



# **KASHI INSTITUTE OF TECHNOLOGY**

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ISO 9001 : 2015 (QUALITY MANAGEMENT SYSTEM)

## **REPORT OF CO – PO ASSESSMENT AND ATTAINMENT Of FACULTY OF COMPUTER SCIENCE & ENGINEERING (AI &ML)**

**Submitted**

**By**

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING  
(AI &ML)**

**KASHI INSTITUTE OF TECHNOLOGY, VARANASI**



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The image shows a handwritten signature in green ink over a purple circular stamp. The stamp contains the text "Director" in the center, with "K. J. Somaiya Institute of Technology" around the top edge and "Vadgaoni" around the bottom edge. There are also small decorative elements within the stamp.

# CO-PO ASSESSMENT & ATTAINMENT

## 1. INTRODUCTION:

According to John Dewey, an American philosopher, psychologist and educational reformer, "Education is not preparation for life, education is life itself". Education is a form of Teaching-learning-practicing in which the knowledge, skills and information are transferred from teachers to students. But the traditional system of education fails to measure the Capability of the students. It only assesses the students learning by allowing them to reproduce the exact text presented in the text book as answer for questions. But the real need and demand of twenty first century learning system is the transition from Output Based Education to Outcome Based Education. Outcome Based Education (OBE) system is able to measure what the students are capable of doing. Indian education system has introduced the Outcome Based Education System through National Board of Accreditation (NBA). This is a model which not only gives much better technical knowledge to twenty first century Engineers, but also gives emphasis on the development of affective domain attribute which are needed in workplace, e.g. interpersonal skills, analytical skills, computer skills, organizational skills, leadership skills, self-confidence, creativity, strong work ethics, motivation, initiative, flexibility, adaptability and entrepreneurial skills. This report described the calculation of various courses like Engineering Physics, Engineering Chemistry, Engineering Mathematics-1, Elementary mathematics-1, Soft Skill, Fundamental of Mechanical Engineering & Mechatronics, Basic Electrical Engineering, Emerging Technology, Artificial Intelligence, Programming for Problem Solving, Emerging Domain in Electronics Engineering, etc), delivery methods to attain OBE in these Programs, presents assessment methods, attainment of Course Outcome (CO), Program Outcome (PO) & Program Specific Outcome (PSO). The goal of outcome-based education (OBE) is to have students demonstrate that they "**know and are able to achieve**" whatever they required outputs are by organizing and focusing the resources available in an educational system. OBE assists universities in tracking their students' academic progress and empowering them to master new talents that will set them apart from their peers throughout the world.



The curriculum is revised as needed to meet the needs of today's students, rather than being repeated for the following generation of students.

The faculty is encouraged to focus on helping the students build new abilities rather than placing too much emphasis on getting everything done on the syllabus before the end of the semester. Additionally, students are evaluated based on the 'Levels' that track their learning skills rather than their grade. Success for all students and staff is the Outcome Based Education (OBE) principle, as stated by ensuring that every student has the skills, abilities, and qualities required for success after leaving the educational system. Organizing institution is a way that allows for the achievement and maximization of those Outcomes for all students. Institutions adopting OBE attempt to carry changes to the educational program by progressively adapting to the requirements of the various stakeholders like Students, Parents, Industry Personnel and Recruiters.

This report described the calculation of various technical and non technical courses. Delivery methods to attain OBE in Engineering Program, presents assessment methods, attainment of course outcome (COs) and program outcome (POs).



## 2- Institute Vision & Mission

### **Vision:**

To empower young generation for substantial contribution to economical, technological and social progress of the society worldwide.

### **Mission:**

- To contribute to the development of the human resources in the form of professional leaders of global cadre.
- To develop holistic personality of the learners.
- To make this Institute as a Leading Centre of Research.



### **3-DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING (AI & ML): VISION AND MISSION**

#### **VISION**

To be head of excellence in technical knowledge and research of Computer Science and Engineering along with good moral values.

#### **MISSION**

- To strengthen core competency of students to be a successful, ethical, effective problem solver in Computer Science & Engineering through analytical learning.
- To promote interdisciplinary research & innovation based activities in emerging areas of technology globally.
- To facilitate and foster the industry-academia collaboration to enhance entrepreneurship skills and acquaintance with corporate culture.
- To inculcate in them a higher degree of social consciousness and moral values towards solving interdisciplinary societal problems using industry academia collaboration.



#### 4-LEVELS OF OUTCOMES:

##### Terminology (Abbreviations)

• **Outcomes - Based Education (OBE) :** Outcome-Based Education (OBE) is a student-centric teaching and learning Methodology in which the course delivery, assessment are planned to achieve stated Objectives and Outcomes. It focuses on measuring student performance i.e. outcomes at different levels.

OBE is all about feedback and outcomes. There are four levels of Outcomes from OBE are:

1-Course Outcomes (COs)

2-Program Outcomes (POs)

3-Program Educational Objectives (PEOs)

3-Program Specific Outcomes (PSOs)

##### •Course Outcomes (COs):

Course Outcomes (COs) are what the student should be able to do at the end of a course. The most important aspect of a CO is that it should be observable and measurable form of a set of individually assessable outcomes of the programme. Graduates Attributes (GAs) are the components indicative of the graduate's potential to acquire competence to practice at the appropriate level.

##### •Program Outcomes (POs):

Program outcomes are statements that describe what the knowledge, skills and attitudes students should have at the time of graduation from an engineering program. That means just at the end of 4 years these represent what is the knowledge, skills and attitudes they should have.

##### • Program Educational Objectives (PEOs):

These are broad statements that describe the career and professional accomplishments in four to five years after graduation that the program is preparing the graduates to achieve.

##### • Program Specific Outcomes (PSOs):

Program Specific Outcomes are statements that describe what the students of a specific engineering program should be able to do.



## Course objectives:

1. Intended outcomes written to help guide instruction for what the students will learn in the course.
2. Course objectives are measurable objectives that the learner is expected to accomplish at the end of an instructional.
3. A statement of an action that a learner should be able to perform after successfully completing the learning material. e.g. course objective of Machine learning.

### Course objective (Machine learning.):

The goal of machine learning is often — though not always — to train a model on historical, labeled data (i.e., data for which the outcome is known) in order to predict the value of some quantity on the basis of a new data item for which the target value or classification is unknown.

### COURSE OUTCOME STATEMENT:

### Course Outcomes (COs):

CO statements indicating what a student can do after the successful completion of a course. Every Course leads to some Course Outcomes. The CO statements are defined by considering the course content covered in each module of a course. For every course there may be 5 or 6 COs. The keywords used to define COs are based on Bloom's Taxonomy. A well written CO facilitates lecturers in measuring the achievement of the CO at the end of the semester. It also helps the lecturers in designing suitable delivery and assessment methods to achieve the designed CO. Graduates Attributes (GAs) are the components indicative of the graduate's potential to acquire competence to practice at the appropriate level. Gas form a set of individually assessable outcomes of the programmed. For e.g. a course such as Machine learning might have the following course outcomes set.

KASHI INSTITUTE OF TECHNOLOGY, VARANASI		
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING		
Course : B.Tech		
Course: KCS-055		
Semester: 5th		
Academic Year:2021-2022		
Course Name : Machine Learning Techniques		
CO1	To understand the need for machine learning to solve various problems	L1: Remember L2: Understand
CO2	To understand widevariety of learning algorithm and how to evaluate	L5: Evaluate
CO3	To understand the latest trend in machine learning	L2: Understand
CO4	To Design appropriate machne learning algorithms and apply the	L3: Applying
CO5	To optimize the models learned and report on the expected accuracy	L4:Analyze

## Course Outcomes & CO-PO Matrix of Various Courses





**Course Outcomes****CSE -3<sup>rd</sup> Semester**

<b>Course Outcomes</b>		<b>BL</b>
<b>Course - DATA STRUCTURE(KCS301)</b>		
<b>S. No.</b>	<b>Course Outcome/ Unit</b>	
1	Describe how arrays, linked lists, stacks, queues, trees and graphs are represented in memory, used by the algorithms and their common applications.	1.2
2	Discuss the computational efficiency of the sorting and searching algorithms.	2
3	Implementation of Trees and Graphs and perform various operations on these data structure.	3
4	Understanding the concept of recursion, application of recursion and its implementation and removal of recursion.	4
5	Identify the alternative implementations of data structures with respect to its performance to solve a real world problem.	5.6
<b>Course Outcomes</b>		<b>BL</b>
<b>Course – Discrete Structure and Theory of Logic(KCS-303)</b>		
<b>S. No.</b>	<b>Course Outcome/ Unit</b>	
1	Knowledge of logical notation to define and reason the fundamental mathematical concepts Such as sets, relations, functions, and integers.	1.2
2	Discuss various structures and properties of modern algebra.	1.2
3	Employ their logical ability such as reasoning able to setup mathematical model of real life problem by applying advanced counting and computing techniques like generating	3.4
4	Demonstrate problems in different areas of computer science using trees and graphs.	5.6
5	Design solution with the help of induction hypotheses ,simple induction proofs and	2.3
<b>Course Outcomes</b>		<b>BL</b>
<b>Course - Computer System and Security (KNC301)</b>		
<b>S. No.</b>	<b>Course Outcome/ Unit</b>	
1	To discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats	1.2
2	To discover cyber-attack scenarios to web browsers and web servers and to explain how to mitigate such threats	2
3	To discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques.	3.
4	To articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios	4
5	To articulate the well-known cyber-attack incidents, explain the attack scenarios, and explain mitigation techniques.	5.6



Course Outcomes		
Course – Computer Organization and architecture(KCS 301)		
S. No.	Course Outcome/ Unit	BL
1	Study of the basic structure and operation of a digital computer system.	2.3
2	Analysis of the design of arithmetic & logic unit and understanding of the fixed point and floating point.	3
3	Implementation of control unit techniques and the concept of Pipelining	3
4	Understanding the hierarchical memory system, cache memories and virtual memory.	3
5	Understanding the different ways of communicating with I/O devices and standard I/O interfaces	2.3

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## Course Outcomes CSE. 4<sup>th</sup> Semester

Course Outcomes		
Course - Operating Systems (KCS- 401T)		
S. No.	Course Outcome/ Unit	BL
1	Understand the structure and functions of OS	2
2	Learn about Processes, Threads and Scheduling algorithms	1
3	Understand the principles of concurrency and Deadlocks	2
4	Learn various memory management scheme	1
5	Study I/O management and File systems	4

Course Outcomes		
Course - Python Programming(KNC 402)		
S. No.	Course Outcome/ Unit	
1	To read and write simple Python programs.	
2	To develop Python programs with conditionals and loops.	
3	To define Python functions and to use Python data structures — lists, tuple, dictionaries	
4	To do input/output with files in Python	
5	To do searching, sorting and merging in Pythons.	

Course Outcomes		
Course - Theory of Automata and Formal Languages (KCS-402)		
S. No.	Course Outcome/ Unit	
1	Understand the basic formal language and automata machine	
2	Understand basic properties and analyzing of regular language and application of finite automaton	
3	Understand and analyzing the context free grammar and Language also proof of correctness.	
4	Understand basic model of PDA. Analyzing and forming Push down automaton.	
5	Understand basic model of Turing Machine. Analyzing and forming Turing Machine and its corresponding language also Understand basic properties Undesirability	



## Course Outcomes

### CSE- 5<sup>th</sup> Semester

Course Outcomes		BL
Course - Compiler Design(KCS-502)		
S. No.	Course Outcome/ Unit	
1	Acquire knowledge of different phases and passes of the compiler and also able to use the compiler tools like LEX, YACC, etc. Students will also be able to design different types of compiler tools to meet the requirements of the realistic constraints of compilers.	3.6
2	Understand the parser and its types i.e. Top-Down and Bottom-up parsers and construction of LL, SLR, CLR and LALR parsing table.	2.6
3	Implement the compiler using syntax-directed translation method and get knowledge about the synthesized and inherited attributes.	4,5,
4	Acquire knowledge about run time data structure like symbol table organization and different techniques used in that.	2.3
5	Understand the target machine's run time environment, its instruction set for code generation and techniques used for code optimization.	2.4

Course Outcomes		BL
Course - Web Technology (KIT 501)		
S. No.	Course Outcome/ Unit	
1	Apply the knowledge of the internet and related internet concepts that are vital in understanding web application development and analyze the insights of internet programming to implement complete application over the web.	1,2,3
2	Understand, analyze and apply the role of mark up languages like HTML, DHTML, and XML in the workings of the web and web applications.	2
3	Use web application development software tools i.e. XML, Apache Tomcat etc. and identifies the environments currently available on the market to design web sites.	4.6
4	Understand, analyze and build dynamic web pages using client side programming JavaScript and also develop the web application using servlet and JSP.	5.6
5	Understand the impact of web designing by database connectivity with JDBC in the current market place where everyone use to prefer electronic medium for shopping, commerce, fund transfer and even social life also.	2.3



Course Outcomes		12
Course - Design And Analysis Of Algorithm (KCS-503)		
S. No.	Course Outcome/ Unit	BL
1	Analyze running time of algorithms using asymptotic methods, by applying knowledge of mathematics on different sorting algorithms.	2, 3, 4
2	Apply standard algorithms of advanced data structure like B-tree, RB tree, Binomial heaps, and Fibonacci heap.	3
3	Design and modify greedy and dynamic approach on algorithms and analyze them to find solutions of Optimization problems related to graphs and other fields.	5, 6
4	Recognize the general principals and good algorithm design techniques dynamic programming, backtracking and branch & bound algorithm for developing efficient ALGORITHM	1, 2, 4
5	Use string matching algorithms as well as relate the concepts of NP Completeness for analyze and understand the complexity of real life problems and developing solution using randomized and approximation algorithms.	2, 3
Course Outcomes		BL
Course - Database Management Systems (KCS- 502)		
S. No.	Course Outcome/ Unit	BL
1	Define database design methodology which gives a good formal foundation in relational data model.	3
2	Identify and formulate information storage and derive an information model expressed in the form of ER diagram and other optional analysis forms.	3.4
3	Apply query processing techniques to automate the real time problems of databases and will be able to create relational algebra expressions for query.	2.3
4	Identify and solve the redundancy problem in database tables using normalization.	2.4
5	Understand the concepts of transactions, their processing and analyze the broad range of database management issues including data integrity, security and recovery	3.6

**Course Outcomes**  
**CSE-6th Semester**

Course Outcomes		BL
Course – Data Compression (KCS-064)		
S. No.	Course Outcome/ Unit	BL
1	Describe the evolution and fundamental concepts of Data Compression and Coding Techniques.	1.2
2	Apply and compare different static coding techniques (Huffman & Arithmetic coding) for text compression.	2.3
3	Apply and compare different dynamic coding techniques (Dictionary Technique) for text compression.	2.3
4	Evaluate the performance of predictive coding technique for Image Compression.	2.3
5	Apply and compare different Quantization Techniques for Image Compression.	2.3



Course Outcomes		BL
Course - Software Project Management(KOE-068)		
S. No.	Course Outcome/ Unit	
1	Identify project planning objectives, along with various cost/effort estimation models.	2
2	Organize & schedule project activities to compute critical path for risk analysis.	2.5
3	Monitor and control project activities.	3.4
4	Formulate testing objectives and test plan to ensure good software quality under SEI-CMM.	6.7
5	Configure changes and manage risks using project management tools.	4.5
Course Outcomes		BL
Course- Web Technology(KCS- 602)		
S. No.	Course Outcome/ Unit	
1	Understand principle of Web page design and types of websites.	2
2	Visualize and recognize the basic concept of HTML and application in web designing.	4
3	Recognize and apply the elements of Creating Style Sheet (CSS).	3.4
4	Understand the basic concept of Java Script and its application.	2
5	Introduce basics concept of Web Hosting and apply the concept of SEO.	2.3
Course Outcomes		BL
Course – Computer Networks (KCS-603)		
S. No.	Course Outcome/ Unit	
1	Define, use and implement Computer Networks and the basic components of a Network system.	1.2
2	Know and Apply pieces of hardware and software to make networks more efficient, faster, more secure, easier to use, able to transmit several simultaneous messages, and able to	2.3
3	Differentiate the various types of network configurations and applying them to meet the changing and challenging networking needs of organizations.	2.3
4	Define and analyze the circuits available for voice and data networks, their transmission speeds (bandwidth), and how they are packaged for commercial use.	4.5
5	To implement replacement of equipment at right time and able to implement project management concepts like CPM, PERT to reduce cost and time.	5.6



Course Outcomes		14
Course - Software Engineering(KCS-602)		
S. No.	Course Outcome/ Unit	BL
1	Students will be able to decompose the given project in various phases of a lifecycle.	1.2
2	Students will be able to choose appropriate process model depending on the user requirements	2
3	Students will be able perform various life cycle activities like Analysis, Design, Implementation, Testing and Maintenance.	3
4	Students will be able to know various processes used in all the phases of the product.	3
5	Students can apply the knowledge, techniques, and skills in the development of a software product.	3

**Course Outcomes**  
**CSE- 7th Semester**

Course Outcomes		BL
Course - Mobile Computing(KCS-711)		
S. No.	Course Outcome/ Unit	
1	Explain and discuss issues in mobile computing and illustrate overview of wireless telephony and Channel allocation in cellular systems.	2.6
2	Explore the concept of Wireless Networking and Wireless LAN.	4
3	Analyze and comprehend Data management issues like data replication for mobile computers, adaptive clustering for mobile wireless networks and Disconnected operations.	4
4	Identify Mobile computing Agents and state the issues pertaining to security and fault tolerance in mobile computing environment.	3
5	Compare and contrast various routing protocols and will identify and interpret the performance of network systems using Adhoc networks.	2.5

Course Outcomes		BL
Course – RENEWABLEENERGY RESOURCES (KOE- 074)		
S. No.	Course Outcome/ Unit	
1	Understand and define the Introduction and evolution of Various non-conventional energy resources	2.6
2	Understand and define the Introduction and evolution Solar Thermal Energy	4
3	Understand and define the Introduction to Geothermal Energy	4
4	Understand and define the Introduction to Thermo-electrical and thermionic Conversions	3
5	Understand and define the Introduction to Bio-mass.	2.5



Course Outcomes		
Course – HSMC I Rural Development (KHU-701)		
S. No.	Course Outcome/ Unit	
1	Students can understand the definitions, concepts and components of rural development	2.3
2	Students will know the importance, structure, significance, resources of Indian rural economy	2.4
3	Students will have a clear idea about the area development program and its impact	4.5
4	Acquire knowledge about Rural entrepreneurship.	2.4
5	Different methods for human resource planning.	3

**Course Outcomes**  
**CSE- 8th Semester**

Course Outcomes		
Course - Project Management & Entrepreneurship (KHU-802)		
S. No.	Course Outcome/ Unit	
1	Students can understand the need, scope and concept of entrepreneurship.	1.3
2	Importance of entrepreneurial idea and innovation, management skills, creating and sustaining enterprising model.	6
3	Meaning, scope, importance of project management and role of project manager	2.3
4	Acquire knowledge about project financing.	5
5	Clear Idea about social entrepreneurship	3

Course Outcomes		
Course – Cloud Computing(KOE-081)		
S. No.	Course Outcome/ Unit	
1	Understand and define the Introduction and evolution of Cloud Computing in addition to the underlying principle of parallel and distributed computing	1.2
2	Understand the importance of different Cloud enabling technologies and learn how to apply them in software industries	2.3
3	Understand and analyze multi layered cloud architecture design along with their applications and challenges	2.4
4	Understand and Apply Resource management and analyze security systems in cloud	2.3
5	Analyze the components of open stack , Google Cloud platform, Hadoop, Virtual Box and Amazon web Service	4,5,6



Course Outcomes		16
Course - Data Mining and Warehousing (KOE-093)		BL
S. No.	Course Outcome/ Unit	
1	Explain to build a Data Warehouse, it's scope, necessity and Contribution to the society.	2
2	Describe how to select hardware and O.S. for designing and managing data warehouse	2
3	Use of high-level operational skills for knowledge discovery for real world problems.	3
4	Demonstrate statistical and machine learning algorithms to underpin the knowledge discovery for an enterprise.	3
5	Discuss different types of OLAP function and tools for data visualization and decision support for computing systems.	2

Handwritten signature in green ink over a circular purple stamp of the Institute of Technology, Varanasi. The stamp contains the text "Institute of Technology" at the top and "Varanasi" at the bottom, with "Director" in the center.



## **Program Outcomes (POs):**

POs are defined by Accreditation Agencies of the country (NBA in India), which are the statements about the knowledge, skills and attitudes, graduate attributes of a formal engineering program should have. Graduate Attributes (GAs) are the components indicative of the graduate's potential to acquire competence to practice at the appropriate level. GAs form a set of individually assessable outcomes of the program. The NBA laid down the graduate attributes relating to program outcomes and is to be derived by Program. These are broad and covers a wider area than of COs. 12 Program Outcomes, or Graduate Attributes for the sake of unity and quality assurance.

The Program outcomes reflect the ability of graduates to demonstrate knowledge in fundamentals of Basic Sciences, Humanities and Social Sciences, Engineering Sciences and apply these principles in understanding and practically apply the knowledge in professional core subjects, electives and projects which enables the graduates to be competent at the time of graduation. The graduates must adhere to professional and ethical responsibilities in the pursuit of their careers and also for the benefit of the society. These outcomes also enable the graduate to pursue higher studies and engage in R&D for a successful professional career. The proper definition and the attainment of POs contribute to the attainment of Program Educational Objectives which will help the graduate to perform his/ her duties, professional responsibilities, design, development, production and testing of novel products, ability to deal with finances and project management during his/her early professional career of 3 to 4 years.

### **PROGRAM OUTCOMES (PO's)**

#### **PO1: Engineering Knowledge**

Apply the knowledge of mathematics, Science, Engineering fundamentals and an Engineering specialization to the solution of complex engineering problems.

#### **PO2: Problems Analysis**

Identify, formulates, review research literature and analyze Complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural Sciences and Engineering Sciences.

#### **PO3: Design /Development of Solutions**

Design solution for Complex engineering problems and design system components are processes that meet the specified needs with appropriate consideration for the public health and safety and the cultural societal and environmental considerations.

#### **PO4: Conduct investigations of Complex Problem**

Use research based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.



- Those problems, as opposed to those presented at the end of chapters in a typical text book, cannot be solved by the straightforward application of knowledge, theories, and techniques applicable to the engineering discipline.
- That may not have a special answer. A design problem, for instance, can be solved in a variety of ways, leading to a variety of potential solutions
- That necessitates taking into account suitable restrictions or requirements, such as cost, power requirement, durability, product life, etc., which must be defined (modeled) within a suitable mathematical framework.
- This frequently necessitates the employment of cutting-edge computational ideas and methods, as in the case of designing an antenna or a DSP filter.

### **PO5: Modern Tool Usage**

Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

### **PO6: The Engineer and Society**

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

### **PO7: Environment and Sustainability**

Understand the impact of the professional Engineering solutions in social and environmental contexts and demonstrate the knowledge need for sustainable development

### **PO8: Ethics**

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practices.

### **PO9: Individual and Team Work**

Function, effectively as an individual and as a member or leader in diverse teams in multidisciplinary settings.

### **PO10: Communication**

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation make effective presentation and give and receive clear instructions.

### **PO11: Project Management and Finance**



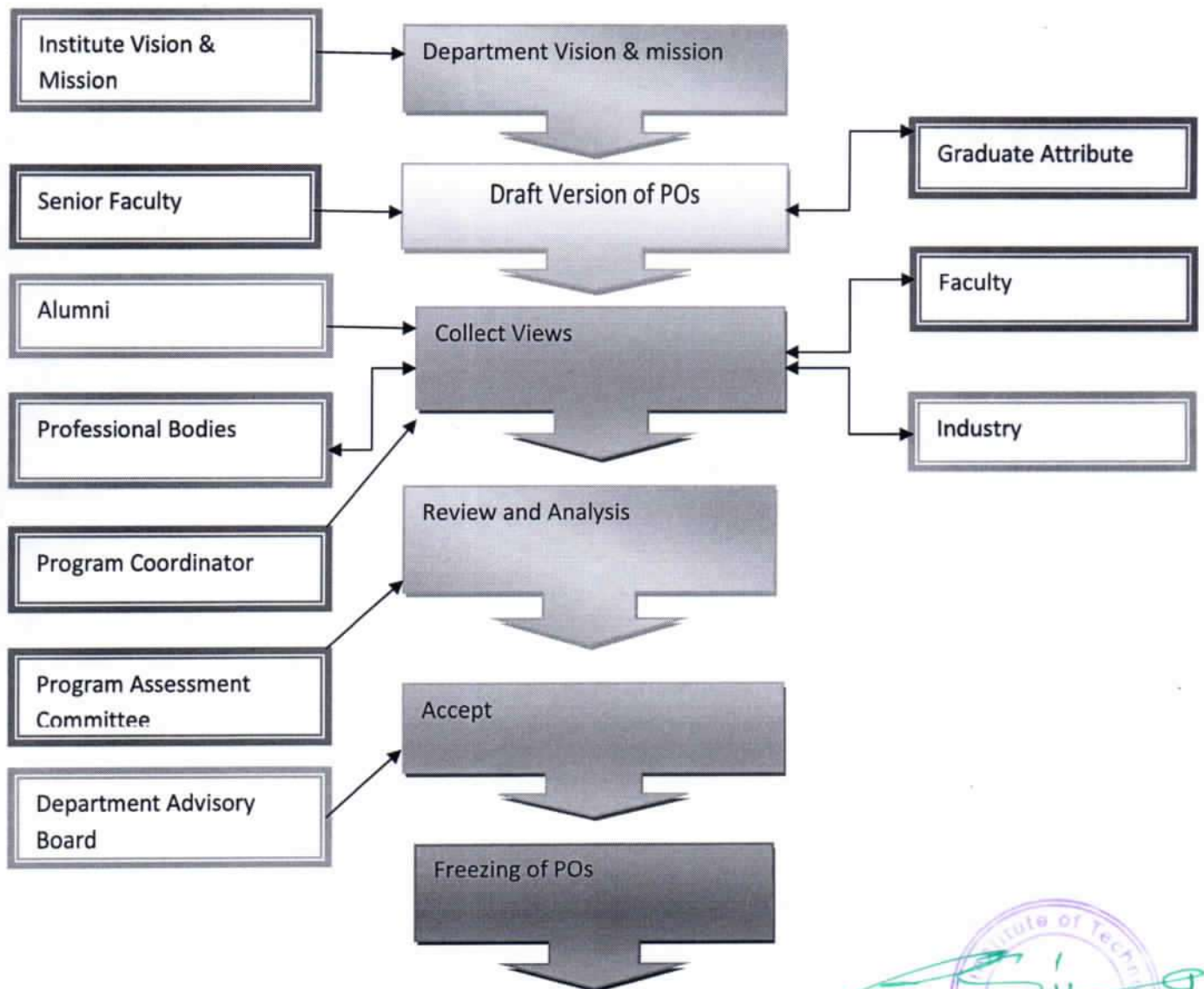
Demonstrate knowledge and understanding of Engineering and Management principles and apply these to one's own work, as a member and leader in a team to manage projects and in multidisciplinary environments.

### PO12: Life -long Learning

Recognize the need for, and have the preparation and ability to engage in independent and life -long learning in the broadest context of technological changes.

### Process to define Program Outcomes (POs) of the department :

Fig.



### **PROGRAM EDUCATIONAL OBJECTIVES (PEOs):**

Program Educational Objectives (PEO) are statements that describe the career and professional accomplishments that the program is preparing the graduates to achieve. PEO's are measured 4–5 years after graduation. They are set in order to measure the effectiveness of the program, and to check whether it has prepared the students to deal with the real world, where they could apply and use the skills and knowledge they've learned to good use.

#### **PEO1 - PROFICIENT DEVELOPMENT**

To develop in the students the capacity to obtain knowledge on Mathematics, Science and Engineering and apply it expertly inside sensible requirements, for example, financial, natural, social, political, moral, wellbeing and security, manufacturability and manageability with due moral obligation.

#### **PEO2-CORE PROFICIENCY**

To provide ability to recognize, plan, appreciate formulate, comprehend, analyze, design and solve engineering problems with hands on experience in different advancement involving modern tools necessary for engineering practice to fulfill the necessities of society and the business.

#### **PEO3 - SPECIALISED ACHIEVEMENT**

To furnished the students with the capacity to explore, reenact, design, simulate, experiment, analyze, optimize and interpret in their core applications through multi disciplinary ideas and contemporary figuring out how to incorporate them into industry prepared graduates.

#### **PEO4 - PROFESSIONALISM**

To provide training, exposure and awareness on importance of soft skills for better career and holistic personality development as well as professional attitude towards ethical issues, team work, responsibility, accountability, multidisciplinary approach and capability to relate engineering issues to broader social context.

#### **PEO5 - LEARNING ENVIRONMENT**

To furnish students with an academic environment and make them mindful of greatness, foster the desire of revelation, imagination, creativity, authority, composed moral codes and rules and the long lasting figuring out how to turn into an effective expert in Computer Science & Engineering.



## The Process for Establishing the PEO's

The PEOs are established through the following process steps:

**STEP 1:** Vision and Mission of the Institute & Department are taken into consideration to interact with various stake holders, and establish the PEO's

**STEP 2:** The Head of the Department, Program Coordinator and other Senior Faculty prepares the draft version of PEOs and POs.

**STEP 3:** The draft rendition is examined with partners and their perspectives are gathered by the Program coordinator

**STEP 4 :** The Program Assessment Committee surveys and dissects the PEOs and POs and presents its recommendations to the Departmental advisory Board.

**STEP 5:** The Departmental advisory Board deliberates on the recommendations and freezes the PEOs and POs and submits them to the BOG for final approval. The Program curriculum is planned by integrating inputs from members of Board of Studies and Academic council who are drawn from various academic institutions, R&D associations and industry.

### PROGRAM SPECIFIC OUTCOMES (PSOs):

The graduates of the department will attain:

#### PSO1: Problem tackling ability

Graduates will actually want to apply the capacity to break down, plan and carry out application explicit electronic framework for complex designing issues for simple, advanced area, correspondences and sign handling applications by applying the information on essential sciences, designing arithmetic and designing basics.

#### PSO2: Professional Skill

Graduates will actually want to foster quick changes in apparatuses and innovation with a comprehension of cultural and biological issues pertinent to proficient designing practice through long lasting learning.

**PSO3: Successful Career** Graduates will actually want to have great versatility to work in multi-disciplinary workplace, great relational abilities as a forerunner in a group in enthusiasm for proficient morals and cultural obligations.

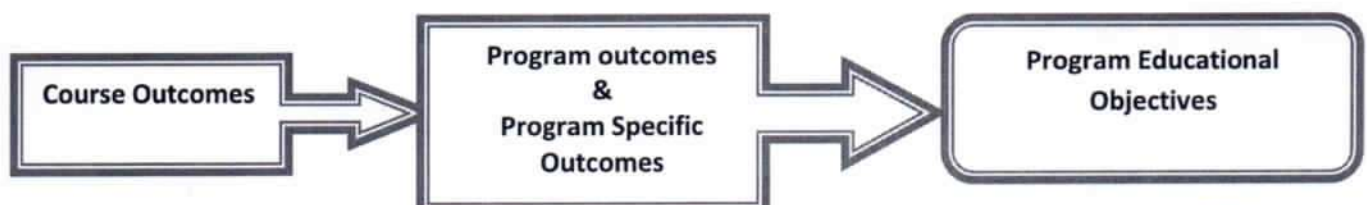


Fig. Relating Outcomes (CO-PO & PSO-PEO)



This figure shows the building block of CO-PO & PSO-PEO Relationship. After CO statements Develop by course in-charge, CO will map with any possible POs based on the relationship exist between them. But all POs are not necessary mapped with one CO and it may be left blank. Anyhow, it is mandatory that all POs should be mapped with any one of PSO and PEO which are specified in the program.

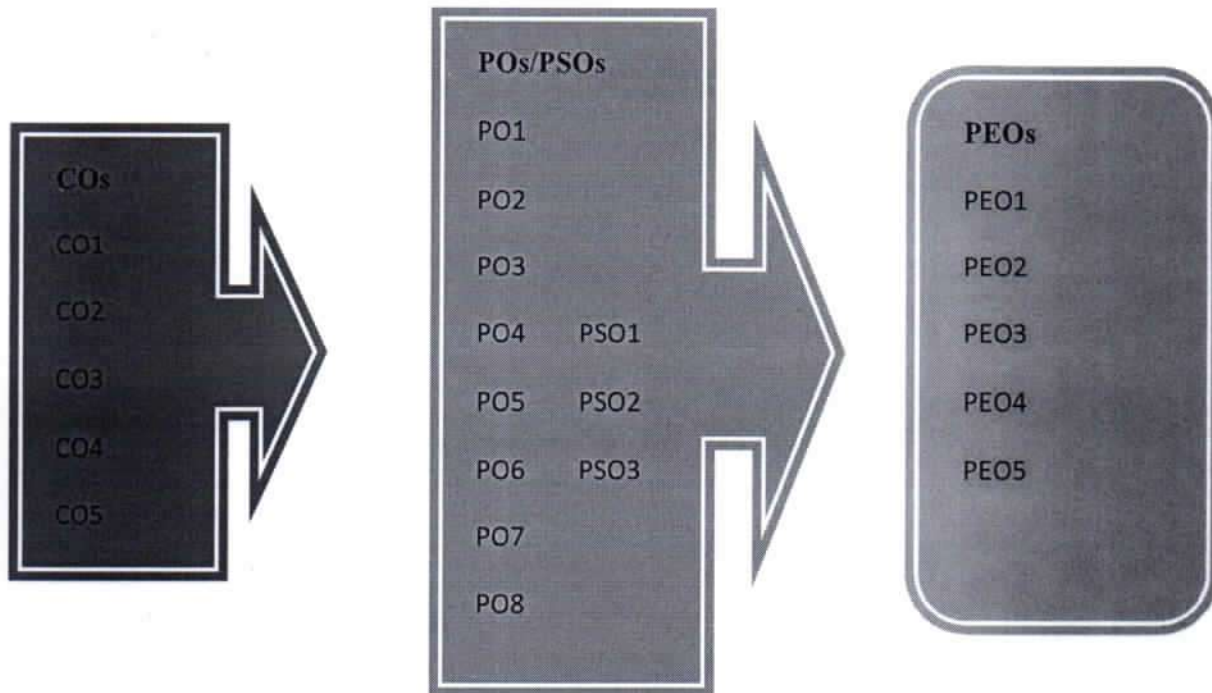


Fig. Relationship between CO, PO, PSO & PEO

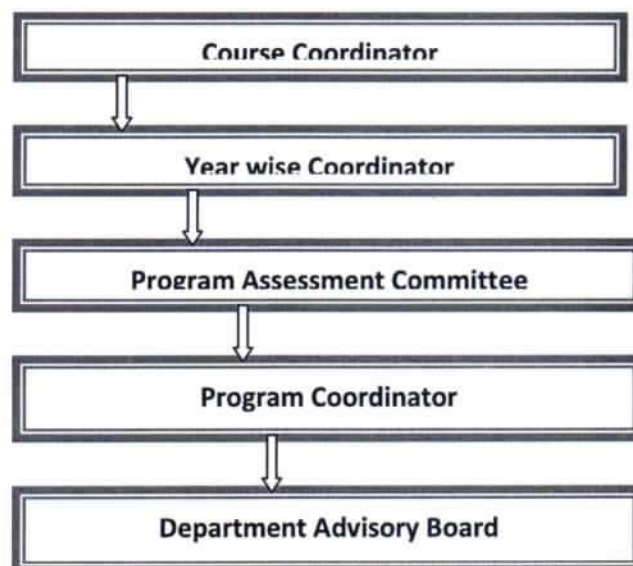


Fig. Hierarchy of Faculty Involvement



- **Course Coordinator:** write appropriate COs and finalize the CO-PO mapping.
- **Year wise Coordinator:** Consolidate the CO attainment of the respective year.
- **Program Assessment Committee:** Consolidate the CO attainment and PO attainment of the respective program.
- **Program Coordinator:** Monitor and Guide the Program Assessment Committee.
- **Department Advisory Board:** All these works mention above have to be done under the supervision of Department Advisory Board.



**Vision, Mission & PEO are published & disseminated at following places:**

<b>Vision , Mission &amp; PEOs</b>			
<b>Sr. No.</b>	<b>Place of Dissemination</b>	<b>Item</b>	<b>Dissemination Detail</b>
1	College Website	Vision ,Mission, PEO	Permanent
2	Depart Area	Vision ,Mission, PEO	Permanent
3	Laboratory Area	Vision ,Mission, PEO	Permanent
4	Notice Board	Vision, Mission,	Permanent
5	Employer Survey Form	Vision ,Mission, PEO	When Required
6	Bulk SMS	Vision ,Mission,	At New Admission
7	Email	Vision ,Mission,	Footer in Every Mail
8	Home Page of ERP	Vision ,Mission,	Permanent
9	Laboratory Manuals	Vision ,Mission,	Permanent
10	Faculty Meetings	Vision ,Mission, PEO	At regular interval
11	In Alumni Interactions	Vision, Mission, PEO	Alumni Meet
12	Back Grounds of all Computers in the Department	Vision, Mission	Permanent

The Process for Updating Vision and Mission of Department:

The following steps are followed to establish Vision and Mission of Department.

**Step 1:** The Institute's Vision & Mission serve as the starting point in Step 1.

**Step 2:** The Department holds faculty discussions about the skill sets required by regional and global employers, industry technological breakthroughs, and R & D. A draft of the Department's vision and mission statements is also created in accordance with suggestions made by the Departmental Planning Committee.

**Step 3:** The draft version is changed in light of feedback from the Departmental Planning Committee, parents, professional organizations, and industry representatives.

**Step 4:** To ascertain whether the accepted points of view are congruent with the institute's vision and goal. Should the Central Advisory Committee deem the Vision and Mission to be unsatisfactory move on to step 5.

**Step 5:** The Central Advisory Committee will again request changes from the Departmental Planning Committee if it is not happy with the Vision and Mission.

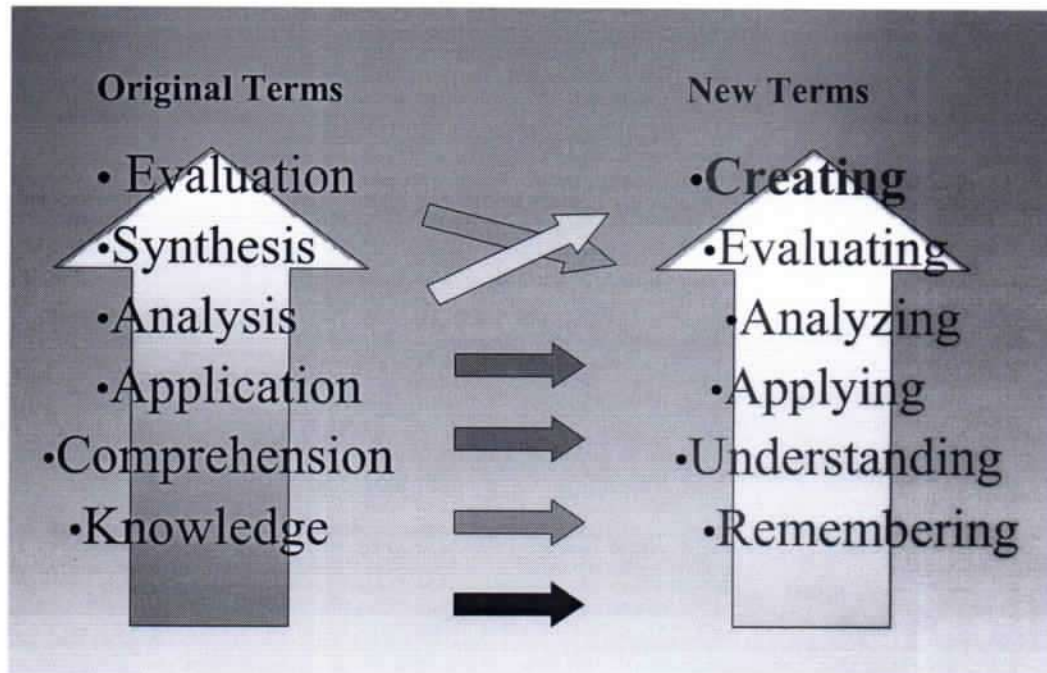
**Step 6:** The Vision and Mission are approved and made public among the stakeholders if they meet the requirements of the Central Advisory Committee.





## 5- Revised Bloom's Taxonomy

Bloom's Taxonomy was created in 1956 under the leadership of educational psychologist Dr Benjamin Bloom in order to promote higher forms of thinking in education, such as analyzing and evaluating concepts, processes, procedures, and principles, rather than just remembering facts. It is most often used when designing educational, training and learning processes.



Critical thinking is a skill that you are expected to develop as you progress through University. Critical thinking will become part of your research, your reading, your planning and reflection and of your academic writing. It involves a set of skills and an attitude of mind that you will need to cultivate and practice - it won't necessarily come easily or naturally! If you can develop critical thinking skills in relation to your subject, they will be valuable to you in many other aspects of life (including employment).

Bloom's taxonomy of thinking and learning illustrates forms of thinking, in ascending order of complexity, from lower-order thinking skills (LOTS) to higher-order thinking skills (HOTS). It begins with **remembering** and ends with **creating**. This is used by lecturers to set learning outcomes and assessment criteria for a course or module, you will often find these verbs in your module handbooks. The knowledge about a subject alone, like having access to a range of information, or 'facts', is at the simplest or lowest level. So using only, or mostly, descriptive language in your writing, to communicate what you know about a topic is not likely to generate many marks. Higher and more complex levels include the ability to analyze, synthesize and evaluate information by comparing and contrasting different points of view, sets of information or experiences. This might involve recognizing patterns of behavior, for example, and using them to make predictions.

#### BLOOM'S REVISED TAXONOMY OF THINKING SKILLS Fig.1

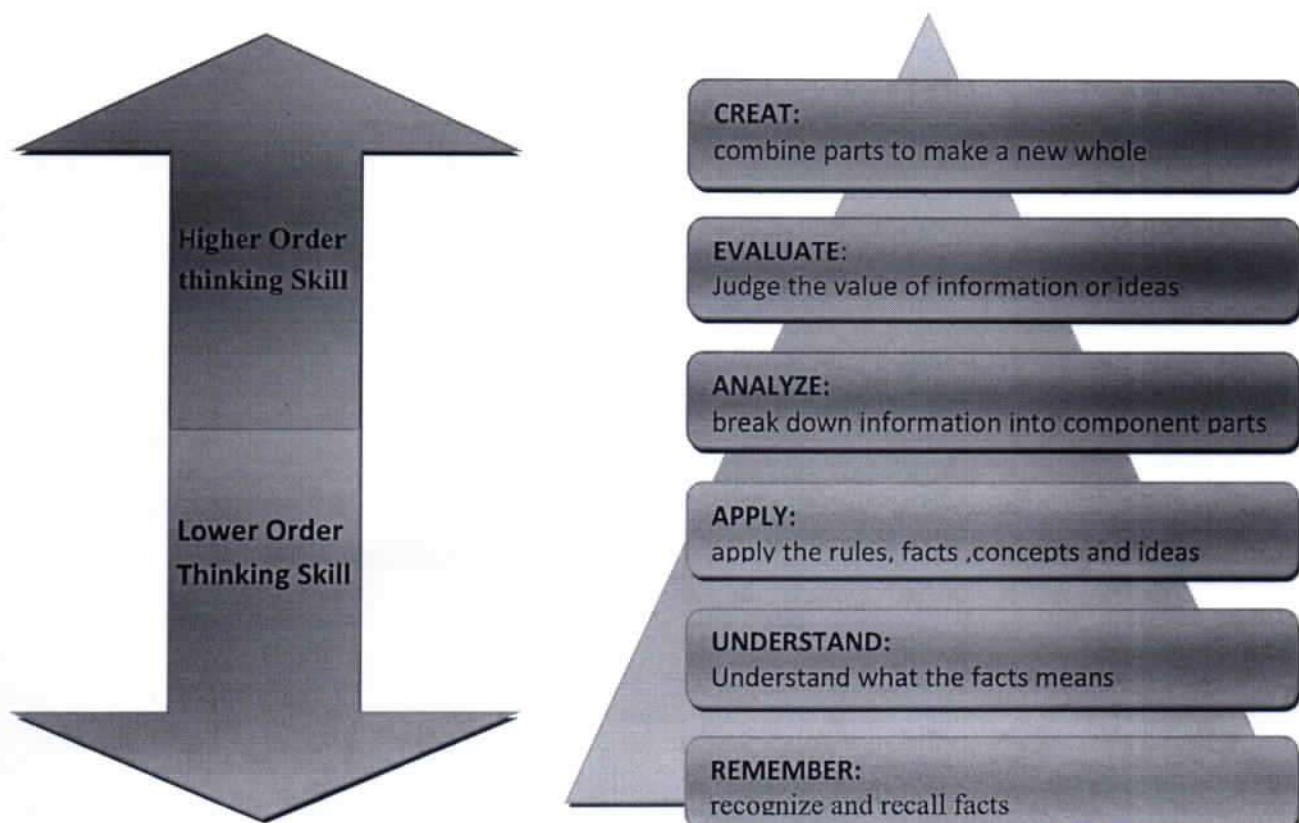
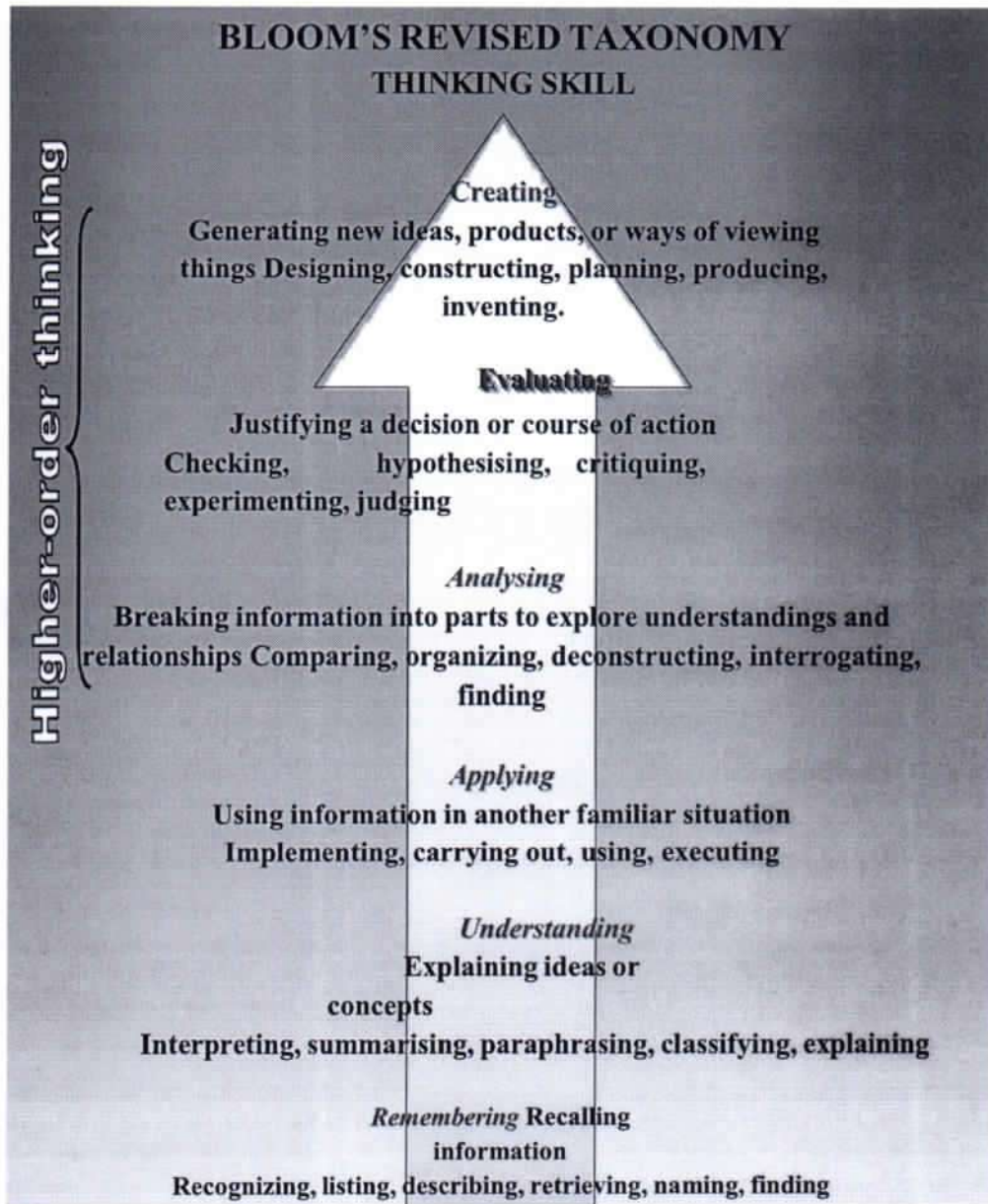


Fig.2



Categories & Cognitive Processes	Alternative Names	Definition
Remember		Retrieve knowledge from long- term memory
Recognizing	Identifying	Locating knowledge in long-term memory that is consistent with presented material
Recalling	Retrieving	Retrieving relevant knowledge from long-term memory

### Cognitive processes: Level 1- C1

Categories & Cognitive Processes	Alternative Names	Definition
Understand		Construct meaning from instructional messages, including oral, written, and graphic communication
Interpreting	Clarifying Paraphrasing Representing Translating	Changing from one form of representation to another
Exemplifying	Illustrating Instantiating	Finding a specific example or illustration of a concept or principle
Classifying	Categorizing Subsuming	Determining that something belongs to a category
Summarizing	Abstracting Generalizing	Abstracting a general theme or major point(s)
Inferring	Concluding Extrapolating Interpolating Predicting	Drawing a logical conclusion from presented information
Comparing	Contrasting Mapping Matching	Detecting correspondences between two ideas, objects, and the like
Explaining	Constructing models	Constructing a cause and effect model of a system

### Level 2 – C2

Categories & Cognitive Processes	Alternative Names	Definition
Apply		Applying a procedure to a familiar task
Executing	Carrying out	Applying a procedure to a familiar task
Implementing	Using	Applying a procedure to an unfamiliar task

### Level 3 – C3



Analyze		Break material into its constituent parts and determine how the parts relate to one another and to an overall structure or purpose
Differentiating	Discriminating Distinguishing Focusing Selecting	Distinguishing relevant from irrelevant parts or important from unimportant parts of presented material
Organizing	Finding coherence Integrating Outlining Parsing Structuring	Determining how elements fit or function within a structure
Attributing	Deconstructing	Determine a point of view, bias, values, or intent underlying presented material

#### Level 4 – C4

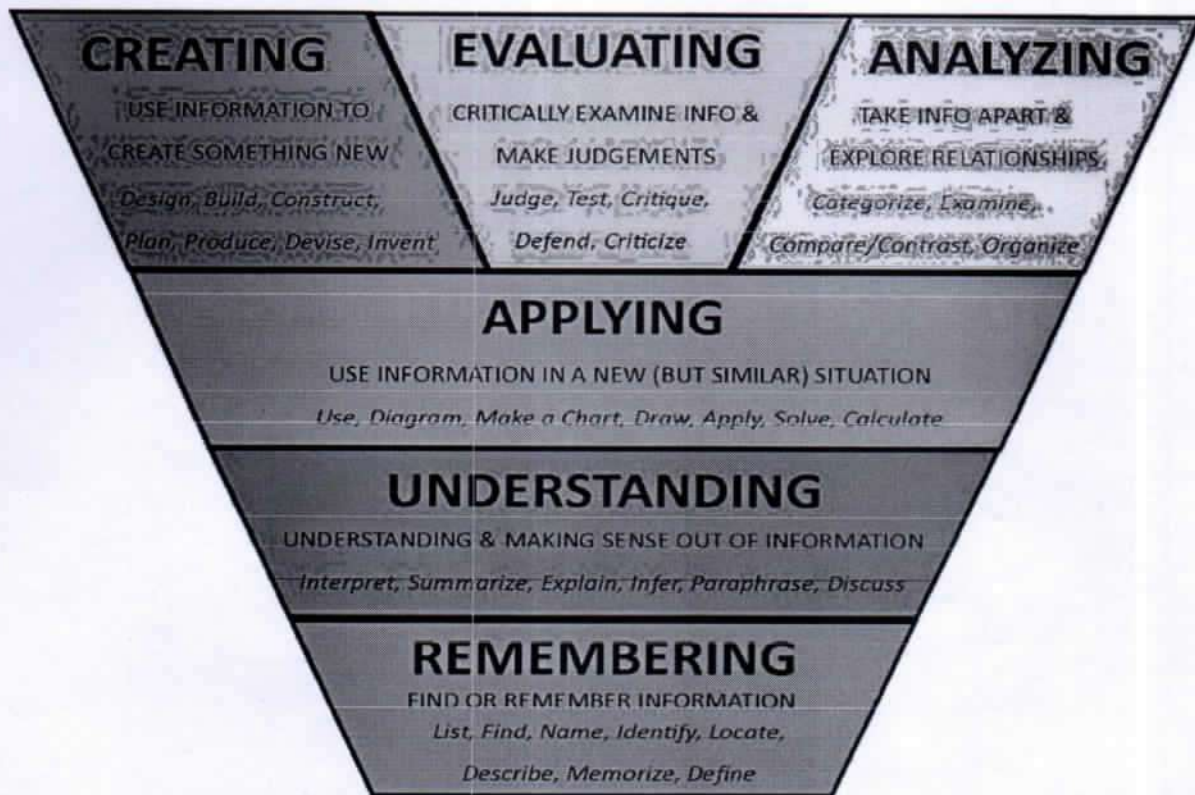
Evaluate		Make judgments based on criteria and standards
Checking	Coordinating Detecting Monitoring Testing	Detecting inconsistencies or fallacies within a process or product; determining whether a process or product has internal consistency; detecting the effectiveness of a procedure as it is being implemented
Critiquing	Judging	Detecting inconsistencies between a product and external criteria; determining whether a product has external consistency; detecting the appropriateness of a procedure for a given problem

#### Level 5 – C5

Categories & Cognitive Processes	Alternative Names	Definition
Create		Put elements together to form a coherent or functional whole; reorganize elements into a new pattern or structure
Generating	Hypothesizing	Coming up with alternative hypotheses based on criteria
Planning	Designing	Devising a procedure for accomplishing some task
Producing	Constructing	Inventing a product

#### Level 6 – C6





**Pictorial representation of Blooms Taxonomy**

### The Knowledge Dimension

Dimension	Definition
Factual Knowledge	The basic elements students must know to be acquainted with a discipline or solve problems in it
Conceptual Knowledge	The interrelationships among the basic elements within a larger structure that enable them to function together
Procedural Knowledge	How to do something, methods of inquiry, and criteria for using skills, algorithms, techniques, and methods
Met cognitive Knowledge	Knowledge of cognition in general as well as awareness and knowledge of one's own cognition



### **Cognitive Process 1: To Remember**

Remembering consists of recognizing and recalling relevant information from long-term memory.

#### **Verbs associated with this level:**

Choose, define, describe, find, identify, label, list, locate, match, name, recall, recite, recognize, record, relate, retrieve, say, select, show, sort and tell

### **Cognitive Process 2: To understand**

Understanding is the ability to make your own meaning from educational material such as reading and teacher explanations. The sub-skills for this process include interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining.

#### **Verbs associated with this level:**

Categorize, clarify, classify, compare, conclude, construct, contrast, demonstrate, distinguish, explain, illustrate, interpret, match, paraphrase, predict, represent, reorganize, summarize, translate and understand

### **Cognitive Process 3: To apply**

Applying refers to using a learned procedure either in a familiar or new situation.

#### **Verbs associated with this level:**

Apply, carry out, construct, develop, display, execute, illustrate, implement, model, solve and use

### **Cognitive process 4: To Analyze**

To analyze is to break material into its constituent parts and determine how the parts relate to one another and to an overall structure or purpose. Students analyze by differentiating, organizing, and attributing.



**Verbs associated with this level:**

Analyze, ascertain, attribute, connect, deconstruct, determine, differentiate, discriminate, dissect, distinguish, divide, examine, experiment, focus, infer, inspect, integrate, investigate, organize, outline, reduce, solve (a problem) and test fo

**Cognitive Process 5: To evaluate**

To evaluate is to make judgments based on criteria and standards.

**Verbs associated with this level:**

Appraise, assess, award, check, conclude, convince, coordinate, criticize, critique, defend, detect, discriminate, evaluate, judge, justify, monitor, prioritize, rank, recommend, support, test, value

**Cognitive Process 6: To Create**

To create is to put elements together to form a coherent or functional whole; reorganize elements into a new pattern or structure; inventing a product. This skill involves putting things together to make something new. To accomplish creating tasks, learners generate, plan, and produce.

**Verbs associated with this level:**

Adapt, build, compose, construct, create, design, develop, elaborate, extend, formulate, generate, hypothesize, invent, make, modify, plan, produce, originate, refine, transform.





## CO – PO AND CO – PSO MAPPING OF COURSES: Mapping Factor (Correlation Level)

The role of CO-PO mapping will be assigned to the faculty as per hierarchy. The course in-charge is responsible for writing the necessary COs for their corresponding course after receiving the department's course (subject) allocation.. COs will be created utilizing the action verbs of the various learning levels., CO statements that are relevant to the skills, knowledge, and behavior that students will learn during the end of each course should be more specific and quantifiable.

After writing the CO statements, CO will be mapped with PO of the department. If the department is having more than one section in a year or the same course is available for more than one program of the same institute in a semester, the subject expert will be nominated as course coordinator of the corresponding course. The role of the course coordinator is to review the CO statements and the CO-PO mapping which has been done by course in-charge. The year wise coordinator has to consolidate the CO's of the respective year and maintain the documentation of the CO attainment level of the respective year courses as well as documentation of the individual students' extra-curricular and co-curricular activities. These details will hand over to the program coordinator in order to evaluate PO attainment of the individual student as well as individual course at the end of the 8<sup>th</sup> semester. The Program coordinator has to evaluate the PO attainment of individual student through direct and indirect method after the student completing their program. All these works have to be done under the guidance of Department Advisory Committee (DAC).

CO – PO mapping indicates to what extent a certain component (either assessment method to CO or CO to PO or PO to PEO & PSO are correlated to each other. Course correlation matrix shows the **Learning Relationship** (level of learning achieved) between COs and POs of a course. This matrix also strongly indicates whether the students are able to achieve the course outcomes/objectives. All the courses together must cover all the POs and PSOs. For a course we map the COs to POs through the CO-PO matrix and to PSOs through the CO-PSO matrix. The matrix can be used for any course and it is good method to evaluate a course syllabus. The various correlation levels are:

- \* **3- indicates Substantial (high)** mapping (high contribution towards attainment)
- \* **2- indicates Moderate** (medium) mapping (medium contribution towards attainment)
- \* **1- indicates Slight (low)** mapping (some contribution towards attainment)
- \* **“-” indicates there is no correlation.**

Procedure followed while assigning the values by Mapping COs to POs:

Judging the importance of the particular COs in relation to the POs.

- If the CO matches strongly with a particular PO criterion then **Assign 3.**
- If it matches moderately then **Assign 2.**



- If the match is low then **Assign 1**.
- If there is no correlation between any CO with PO else mark with ‘-’ Symbol
- If an action verb used in a CO is repeated at multiple Blooms levels, then we need to judge which Blooms level is the best fit for that action verb the first five POs are purely of **technical** in nature, while the other POs are **non-technical**.
- Writing the COs, we need to restrict ourself between Blooms Level 1 to Level 4. Again, if it is a programming course, restrict between Blooms Level 1 to Level 3 but for the other courses, we can go up to Blooms Level 4.
- For the laboratory courses, while composing COs, we need to restrict our self between Blooms Level 1 to Level 5.
- Only for Mini-project and Main project, you may extend up to Blooms Level 6 while composing COs.

**Note:** \* The table given below gives information about the action verbs used in the POs and the nature of POs, stating whether the POs are technical or non-technical. we need to understand the intention of each POs and the Bloom’s level to which each of **POs** and the Blooms level to which each of these action verbs in the POs correlates to. Once you have understood the **POs** then you can write the COs for a course and see to what extent each of those COs correlate with the POs.



Table: Process for mapping the values for CO-PO Matrix

Type	POs	Action Verb(s) in POs	Bloom's Level(s) for POs	Blooms Level(s) for COs	Type	Thumb Rule	
					Non Technical		
Technical	PO1	Apply	L3	Blooms L1 to L4 for Theory Courses		Non Technical	PO7 If Blooms L1 Action Verbs of a CO -> Correlates any of PO7 to PO12 -> then Assign 1
	PO2	Identify	L2				
		Formulate	L6				
		Review	L2				
	PO3	Design	L3,L6	Blooms L1 to L5 for Laboratory Courses	PO8		If Blooms L2 to L3 Action Verbs of a CO -> Correlates any of PO7 to PO12 -> then Assign 2
		Develop	L3,L6		PO9		
	PO4	Analyze	L4		Blooms L1 to L6 for Mini Project and Major Project		PO10
		Interpret	L2 , L3	PO11			
		Design	L6	PO12			
	PO5	Create	L6	Blooms L1 to L6 for Mini Project and Major Project	PO12		If Blooms L4 to L6 Action Verbs of a CO -> Correlates any of PO7 to PO12 -> then Assign 3
		Select	L1 , L2 L6				
		Apply	L3				
	PO6	Apply	L3	Blooms L1 to L6 for Mini Project and Major Project	PO12		If Blooms L4 to L6 Action Verbs of a CO -> Correlates any of PO7 to PO12 -> then Assign 3
		Assess	L5				



## CO-PO &amp; PSO MAPPING FOR CO-PO MATRIX: SAMPLE

## Department of Computer Science & Engineering

Course : B.Tech  
Course: KCS-302

Semester: 3RD

Academic Year:2021-2022  
Course Name : DATA STRUCTURE

### CO-PO & PSO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	-	-	-	-	-	-	-	-	3	1	-
CO2	2	1	3	1	1	-	-	-	-	-	-	-	2	1	1
CO3	2	1	2	-	-	-	-	-	-	-	-	-	1	-	-
CO4	2	1	1	-	-	-	-	-	-	-	-	-	-	-	1
CO5	2	1	1	-	-	-	-	-	-	-	-	-	-	1	1

Course : B.Tech  
Course Code : KCS 302

Semester: III  
Course Name : Computer Architecture & Organization

Academic Year:2021-2022

### CO-PO & PSO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	-	-	-	-	-	-	-	-	3	1	-
CO2	2	1	3	1	1	-	-	-	-	-	-	-	2	1	1
CO3	2	1	2	-	-	-	-	-	-	-	-	-	1	-	-
CO4	2	1	1	-	-	-	-	-	-	-	-	-	-	-	1
CO5	2	1	1	-	-	-	-	-	-	-	-	-	-	1	1
CO5	2	1	1	-	-	-	-	-	-	-	-	-	-	1	-

Course : B.Tech  
Course: KCS-502

Semester: 5th

Academic Year:2021-2022

Course Name : Design and Analysis of Algorithm

### CO-PO & PSO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	-	-	-	-	-	-	-	-	3	1	-
CO2	1	2	1	1	1	-	-	-	-	-	-	-	2	-	1
CO3	2	1	2	-	-	-	-	-	-	-	-	-	1	1	-
CO4	2	1	1	-	-	-	-	-	-	-	-	-	-	-	1
CO5	2	1	1	-	-	-	-	-	-	-	-	-	-	1	1



Course : B.Tech Semester: 5th Academic Year:2021-2022  
 Course: KCS-055 Course Name : Machine Learning Techniques

### CO-PO & PSO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2		1	-	-	-	-	-	-	-	2	2	1
CO2	2	2	1	1	2	-	-	-	-	-	-	-	3	1	1
CO3	2	2	2	2	1	-	-	-	-	-	-	-	1	1	1
CO4	2	1	1	2	2	-	-	-	-	-	-	-	1	1	1
CO5	2	2	2	2	3	-	-	-	-	-	-	-	1	1	1

Course : B.Tech Semester: 5th Academic Year:2021-2022  
 Course: KCS-074 Course Name : Cryptography & Network Security

### CO-PO & PSO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	2	2	-	-	-	-	-	-	-	1	-	1
CO2	1	1	1	1	1	-	-	-	-	-	-	-	3	2	2
CO3	3	1	1	1	3	-	-	-	-	-	-	-	3	2	1
CO4	2	2	2	2	2	-	-	-	-	-	-	-	3	2	1
CO5	2	2	2	2	2	-	-	-	-	-	-	-	3	1	1

Course : B.Tech Semester: VI Academic Year:2021-2022  
 Course Code : KCS 064 Course Name : Data Compression  
 N

### CO-PO & PSO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	-	-	-	-	-	-	-	-	2	1	-
CO2	2	1	1	1	1	-	-	-	-	-	-	-	2	-	1
CO3	2	1	2	-	-	-	-	-	-	-	-	-	1	1	-
CO4	1	1	1	-	-	-	-	-	-	-	-	-	-	1	-
CO5	2	1	1	-	-	-	-	-	-	-	-	-	-	1	-

Course : B.Tech Semester: V Academic Year: 2021-2022  
 Course Code : KIT 501 Course Name : Web Technology

### CO-PO & PSO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	-	-	-	-	-	-	-	-	3	1	-
CO2	2	1	3	1	1	-	-	-	-	-	-	-	0	-	-
CO3	2	1	2	-	-	-	-	-	-	-	-	-	1	-	-
CO4	2	1	1	-	-	-	-	-	-	-	-	-	-	1	-
CO5	2	1	1	-	-	-	-	-	-	-	-	-	-	1	-

Director  
 Institute of Technology  
 K. J. Somaiya Institute of Technology  
 K. J. Somaiya Institute of Technology  
 K. J. Somaiya Institute of Technology

Course : B.Tech  
Course Code : KCS 602

Semester: VI

Academic Year:2021-2022  
Course Name : Web Technology

### CO-PO & PSO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	1	-	-	-	-	-	-	-	3	1	-
CO2	3	2	2	1	2	-	-	-	-	-	-	-	2	1	1
CO3	2	1	1	2	1	-	-	-	-	-	-	-	1	-	-
CO4	2	1	1	2	2	-	-	-	-	-	-	-	-	-	1
CO5	2	2	1	1	1	-	-	-	-	-	-	-	-	1	1

Course : B.Tech  
Course: KCS-603

Semester: 6TH

Academic Year:2021-2022

Course Name : COMPUTER NETWORK

### CO-PO & PSO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	-	-	-	-	-	-	-	-	2	1	-
CO2	2	1	1	1	1	-	-	-	-	-	-	-	2	-	1
CO3	2	1	2	-	-	-	-	-	-	-	-	-	1	1	-
CO4	1	1	1	-	-	-	-	-	-	-	-	-	-	1	-
CO5	2	1	1	-	-	-	-	-	-	-	-	-	-	1	-

### DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Course : B.Tech  
Course Code : KOE 068

Semester: VI

Academic Year:2021-2022

Course Name : Software Project Management

### CO-PO & PSO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	-	-	-	-	-	-	-	-	3	1	-
CO2	2	2	2	1	1	-	-	-	-	-	-	-	3	1	1
CO3	1	1	2	-	-	-	-	-	-	-	-	-	1	-	-
CO4	2	1	1	2	1	-	-	-	-	-	-	-	-	-	1
CO5	2	2	1	-	-	-	-	-	-	-	-	-	-	-	-



Course : B.Tech  
Course Code : KOE 068

Semester: VI Academic Year:2021-2022  
Course Name : Software Project Management

### CO-PO & PSO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	-	-	-	-	-	-	-	-	3	1	-
CO2	2	2	2	1	1	-	-	-	-	-	-	-	3	1	1
CO3	1	1	2	-	-	-	-	-	-	-	-	-	1	-	-
CO4	2	1	1	2	1	-	-	-	-	-	-	-	-	-	1
CO5	2	2	1	-	-	-	-	-	-	-	-	-	-	1	1

Course : B.Tech  
Course Code : KIT-601

Semester: VI Academic Year:2021-2022  
Course Name : Data-Analytics

### CO-PO & PSO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	-	-	-	1	-	1	-	-	3	1	-
CO2	2	1	3	1	1	-	-	-	-	-	-	-	3	1	1
CO3	2	1	2	-	-	-	-	-	-	-	-	-	1	-	-
CO4	2	1	1	1	-	-	-	-	-	1	-	1	-	1	-
CO5	2	1	1	-	-	-	-	-	-	-	-	-	-	1	-

Course : B.Tech  
Course Code : KHU-701

Semester: 7th Academic Year:2021-2022  
Course Name : HSMC-1

### CO-PO & PSO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	-	-	-	-	-	-	-	-	3	1	-
CO2	2	1	3	1	1	1	1	1	1	1	1	1	3	1	1
CO3	2	1	2	-	-	-	-	-	-	-	-	-	1	-	-
CO4	2	1	1	-	-	-	-	-	-	-	-	-	-	1	-
CO5	2	1	1	-	-	-	-	-	-	-	-	-	-	1	-
CO5	2	1	1	-	-	-	-	-	-	-	-	-	-	1	-



Course : B.Tech		Semester: 8TH		Academic Year:2021-2022											
Course: KCS 713		Course Name : CLOUD COMPUTING													
CO-PO & PSO MAPPING															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	-	-	-	-	-	-	-	-	3	1	-
CO2	2	1	3	1	1	-	-	-	-	-	-	-	2	1	1
CO3	2	1	2	-	-	-	-	-	-	-	-	-	1	-	-
CO4	2	1	1	-	-	-	-	-	-	-	-	-	-	-	1
CO5	2	1	1	-	-	-	-	-	-	-	-	-	-	1	1

KASHI INSTITUTE OF TECHNOLOGY, VARANASI															
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING															
CO-PO ATTAINMENT															
Course : B.Tech		Semester: 3RD		Academic Year:2021-2022											
Course Code : KAS 301		Course Name : Technical Communication													
Name of the Faculty : Mr. Nilesh Prajapati															
CO-PO & PSO MAPPING															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	1	1	1	2	2	2	2	2	1	-
CO2	-	-	-	-	-	-	-	1	1	3	3	2	1	2	-
CO3	-	-	-	-	-	-	-	1	2	3	2	2	1	1	-
CO4	-	-	-	-	-	2	1	-	1	3	2	3	2	2	-
CO5	-	-	-	-	-	-	-	-	2	3	1	1	1	1	-





## Attainment of Course Outcomes

In the Outcome Based Education (OBE), assessment is done through one or more than one processes, carried out by the department, that identify, collect, and prepare data to evaluate the achievement of course outcomes (CO's).

The process for finding the attainment of Course outcomes uses various tools/methods. These methods are classified into two types:

### Assessment Methodology (Direct and Indirect)

#### **Direct methods:**

Direct methods display the student's knowledge and skills from their performance in the class assignment test (It is a metric used to continuously assess the student's understanding capabilities), internal assessment tests [the Internal Assessment marks in a theory paper shall be based on two tests, sessional test(mid-1) & pre university test (PUT) mid-2], End semester examinations (theory or practical), seminars, laboratory assignments/experiments (it is a qualitative performance assessment tool designed to assess student's practical knowledge and problem solving skills), mini/major projects, add on courses, certification, presentations (as per the requirement) etc. These methods provide a sampling of what students know and/or can do and provide strong evidence of student learning.

Various methods used in assessment process that periodically documents and demonstrates the degree to which the Course Outcomes are attained.

#### **Indirect methods:**

Indirect methods such as course exit survey/assignments of course outcomes by feedback, assignments of mini/major project by external experts, faculty feedback, examiner feedback & others survey to reflect on student's learning. They are used to assess opinions or thoughts about the graduate's knowledge or skills.

Collect variety of information about course outcomes from the students after learning entire course.

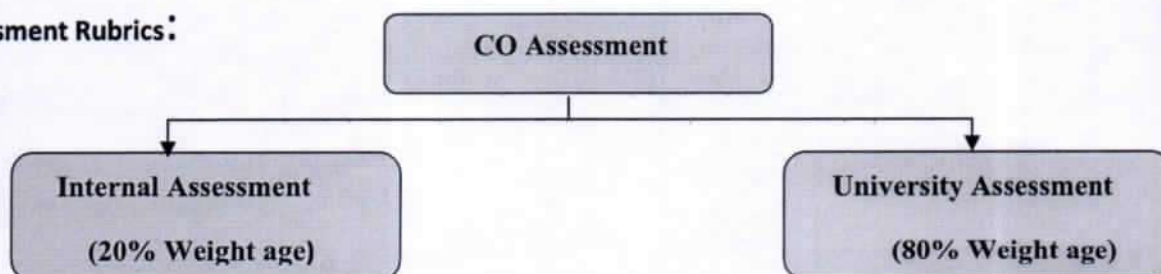
Rubrics are used for both formative and summative assessment of students. Same rubric is used for assessing an outcome so that the faculty is able to assess student progress and maintain the record of the same for each student.

## ASSESSMENT PROCESS

### Assessment Process for CO Attainment:

For the evaluation and assessment of CO's and PO's, rubrics are used. The rubrics considered here are given below:

#### CO Assessment Rubrics:

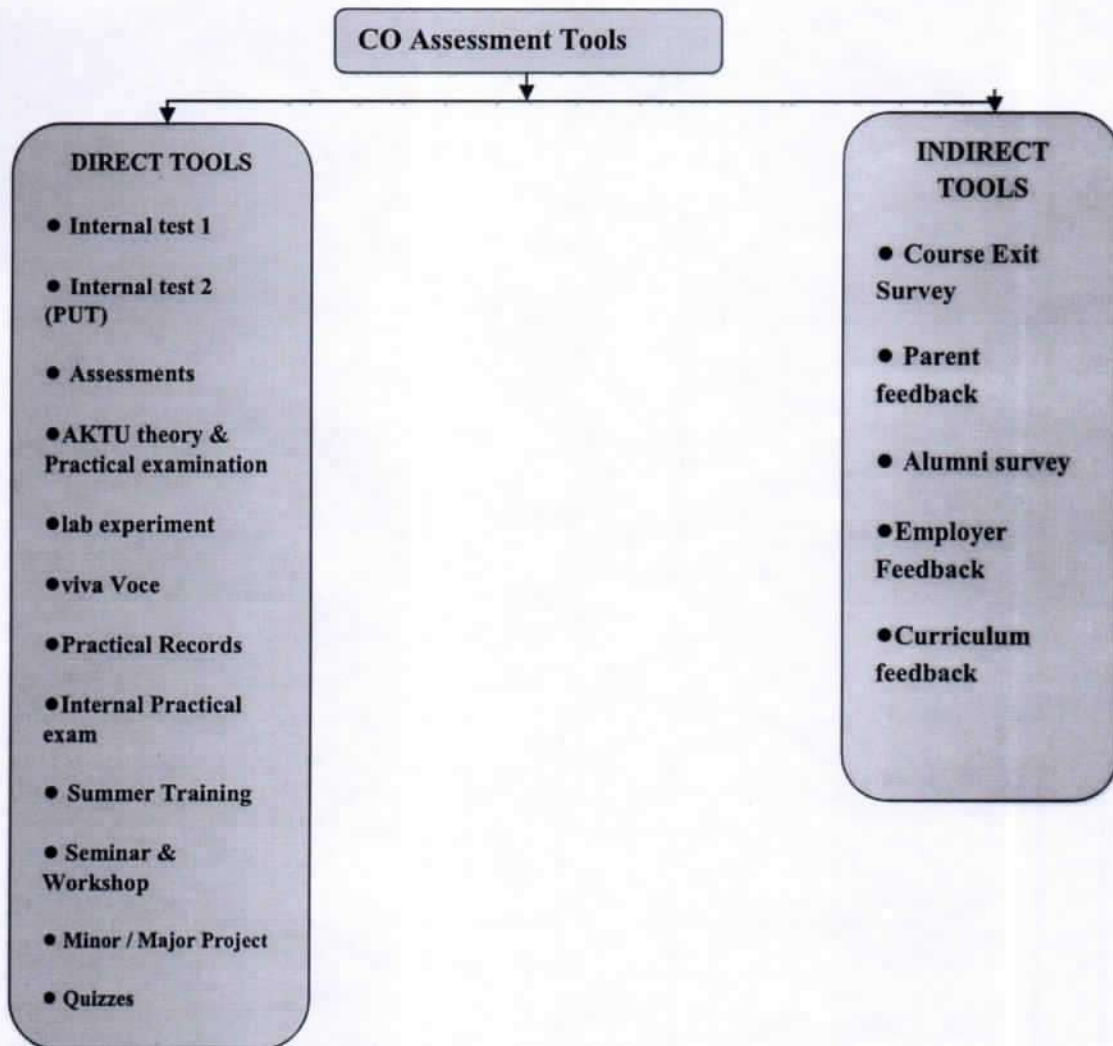


Assessment Type	Assessment method	weight age	Assessment Period	Assessment and Reviewed By
Direct	Assessment tool based on Subject nature	80%  (80% of AKTU Examination + 20% of the Assessment tools)	Once per Semester	Department Advisory committee
	AKTU Examination		Once per Semester	
Indirect	Current Passing out Students Survey	20%	8 <sup>th</sup> semester	Department Advisory committee
	Recruiters Survey		Every Placement activity	
	Alumni Survey		Once per Year	

Course Outcome is evaluated based on the performance of students in internal assessments and in university examination of a course. Internal assessment contributes 20% and university assessment contributes 80% to the total attainment of a CO.

**CO Assessment Tools :** The description of Assessment tools used for the evaluation of program outcomes is given in Table below. The various assessment tools used to evaluate COs and the frequency with which the assessment processes are carried out are listed in this table. In each course, the level of attainment of each CO is compared with the predefined targets, if is not, the course coordinator takes necessary steps for the improvement to reach the target. With the help of CO against PO/PSO mapping, the PO/PSO attainment is calculated by program coordinator. Assessment Tools are of two types' direct tools and indirect tools. Which are described below?

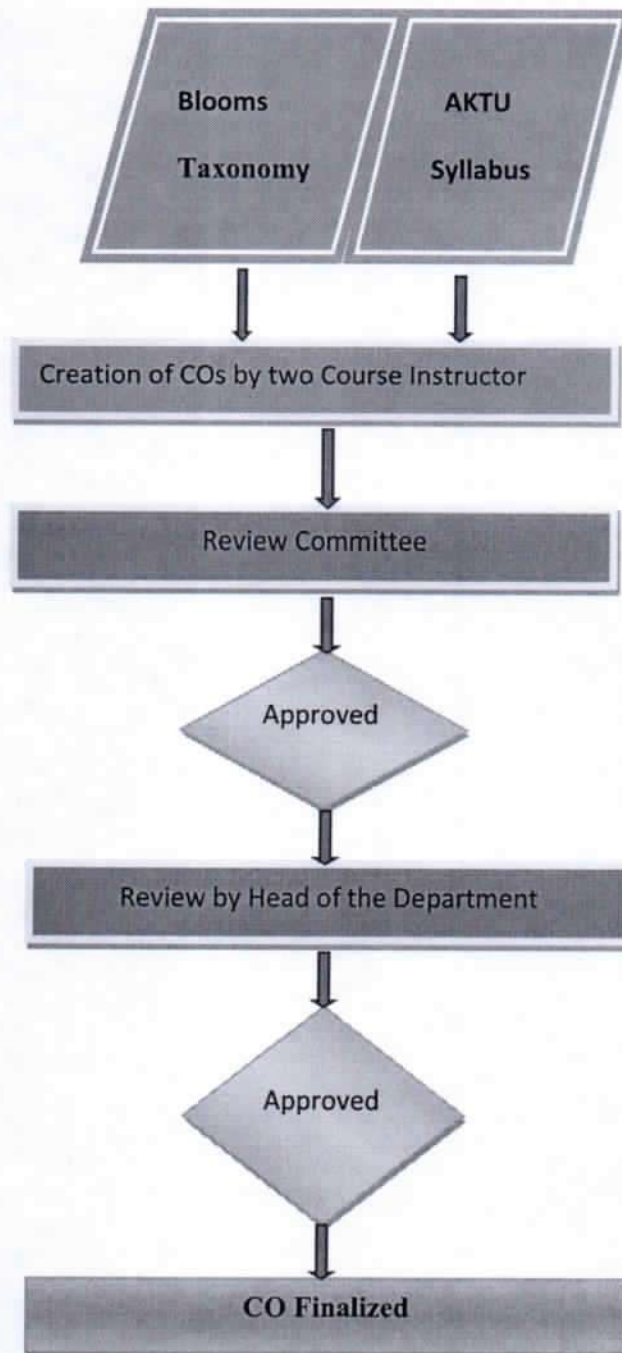




**Assessment process for calculating the attainment of POs and PSOs:****Assessment Process for Evaluation of Course Outcomes:**

Assessment tools and its frequency, the responsible authority to collect the data and its relevant COs, are tabulated as follows:

Fig.



### Assessment Method & Attainment Level :

**Step 1:** Obtain Course Outcome.

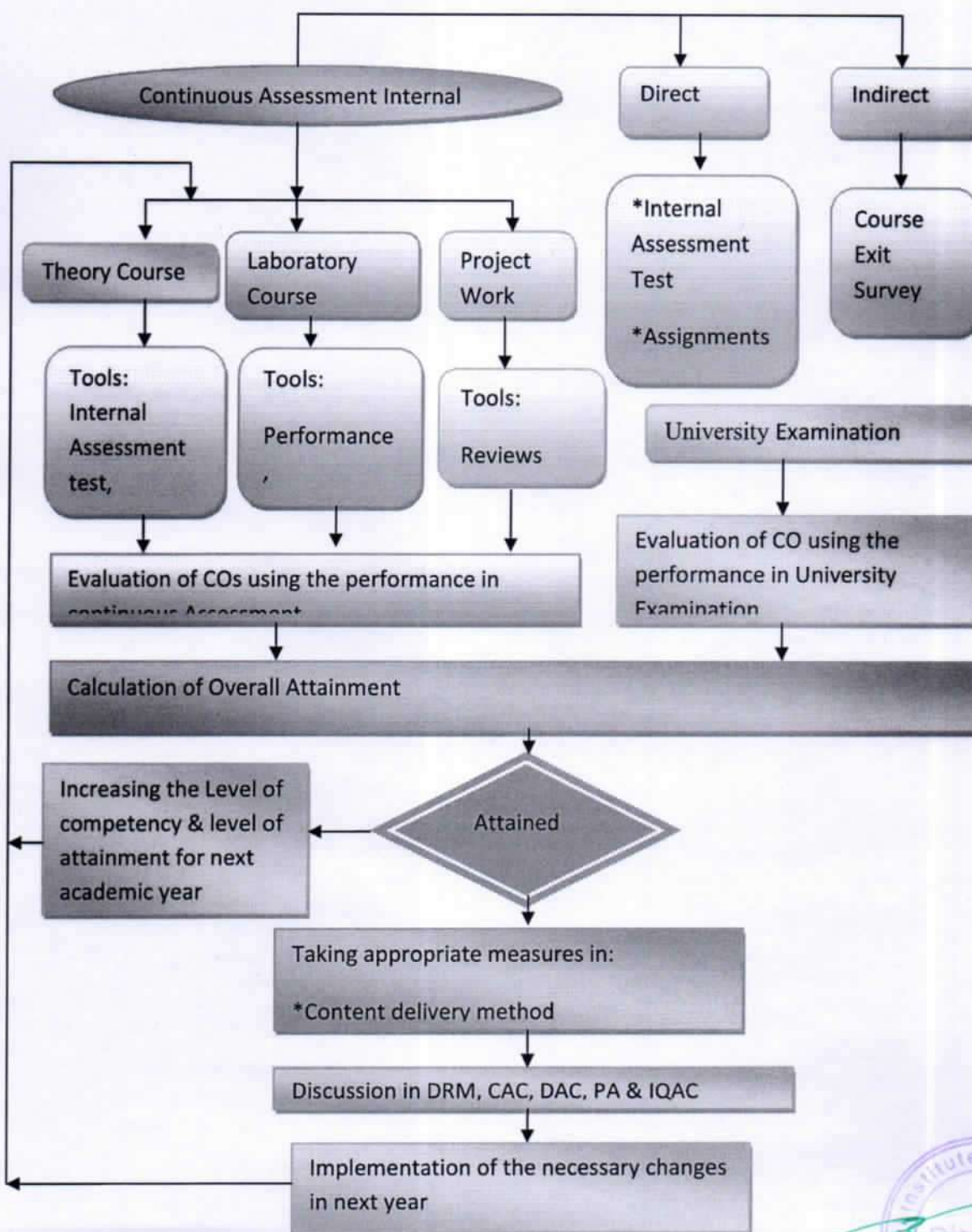
**Step 2:** Mapping of CO with PO.

**Step 3:** Setting weight- age for CO assessment.

**Step 4:** COs measurement through assessment.

**Step 5:** Obtain PO attainment table through direct and indirect method.

**Process for CO Attainment:** Fig.



### Methodology for Evaluating Course Outcomes (COs) Internal

Concurrent Evaluation Criteria				
Pattern	Nature of Course Full / Half Credit	Concurrent Evaluation	Nature of Exam/Assignments/Others	Converted Marks
1. B. Tech Odd/Even (2021- 22)	1- Generic Core Courses (Full credit)	Internal Test 1 (sessional)	Test 1 Marks- 40 ( CO1 & CO2- 20 Mark each )  Test 2 ( PUT) Marks - 60 (CO <sub>3</sub> , CO4 & CO5 - 20 Marks each)	Test 1: CO1 & CO2 (Objective) = 20 (10 marks each)
		&		Test 2 : CO3,CO4 & CO5 (Descriptive) = 30 ( 10 marks each )
2. MBA- Odd/Even (2021- 22)	2- Generic Elective courses (Half Credit)	Assignments (Unit wise)	Unit-1 Unit-2 Unit-3 Unit-4 Unit-5	25 (5 Marks Each)
		*Others	Seminar/Presentation/Project (Mini/Major)/Viva/Quiz/Work shop etc.	25 (5 Marks Each)
			Total Marks (Each COs)-	100

\* Presentation / Case Study / Role Play/ Industrial Visit/Field Visit/ Seminar/Guest Lecture /MCQs/Research paper writing/ Viva etc.



## Methodology for Evaluating Course Outcomes (COs) External

### COMPUTATION OF SGPA, YGPA & CGPA

The Dr. A.P.J. Abdul Kalam Technical University (APJAKTU), Lucknow adopts absolute grading system wherein the marks are converted to grades and every semester results will be declared with semester grade point average (SGPA). Yearly Grade Point Average (YGPA) shall be calculated at each year by calculating from the formula given in section 14.4 (b) of an academic year. The Cumulative Grade Point Average (CGPA) shall be calculated at the end of last semester of the program. The grading system is with the following letter grades and grade points scale as given below:

Score (Marks) Range	(AKTU Guidelines) Letter Grade	Level	Grade Points
$\geq 90$	A <sup>+</sup>	Outstanding	10
<90	A	Excellent	9
<80 , $\geq 70$	B <sup>+</sup>	Very Good	8
<70 $\geq 60$	B	Good	7
<60 $\geq 50$	C	Above Average	6
<50 $\geq 45$	D	Average	5
<45 $\geq 40$	E	Poor	4
<40	F	Fail	00







## Direct Assessment of COs, POs & PSOs:

(Quality / Relevance of Assessment Process)

### Assessment Process for Evaluation of Theory Courses

Assessment Tools and its frequency, the responsible authority to collect the data and its relevant COs, are tabulated in tables.

Assessment Tools	Assessment Period	Assessed By	Reviewed By	Mapping with COs
Class Test -1 Class Test -2 (Pre University Test) (PUT)	Once Per Semester	Course Instructor	Department Advisory committee (DAC)	Relevant CO
Assignments-1	Once Per Semester	Course Instructor	Department Advisory committee (DAC)	CO1
Assignments-2				CO2
Assignments-3				CO3
Assignments-4				CO4
Assignments-5				CO5
Quizzes	Once Per Semester	Course Instructor	Department Advisory committee (DAC)	All COs
University Semester Exam	Once Per Semester	Course Instructor	Department Advisory committee (DAC)	All COs



Assessment Tools	Assessment Period	Assessed By	Reviewed By	Mapping with COs
Lab Experiment	Throughout Semester	Course Instructor	Department Advisory committee (DAC)	All COs
Viva Voce	Throughout Semester	Course Instructor		All COs
Practical Record	Throughout Semester	Course Instructor		All COs
Internal Practical Exam	Once Per Semester	Internal Examiners		All COs
University Semester Exam	Once Per Semester	Internal Examiners appointed by the department & External Examiners Appointed by AKTU		All COs

### Assessment Process for Evaluation of Laboratory Courses



Assessment Tools		Assessed Period	Assessed By	Reviewed By	Mapping with COs						
Topic Approval		7 <sup>th</sup> Sem	Project Review committee	Department Advisory committee (DAC)	All COs						
Progress Presentation 1	Presentation Skill	7 <sup>th</sup> Sem			Project Review committee	Department Advisory committee (DAC)	All COs				
	Viva Voce										
	Implementation report										
	Faculty Interaction										
Progress Presentation 2	Presentation Skill	7 <sup>th</sup> Sem					Project Review committee	Department Advisory committee (DAC)	All COs		
	Viva Voce										
	Implementation report										
	Faculty Interaction										
Internal Final Presentation	Presentation Skill	8 <sup>th</sup> Sem							Project Review committee	Department Advisory committee (DAC)	All COs
	Viva Voce										
	Implementation report										
	Faculty Interaction										
External Presentation	Presentation Skill	8 <sup>th</sup> Sem	Project Review committee	Department Advisory committee (DAC)	All COs						
	Viva Voce										
	Implementation report										
	Faculty Interaction										

**Assessment Process for Evaluation of Project Courses**



### Assessment Process for Evaluation of Seminar Courses & Industrial Training Courses

Assessment Tools		Assessed Period	Assessed By	Reviewed By	Mapping with COs
External Presentation	Presentation Skill  Viva Voce  Implementation report  Faculty Interaction	Once Per Semester	Seminar Review committee	Department Advisory committee (DAC)	All COs

### Assessment Process for General Proficiency Course

Assessment Tools	Assessed Period	Assessed By	Reviewed By	Mapping with COs
Sports Event	Throughout the program	Sports Committee	Department Advisory Committee (DAC)	CO1
Cultural Events		Cultural Committee		CO2
Technical Events		Technical Committee		CO3
Societal & Environmental Events		Societal & Environmental Committee		CO4
Discipline		Proctorial Board		CO5



### CO Attainment Target Level Methods:

There can be several methods. e.g.

- Same target is identified for all the COs of the course i.e. target can be class average marks  $\geq 60\%$  marks.
- Target are same for all COs and are set in terms of performance level of different groups of students. While this method classifies students in to different categories, it does not provide any specific clues to plans for improvements of quality of learning. e.g.

Target			
(% of students getting < 50)	(% of students getting >50 and < 65)	(% of students getting >65 and < 80)	(% of students getting $\geq 80$ )
10	40	40	10

- Targets are set for each CO of a course separately. It does not directly indicate the distribution of performance among the students. However, it has the advantage of finding out the difficulty of specific COs. Fig.

COs	Target ( Class Average)
CO1	70%
CO2	80%
CO3	75%
CO4	65%
CO5	80%

Target Level :

- Targets are quantized in to certain level, 3 being the most common number of levels.
- Level 3: If 70% students scoring  $\geq 60\%$  of Marks allocated to CO
- Level 2: If 60% student scoring  $\geq 60\%$  of Marks in CO
- Level 1: If 50% student scoring  $\geq 60\%$  of Marks in CO
- Level 0: If < 50% student scoring  $\geq 60\%$  of Marks in CO

Aim is to attain Level 3



**CO Attainment Calculation:**

The course outcomes for all the courses are calculated in terms of percentage using the formula.

$$\text{COx in \%} = \frac{\text{Marks obtained by the students in COx}}{\text{Maxium marks allotted in COx}} \times 100$$

Where  $x = [1 \text{ to } N]$ ,  $N = \text{Number of COs}$

Each course outcome is calculated for all the students based on marks obtained by the students.

$$\text{COx Attainment in \%} = \left[ \frac{\text{No. of Students scored } \geq 70 \text{ of Marks in COx}}{\text{Total No. of students}} \times 100 \right]$$

Where  $x = [1 \text{ to } N]$ ,  $N = \text{Number of Cox}$

CO Attainment Level is defined based on the following criteria:

Fig.

Assessment Method	COs Attainment Level	
Internal Assessment	Level 3	If 70% students scoring $\geq 70\%$ of Marks in COs
	Level 2	If 60% student scoring $\geq 70\%$ of Marks in COs
	Level 1	If 50% student scoring $\geq 70\%$ of Marks in COs

After calculating the attainment level of each COs from the performance of Internal Assessment Test 1 & 2, the attainment level of Internal Assessment Test is calculated with ratio of sum of all the COs attained by total number of COs as shown below:



$$\text{IAT Attainment Level} = \frac{\text{Sum of all COs attained by students}}{\text{Total Number of COs}}$$

Where IAT = Internal Assessment Test

IAT is calculated as follows:

$$\text{E.g. Internal Assessment Test} = \frac{\text{CO1} + \text{CO2} + \text{CO3} + \text{CO4} + \dots}{5}$$

Based on university grade, the attainment level of COs is calculated. The attainment level is decided on the following criteria.

Fig.

Assessment Method	Cox Attainment Level	
University (External) Assessment	Level 3	If 60% student scoring $\geq$ 50% of Marks in University Exam
	Level 2	If 50% student scoring $\geq$ 50% of Marks in University Exam
	Level 1	If 40% student scoring $\geq$ 50% of Marks in University Exam

The university attainment level is calculated as follows

$$\text{Over all CO Attainment Direct} = \left( \frac{\sum_{i=1}^n \text{CO}_i}{n} \times 0.2 \right) + (\text{UA} \times 0.8)$$

(Where n = Number of course outcome)

$$\text{Over all Attainment} = \frac{(\text{DTA} + \text{UA}) + \text{IDA}}{2}$$

(Where UA = University Attainment level)

(DTA= Direct Attainment level, IDA = Indirect attainment Level)



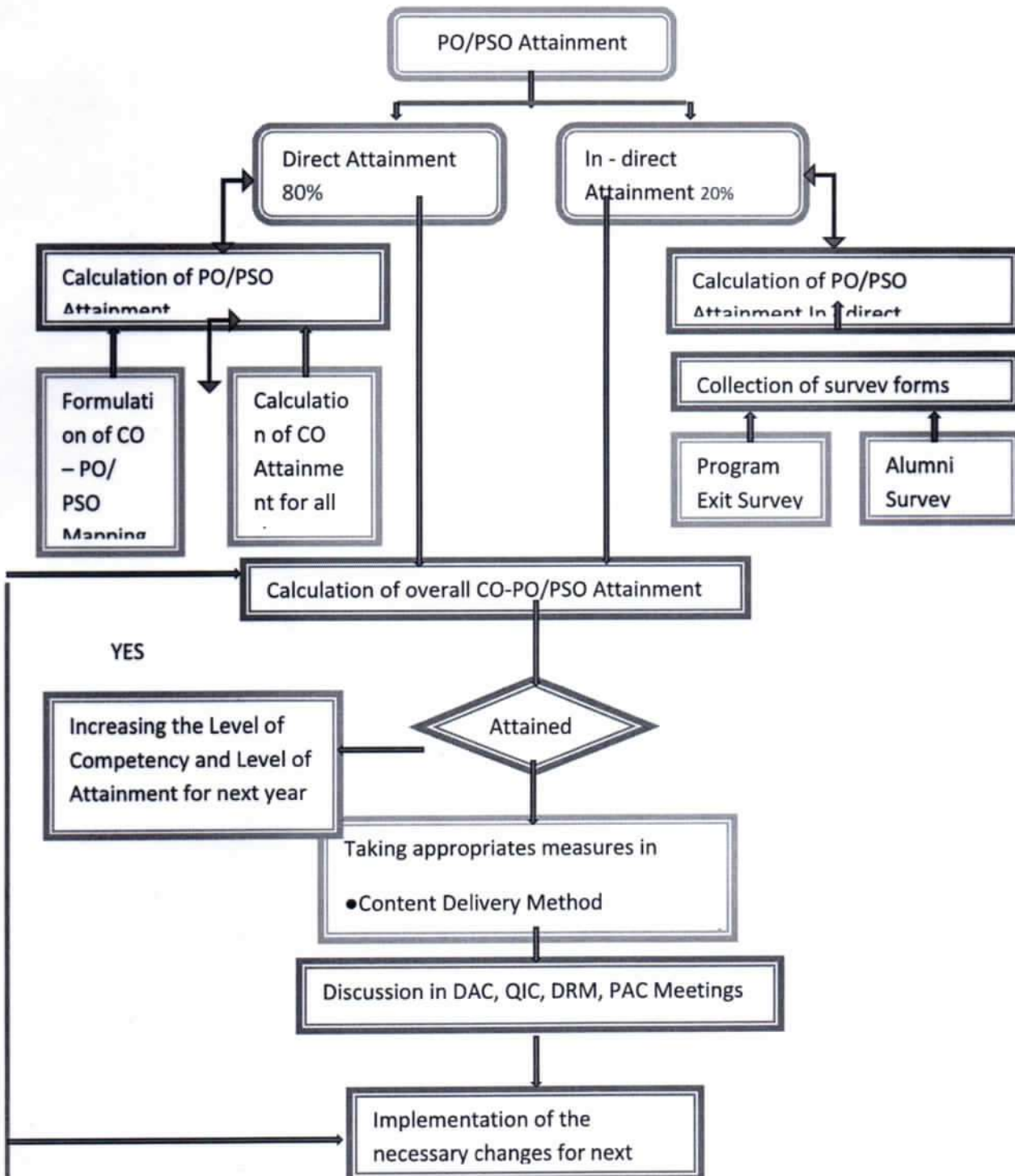
**CO ATTAINMENT: SAMPLE  
(Machine Learning Techniques)**







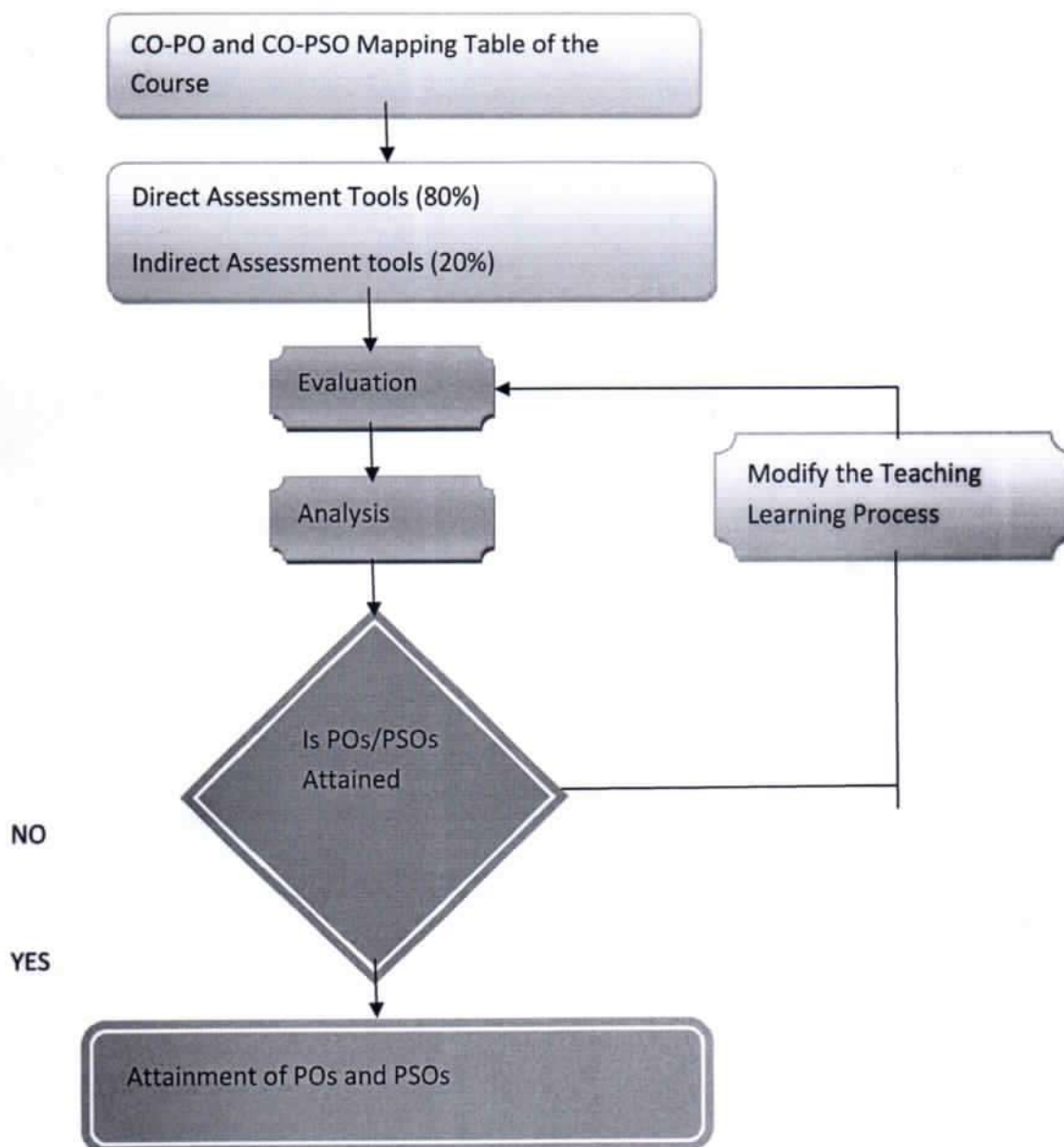
### Process for PO/PSO Attainment:



Assessment tools and processes used for measuring the Attainment of each of the Program Outcomes (POs) and Program Specific Outcomes (PSOs):



Evaluation of attainment of POs and PSOs is based on direct and indirect assessment tools. Direct assessment of POs and PSOs is based on student's performance in continuous assessment and university examination. Indirect assessment is based on Program Exit Survey (Theory & Practical). The various direct and indirect tools and its frequency, the responsible authority to collect data for assessing the attainment of each POs and PSOs are given below table.



**Course level PO & PSO Attainment Calculation:**

The PO & PSO attainment for the course is calculated using following formula

PO Attainment of Course ( $X$ )

$$= \text{CO Attainment \% of Course } (X) \times \text{PO}_y \text{ mapping value of course}(x)/100$$

PO Attainment Level of Course ( $X$ )

$$= (\text{weighted Average Value of PO} \times \text{CO Attainment Average}) / 3$$

PSO Attainment of Course ( $X$ )

$$= \text{CO Attainment \% of Course } (X) \times \text{PSO}_y \text{ mapping value of course}(x)/100$$

(Where,  $y = [1 \text{ to } N]$ ,  $N = \text{Number of Program Outcomes}$ )

PSO Attainment Level of Course ( $X$ )

$$= (\text{weighted Average Value of PSO} \times \text{CO Attainment Average}) / 3$$

(Where,  $y = [1 \text{ to } N]$ ,  $N = \text{Number of Program Specific Outcomes}$ )



## DATA OF PO & PSO ATTAINMENT IN VARIOUS COURSES

KASHI INSTITUTE OF TECHNOLOGY, VARANASI															
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING															
CO-PO ATTAINMENT															
Course : B.Tech			Semester: VIII			Academic Year: 2021-2022									
Course: K08 MI						Course Name : CLOUD COMPUTING									
CO-PO & PSO MAPPING															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	1	-	-	-	-	-	-	-	3	1	-
CO2	1	1	2	1	1	-	-	-	-	-	-	-	2	1	1
CO3	2	-	2	-	1	-	-	-	-	-	-	-	1	-	-
CO4	2	1	2	-	2	-	-	-	-	-	-	-	-	-	1
CO5	2	1	1	1	-	-	-	-	-	-	-	-	-	1	1

CO-PO & PSO COMPUTATION																															
COs	CO Attainment %	PO1		PO2		PO3		PO4		PO5		PO6		PO7		PO8		PO9		PO10		PO11		PO12		PSO1		PSO2		PSO3	
		P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A		
CO1	65.52	2	1.3	1	0.66	2	1.3	2	1.31	1	0.66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1.97	1	0.66	-	-
CO2	58.62	1	0.6	1	0.59	2	1.2	1	0.59	1	0.59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1.17	1	0.59	1	0.586
CO3	44.83	2	0.9	-	-	2	0.9	-	-	1	0.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.45	-	-	-	
CO4	44.83	2	0.9	1	0.45	2	0.9	-	-	2	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.448	
CO5	47.13	2	0.9	1	0.47	1	0.5	1	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.47	1	0.471	
<b>TOTAL</b>		<b>9</b>	<b>4.6</b>	<b>4</b>	<b>2.16</b>	<b>9</b>	<b>4.7</b>	<b>4</b>	<b>2.37</b>	<b>5</b>	<b>2.59</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>6</b>	<b>3.59</b>	<b>3</b>	<b>1.71</b>	<b>3</b>	<b>1.506</b>
Attainment %		51		54		53		59.2		51.7																59.8		57.1		50.19	
Attained Level		2		2		2		2		2																2		2		2	
WEIGHTED AVERAGE VALUE OF POs/PSOs		0.93		0.54		0.95		0.79		0.65																1.20		0.57		0.50	
P = PLANNED																															
A = ATTAINED																															

CO Attainments			
S.N	COs NO	CO Percentage	CO ATM Level
1	CO1	65.52	2
2	CO2	58.62	2
3	CO3	44.83	1
4	CO4	44.83	1
5	CO5	47.13	1
AVERAGE		52.18	1.60

Action Taken Report	
COs	Action Taken
CO1	Attained
CO2	Attained
CO3	Attained
CO4	Attained
CO5	Attained

Signature of faculty

Head of the Department  
Computer Science & Engineering



KASHI INSTITUTE OF TECHNOLOGY, VARANASI															
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING															
Course / B.Tech				Semester: 6th				Academic Year: 2021-2022				Course Name / COMPILER DESIGN			
CO-PO & PSO MAPPING															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	-	-	-	-	-	-	-	-	3	1	-
CO2	1	2	1	1	1	-	-	-	-	-	-	-	2	-	1
CO3	2	1	2	-	-	-	-	-	-	-	-	-	1	1	-
CO4	2	1	1	-	-	-	-	-	-	-	-	-	-	-	1
CO5	2	1	1	-	-	-	-	-	-	-	-	-	-	1	1

CO- PO & PSO COMPUTATION																															
COs	CO Attainment %	PO1		PO2		PO3		PO4		PO5		PO6		PO7		PO8		PO9		PO10		PO11		PO12		PSO1		PSO2		PSO3	
		P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A		
CO1	58.62	2	1.2	1	0.59	2	1.2	2	1.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1.76	1	0.59	-	-	
CO2	58.62	1	0.6	2	1.17	1	0.6	1	0.59	1	0.59	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1.17	-	-	1	0.586	
CO3	44.83	2	0.9	1	0.45	2	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO4	45.98	2	0.9	1	0.46	1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.46	
CO5	47.13	2	0.9	1	0.47	1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.471		
<b>TOTAL</b>		<b>9</b>	<b>4.5</b>	<b>6</b>	<b>3.14</b>	<b>7</b>	<b>3.6</b>	<b>3</b>	<b>1.76</b>	<b>1</b>	<b>0.59</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>6</b>	<b>3.38</b>	<b>3</b>	<b>1.51</b>	<b>3</b>	<b>1.517</b>	
Attainment %		50		52.3		51		58.6		58.6		-		-		-		-		-		-		56.3		50.2		50.57			
Attained Level		2		2		2		2		2		-		-		-		-		-		-		2		2		2			
WEIGHTED AVERAGE VALUE OF POs/PSOs		0.90		0.63		0.72		0.88		0.59		-		-		-		-		-		-		1.13		0.50		0.51			
P = PLANNED		A = ATTAINED																													

CO Attainments			
S.N.	COs NO.	CO Percentage	CO ATM Level
1.	CO1	58.62	2
2.	CO2	58.62	2
3.	CO3	44.83	1
4.	CO4	45.98	1
5.	CO5	47.13	1
AVERAGE		51.03	1.60

Action Taken Report	
COs	Action Taken
CO1	Attained
CO2	Attained
CO3	Attained
CO4	Attained
CO5	Attained

Signature of faculty

Head of the Department  
Computer Science & Engineering

KASHI INSTITUTE OF TECHNOLOGY, VARANASI																															
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING																															
Course : B.Tech		Semester: 4 <sup>TH</sup>					Academic Year: 2021-2022					Course Name : COMPUTER NETWORK																			
Course Code: KCS-403																															
CO-PO & PSO MAPPING																															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3																
CO1	2	1	2	1	-	-	-	-	-	-	-	-	2	1	-																
CO2	1	1	1	1	1	-	-	-	-	-	-	-	2	1	1																
CO3	2	2	1	2	-	-	-	-	-	-	-	-	1	1	-																
CO4	1	1	1	1	-	-	-	-	-	-	-	-	-	-	1																
CO5	2	1	1	1	-	-	-	-	-	-	-	-	-	-	1																
CO-PO & PSO COMPUTATION																															
COs	CO Attainment %	PO1		PO2		PO3		PO4		PO5		PO6		PO7		PO8		PO9		PO10		PO11		PO12		PSO1		PSO2		PSO3	
		P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A
CO1	59.77	2	1.2	1	0.6	2	1.2	1	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1.2	1	0.6	-	-
CO2	59.77	1	0.6	1	0.6	1	0.6	1	0.6	1	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1.2	-	-	1	0.6
CO3	44.83	2	0.9	2	0.9	1	0.4	2	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.45	1	0.45	-	-
CO4	45.98	1	0.5	1	0.46	1	0.5	1	0.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.46	-	-	
CO5	47.13	2	0.9	1	0.47	1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.47	-	-	
<b>TOTAL</b>		<b>8</b>	<b>4.1</b>	<b>6</b>	<b>3.02</b>	<b>6</b>	<b>3.2</b>	<b>5</b>	<b>2.55</b>	<b>1</b>	<b>0.6</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>5</b>	<b>2.84</b>	<b>4</b>	<b>1.98</b>	<b>1</b>	<b>0.6</b>
Attainment %		51		50.4		53		51		59.8																56.8		49.4		59.8	
Attained Level		2		2		2		2		2																2		2		2	
WEIGHTED AVERAGE VALUE OF POs/PSOs		0.82		0.60		0.63		0.64		0.60																0.55		0.49		0.60	
P = PLANNED		A = ATTAINED																													

CO Attainments			
S.N.	COs NO.	CO Percentage	CO ATM Level
1	CO1	59.77	2
2	CO2	59.77	2
3	CO3	44.83	1
4	CO4	45.98	1
5	CO5	47.13	1
AVERAGE		51.49	1.60

Action Taken Report	
COs	Action Taken
CO1	Attained
CO2	Attained
CO3	Attained
CO4	Attained
CO5	Attained

Head of the Department  
Computer Science & Engineering

Signature of faculty

KASHI INSTITUTE OF TECHNOLOGY																															
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING																															
Course : B.Tech		Semester: 5 <sup>TH</sup>					Academic Year: 2021-2022					Course Name : Data-Analytic																			
Course Code: KCT-401																															
CO-PO & PSO MAPPING																															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3																
CO1	2	1	2	2	-	-	-	1	-	1	-	-	3	1	-																
CO2	2	1	3	1	1	-	-	-	-	-	-	-	3	1	1																
CO3	2	1	2	-	-	-	-	-	-	-	-	-	-	1	-																
CO4	2	1	1	1	-	-	-	-	-	1	-	1	-	1	-																
CO5	2	1	1	-	-	-	-	-	-	-	-	-	-	1	-																
CO-PO & PSO COMPUTATION																															
COs	CO Attainment %	PO1		PO2		PO3		PO4		PO5		PO6		PO7		PO8		PO9		PO10		PO11		PO12		PSO1		PSO2		PSO3	
		P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A		
CO1	100.00	2	2	1	1	2	2	2	2	-	-	-	-	-	1	1	-	-	1	1	-	-	-	-	-	3	3	1	1	1	1
CO2	100.00	2	2	1	1	3	3	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	1	1	1	
CO3	100.00	2	2	1	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-		
CO4	100.00	2	2	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	-	1	1	-		
CO5	100.00	2	2	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-		
<b>TOTAL</b>		<b>10</b>	<b>10</b>	<b>5</b>	<b>5</b>	<b>9</b>	<b>9</b>	<b>4</b>	<b>4</b>	<b>1</b>	<b>1</b>	-	-	-	-	<b>1</b>	<b>1</b>	-	-	<b>2</b>	<b>2</b>	-	<b>1</b>	<b>1</b>	<b>7</b>	<b>7</b>	<b>4</b>	<b>4</b>	<b>1</b>	<b>1</b>	
Attainment %		100		100		100		100		100																100		100		100	
Attained Level		3		3		3		3		3																3		3		3	
WEIGHTED AVERAGE VALUE OF POs/PSOs		2.00		1.00		1.80		1.33		1.00																2.33		1.00		1.00	
P = PLANNED		A = ATTAINED																													

CO Attainments			
S.N.	COs NO.	CO Percentage	CO ATM Level
1	CO1	100.00	3
2	CO2	100.00	3
3	CO3	100.00	3
4	CO4	100.00	3
5	CO5	100.00	3

Action Taken Report	
COs	Action Taken
CO1	Attained
CO2	Attained
CO3	Attained
CO4	Attained
CO5	Attained



KASHI INSTITUTE OF TECHNOLOGY,VARANASI															
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING															
Course : B.Tech		Semester : 3		Academic Year: 2021-2022											
Course: ICC-466				Course Name: Design and Analysis of Algorithms											

CO-PO & PSO MAPPING															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	2	2	-	-	-	-	-	-	-	-	3	1	-
CO2	2	2	1	1	1	-	-	-	-	-	-	-	2	-	1
CO3	2	2	2	1	-	-	-	-	-	-	-	-	1	1	-
CO4	2	1	1	-	-	-	-	-	-	-	-	-	-	-	1
CO5	1	1	1	-	-	-	-	-	-	-	-	-	-	1	1

		PO1		PO2		PO3		PO4		PO5		PO6		PO7		PO8		PO9		PO10		PO11		PO12		PSO1		PSO2		PSO3			
COs	CO Attainment %	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A		
CO1	58.62	1	0.6	2	1.17	2	1.2	2	1.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1.76	1	0.59	-	-			
CO2	58.62	2	1.2	2	1.17	1	0.6	1	0.59	1	0.59	-	-	-	-	-	-	-	-	-	2	1.17	-	-	-	-	-	-	1	0.586			
CO3	44.83	2	0.9	2	0.9	2	0.9	1	0.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.45	1	0.45	-	-			
CO4	45.98	2	0.9	1	0.46	1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.46			
CO5	47.13	1	0.5	1	0.47	1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.47	1	0.471			
<b>TOTAL</b>	<b>8</b>	<b>4</b>	<b>8</b>	<b>4.17</b>	<b>7</b>	<b>3.6</b>	<b>4</b>	<b>2.21</b>	<b>1</b>	<b>0.59</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	<b>3.38</b>	<b>3</b>	<b>1.51</b>	<b>3</b>	<b>1.517</b>		
Attainment %		51		52.2		51		55.2		58.6		-		-		-		-		-		-		-		6		3.38		3		1.517	
Attained Level		2		2		2		2		2		-		-		-		-		-		-		-		2		2		2			
WEIGHTED AVERAGE VALUE OF POs/PSOs		0.81		0.83		0.72		0.74		0.59		-		-		-		-		-		-		-		1.13		0.50		0.51			
P = PLANNED		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-			
A = ATTAINED		A		A		A		A		A		-		-		-		-		-		-		-		A		A		A			

CO Attainments			
S.N.	COs NO.	CO Percentage	CO ATM Level
1	CO1	58.62	2
2	CO2	58.62	2
3	CO3	44.83	1
4	CO4	45.98	1
5	CO5	47.13	1
AVERAGE		51.03	1.60

Action Taken Report	
COs	Action Taken
CO1	Attained
CO2	Attained
CO3	Attained
CO4	Attained
CO5	Attained

Head of the Department  
Computer Science & Engineering

Signature of faculty

KASHI INSTITUTE OF TECHNOLOGY,VARANASI															
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING															
Course : B.Tech		Semester : 4TH		Academic Year: 2021-2022											
Course: ICC-044				Course Name: DATA COMPRESSION											

CO-PO & PSO MAPPING															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	-	-	-	-	-	-	-	-	2	1	-
CO2	2	1	1	1	1	-	-	-	-	-	-	-	2	-	1
CO3	2	1	2	-	-	-	-	-	-	-	-	-	1	1	-
CO4	1	1	1	-	-	-	-	-	-	-	-	-	-	-	1
CO5	2	1	1	-	-	-	-	-	-	-	-	-	-	-	1

		PO1		PO2		PO3		PO4		PO5		PO6		PO7		PO8		PO9		PO10		PO11		PO12		PSO1		PSO2		PSO3			
COs	CO Attainment %	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A		
CO1	59.77	2	1.2	1	0.6	2	1.2	2	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1.2	1	0.6	-	-			
CO2	59.77	2	1.2	1	0.6	1	0.6	1	0.6	1	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1.2	-	-	1	0.6			
CO3	44.83	2	0.9	1	0.45	2	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.45	1	0.45	-	-			
CO4	45.98	1	0.5	1	0.46	1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.46	-	-			
CO5	47.13	2	0.9	1	0.47	1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.47	-	-			
<b>TOTAL</b>	<b>9</b>	<b>4.7</b>	<b>5</b>	<b>2.57</b>	<b>7</b>	<b>3.6</b>	<b>3</b>	<b>1.79</b>	<b>1</b>	<b>0.6</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	<b>2.84</b>	<b>4</b>	<b>1.98</b>	<b>1</b>	<b>0.6</b>			
Attainment %		52		51.5		52		59.8		59.8		-		-		-		-		-		-		-		5		2.84		4		1.98	
Attained Level		2		2		2		2		2		-		-		-		-		-		-		-		2		2		2			
WEIGHTED AVERAGE VALUE OF POs/PSOs		0.94		0.51		0.72		0.90		0.60		-		-		-		-		-		-		-		0.95		0.49		0.60			
P = PLANNED		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-			
A = ATTAINED		A		A		A		A		A		-		-		-		-		-		-		-		A		A		A			

CO Attainments			
S.N.	COs NO.	CO Percentage	CO ATM Level
1	CO1	59.77	2
2	CO2	59.77	2
3	CO3	44.83	1
4	CO4	45.98	1
5	CO5	47.13	1
AVERAGE		51.49	1.60

Action Taken Report	
COs	Action Taken
CO1	Attained
CO2	Attained
CO3	Attained
CO4	Attained
CO5	Attained

Head of the Department  
Computer Science & Engineering

Signature of faculty



KASHI INSTITUTE OF TECHNOLOGY, VARANASI																
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING																
Course : B.Tech			Semester : III				Academic Year: 2021-2022						Course Name : DATA STRUCTURE			
Course : CCS-202																
CO-PO & PSO MAPPING																
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	2	1	2	2	-	-	-	-	-	-	-	-	3	1	-	
CO2	2	1	3	1	1	-	-	-	-	-	-	-	2	1	1	
CO3	2	1	2	-	-	-	-	-	-	-	-	-	1	-	-	
CO4	2	1	1	-	-	-	-	-	-	-	-	-	-	-	1	
CO5	2	1	1	-	-	-	-	-	-	-	-	-	-	1	1	

COs		PO1		PO2		PO3		PO4		PO5		PO6		PO7		PO8		PO9		PO10		PO11		PO12		PSO1		PSO2		PSO3	
		P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A
CO1	65.52	2	1.3	1	0.66	2	1.3	2	1.31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1.97	1	0.66	-	-
CO2	58.62	2	1.2	1	0.59	3	1.8	1	0.59	1	0.59	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1.17	1	0.59	1	0.586	
CO3	44.83	2	0.9	1	0.45	2	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.45	-	-	-	-	
CO4	44.83	2	0.9	1	0.45	1	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.448		
CO5	47.13	2	0.9	1	0.47	1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.47	1	0.471	
TOTAL		10	5.2	5	2.61	9	4.9	3	1.9	1	0.59	-	-	-	-	-	-	-	-	-	-	-	-	-	6	3.59	3	1.71	3	1.506	
Attainment %			52		52.2		54		63.2		58.6															59.8		57.1		50.19	
Attained Level			2		2		2		2		2															2		2		2	
WEIGHTED AVERAGE VALUE OF POs/PSOs			1.04		0.52		0.98		0.95		0.59															1.20		0.57		0.50	
P = PLANNED				A = ATTAINED																											

CO Attainments			
S.N.	COs NO.	CO Percentage	CO ATM Level
1	CO1	65.52	2
2	CO2	58.62	2
3	CO3	44.83	1
4	CO4	44.83	1
5	CO5	47.13	1
AVERAGE		52.18	1.60

Action Taken Report	
COs	Action Taken
CO1	Attained
CO2	Attained
CO3	Attained
CO4	Attained
CO5	Attained

Signature of faculty

Head of the Department  
Computer Science & Engineering

KASHI INSTITUTE OF TECHNOLOGY, VARANASI																
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING																
Course : B.Tech			Semester : 5th				Academic Year: 2021-2022						Course Name : Machine Learning Technology			
Course : ECS-455																
Name of the Faculty : Mr. Sanjay Kumar Chandra																
CO-PO & PSO MAPPING																
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	2	1	2	0	1								2	2	1	
CO2	2	2	1	1	2								3	1	1	
CO3	2	2	2	2	1								1	1	1	
CO4	2	1	1	2	2								1	1	1	
CO5	2	2	2	2	3								1	1	1	

COs		PO1		PO2		PO3		PO4		PO5		PO6		PO7		PO8		PO9		PO10		PO11		PO12		PSO1		PSO2		PSO3	
		P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A
CO1	93.10	2	1.86	1	0.93	2	1.86	-	-	1	0.93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1.86	2	1.86	1	0.93
CO2	95.40	2	1.91	2	1.91	1	0.95	1	0.95	2	1.91	-	-	-	-	-	-	-	-	-	-	-	-	-	3	2.86	1	0.95	1	0.95	
CO3	26.44	2	0.53	2	0.53	2	0.53	2	0.53	1	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.26	1	0.26	1	0.26	
CO4	42.53	2	0.85	1	0.43	1	0.43	2	0.85	2	0.85	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.43	1	0.43	1	0.43	
CO5	48.28	2	0.97	2	0.97	2	0.97	2	0.97	3	1.45	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.48	1	0.48	1	0.48	
TOTAL		10	6.11	8	4.76	8	4.74	7	3.3	9	5.4	-	-	-	-	-	-	-	-	-	-	-	-	-	8	5.9	6	3.99	5	3.06	
Attainment %			61.1		59.5		59.2		47.1		60		####	####	####	####	####	####	####	####	####	####	####	####	####		73.7		66.5		61.1
Attained Level			2		2		2		2		2		####	####	####	####	####	####	####	####	####	####	####	####		3		2		2	
WEIGHTED AVERAGE VALUE OF POs/PSOs			1.22		0.95		0.95		0.82		1.08		####	####	####	####	####	####	####	####	####	####	####	####		1.18		0.80		0.61	
P = PLANNED				A = ATTAINED																											

CO Attainments			
S.N.	COs NO.	CO Percentage	CO ATM Level
1	CO1	93.10	3
2	CO2	95.40	3
3	CO3	26.44	1
4	CO4	42.53	1
5	CO5	48.28	1
AVERAGE		61.15	2.00

Action Taken Report	
COs	Action Taken
CO1	Attained
CO2	Attained
CO3	Attained
CO4	Attained
CO5	Attained

Signature of faculty

Head of the Department  
Computer Science & Engineering

KASHI INSTITUTE OF TECHNOLOGY															
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING															
Course : B.Tech				Semester : 8				Academic Year : 2021-2022				Course Code : KSU-801			
CO-PO & PSO MAPPING															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	-	-	-	-	-	-	-	-	3	1	-
CO2	2	1	3	1	1	1	1	1	1	1	1	1	3	1	1
CO3	2	1	2	-	-	-	-	-	-	-	-	-	1	-	-
CO4	2	1	1	-	-	-	-	-	-	-	-	-	1	-	-
CO5	2	1	1	-	-	-	-	-	-	-	-	-	1	-	-

CO-PO & PSO COMPUTATION																															
COs	CO Attainment %	PO1		PO2		PO3		PO4		PO5		PO6		PO7		PO8		PO9		PO10		PO11		PO12		PSO1		PSO2		PSO3	
		P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A
CO1	35.44	2	0.7	1	0.35	2	0.7	2	0.71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1.06	1	0.35	-	-
CO2	35.44	2	0.7	1	0.35	3	1.1	1	0.35	1	0.35	1	0.35	1	0.35	1	0.35	1	0.35	1	0.4	1	0.35	1	0.35	3	1.06	1	0.35	1	0.354
CO3	69.62	2	1.4	1	0.7	2	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.7	-	-	-	-	
CO4	69.62	2	1.4	1	0.7	1	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.7	-	-	
CO5	69.62	2	1.4	1	0.7	1	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.7	-	-	
TOTAL		10	5.6	5	2.8	9	4.6	3	1.06	1	0.35	1	0.35	1	0.35	1	0.35	1	0.35	1	0.4	1	0.35	1	0.35	7	2.82	4	2.1	1	0.354
Attainment %		36		55.9		51		35.4		35.4		35.4		35.4		35.4		35.4		35		35.4		35.4		40.3		52.5		35.44	
Attained Level		2		2		2		2		2		2		2		2		2		2		2		2		2		2		2	
WEIGHTED AVERAGE VALUE OF POs/PSOs		1.12		0.56		0.91		0.53		0.35		0.35		0.35		0.35		0.35		0.35		0.35		0.35		0.94		0.53		0.35	
P = PLANNED		A = ATTAINED																													

CO Attainments			
S.N.	COs NO.	CO Percentage	CO ATM Level
1	CO1	35.44	1
2	CO2	35.44	1
3	CO3	69.62	2
4	CO4	69.62	2
5	CO5	69.62	2

Action Taken Report	
COs	Action Taken
CO1	Attained
CO2	Attained
CO3	Attained
CO4	Attained
CO5	Attained

KASHI INSTITUTE OF TECHNOLOGY															
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING															
Course : B.Tech				Semester : 7				Academic Year : 2021-2022				Course Code : KSU-701			
CO-PO & PSO MAPPING															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	-	-	-	-	-	-	-	-	3	1	-
CO2	2	1	3	1	1	1	1	1	1	1	1	1	3	1	1
CO3	2	1	2	-	-	-	-	-	-	-	-	-	1	-	-
CO4	2	1	1	-	-	-	-	-	-	-	-	-	1	-	-
CO5	2	1	1	-	-	-	-	-	-	-	-	-	1	-	-

CO-PO & PSO COMPUTATION																															
COs	CO Attainment %	PO1		PO2		PO3		PO4		PO5		PO6		PO7		PO8		PO9		PO10		PO11		PO12		PSO1		PSO2		PSO3	
		P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A		
CO1	34.57	2	0.7	1	0.35	2	0.7	2	0.69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1.04	1	0.35	-	-
CO2	34.57	2	0.7	1	0.35	3	1	1	0.35	1	0.35	1	0.35	1	0.35	1	0.35	1	0.35	1	0.3	1	0.35	1	0.35	3	1.04	1	0.35	1	0.35
CO3	69.14	2	1.4	1	0.69	2	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.69	-	-	-	-	
CO4	69.14	2	1.4	1	0.69	1	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.69	-	-	
CO5	69.14	2	1.4	1	0.69	1	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.69	-	-	
TOTAL		10	5.5	5	2.77	9	4.5	3	1.04	1	0.35	1	0.35	1	0.35	1	0.35	1	0.35	1	0.3	1	0.35	1	0.35	7	2.77	4	2.07	1	0.35
Attainment %		55		55.3		50		34.6		34.6		34.6		34.6		34.6		34.6		35		34.6		34.6		39.5		51.9		34.6	
Attained Level		2		2		2		2		2		2		2		2		2		2		2		2		2		2		2	
WEIGHTED AVERAGE VALUE OF POs/PSOs		1.11		0.55		0.90		0.52		0.35		0.35		0.35		0.35		0.35		0.35		0.35		0.35		0.92		0.52		0.35	
P = PLANNED		A = ATTAINED																													

CO Attainments			
S.N.	COs NO.	CO Percentage	CO ATM Level
1	CO1	34.57	1
2	CO2	34.57	1
3	CO3	69.14	2
4	CO4	69.14	2
5	CO5	69.14	2

Action Taken Report	
COs	Action Taken
CO1	Attained
CO2	Attained
CO3	Attained
CO4	Attained
CO5	Attained



KASHI INSTITUTE OF TECHNOLOGY																															
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING																															
Course : B.Tech				Semester : VI				Academic Year:2021-2022				Course Code : K08 808																			
Course Name : Software Project Management																															
CO-PO & PSO MAPPING																															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3																
CO1	2	1	2	2	-	-	-	-	-	-	-	-	3	1	-																
CO2	2	2	2	1	1	-	-	-	-	-	-	-	3	1	1																
CO3	1	1	2	-	-	-	-	-	-	-	-	-	1	-	-																
CO4	2	1	1	2	1	-	-	-	-	-	-	-	-	-	1																
CO5	2	2	1	-	-	-	-	-	-	-	-	-	-	1	1																
CO- PO & PSO COMPUTATION																															
COs	CO Attainment %	PO1		PO2		PO3		PO4		PO5		PO6		PO7		PO8		PO9		PO10		PO11		PO12		PSO1		PSO2		PSO3	
		P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A
CO1	59.30	2	1.2	1	0.59	2	1.2	2	1.19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1.78	1	0.59	-	-
CO2	59.30	2	1.2	2	1.19	2	1.2	1	0.59	1	0.59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1.78	1	0.59	1	0.59
CO3	45.35	1	0.5	1	0.45	2	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.45	-	-	-	-
CO4	45.35	2	0.9	1	0.45	1	0.5	2	0.91	1	0.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.45
CO5	47.67	2	1	2	0.95	1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.48	1	0.48
<b>TOTAL</b>		<b>9</b>	<b>4.7</b>	<b>7</b>	<b>3.64</b>	<b>8</b>	<b>4.2</b>	<b>5</b>	<b>2.69</b>	<b>2</b>	<b>1.05</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>7</b>	<b>4.01</b>	<b>3</b>	<b>1.66</b>	<b>3</b>	<b>1.52</b>
Attainment %		52		52		53		53.7		52.3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	57.3		55.4		50.8	
Attained Level		2		2		2		2		2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	2		2		2	
WEIGHTED AVERAGE VALUE OF POs/PSOs		0.94		0.73		0.84		0.90		0.52		-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.34		0.55		0.51	
P = PLANNED		A = ATTAINED																													

CO Attainments			
S.N.	COs NO.	CO Percentage	CO ATM Level
1	CO1	59.30	2
2	CO2	59.30	2
3	CO3	45.35	1
4	CO4	45.35	1
5	CO5	47.67	1

Action Taken Report	
COs	Action Taken
CO1	Attained
CO2	Attained
CO3	Attained
CO4	Attained
CO5	Attained

KASHI INSTITUTE OF TECHNOLOGY																															
DEPARTMENT OF INFORMATION TECHNOLOGY																															
Course : B.Tech				Semester : VI				Academic Year:2021-2022				Course Code : K08 808																			
Course Name : Software Project Management																															
CO-PO & PSO MAPPING																															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3																
CO1	2	1	2	2	-	-	-	-	-	-	-	-	3	1	-																
CO2	2	2	2	1	1	-	-	-	-	-	-	-	3	1	1																
CO3	1	1	2	-	-	-	-	-	-	-	-	-	1	-	-																
CO4	2	1	1	2	1	-	-	-	-	-	-	-	-	-	1																
CO5	2	2	1	-	-	-	-	-	-	-	-	-	-	1	1																
CO- PO & PSO COMPUTATION																															
COs	CO Attainment %	PO1		PO2		PO3		PO4		PO5		PO6		PO7		PO8		PO9		PO10		PO11		PO12		PSO1		PSO2		PSO3	
		P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A
CO1	60.00	2	1.2	1	0.6	2	1.2	2	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1.8	1	0.6	-	-
CO2	60.00	2	1.2	2	1.2	2	1.2	1	0.6	1	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1.8	1	0.6	1	0.6
CO3	60.00	1	0.6	1	0.6	2	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.6	-	-	-	-
CO4	60.00	2	1.2	1	0.6	1	0.6	2	1.2	1	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.6	
CO5	60.00	2	1.2	2	1.2	1	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.6	1	0.6
<b>TOTAL</b>		<b>9</b>	<b>5.4</b>	<b>7</b>	<b>4.2</b>	<b>8</b>	<b>4.8</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>1.2</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>7</b>	<b>4.2</b>	<b>3</b>	<b>1.8</b>	<b>3</b>	<b>1.8</b>
Attainment %		60		60		60		60		60		-	-	-	-	-	-	-	-	-	-	-	-	-	-	60		60		60	
Attained Level		2		2		2		2		2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	2		2		2	
WEIGHTED AVERAGE VALUE OF POs/PSOs		1.08		0.84		0.96		1.00		0.60		-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.40		0.60		0.60	
P = PLANNED		A = ATTAINED																													

CO Attainments			
S.N.	COs NO.	CO Percentage	CO ATM Level
1	CO1	60.00	2
2	CO2	60.00	2
3	CO3	60.00	2
4	CO4	60.00	2
5	CO5	60.00	2

Action Taken Report	
COs	Action Taken
CO1	Attained
CO2	Attained
CO3	Attained
CO4	Attained
CO5	Attained



KASHI INSTITUTE OF TECHNOLOGY,VARANASI															
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING															
CO-PO ATTAINMENT															
Course : B.Tech		Semester: 3RD				Academic Year: 2021-2022									
Course Code : X45 301		Course Name : Technical Communication													
Name of the Faculty : Mr. Nitish Prasad															
CO-PO & PSO MAPPING															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	1	1	1	2	2	2	2	2	1	-	-
CO2	-	-	-	-	1	1	3	3	2	1	2	-	-	-	-
CO3	-	-	-	-	-	-	1	2	3	2	2	1	1	-	-
CO4	-	-	-	-	2	1	-	1	3	2	3	2	2	-	-
CO5	-	-	-	-	-	-	2	3	1	1	1	1	1	-	-

		PO1		PO2		PO3		PO4		PO5		PO6		PO7		PO8		PO9		PO10		PO11		PO12		PSO1		PSO2		PSO3		
COs	CO Attainment %	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	
CO1	65.52	-	-	-	-	-	-	-	-	-	-	1	0.66	1	0.66	2	1.31	2	1.3	2	1.31	2	1.31	2	1.31	2	1.31	1	0.66	-	-	
CO2	58.62	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.59	1	0.59	3	1.8	3	1.76	2	1.172	1	0.59	2	1.17	-	-		
CO3	45.98	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.46	2	0.92	3	1.4	2	0.92	2	0.92	1	0.46	1	0.46	-	-		
CO4	45.98	-	-	-	-	-	-	-	-	-	-	2	0.92	1	0.46	-	1	0.46	3	1.4	2	0.92	3	1.379	2	0.92	2	0.92	-	-		
CO5	51.72	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1.03	3	1.6	1	0.52	1	0.517	1	0.52	1	0.52	1	0.52	-	-		
<b>TOTAL</b>												3	1.57	2	1.11	3	1.7	8	4.31	14	7.4	10	5.43	10	5.299	7	3.79	7	3.72	-	-	
Attainment %		###		####		###		####		####		####		52.5		55.7		56.7		53.9		53		54.3		52.99		54.2		53.2		###
Attained Level		###		####		###		####		####		####		###		###		###		###		###		###		###		###		###		###
WEIGHTED AVERAGE VALUE OF POs/PSOs		###		####		###		####		####		###		0.79		0.56		0.57		0.86		1.48		1.09		1.06		0.76		0.74		###
P = PLANNED		A = ATTAINED																														

CO Attainments			
S.N.	COs NO.	CO Percentage	CO ATM Level
1	CO1	65.52	2
2	CO2	58.62	2
3	CO3	45.98	1
4	CO4	45.98	1
5	CO5	51.72	2
AVERAGE		53.56	2.00

Action Taken Report	
COs	Action Taken
CO1	Attained
CO2	Attained
CO3	Attained
CO4	Attained
CO5	Attained

Head of the Department  
Computer Science & Engineering

Signature of faculty

KASHI INSTITUTE OF TECHNOLOGY															
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING															
Course : B.Tech		Semester: V				Academic Year: 2021-2022									
Course Code : KIT 301		Course Name : Web Technology													
Name of the Faculty : Mr. Nitish Prasad															
CO-PO & PSO MAPPING															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	2	-	-	-	-	-	-	-	-	3	1	-
CO2	2	1	3	1	1	-	-	-	-	-	-	-	-	-	-
CO3	2	1	2	-	-	-	-	-	-	-	-	-	1	-	-
CO4	2	1	1	-	-	-	-	-	-	-	-	-	-	1	-
CO5	2	1	1	-	-	-	-	-	-	-	-	-	-	1	-

		PO1		PO2		PO3		PO4		PO5		PO6		PO7		PO8		PO9		PO10		PO11		PO12		PSO1		PSO2		PSO3	
COs	CO Attainment %	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A
CO1	100.00	2	2	1	1	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	1	1	-	-
CO2	100.00	2	2	1	1	3	3	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	100.00	2	2	1	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	
CO4	100.00	2	2	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	
CO5	100.00	2	2	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	
<b>TOTAL</b>		10	10	5	5	9	9	3	3	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	3	3	-	-
Attainment %		100		100		100		100		100		-	-	-	-	-	-	-	-	-	-	-	-	-	-	100		100		-	
Attained Level		3		3		3		3		3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	3		3		-	
WEIGHTED AVERAGE VALUE OF POs/PSOs		2.00		1.00		1.80		1.50		1.00		-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.00		1.00		-	
P = PLANNED		A = ATTAINED																													

CO Attainments			
S.N.	COs NO.	CO Percentage	CO ATM Level
1	CO1	100.00	3
2	CO2	100.00	3
3	CO3	100.00	3
4	CO4	100.00	3
5	CO5	100.00	3

Action Taken Report	
COs	Action Taken
CO1	Attained
CO2	Attained
CO3	Attained
CO4	Attained
CO5	Attained

## **INDIRECT ATTAINMENT:**

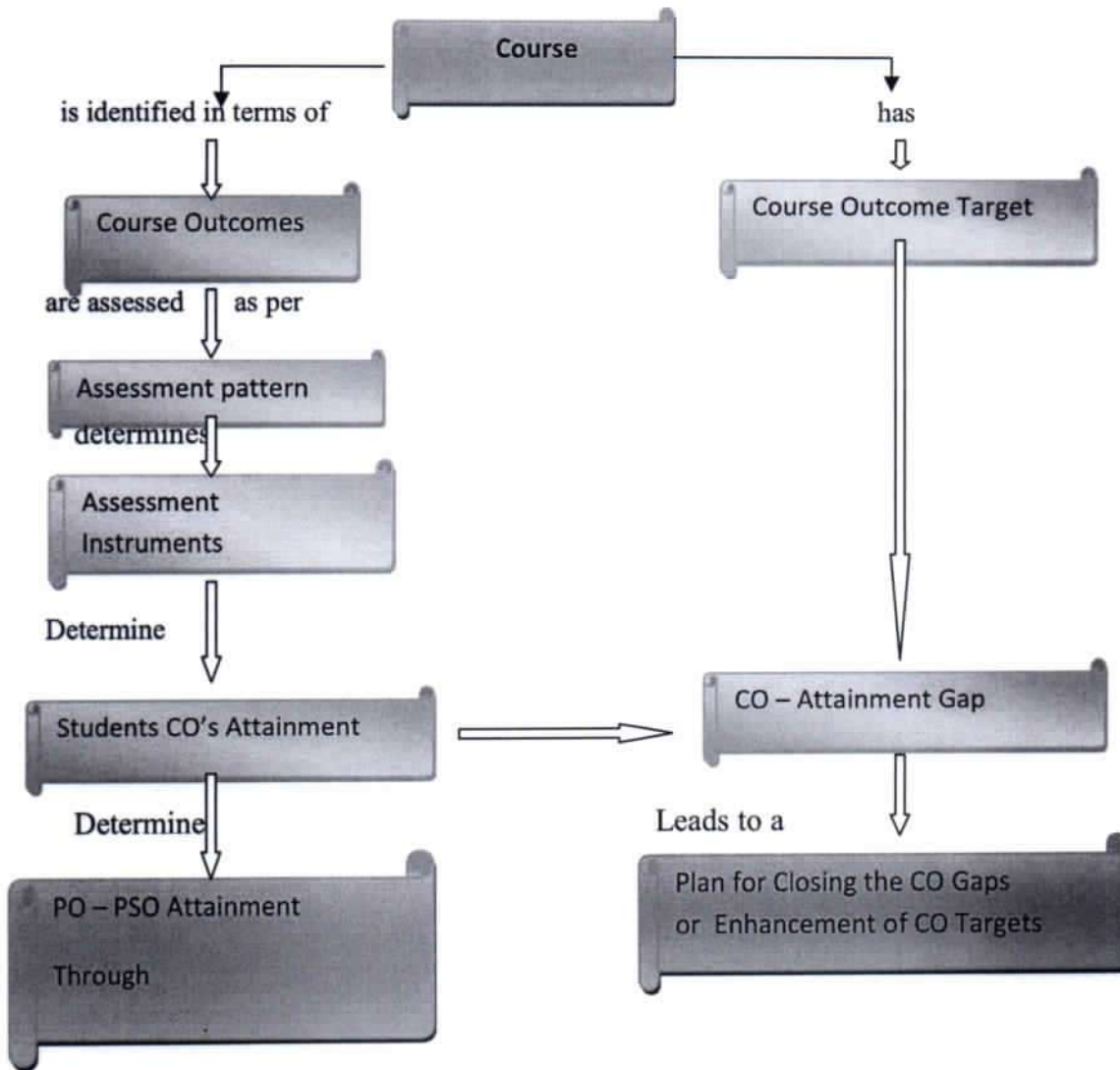


KASHI INSTITUTE OF TECHNOLOGY, VARANASI				
DEPARTMENT OF COMPUTERS SCIENCE AND ENGINEERING (AL&VE)				
INDIRECT ATTAINMENT				
Course : B.Tech		Semester: 5th		Academic Year: 2021-2022
Course Code : KCS-055		Course Name : Machine Learning Techniques		
Name of the Faculty : Mr. Santosh Kumar Chauhan				
S.No	Roll No.	Name	MM (20)	Percentage
1	1842810016	ANUSHKA SHARMA	15	75
2	1842810023	BRJESH KUMAR YADAV	13	65
3	1842810033	HIMANSHU TIWARI	14	70
4	1842810092	VAISHNAVI MISHRA	14	70
5	1904280100001	ABHAY PRATAP SAMRAT	16	80
6	1904280100002	ABHISHEK DWIVEDI	15	75
7	1904280100004	AJAY SINGH	18	90
8	1904280100005	AKRITI YADAV	18	90
9	1904280100006	AMAN PATEL	18	90
10	1904280100007	AMIRHAMZA	18	90
11	1904280100008	ANCHAL SINGH	15	75
12	1904280100009	ANIKET KUMAR MISHRA	13	65
13	1904280100010	ANJALI MAURYA	14	70
14	1904280100011	ANKUL KUMAR SINGH	15	75
15	1904280100012	ASHISH KUMAR BHATTACHARYA	13	65
16	1904280100013	ASHISH KUMAR BIND	18	90
17	1904280100014	ASHUTOSH TRIPATHI	18	90
18	1904280100015	AWANISH KUMAR YADAV	18	90
19	1904280100016	BIJENDRA KUMAR	16	80
20	1904280100017	BITU KUMAR SHA	17	85
21	1904280100018	DEEPAANSHU SINGH	17	85
22	1904280100019	DEEPSHIKHA SINGH	16	80
23	1904280100020	DEEPSHIKHA TRIPATHI	16	80
24	1904280100021	DEVENDRA PRASAD	15	75
25	1904280100022	DIKSHA TRIPATHI	15	75
26	1904280100023	DIL RAJ GAUTAM	15	75
27	1904280100024	EKTA PATEL	18	90
28	1904280100025	FALAK NAAZ	18	90
29	1904280100027	HARSHIT RANJAN RAI	16	80
30	1904280100028	HARSHITA VISHWAKARMA	20	100
31	1904280100029	HIMANSHU DEV PANDEY	18	90
32	1904280100030	JAI VISHNOO JAISWAL	18	90
33	1904280100031	KISHAN SONI	16	80
34	1904280100032	KM PRACHI SINGH	18	90
35	1904280100033	KM PRIYANKA SHARMA	16	80
36	1904280100034	KM WAGEESHA TRIPATHI	16	80
37	1904280100035	KM. APRAJITA PANDEY	18	90
38	1904280100036	MANIKANT	20	100
39	1904280100037	MANISH KUMAR PATEL	15	75
40	1904280100038	MATAVAR PRASAD	18	90
41	1904280100041	MOHD WASEEM AHMED	20	100
42	1904280100042	NAVEEN MISHRA	20	100
43	1904280100043	NEHA SINGH	20	100
44	1904280100044	NEHA MISHRA	15	75
45	1904280100045	NISHANT KUMAR	17	85
46	1904280100046	NITIN KUMAR SAROJ	17	85
47	1904280100047	NITISH KUMAR PANDEY	17	85
48	1904280100048	PRADYUMN AGRAWAL	15	75
49	1904280100049	PUJA KUMARI	15	75
50	1904280100050	RATI SINGH	16	80
51	1904280100051	RATNESH DUBEY	18	90
52	1904280100052	RISHABH SINGH	15	75
53	1904280100054	RISHU RAI	12	60
54	1904280100055	RITIK DWIVEDI	12	60
55	1904280100056	ROHIT KUMAR BIND	12	60
56	1904280100058	SANDIPAN CHAKRABORTY	12	60
57	1904280100059	SANTOSH KUMAR	13	65
58	1904280100060	SAPTRISHI DAS	13	65
59	1904280100061	SATYAM TRIPATHI	13	65
60	1904280100062	SAURABH KUMAR	16	80
61	1904280100063	SHAHABENAWAZ ALAM	18	90
62	1904280100064	SHAILESH KUMAR SINGH	17	85
63	1904280100065	SHANU SAINI	17	85
64	1904280100066	SHIVAM MISHRA	17	85
65	1904280100067	SHOEB ANSARI	16	80
66	1904280100068	SHRUTI MAURYA	16	80
67	1904280100070	SUMIT SINGH	15	75
68	1904280100072	SUNIL	18	90
69	1904280100074	SURAJ KUMAR DHUSIYA	20	100
70	1904280100076	SURAJ VERMA	20	100
71	1904280100077	VAIBHAV KUSHWAHA	15	75
72	1904280100078	VIKAS PRAJAPATI	18	90
73	1904280100079	VIPUL SINGH	16	80
74	1904280100080	VISHAKHA JAISWAL	17	85
75	1904280100081	VISHAL TIWARI	17	85
76	1904280100082	VIVEK KUMAR TIWARI	18	90
77	1904280109003	ASHISH MAURYA	17	85
78	2004280108001	RAVI KUMAR VERMA	17	85
79	2004280109001	ABHISHEK RAWAT	15	75
80	2004280109002	ACHALA SRIVASTAVA	20	100
81	2004280109003	AMITESH RANJAN	15	75
82	2004280109004	DEEKSHA KESHARWANI	18	90
83	2004280109005	KM ANSHEE GOND	18	90
84	2004280109007	RAVINDRA KUMAR GAUTAM	16	80
85	2004280109008	SHASHI SHEKHAR AZAD	16	80
86	2004280109009	SHIVANI SINGH	16	80
87	2004280109010	SHOMYA SRIVASTAVA	15	75
Total number of Students				90
Number of Student Secured $\geq$ 70% Marks				60
% of Students Attained Attainment Level				67
				2

If 70% Students Scoring $\geq$ 70% Marks	
ATTAINMENT LEVEL 3	
If 60% Students Scoring $\geq$ 70% Marks	
ATTAINMENT LEVEL 2	
If 50% Students Scoring $\geq$ 70% Marks	
ATTAINMENT LEVEL 1	
<b>Action Taken Report</b>	
COs	Action Taken
CO1, CO2, CO3, CO4, CO5	Attained



### CO attainment and Gap Analysis:



### Calculation of Gap Analysis:

$$\text{Gap} = \text{Target in level} - \text{Attainment in level}$$





KASHI INSTITUTE OF TECHNOLOGY, VARANASI				
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING				
OVERALL ATTAINMENT				
Course : B.Tech		Semester: 5th		Academic Year: 2021-2022
Course Code : KCS-055		Course Name : Machine Learning		
Techniques				
Name of the Faculty : Mr. Santosh Kumar Chauhan				
DIRECT ATM LEVEL	AKTU END SEM ATM LEVEL	DT*0.2+AE*0.8	INDIRECT ATM LEVEL	OVERALL ATM LEVEL
1.80	3	2.76	2	2.38
OVERALL ATM AVG.		2.38		

Gap Analysis		
Target Attainment level	Attainment Level	Gap = Target in level - Attainment in level
3.00	2.38	0.62

Sign of Faculty

Head of the Department  
Computer Science & engineering

### Action taken after identifying the gaps:

Convey the identified gaps to Board of Studies:

Considering the feedback from faculty, PAC committee, students and DAB committee, a representation is prepared by the department to convey the gaps and possible action plan to the Board of Studies (BOS). These inputs are taken into consideration by BOS while revising the syllabus)

Following activities are planned to fulfil the identified gap.

Action taken for identified Gap
*Students are encouraged to Enrol NPTEL online certification course and to appear for certification exam.
*Remedial Classes will be conducted.
*Bridge classes for units.
*Assignments for critical topic.
*Solution for university question for unit.