name and year of passing: Master of Computer Applications (M.C.A) Year of Passing : 2005		
Specialization	General: Programming	
	Specific: - - - - -	
University name as per last degree: OSMANIA UNIVERSITY		
Teaching experience: 5		
Research Interest : Networks,		
Nu-e-mail: mbkamal@nu.edu.sa		

Name of teacher: Mohammed Al Zamanan		
Last degree name and year of passing: Master		
Specialization	General: Information System	
	Specific: System Analysis	
University name as per last degree: DePaul University		
Teaching experience: 5		
Research Interest : Cloud computing, supply chain, software engineering, Project management		
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Name of teacher: Ali Ahmed H. Zamanan		
Last degree name and year of passing: Bachelors		
Specialization	General: Information System	
	Specific: : Information System	
University name as per last degree: Najran Universit		
Teaching experience: 5		
Research Interest : Database		
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Name of teacher: Fayes Alshahrani		
Last degree name and year of passing: Master		
Specialization	General: Information System	
	Specific: DATABASE	
University name as per last degree: University of Depaul		
Teaching experience: 5		
Research Interest : cloud Computing, Database, Datamining, Project management		
Nu-e-mail: fmalbalala @nu.edu.sa		

Name of teacher: yahya almazni		
Last degree name and year of passing: Master		
Specialization	General: Information System	
	Specific: : Information System	
University name as per last degree: University of Maryland Baltimore County		
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Research Interest : Machine Learning, big data		
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Administrative Staff

Name of admin staff: Mohammed Ali Abo-saq	
Responsibility: Department faculty members	
Academic qualification: Bachelor	
Experience: 4 years	
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Lab Assistant

Mr. Mohammad Hadi Tel.: Tel.: (+966) 7 5428612	

Education System

The college follows the semester system. Two semesters are offered in each academic year (each semester is called a level). The duration of each semester is fourteen weeks excluding examination, in addition to an optional 8-weeks summer semester.

Students Admission

Students who want to be admitted in The Department of Information Systems, Najran University, should satisfy the following requirements:

1. The student shall only be admitted to the University upon the calculation of his/her average as follows: 30% general aptitude, 30% achievement test and 40% general secondary (academic) if the student wishes to enroll in preparatory year. For all the other specializations, the average shall be calculated as follows: 30% aptitude and 70% general secondary.
2. The student should have obtained the general secondary certificate or its equivalent from the Kingdom or abroad.
3. No more than two academic years should have elapsed from the date of his/her obtaining such certificate or its equivalent.
4. The student should have a good conduct and proper behavior.
5. The student should successfully pass any exam or personal interview (if found).
6. The student should be medically fit.
7. The student should obtain approval from his authority to pursue his/her studies, if s/he works for any governmental or private body.
8. The student should not have been expelled from Najran University or any other university for academic or disciplinary reasons.
9. After the student is admitted, if it is turns out that he/she has already been expelled for disciplinary or academic reasons, his/her admission shall be considered as void.
10. The student meeting the requirements should present the documents stipulated by the Deanship of Admission and Registration at the University.
11. The student should not be enrolled for another university degree at the same university or at another university and should not have already obtained such degree.

12. Files of students who are late for admission tests (if found) shall be ruled out.
13. Files of students who are late for personal interviews (if found) and do not present an acceptable excuse shall be ruled out.
14. Students who are late in carrying out the admission procedures within the deadline set by the University, and who do not present an excuse acceptable by the Deanship of Admission and Registration shall have cancelled their admission.

Student admission and registration for IS is performed electronically through EDUGATE, supervised by the Deanship of Admissions and Registration. All admission information is described publicly in a clear and understandable way on the program websites, including the requirements, policies and procedures. The Deanship of E-Learning provides all the information regarding distance learning regulations, requirements, enrolment process and also supports students by providing E-learning training (Blackboard) and services through the websites. And these E-learning services were limited to the boys' campus till the last academic year. Moreover, the faculty members of IS program experienced difficulties during their course registration process in blackboard at the beginning of this academic First semester 2013/2014. Hence the performance of using E-learning mode for the courses of IS program became unsatisfactory. All most all faculty members of our program play a vital role as an academic advisor to support students during their course registration process and are supervised by College's Academic Advising Unit. Rules governing admission with credit for previous studies are clearly specified in the student handbook which is developed for IS program and complete information about the program, including the range of courses, program requirements, services and other relevant information is made publicly available to potential students and families prior to applications for admission through program website. At the beginning of each semester, the College arranges a comprehensive orientation program for prospective students to ensure thorough understanding of program requirements, the range of services and facilities available for them, and about their code of conduct & responsibilities.

Employment Zones

1) Computer system analyst for enterprise
2) Human resource management
3) Computer programmer
4) Database designer and administrator
5) Network administrator
6) Software developer
7) System administrator
8) Researcher
9) Teaching profession
10) Industrial data processing.

Medium of Instruction

Languages used for student-centered leaning at the college are Arabic, and English.

Methods of Teaching and Learning

The College of Computer Science and Information systems emphasizes on the student-centered learning should which facilitates the learner in doing, thinking, manipulating, constructing, testing, analyzing and reflecting.

Important methods of teaching and learning at the college are:

1) Lectures
2) Tutorials
3) Independent reading
4) Lab works
5) Individual and small group projects
6) Web browsing and searching
7) Seminars and symposium
8)

Methods of Assessment

Important methods of assessment at the College are:

1) Class tests
2) Assignments and homework
3) Presentation
4) Mini project
5) Lab evaluation through lab reports, lab performance, and exams
6) Midterm exams
7) Final exam

Rules and Regulations for Registration of Courses

The student is automatically registered at the beginning of each semester for a number of units according to his academic standing. Students with lower GPA are eligible to register up to 12 units, while those of higher GPA are eligible for up to 18 units as maximum.

Dropping and Adding of a Course

The Processes of dropping and adding are performed by the student electronically in the first week of the semester through accessing the academic system of the University Deanship of Admission and Registration:

http://www.nu.edu.sa/gui/SubDefault.aspx?PageId=380

No student is allowed to register a course without passing its pre-requisite course.

Students, who pass all courses without failures, are registered in the courses of the subsequent level beginning gradually after the lower levels according to the study plans approved.

Students, who fail in some courses, are registered in courses that ensure their minimum study load in each semester taking into account the following points:

No clash in the course study schedule.

Satisfying the previous requirements of the course or courses to be registered.

Withdrawal Rules

The student has the right to withdraw from an academic semester within the withdrawal period announced in the academic calendar for the current semester. No withdrawal is allowed during the last five weeks before the final examination. The student may get chance for the final examination if the college council accepted the student's excuse.

Class Attendance

For academic accomplishment at the college of computer science and information systems students should attend at least 75% of the lectures, tutorials, and practical and laboratory lessons in regular courses. Students failing to meet this requirement in any of his registered courses will be prohibited from attending the final examination of those courses and will have F grades that are zero grades for those courses.

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 computer science and information systems (CSIS) at Najran University (NU) is therefore confidently assessing all students' activities at program and course levels. Faculty members of Information Systems (IS) program hence use a range of assessment measures including quizzes, assignments, projects, student portfolios, mid-terms and final 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. These results are analyzed and an on-going process

of improvement implemented in terms of student learning outcomes (SOs) at program level and course learning outcomes (CLOs) at course level. The CLOs and SOs are assessed and evaluated regularly to improve the quality of IS program. More specifically, faculty collects data from various sources (courses, surveys, etc.) and prepares them for evaluation. Then, the department evaluates the collected data and presents results to various stakeholders for approval. The approved improvements will then are implemented to ensure a systematic quality assurance system. By the end of each semester of the academic year, the department curriculum committee prepared a list of actions to be implemented at the course level, program level, other levels with assigned deadline and responsible people. In the next section (Continuous Improvement), we will explain in more details about approved list of actions taken or to be taken in order to improve the level of achievements of SOs. Our goal is to ensure that the average achievement of each one of the SOs is 65% in this assessment method (CLOs Assessment).

The IS program uses the following procedures to deal with situations where standards of student achievement are inadequate or inconsistently assessed. This is the paramount for the success of the students as well as the whole program of the IS department:

1. By the end of each semester, each instructor has to submit a course report for the corresponding course. The course report contains the achievements of each one of course learning outcomes (CLOs) based on students' performances and surveys. Moreover, if a CLO (students did not achieve the standard) is not achieved, the instructor has to prepare action to be taken in order to improve the achievement levels of students. The course report may also contain recommendations about the assessment methods used in the course.
2. The Curriculum Committee (CC) receives and reviews the course reports. CC approves recommendations/actions to be implemented at various levels in the program (course level, program level and level other than the program, etc.). Note that the approved recommendations are based on the course reports.

3. Student learning outcomes at the program level are assessed by using a set of rubrics. SO assessment groups collect all data and evaluate each one of the SOs. If an SO is not achieved, then an improvement plan must be prepared. Note that the improvement plan might contain actions related to all aspects of the program such as data collection, evaluation of data, facilities and resources, faculty members, etc.

Both direct and indirect assessment methods are used to measure students' performance. Direct assessment methods include quizzes, assignments, exams, etc.; indirect assessment methods include surveys, questionnaires including course survey, students' online survey, current students' survey, exit survey, alumni survey, etc. These exams and survey's results enable faculty to determine where skills and knowledge deficiencies of the students exist and most frequently develop.

Examination and Grading Systems

Examination assessment or evaluation system is based on the theoretical and practical exams and homework, exercises, projects and any other scientific activities. Full marks for each course of the curricula for computer science are equal to 100 (hundred) points and is divided into two main sections, namely: course work and final examination.

Course work grade: The 50 (fifty) points are assigned for grading course work. Methods of grading include two midterm exam, class tests, quizzes, homework, assignments, exercises, mini projects, report writing, presentation of projects, lab report and lab exams, and any other scientific activities. Grades are distributed on different parts by course teacher depending on the nature of the course.

2. Final exam grade:

The total points for final exam are 50 points. The method of grading for the final exam includes a theoretical exam.

The pass mark in each course is 60%.

Exam evaluation system at the college is mentioned on the following tables:

Course (Without lab)

Assessment Process	Class test	Assignment/Project	Midterms	Final	Total
Maximum points	10%	10%	30%	50%	100%

Course (With lab)

Assessment Process	Class test	Midterms	Lab	Final	Total
Maximum points	06%	24%	20%	50%	100%

The Grading system of Najran University:

Letter of Grade	Mark (%)	Average Point
A+	95 – 100	5.00
A	90 – 94	4.75
B+	85 – 89	4.50
B	80 – 84	4.00
C+	75 – 79	3.50
C	70 – 74	3.00
D+	65 – 69	2.50
D	60-64	2.00
F	Below 60	1.00

Average and Cumulative GPA:

The Average and cumulative GPA are calculated every semester for the student automatically by the system.

Calculating the Semester Average:

The GPA is calculated considering the following points:

1. Determining the total points obtained in all courses of the semester.
2. Determining the total number of hours registered in the semester.

The average is calculated every semester according to the following equation:

$$\text{GPA} = \frac{\text{Total Points (Item 1)}}{\text{Numbers of Hours registers in the semester (Item 2)}}$$

A student's grade point average (GPA) is determined by dividing the cumulative point value of all courses attempted by the number of units in the student's semester schedule. An example is the following hypothetical student's report having six subjects in a particular semester.

Course	Credit-Hours	Letter Grade	Value Factor	Product (Total Grade Point)
1	2	B+	4.5	9
2	3	D	2	6
3	3	C	3	9
4	4	D+	2.5	10
5	1	B	4	4
6	4	C	3	12
Total	17			50

This student's semester grade point average is (50/17) = 2.94

CGPA (Cumulative GPA): For first semester, students' GPA is also equals to students' CGPA. [(total grade point for semester 1) + (total grade point for semester 2) +……+ (total grade point for semester n)] / total credit taken in all semesters.

Example of calculating CGPA: In 1st semester student got 32 total grade points for 11 credits, and in 2nd student got 39 total grade points for 14 credits, the CGPA of this student is:
[(32) + (39)] / (11 + 14) = 2.84 CGPA

The cumulative grade point value is translated as follows:

Accumulative Points	Accumulative Grade
4.50 upwards	Excellent
3.75 - 4.50	Very Good
2.75 - 3.75	Good
2.00 - 2.75	Pass
Less than 2.00	Fail

Transfer Students and Transfer Courses

Internal transfer in college of Computer Science and Information Systems:

From	To	Minimum GPA	Max number of students allowing to transfer per semester/ term
Department of Computer Science	Department of Information Systems	2.5	5
Department of Information Systems	Department of Computer Science	3	10

Restrictions of the Final Examination

No student will be allowed to sit for a final examination after the lapse of 30 minutes from the beginning of the examination. Also, no student will be allowed to leave the examination venue less than 30 minutes after the beginning of the examination .

Undergraduate Project and Thesis

Independent study course whereby a group of students (3 to 4) at level seven selects one of the proposals submitted by department faculty members with a timeline and evidence of research and analysis, meets with an advisor and co-adviser throughout the semester and then provides a final report regarding system requirement, analysis, and design and makes a formal presentation. In the next semester at level eight every group develops, simulates, implements, and tests software, database through the semester and then provides a final report, presents software, and makes a formal presentation.

The major intended learning outcomes of the project or research task:

1) Development of skills in planning, analyzing, designing, and carrying out a major research project
2) Development of practical skills of using various computer software, programs, programming languages, databases and implement in professional life
3) Improvement of analytical, writing, and communicative skills
4) Improvement of skills in effective time management
5) Improvement in ability to operate as a team member in a significant project
6) Improvement in ability to think critically, research in various aspects
7) Improvement in ability to respect social, ethical, and moral issues

Educational Assistance for Students

Students receive adequate educational assistance for our program both from institutional level (e.g. Deanship of Affairs, Deanship of Admission and Registration, Deanship of Library Affairs, Deanship of E-learning, Deanship of Post Graduate Studies and college level (e.g. Academic Advising Unit, Alumni Unit). Teaching staff of our program have reserved 10 hours per week from their total workload to provide

educational assistance to the students by means of mentoring and counseling. In female campus (Attayba Campus), faculties schedule extra 3 hours apart from 10 office hours which is dedicated for academic counseling and advising. In the second semester of the academic year 2012/2013, 33 faculty members delivered 25 departmental courses to 154 undergraduate students in two campuses (Boys and Girls). The student-to-faculty ratio was 4.67:1. This shows the adequacy of faculty size for the offered program and the student population. There are more than 75088 books and other library materials. Out of which 5191 books are related to computer sciences and information systems. The electronic library in the department of Computer Science & Information Systems in Najran University is having 168 GB of data, which contains 119,779 e-books. The library uses an electronic gateway called OPAC and Saudi Digital Library (SDL). Through the OPAC and SDL, users can access the library catalogue, periodical indexes and databases and electronic reference sources etc. Additionally some of the subject databases are could be useful, depending on the focus or research interest. Complete electronic library databases are available to students, faculty and staff from within the open library staff rooms on the campus using portal ID access. In Computer Science program, both male and female sections' classrooms are equipped with Smart Classrooms for audio/video presentations. Presentations and seminars with a large expected attendance are also scheduled in these two campuses. All the classrooms in College of Computer Science and Information Systems (CSIS) are well equipped with digital podium, smart board (Ketab) and enough seating arrangement for students. The College of CS and IS provides twelve on campus labs among which one is an open lab with internet connectivity, remains open from 8::00 AM till 2:00 PM from Sunday through Thursday. All twelve labs are equipped with Microsoft Windows XP and Microsoft Windows 7 or Linux operating systems. All computers have standard software for productivity, creativity, web browsing and multimedia. Printing is available in all the labs. All faculty members are provided suitable office space in the university campus. Each faculty office has a desktop table with chairs and a cabinet at least one workstation, at least one Ethernet

jack and printer. Campus-authenticated wireless connectivity is also available through university gateway via numerous wireless access points in the building. All students have the option to use a university-wide MS Exchange e-mail account; students who prefer to bring their own laptops to campus can configure their systems so they can connect to an Ethernet port to use the internet or MS Exchange e-mail access. College of CS and IS uses University's internal automated communication system called Correspondence Tracking System (CTS) for all official communication including student academic counseling and advice to deal various students' appeals/requests.

Students' Academic Advising Unit

Academic advising unit of IS program governs by the College of CSIS aimed to provide absolute guidance to the students through efficacious counselling regarding students' academic and personal difficulties. However, this service is currently limited to academic concerns. Students are formed in a group according to their student ID and each group has been assigned to an academic advisor to ensure that all students get academic counselling throughout the program. All most all faculty members of the program are playing a role as an academic advisor as a part of their job responsibilities by following the guidelines set by academic advising unit and being monitored by the coordinator of this unit. At present, separate time for student advising in academic advisors' time table has not been enforced to schedule, however the unit is looking forward to implement this plan for the program in near future. Hence, academic counselling is carried out during weekly office hours (10 hours) of the academic advisors'. Each newly enrolled student is encouraged to meet his/her academic advisor and open a student file which should be kept and maintained by academic advisor as record. This file should reflect student progress mainly concerning on student's results. Academic advisors write a summary

report on each student progress and based on this progress report, at the end of each semester, academic advisors produce a subject plan for the coming semester for each advisee student. After preparing a subject plan for a student, academic advisors are accountable to forward this plan to the academic advising unit and in parallel consult with the student about the proposed subject plan the graduating/higher level (level7, 8, 9) students depending on the students' necessity. For our along with their expected graduation time frame (part of their program plan). Counselling on career planning take place mostly for the graduating/higher level (level 7, 8, and 9) students depending on the students' necessity. For this program, students' academic appeals are mainly categorized by the form of 'Add/drop courses, absent excuses, Rechecking of exams and Make up exams'. Apart from these academic appeals, other appeals are also considered by the academic advising units by an adopted mechanism. Each student is accountable to place an appeal through his/her academic advisor using case specific appeal form. All appeal forms are available on the university's website from where student can fetch. These forms are also available with academic advisors. Academic advisors are accountable to consult with the student in detail to spot students' need and provide guidance to fill out the appeal form. During this consultation process, academic advisors are responsible to fetch necessary record from corresponding student file to support his/her opinion.

When an appeal has been finalized and submitted by the student, academic advisors are accountable to attach necessary supporting documents such as student's transcript, medical excuses, add/drop form etc. with this appeal and forward this appeal to the academic advising unit through the University's correspondence tracking system (https://cts.nu.edu.sa/NajranCTS/start) for further processing. The coordinator of academic advising unit is accountable to check completeness and to verify the ground of each appeal based on university's regulations, college rules and program requirements.

If an appeal complies with all requirements, it has been carrying forwarded to the decision making authority (Dean of the college), else it has been returned to the correspondent academic advisor.

The decision making authority provides decision on the majority appeal cases by 7 days that appear in different places/format depending on the nature of the appeal.

Successful appeal for rechecking of exam is forwarded to the college coordinator. College coordinator is accountable to form an evaluation committee and send the review request to that committee. The evaluation committee should consist of at least 3 people (i.e. Program coordinator, subject coordinator, member of that subject's knowledge group) and is accountable to provide the outcome within 3 days.

College of CSIS also developed a system to handle students' complaints. Complaints are normally categorized in forms of general complaints, blind box complaints and direct E-mail complaints. **General complaints** made by students have no specific allegation and normally related to class room facilities, difficulties with class schedule etc. To make this type of complaints, students have to visit their academic advisors and discuss about their issues. Academic advisors will pass the students complaints to the academic advising unit coordinator. The coordinator will review the complaint and if necessary, will pass it to the college council. College council will pass the decision to the academic advising unit's coordinator and finally the decision will reach to the academic advisor to notify the student about their complaint outcomes. **Blind Box complaints** are normally case specific with pointed allegation and handle with high confidentiality. There is a specific template/form for this type of complaint. The college provided a complaint and suggestion box at the ground floor of College of Computer Science and Information System building (beside Dean's office) with the specified forms. Students write down their complaints and suggestions in the suggested form and drop them in the complaint box. The box usually opened on 25th of each month by the complaint handling committee (in presence of at least 2 members) and passes the complaints (if any) to the college council for further actions. In **Direct E-mail complaints**, students from female campus are allowed to complain directly to the Dean of the college through a specified e-mail address and this kind of complaint is highly confidential and in this case Dean of the college takes the decision directly.

Faculty members are assigned students majoring in their field of expertise and are trained in counselling students regarding program requirements. Student meets with academic advisor either in the group or individually at any time throughout the semester. Advisor has no more than 17 students to advice for the independent study

Advisors major responsibilities are:

1) To make individual student file and keep students records
2) To offer courses for regular and summer semesters
3) To manage students' sick leaves
4) To handle excuses during semester
5) To keep the records of internal, midterms, lab, and final exams' marks
6) To declare marks of internal, and midterms to the students
7) To manage departmental procedures if any student wants to take summer courses in any other universities within the kingdom
8) To monitor students' academic and moral progress
9) To advice the students about program planning and career planning

Student Records

Najran University adopted fully automated system that inherits well defined regulations to keep up student records. This automated system is centrally organized and operated by University's 'Student Record and Registration Department'. Information System (IS) program is also abided by that automated system. This student record system regularly provides aggregated statistical data required for planning, reporting and quality assurance. Clear rules are established and maintained governing privacy of information and controlling access to individual student records. This automated system supports eligibility checking for graduation in relation to program and course requirements.

Student Management

Information Systems program adopted effective policies and regulations to establish fair and consistent processes of student management, with effective safeguards for independent consideration of disputes and appeals. Class Attendance requirements are made clear to students at the time of orientation and are monitored & enforced using automatic student attendance system. Student appeal and complaint procedures are specified in regulations, published and made widely known at the time of orientation. The college of CSIS developed different case specific academic appeal templates to make clear ground of academic appeals. These appeal and complaint procedures protect against time wasting on trivial issues, but still provide adequate opportunity for matters of concern to students to be fairly dealt with and supported by student counseling provisions. Appeal and complaint procedures guarantee impartial consideration by persons or committees independent of the parties involved in the issue, or who made a decision or imposed a penalty that is being appealed against. Procedures have been developed to ensure that students are protected against subsequent punitive action or discrimination following consideration of a complaint or appeal. For IS program, appropriate policies and procedures are in place to deal with academic misconduct, including plagiarism and other forms of cheating.

Open Lab and Lab Supervising

Open lab is a lab at the college of computer science and information systems where students can spend their times for exercising and practicing their relevant lab works, tutorial works, making presentation in computer with the help of teaching staff. During the semester the open lab is opened from 8:00 AM to 5:00 PM with a short break from 12:00 PM to 1:00 PM. Every teaching staff including TAs is assigned for 2 hours in a week to supervise the open lab and to guide, assist and, help the students to their practice and studies in the lab.

Other than open lab, all other labs of the college are closely monitoring and supervising by the faculty staff members. One faculty member is assigned for one lab, and he is named as "lab supervisor".

College Learning Facilities

To serve all the departments of the College of computer science and information systems, the College contains a number of computer laboratories, namely: programming lab, database lab, assembly language lab, UNIX lab, artificial intelligence lab, computer graphics lab, networks lab, open lab, and digital lab. The College's physical facilities include:

1) Lecture halls
2) Computer laboratories
3) Digital laboratory
4) Seminar room
5) Open lab

Commitment to Quality Improvement in the Program

Quality development and its improvement of the program is directly controlled and managed by the University higher authority in form of University's President's undeviating involvement along with the deanship of development and quality's relentless supports, monitoring, and commitment to establish quality culture. The DQU of the college which is controlled by quality council, presided by the dean of the College, has formed numerous committees and sub-committees which include representatives from program's administrators, faculty members, and other staff members. Direct involvement of all the academic and administrative staffs of the program creates a generous quality environment in the college as well as in the department of IS that supports further development, control, and improvement of the quality culture within the program. Committees and sub-committees of the DQU of the program supports and

advice on mechanism, policies, procedures, management, and implementation of activities and tasks related to quality control and improvement in the program. The organizational structure of DQU of the program is illustrated in the figures bellow.

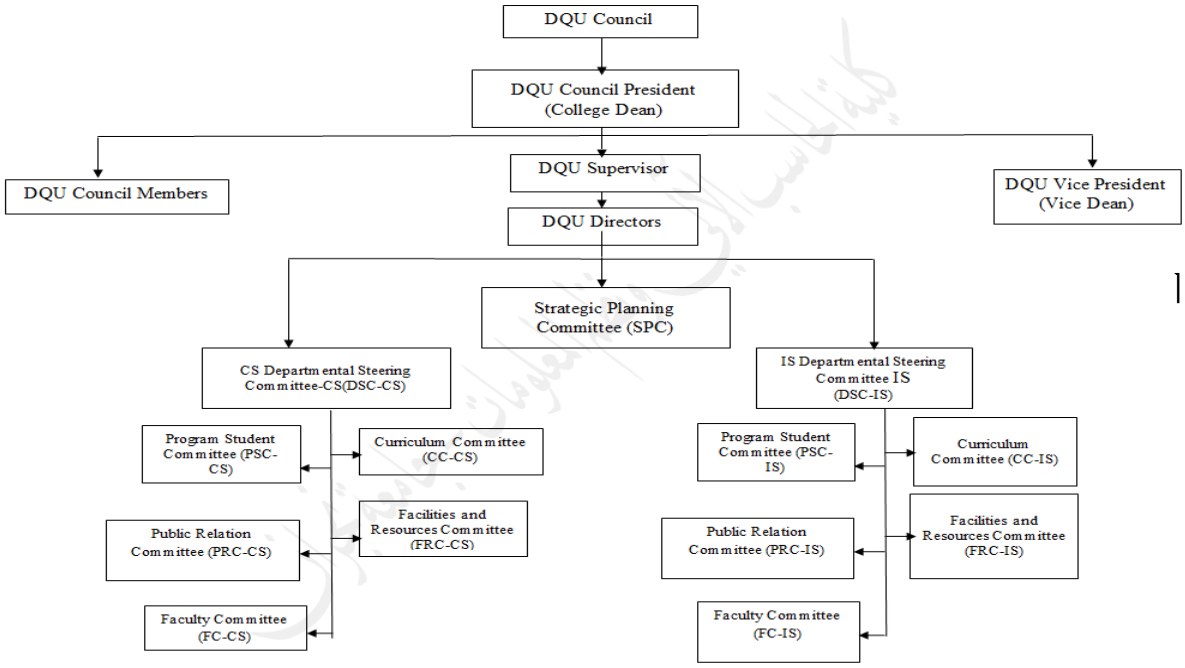


Figure: DQU unit of IS program's organizational structure.

IS Department (Program Level) Administrative chart:

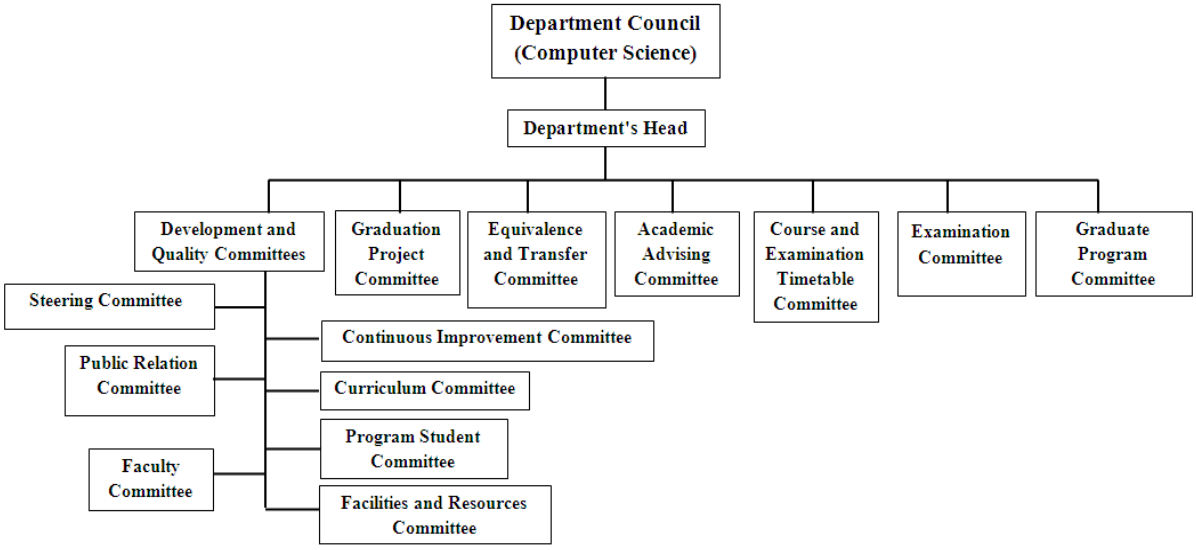


Figure: IS Department (program level) administrative chart

Improvements in quality are appropriately acknowledged and great achievements recognized. Faculty members are involved in the quality improvement processes and their participation is required in all sorts of activities. Seminars, workshops, training programs relating to quality have been provided by Deanship for development and quality, and also program's internal DQU unit that ensures continued quality monitoring. The program's continuous quality improvement processes are illustrated in figures bellow.

All academic and administrative staffs are members of various committees and sub-committees committed to ensure quality culture throughout the IS program in the college. In this academic year 2013/2014 IS Program on behalf of the college of computer science and information systems is going to submit its first report to NCAAA and final report to ABET for its accreditation, and this is the total quality efforts and supports from all academic and administrative staffs related to this program.

At the program level the DQU unit directs the overall program planning, delivery and evaluation by following up with:

1. The preparation of CLOs.
2. The preparation of course specifications.
3. The preparation of course reports.
4. The preparation of course files in each semester.
5. Guidelines to prepare CLOs and course files, course specifications and course reports.
6. Evaluating course report and take steps for its implementation.
7. Preparing and distributing examination guidelines, methods.
8. The preparation of program specification and reports.
9. Design and develop tasks related to academic program quality improvement activities.
10. Arranging seminars, workshops, meetings on quality assurance and management systems.

11. Provide annual plan of all committees those are directly related to quality culture.
12. Conduct various surveys related to academic and administrative staffs, students, alumni, employer, and other stakeholders.
13. Preparing reports on quality works and preparing plans for improvement.
14. Initiates and produces collaboration in between teaching, research, and community services in terms of continuous quality improvement process.
15. Getting approval of all quality planning, works, reports and surveys from college or program council.
16. Monitoring the total quality functionalities in the program.
17. Documenting all quality activities.
18. The preparation of national and international accreditation (NCAAA and ABET).
19. Review the progress of all committees related to the DQU.

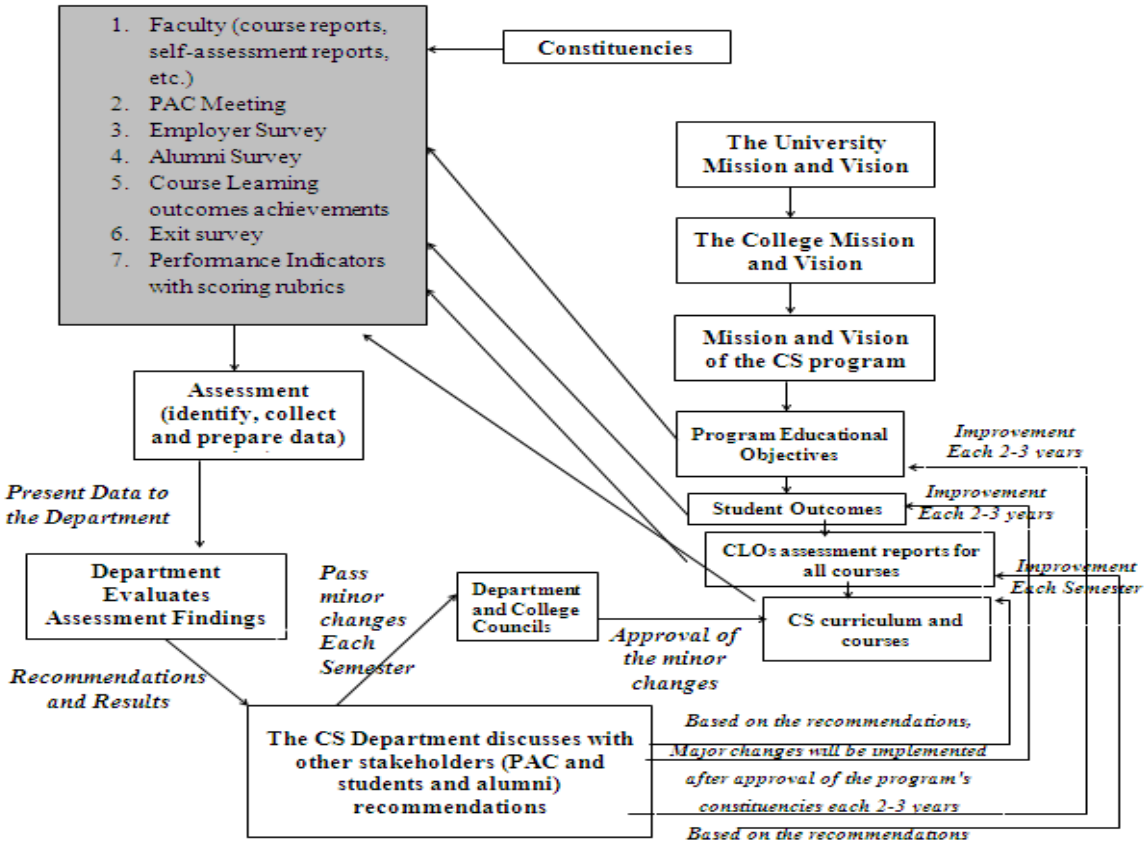


Figure: Continuous Quality Improvement Process for the IS Program

The following table illustrates the mapping of NCAAA standards to ABET criteria. It is clear from the table that a lot of common requirements exist between ABET and NCAAA.

Table: Mapping NCAAA standards to ABET Criteria

NCAAA		ABET	
Standard #	**Standard**	**Criterion #**	**Criterion**
1	Mission and Objectives	**2**	Program Educational Objectives
2	Program Administration	**6**	Faculty
3	Management of Program Quality Assurance	N/A	N/A
4	Learning and Teaching	**3** **5** **4**	Students Outcomes Curriculum Continuous improvement
5	Student Administration and Support Services	**1**	Students
6	Learning Resources	**part of ABET Criterion 7**	Facilities
7	Facilities and Equipment	**7**	Facilities
8	Financial Planning and Management	**8**	Institutional Support
9	Employment Processes	**part of ABET Criterion 6**	Faculty
10	Research	**part of ABET Criterion 6**	Faculty
11	Relationships with the Community	**part of ABET Criterion 2**	Program Educational Objectives

The key element of any quality assurance system is the existence of a systematic way to improve the quality of the program called Continuous Quality Improvement (CQI). Following figures show how a program fulfills CQI in NCAAA and ABET.

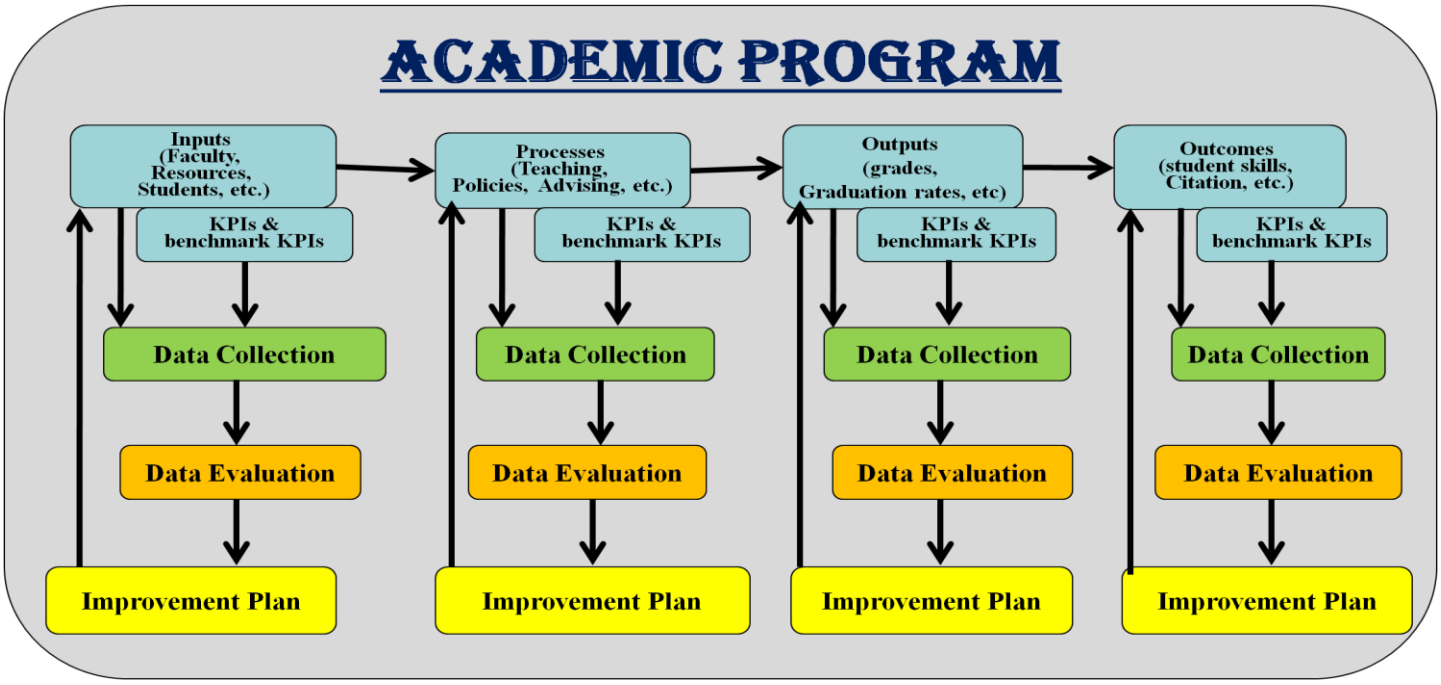


Figure: Continuous Quality Improvement (CQI) from the NCAAA point of view

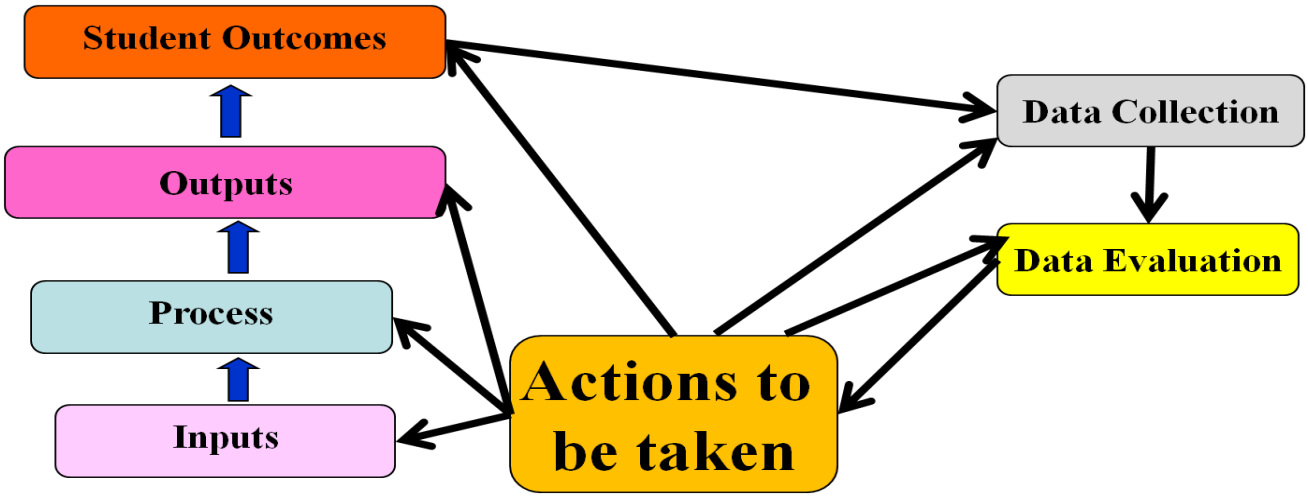


Figure: Continuous Quality Improvement (CQI) from the ABET point of view

Program Evaluation and Review

The main objective of the evaluation and review processes is to evaluate the quality of the IS program. More specifically, all aspects that affect the program (e.g. learning outcomes, facilities and resources, teaching strategies, etc.) are reviewed and assessed to improve the quality of the program, to show responsibility to the general community and to prospective students. The evaluation and review processes are designed to ensure that a sustainable and efficient continuous improvement system is applied to meet the following additional goals:

- To monitor the mission and objectives of the program.
- To foster academic excellence.
- To determine the weaknesses and strengths of all aspects related (e.g. academic, community service and research) to the program.
- To define how to improve the quality of the program.
- To ensure rigor implementation of actions in order to improve the program.
- To improve teaching strategies and other educational practices.
- To check and improve the extent to which each learning outcomes at various levels are being attained.
- To monitor and improve academic support and services provided to students.
- To check that resources and facilities are available and used effectively.
- To provide and improve direction related to administrative decisions on issues related to financial planning and employment processes.
- To maintain internal and external benchmarking and determine how the quality of the program has been improved.
- To obtain national and international accreditations (NCAAA and ABET).

The program is reviewed internally and externally through several assessment methods. The internal review system of the program includes the following:

1. Annual Program Report: The NCAAA annual report template is filled out every year and covers all issues related to the program. This report includes evaluation of learning outcomes and a general evaluation of the program using surveys. The information on enrolment of students, completion rates, records of student completion rates in all courses and grades distributions are used quality indicators.
2. Curriculum Committee Report About Courses: By the end of each semester, the curriculum committee (CC) reviews all courses' reports (NCAAA format) and prepare a report that contains three sections 1) recommendations to be implemented at the program level 2)recommendations to be implemented for all courses 3) recommendations at specific course level. The recommendations are discussed by the program council and implemented and followed-up.
3. Exit Survey: This survey is filled-up by all students at the time of graduation. Specifically, this survey is given to them before they can make the final presentation of their Graduation Project II (492CIS-4). The purpose of this survey is to measure if the performance indicators for each student outcomes meet the required level of achievement (65% agree or strongly agree) or not. The exit survey explicitly addresses the SOs in terms of their PIs. The exit survey consists of several sections that allow students to give their opinions in advising, learning resources, professional preparation, teaching strategies and educational practices. They also can write comments about the program overall and suggest improvements.
4. University Online Course Survey: By the end of the semester, the quality of the courses is evaluated from the students' perspectives. This survey includes several sections such as 1) content of the course, 2) teaching strategies 3) assessment methods, 4) text books and 5) lecture materials etc. Students overall rating on the quality of their courses is discussed with all faculty members and improvement plan is prepared if needed.

5. Current Student Survey: The program adopted the NCAAA current student survey. This survey is distributed to students once a year. Moreover, this survey is

used to take the opinions of students about issues such as 1) Academic Advising and Support provided to students, 2) Learning Resources and Equipment 3) Learning and Teaching 4) learning outcomes and 5) overall quality of the program.

6. NCAAA Course Reports: By the end of each semester, each instructor must submit the course report (NCAAA) that contains assessment of Course Learning Outcomes (CLOs) as well as improvement plan based on CLOs assessment. Improvement plan might be related to several aspects in the program such as facilities, teaching strategies, content of the course, etc.
7. Facilities and Resources Survey: This survey is conducted once a year to take the opinions of faculty members regarding the allocation of facilities and resources and their appropriateness and effectiveness. The Faculty and Resources Committee (FRC) are responsible for this survey.
8. Alumni and Employer Surveys: The alumni and employer surveys contain questions and feedback boxes to assess the achievement and the importance of the current Program Education Objectives. They also can give comments on each one of the PEOs. In addition, the alumni survey contains questions related to the curriculum and overall evaluation (facilities, advising, etc.) of the program. The surveys provide an insight on 1) whether the graduates have accomplished the program educational objectives and 2) the importance and relevance of the current program educational objectives.
9. Program Advisory Committee (PAC) Meeting and Survey: the chair of the department meets every year with the PAC to know whether the current SOs meet the needs of the labor market. PAC evaluates the importance of learning outcomes through survey and ensures that the outcomes are still in-line with the dynamic needs of the industry. In addition, PAC must be involved of any changes to improve the program.
10. Program Administration Survey: This survey is to take the opinion of faculty members about the administration of the program.

11. Questionnaire about the Internal Quality Assurance System: This questionnaire is conducted every year to evaluate the performance of the quality assurance systems in the college.
12. Text Book Evaluation and Availability Form: This form is filled out by all faculty members every semester to evaluate the relevancy of text books and references materials to the academic fields.
13. Evaluation Mechanisms: For each one of the NCAAA standards (11 standards), a set of evaluation mechanisms were developed and used to evaluate the results of the corresponding KPIs and the quality of relevant practices. Mechanisms to evaluate KPIs and standards include data about: when data are collected (e.g. Once a Year), responsible people to collect and evaluate the data (DQU and DSC and CC), Targeted group (Alumni), Assessment methods (Alumni survey), purpose of the mechanism and target (KPI).

Several committees and units are involved in the organization of surveys, data collections, and analysis of results. The DQU and DSC monitor the progress of other committees and ensure that review processes are implemented as planned. The data of the program review processes are collected and evaluated throughout the program by several working committees. Several reports are prepared and reviewed as follows:

- Reports related to the curriculum and academic issues such as courses, learning outcomes are discussed at the curriculum committee and improvement plans are created. The output of the curriculum committee needs approval from the program council and/or college council.
- All evaluation results and reports are discussed at the program council, and if needed, at the college council for approval. Improvement plans are created and followed.
- Major changes in the program must be discussed with all stakeholders of the program including PAC, faculty and students, etc. and finally approved by the program, college and institution councils.

- Minor changes need approval from the program council and can be implemented any time during the program review process (assessment cycle).

The following figure shows the review and evaluation processes of the program. The data are collected for all aspects of the program (KPIs, inputs, processes, outputs and outcomes) from various stakeholders. The data are then analyzed. The evaluation results are discussed by the CC and program and college council. Finally, actions are created and implemented and monitored to improve the quality of the program.

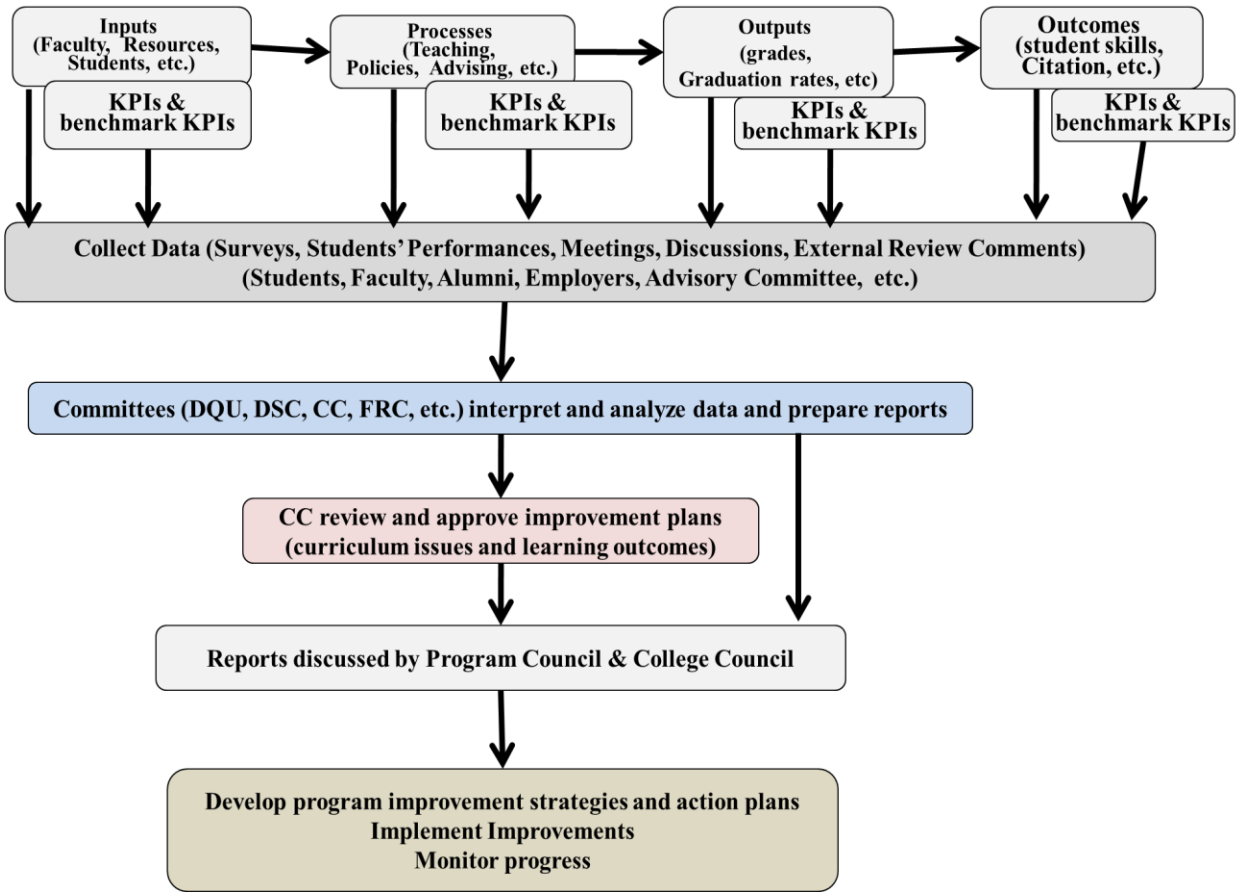


Figure: IS Program Evaluation and Review Processes

Program's Knowledge Group

The curriculum committee has decided and approved 11 knowledge areas for CS program. The knowledge areas are as follows:

i. Programming Languages Concepts
ii. Data Structures and Algorithms
iii. Computer Organization and Architecture
iv. Information Management
v. Operating Systems
vi. Software Engineering
vii. Intelligent Systems
viii. Computer Graphics and Human Computer Interaction
ix. Networking and Distributed Computing
x. Social and Professional Issues
xi. Basic Science

Teaching Staff and Student Involvement in Research

- Faculty of computer science and information systems is aware about the research outcomes in their career development and student educational studies. Regarding research faculty in contributing by involving student in graduation projects and publishing research at different levels to contribute latest educational development both at faculty and student level.
- College of computer science and information systems is well developed institute having clear and defined policies to conduct research at different level. These policy guidelines are internationally recognized and provide clear directions to conduct and published creative and original research.
- There is a mechanism that is operated in the college of computer science and information system that provides an opportunity to junior staff to build their knowledge and skills to conduct quality research. This mechanism involves the

faculty coordination on regular basis and thorough brainstorming on each and every research topic and assistance of seniors to produce quality research.

- The college of computer science and information system does not offer postgraduate program. To carry out Postgraduate research, the postgraduate program should be offered by the department so that students participate in research both individually and in groups at different levels.
- Presently there are no students involved in joint research projects.

The CSISs College's vision places equal emphasis on teaching and research. The CSISs College believes that research is one of three key pillars of academic excellence, along with teaching and community engagement. At CSISs College, we strive to continuously develop our scientific infrastructure to ensure that faculty and students have access to quality research space and resources they need such as classroom space, laboratory facilities, and equipment, access to computing facilities and associated software, private study facilities, and research equipment etc.

Research activities for the program

1. Books and journals and other materials are available in Arabic and English (or other languages) as required for the program and associated research (Available through Deanship of Library affairs website http://portal.nu.edu.sa/web/deanship-of-libraries-affairs/home)
2. Sufficient facilities are provided for both individual and small group study and research as required for the program (Available through deanship of Scientific Research and Research Unit in the college; website: http://dsr.nu.edu.sa)
3. Ready access to on-line data-bases and research and journal material relevant to the program (Available through Deanship of Library affairs website http://portal.nu.edu.sa/web/deanship-of-libraries-affairs/home)
4. Sufficient Budget available for conducting Scientific and Research Projects in the college. The Deanship of Scientific Research announces for Project Proposals,

Accepted Projects will get required funding. (All the required information is available with the Deanship of Scientific Research)

5. Facilities meet the health and safety requirements for both faculty and students all over the university.
6. Teaching, laboratory facility is enough to continuing the academic and research activities.
7. Classroom and other Labs facility are easily accessible to all staff members with students.
8. Library catalogue is available on-line.
9. A high speed internet facility is available in central library for users.

Evaluation of community activities in the program

1. Najran University vision, mission and objectives clearly define the commitment towards the fulfillment of the community needs.
2. College of computer science & information system forms advisory board to get the opinion of community to improve the quality of programs at college.
3. Community contribution is one of the factors in faculty evaluation and promotion, which encourage the faculty members to address the community issues.
4. The college has a Research Unit that is working in close with the Centre for Scientific and Engineering Research at Najran University.
5. College of Computer Science and Information System are granted funding from the deanship of scientific research at Najran University and have the experience in dealing with requirements in fulfilling the research funding.
6. Appreciation certificates are awarded for faculty members who are involved in community services.
7. Alumni unit is well established and working. Unit is responsible to keep track the alumni and their contribution towards the community.
8. The alumni are responding to our inquiries.

Community Contribution

According to the 1433/1434 community contribution document done by the college, the researches that address the community needs are listed below:

- Cloud Commerce: Readiness Measurement of KSA.
- Local E-Government Based Cloud Commerce: KSA perspective.
- E-government Based on Cloud Computing with Rational Inference Agent.
- Is Saudi Arabia Ready for E-learning? – A Case Study.
- Mobile Learning in Saudi Arabia – Prospects and Challenges.
- Development of and ICT-based layer model for improving managerial decision making on water issues in arid and semi-arid regions.
- WSN-Based Support for Irrigation Efficiency Improvements in Arab Countries.
- Towards Design of Novel Low Power MAC Protocol for Wireless Body Area Networks.
- Multi-Radio Platform for Wireless Body Area Networks MAC Protocol.
- Seminar on Computer Security.

Study Plan

The education system is semester based (two semesters in a year) in the department of Information Systems. To be graduated from the department any student must complete a 108 credit hours length Information Systems program. The total credit hours are originated from three requirements: University Requirements (12 credit hours), College requirements (30 credit hours) and Department requirements 66 credit hours.

Analysis of 3 requirements for the Information Systems Program

Requirements Name	Total Courses	Total Credit Hours
University Requirements	6	12
College Requirements	9	30
Department Requirements	21	66

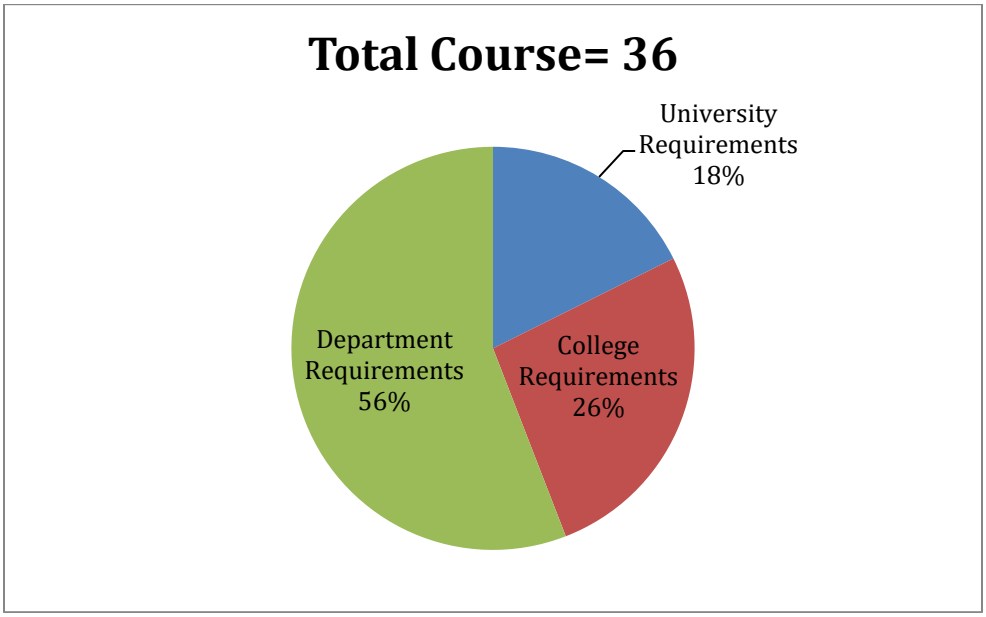


Figure: Analysis the requirements according to the percentage on the basis of total number of courses.

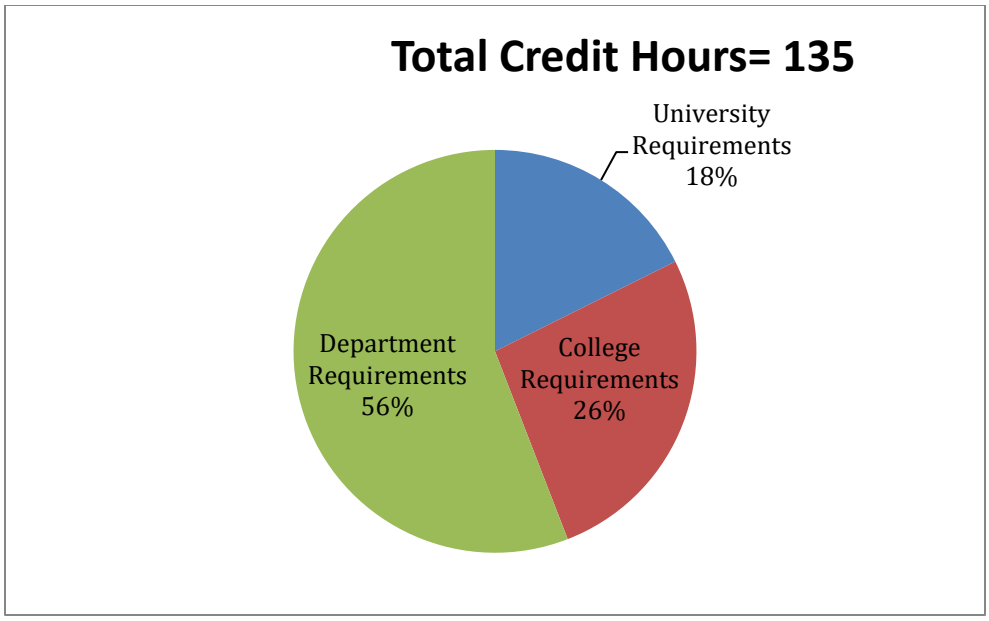


Figure: Analysis the requirements according to the percentage on the basis of total number of credit Hours.

University Requirements

University Requirements are courses required to obtain a scientific degree, which consists of 6 courses and the total number of credits hours are of 12 units as shown in the table below:

University Requirements			
Sl. No.	**Course Code**	**Course Name**	**Credit Hour**
1	111ISL-2	Introduction to Islamic Culture	2 (2,0,0)
2	112ISL-2	Islamic Culture 2	2 (2,0,0)
3	113ISL-2	Islamic Culture 3	2 (2,0,0)
4	114ISL-2	Islamic Culture 4	2 (2,0,0)
5	201ARAB-2	Arabic Skills	2 (2,0,0)
6	202ARAB-2	Arabic Writing	2 (2,0,0)
		Total Credit Hours	**12**

College Requirements

The main objective of the college requirements is to provide knowledge and information to students essential to obtain a Bachelor's degree from the Faculty of Computer Science and Information Systems at the University of Najran. Requirements of the College consist of 09 different courses and a number of total 30 credit hours. The requirements of the College cover the courses of Mathematics, Statistics and Probability, Physics, Programming Languages, Data Structures, and Operating Systems as shown in the table below.

College Requirements				
Sl No.	**Course Code**	**Course Name**	**Credit Hour**	**Prerequisite**
1	106MATH-3	Introduction to Integration	3 (3,0,1)	
2	152MATH-3	Discrete Mathematics	3 (3,0,1)	
3	342MATH-3	Linear Algebra	3 (3,0,1)	
4	104PHIS-4	General Physics	4 (3,2,1)	
5	324STAT-3	Probabilities and Engineering Statistics	3 (3,0,1)	
6	111CSS-4	Programming Language 1	4 (3,2,1)	
7	113CSS-4	Programming Language 2	4 (3,2,1)	111CSS-4
8	212CSS-3	Data Structures	3 (2,2,1)	111CSS-4
9	227CSS-3	Operating Systems	3 (2,2,1)	111CSS-4
			Total Credit Hours	**30**

Department Requirements

The requirements of department consist of 21 different courses with a number of 65 credit hours on the base of computer science program as shown in the table below:

Department Requirements				
Sl No.	**Course Code**	**Course Name**	**Credit Hour**	**Prerequisite**
1	101ACC-3	Principles of Accounting-1	3(3,0,1)	
2	211MAG-3	Management Fundamentals	3(3,0,1)	
3	224CIS-3	Visual Programming	3(2,2,1)	
4	230CIS-3	Introduction to Database System	3(2,2,1)	
5	240CIS-3	Information Systems Analysis and Design	3(3,0,1)	
6	324CIS-3	Modern Application Development	3(1,4,1)	342CIS-3
7	335CIS-3	Database Management System	3(2,2,1)	230CIS-3
8	337CIS-3	DBMS Administration	3(2,2,1)	230CIS-3
9	342CIS-3	Information Systems Engineering	3(2,2,1)	240CIS-3

10	351CIS-3	Information Systems Project Management	3(2,2,1)	
11	370CIS-3	Data Communication and Computer Networks	3(2,2,1)	
12	410CIS-3	Information Systems Policy and Strategy	3(3,0,1)	
13	420CIS-3	ICT Network Administration	3(2,2,1)	370 CIS-3
14	430CIS-3	E-Business	3(2,2,1)	
15	440CIS-3	Multimedia Technology	3(2,2,1)	
16	446CIS-4	Internet Applications Development	4(3,2,1)	
17	450CIS-3	Decision Support Systems	3(2,2,1)	
18	460CIS-3	Information Systems Security Administration	3(2,2,1)	370 CIS-3
19	470CIS-3	Geographic Information Systems	4(4,0,0)	
20	491CIS-4	Graduation Project 1	4(0,8,0)	342CIS-3
21	492CIS-4	Graduation Project 2	4(0,8,0)	491CIS-4
			Total Credit Hours	**66**

Symbols Used

Meaning of symbols used in this handbook is identified as follows:

Symbols used in the study plan

Symbols for Course Code	Interpretation
CIS	Information Systems
CSS	Computer Science
MATH	Mathematics
PHIS	Physics
STAT	Statistics
ISL	Islamic Culture
ARAB	Arabic Language
BIOL	Biology

Numbering System

The numbering system used for each course at this College is as follows:

Table of example

Course Code	Course Name
111 CSS-4	Programming Language 1

3 letters, 3 digits, and 1 digit

Explanation: 1. The 3 letters (e.g. CSS) indicate the name of the program

2. The first digit from the 3 digits length number (e.g. 1(first) 1(second) 1(third)) represents the level of program, it may be either beginning or medium, or higher (advance) level.

3. The second digit from the 3 digits length number (e.g. 1(first) 1(second) 1(third)) represents the path within the courses of the program.

4. The third digit from the 3 digits length number (e.g. 1(first) 1(second) 1(third)) represents the sequence of the courses of the program.

5. The 1 digit (e.g. 4) represents total credit hours of the course.

Credit Hours vs. Contact Hours of the program

Calculation of credit hours (credit hours) and hours of communication (contact hours):

"contact hours" refer to the amount of time that a student spends interacting directly with a faculty member at the time of lectures, laboratory (practical), and tutorial (exercises), whereas "credit hours" is the unit weight for the number of weekly classes of the subject which is determined by the university.

The format of credit hours for each course:

Number of credit hours (theoretical, laboratory (practical), exercises (tutorial))

Number of credit hours calculated from the hours of theoretical and laboratory exercises, where:

Every hour (academic hour=50 minutes) of theory calculated one credit hour.

Every two hours of laboratory calculated one credit hour.

Each hour of tutorial (exercise) counted zero credit hours, in other words hours of exercises are not counted in credit hours.

Example:

If a 3-credit "Computer Architecture" course met from 11:00-11:50 on Saturdays, Mondays, and Wednesdays for 14 weeks, then the course would have 42 "credit hours" and 56 (Theoretical/ Lecture=42 + Lab=0 + Tutorial=14) "contact hours".

The above mentioned credit hours are determined by multiplying 1 hour (50-minute= 1 academic hour) classes by 3 (3 classes per week) and then by 14 (14 weeks of classes).

Semester Wise Course Distribution
Preparatory Year

Level One			
Course Code	**Course Name**	**Credit Hours**	**Prerequisite**
140TEC-3	Computer Skills	**3**	
140MATH-2	Introduction of Mathematics	**2**	
140SKL-2	Learning, Thinking and Research Skills	**2**	
140ENGG-2	English Language: Reading Skills	**2**	
141ENGG-2	English Language: Writing Skills	**2**	
142ENGG-2	English Language: Listening and Speaking Skills	**2**	
143ENGG-2	English Language: Grammars	**2**	
Total Number of Credit Hours		**15**	

Level Two			
Course Code	**Course Name**	**Credit Hours**	**Prerequisite**
150MAN-1	Occupational Ethics	**1**	
140MATH-4	Algebraic Sciences	**4**	
150SKL-2	Communication Skills	**2**	

150ENGG-3	English Language: Speaking	**3**	
151ENGG-2	Report Writing	**2**	
Total Number of Credit Hours		**12**	

Total 27 Credit Hours

Regular Semester

Level Three			
Course code	**Course title**	**Credit hours**	**Pre requisite**
111ISL-2	Introduction to Islamic Culture 1	2	
104PHIS-4	Principles of Physics	4	
111CSS-4	Computer Programming-1	4	
106MATH-3	Introduction to Integration	3	
152MATH-3	Discrete Mathematics	3	
Total credit hours		**16**	

Level Four			
Course code	**Course title**	**Credit hours**	**Pre requisite**
201ARAB-2	Arabic Language Skills	2	
101ACC-3	Accounting Principles	3	
113CSS-4	Object Oriented Programming	4	111CSS-4
324MATH-3	Probabilities and Engineering Statistics	3	
240CIS-3	Information Systems Analysis and Design	3	
Total credit hours		**15**	

Level Five			
Course code	**Course title**	**Credit hours**	**Pre requisite**
342MATH-3	Linear Algebra	3	
212CSS-3	Data Structures	3	111CSS-4
230CIS-3	Fundamental of Databases	3	
342CIS-3	Information Systems Engineering	3	240CIS-3
211MAG-3	Principles of Management	3	
Total credit hours		**15**	

Level Six			
Course code	**Course title**	**Credit hours**	**Pre requisite**
227CSS-3	Operating Systems	3	111CSS-4
370CIS-3	Data Communication and Computer Networks	3	
224CIS-3	Visual Programming	3	
335CIS-3	Database Management Systems	3	230CIS-3
351CIS-3	Information Systems Project Management	3	
Total credit hours		**15**	

Level Seven			
Course code	**Course title**	**Credit hours**	**Pre requisite**
112ISL-2	Introduction to Islamic Culture 2	2	
430CIS-3	Electronic Business	3	
324CIS-3	Modern Applications Development	3	342CIS-3
440CIS-3	Multimedia Technologies	3	
202ARAB-2	Arabic Writing	2	
337CIS-3	Database Management Systems Administration	3	230CIS-3
	Total credit hours	**16**	

Level Eight			
Course code	**Course title**	**Credit hours**	**Pre requisite**
491CIS-4	Graduation Project-1	4	342CIS-3
113ISL-2	Islamic Culture 3	2	
446CIS-4	Internet Application Development	4	
420CIS-3	ICT Networks Administration	3	370CIS-3
460CIS-3	Information Systems Security Administration	3	370CIS-3
	Total credit hours	**15**	

Level Nine			
Course code	**Course title**	**Credit hours**	**Pre requisite**
114ISL-2	Islamic Culture 4	2	
492CIS-4	Graduation Project-2	4	491CIS-4
410CIS-3	Information Systems Policy and Strategy	3	
450CIS-3	Decision Support Systems	3	
470CIS-3	Geographic Information Systems	3	
Total credit hours		**16**	

Total credit hours: 108

Grand Total: 27+108=135

Level Wise Credit Hours' Analysis

Level No.	Credit Hours
Level 3	16
Level 4	15
Level 5	15
Level 6	15
Level 7	16

Level 8	15
Level 9	16

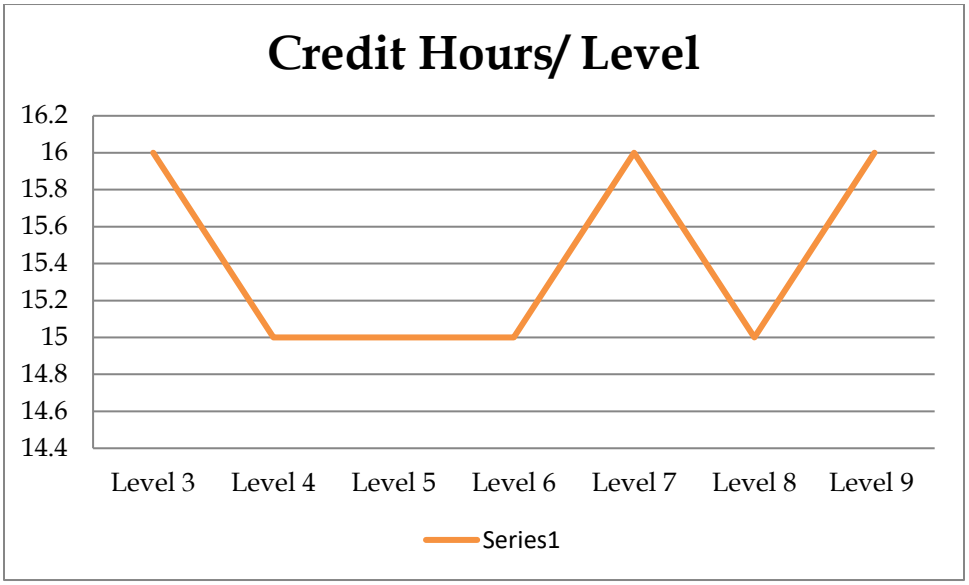
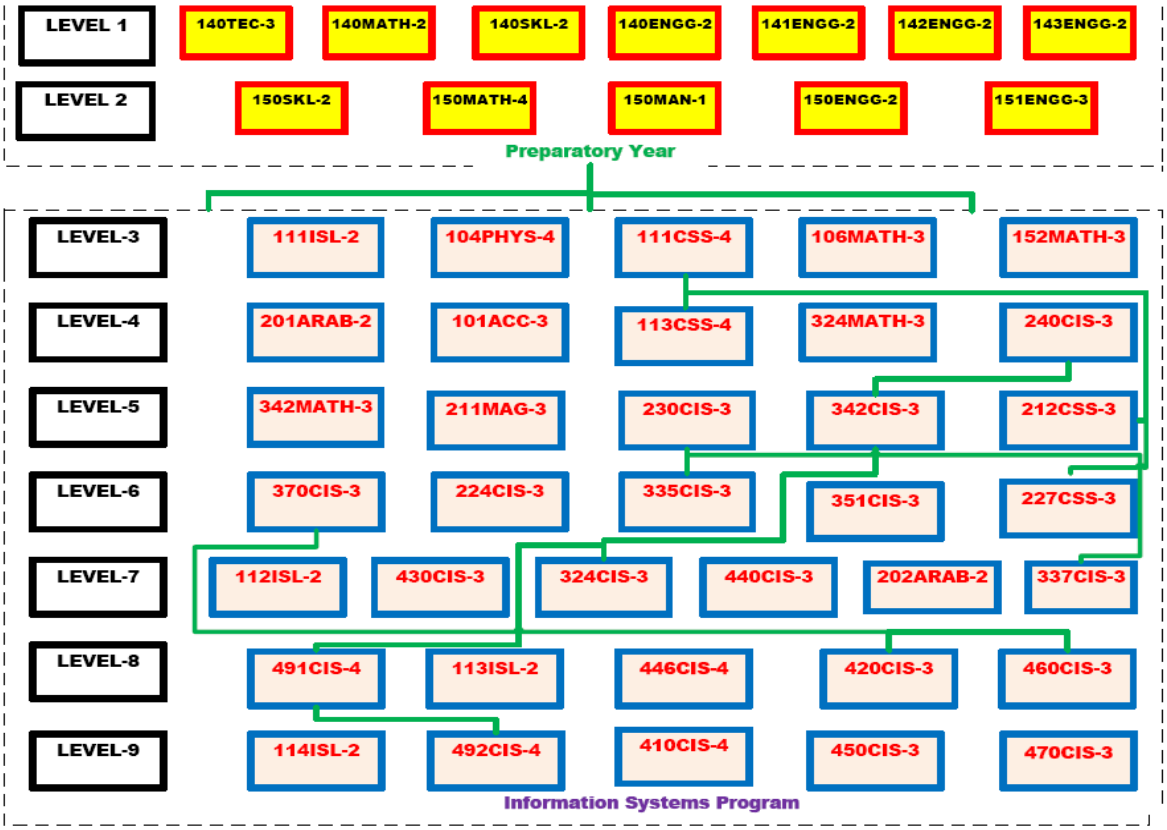


Figure: Analysing the credit hours per level.

IS Program's Prerequisite Map



Course Description

Course Description:

Course Code	Course Name	Credit Hours	Prerequisite
104PHIS-3	General Physics	4 (3, 2,1)	None

Course Description:

Vectors; uniformly accelerated motion; Newton's laws; work, energy and power; oscillatory motion; wave motion; electrostatics; the electric field and the electric potential; electric current; magnetic fields and electromagnetic waves; atomic models; crystal structures and bonding in solids; free electron theories of solids; semiconductors; semiconductor devices.

Course Code	Course Name	Credit Hours	Prerequisite
111CSS-4	Computer Programming-1	4 (3, 2, 1)	None

Course Description:

Introduction to C programming language, algorithms, flowcharts, data types, identifiers, storage classes, constants, operators, expressions, statements, console I/O statements, selection statements, switch, iteration statements, jump statements, function calls, Arrays, pointers, structures, unions, enumerations, file I/O, and basic principles of the C++ programming language (e.g. data types, objects and classes).

Course Code	Course Name	Credit Hours	Prerequisite
106MATH-3	Introduction to Integration	3 (3, 0, 1)	None

Course Description:

The integral and its properties, Riemann sums and the definite integral, area under a curve, formal properties: Additively, linearity, triangle inequality, the fundamental theorem, indefinite integrals, integration by substitution, integration of powers of sine's and cosines, integration by parts, integration of rational functions with linear or quadratic denominator, and a variety of applications of integration.

Course Code	Course Name	Credit Hours	Prerequisite
152MATH-3	Discrete Mathematics	3 (3, 0, 1)	None

Course Description:

Numbers systems; Logic: conjunctions, logical equivalence and arguments, predicate logic; propositional logics, methods of proofs. Sets: operations on sets, Cartesian products. Relations: Equivalence relations, order relations, functions, counting principles, permutations and combinations, trees and graph.

Course Code	Course Name	Credit Hours	Prerequisite
342MATH-3	Linear Algebra	3 (3, 0, 1)	None

Course Description:

Linear equations, matrix representation of linear equations, inverse of matrix, symmetric matrices, determinants, vector representation, relationship between vectors, vector spaces and subspaces, linear independence, basic of vector spaces, linear transformations, bases of vector spaces, linear transformations, rank of matrix Eigen values and eigenvectors, and orthogonality and least squares.

Course Code	Course Name	Credit Hours	Prerequisite
113CSS-4	Object Oriented Programming	4 (3, 2, 1)	111CSS-4

Course Description:

Introduction to object oriented programming (OOP) concepts, basic Java syntax, introduction to objects and classes, data types, variables and operators, selection and control structures, array, properties of classes, inheritance, package and interface, abstract class, polymorphism, exception handling, thread, multithreading, file system, I/O, applet, Java Network, Interface, Interface Development Environment.

Course Code	Course Name	Credit Hours	Prerequisite
324MATH-3	Engineering Statistics and Probability	3 (3, 0, 1)	None

Course Description:

Concepts of statistics and its applications in science and engineering, measure of central tendency, measure of dispersion, regression, correlation, and their applications. Concepts of probability and its applications in science and engineering, probability axioms, conditional probability, independent probability for events, some probability distributions and random variables: discrete and continuous random variables, some important probability distributions (discrete and continuous), computer applications using statistical software.

Course Code	Course Name	Credit Hours	Prerequisite
240CIS-3	Information Systems Analysis and Design	3 (2, 2, 1)	

Course Description:

This course is concerned with the fundamental knowledge, methods and skills needed to analyze, design and implement computer-based systems. It addresses the role of the systems analyst, and the techniques and technologies used. The structured software development life cycle approach, modeling techniques and development phases are comprehensively discussed and reviewed. In modeling techniques, process models, information models, system architecture models, and object oriented models are thoroughly described. A project is given to all students that should cover analysis and design phases of a relatively data-oriented business case; with emphasis on data modeling (ER diagrams), process modeling (DFDs), and architectural system design issues (DD, HIPO, IPO).

Course Code	Course Name	Credit Hours	Prerequisite
224CIS-3	Visual Programming	3 (2, 2, 1)	

Course Description:

In this course, the main concepts and methods used in visual programming languages are given. For a carefully selected visual programming language, the following topics are studied: the syntax and semantics of the language, data types, conditional statements, loops, data structures, modular programming, review of relevant OO techniques and methodologies, user interface design rules, materializing an interface as a set of visual objects, file types and structures, file applications, publishing an interface on the web, basic concepts of HCI (human computer interface), comparison between the selected language and other visual programming languages.

Course Code	Course Name	Credit Hours	Prerequisite

212CSS-3	Data Structures	3 (2, 2, 1)	111CSS-4

Course Description:

Study of common Abstract Data Types (ADTs), basic data structures and design and analysis of algorithms. Common ADTs: stack, queue, list, tree, priority queue, map and dictionary. Basic Data structures include arrays, linked lists, heaps, hash tables, search trees. Basic design and analysis of algorithms covers asymptotic notation, recursive algorithms, searching and sorting, tree traversal, graph algorithms.

Course Code	Course Name	Credit Hours	Prerequisite
230CIS-3	Introduction to Database Systems	3 (2, 2, 1)	

Course Description:

In this course, students should study the following topics: characteristics and advantages of the database management systems (DBMS), database concepts and architecture; data models, database schemes and instances, DBMS and the concept of program-data independence, database languages and interfaces, database models, relational data model and relational algebra, relational model constraints; domains, keys, and integrity constraints, the structured query language (SQL); data definition, queries, update, statements, and views in SQL, database design; functional dependencies, normal forms, introduction to object oriented (OO) databases.

Course Code	Course Name	Credit Hours	Prerequisite
342CIS-3	Information Systems Engineering	3(2, 2, 1)	240CIS-3

Course Description:

This course covers the following topics: the advanced steps in software developing such as types of software testing and user acceptance testing, different strategies used in software installation, processes of maintaining information systems; types of maintenance, measuring and controlling of maintenance effectiveness, software quality assurance, quality concepts, the ISO 9000 & ISO 9126 quality factors, technical metrics for software and examples of function-based, specification quality, testing metrics, technical metrics for software sizing, object-oriented systems metrics, software development methodologies, requirement engineering and configuration management.

Course Code	Course Name	Credit Hours	Prerequisite
227CSS-3	Operating Systems	3 (2, 2, 1)	111CSS-4

Course Description:

Introduction, history and evolution of operating systems, operating system structure, process management and scheduling, inter process communication, process coordination and synchronization, threads (overview, multithreading model and threading issues), CPU scheduling (Basic concepts and scheduling algorithms), deadlocks (deadlock characterization, methods for handling deadlock), deadlock prevention, deadlock avoidance and detection, memory management, introduction to protection and security issues, introduction to file management and application.

Course Code	Course Name	Credit Hours	Prerequisite
324CIS-3	Modern Application Development	3 (2, 2, 0)	342CIS-3

Course Description:

In this course, modern programming trends and techniques are given, and their usage in developing real applications for society organizations. Students go through a learning curve that starts by understanding a problem, analyzing it, sketching a solution, implementing the solution, documenting it and finally presenting the work in a professional manner. Hence, all these skills must be emphasized in this course. This course is intended to widen the vision of students and gives them a flavor of the real world problems that can be tackled using programming languages, as opposed to higher level tools such as CASE tool or DB packages. Projects must be selected carefully to provide the student with skills in modern applications, e.g. e-commerce applications. The programming language can be any of the languages studied before. Students must be able to finish 2-3 large projects during the period of this course. Modern trends of software development, e.g. component-based and aspect-based programming will be covered.

Course Code	Course Name	Credit Hours	Prerequisite
370CIS-3	Data Communication and Computer Networks	3(2, 2, 1)	

Course Description:

This course covers the following topics: definition of computer networks and their objectives and applications, computer network types; LANs, PANs, MANs and WANs, computer network architecture: layering, protocols and standard models, the ISO OSI and TCP/IP reference models, physical layer of computer network: the transmission media; signal types, signal characteristics and impairments, modulation techniques and modems, digital signal encoding schemes; NRZ, Manchester and AMI encoding, physical interface; USART, RS-232C/V.24, and USB, data transmission basics: synchronous and asynchronous transmission, synchronization levels; bit, character and frame, transmission modes; full , half duplex, simplex , parallel and serial, data link layer: data link layer functions and standards, ARQ protocols; stop and wait, Go-back-N, and selective reject, DLC protocol standards; HDLC , Internet PPP and SLIP, local area networks: topology and media access methods, LAN

protocols and the IEEE 802 standard, ethernet and IBM token ring LANs, wireless LANs, WANs and data transport networks; GSM cellular, satellite, ATM & ISDN.

Course Code	Course Name	Credit Hours	Prerequisite
335CIS-3	Database Management Systems	3 (2, 2, 1)	230CIS-3

Course Description:

This course covers the following topics: DBMS architecture and administration; centralized and client-server approaches, system catalog, and data dictionary, transaction management; concepts, characteristics, and processing, recovery techniques, concurrency control techniques: serializability, deadlock, locking schemes, time-stamp ordering, multi-version, and optimistic techniques, DB security, distributed databases, distributed DBMS, data fragmentation and replication, distributed transactions management, object-oriented databases, introducing to new emerging DB technologies and applications; Web DBs, multimedia DBs, data warehousing , data Mining, … etc.

Course Code	Course Name	Credit Hours	Prerequisite
351CIS-3	Information Systems Project Management	3(3,0,1)	

Course Description:

This course provides an introductory terminologies, concepts, related to IT, IS, management, project, and project management. Project management context models (structural and behavioral) such organizational, technological, and business are discussed with emphasis to responsibilities and behavior of project manager and project team, and the role of ICT in any IS project management. The course addresses essential topics to project management such as project group process (initiating, planning, executing, controlling, and closing) and knowledge areas (project integration, scope, time, cost, quality, human resource,

communications, risk, procurement). Project management software is used to provide students with a hands-on experience to effectively use software to manage projects.

Course Code	Course Name	Credit Hours	Prerequisite
491CIS-3	Project-I	4	342CIS-3

Course Description:

The previous courses have provided the IS students with strong and sufficient knowledge to develop information systems. The next logical stage is that the IS student must acquire hands-on experiences on developing real world information systems. In addition, the students should be familiarized with real world problems encounter during the development of real world information systems. Furthermore, the students should be trained to work in teams. In this course, the students will be organized into groups. The number of students in each group should not exceed three students. In developing an information system, a particular information system development methodology should be used. Each group will develop a real world information system in two stages: The first stage will be carried out in IS 496. In IS 496, the students of each group must identify a problem domain, define a problem, identify the requirements in details, specify requirements in details analyze and document the current system, proposed alternative systems, and design a particular system in details which includes 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 must submit a formal report documenting the problem domain, the problem, the requirements, the specifications, and the system models.

Course Code	Course Name	Credit Hours	Prerequisite
410CIS-3	Information System Policies and Strategies	3 (3, 0, 0)	

Course Description:

This course provides an understanding of the use of information technology from an organizational perspective by focusing on the development of IT policies and plans to achieve organizational goals. Topics include the strategic uses of IT, translating IT objectives into operating principles, IT architecture and infrastructure, software development management, organizational change, outsourcing, governance, risk management, and performance measurement.

Course Code	Course Name	Credit Hours	Prerequisite
420CIS-3	ICT Networks Administration	3 (2, 2, 1)	370CIS-3

Course Description:

Introduction, Overview of Network operating system, Setting up a Network Server, Setting up Network Clients, Network Design Issues, Network Client Administration, Workgroup and Domain Concepts. System Administration Basics, Network Services, Monitoring and Logging of various Operating System Events, Security Applications and General System Events, Monitoring Wide Variety of System Objects, Diagnosing and Troubleshooting Hardware, System Configuration including Screen Display, Network Services, Protocols, Servers, Services and System devices, User and Group Management and Services used to manage User Access to Resources, Remote Administration, Management of Key Processes, Network Services Administration including e-mail, Internet, Web and FTP, Firewall Administration, Controlling Access to the Machines.

Course Code	Course Name	Credit Hours	Prerequisite
430CIS-3	Electronic Business	3(2, 2, 1)	

Course Description:

This course begins with the historical review and current applications of the World Wide Web (WWW) and the Internet. WWW and Internet technology infrastructure : languages, hardware web, server platforms, various software tools, and protocols used to develop web-based applications adopted by profit and nonprofit organizations throughout the world. E-business models: business-to-business, and business-to consumer, etc... E-business applications: e-government, e-commerce, e-payment, mobile commerce, e-banking, e-jobs, e-learning, e-advertisement, etc.. E-business management: e-business projects management, risk management in e-business, e-commerce and supply chain management, e-commerce and customer asset management, etc.. Strategic trends in developing e-business systems: Web-based marketing strategies and models, public policies and legal issues of privacy, security issues, steps necessary for an enterprise to formulate an overall e-business strategy.

Course Code	Course Name	Credit Hours	Prerequisite
440CIS-3	Multimedia Technologies	3 (2, 2, 1)	

Course Description:

Introduction, Images and Graphics, Video, Animation, Audio, Audio Speech, Compression, Optical Memory Media, Programming, Resources and Quality of Service, Media Server, Documents, Semantics (Ontology and Metadata), Synchronization, Design, Application, Learning, and User Interfaces.

Course Code	Course Name	Credit Hours	Prerequisite
337CIS-3	Database Management Systems Administration	3(2, 2, 1)	230CIS-3

Course Description:

This course covers the following topics: Selection of DBMS, Architecture of the chosen DBMS, Installation issues, DB creation, Indexing, Integrity Constraints triggers and assertions, DB

Backups, Security management, Recovery issues, Performance management and tuning. Other features of the DBMS: Integration with web technologies, DB connectivity tools, Data distribution, fragmentation, and replication issues, Management issues of the DBA activity.

Course Code	Course Name	Credit Hours	Prerequisite
492CIS-4	Graduation Project 2	4 (0, 8, 0)	491CIS-4

Course Description:

In this course, each group will continue developing the information systems that started in IS 496. Groups must use particular tools to implement their information systems in a good programming practice. These implementation tools must be new and the students have not been experienced in the previous courses. Furthermore, students must generate user manuals for their information systems in an appropriate format. At the end of the term, each group must submit a final report, which documents completely the information system, from the problem definition phase to the implementation phase, and contains a user manual for the information system.

Course Code	Course Name	Credit Hours	Prerequisite
446CIS-4	Internet Applications Development	4 (3, 2, 1)	

Course Description:

This course explores advanced and modern concepts and technologies used in the development of electronic business applications. Topics include component development and reuse, distributed object technologies, multi-tier applications, client-side versus server-side technologies, service-oriented architectures, enterprise application integration, data transformation, role of open-source technologies, and finally e-business application installation and deployment issues.

Course Code	Course Name	Credit Hours	Prerequisite
450CIS-3	Decisions Support Systems	3(2, 2, 1)	

Course Description:

This course covers the following topics: the decision making process, decision making and support systems (DSS), modeling and support, categorization of problem-solving techniques, data management and concepts of the data warehousing, modeling of management problems; linear programming models, simulation models, and heuristics and forecasting models, model-base management systems, DSS user interface design and management, decision support system construction methods, DSS hardware, software, and technology Levels, knowledge-based systems and expert systems, expert system architecture, representation of knowledge, forward and backward chaining, inferences making process, applications of expert systems in decision making, group, distributed, and executive decision support systems.

Course Code	Course Name	Credit Hours	Prerequisite
460CIS-3	Information Systems Security Administration	3 (2, 2, 1)	370CIS-3

Course Description:

Security fundamentals, policies, procedures, and mechanisms. Identification, authentication models, access control models. Data models, concepts and mechanisms for software, hardware, operating system and database security. Basic cryptography (symmetric and asymmetric) and its applications. Security in computer networks and distributed systems. Attacks types and how to prevent them. Prevention and control of viruses and other rogue programs. In addition, the basics of physical security, incidence response, disaster recovery, business continuity, and forensics.

Course Code	Course Name	Credit Hours	Prerequisite
470CIS-3	Geographic Information Systems	3 (3, 0, 1)	

Course Description:

We begin by introducing the use of GIS, explain the use of current software & hardware. How to use the real-world geographical data (Spatial) sets and understanding of GIS data sets. Then student will learn how to analyze the GIS data. Student will be able to solve problems using GIS. In the lab students will practice adding elements to maps using GIS software.

Graduation Project and Assessment System

Independent study course whereby a group of students (3 to 4) at level seven selects one of the proposals submitted by department faculty members with a timeline and evidence of research and analysis, meets with an advisor and co-adviser throughout the semester and then provides a final report regarding system requirement, analysis, and design and makes a formal presentation. In the next semester at level eight every group develops, simulates, implements, and tests software, database through the semester and then provides a final report, presents software, and makes a formal presentation.

The major intended learning outcomes of the project or research task.

1) Development of skills in planning, analyzing, designing, and carrying out a major research project
2) Development of practical skills of using various computer software, programs, programming languages, databases and implement in professional life
3) Improvement of analytical, writing, and communicative skills
4) Improvement of skills in effective time management

5) Improvement in ability to operate as a team member in a significant project
6) Improvement in ability to think critically, research in various aspects
7) Improvement in ability to respect social, ethical, and moral issues

Project's study courses offered by the program are mentioned below:

Level No (Semester/year)	Course code	Course Name	Prerequisites
8 (2/4)	491CIS-4	Graduation Project 1	342CIS-3
9 (1/5)	492CIS-4	Graduation Project 2	491CIS-4

Relation of IS Courses to Student Outcomes

Required IS Courses	IS Student Outcomes a-j									
	a. An ability to apply knowledge of computing and mathematics appropriate to the discipline;	**b.** An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.	**c.** An ability to design, implements, and evaluate a computer-based system, process, component, or program to meet desired needs.	**d.** An ability to function effectively on teams to accomplish a common goal.	**e.** An understanding of professional, ethical, legal, security and social issues and responsibilities.	**f.** An ability to communicate effectively with a range of audiences;	**g.** An ability to analyze the local and global impact of computing on individuals, organizations, and society;	**h.** An ability to recognize the need for and to engage in continuing professional development.	**i.** An ability to use current techniques, skills, and tools necessary for computing practice.	**j.** An understanding of processes that support the delivery and management of information systems within a specific application environment. [IS]
111CSS-4 Computer Programming-1	√	√	√						√	√
113CSS-4 Object Oriented Programming		√	√						√	√
212CSS-3	√	√	√						√	√

Data Structures										
227CSS-3 **Operating Systems**	√	√	√						√	√
224CIS-3 **Visual Programming**	√		√		√		√		√	√
230CIS-3 **Introduction to Database Systems**	√	√	√	√		√			√	√
240CIS-3 **Information Systems Analysis and Design**	√	√	√						√	
324CIS-3 **Modern Applications Development**	√	√	√					√	√	√
335CIS-3 **Database Management Systems**	√	√	√						√	√
337CIS-3 **DBMS Administration**		√			√		√	√		
342CIS-3	√	√	√		√			√	√	√

Information Systems Engineering										
351CIS-3 **Information Systems Project Management**	√	√	√						√	√
370CIS-3 **Data Communication and Computer Networks**	√	√							√	√
410CIS-3 **Information Systems Policy and Strategy**	√	√	√		√		√	√	√	√
420CIS-3 **Information Technology Networks Administration**	√	√			√					
430CIS-3 **E-Business**	√	√							√	√
440CIS-3 **Multimedia Technology**	√	√	√						√	√
446CIS-3 **Internet Application Development**	√	√	√					√	√	√

450CIS-3 **Decision Support Systems**	√	√	√						√	√
460CIS-3 **Information Systems Security Administration**	√	√			√					
470CIS-3 **Geographic Information Systems**	√	√	√						√	
491CIS-4 **Graduation Project-1**	√	√	√	√	√	√		√	√	√
492CIS-4 **Graduation Project-2**	√	√	√	√	√	√		√	√	√

Relation of Non-IS courses in the curriculum to the Student Outcomes

Non-IS Courses	Student Outcomes a-j									
	a. An ability to apply knowledge of computing and mathematics appropriate to the discipline;	**b.** An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.	**c.** An ability to design, implements, and evaluate a computer-based system, process, component, or program to meet desired needs.	**d.** An ability to function effectively on teams to accomplish a common goal.	**e.** An understanding of professional, ethical, legal, security and social issues and responsibilities.	**f.** An ability to communicate effectively with a range of audiences;	**g.** An ability to analyze the local and global impact of computing on individuals, organizations, and society;	**h.** An ability to recognize the need for and to engage in continuing professional development.	**i.** An ability to use current techniques, skills, and tools necessary for computing practice.	**j.** An understanding of processes that support the delivery and management of information systems within a specific application environment. [IS]
101ACC-3 Principles of Accounting-1										√
104PHYS-4 General Physics	√	√							√	
106MATH-3 Introduction to Integration	√									
111ISL-2				√	√					

Introduction to Islamic Culture										
112ISL-2 Islamic Culture 2				√	√					
113ISL-2 Islamic Culture 3				√	√					
114ISL-2 Islamic Culture 4				√	√					
152MATH-3 Discrete Mathematics	√									
201ARAB-2 Arabic Language (Skills)				√	√					
202ARAB-2 Arabic Language (Editing)				√	√					
211MAG-3 Managements Fundamentals										√
324STAT-3 Engineering Statistics and Probability	√									
342MATH-3 Linear Algebra	√									

Relation of Preparatory Year courses in the curriculum to the Student Outcomes

PY Courses	Student Outcomes a-j									
	a. An ability to apply knowledge of computing and mathematics appropriate to the discipline;	**b.** An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution	**c.** An ability to design, implements, and evaluate a computer-based system, process, component, or program to meet desired needs.	**d.** An ability to function effectively on teams to accomplish a common goal.	**e.** An understanding of professional, ethical, legal, security and social issues and responsibilities.	**f.** An ability to communicate effectively with a range of audiences;	**g.** An ability to analyze the local and global impact of computing on individuals, organizations, and society;	**h.** An ability to recognize the need for and to engage in continuing professional development.	**i.** An ability to use current techniques, skills, and tools necessary for computing practice.	**j.** An understanding of processes that support the delivery and management of information systems within a specific application environment. [IS]
140TEC-3 Computer Skills	√	√	√			√			√	√
140MATH-2 Mathematics 1	√									
140SKL-2				√	√	√				

Learning, Thinking and Research Skills										
140ENGG-2 **Reading Skills**		√		√	√	√				
141ENGG-2 **Writing Skills**		√		√		√		√	√	
142ENGG-2 **Listening and Speaking Skills**						√				
143ENGG-2 **Grammar**	√					√				
150MAN-1 **Job Ethics**				√	√	√				
150MATH-4 **Mathematics 2**	√									
150SKL-2 **Communication Skills**										
150ENGG-3 **General English**	√			√	√	√	√		√	

151ENGG-2 **Writing Technical Reports**				√	√	√			√	

Relationship between Course Learning Outcomes (CLOs) and Student Learning Outcomes (SOs) for the IS courses

Relationship between CLOs and SOs

		SOs									
Courses	**CLOs**	**a**	**b**	**c**	**d**	**e**	**F**	**g**	**h**	**i**	**j**
Programming Language 1 111CSS-4	CLO_1: Describe the basic concepts of C programming.	√									
	CLO_2:Analyze computing problems to formulate practical solutions		√								
	CLO_3:Apply the concept of algorithm and flowchart in solving problems										
	CLO_4:Develop C programs involving various C statements , Arrays, Pointers, and data structures			√							
	CLO_5: Apply functions related concepts (definition, parameters, function call … etc) to optimize and to facility C programs			√						√	

	CLO_6:Assess program execution										
Object Oriented Programming 113CSS-4	CLO_1: Describe principles, usage and benefits of Object Oriented Programming (OOP).	√									
	CLO_2: Recognize Java syntax and semantics.	√	√								
	CLO_3: Use of Java Standard classes.							√	√	√	
	CLO_4: Implement Object Oriented techniques to solve problems.		√	√					√		
	CLO_5: Evaluate the workflow program including error handling.			√							
	CLO_6: Assess Object Oriented application			√							
Data Structures 212CSS-3	CLO_1: Distinguish between Abstract Data Types (ADTs), data structures and algorithms.	√									
	CLO_2: Calculate the costs (space/time) of data structures and their related algorithms, both source code and pseudo-code, using the asymptotic notation (O())		√								
	CLO_3: Describe basic ADTs (stack, queue, array list, node list, priority queue, tree, map and	√								√	

	dictionary) and their related data structure implementations (array, single linked structure, double linked structure, heap, hash table, binary search tree, AVL tree)										
	CLO_4: Recognize basic concepts and techniques (recursive, sorting, searching, graph) used in design of basic algorithms.	√									
	CLO_5: Implement basic algorithms and ADTs using different data structures strategies in Object Oriented Programming (OOP) language.			√						√	
	CLO_6: Decide which type of data structures and algorithms best suits the problem they are solving		√	√							
Information Systems Analysis and Design 240CIS-3	CLO_1: Define system analysis & design fundamentals	√									
	CLO_2: Describe the steps involved in the project initiation and planning process.	√	√								
	CLO_3: Design system process using different methods			√							
	CLO_4: Analyze system performances (risk assessment, technical/economical assessment, etc.) based on that system's design			√						√	

	CLO_5: Analyze different implementing methods and their managements.			√						√	
Operating System 227CSS-3	CLO_1: Recognize operating system history, services, applications and types	√									
	CLO_2: Write UNIX commands to perform essential operations.	√	√							√	
	CLO_3: Describe various algorithms processes, threads, scheduling, synchronization, deadlock and virtual memory	√									√
	CLO_4: Explain operating system support for processes, threads, scheduling, synchronization, deadlock, virtual memory and file systems	√									√
	CLO_5: Develop programs to make use of various systems calls and implement standard problems/algorithms related to operating systems concepts		√	√						√	

Visual Programming 224CIS-3	CLO_1: Define modeling concepts: abstraction, encapsulation and packages, objects interface, inheritance etc.	√		√						√	
	CLO_2: Build a GUI using Swing and applets components			√						√	
	CLO_3: Define events and handle GUI generated events			√						√	
	CLO_4: Develop application using JDBC					√		√			
	LO_5: Distinguish user interface design rules			√							√
Introduction to Database Systems 230CIS-3	CLO_1 :Explain the general concepts and characteristics of database, database system, data, DBMS, database design, database programming languages	√									
	CLO_2 : Design Entity Relationship Model (E/R) for a realistic application		√	√						√	
	CLO_3 : Create a normalized, well-structured relational data model by using database theories such as the conversion from E/R to set of relational tables and functional	√									√

	dependencies, canonical covers, decomposition and normalization techniques										
	CLO_4 : Solve simple queries by using the operations (selection, projection, join, Cartesian product) of the theoretical database language Relational Algebra			√						√	
	CLO_5 : Manage the relational database schemas through the DDL SQL statements (Create, Drop, Alter) with either the MySQL or Oracle database server			√						√	
	CLO_6: Implement simple and complex SQL statements to specify or modify the relation/database instances.			√						√	√
	CLO_7: Solve effectively in teams the course project goal within time and resource constraints				√						
	CLO_8: Practice communication skills in writing and presenting the course project.						√				

Information Systems Engineering 342CIS-3	CLO_1: Model a system in UML using rational rose or ArgoUML	√									
	CLO_2: Describe various software process models for information system.	√		√							
	CLO_3: Collect software requirements and build system requirements specification document.	√	√	√							
	CLO_4: Develop software architecture and understand detailed software design	√		√					√		
	CLO_5: Understand the concept of software project management and perform software testing		√			√			√	√	√
Modern Application Development 324CIS-3	CLO_1: Describe principles, techniques and usage of modern software development process.	√									
	CLO_2: Solve problems related to real world application development.	√	√								
	CLO_3: Use standard practices to develop modern application.							√	√	√	

	CLO_4: Implement recent devices to develop application.		√	√					√		√
	CLO_5: Evaluate modern trends of software development.			√							
Data Communication and Computer Networks 370CIS-3	CLO_1: Define the key terminologies and concepts of data communications and networking	√									
	CLO_2: Describe concepts of physical and data link layer protocols, and design/performance issues in local area networks and wide area networks	√	√								
	CLO_3: Explain services and features of the various layers of data networks		√								√
	CLO_4: Design different types of networks based on IP classes and different network topologies		√							√	√
	CLO_5: Explain basic protocols of network, transport , and application layer, and how they can be used to assist in network design and implementation		√							√	√

Database Management Systems 335CIS-3	CLO_1: Identify the client/server architecture of the Database	√									
	CLO_2: Use SQL as a procedural language to interact with DB.		√							√	
	CLO_3: Use control structure, composite data types, explicit cursors in PL/SQL to improve productivity on a DBMS.		√							√	
	CLO_4: Solve runtime errors		√	√							
	CLO 5:Predict runtime errors			√							√
	CLO_6: Create procedures, functions, sequence, cursors and triggers.			√						√	
	CLO _7: Develop DB application to interact with DB.			√						√	√
Information Systems Project Management 351CIS-3	CLO_1: Identify the project management phases and the project management knowledge areas.		√								√
	CLO_2: Apply the purpose and importance of project management knowledge	√									√

	areas from the perspectives of planning, tracking and completion of project.										
	CLO_3: Evaluate a project to develop the scope of work, provide accurate cost estimates and to plan the various activities			√							√
	CLO_4: Develop project scope, schedule, cost, and other themes related to project management aspects			√						√	√
	CLO_5: Use risk management analysis techniques that identify the factors that put a project at risk and to quantify the likely effect of risk on project timescales	√	√								√
Information Systems Policy and Strategy 410CIS-3	CLO_1: Describe the importance of Information Systems Management and Strategic planning of Information Systems.	√									
	CLO_2: Use IT in a strategic fashion.	√		√							

	CLO_3: Breakdown IT objectives in to Operating Principles	√	√	√				√			√
	CLO_4: Manage organizational change, outsourcing, governance, IT architecture and infrastructure and software development of the Organization	√	√			√				√	
	CLO_5: Develop IT policies and plans to achieve organizational goals.	√	√	√					√	√	√
	CLO_6: Evaluate Risk and Performances of the Organization	√								√	√
ICT Networks Administration 420CIS-3	CLO_1: Understand the responsibilities of a network administrator.	√									
	CLO_2: Be familiar with a Network Operating System used by network servers		√								
	CLO_3: Be able to design and implement Microsoft Active Directory installation		√								

	CLO_4: Understand network security issues	√				√					
	CLO_5: Be able to perform user and group management	√									
	CLO_6: Be able to diagnosis and troubleshoot hardware					√					
E-Business 430CIS-3	CLO_1: Define the basic terminologies of E-commerce.	√									
	CLO_2: Distinguish different types of E-commerce business relationships.		√								
	CLO_3: Explain different issues of E-commerce management.	√									√
	CLO_4: Analyze features related to E-payments and E-commerce security.									√	√
	CLO_5: Evaluate different trends of E-Commerce applications.									√	√

Multimedia Technology 440CIS-3	CLO_1: Understand basic multimedia conc devices ,applications ,authoring compression , Quality of Service ,Multimedia network and GIS concept the current trends in multimedia	√									
	CLO_2: Calculate storage size of image ,audio and video (Black and white , color map or gray scale and true color)		√							√	
	CLO_3: Solve simple compression using Huffman coding Algorithm			√						√	
	CLO_4: Create Macromedia Flash, animations and learning interactions	√		√						√	
	CLO_5: Apply the leaned concept of multimedia in small project.		√	√						√	√
	CLO_1: Identify the Architecture of the DBMS		√			√					
	CLO_2: Create new database.		√								
	CLO_3: Apply database backup's issues to recovery.					√					
	CLO_4: Determine the benefits of indexing and		√					√			

DBMS Administration 337CIS-3	Integrity constraints.										
	CLO_5: Analyze the Categories of Database failure.					√			√		
Internet Applications Development 446CIS-3	CLO_1: Identify the basic of technologies in the development of internet application in the modern world.	√	√								
	CLO_2: Recognize the basic Syntax and Semantics of Client side and Server side technologies with Programming Language. (Such as HTML, CSS, JavaScript, PHP, MySQL).		√	√							
	CLO_3: Apply the modern web development tools to design the interactive web applications.			√						√	
	CLO_4: Evaluate the several web technologies and application architectures.			√					√	√	√

	CLO_5: Develop the real Internet Applications using the latest application architectures.			√							
Decision Support Systems 450CIS-3	CLO_1: Describe the generic structure of decision support systems, identify their categories and classes and discuss the behavioral and normative theories of decision making.	√									
	CLO_2: Recognize the value of decision support systems to individuals and organizations and report current practices in the use of decision support systems.		√								√
	CLO_3: Explain decision analytic techniques and apply these techniques in solving simple decision problems.		√							√	
	CLO_4: Define and analyses the concepts and structure of expert systems and data warehouses,	√									√

	and propose ways of dealing with the issues involved in their design and development.										
	CLO_5: Identify, appraise and discuss the main concepts, techniques, technologies and applications of data mining and data warehousing.			√						√	
	CLO_6: Describe the generic structure of decision support systems, identify their categories and classes and discuss the behavioral and normative theories of decision making.			√						√	√
Information Systems Security Administration 460CIS-3	CLO_1: Define the basic concepts in information security	√									
	CLO_2: Describe different cryptography techniques and algorithms	√	√								
	CLO_3: Define the concepts of authentication and access control	√									
	CLO_4: Illustrate the security aspects of Database and security issues in Operating Systems	√	√								

	CLO_5: Analyze the security issues in Computer Networks	√	√			√					
	CLO_6: Describe different countermeasures to stop or to recover from an attack	√				√					
491CIS-4 Graduation Project 1 & 492CIS-4 Graduation Project 2	CLO_1: Analyze a problem and user requirements		√								
	CLO_2: Make effective literature reviews to understand the key elements of the project.	√									
	CLO_3: Design the appropriate solution to the project's problem			√							√
	CLO_4: Use the appropriate techniques and tools necessary for designing the project									√	
	CLO_5: Solve effectively in teams the project goals within time and resource constraints				√						

	CLO_6: Practice communication skills in writing and presenting the project.						√				
	CLO_7: Demonstrate originality in part of the project work.					√			√		
	CLO_8: Demonstrate an understanding of professional, ethical, security, and responsibilities.					√					
	CLO_9: Use software tools independently.			√						√	
470CIS-3 Geographic Information Systems	CLO_1 : Explain the general concepts of GIS, ArcGIS, ArcMap and Openstreetmap	√									
	CLO_2 : Use Projections & Coordinate Systems	√								√	
	CLO_3: Analyze Vector and Mapping		√								
	CLO_4: Design Map Layouts and 3D Models			√							
	CLO_5: Create Feature Datasets									√	

	CLO_6 : Create and Modify Tables		√							√	

How the transcripts are to be interpreted

Meanings of the abbreviated terms those are using in students' transcript are mentioned in the Table below:

Table: Abbreviated terms and their meanings

Abbreviated Terms	Meaning
AHRS	Available or registered hours/ credit hours
EHRS	Earned or passed hours/ credit hours
QHRS	Cumulative hours
QPTS	Cumulative points
GPA	Grade Point Average
Hrs	Hours/ Credit hours
Pts	Points

Recognition of Outstanding Academic Performance

In addition, outstanding academic performance is recognized and rewarded. Whereas. There is an approved mechanism to support academic excellence of teaching staff members in our college. So almost every year outstanding faculty members are recognized and rewarded by certificates, crests, salary awards, research funds etc. The following table shows a record of past outstanding faculty members achievement which is extracted from.

Table 9.6 Record of Outstanding Faculty Members' Achievements

Outstanding Faculty Name	*Year*	*Type of Support (e.g. Certificate, Crest, Award etc)*	*Outstanding Category (e.g. teaching, research etc)*
Samiul Islam	*1431 H*	*Certificate*	*Student Advising*
Md. Kafil Uddin	*2010*	*Certificate*	*Working on ABET*
	2011	*Certificate*	*Research Conference*
	2012	*Certificate*	*ABET Workshop*
Haji Moinuddin	*2010*	*Certificate*	
	2011	*Certificate*	
Shah Masud	*2010-11*	*Crest, Certificate*	*Initiatives, Ethics*
	2009-10	*Certificate*	*1/3 Best Website Award*
Gazi Golam Faruque	*2010*	*Crest*	*Teaching*
	2011	*Certificate*	*ABET Workshop*
Dr. Addin Osman	*2011*	*Certificate*	*Teaching*
Dr. Zakaria Saeed Toukal	*1431-32*	*Certificate, Award*	*Research*
	1432-33	*Certificate*	*Teaching, Administration*
Mohammad Akram	*2010*	*Certificate*	*Teaching*
	2011-12	*Fund*	*Research*
Dr. Arif Siddique	*2011*	*Sheild of Motivation*	
Dr. Ahmad Taleb	*2011-12*	*Certificate*	*Quality work for the program*
	2011-12	*Salary Award*	
Dr. Anwar Ali	*2011*	*Certificate*	*Coordinator*
	2012	*Certificate*	*Quality*
Ahmed Monjurul Hasan	*2013*	*Certificate*	*Students' Research Project*
	2011-12	*Certificate*	*NCAAA and ABET*
	2012	*Research Fund*	*Research*

Department's Images

Image 1: The Dean of the College H.E. Dr. Abdullah Alabas

Image2: Teaching staff with the Dean.

Image3: Teaching staff with the Dean.

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Prepared and Updated by (Summer 2014)

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