Table (1): Qualification Identity.

Qualification Identity Card	
Name of Awarding Institution	PSUT
Qualification Name	(B.Sc.) degree in Computer Science
Qualification Level	7
Type of Qualification	Academic
Class of Qualification	Major
Objective of the Qualification	Graduates with this qualification will be able to at IT related companies or pursue a Master degree in CS
Volume (Credit Hours)	Credit hours
Field of learning	Computer Science
Graduation requirements	Pass 132 credit hours of course work
Entry requirements	High school certificate in Scientific, IT, Industrial, Agricultural, CompHealth Education
Grading system	Percentage (%)
Supporting documents for recognition of qualification	Graduation Certificate Transcript

Table (2) Compatibility of PO's with Level Descriptors

Compatibility of PO's with Level Descriptors

Please check each LO with regard to compatibility with the Level Descriptors by marking each cell as:

Compatible
Partially compatible
Not compatible

Program Learning Outcomes	Knowledge	Skills	Competencies
PO1 (a)	Compatible	Partially compatible	Not compatible
PO2 (b)	Compatible	Partially compatible	Not compatible
PO3 (c)	Partially compatible	Compatible	Partially compatible
PO4 (d)	Partially compatible	Compatible	Partially compatible
PO5 (e)	Compatible	Partially compatible	Not compatible
PO6 (f)	Partially compatible	Compatible	Partially compatible
PO7 (g)	Not compatible	Partially compatible	Compatible
PO8 (h)	Partially compatible	Partially compatible	Compatible
PO9 (i)	Partially compatible	Compatible	Partially compatible

Recommendations for

Level Descriptors	Add your recommendation here
Program Outcomes	Add your recommendation here
Program Curriculum	Add your recommendation here

Program Learning Outcomes

Upon completion of the program, graduates should be able to:

PO-a	Ability to apply knowledge of computing and mathematics appropriate to the discipline
PO-b	Ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
PO-c	Ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
PO-d	Ability to function effectively on teams to accomplish a common goal
PO-e	Understand professional, ethical, legal, security and social issues and responsibilities
PO-f	Ability to communicate effectively with a range of audiences
PO-g	Ability to analyze the local and global impact of computing on individuals, organizations, and society
PO-h	Recognize the need for and be able to engage in continuing professional development
PO-i	Ability to use current techniques, skills, and tools necessary for computing practice.

Course Number	Course Name	a	b	c	d	e	f	g	h	i
11391	Practical Training	X	X	X	X	X	X	X	X	X
11425	Software Engineering		X	X	X		X			X
11428	Artificial Intelligence	X	X	X						X
11435	Data Communications and Computer Networks	X	X	X	X	X				X
11447	Mobile Technology	X	X	X		X		X		X
11449	Computer and Society					X		X	X	X
11343	Special Topics in Computer Science I	X	X	X						X
11347	Electronic business		X		X	X	X	X	X	
11417	Compiler Design and Programming Languages	X	X	X	X					X
11436	Distributed Systems	X	X	X						X
11445	Digital Image Processing	X	X	X						X
11446	Special Topics in Computer Science II	X					X	X		
11464	Information Systems Security		X	X		X	X			X
11492	Graduation Project	X	X	X	X	X	X	X	X	X

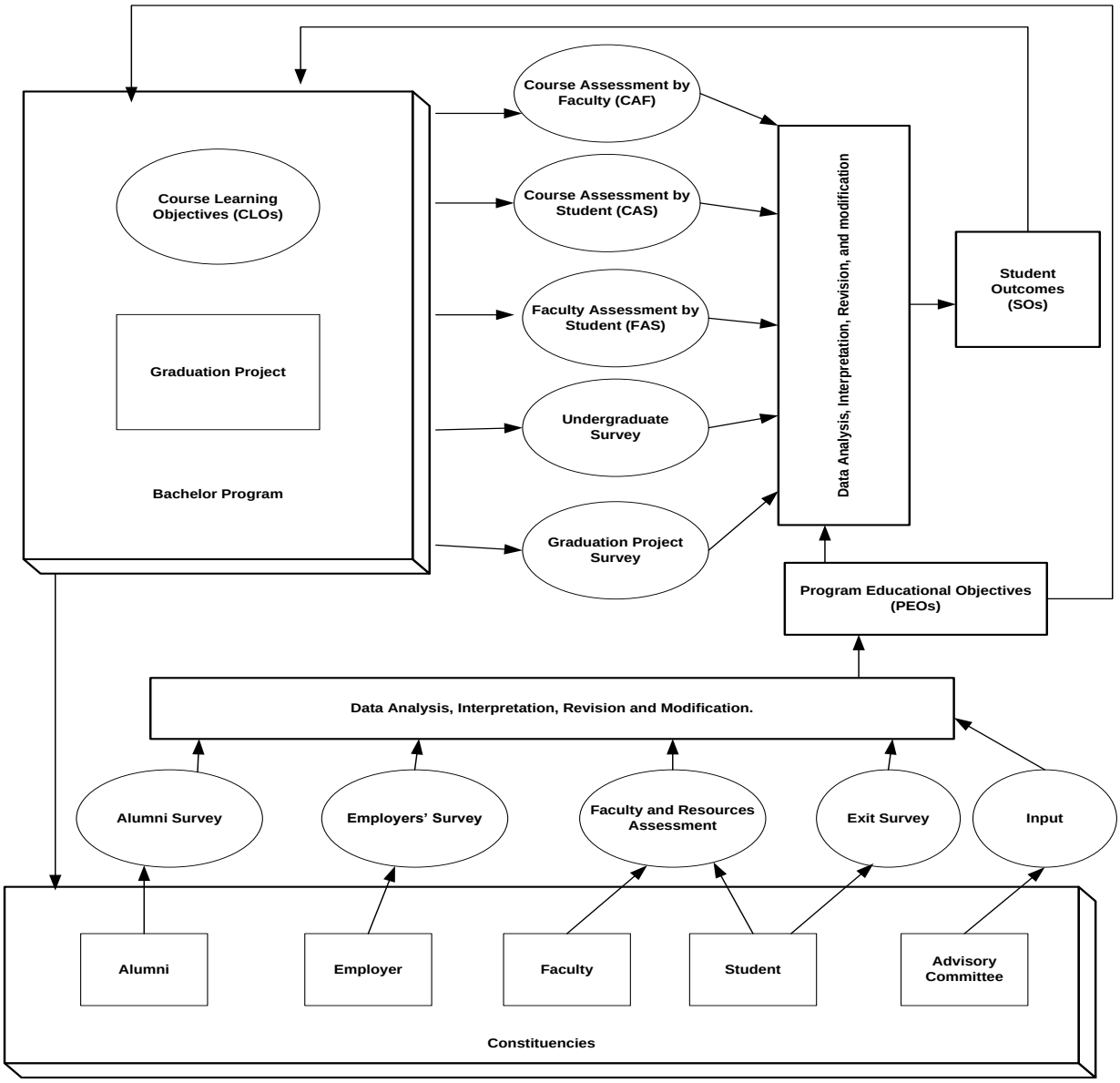
Process for the Establishment and Revision of the Student Outcomes

The student outcomes of the Computer Science program are regularly reviewed by the departmental assessment committee as illustrated in Figure 3-1. The committee solicits opinions from students, faculty, administration, and employers through informal discussions, surveys, advisory Council meetings, and student feedback. The departmental curricula committee regularly reviews and seeks curricula improvements to assess the student outcomes of the program. The documentation for the entire program outcomes can be found in the course portfolios for all computer science courses.

The following documents will be accessible to the visitors for review:

1. Course Portfolios of all Computer Science Courses

2. Program brochure
3. Minutes of the CS departmental meetings
4. Minutes of the different committees meetings
5. Minutes of the focus groups
6. Student Catalog



Computer Science Program Assessment and Revision Process

The portfolio for a certain course includes all the necessary information pertinent to that course as follows:

a- Course contribution to the program outcome.
b- Course assessment reports.
c- Faculty/Course self-assessment reports.

d- Detailed course syllabus.
e- Course objectives.
f- Course Learning Outcomes.
g- Student Grade Distribution.
h- Course student evaluation.
i- Three samples of students graded work (tests, final exam, quizzes, and assignments.
j- Copy of tests, exam, quizzes, and assignments.
k- Samples of term project reports.

Achievement of Student Outcomes

The Computer Science Department has approved a number of assessment tools that have been used to measure the level of achievements of student outcomes. These assessments are:

1. Direct Assessment by Faculty
2. Direct Assessment by Student
3. Alumni Survey
4. Senior Exit Survey
5. Evaluation of Senior Project by Faculty
6. Evaluation of students Training by Industry Supervisors

Course Descriptions

The following describes the main topics which will be discussed within the program courses.

Object Oriented Programming Pre-requisites: 11103 3 credit hours
Object oriented programming concepts and paradigms. Review of control structures, data types, functions, arrays and pointers. Data abstraction. Encapsulation and information hiding. Classes attributes and methods. Inheritance. Overloading. Polymorphism. Templates.

Visual Programming Pre-requisites: 11206 3 credit hours
This course introduces computer programming using a modern visual programming language with object-oriented programming principles. Emphasis is on event-driven programming methods, including creating and manipulating objects, classes, and using object-oriented tools such as the class debugger.

Data Structures and Introduction to Algorithms Pre-requisites: 20134, 11206, 11253 3 credit hours
Basics of algorithm design and analysis. Asymptotic analysis of upper and average complexity bounds: best, average, and worst case behaviors. Big "O" notation. Searching and sorting algorithms. Recursion. Data abstraction and review of object oriented concepts. Basic data structures. Sequential and linked representation of data structures. List, Ordered List, Sets, Stack, Queue, tree, Binary trees, graph and network.

Webpage Design and Internet Programming Pre-requisites: 12343 3 credit hours
This course focuses on how to design and maintain interactive and dynamic web sites using HTML, Cascading Style Sheets (CSS) and client–side scripting with JavaScript. The students will also learn basic Web Page design principles. The goal is to develop effective, pleasing and useful Web sites. In the JavaScript part of the course students will develop real-world projects to learn JavaScript programming, the JavaScript Object Model, JavaScript event handlers, and how to integrate JavaScript programs in a HTML document. Other client-side technologies (Ajax and XML) will be introduced.

Webpage Design and Internet Programming Lab Co-Requisite: 11241 1 credit hour
Laboratory sessions on how to design interactive and dynamic WebPages. Programming tools: HTML, JavaScript, Ajax and XML.

Algorithm Design and Analysis Pre-requisites: 11212 3 credit hours
Formal techniques of the design and analysis of algorithms. Asymptotic analysis of upper and average complexity bounds. Empirical measurements of performance; time and space tradeoffs in algorithms. Correctness and finiteness of algorithms. Algorithmic strategies: Brute-force, greedy, divide-and-conquer, backtracking, branch-and-bound, heuristics, pattern matching and string/text algorithms. Implementation strategies for Graph, Network and Tree algorithms

Theory of computation Pre-requisites: 11103, 20134 3 credit hours
Introduction to formalisms studied in computer science and mathematical models of computing machines. The language formalisms: regular, context-free, contextsensitive, and recursively enumerable languages. The machines: finite-state, pushdown and linear bounded automata and Turing machines.

Database Systems Pre-requisites: 11212 3 credit hours
Basic concepts of databases. DBMS components. Transaction managements. Data modeling. Entity relationships diagrams. Relational databases. Database integrity constraints. Relational Algebra. Query languages. Dependencies, schema designs normalization and redundancy elimination.

Systems Analysis and Design Pre-requisites: 11212 3 credit hours
Fundamental concepts. Notion of a system. Information system. System life cycle. Approaches to system analysis and design (classical, structured and object-oriented). Preliminary and Detailed Analysis. Workflow and Dataflow Diagrams. Structured English. Decision Tables etc. Criteria for software design and evaluation: module coupling, cohesion, modularity, portability. A project is required.

Operating Systems Pre-requisites: 11212 3 credit hours
Introduction to Operating Systems. Processes. Threads. CPU Scheduling. Process Synchronization. Dead-Locks problem. Memory management. Virtual memory. File System. Mass Storage management. Case Study: UNIX.

Database Systems Lab. Co-requisite: 11323 1 credit hour
How to design and implement a complete database application using a modern relational database system: It covers relations, queries, forms, reports, objects, properties, data design, software design, and rapid application development tools.

11355 Operating Systems Lab. Co-requisite: 11335 1 credit hour
This course will provide practical skills needed for using a UNIX type operating system. This will include LINUX installation, Vi environment and commands file and process management commands, email, shell programming, and system administration, in addition to implementing some of operating system concepts, such as memory management or CPU scheduling.

Practical Training Pre-requisites: 90 Cr. Hrs. 3 credit hours Grade: Pass / Fail
The student is required to do practical training in a well known software company for a period of (2) months, full-time training, with at least (6) hours per day, or 3 months part-time training with at least (4) hours per day. In addition to training hours, for the part-time training, the student is allowed to register not more than (10) credit hours in the first or the second semester, or (4) credit hours in the summer semester. The student is required to perform tasks that are related to his major, such as writing, developing, or learning some new software

Wireless Networks and applications Pre-requisite: 11435, 20334 Credit hours: 3
This course provides an overview of Wireless Data Communication principles. The topics that will be covered in this course include: wireless protocols, Mobile IP, Ad hoc Networks, Wireless Sensor Networks, Vehicular networks.
11449 Computer and Society Co-requisite: : 90 Cr. Hrs 1 credit hour S
eminars on the social, ethical, and legal issues of computing. Social impact of computerization on local and global organizations. Public perception of computers and computer scientists. Intellectual property: copyrights, patents, trademarks, and commercial law. Computer crime. Economic issues in computing. Privacy and civil liberties. Professional and ethical responsibilities.
11464 Information Systems Security Pre-requisites: 11212 3 credit hours

This course explains Security protocols, authentication protocols, data integrity, digital signatures, intrusion detection, key management and distribution, viruses and other malicious codes, information flow, mobile code and agent security. Cryptographic algorithms: Secret Key Encryption (DES), Public Key Encryption (RSA), Message Digest Algorithm (MD5); Attacks and countermeasures: Packet sniffing, Spoofing and denial of service; Application layer security: HTTPS, secure email; Transport layer security: TLS, SSL; Network layer security: IP security (IPSec), AH protocol, ESP protocol; access control and Firewalls: Filter-based firewalls, Proxy-based firewalls; wireless networks security, security in IEEE 802.11, WEP protocol, EAP protocol.

11493 Graduation Project 1 Pre-requisites: 90 Cr. Hrs 1credit hours
Project is aimed at developing real world problem solving skills, including problem definition, analysis, and needed software. A project should be performed by a group of students under the supervision of a faculty member. Students are required to develop a complete implementation fulfilling the project objectives and submit a final report. Project must be presented to a committee of the faculty.

11494 Graduation Project 2 Pre-requisites: 90 Cr. Hrs 2 credit hours

Digital Logic Design Pre-requisites: - 3 credit hours
Binary system. Boolean algebra and logic gates. Simplification of Boolean functions. Combinational logic with MSI and LSI. Sequential logic. Registers. Counters. The memory unit.

Computer Organization and Assembly Pre-requisites: 22241 3 credit hours
Register transfer and micro-operations. Basic computer organization and design. Design of arithmetic logic unit. Design of accumulator. Central processing unit. Hardwired control. Micro programmed control. Execution of instructions. Pipelining. Introduction to memory hierarchy. Microprocessor organization. Central processing unit. Addressing modes. Instruction set. Programming in assembly language. Software interrupts and interfacing with BIOS and DOS. A specific microprocessor will be studied in detail.

Computer Architecture Pre-requisites:22342 3 credit hours
Computer Evolution and Performance. System Buses and Memory. Input/Output. Computer Arithmetic. CPU Structure and Function. Multimedia instruction set. Reduced Instruction Set Computers (RISCs). Instruction-Level Parallelism and Superscalar Processors. Control Unit Operation. Parallel Processing. SMPs, clusters, and NUMA systems.