SREE ABIRAAMI ARTS AND SCIENCE COLLEGE FOR WOMEN
Approved by Govt. of Tamil Nadu | Affiliated to Thiruvalluvar University
Recognized under section 2(f) of the UGC Act, 1956 | An ISO 9001:2015 Certified Institution
Katpadi Road, Keelalathur, Gudiyattam-635803. Vellore District, Tamil Nadu, India.

CO - PO Attainment Manual

MAPPING COs WITH POs AND PSOs

UG Department of Computer Applications

B.C.A.,Computer Applications (2020-2022)

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1. Institution Vision and Mission:

Vision:

- To emerge as a renowned women institution in academic excellence, equipping students with intellectual, spiritual and emotional strength to face the global challenges.

Mission:

- To set a standard in the realm of education by combining several fields of study.
- To educate and equip women with knowledge and skills needed for successful life.
- To provide value based education that integrates arts, science and spirituality.
- To provide faculty with domain specific knowledge and ICT skills.
- To concentrate on sensitive social issues through outreach and extension activities.

2. About the Department

The Department of Computer Applications was established in the year 2017 with the objective of imparting quality education in the field of Computer Applications. With rapidly evolving technology and the continuous need for innovation, the department has always produced quality Professionals. The aim of this department is to develop core competence in Computer Science and prepare the students to carry out development work, as well as take up challenges in research. The department has very good faculty strength, who are all active learners and whose knowledge, insights and perspectives gained are transformed to keep their students fresh, topical, and timely. The driving mission for the department is to advance the frontiers of research in computer science and automation and offer world-class pedagogical and research experience to its students.

Vision

To create the most conducive environment for quality academic and technology-oriented education in Computer Science and Applications, prepare the students for a globalized technological environment and mould them to serve the society.

To empower the graduates to be technologically adept, innovative, self-motivated, responsible citizens in providing globally standard education through a conducive Teaching and learning environment which responds swiftly to the challenges of the ever-changing world.

Mission

- To impart high quality professional training at the industry level with an emphasis on basic principles of computer science and its applications.
- To impart moral and ethical values, and interpersonal skills to the students.
- To empower the students with required skills to solve the complex technological problems of modern society and provide them with a framework for promoting collaborative and multidisciplinary activities.
- To achieve academic excellence by imparting in-depth knowledge to the students through effective pedagogies and hands on training on latest tools and technologies.
- To prepare the students to be continuous learners and absorb professional skills in the connected world.
- To strengthen the industry-Academia interface, helps the graduates to emerge as leaders in academics or an inspiring revolutionary in entrepreneurship

3. Program Outcomes and Program Specific Outcomes

Program Outcomes (POs)

PO1: Understand and apply mathematical foundation, financial accounting and domain knowledge for the conceptualization of computing models from defined problems.

PO2 : Understand, analyze and develop computer programs in the areas related to algorithm, web design and IoT for efficient design of computer based system and the young professional for a range of computer organization, techniques of Computer Networking, Software Engineering, E-Commerce, Database management, Multimedia, Artificial Intelligence, Advance Java and Computer Applications.

PO3 : Familiarity and practical competence with a broad range of programming language and open-source platforms. A project is a study of factual information for comprehending and applying the various concepts of the course into practice.

PO4 : Understand the progressive way for their future and also helps them to know the real purpose of their life. Develop sensitivity for the natural, physical and human resources in the environment.

PO5 : Acquiring moral culture, communicative competency and potential job opportunities through learning the language subjects.

Program Specific Outcomes (PSOs)

PSO1: In order to enhance the programming skills of the young IT professionals, the program has introduced the concept of project development in each language and technology learned during the semester. The ability to work independently on a large software project while also functioning as an effective team member.

- PSO2 : After completion of the Bachelor in Computer Application, students will be able to work in IT industries, various public and private sectors etc. They will be able to work on different profiles like web developers, UI designers, testers, coders, SEO developers etc. Pursue higher studies in the area of Computer Science/Applications. Take up self-employment in Indian & global software market.

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4. Blooms Taxonomy

Bloom's Taxonomy was developed in 1956 by educational psychologist Dr. Benjamin Bloom to promote higher forms of thinking in education, such as analyzing and evaluating concepts, processes, procedures, and principles, rather than simply memorizing facts. It is most often used when designing educational, training, and learning processes.

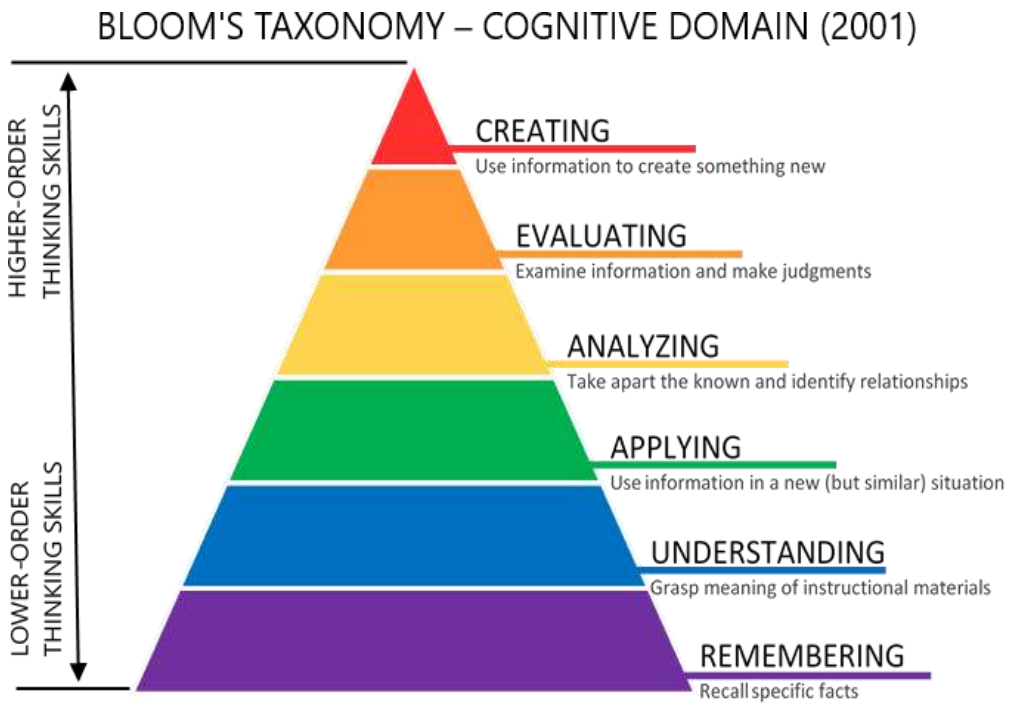

Figure 1.Pictorial representation of Blooms Taxonomy

S. No.	Domain	Keywords	Examples
1.	**Remembering:** Recall or retrieve previous learned information.	Defines, describes, identifies, knows, labels, lists, matches, names, outlines, recalls, recognizes, and reproduces, select, state.	Recite a policy. Quote Prices from memory to a customer. Recite the safety rules.
2.	**Understanding:** Comprehending the meaning, translation, interpolation, and interpretation of instruction and problem in one's own words.	Comprehends, converts, defends, distinguishes, estimates, explains, extends, generalizes, gives an example, infers, interprets, paraphrases, predicts, rewrites, summarizes, translates	Rewrite the principles of writing. Explain one's own words the steps for performing a complex task. Translate an equation into computer spreadsheet.

3.	**Analyzing:** Students being able to draw connections between ideas, thinking critically, to break down information into the sum of its parts.	Analyse Appraise Compare Contrast Distinguish Explore Infer Investigate	Recognize logical fallacies in reasoning. Gathers information from a department and selects the require tasks for training.
4.	**Applying:** Use a concept in a new situation or unprompted use of an abstraction. Applies what was learned in the classroom into novel situation in the work place.	applies, changes, computes, constructs, demonstrates, discovers, manipulates, modifies, operates, predicts, prepares, produces, relates, shows, solves, uses	students can take their knowledge and understanding, applying it to different situations. This usually involves students answering questions or solving problems.
5.	**Evaluating:** Make judgments about the value of ideas or materials.	appraises, compares, concludes, contrasts, criticizes, critiques, defends, describes, discriminates, evaluates, explains, interprets, justifies, relates, summarizes supports	Select the most effective solution. Hire the most qualified candidate. Explain and justify a new budget.
6.	**Creating:** Build a structure or pattern from diverse elements. Put parts together to form a whole, with emphasis on creating a new meaning or structure.	categorizes, combines, compiles, composes, creates, devises, designs, explains, generates, modifies, organizes, plans, rearranges, reconstructs, relates, reorganizes, revises, rewrites, summarizes, tells, writes	Write a company operations or process manual. Design a machine to perform a specific task. Integrates training from several sources to solve a problem. Revises and process to improve the outcome.

5. Course Outcomes (COs):

Statements indicating what a student can do after completing a course successfully. Each Course has some Course Outcomes. The course content covered in each module of a course is used to define the CO statements. There could be 5 or 6 COs for each course. Bloom's Taxonomy is used to define the keywords used to define COs.

THIRUVALLUVAR UNIVERSITY
BACHELOR OF COMPUTER APPLICATIONS
DEGREE COURSE

DEGREE COURSE UNDER CBCS

(With effect from 2020 - 2021)

The Course of Study and the Scheme of Examination

S. No.	Part	Study Components / Course Title		Ins. Hrs / week	Credit	Title of the Paper	Maximum Marks		
		SEMESTER I					**CIA**	**Uni. Exam**	**Total**
1.	I	Language	Paper-1	6	4	Tamil/Other Languages	25	75	100
2.	II	English (CE)	Paper-1	6	4	**Communicative English I**	25	75	100
3.	III	Core Theory	Paper-1	6	4	Programming in C	25	75	100
4.	III	Core Practical	Practical-1	3	2	Programming in C Lab	25	75	100
5.	III	Allied -1	Paper-1	7	3	Mathematical Foundations - I	25	75	100
6.	**III**	**PE**	**Paper 1**	**6**	**3**	**Professional English I**	**25**	**75**	**100**
7.	IV	Environmental Studies		2	2	Environmental studies	25	75	100
		Sem. Total		**36**	**22**		**175**	**525**	**700**
		SEMESTER II					**CIA**	**Uni. Exam**	**Total**
8.	I	Language	Paper-2	6	4	Tamil/Other Languages	25	75	100
9.	II	English (CE)	Paper-2	6	4	**Communicative English II**	25	75	100
10.	III	Core Theory	Paper-2	5	4	C++ & Data Structure	25	75	100
11.	III	Core Practical	Practical-2	2	2	C++ and Data Structures Lab	25	75	100
12.	III	Allied-1	Paper-2	7	5	Mathematical Foundations - II	25	75	100
13.	**III**	**PE**	**Paper 1**	**6**	**3**	**Professional English II**	25	75	100
14.	IV	Value Education		2	2	Value Education	25	75	100
15.	IV	Soft Skill		2	1	Soft Skill	25	75	100
		Sem. Total		**36**	**25**		**200**	**600**	**800**

SEMESTER III							CIA	Uni. Exam	Total
16.	III	Core Theory	Paper-3	5	4	Programming in JAVA	25	75	100
17.	III	Core Theory	Paper-4	4	4	E-Commerce	25	75	100
18.	III	Core Theory	Paper-5	5	4	Operations Research	25	75	100
19.	III	Core Practical	Practical-3	4	3	Programming in JAVA Lab	25	75	100
20.	III	ALLIED-2	Paper-3	7	3	Financial Accounting-I	25	75	100
21.	IV	Skill based Subject I	Paper-1	3	2	Web Technology	25	75	100
22.	IV	Non-Major Elective	Paper-1	2	2	Introduction to Information Technology	25	75	100
		Sem. Total		**30**			**175**	**525**	**700**
SEMESTER IV							**CIA**	**Uni. Exam**	**Total**
23.	III	Core Theory	Paper-6	5	4	Relational Database Management Systems	25	75	100
24.	III	Core Theory	Paper-7	4	4	Enterprise Resource Planning	25	75	100
25.	III	Core Theory	Paper-8	5	4	Wireless Data Communications	25	75	100
26.	III	Core Practical	Practical-4	4	3	RDBMS Lab	25	75	100
27.	III	ALLIED-2	Paper-4	7	5	Financial Accounting-II	25	75	100
28.	IV	Skill based Subject -II	Paper-2	3	2	Internet Of Things	25	75	100
29.	IV	Non-Major Elective	Paper-2	2	2	Internet Technology	25	75	100
		Sem. Total		**30**	**24**		**175**	**525**	**700**
SEMESTER V							**CIA**	**Uni. Exam**	**Total**
30.	III	Core Theory	Paper-9	6	4	Mobile Application Development	25	75	100
31.	III	Core Theory	Paper-10	6	4	Operating System	25	75	100
32.	III	Core Theory	Paper –11	4	2	Design and Analysis of Algorithms	25	75	100
33.	III	Core Practical	Practical-5	4	3	Mobile Applications Development-Lab	25	75	100
34.	III	Core Practical	Practical-6	4	3	Operating System-Lab	25	75	100

35.	III	Internal Elective I	Paper-1	3	3	**(Choose any one)** A. Data Mining B. Information Security C. Software Testing	25	75	100
36.	IV	Skill Based Subject III	Paper– 3	3	2	Software Engineering	25	75	100
		Sem. Total		**30**	**21**		**175**	**525**	**700**

SEMESTER VI							**CIA**	**Uni. Exam**	**Total**
1.	III	Core Theory	Paper-12	4	4	Open Source Software	25	75	100
2.	III	Core Theory	Paper-13	4	4	Python programming	25	75	100
3.	III	Core Practical	Practical-7	4	2	Python programming Lab	25	75	100
4.	III	Core Practical	Practical-8	4	2	Open Source Programming - Lab	25	75	100
5.	III	Core Project		5	5	Group/ Individual Project Work	25	75	100
6.	III	Internal Elective II	Paper-2	3	3	**(Choose any one)** 1. Big Data Analytics 2. Cryptography 3. Digital Image Processing	25	75	100
7.	III	Internal Elective III	Paper-3	3	3	**(Choose any one)** 1.Artificial Intelligence 2. System Software 3. Mobile Computing	25	75	100
8.	IV	Skill Based Subject IV	Paper-4	3	2	Object Oriented analysis and design	25	75	100
9.	V	Extension Activities		0	1		100	0	100
		Sem. Total			**26**		**300**	**600**	**900**
					140				**4500**

Semester	Course Code	Course Name
I	CLT10	Tamil
	CLE10	Communicative English I
	CCA11	Programming in C
	CPCA13	Programming in C Lab
	CAMA15B	Mathematical Foundations – I
	CPE10C	Professional English
	CES10	Environmental studies
II	CLT20	Tamil II
	CLE20	Communicative English II
	CCA21	C++ & Data Structure
	CPCA23	C++ and Data Structures Lab
	CAMA25B	Mathematical Foundations - II
	CPE20C	Professional English II
	CGA20	Value Education
	CSS20	Soft Skill
III	CCA31	Programming in JAVA
	CCA32	E-Commerce
	CCA33	Operations Research
	CPCA36	Programming in JAVA Lab
	CAMA15C	Financial Accounting-I
	CSCA34	Web Technology
	CNCM37	General Commercial Knowledge
IV	CCA41	Relational Database Management Systems
	CCA42	Enterprise Resource Planning
	CCA43	Wireless Data Communications
	CPCA46	RDBMS Lab
	CACM 25C	Financial Accounting-II
	CSCA44	Internet Of Things
	CNCM47	Advertising And Salesmanship
v	CCA51	Mobile Application Development
	CCA52	Operating System
	CCA53	Design and Analysis of Algorithms

	CPCA56	Mobile Applications Development-Lab
	CPCA52	Operating System-Lab
	CECA54 A	Data Mining
	CSCA55	Software Engineering
VI	CCA61	Open Source Software
	CPCA62	Python programming
	CCA62	Python programming Lab
	CPCA66	Open Source Programming - Lab
	CECA63B	Cryptography
	CECA64A	Artificial Intelligence
	CSCA 65	Object Oriented analysis and design

SEMESTER – I

Subject Name: Tamil-I

Subject Code: CLT10

CO1: மரபுக்கவிதை,புதுக்கவிதை மற்றும் கவிஞர்களைப் பற்றி அறிந்து கொள்கின்றனர்.

CO2: உரைநடையின் தோற்றம், வளர்ச்சி நிலைகளை தெரிந்து கொள்கின்றனர்.

CO3: நாடகத்தின் தொன்மை, வளர்ச்சி நிலைகளை பற்றி அறிந்து கொள்கின்றனர்.

CO4: சிறுகதையின் இலக்கணம்,உத்திகளை உணர்ந்து கொள்கின்றனர்.

CO5: அடிப்படை இலக்கணவிதிகள்,பிறமொழிச்சொற்கள் பற்றி அறிந்து கொள்கின்றனர்.

Subject Name: Communicative English I
Subject Code: CLE10

CO1: To understand and apply communication theory.

CO2: To critically think about communication processes and message

CO3: To write effectively for a variety of contexts and audiences.

CO4: To interact skillfully and ethically.

CO5: To develop and deliver the professional presentation.

Subject Name: Programming in C

Subject Code: CCA11

CO1: Learn the basics and introduction of computers, the structure of C, and control structures.

CO2: Explain the concepts of derived data types such as arrays, structures, union and pointers. Identify the usage of arrays, functions, structures, union and pointers.

CO3: Analyse the features of structures, union and their applications.

CO4: Design programs involving decision structures, loops and functions.

CO5: Enhance their programming skills in C.

Subject Name: Programming in C Lab

Subject Code: CPCA13

CO1: Understand the basic terminology used in computer programming.

CO2: Write, compile and debug programs in Language.

CO3: Create programs involving decision structures, loops, strings and functions.

CO4: Identify solution to a problem apply control structure and user defined functions for solving the problem.

CO5: Demonstrate the use of String and string handling functions.

CO6: Design programs involving structures and pointers.

Subject Name: Mathematical Foundations – I

Subject Code: CAMA15B

CO1: Ability to apply mathematical logic to solve problems.

CO2: Understand the sets, relations, functions and discrete structures.

CO3: Ability to apply binary operations.

CO4: Understand the concepts of Differentiations using to solve a simple problem using standard limits.

CO5: Able to model and solve real world problems using graphs.

Subject Name: Professional English

Subject Code: CPE10C

CO1: To develop the language skills of students by offering adequate practice.

CO2: To develop strategic competence.

CO3: To sharpen the students' critical thinking.

CO4: To help the students efficient communication for their profession.

CO5: To enhance the lexical, grammatical and Sociolinguistics communication.

SEMESTER – II

Subject Name: Tamil II

Subject Code: CLT20

CO1: சைவ சமயம் ,நாயன்மார்களைப் பற்றி அறிந்து கொள்கின்றனர்.

CO2: தமிழ் மொழி வளர்ச்சியில் சையவ வைணவ சமயதின் பங்கினை தெரிந்து கொள்கின்றனர்.

CO3: சிற்றிலக்கியங்களின் வளர்ச்சி நிலைகளை பற்றி அறிந்து கொள்கின்றனர்.

CO4: தமிழ் மொழி வளர்ச்சியில் கிறித்துவ ,இஸ்லாமிய சமயத்தின் பங்கினை தெரிந்து கொள்கின்றனர்

CO5: பத்தொன்பதாம் நூற்றாண்டின் இலக்கிய வளர்ச்சி நிலைகளை பற்றி அறிந்து கொள்கின்றனர்.

Subject Name: Communicative English II

Subject Code: CLE20

CO1: To develop the vocabulary and improve the accuracy in grammar.

CO2: To produce words with right Pronunciation**.**

CO3: To improve the LSRW skills and the related sub skills.

CO4: To demonstrate positive group communication exchanges

CO5: To inculcate the spiritual and moral values from the Indian sages.

Subject Name: C++ & Data Structure

Subject Code: CCA21

CO1: Explain object-oriented concepts and describe how they are supported by C++. This includes identifying the features and peculiarities of the C++ programming language.

CO2: Apply C++ features to program design and implementation.

CO3: Analyse the concept of classes and object, array, functions, constructor and destructor.

CO4: Understand the concepts of inheritance and classification, pointer's virtual function and polymorphism.

CO5: Understand the concept of function templates and exception handling.

CO6: Learn and implement Arrays, Stacks, Queues, Linked List, Trees, Graph and various Operations.

Subject Name: C++ and Data Structures Lab

Subject Code: CPCA23

CO1: Design and implement programs using C++.

CO2: Understand the difference between the top-down and bottom-up approach.

CO3: Describe the object-oriented programming approach in connection with C++.

CO4: Illustrate the process of data file manipulations using C++.

CO5: Apply virtual and pure virtual function & complex programming situations.

CO6: Create programs for various real-world problems.

CO7: Implement an achievable practical application and analyze issues related to object-oriented techniques in the C++ programming language.

Subject Name: Mathematical Foundations - II

Subject Code: CAMA25B

CO1: Ability to use concepts in the field of data science.

CO2: Understand the concepts of linear equations based on rank methods.

CO3: Describe the concepts of integrations.

CO4: Employ the techniques and methods related to the area of data science in variety of applications.

CO5: Apply logical thinking to understand and solve the problems in context.

Subject Name: Professional English II

Subject Code: CPE20C

CO1: To make the students culturally aware of the target situation.

CO2: To concentrate on the required language skills.

CO3: Find out solutions of partial differential equation.

CO3: To make the students aware about the grammatical knowledge.

CO4: To equip the students for their professional life.

CO5: To educate the students about how to apply the LSRW in their profession.

SEMESTER – III

Subject Name: Programming in JAVA

Subject Code: CCA31

CO1: Understand the principles and practice of object-oriented analysis and design in the construction of robust, maintainable programs that satisfy their requirements.

CO2: Understand the basic oops concept Java evaluation and implementation overview of java.

CO3: Know operators and expressions, decision making and branching, Decision making and Looping.

CO4: Able to understand classes and methods, array strings and vectors, interface concept instead of multiple inheritances.

CO5: Packages of java, multithreaded programming contains synchronization, managing errors and exceptions handling.

CO6: Able to perform applet programming designing HTML, graphic programming.

Subject Name: E-Commerce

Subject Code: CCA32

CO 1: Understand the concepts of E-commerce and its different type and describe the network infrastructure E-commerce.

CO 2: Understand the concepts of networks and fundamentals of security concepts, services and cryptography.

CO 3: Understand the concepts of electronic payment systems and online security.

CO 4: Learn the basic fundamentals of electronic document interchange EDI and chain management process.

CO 5: Learn the concepts of internet trading relationship including inter organization and intra-organizations.

Subject Name: Operations Research

Subject Code: CCA33

CO 1: Identify and develop operational research models from the verbal description of the real system.

CO 2: Understand the mathematical tools that are needed to solve optimization problems and Transportation Assignment problem.

CO 3: Use mathematical software to solve the proposed models and sequencing problem.

CO 4: Develop a report that describes the model and the solving technique, analyze the results and propose recommendations in language understandable to the decision-making processes in Management Engineering.

CO 5: Able to understand the concepts of solve the minimal spanning tree problem, shortest route problem, maximal flow problem and minimal COt capacitated flow problem.

Subject Name: Programming in JAVA Lab

Subject Code: CPCA36

CO 1: Write Java application programs using OOP principles and proper program Structuring

CO 2: Develop Java program using packages, inheritance and interface.

CO 3: Create Multithreaded programs.

CO 4: Write Java programs to implement error handling techniques using exception handling and develop programs using class and inputs from keyboard.

CO 5: Develop graphical User Interface using AWT.

CO 6: Demonstrate event handling mechanism.

Subject Name: Financial Accounting-I

Subject Code: CAMA15C

CO 1: Introduce the basic concepts and conversions to the students, this would help in development of accounting knowledge.

CO 2: Understand the concepts of Double entry system this helps in preparation of various books of accounts

CO 3: Develop the capability of students to prepare the Final Accounts of a Small Business Concern.

CO 4: Learn the concept of single-entry system of accounting which helps them to prepare the accounts from incomplete records.

CO 5: Enhance the Accounting Knowledge by introducing the practical uses of Average Due Date and Bank Reconciliation Statement.

Subject Name: Web Technology

Subject Code: CSCA34

CO 1: History and development of the World Wide Web and Associated technologies.

CO 2: The client-server architecture of the World Wide Web and its communication protocol HTTP/HTTPS.

CO 3: Formats and languages used in modern web-pages: HTML, XHTML, CSS, XML,XSLT.

CO 4: Programming web pages with VB Script, JavaScript and ASP.NET.

CO 5: Design and development of web-pages and web-applications.

CO 6: Use of web technology.

CO 7: Retrieval of information, use of documentation and standards.

SEMESTER – IV

Subject Name: Relational Database Management Systems

Subject Code: CCA41

CO 1: Give an introduction about DBMS, data models, a schema, E-R diagram, relational database and benefits of database.

CO 2: Able to design a good database using normalization, decomposition and functional dependency.

CO 3: Understand the concepts of database architecture, client server architecture, parallelism, concepts and distributed database concepts

CO 4: Learn about indexes, sequences, data integrity, creating and maintaining tables and user privileges.

CO 5: Understand the basic concepts of PL/SQL programming, cursors, triggers, packages, procedures, functions and transactions.

Subject Name: Enterprise Resource Planning

Subject Code: CCA42

CO 1: Understand the functionalities of enterprise resource planning.

CO 2: Understand characterize the ERP implementation procedures.

CO 3: Understand the elements of ERP.

CO 4: Understand the available ERP packages.

CO 5: Understand the models of ERP with other related technologies.

Subject Name: Wireless Data Communications

Subject Code: CCA43

CO1: Know the basic concepts of data communication, layered model, protocols and inter working between computer networks and switching components in telecommunication systems.

CO 2: Understand various types of transmission media, network devices; and parameters of evaluation of performance for each media and device. Understand the routing algorithm and protocols that are used in network communications.

CO 3: Understand the principles and operations behind various application layer protocols like HTTP, SMTP, FTP, TCP and UDP.

CO 4: Explain the security issues related to data communication in networks. Try to tackle various information security techniques to safe guard the valuable information from one end to another.

CO 5: Understand the functions performed by a Network Management System and to analyze connection establishment and congestion control with respect to TCP Protocol. Apply the concept of networks in various fields.

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Subject Name: RDBMS Lab

Subject Code: CPCA46

CO 1: Understand the principles and practice of design and implement a database schema for a given problem domain.

CO 2: Populate and query a database using SQL, DDL and DML commands.

CO 3: Learn Aggregate functions and Group functions.

CO 4: Design and Implement a database query using Joins, Sub-Queries and Set Operations.

CO 5: Learn and Implement program in SQL including Objects
(Functions, Procedures, Triggers).

Subject Name: Financial Accounting-II

Subject Code: CACM 25C

CO 1: Understand the concepts of Branch Accounting and enable the students to prepare Accounts for various types of Branches.

CO 2: Enhance the procedure for preparing Departmental Accounts.

CO 3: Develop the skill of the students in preparing Hire Purchase Accounting, both in the books of Hire Purchaser and hire vendor.

CO 4: Understand the Accounting Procedure for Partnership in cases like Admission, Retirement, Death.

CO 5: Understand the Accounting procedure for Dissolution and Insolvency of a Partner.

Subject Name: Internet Of Things

Subject Code: CSCA44

CO 1: Give an Introduction to IoT, M2M, IoT Architecture, IoT Model and Views, IOT protocols and Real-world design constraints enable the students to learn the concepts of IoT.

CO 2: To Understand about the fundamentals of Internet of Things and its building blocks along their characteristics with.

CO 3: To Understand the recent applications domains of IoT in everyday life.

CO 4: To Understand the other associated technologies like cloud computing in the domain of IoT.

CO 5: Train the students to build IoT systems using sensor, single board computers and open source IoT platforms.

SEMESTER -V

Subject Name: Mobile Application Development

Subject Code: CCA 51

CO 1: Learn majoring in Information Systems Technology, covers project-oriented development of applications for mobile computing devices.

CO 2: Learn how to develop mobile applications utilizing memory management, user interface design, user interface building, input methods, data handling, network techniques, URL loading, and GPS and motion sensing.

CO 3: Develop a project that produces a professional quality deployable mobile application.

CO 4: Researching the different mobile platforms (such as iPhone, Android, Windows 8) and technologies (such as a smartphone, tablet or netbook) available and comparing their strengths and weaknesses.

CO 5: Selecting the appropriate mobile platform, language, and API's (application programming interfaces) needed to produce selected professional quality mobile application.

Subject Name: OPERATING SYSTEM

Subject Code: CCA 52

CO 1: Understand the basics of operating systems like kernel, shell, types and views of operating systems

CO 2: Explain the various CPU scheduling algorithms and remove deadlocks.

CO 3: Learn various memory management techniques and concept of thrashing.

CO 4: Use disk management and disk scheduling algorithms for better utilization of external memory.

CO 5: Recognize file system interface, protection and security mechanisms.

CO 6: Explain the various features of distributed OS like Unix, Linux, windows etc.

Subject Name: Design and Analysis of Algorithms

Subject Code: CCA 53

CO 1: Interpret the performance of algorithms using analysis techniques.

CO 2: Examine the fundamental algorithmic strategies.

CO 3: Learn how to Compare the fundamental algorithmic strategies.

CO 4: Implement Graphs and trees algorithms in real time systems.

CO 5: Summarize the advance types of algorithms.

Subject Name: Mobile Applications Development-Lab

Subject Code: CPCS 56

CO 1: Researching the different mobile platforms (such as iPhone, Android, Windows 8) and technologies (such as a smartphone, tablet or netbook) available and comparing their strengths and weaknesses.

CO 2: Evaluating the strengths and weaknesses of the different programming languages (such as C++, C#, Java) that are available for the different mobile platforms.

CO 3: Identifying the different application programming interfaces (such as Google,GPS, motion sensing) that are available for the different mobile platforms and languages.

CO 4: Selecting the appropriate mobile platform, language, and API's (Application Programming Interfaces) needed to produce selected professional quality mobile application.

Subject Name: Operating System-Lab

Subject Code: CPCS 57

CO 1: Able to compare different process scheduling algorithms and interpret the concurrency problem to overcome it by using different solutions.

CO 2: Able to estimate the memory allocated for a process.

CO 3: Able to interpret the structure of a file system and disk and also able to manage them.

CO 4: Experiment with Unix commands and shell programming.

CO 5: Able to build shell program for process and file system management with system calls.

Subject Name: Data Mining

Subject Code: CECA54A

CO 1: Understand data warehousing and mining concepts. Learn fetch the data easily from large value of data.

CO 2: Understand the tools and technique of data mining. Evaluate different models used for OLAP, OLTP and data preprocessing.

CO 3: Able to apply data mining techniques in various application and its case studies.

Categorize the situations for applying different data-mining techniques: frequent pattern mining, association, correlation, classification, prediction, and cluster and outlier analysis

CO 4: Know the architecture of data ware house and its applications.

CO 5: Understand the concept of Online analytical processing (OLAP) and its implementation.

Subject Name: Software Engineering

Subject Code: CSCA 55

CO 1: Acquire strong fundamental knowledge in science, mathematics, fundamentals of computer science, software engineering and multidisciplinary engineering to begin in practice as a software engineer.

CO 2: Design applicable solutions in one or more application domains using software engineering approaches that integrate ethical, social, legal and economic concerns.

CO 3: Deliver quality software products by possessing the leadership skills as an individual or contributing to the team development and demonstrating effective and modern working strategies by applying both communication and negotiation management skill.

CO 4: Apply new software models, techniques and technologies to bring out innovative and novelistic solutions for the growth of the society in all aspects and evolving into their continuous professional development.

Subject Name: Software Engineering

Subject Code: CSCA 55

CO 1: Acquire strong fundamental knowledge in science, mathematics, fundamentals of computer science, software engineering and multidisciplinary engineering to begin in practice as a software engineer.

CO 2: Design applicable solutions in one or more application domains using software engineering approaches that integrate ethical, social, legal and economic concerns.

7CO 3: Deliver quality software products by possessing the leadership skills as an individual or contributing to the team development and demonstrating effective and modern working strategies by applying both communication and negotiation management skill.

CO 4: Apply new software models, techniques and technologies to bring out innovative and novelistic solutions for the growth of the society in all aspects and evolving into their continuous professional development.

SEMESTER-VI

Subject Name: Open Source Software

Subject Code: CCA 61

CO 1: Fundamental driving factors that created the Free and Open Source Software (F/OSS) movement.

CO 2: Motivations for Open-Source Software Developers' participation.

CO 3: Understand the features of OSS over Commercial software. Learn simple shell programs using simple commands

CO 4: Apply the DDL and DML commands for their simple Applications with MySQL as backend. Classify the usage of different operators and functions in PHP.

CO 5: Implement the web pages for manipulating files

Subject Name: Python programming

Subject Code: CCA 62

CO 1: Modelling some real-world problems in Python and solve them.

CO 2: Building projects in Python

CO 3: Understanding all the foundations of Python and knowing how to apply them

CO 4: Understanding all the Pythonic Data Structures, Objects, Functions and Modules

CO 5: Knowing how to use Jupyter iPython Notebook for Data Science Applications

CO 6: Foundations for Data Science: The Numpy module

CO 7: Understanding Client-Server Architecture and Making HTTP Requests with Python.

Subject Name: Python programming Lab

Subject Code: CPCS66

CO 1: Understands basics of Python Programming language including input/output Functions, operators, basic and collection data types

CO 2: Implement decision making, looping constructs and functions

CO 3: Design modules and packages - built in and user defined packages

CO 4: Implement object-oriented programming and exception handling.

CO 5: Create files and form regular expressions for effective search operations on Strings and files.

Subject Name: Open Source Programming - Lab
Subject Code: CPCS67

CO 1: Discuss the insights of internet programming and implement complete application over the web.

CO 2: Demonstrate the important HTML tags for designing static pages and separate design from content using Cascading Style sheet.

CO 3: Understand, analyze and apply the role of languages like HTML, DHTML,CSS, JavaScript and PHP.

CO 4: Identify the environments currently available on the market to design websites.

CO 5: Build web applications using PHP and MYSQL.

Subject Name: Cryptography

Subject Code: CECA 63B

CO 1: Know the methods of conventional encryption.

CO 2: Understand the concepts of public key encryption and number theory

CO 3: Understand various applications of cryptography and security issues practically.

CO 4: Understand the concepts of public key encryption algorithms.

CO 5: Understand the concepts of public key real time applications.

Subject Name: Artificial Intelligence

Subject Code: CECA 64A

CO 1: Able to improve human–AI interaction and real-time decision-making.

CO 2: Evaluate the advantages, disadvantages, challenges, and ramifications of human–AI augmentation.

CO 3: Design and develop symbiotic human–AI systems that balance the information processing power of computational systems with human intelligence and decision making.

CO 4: Understand the benefits, limitations, and tradeoffs of designing engaging and ethical conversational user interactions, including those supported by chat bots, smart speakers, and other AI-driven, voice-based technologies.

CO 5: Design and evaluate conversational interfaces for different users and contexts of use.

Subject Name: Object Oriented analysis and design

Subject Code: CSCA 65

CO 1: Able to design and implement projects using Object Oriented concepts.

CO 2: Use the UML analysis and design diagrams.

CO 3: Apply appropriate design patterns.

CO 4: Able to Create code from design.

CO 5: Compare and contrast various testing techniques.

CO 6: Able to Improve the techniques of problem Solving, and Critical Analysis.

CO 7: Develop principles of problem solving by computer, and the construction of appropriate algorithms for the solution of problems.

6. CO – PO and CO – PSO Mapping of Courses:

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 as shown below. The various correlation levels are:

"1" – Slight (Low) Correlation

"2" – Moderate (Medium) Correlation

"3" – Substantial (High) Correlation

"-" indicates there is no correlation.

Mapping of Course Outcomes& Programme Outcomes to Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO1							
CO2							
CO3							
CO4							
CO5							
CO6							

Correlation Level: H – High, M- Moderate, L-Low

6.1 Levels of Outcomes

There are four levels of outcome such as Course Outcome (CO), Program Outcome (PO), Program Specific Outcome (PSO) and Program Educational Objective (PEO). Course Outcomes are the statements that declare what students should be able to do at the end of a course. POs are definedby Accreditation Agencies of the country (NBA in India), which are the statements about the knowledge, skills and attitudes, graduate attributes of a form engineering program should have. Graduates Attributes (GAs) are the components indicative of the graduate's potential to acquirecompetence 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.

The Program outcomes reflect the ability of graduates to demonstrate knowledge in fundamentals of Basic Sciences, Humanities and Social Sciences, Engineering Sciences and applythese 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 studiesand 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 producibility to deal withfinances and project management during his/her early professional career of 3 to 4 years.

Program Specific Outcomes are the statements that assert what the grandaunts of a specific engineering program should do what they can able to do. Program Educational Objectives are the broad statements which describe in detail about the career and professional accomplishments after significant years of graduation that the program prepare the grandaunts to achieve.

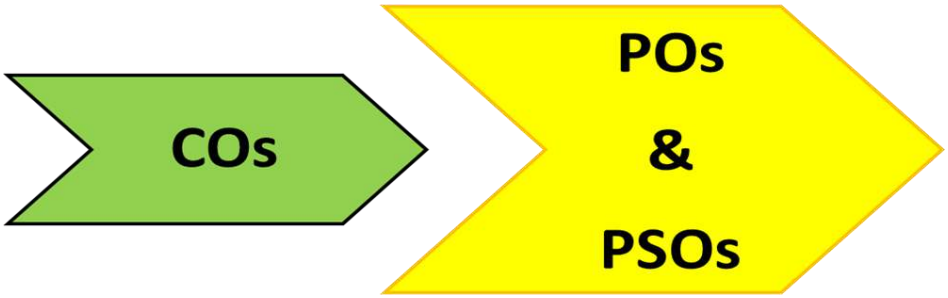


Figure 2.Relating the outcomes (Cos – POs &PSOs)

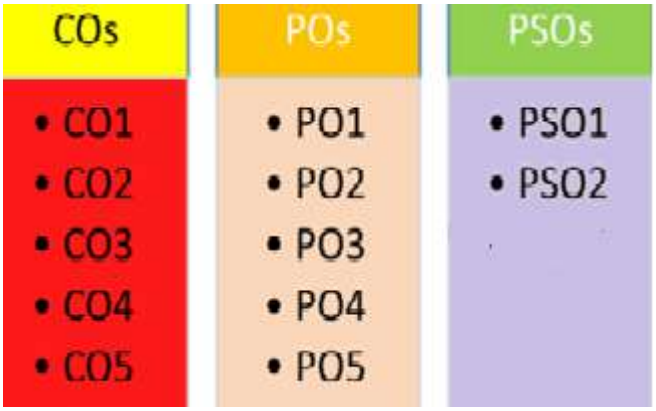


Figure 3.Relationship between COs, and POs&PSOs

The above Figure 2 and Figure 3show the building block of CO-PO&PSO relationship. After CO statements are developed by the course in-charge, CO will map with any possible PO's based on the relationship exist between them. But the PO's are not necessarily mapped with any one CO and it may be left blank. Anyhow, it ismandatory that all POs should be mapped with any one of PSOswhich are specified in the program.

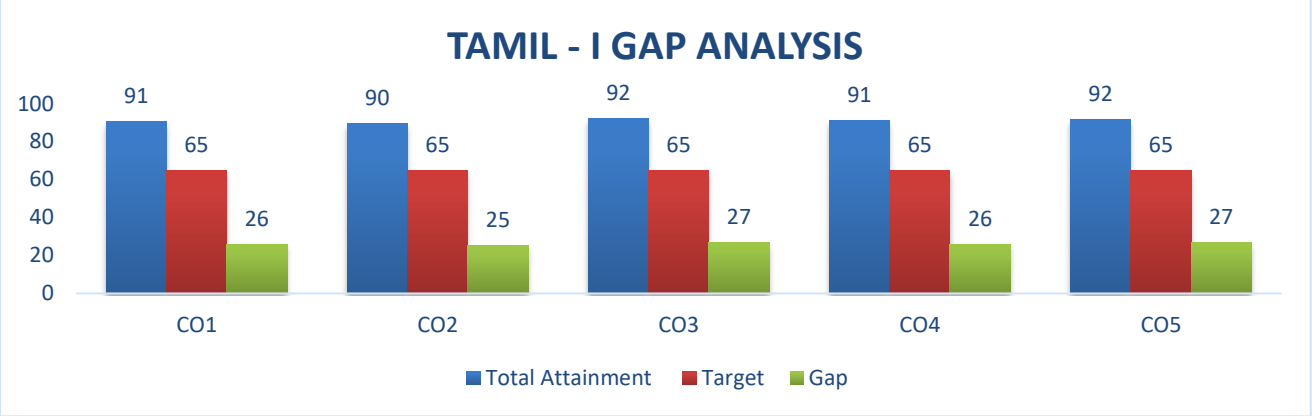
6.2 Process involved in CO-PO Mapping

The role of CO-PO mapping will be assigned to the faculty as per hierarchy followed in Figure 3. After the course (subject) allotment from the department, the course in-charge of the course has to write appropriate COs for their corresponding course. It should be narrower and measurable statements. By using the action verbs of learning levels, CO's will be designed. CO statements should describe what the students are expected to know and able to do at the end of each course, which are related to the skills, knowledge and behaviour that students will acquire through the course.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 therespective 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 attainmentof the individual student as well as individual course at the end of the fourth semester. The Program coordinator has to evaluate the PO attainment of individual student through direct and indirect method after the student completing their program.

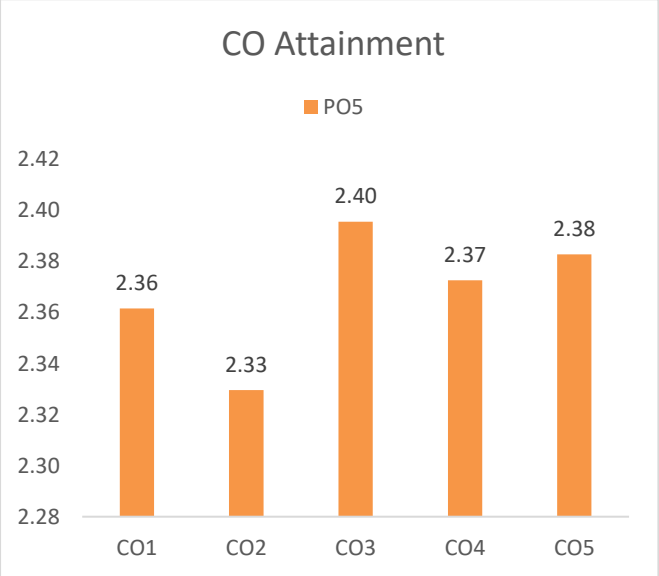
7. CO-PO Mapping

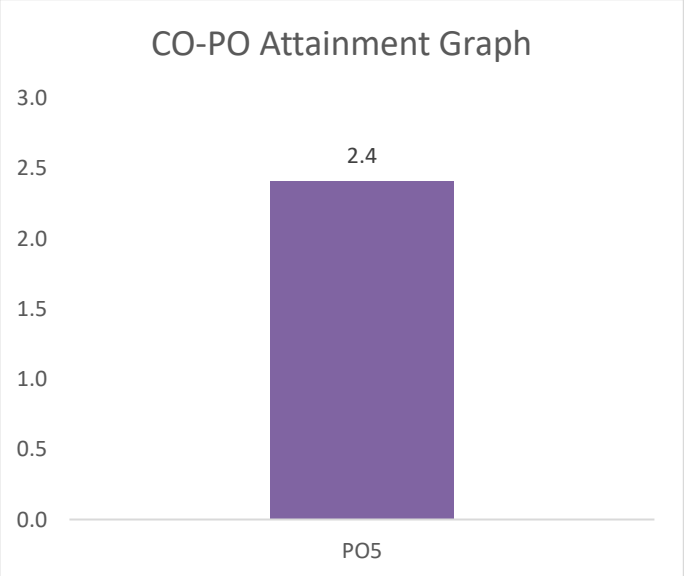
Semester - I

SUBJECT NAME	SUBJECT CODE	SEMESTER
TAMIL-I	CLT10	I

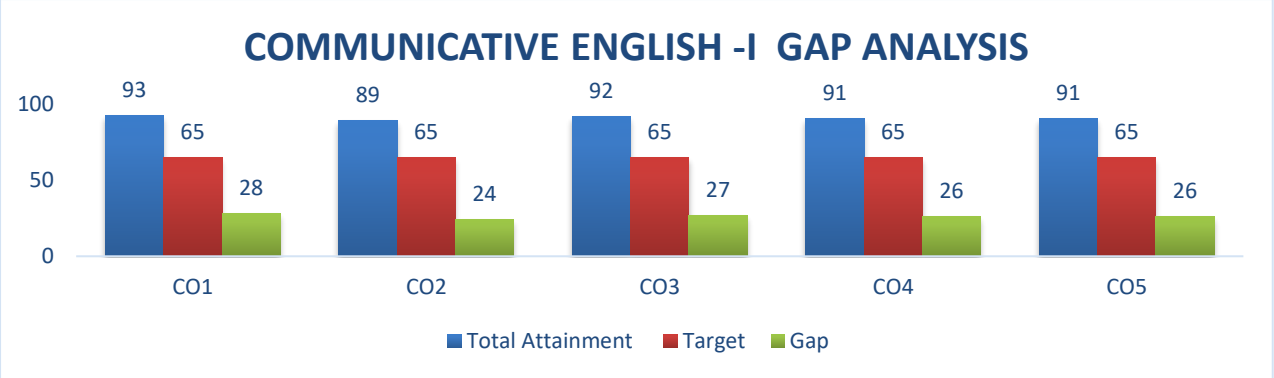


CO-PO mapping							
	PO 1	PO 2	PO 3	PO 4	PO 5	PSO 1	PSO 2
CO 1					H	H	
CO 2					M	H	
CO 3					H	H	
CO 4					M		M
CO 5					H	H	

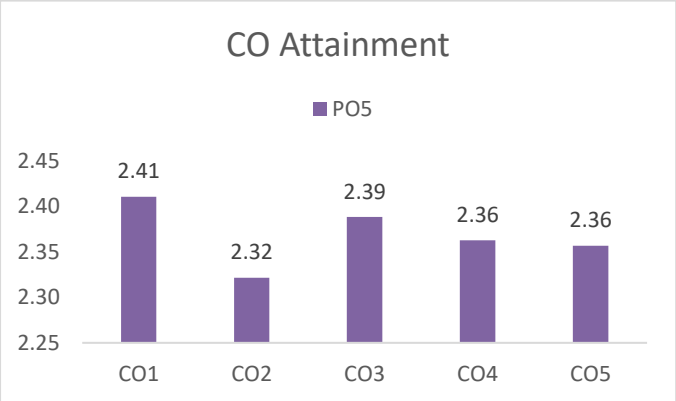


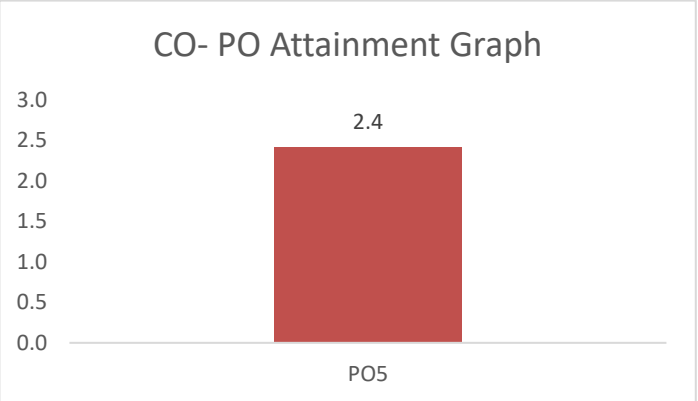


SUBJECT NAME	SUBJECT CODE	SEMESTER
COMMUNICATIVE ENGLISH -I	CLE10	I

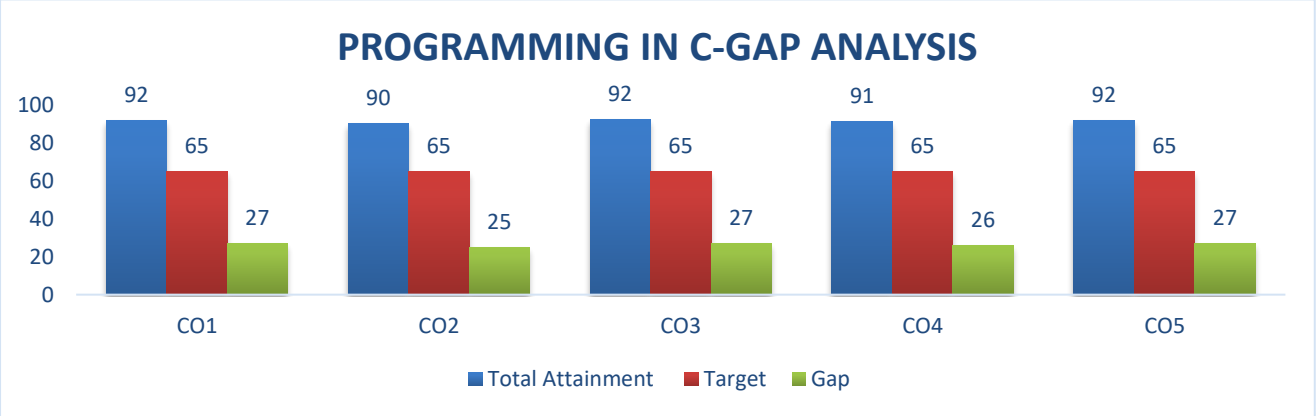


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1					H	H	
CO 2					M	H	
CO 3					H		
CO 4					M	M	
CO 5					H	H	

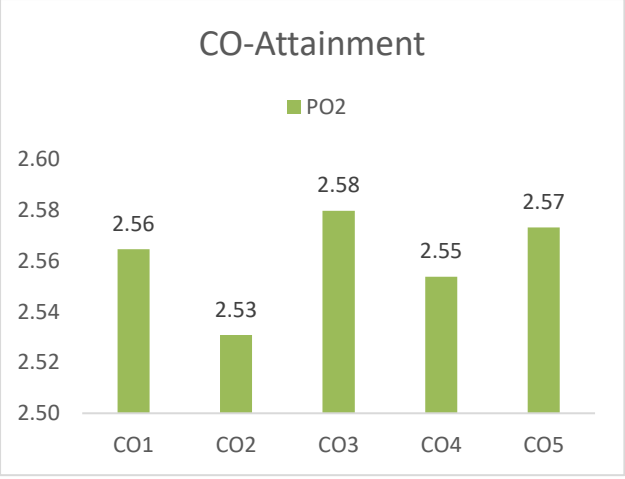


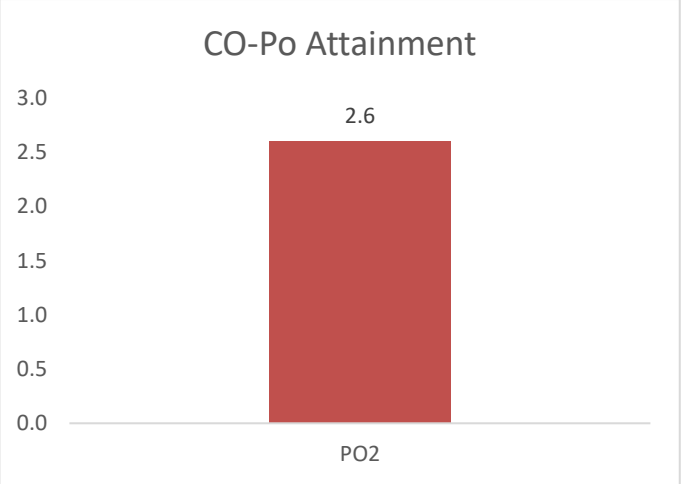


SUBJECT NAME	SUBJECT CODE	SEMESTER
PROGRAMMING IN C	CCA11	I

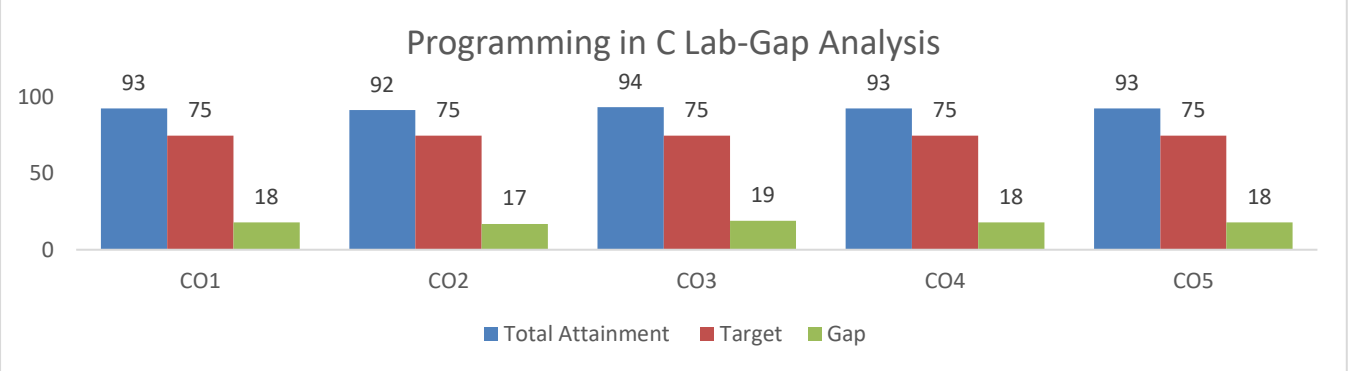


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1		H				H	
CO 2		H				H	
CO 3		H				H	
CO 4		M					M
CO 5		H				H	

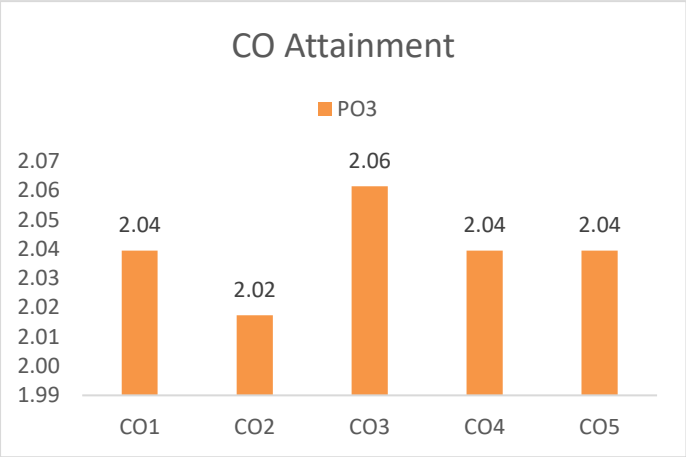


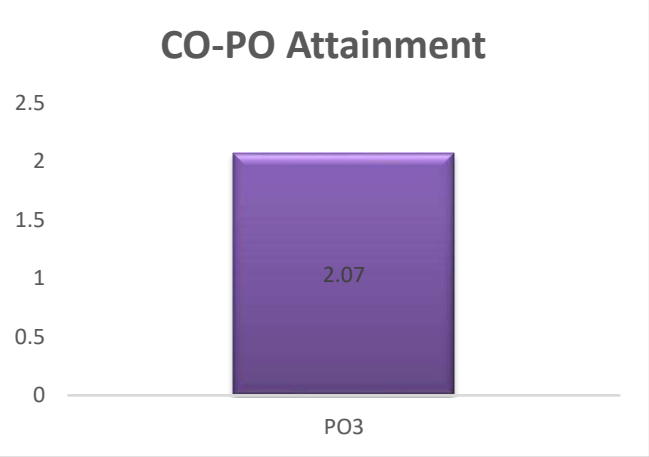


SUBJECT NAME	SUBJECT CODE	SEMESTER
PROGRAMMING IN C LAB	CPCA13	I

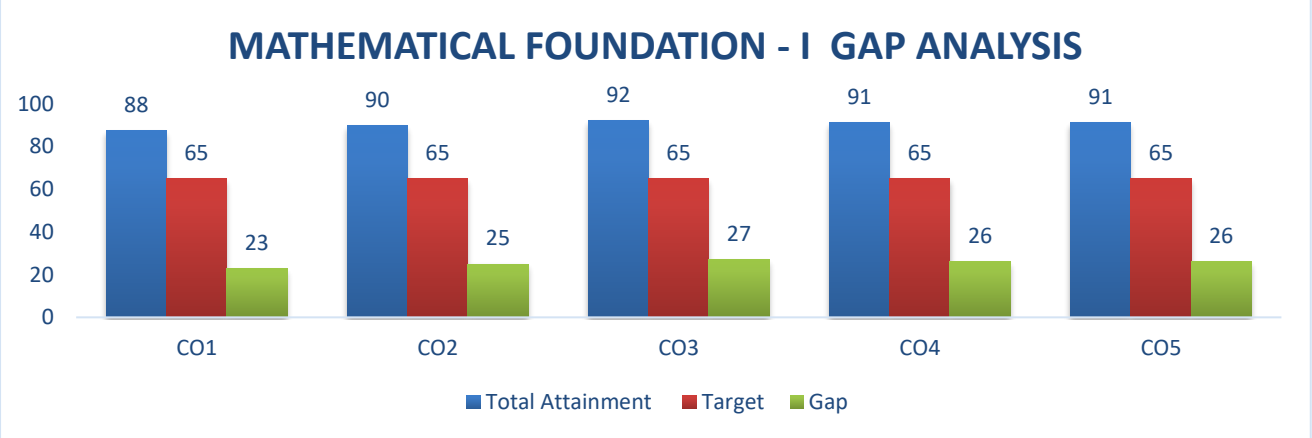


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1			M			H	
CO 2			M			M	
CO 3			M			H	
CO 4			H			M	
CO 5			M			H	

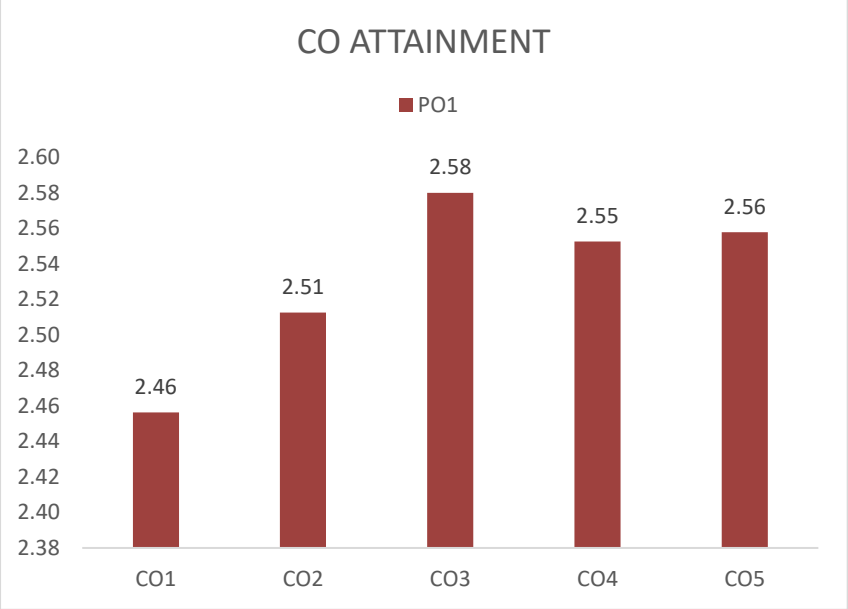


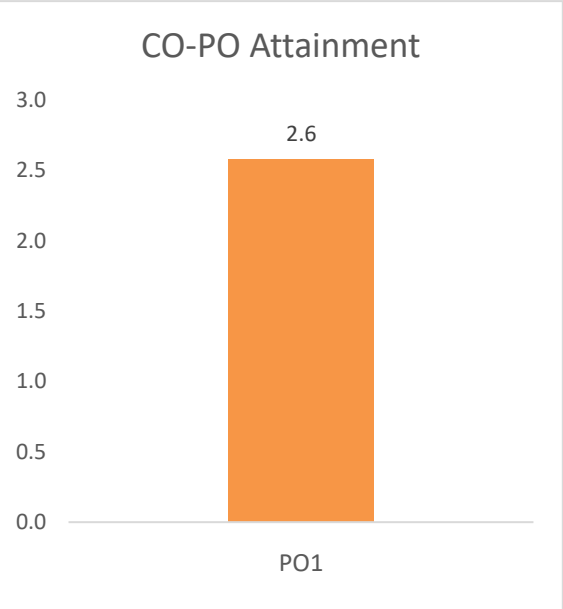


SUBJECT NAME	SUBJECT CODE	SEMESTER
MATHEMATICAL FOUNDATION - I	CAMA15B	I

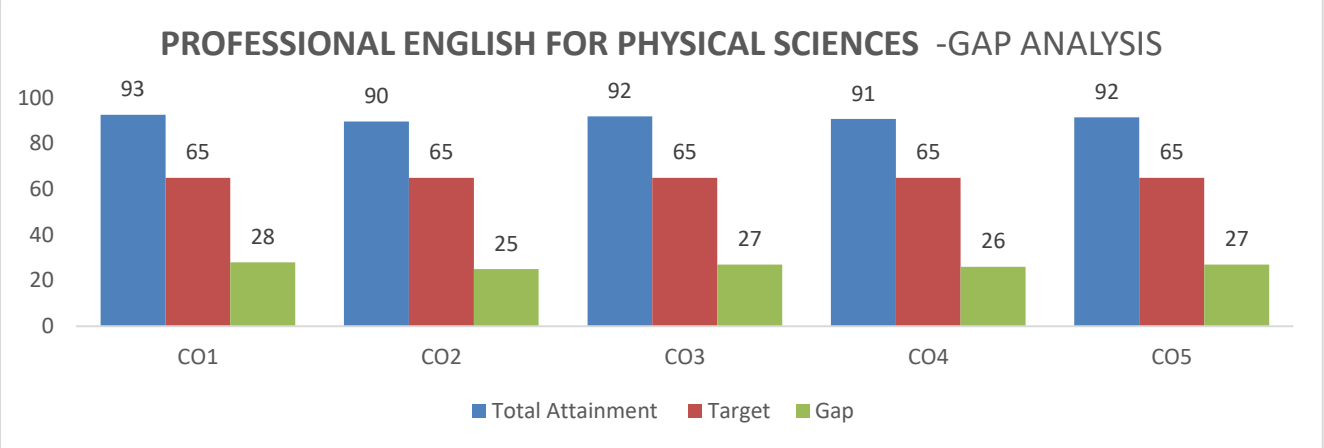


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1	H					H	
CO 2	H					H	
CO 3	H					H	
CO 4	H						M
CO 5	M					H	

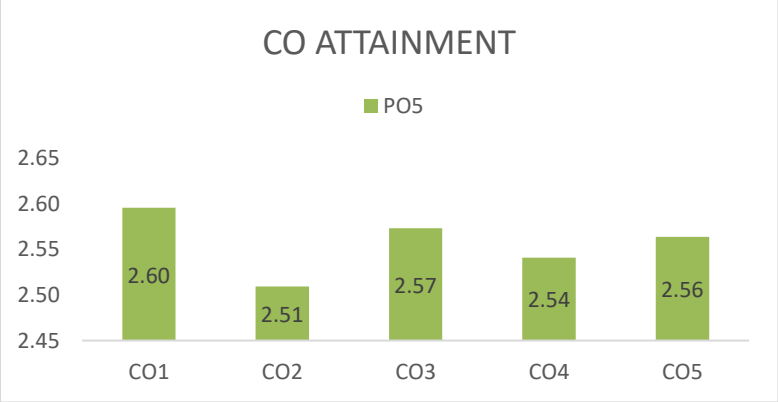


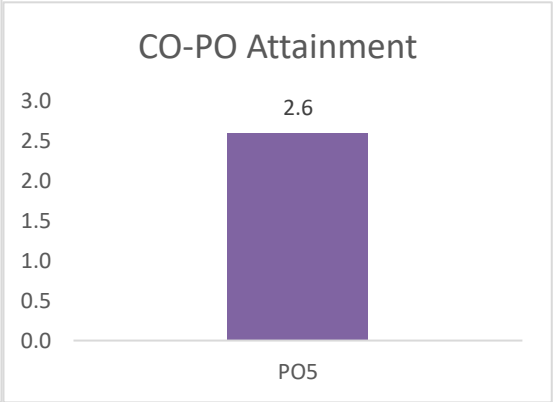


SUBJECT NAME	SUBJECT CODE	SEMESTER
PROFESSIONAL ENGLISH FOR PHYSICAL SCIENCES	CPE10C	I

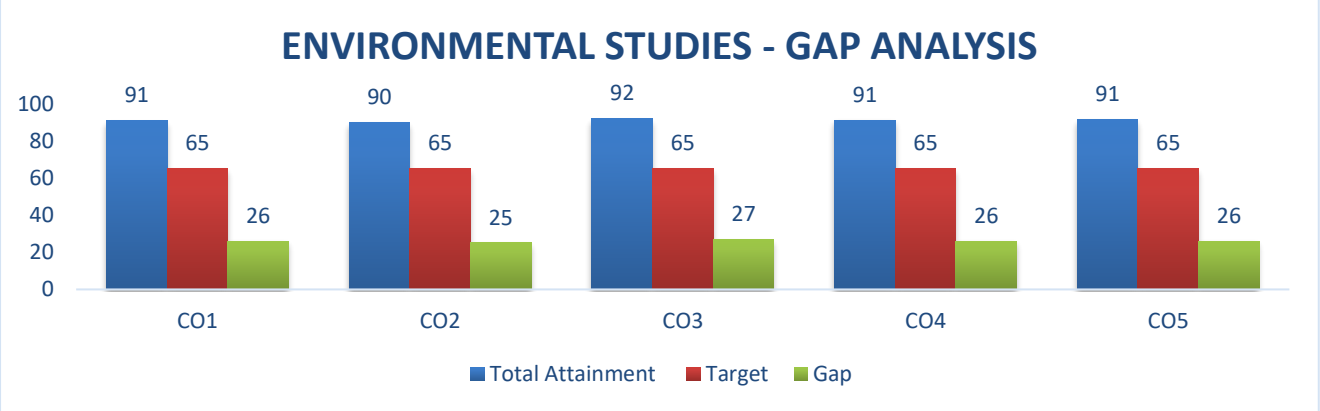


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1					H	H	
CO 2					H	H	
CO 3					M		M
CO 4					H		H
CO 5					H	H	

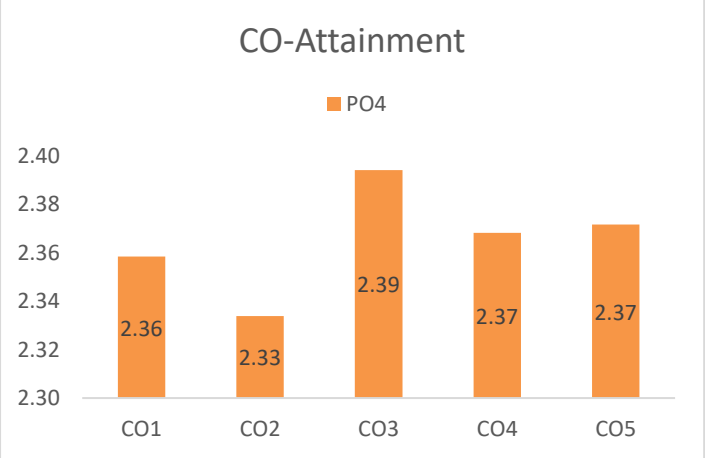


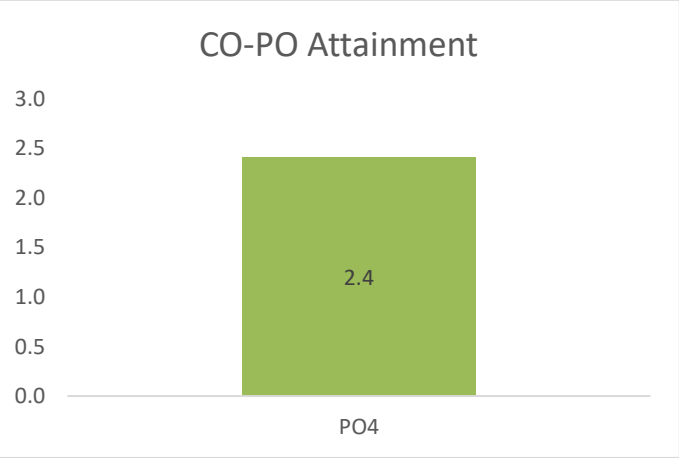


SUBJECT NAME	SUBJECT CODE	SEMESTER
ENVIRONMENTAL STUDIES	CES10	I

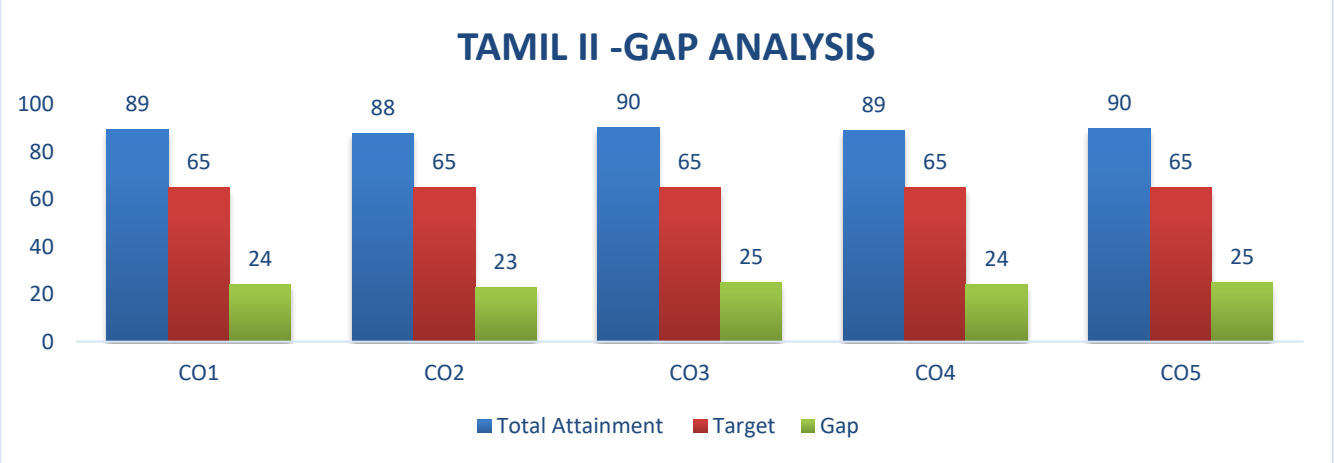


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1				M		M	
CO 2				H		H	
CO 3				H		H	
CO 4				M			M
CO 5				H		H	

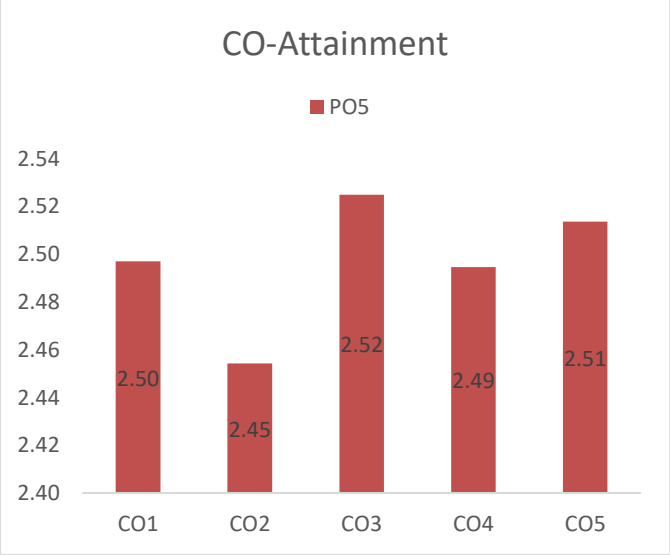


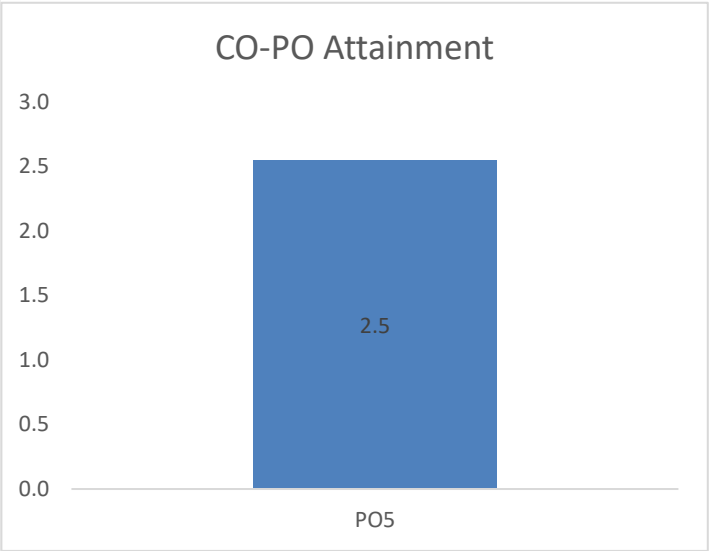


SUBJECT NAME	SUBJECT CODE	SEMESTER
TAMIL II	CLT20	II

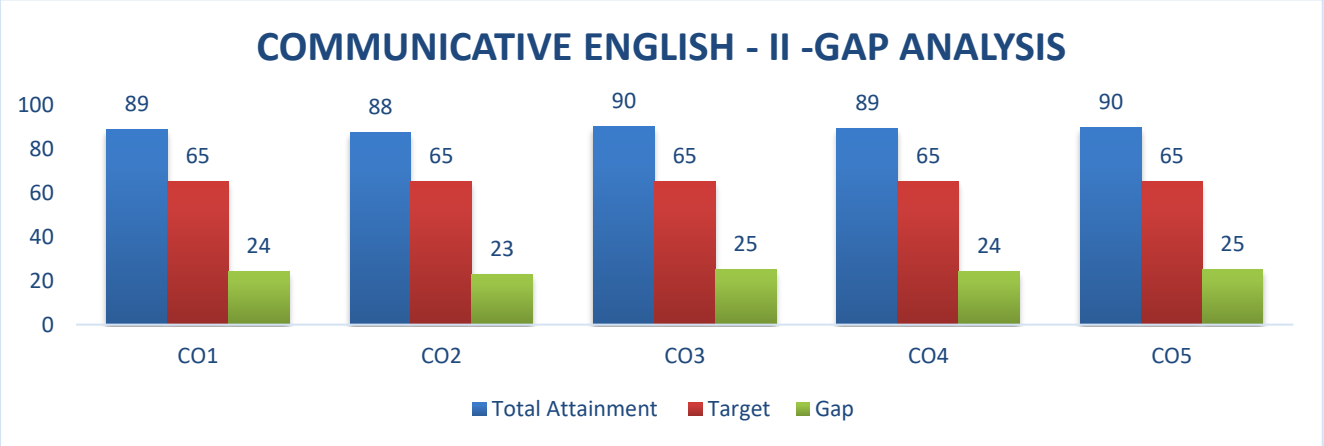


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1					H	M	
CO 2					H	H	
CO 3					M	H	
CO 4					H		M
CO 5					H	H	

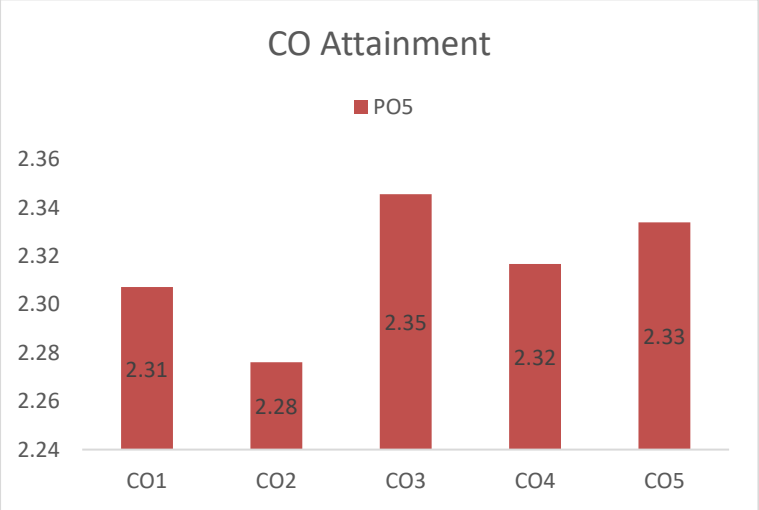


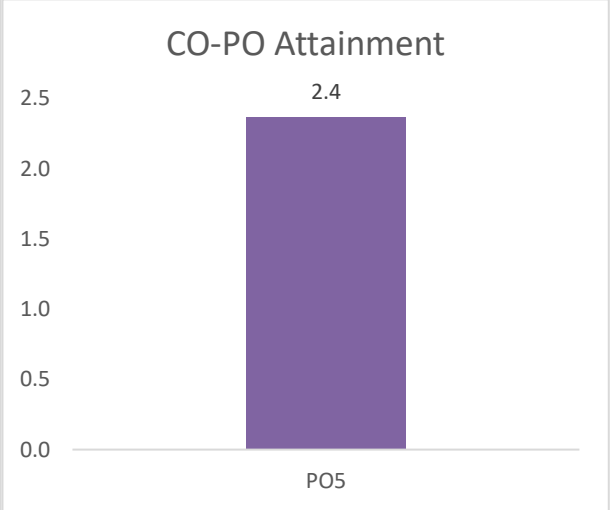


SUBJECT NAME	SUBJECT CODE	SEMESTER
COMMUNICATIVE ENGLISH - II	CLE20	II

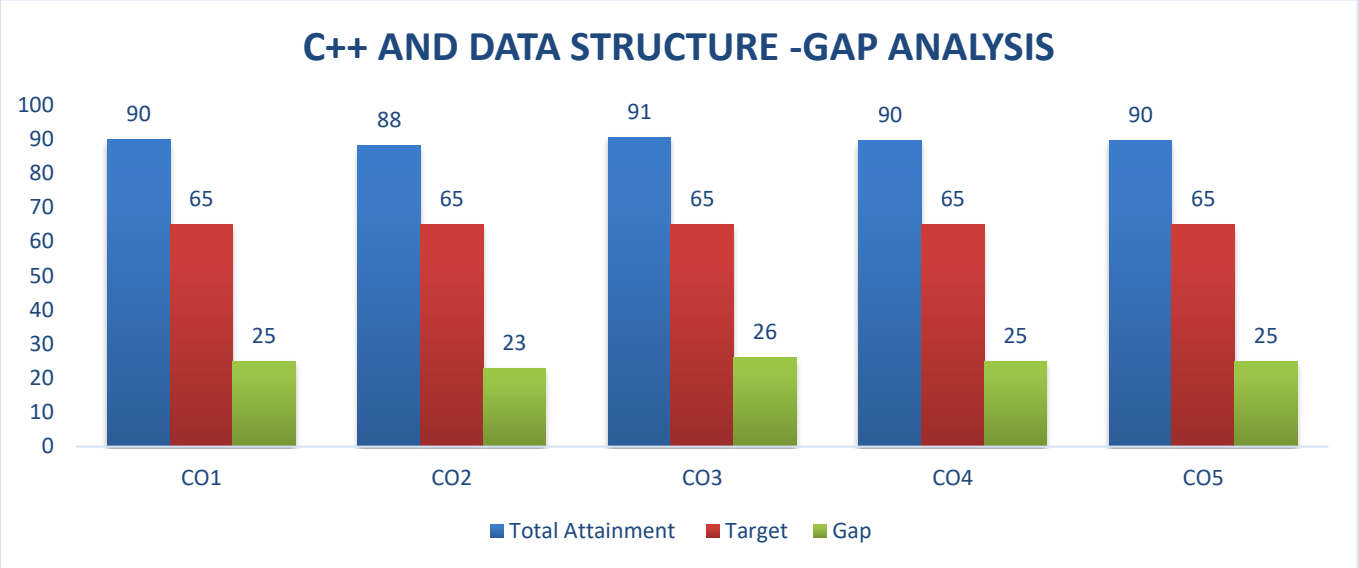


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1					H		M
CO 2					H	H	
CO 3					M	H	
CO 4					H		M
CO 5					M	H	

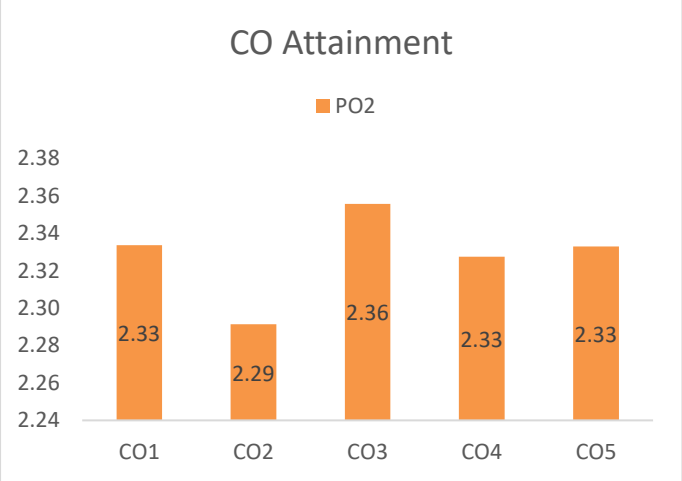


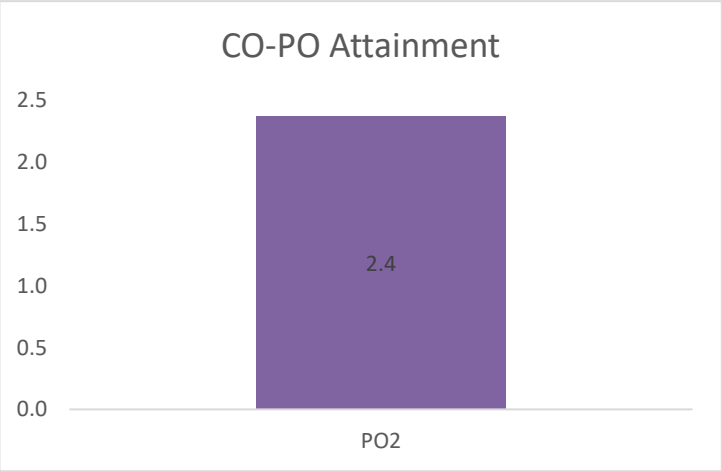


SUBJECT NAME	SUBJECT CODE	SEMESTER
C++ AND DATA STRUCTURE	CCA21	II

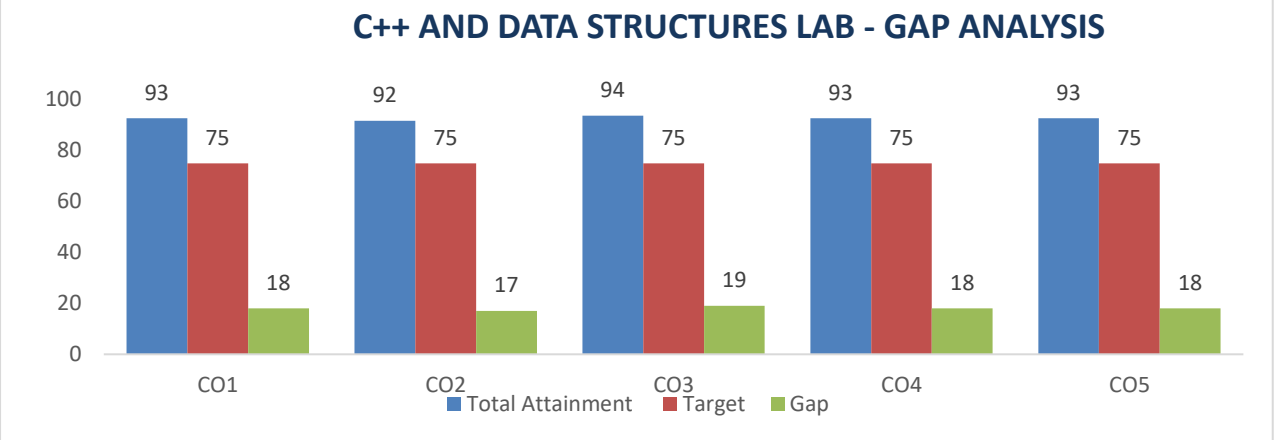


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1		M					M
CO 2		H				H	
CO 3		H				H	
CO 4		M					M
CO 5		H				H	

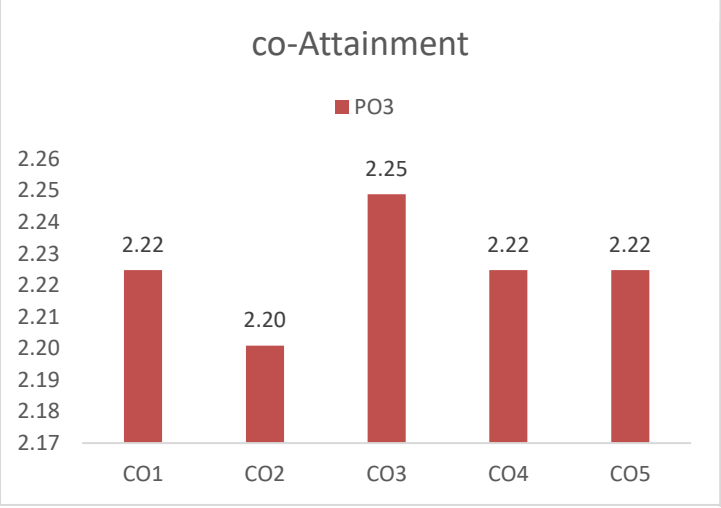


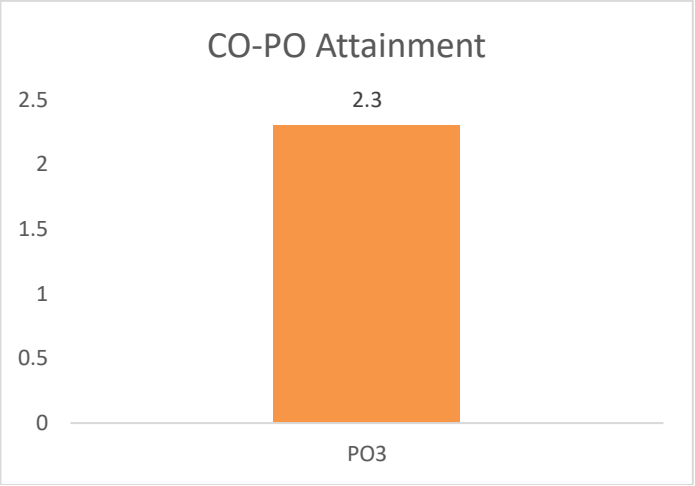


SUBJECT NAME	SUBJECT CODE	SEMESTER
C++ AND DATA STRUCTURES LAB	CPCA23	II

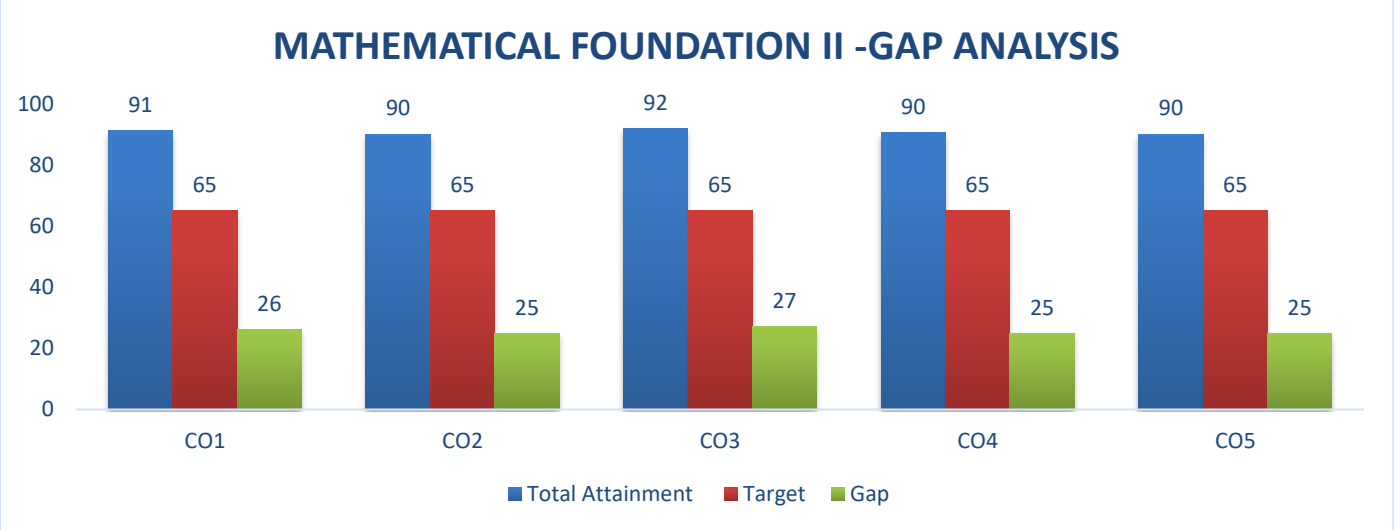


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1			M			H	
CO 2			H			H	
CO 3			M			H	
CO 4			H			M	
CO 5			M			H	

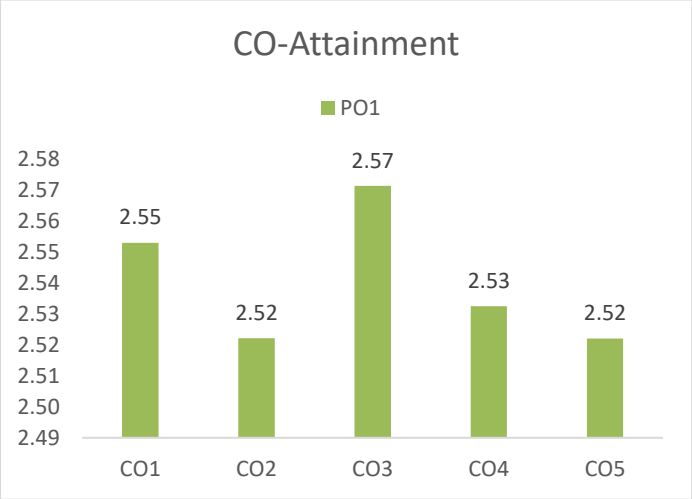


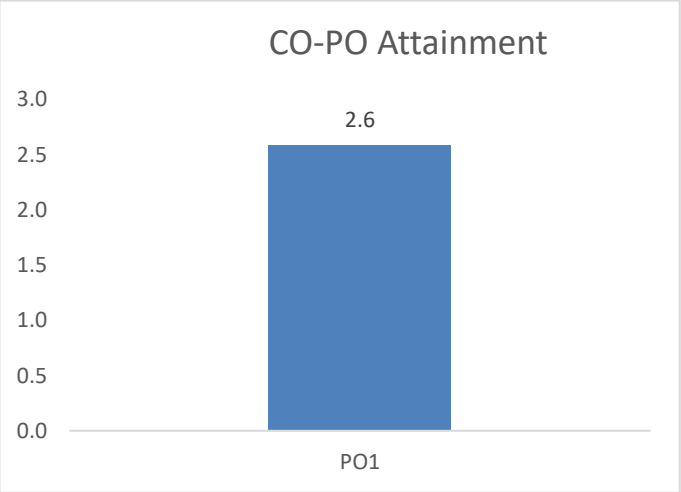


SUBJECT NAME	SUBJECT CODE	SEMESTER
MATHEMATICAL FOUNDATION II	CAMA25B	II

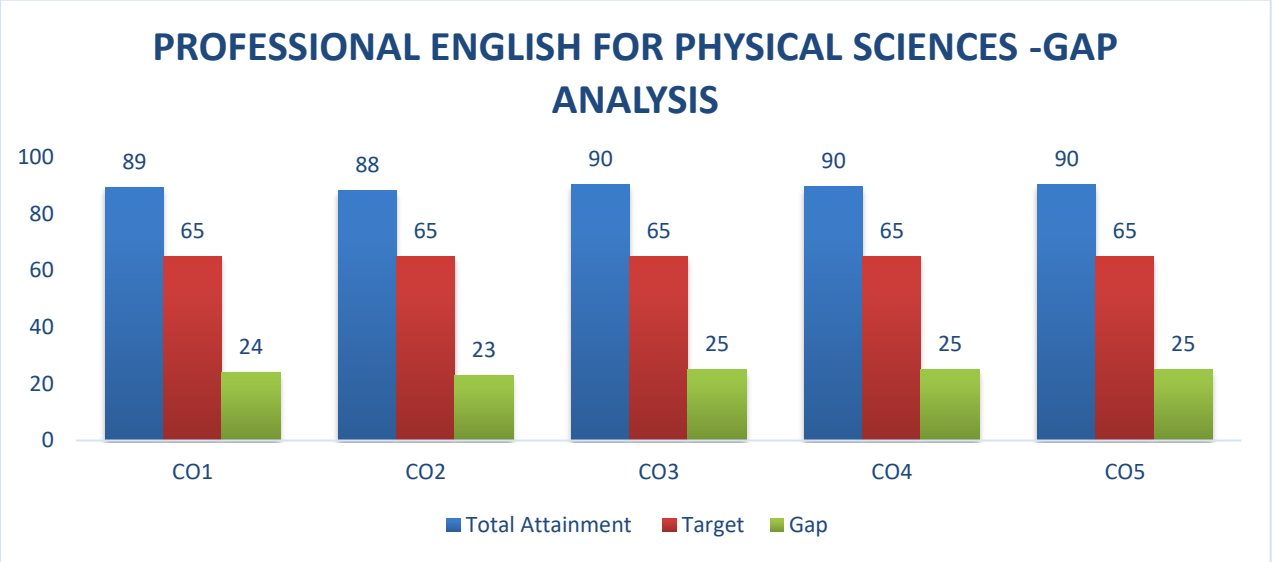


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1	H					H	
CO 2	H					H	
CO 3	M						M
CO 4	H					H	
CO 5	H					H	

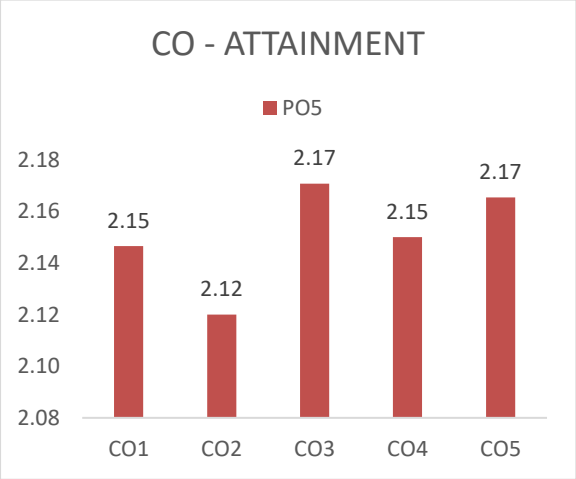


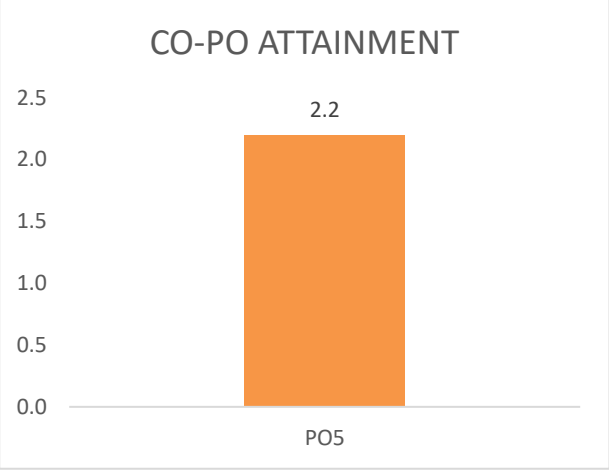


SUBJECT NAME	SUBJECT CODE	SEMESTER
PROFESSIONAL ENGLISH FOR PHYSICAL SCIENCES	CPE20C	II

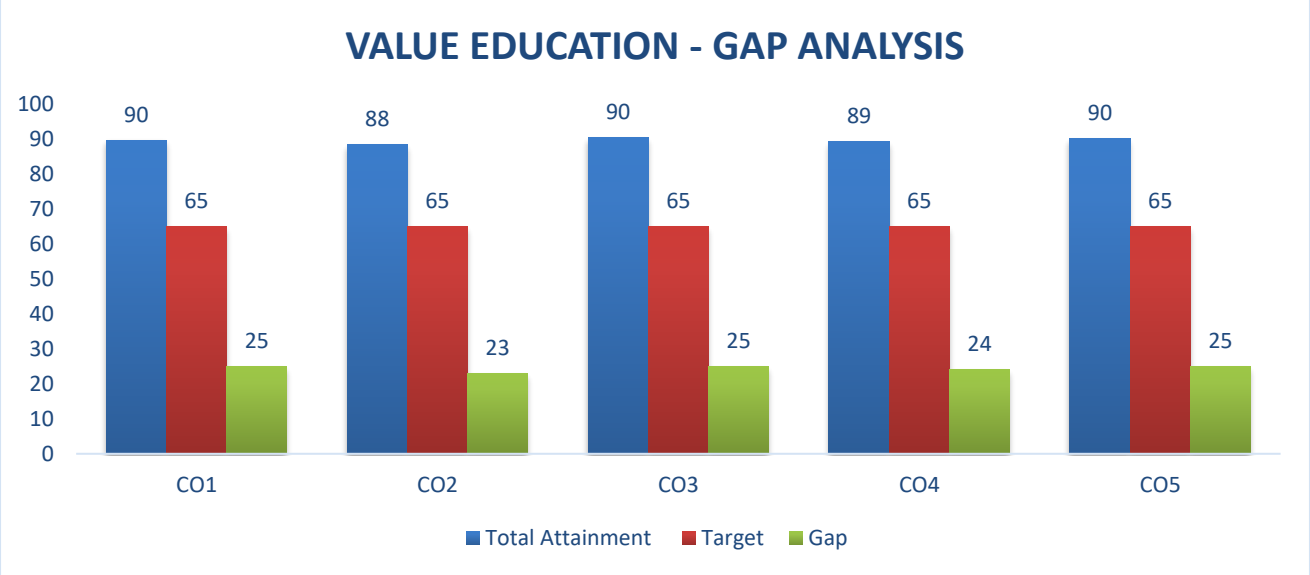


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1					H	H	
CO 2					M	H	
CO 3					M	H	
CO 4					M		M
CO 5					H	H	

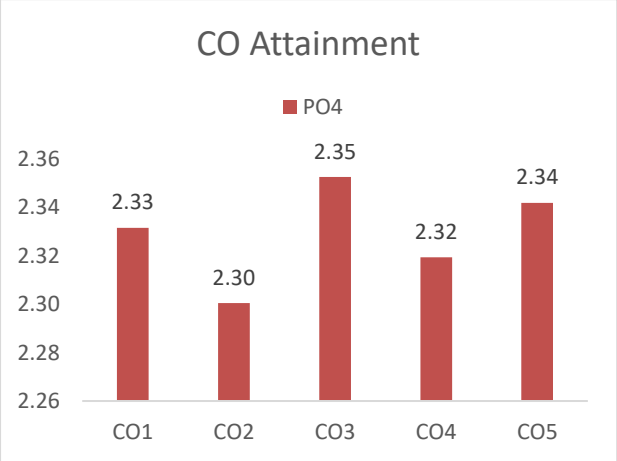


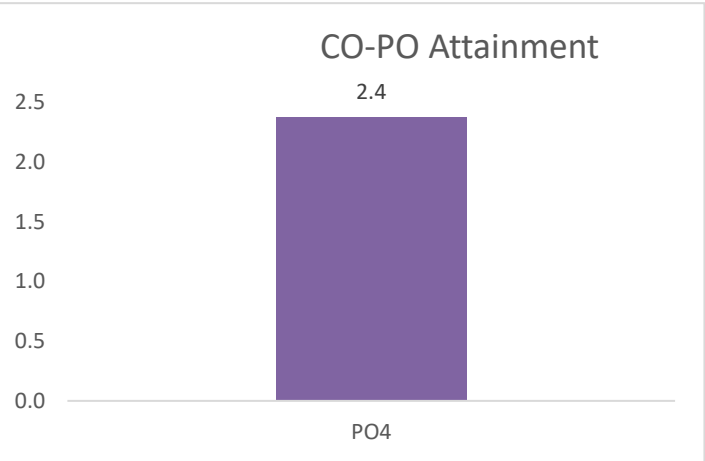


SUBJECT NAME	SUBJECT CODE	SEMESTER
VALUE EDUCATION	CGA20	II

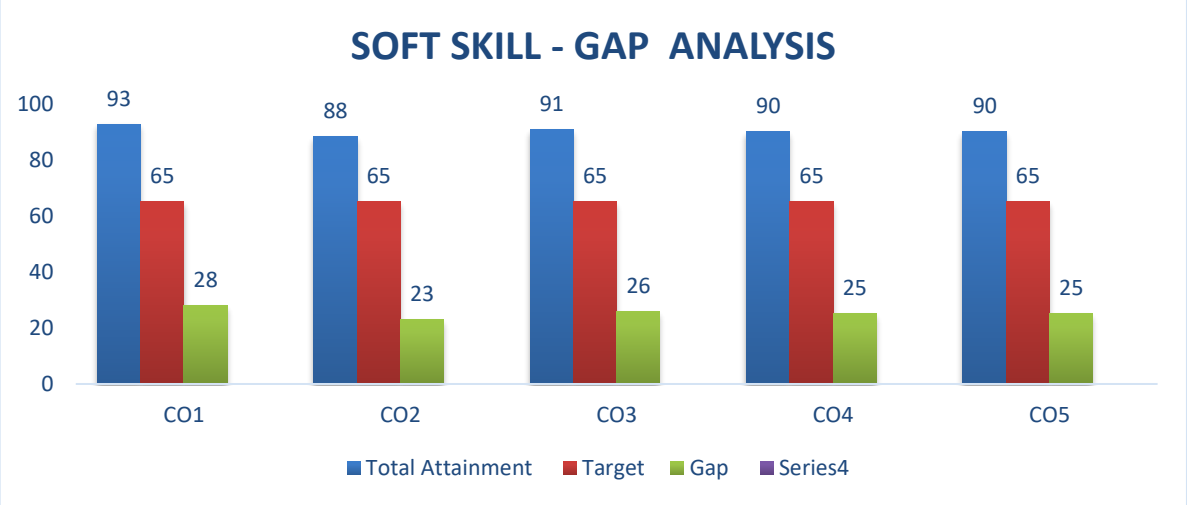


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1				H		H	
CO 2				M		M	
CO 3				H			M
CO 4				M		M	
CO 5				H		H	

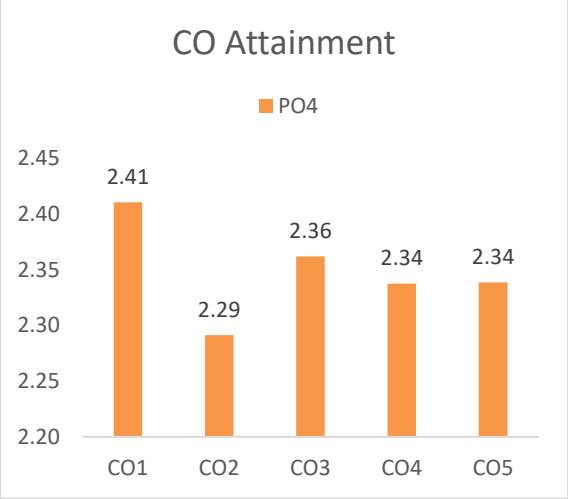


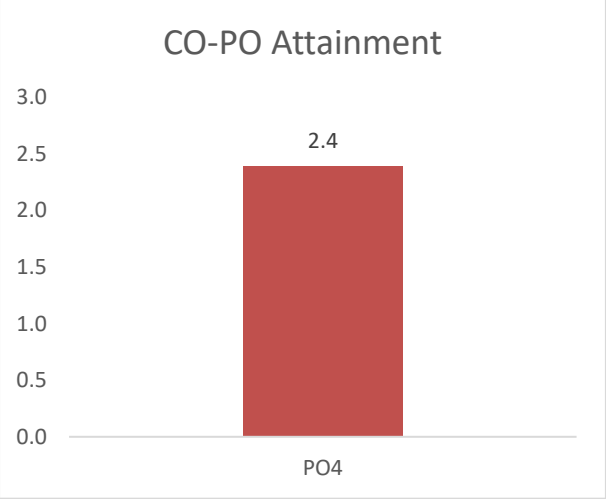


SUBJECT NAME	SUBJECT CODE	SEMESTER
SOFT SKILL	CSS20	II

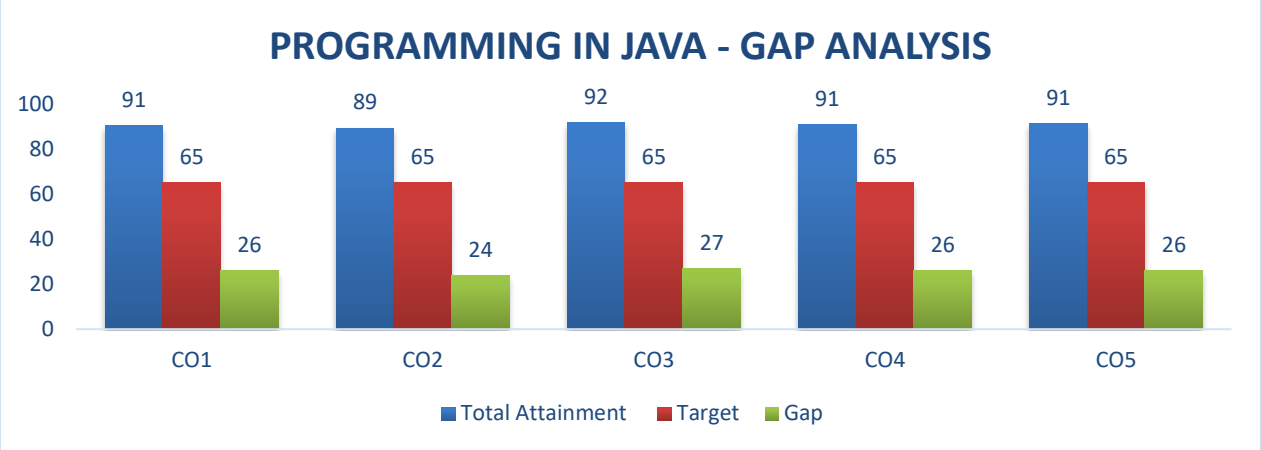


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1				H		H	
CO 2				M		H	
CO 3				H			M
CO 4				M		M	
CO 5				H		H	

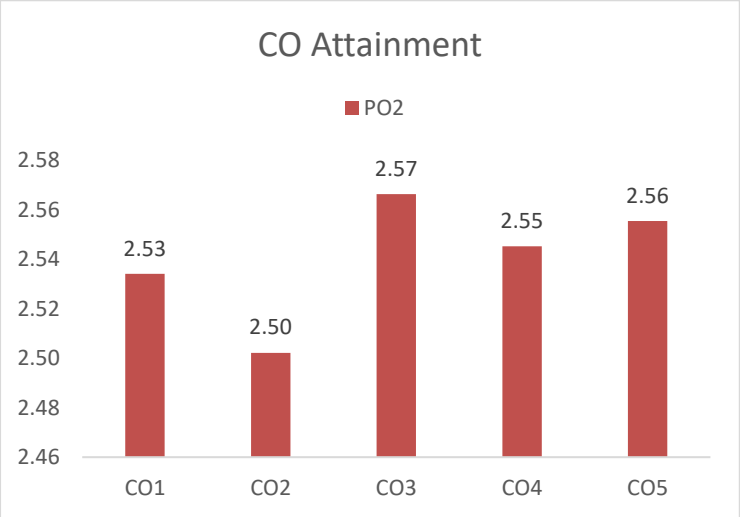


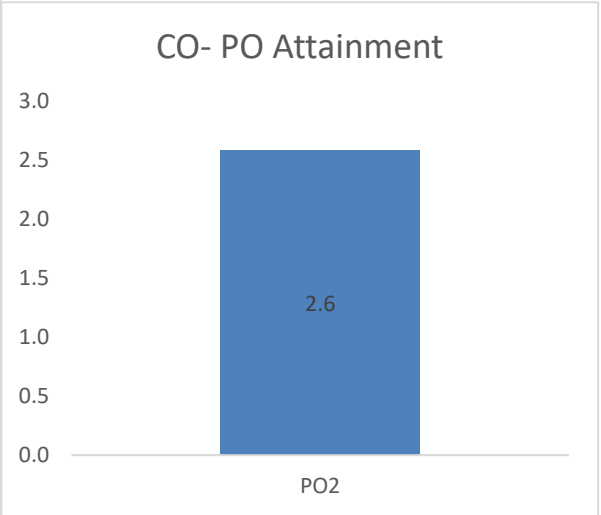


SUBJECT NAME	SUBJECT CODE	SEMESTER
PROGRAMMING IN JAVA	CCA31	III

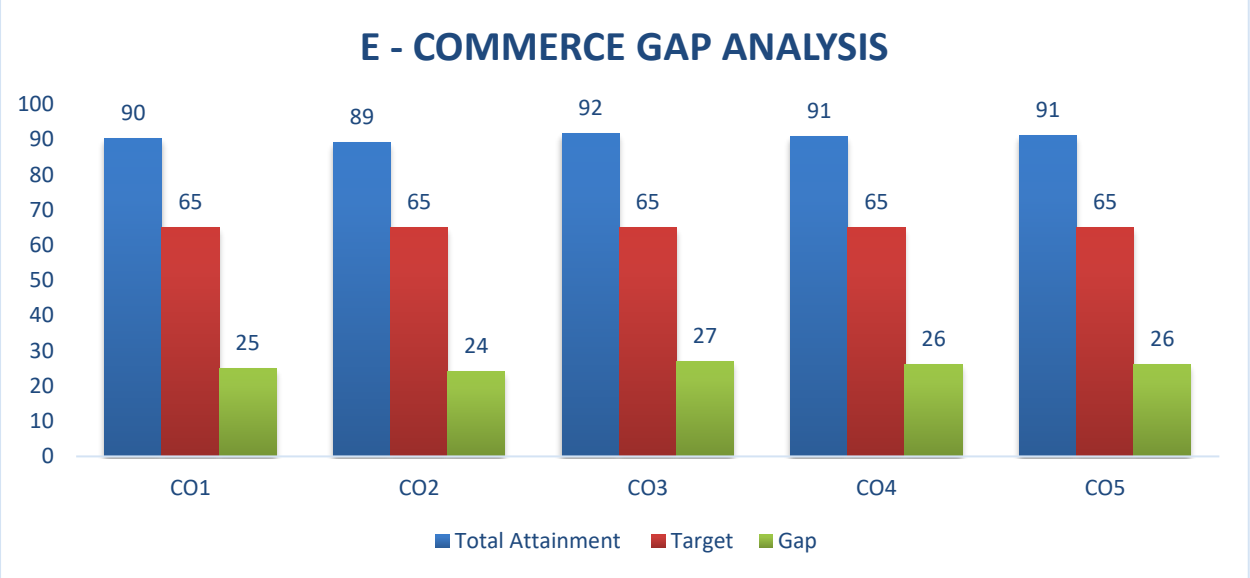


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1		H				H	
CO 2		M				H	M
CO 3		H				H	
CO 4		H					M
CO 5		H				H	

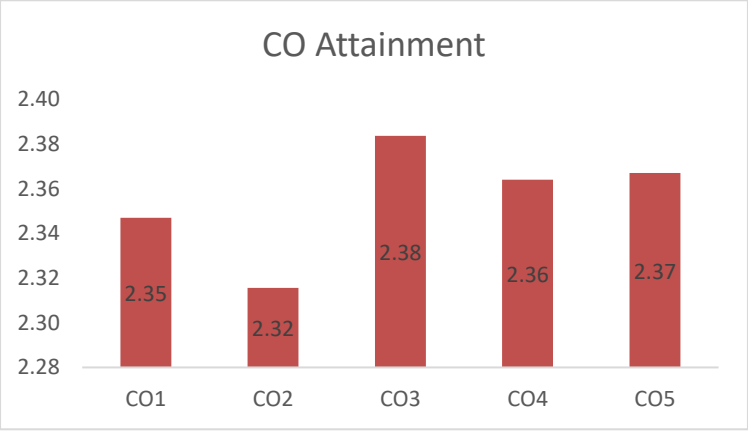


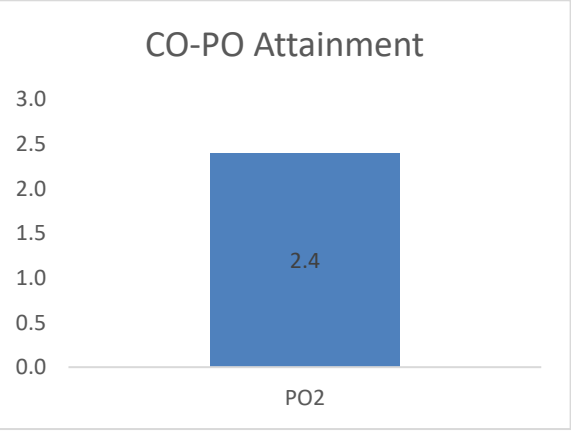


SUBJECT NAME	SUBJECT CODE	SEMESTER
E-COMMERCE	CCA31	III

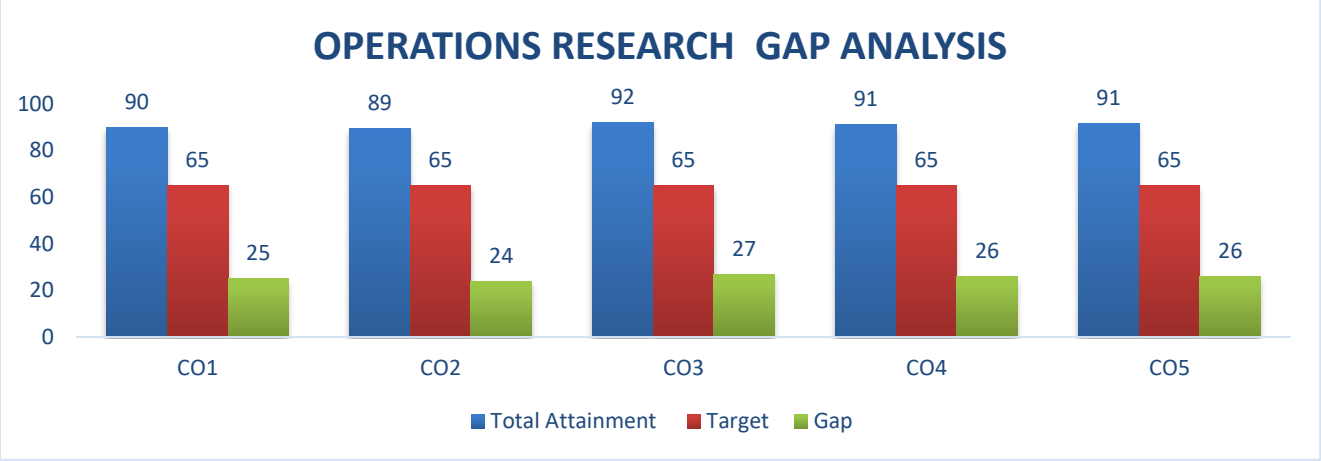


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1		H				H	
CO 2		M				H	
CO 3		H					H
CO 4		M					M
CO 5		H				H	

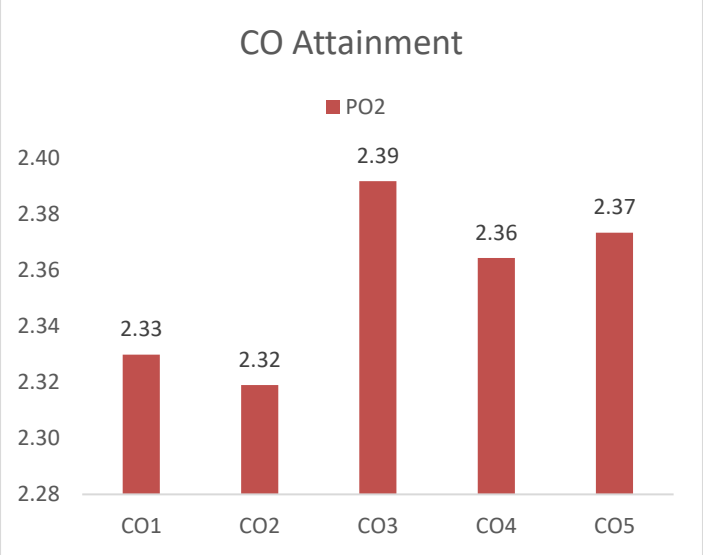


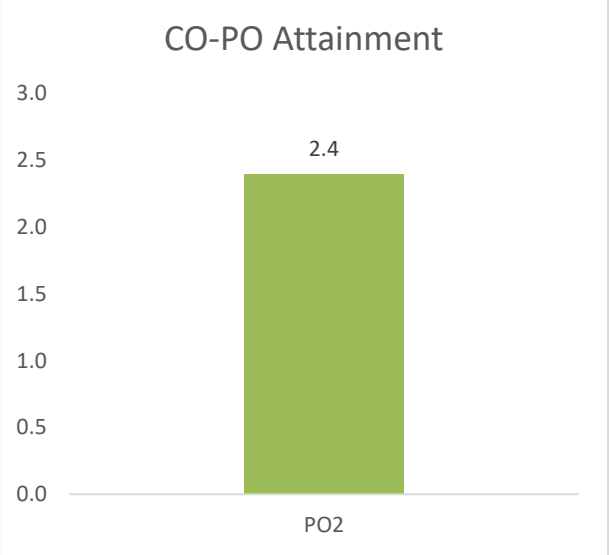


SUBJECT NAME	SUBJECT CODE	SEMESTER
OPERATIONS RESEARCH	CCA32	III

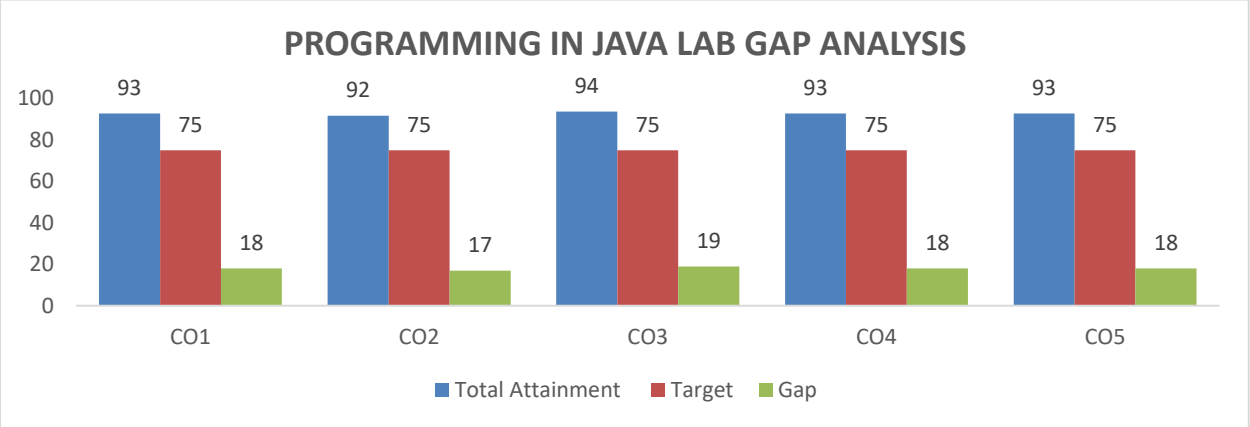


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1		H				H	
CO 2		M				M	
CO 3		M					M
CO 4		H					H
CO 5		H				H	

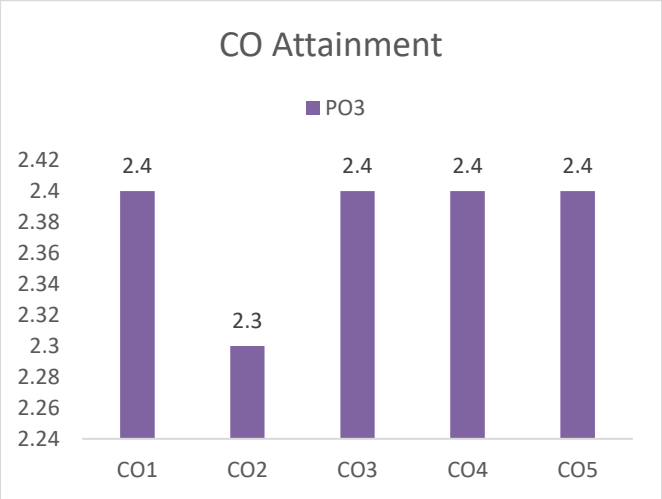


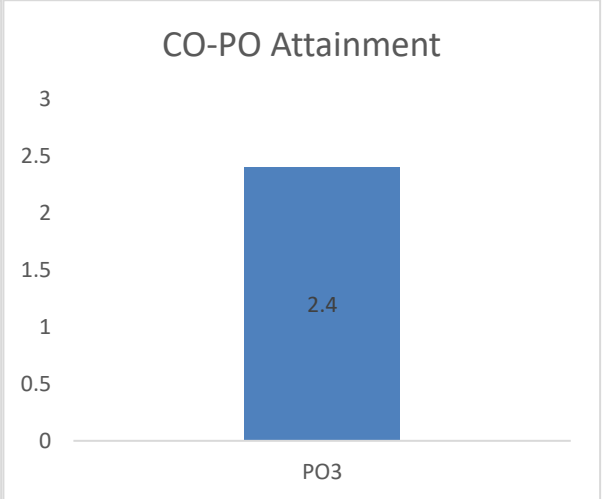


SUBJECT NAME	SUBJECT CODE	SEMESTER
PROGRAMMING IN JAVA LAB	CPCA36	III

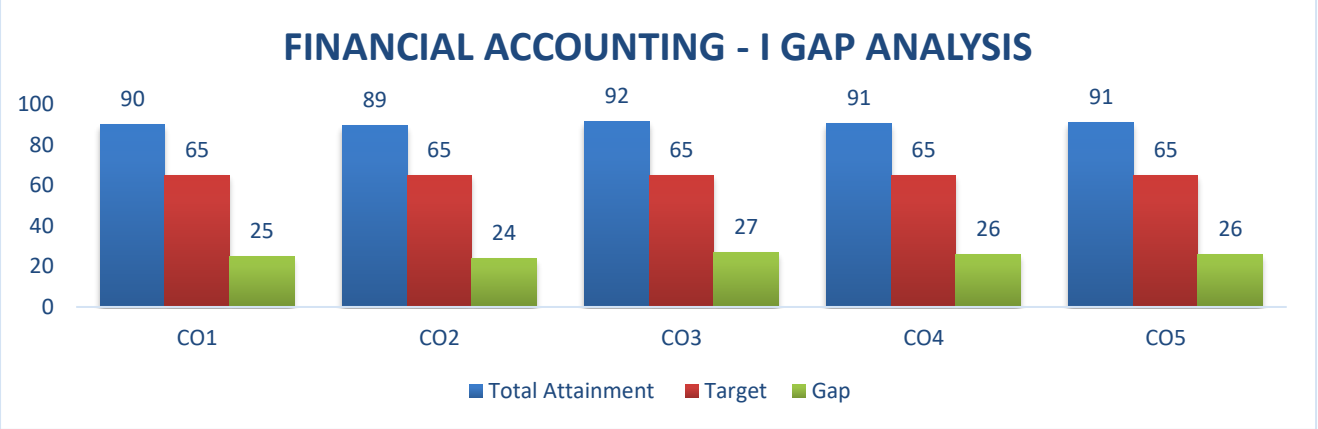


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1			H			M	
CO 2			M			H	
CO 3			M			M	
CO 4			H			M	
CO 5			H			H	

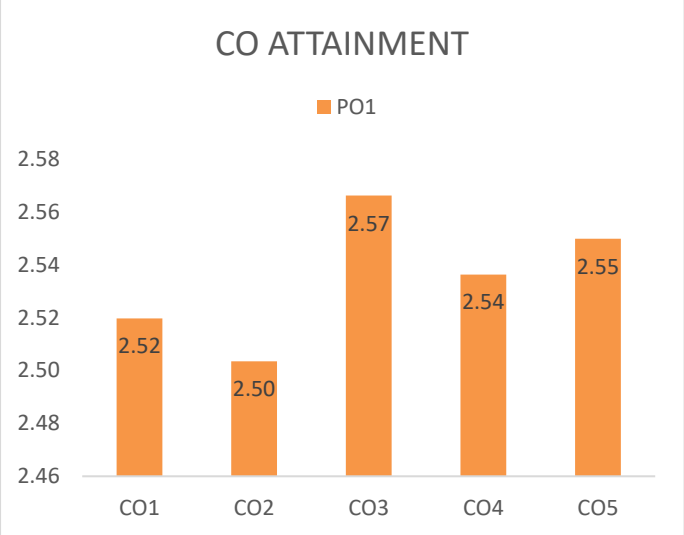


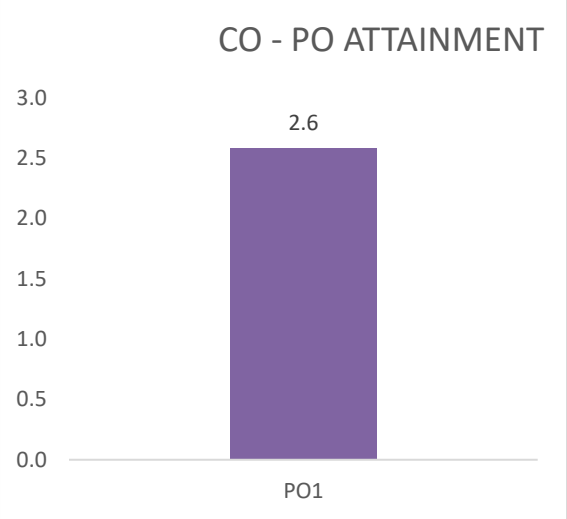


SUBJECT NAME	SUBJECT CODE	SEMESTER
FINANCIAL ACCOUNTING-I	CACMA15C	III

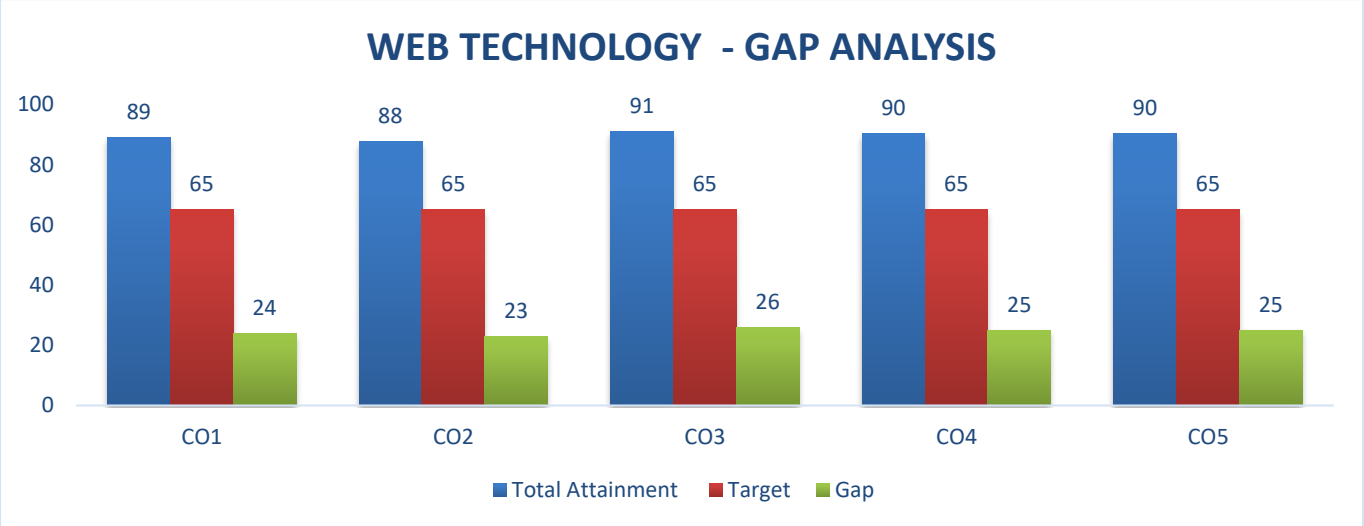


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1	M					H	
CO 2	H					H	
CO 3	H						M
CO 4	H						M
CO 5	H					H	

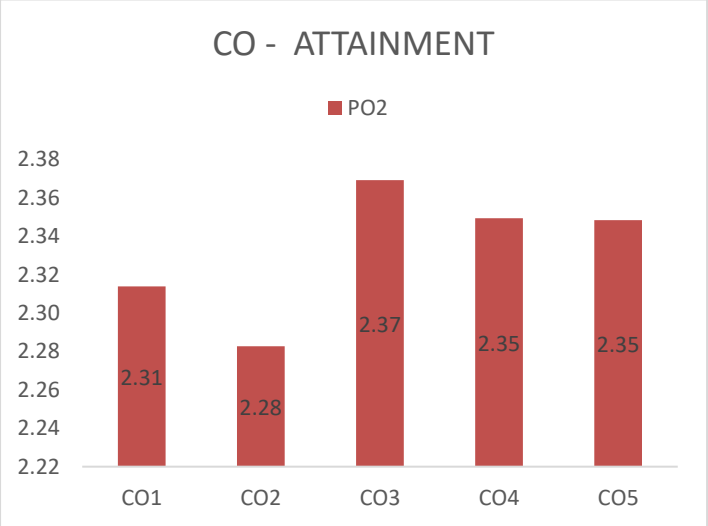


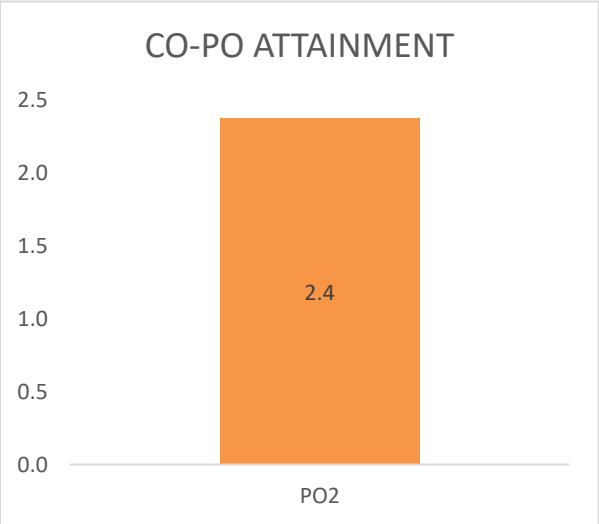


SUBJECT NAME	SUBJECT CODE	SEMESTER
WEB TECHNOLOGY	CSCA34	III

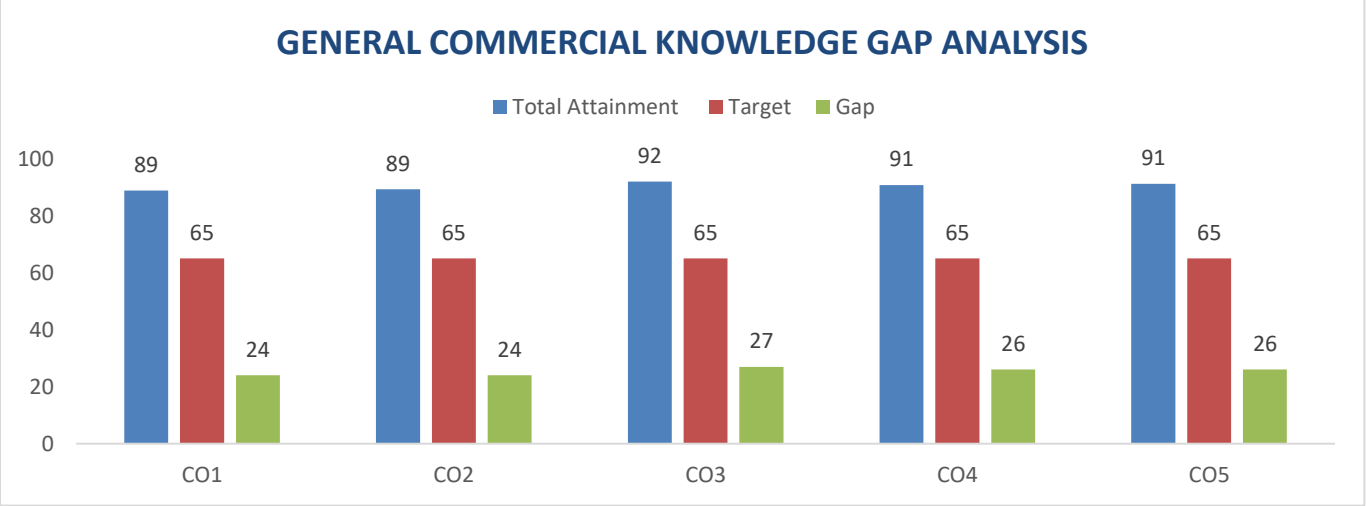


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1		H				H	
CO 2		M				M	
CO 3		H				H	
CO 4		H					M
CO 5		M				M	

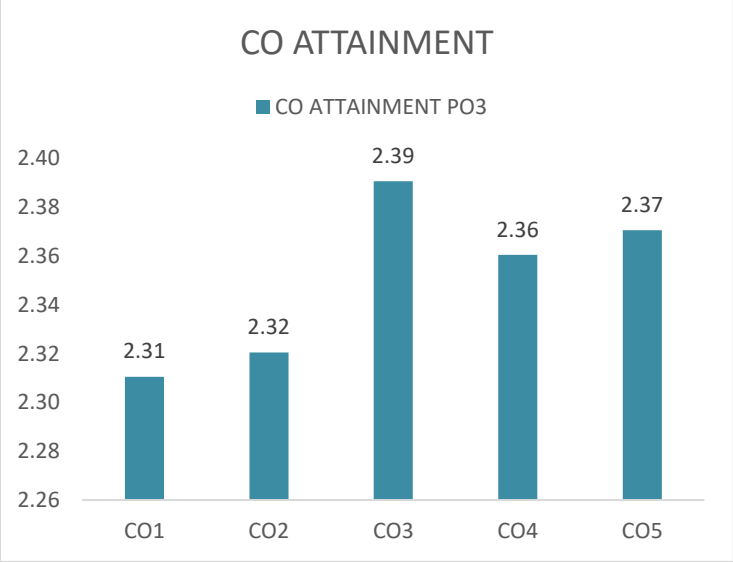


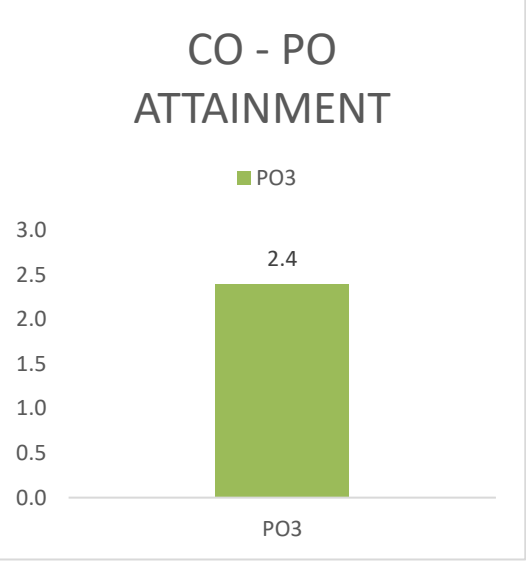


SUBJECT NAME	SUBJECT CODE	SEMESTER
GENERAL COMMERCIAL KNOWLEDGE	CNCM37	III

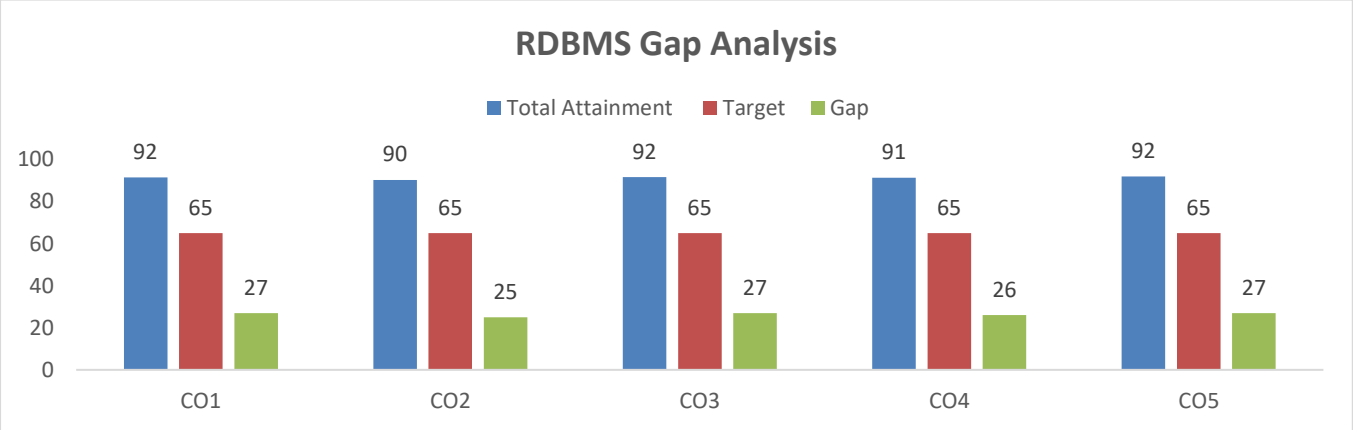


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1			H			H	
CO 2			H			H	
CO 3			M				M
CO 4			H				M
CO 5			M			H	

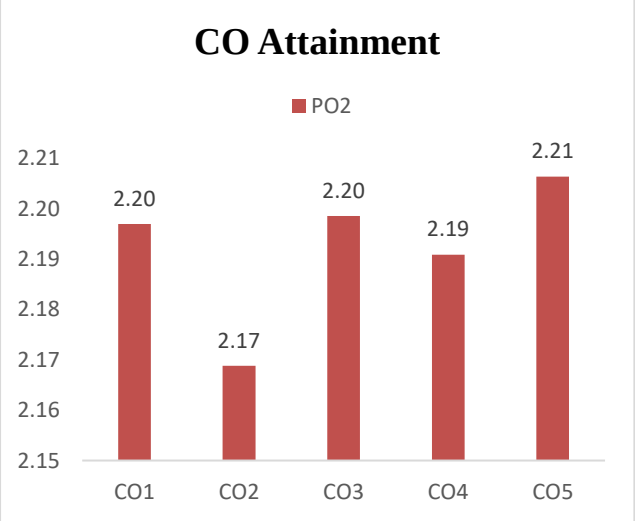


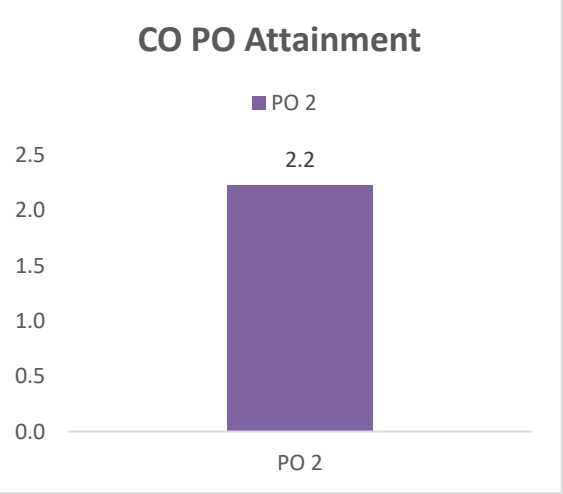


SUBJECT NAME	SUBJECT CODE	SEMESTER
RELATIONAL DATABASE MANAGEMENT SYSTEM	CCA41	IV

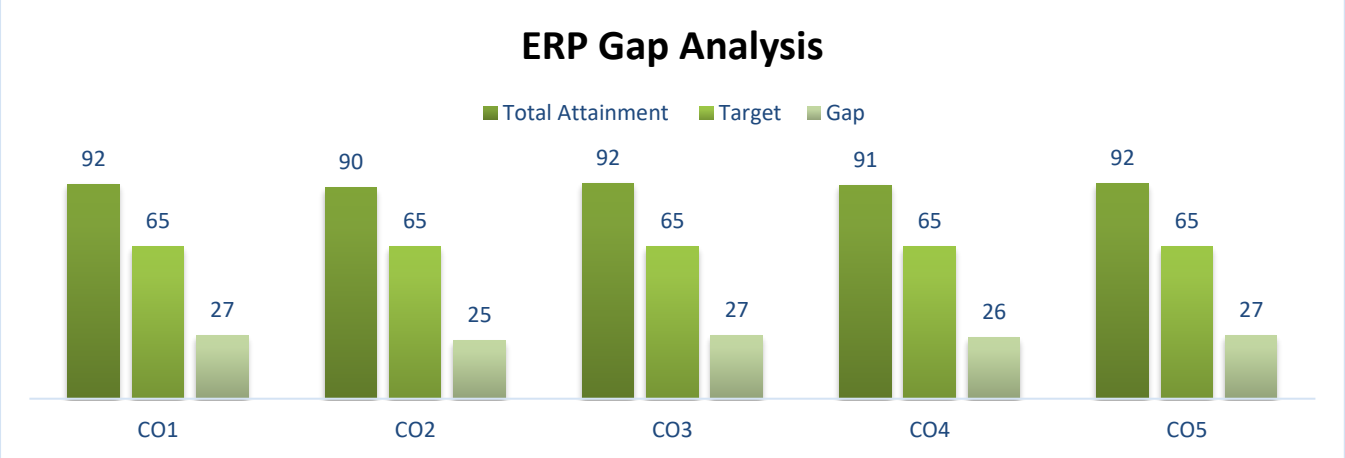


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1		H				H	
CO 2		M				H	
CO 3		H				M	
CO 4		M					M
CO 5		M				H	

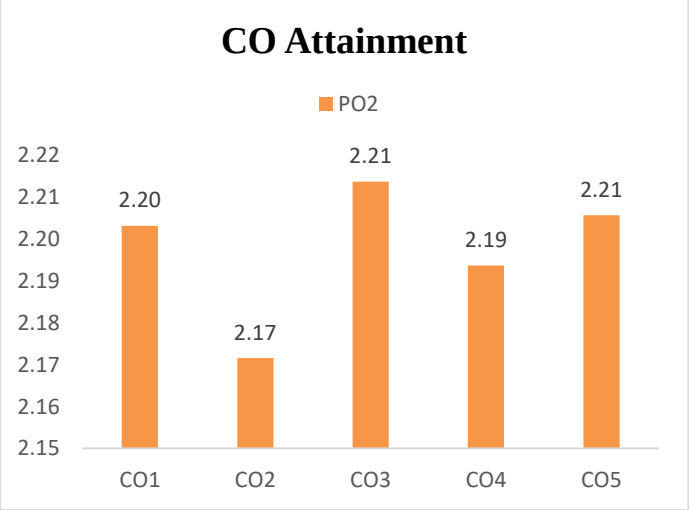


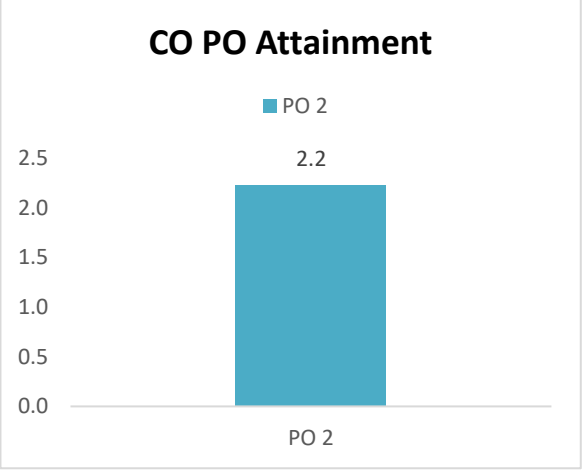


SUBJECT NAME	SUBJECT CODE	SEMESTER
ENTERPRISE RESOURCE PLANNING	CCA42	IV

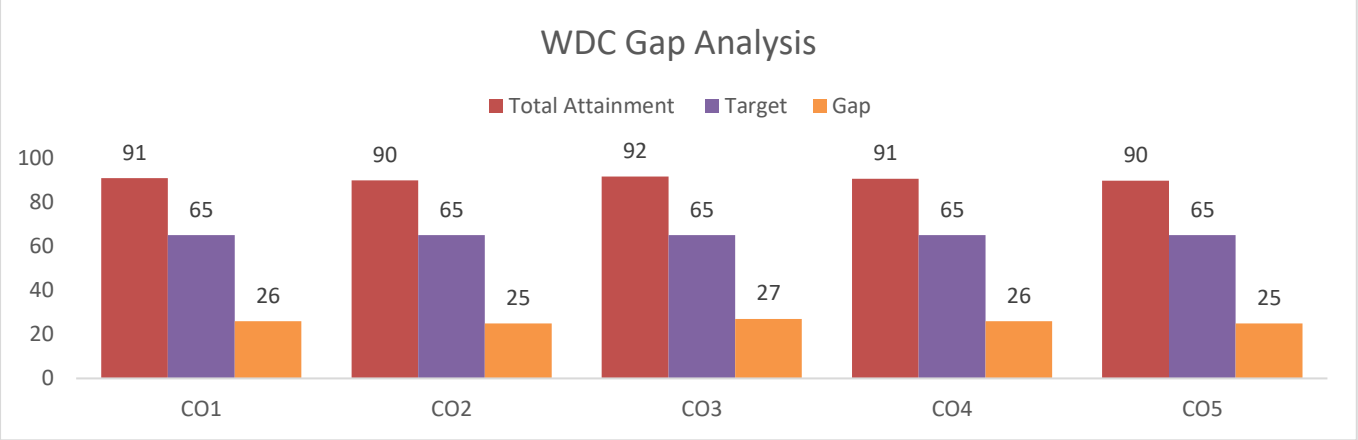


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1		H				H	
CO 2		M				H	
CO 3		H				M	
CO 4		M					M
CO 5		M				H	

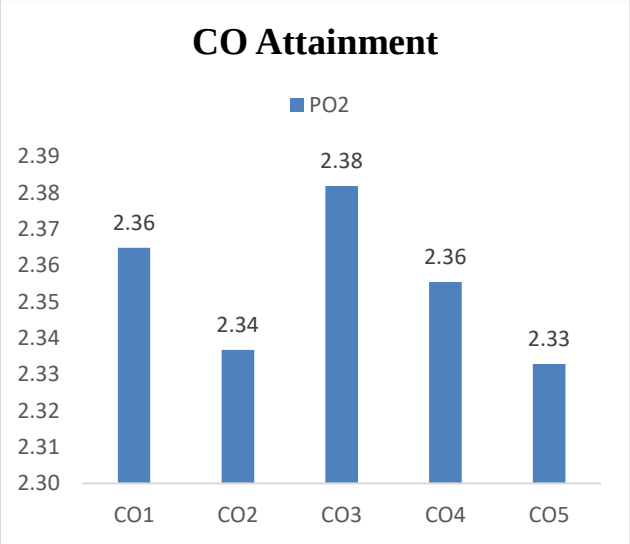


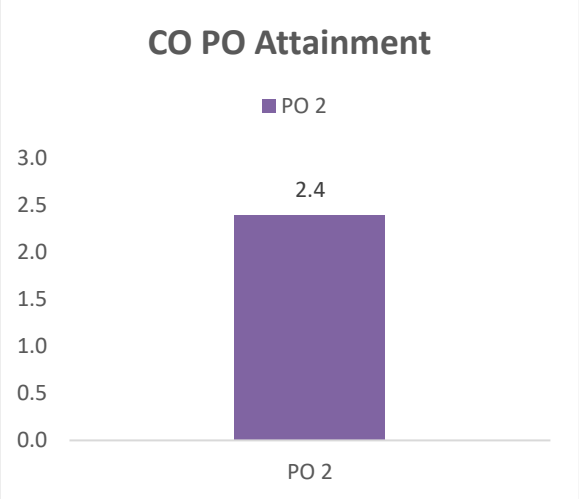


SUBJECT NAME	SUBJECT CODE	SEMESTER
WIRELESS DATA COMMUNICATIONS	CCA43	IV

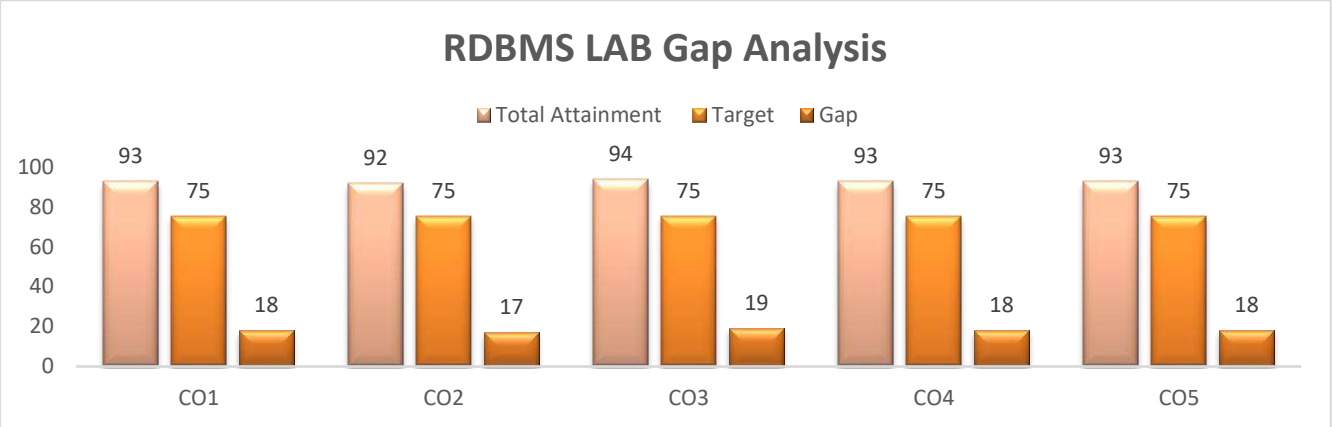


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1		H				H	
CO 2		M				M	
CO 3		H					M
CO 4		M					M
CO 5		H				M	

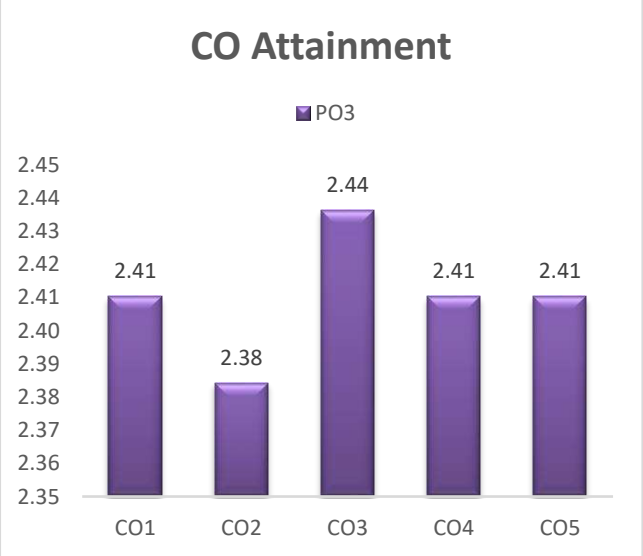


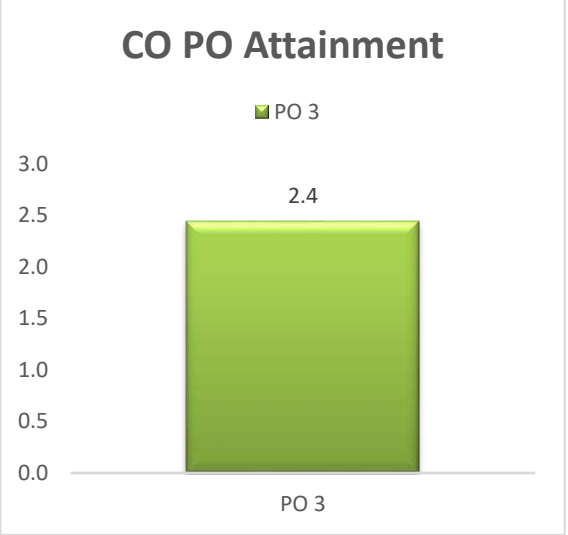


SUBJECT NAME	SUBJECT CODE	SEMESTER
RELATIONAL DATABASE MANAGEMENT SYSTEM LAB	CPCA46	IV

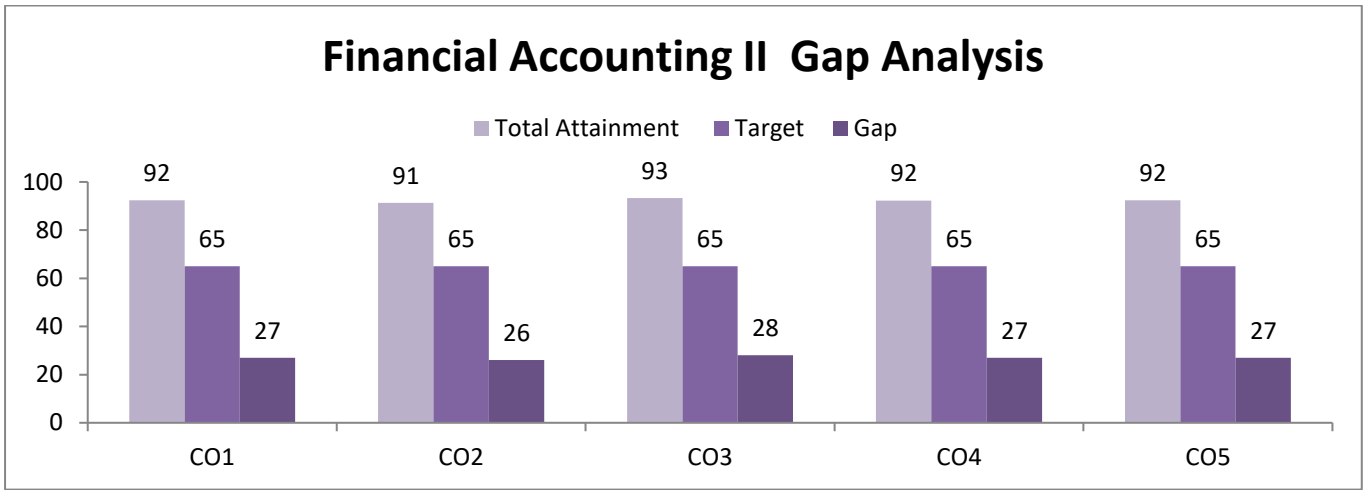


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1			H			M	
CO 2			M			H	
CO 3			M			M	
CO 4			H			M	
CO 5			H			H	

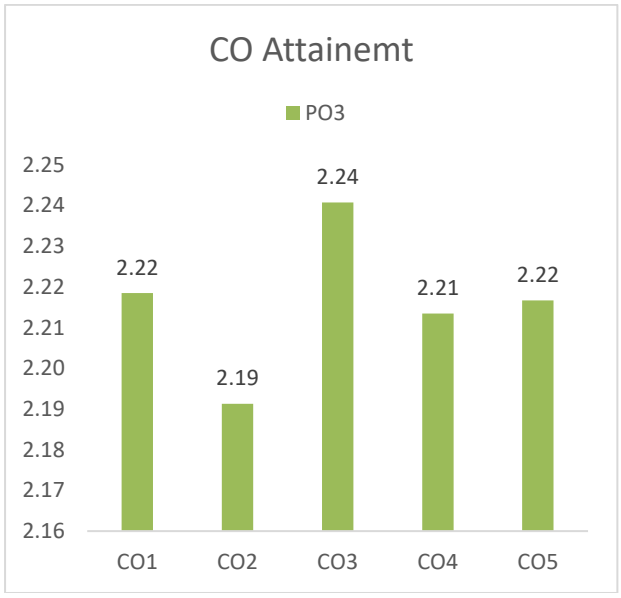


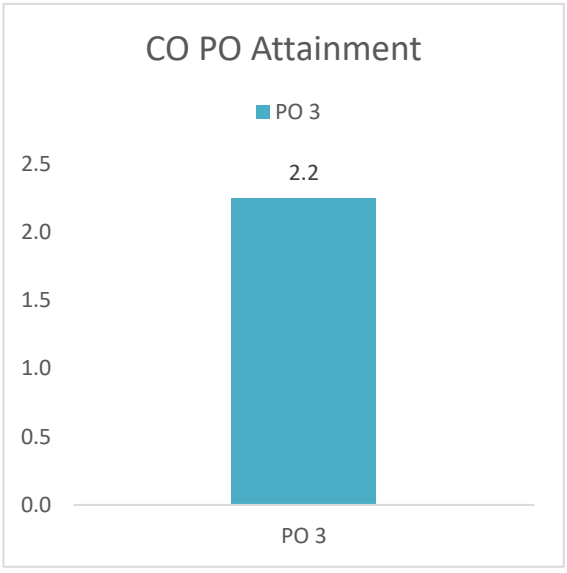


SUBJECT NAME	SUBJECT CODE	SEMESTER
FINANCIAL ACCOUNTING – II	CACM25C	IV

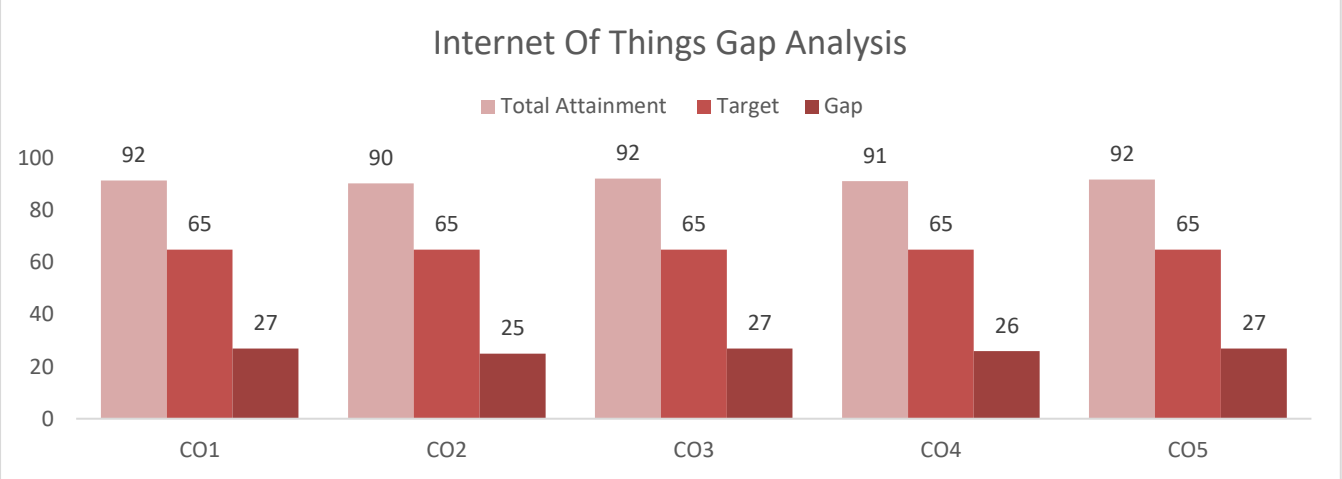


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1			M				L
CO 2			H			H	
CO 3			M			H	
CO 4			H				M
CO 5			M			H	

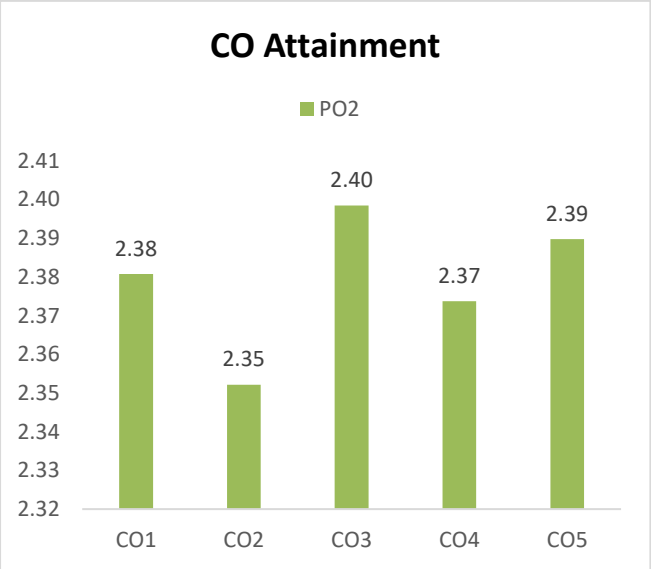


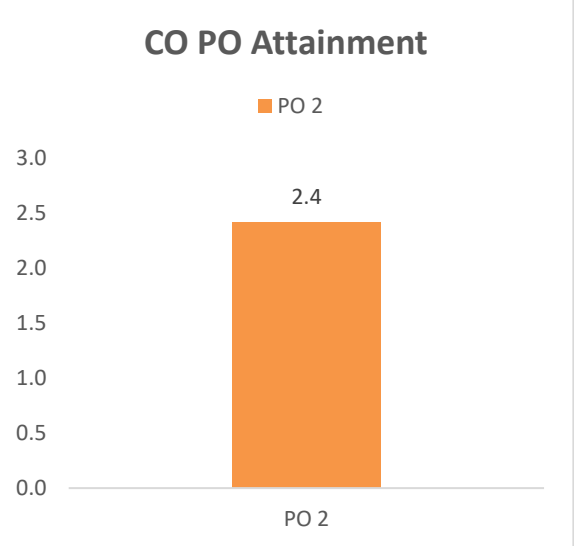


SUBJECT NAME	SUBJECT CODE	SEMESTER
INTERNET OF THINGS	CSCA44	IV

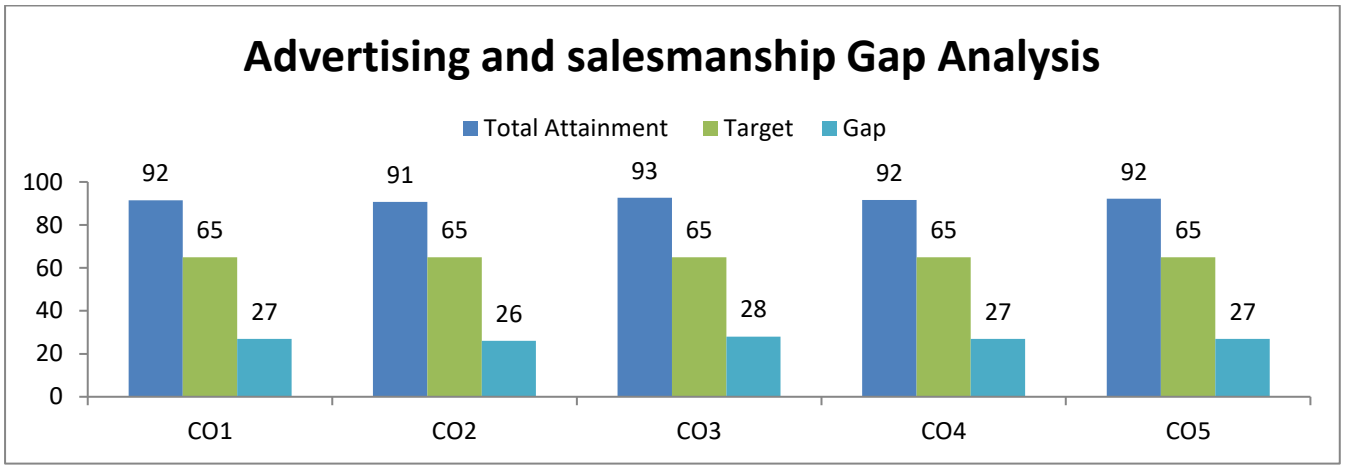


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1			H			H	L
CO 2			M			M	
CO 3			H				
CO 4			M				M
CO 5			H			M	

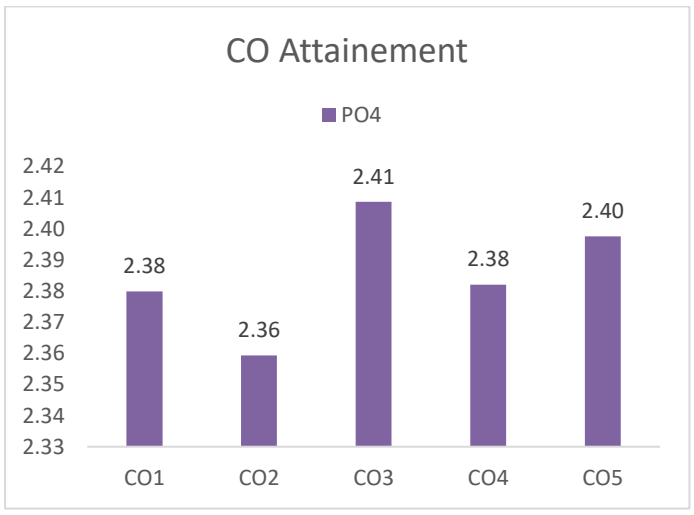


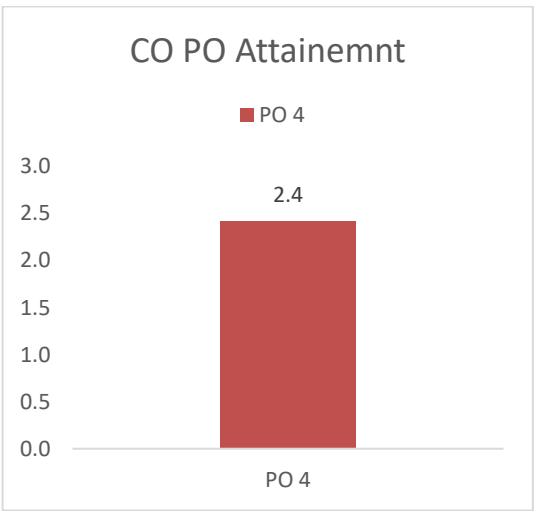


SUBJECT NAME	SUBJECT CODE	SEMESTER
ADVERTISING AND SALESMANSHIP	CNCM47	IV

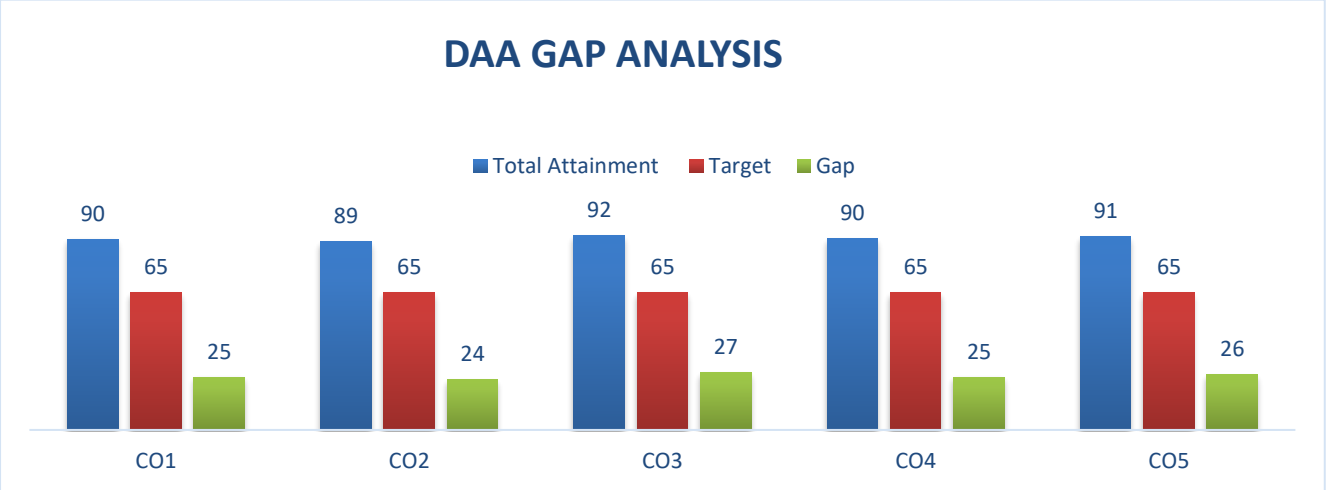


CO-PO mapping							
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO 1				H		H	
CO 2				M		H	
CO 3				H			M
CO 4				M		H	
CO 5				H			M

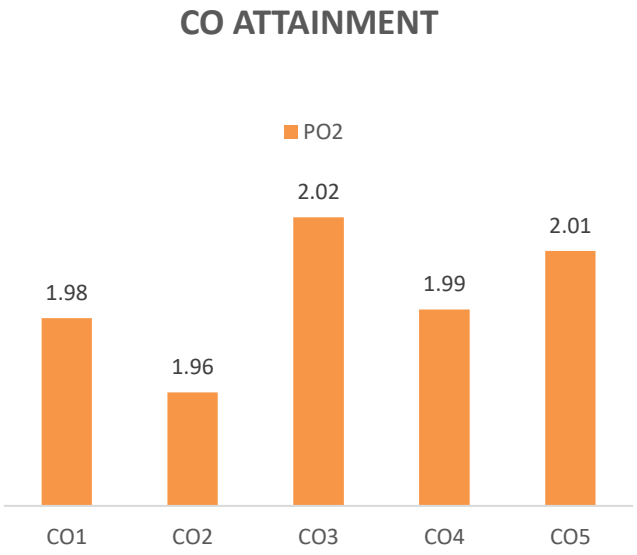


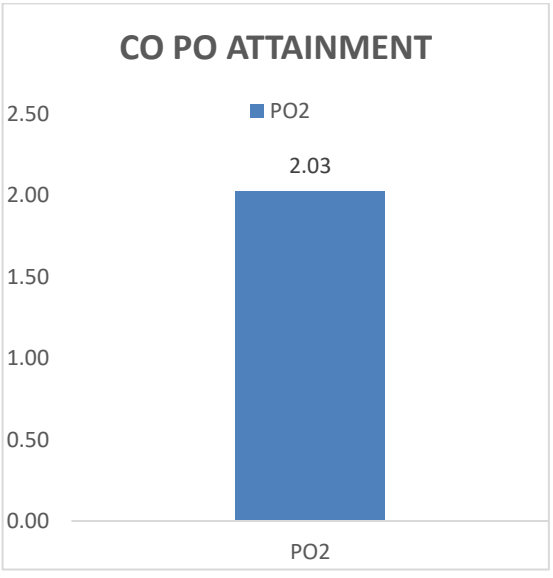


SUBJECT NAME	SUBJECT CODE	SEMESTER
DESIGN AND ANALYSIS OF ALGORITHM	CCA53	V

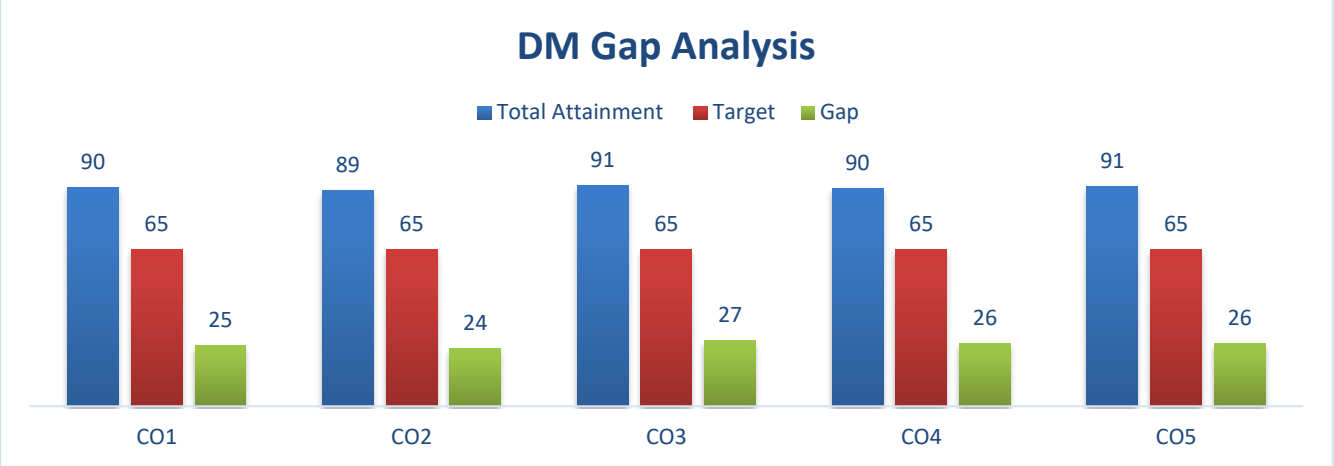


CO-PO mapping							
	PO 1	PO 2	PO 3	PO 4	PO 5	PSO 1	PSO 2
CO 1		3				3	
CO 2		2				3	
CO 3		1					2
CO 4		3					2
CO 5		2				3	

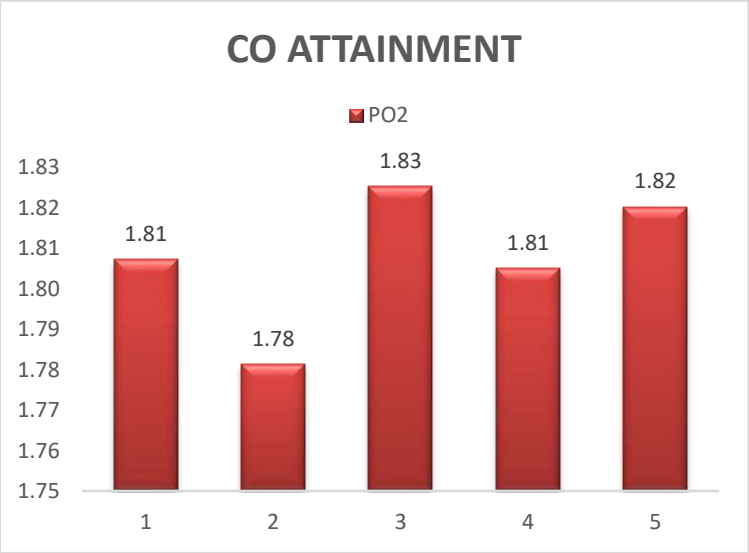


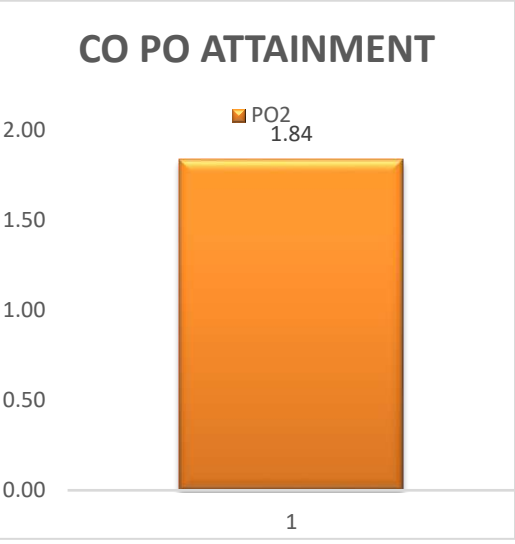


SUBJECT NAME	SUBJECT CODE	SEMESTER
DATA MINING	CECA54A	V

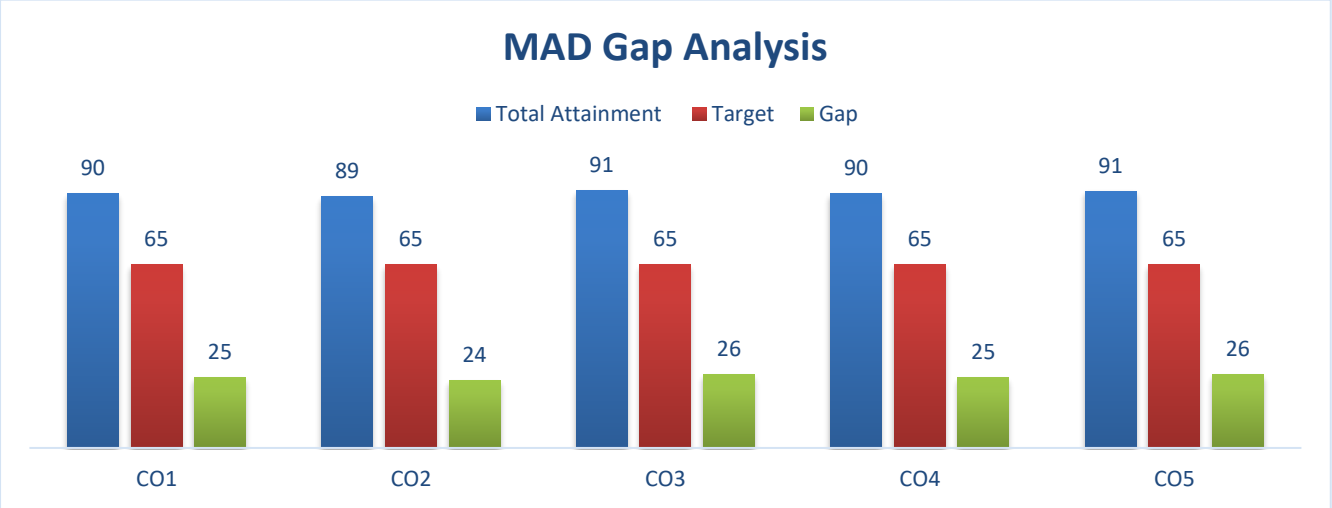


CO-PO mapping							
	PO 1	PO 2	PO 3	PO 4	PO 5	PSO 1	PSO 2
CO 1		2				3	
CO 2		2				3	
CO 3		3					2
CO 4		2					2
CO 5		1				3	

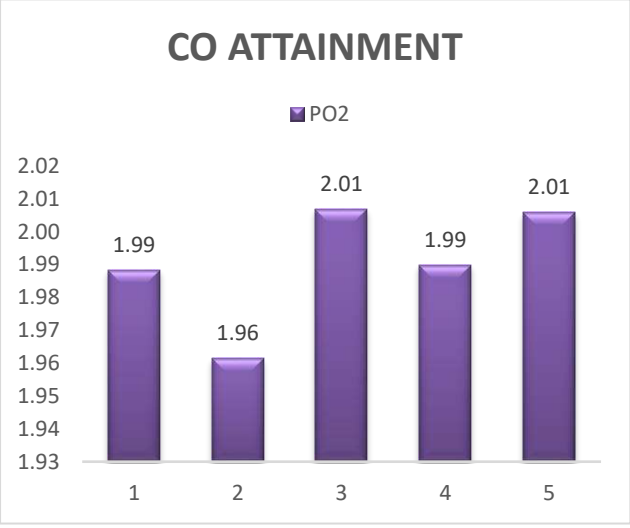


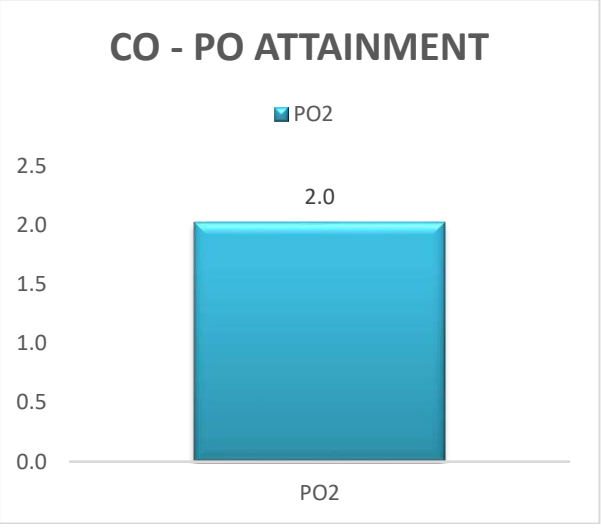


SUBJECT NAME	SUBJECT CODE	SEMESTER
MOBILE APPLICATION DEVELOPMENT	CCA51	V

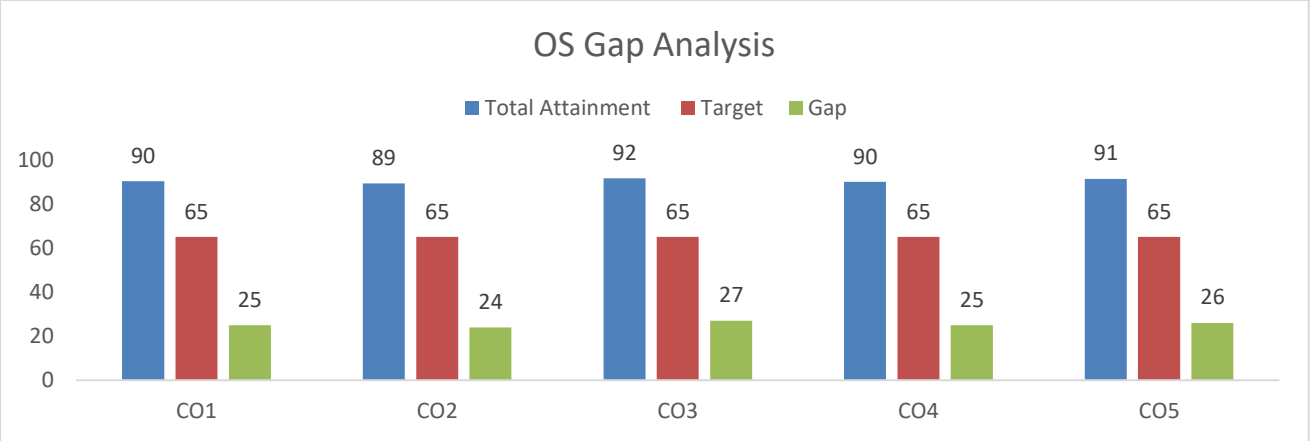


CO-PO mapping							
	PO 1	PO 2	PO 3	PO 4	PO 5	PSO 1	PSO 2
CO 1		3				3	
CO 2		2				3	
CO 3		2					2
CO 4		1					2
CO 5		3				3	

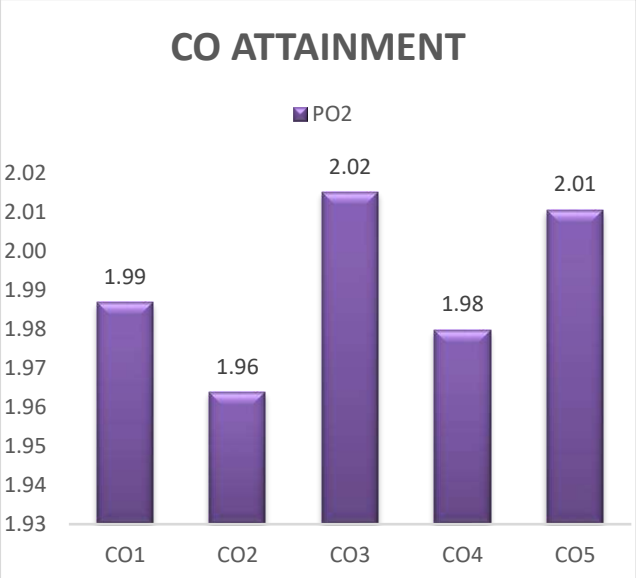


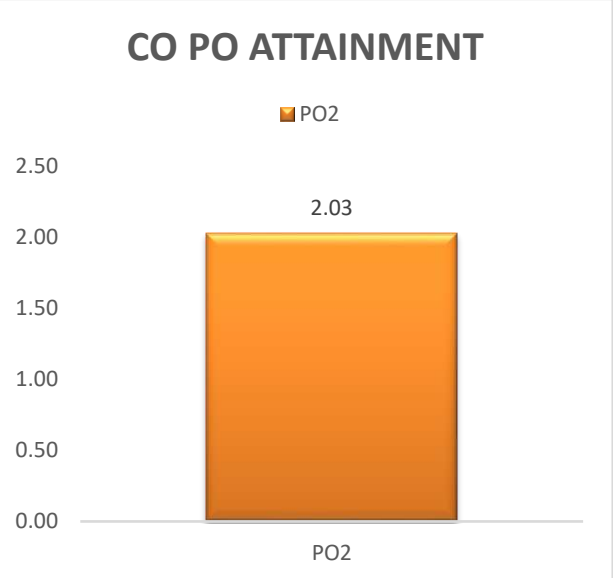


SUBJECT NAME	SUBJECT CODE	SEMESTER
OPERATING SYSTEM	CCA52	V

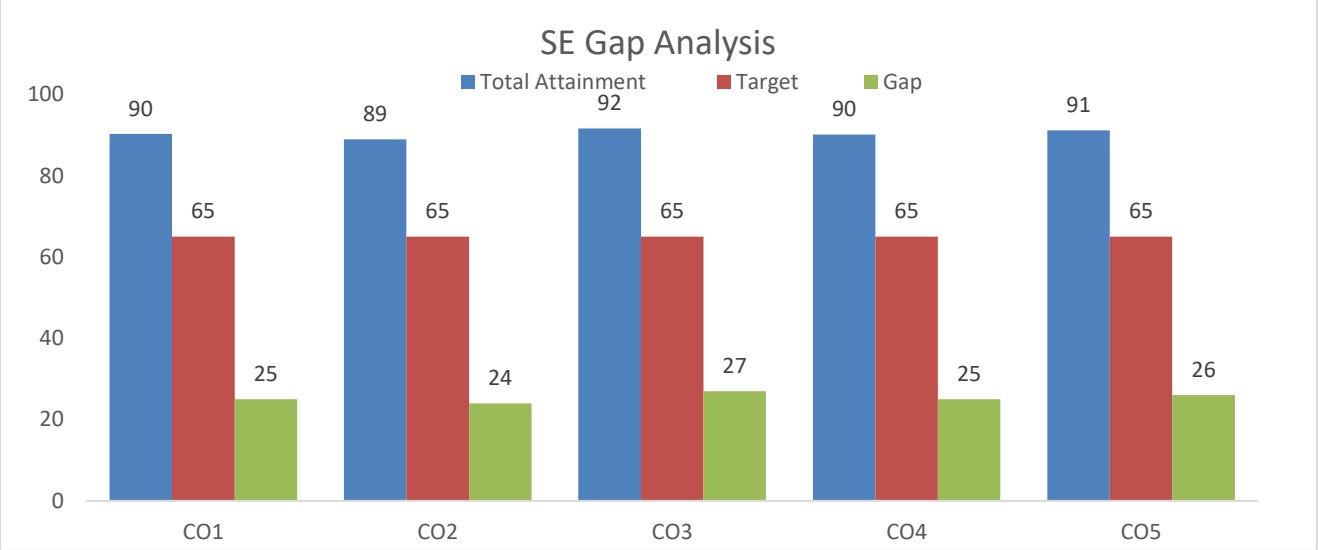


CO-PO mapping							
	PO 1	PO 2	PO 3	PO 4	PO 5	PSO 1	PSO 2
CO 1		2				3	
CO 2		3				3	
CO 3		3					2
CO 4		2					2
CO 5		1				3	

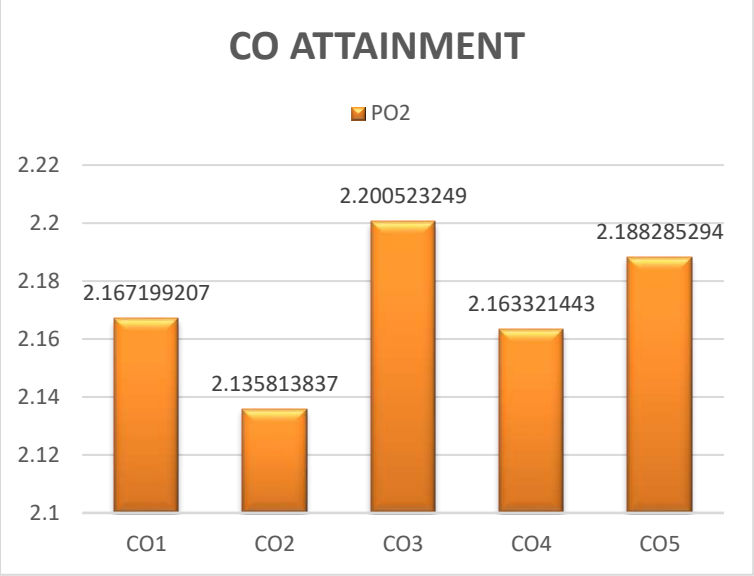


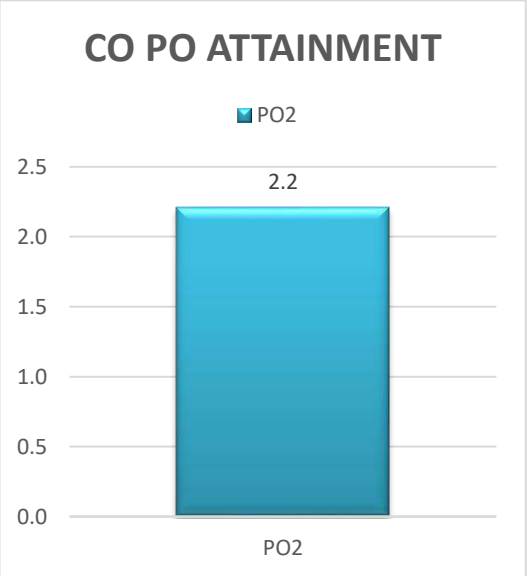


SUBJECT NAME	SUBJECT CODE	SEMESTER
SOFTWAR ENGINEERING	CSCA55	V

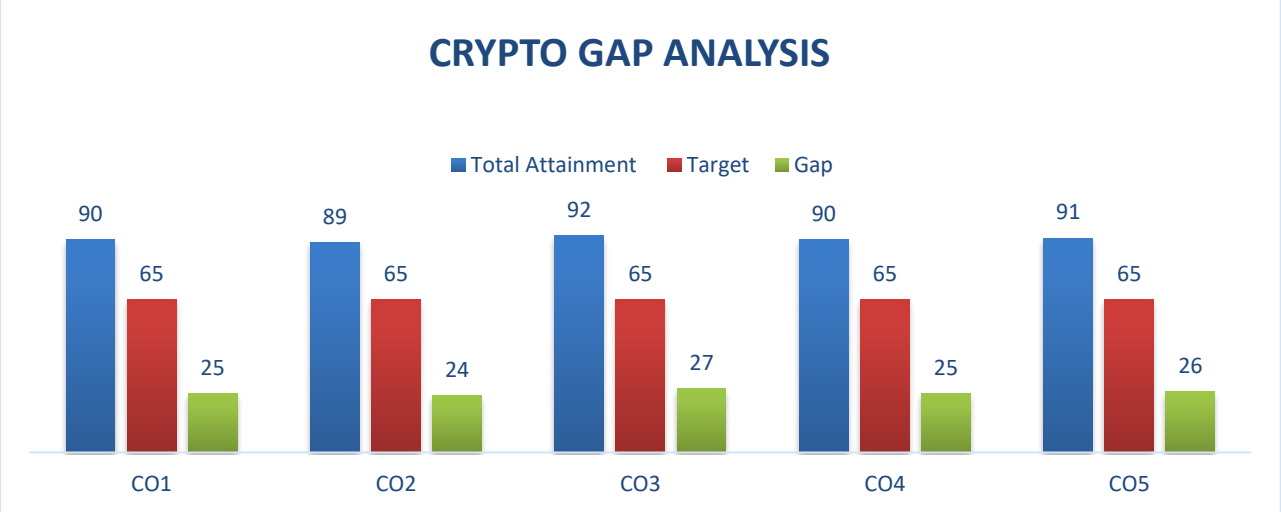


CO-PO mapping							
	PO 1	PO 2	PO 3	PO 4	PO 5	PSO 1	PSO 2
CO 1		3				3	
CO 2		2				3	
CO 3		1	2				2
CO 4		2					2
CO 5		4				3	

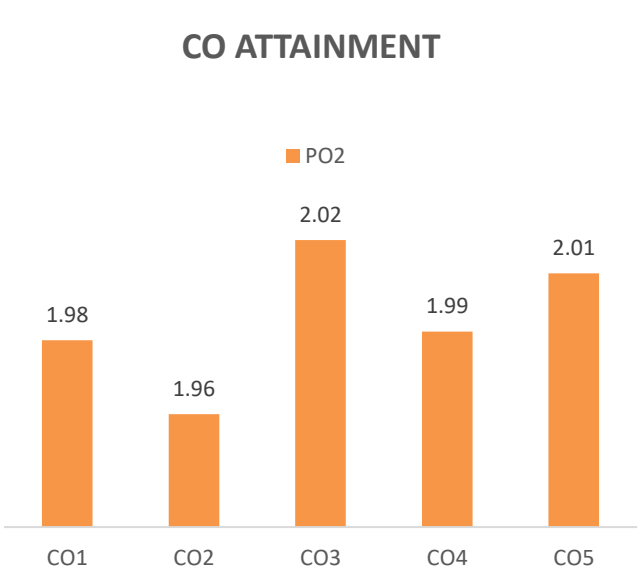


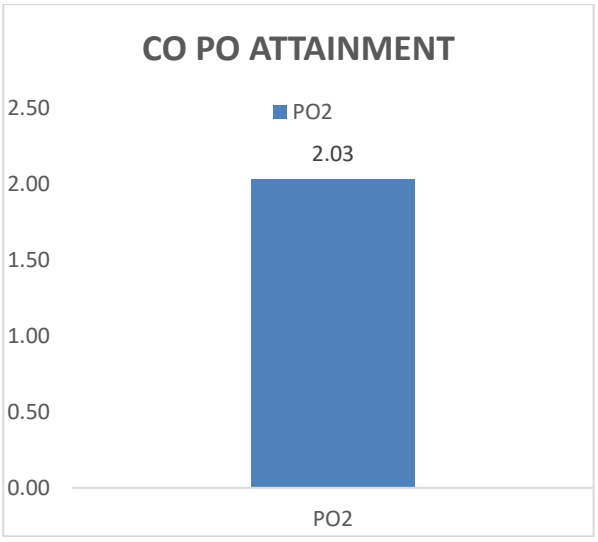


SUBJECT NAME	SUBJECT CODE	SEMESTER
CRYPTOGRAPHY	CECA63B	VI

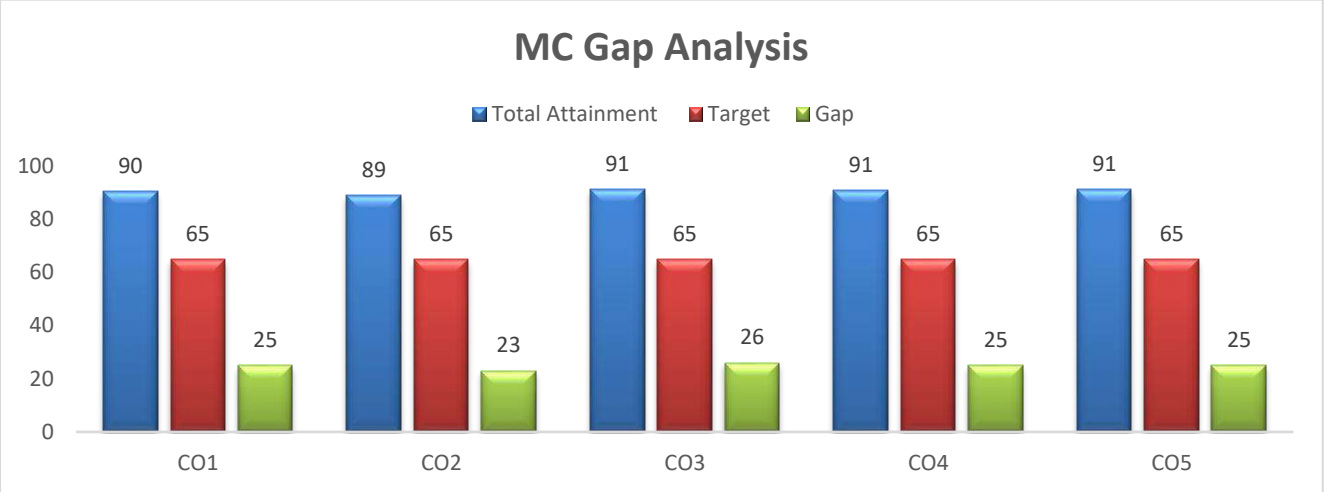


CO-PO mapping							
	PO 1	PO 2	PO 3	PO 4	PO 5	PSO 1	PSO 2
CO 1		3				3	
CO 2		2				3	
CO 3		1					2
CO 4		3					2
CO 5		2				3	

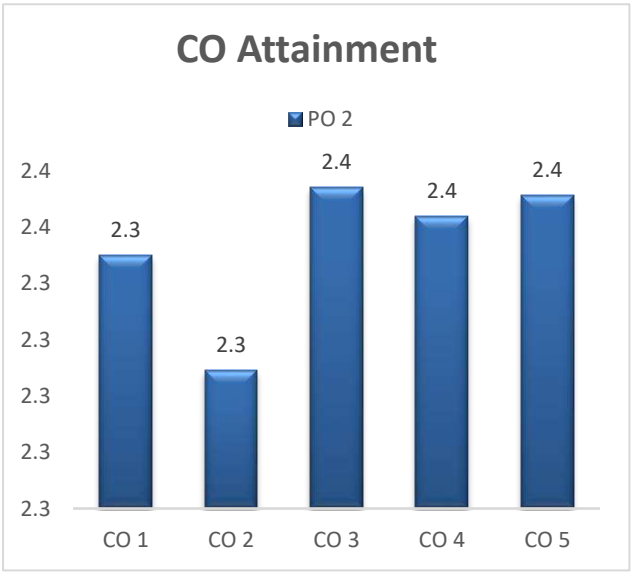


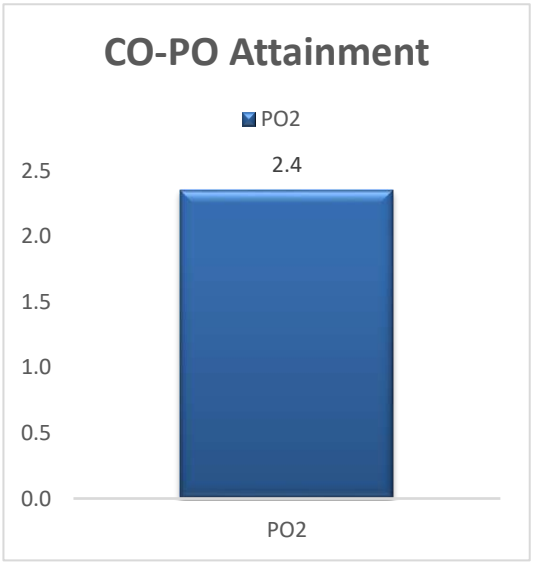


SUBJECT NAME	SUBJECT CODE	SEMESTER
MOBILE COMPUTING	CECA64C	VI

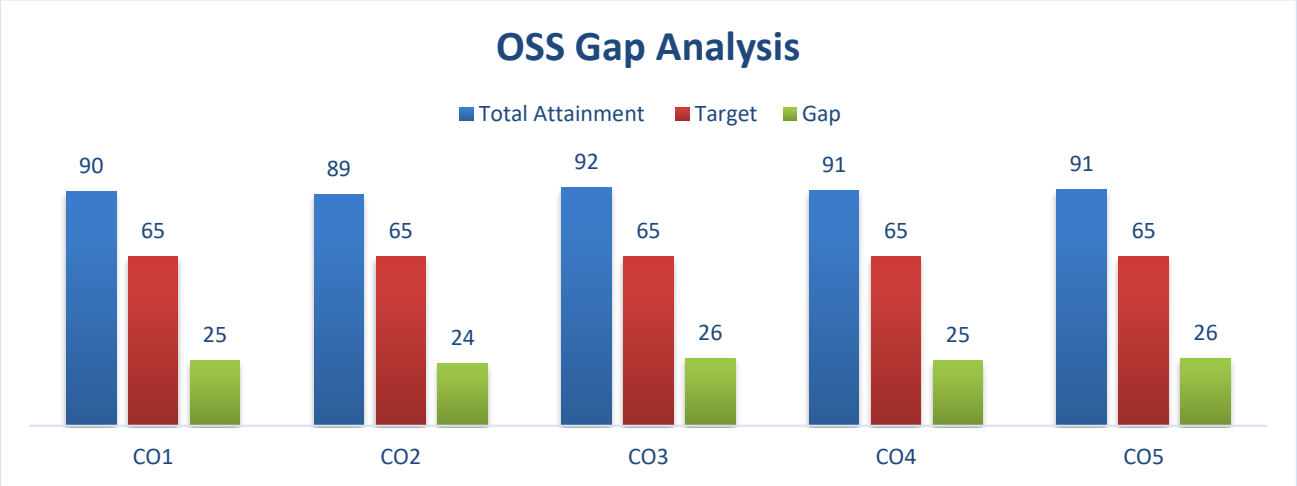


CO-PO mapping							
	PO 1	PO 2	PO 3	PO 4	PO 5	PSO 1	PSO 2
CO 1		2					2
CO 2		3				3	
CO 3		3				3	
CO 4		2					2
CO 5		3				3	

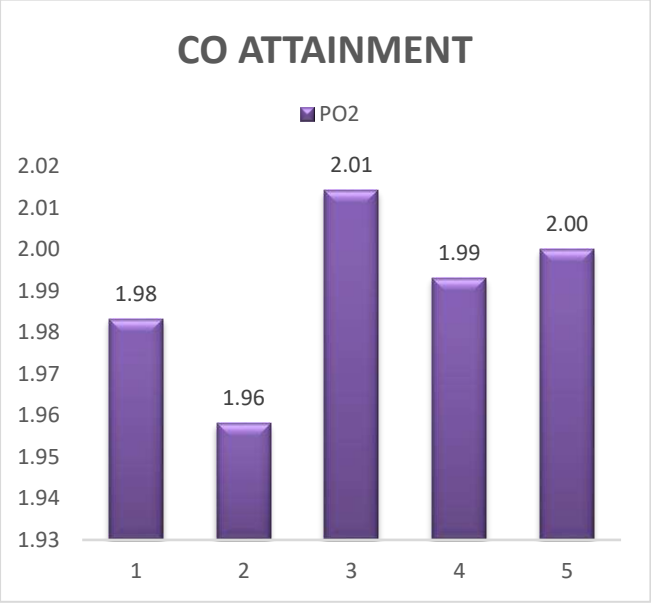


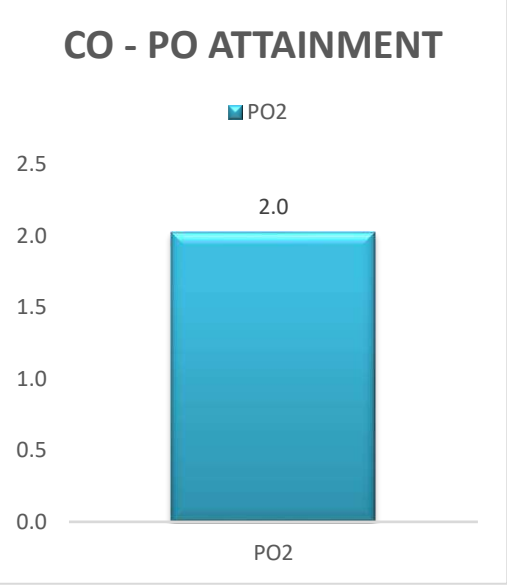


SUBJECT NAME	SUBJECT CODE	SEMESTER
OPEN SOURCE SOFTWARE	CCA61	VI

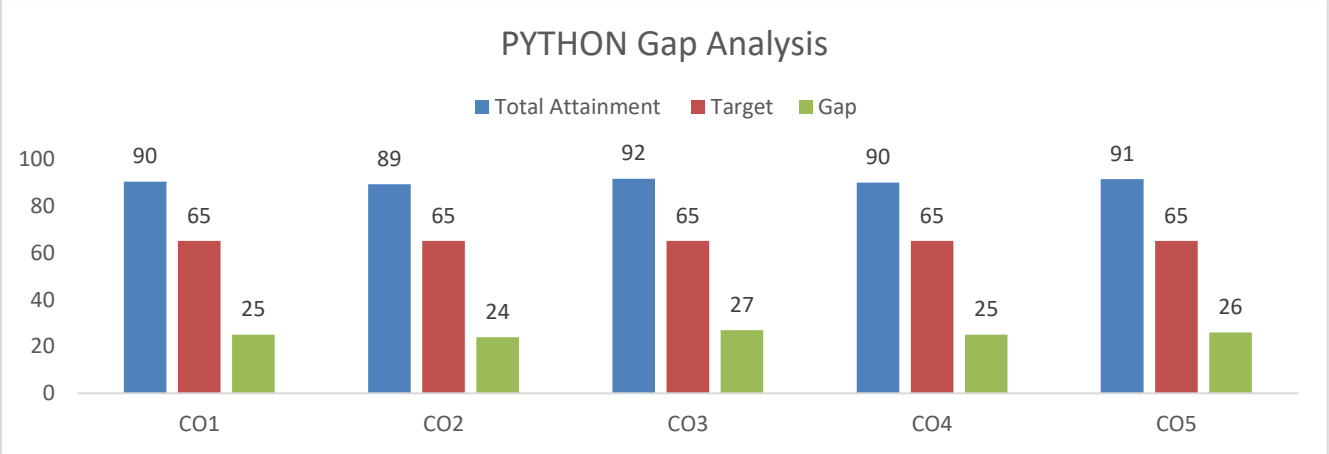


CO-PO mapping							
	PO 1	PO 2	PO 3	PO 4	PO 5	PSO 1	PSO 2
CO 1		3				3	
CO 2		2				3	
CO 3		2					2
CO 4		1					2
CO 5		3				3	

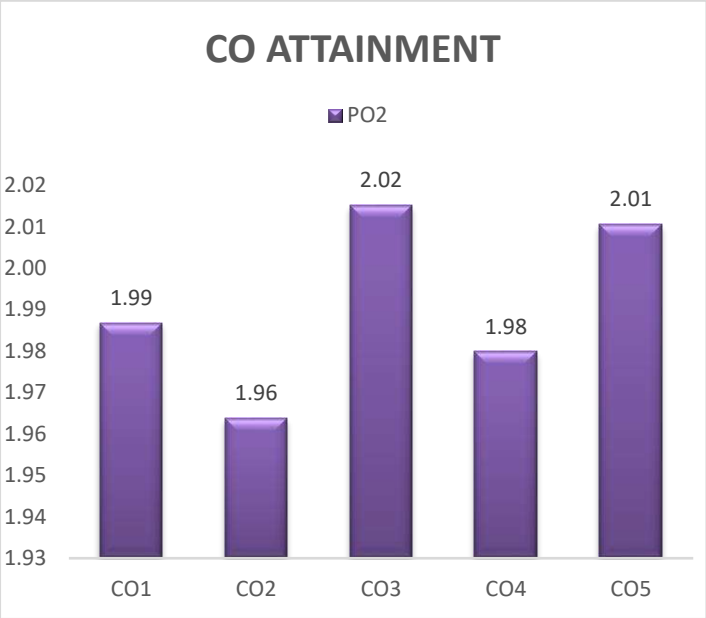


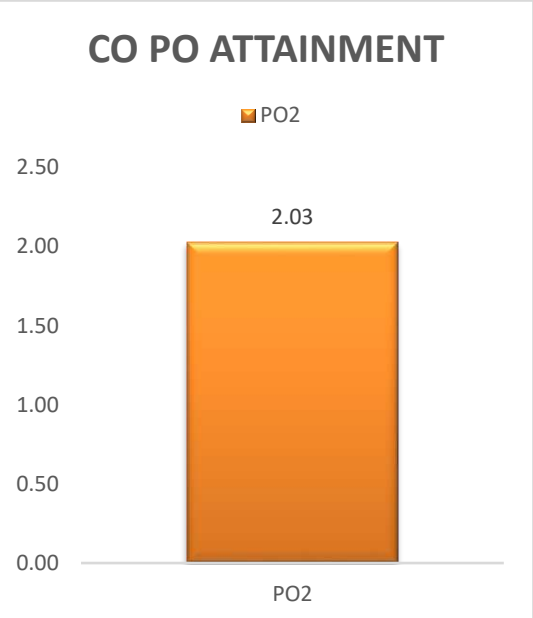


SUBJECT NAME	SUBJECT CODE	SEMESTER
PYHTON PROGRAMMING	CCA62	VI



CO-PO mapping							
	PO 1	PO 2	PO 3	PO 4	PO 5	PSO 1	PSO 2
CO 1		2				3	
CO 2		3				3	
CO 3		3					2
CO 4		2					2
CO 5		1				3	



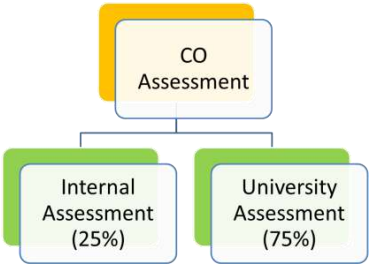


8. CO-PO ASSESSMENT

8.1 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:

(i) CO Assessment Rubrics:

O Assessment Internal Assessment (M5% weightage) University Assessment (75% weightage) Course Outcome is evaluated based on the performance of students in internal assessments and in university examination of a course. Internal assessment contributes M5% and university assessment contributes 75% to the total attainment of a CO.



Course Outcome is evaluated based on the performance of students in internal assessments and in university examination of a course. Internal assessment contributes M5% and university assessment contributes 75% to the total attainment of a CO.

(ii) CO-Assessment Process:

Assessment Parameters: The performance of a student in each semester shall be evaluated course - wise with a maximum of 100 marks for theory course and 100 marks for laboratory.

(iii) CO Assessment Tools:

The description of Assessment tools used for the evaluation of program outcomes is given in the Table 8.1. The various assessment tools used to evaluate COs and the frequency with which the assessment processes are carried out are also listed.

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 the program coordinator.

Table 8.1: Evaluation of COs & POs:

Mode of Assessment	Assessment Tool	Description	Evaluation of Course Outcomes	Related POs/PSOs	Frequency of Assessment
Direct	Theory Internal Examinations	Three Written examinations are conducted and its average are evaluated	The questions in the internal examinations and assignment sheets are mapped against COs of respective course. The questions for two internal examinations and assignments are framed in such a way to cover all course outcomes.	PO1 to PO5, PSO1 &PSOM	Three per semester
Direct	Assignments	Three assignments are given for each course for continuous assessment average marks are considered	The final attainment for each CO under direct assessment is calculated by taking from averageof the CO attainments Internal Examinations and Assignments	PO1 to PO5, PSO1 & PSOM	Continuous
Direct	Assignment	The day to day evaluation is considered	The final attainment of each CO is calculated by taking average of the % attainment from day to day evaluation and Internal examination	PO1 to PO5, PSO1 & PSOM	Continuous
Direct	Field oriented Project	To test students concepts in design, creative thinking and independent analysis. Two project reviews are conducted	Two internal project reviews are conducted and average of these two review assessments are conducted	PO1 to PO5, PSO1 & PSOM	One project review is conducted in IV semester
Direct	Comprehensi ve Viva-voce Examination	To assess the student's technical and	The assessment is carried out by HoD and three senior Faculty	PO1 to PO5, PSO1 & PSOM	IV semester

		analytical Skills with communication skills	members along with students overall academic performance.		

(iv) Pattern of Theory course Evaluation

(a) Pattern for Internal Examinations: For theory courses of each semester there shall be three (CIA – I & II and Model) descriptive exams. CIA – I & II will be held for 90 minutes and model examination for 3 hours. These exams will be taken for the assessment of internal marks. The first internal examination will be conducted as per the plan in the academic calendar and the schedule planned by examination cell.

(b) Pattern for External End Examinations:

There shall be an external examination for every theory course and consists of three parts (Part- A, Part-B& Part - C). The duration of the time for this end examination is 3 hours.

Assessment Rubrics: An overall cut-off value is taken for all CO's commonly based on the highest mark secured and the number of students with their external mark above the cut-off value is considered for rating all CO attainments.

(v) CO-wise assessment Rubrics: Every internal question and every assignment is mapped to a specific COs. Thereafter, a CO -wise cut-off value is taken based on the highest mark secured for that CO and the number of students with their internal mark above the cutoff Value is considered for rating the CO attainment.

(vi) Quality/Relevance of Assessment Process:

Theory: Internal exams motivate students to keep up with subject content covered in class. Three written examinations are conducted and its average marks are considered. For theory subjects, during asemester there shall be M CIA examinations and one Model Examination. Each CIA examination consists of descriptive paper and one assignment. The descriptive papers CIA I and CIA II shall be for 50marks each with a total duration of 1 ½ hours and Model Examination is for 75 marks with the total duration of 3 hours. The descriptive paper pattern is given in the below table. While the CIA-I examination shall be conducted on 1 to M units of the syllabus, CIA II shall be conducted for 3 and 4 unit. And model Exam is conducted for 75 marks with whole syllabus. Ten marks (10) marks are allocated for Assignments (as specified by the subject teacher concerned).

Table 8.M: Internal test question paper set-up:

Internal Exam	CIA I (50 marks)	CIA II (50 marks)	Model (75 marks)
Part – A (M marks)	MX5=10marks	MX5=10marks	MX10=M0marks
Part – B (5 marks)	4X5=M0 marks	4X5=M0 marks	5X5=M5 marks
Part – C (10 marks)	MX10=M0 marks	MX10=M0 marks	3X10=30 marks

Assignment: The first Assignment should be submitted before the conduct of the CIA -I, the second Assignment should be submitted before the conduct of the CIA-II examination and the third Assignment should be submitted before the conduct of the model examination. The total markssecured by the student in each I and II CIA are evaluated for 50 marks and model exam for 75 marks, and the average of the three CIA examinations shall be taken as the final marks secured by each candidate. The questions in the internal examinations and assignment sheets are mapped against COsof respective course. The questions for two internal examinations and Assignments are framed in sucha way to cover all Course Outcomes. The questions are framed in such a way that it should satisfy Bloom's Taxonomy, wherein each question is mapped to the appropriate course outcome of the respective course, which is evaluated based on the set attainment levels by the department.

Seminar Work Evaluation:

The subject handling faculty member would assess the technical seminar presentations by the students. She would ensure that the students choose advanced concepts in the respective areas with a lot of relevance and applicability. One seminar per student in every semester would be conductedas per the schedule mentioned in the lesson plan. The subject handling faculty member follow rubrics, which is set by the department for evaluation of seminar.

University examination: These end-semester examinations are of 3- hour duration and cover the entire syllabus of the course. It would generally satisfy all course outcomes for a particular course. TheCOs are evaluated based on the set attainment levels.

Project Work Evaluation:

Mini-Project: There shall be field oriented Mini-Project, in collaboration with literary field of their specialization, to be taken up during the II Semester. However, the mini-project and its report shall be evaluated along with the project work in I year II Semester. The committee consists of an external examiner, head of the department, the supervisor of the mini-project and a senior faculty member of the department. There shall be no internal marks for literary field oriented mini-project.

Presentation: The content, quality of the presentation and communication skills are assessed by the evaluation committee.

Viva-voce: At the end of the presentation, the assessment panel and the student audience ask questions and seek clarifications on specific issues related to the seminar. The effectiveness of the student's response to these queries is assessed.

Major Project: Major Project is intended to be a challenge to the intellectual and innovative abilities of students. It gives students the opportunity to synthesize and apply the knowledge and analytical skills learned in the different disciplines. Out of a total of M00 marks for the project work, 50 marks shall be allotted for Internal Evaluation and 150 marks for the End Semester Examination (Viva Voce).The End Semester Examination of the project work shall be conducted by the same committee as appointed for the University external member. The Internal Evaluation shall be on the basis of two seminars given by each student on the topic of her project. Project will enable student to think innovatively on the development of advanced literature and technologies in the field of literature. Students are expected to Perform an in-depth study of the topic assigned in light of the preliminary report prepared in the seventh semester. Review and finalise the approach to the problem. Develop a final product/ process, perform testing, arrive at results & conclusions and suggest future directions. Prepare a paper for Conference presentation/ publication, if possible. Prepare a report in the standard format for being evaluated by the Internal project Review Committee

Process for assessing the quality of Projects: The Internal project Review Committee and the project guide together will analyze the nature of the project and make sure that the work is environment friendly, ensures safety, ethics and cost effective. The projects are classified into different streams and their relevance to POs and PSOs are identified to ensure its quality.

(vii) Attainment of Program Outcomes and Program Specific Outcomes

The following are the Assessment Tools:

Several tools are described for assessing course outcomes. The program outcomes are based on the course outcomes. Thus, the tools remain the same for assessing the program outcomes. In addition, the tools of survey based on the alumni and exit surveys are considered.

1. The tools broadly are
2. End of course surveys (half yearly)
3. Student exit surveys
4. Alumni surveys yearly
5. Staff surveys – yearly

6. Higher education and placement – student publications

(viii) Attainment Levels: Course outcomes of all courses are assessed with the help of above mentioned assessment tools and attainment level is evaluated based on set attainment rubrics as per **table 8.M.**If the average attainment of a particular course for two consecutive years is greater than 80% of the maximum attainment value (i.e. 80% of 3 = M.4), then for that particular course the current rubrics for attainment must be changed to analyse continuous improvement.

Table 8.3: Assessment methods and levels:

Assessment Methods	Attainment Levels	
Internal Assessment	**Level 1**	60% of students scoring more than 40% marks in internal assessment tools
	Level M	70% of students scoring more than 40% marks in internal assessment tools
	Level 3	70% of students scoring more than 40% marks in internal assessment tools
University Assessment	**Level 1**	60% of students scoring more than 40% marks in internal assessment tools
	Level M	70% of students scoring more than 40% marks in internal assessment tools
	Level 3	75% of students scoring more than 40% marks in internal assessment tools

(ix) Validation of CO-PO mapping

Step 1: Obtain course outcome.

Step M: Mapping of course outcome with program outcome.Step 3: Setting weightage for CO assessment.

Step 4: CO measurement through assessment.

Step 5: Obtain CO attainment table through direct and indirect assessment methods.

Step 6: Obtain PO attainment table through direct and indirect assessment methods.

With the CO-PO Mapping, we have attained and fulfilled the curriculum of the University with certain lacking which states that we will show our progress in the upcoming attainments.

(x) Assessment and Attainment methods:

Assessment is one or more processes which is carried out by the institution, that identify, collect and prepare data to evaluate the achievement of course outcomes and program outcomes. Attainment is the action or fact of achieving a standard result towards accomplishment of desired goals. Primarily attainment is the standard of academic attainment as observed by test and/or examination result. Assessment methods are categorized into two as direct method and indirect method to access CO's and PO's. The direct methods display the student's knowledge and skills from their performance in the continuous internal assessment tests, semester examinations and supporting activities such as seminars, assignments, case study, group discussion, online quiz, mini project etc., These methods provide a sampling of what students know and/or can do and provide strong evidence of student learning. The indirect method done through surveys and interviews; it asks the stakeholders to reflect their views on student's learning. The institute assesses opinions or thoughts about graduate's knowledge or skills by different stakeholders.

CO assessment methods are employed

Direct assessment method and indirect assessment method are considered for 90% and 10% weightages respectively.

Internal test assessment and end semester examination assessment are considered with the weightage of M5% and 75% respectively for the direct assessment of CO.

(xi) Procedure for Attainment of Program Outcomes

At the end of the each programme, the PO/PSO assessment is done from the CO attainment of all curriculum components. As per NAAC guidelines, program can appropriately define the attainment level. The attainment level may be set by the particular program or commonly by the institution. The attainment can be made as best the choice by the institution or the program by analyzing the students' knowledge. This can be achieved by using different supporting activities. This attainment is mainly for the purpose of making an esteemed graduates with good analytical, practical and theoretical knowledge about the program by attaining the PEO's and PSO's of the program and the institution. For the evaluation and assessment of COs and POs, rubrics are used. The rubrics considered here are given below:

CO-PO Attainment Process

Attainment Level 1: 60% of students score more than 40% marks out of the maximum relevant marks.
Attainment Level M: 70% of students score more than 40% marks out of the maximum relevant marks.
Attainment Level 3: 75% of students score more than 40% marks out of the maximum relevant marks.

(xii). Indirect Assessment Tools and Process:

Indirect assessment is done through program exit survey, alumni survey and employer survey where program exit survey and employer survey are given a weightage of M5% each and alumni survey is given a weightage of 50%.

1. Graduate Exit Survey:

A exit survey is conducted for students who have graduated out of the department for that year.

(i) Questionnaire Format

Kindly rate the following criteria on a scale of 1-5. Your genuine response will be helpful for the continuous quality improvement of our UG programme in ECE.

5.Excellent 4. Very Good 3. Good 2.Average 1. Poor

(ii) Evaluation Process

The questionnaire consists of 8 questions which is relevant for assessing each PO and PSO. Each question is having 5 options namely Excellent, Very Good, Good, Average and Poor, which is given marks 5,4,3,M,1 respectively. These survey results are tabulated and the average values corresponding to each PO and PSO are determined.

2. Alumni Survey:

Feedback is taken from alumni.

(i) Questionnaire Format

Kindly rate the following criteria on a scale of 1-5. Your genuine response will be helpful for the continuous quality improvement of our UG programme in ECE.

5.Excellent 4. Very Good 3. Good 2.Average 1. Poor

(ii) Evaluation Process

The questionnaire consists of 9 questions which is relevant for assessing each PO and PSO. Each question is having 5 options namely Excellent, Very Good, Good, Average and Poor, which is given marks 5,4,3,M,1 respectively. These marks are tabulated and the average values corresponding to each PO and PSO are determined.

Indirect Attainment	=	50% attainment of Graduate Exit survey	+
		50% attainment of Alumni survey	
Overall Attainment of PO	=	90% of Direct Attainment of each PO	+
		10% Indirect Attainment of each PO	

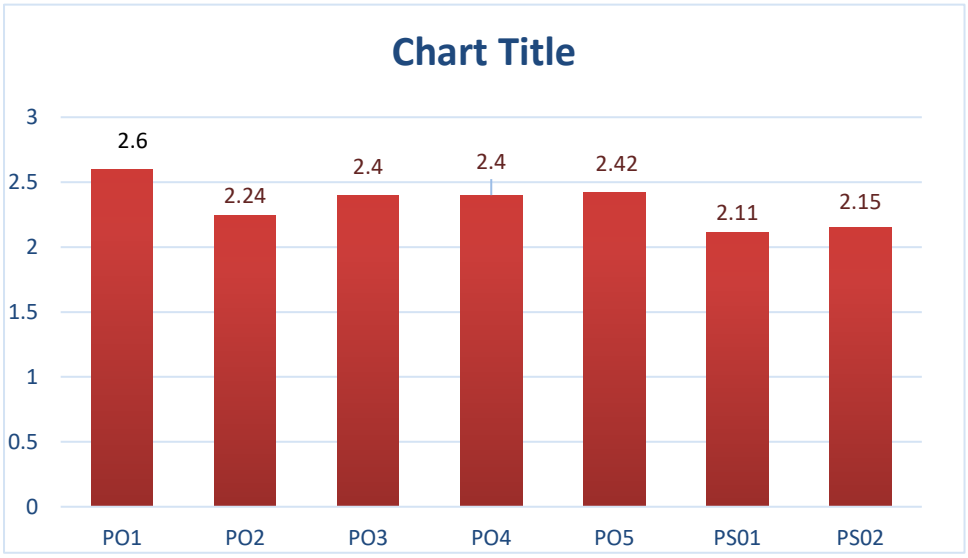
CO-PO Attainment Process

Table 8.4: Overall CO- PO Attainment

Semester	Subject Code	Subject Name	PO1	PO2	PO3	PO4	PO5	PS01	PS02
I	CLT10	TAMIL I					2.4	1.7	1.6
	CLE10	COMMUNICATIVE ENGLISH I					2.4	1.6	1.8
	CCA11	PROGRAMMING IN C		2.6				2.7	2.18
	CPCA13	PROGRAMMING IN C LAB			2.07			2.17	2.16
	CAMA15B	MATHEMATICAL FOUNDATION I	2.6					1.3	1.4
	CPE10C	PROFESSIONALENGLISH FOR PHYSICAL SCIENCE					2.6	1.2	1.6
	CES10	ENVIRONMENTAL STUDIES				2.4		1.1	1.2
II	CLT20	TAMIL II					2.5	1.7	1.8
	CLE20	COMMUNICATIVE ENGLISH II					2.4	1.5	1.8
	CCA21	C++ AND DATA STRUCTURE		2.4				2.18	2.19
	CPCA23	C++ AND DATA STRUCTURE LAB			2.3			2.16	2.17
	CAMA25B	MATHEMATICAL FOUNDATION II	2.6					1.7	1.8
	CPE20C	PROFESSIONAL ENGLISH FOR PHYSICAL SCIENCE					2.2	1.1	1.8
	CGA20	VALUE EDUCATION				2.4		1.6	1.7
	CSS20	SOFT SKILL				2.4		1.7	1.9
III	CCA31	PROGRAMMING IN JAVA		2.6				2.17	2.19
	CCA31	E-COMMERCE		2.4				2.1	2.2
	CCA32	OPERATION RESEARCH		2.4				2.1	1.7
	CPCA36	PROGRAMMING IN JAVA LAB			2.4			2.17	2.18
	CACMA15C	FINANCIAL ACCOUNTING I	2.6					2.6	2.7
	CSCA34	WEB TECHNOLOGY		2.4				2.8	2.6
	CNCM37	GENARAL COMMERCIAL KNOWLEDGE			2.4			1.5	1.7

IV	CCA41	RELATIONAL DATA BASE MANAGEMENT SYSTEM		2.2				2.9	2.1
	CCA42	ENTERPRISE RESOURCE PLANNING		2.2				2.19	2.9
	CCA43	WIRELESS DATA COMMUNICATION		2.4				2.8	2.9
	CPCA46	RELATIONAL DATA BASE MANAGEMENT SYSTEM LAB			2.4			2.8	2.9
	CACM25C	FINANCIAL ACCOUNTING II			2.2			1.8	1.6
	CSCA44	INTERNET OF THINGS		2.4				2.9	2.8
	CNCM47	ADVERTISING AND SALESMANSHIP				2.4		2.2	2.3
V	CCA53	DESIGN AND ANALYSIS OF ALGORITHM		2.03				2.9	2.8
	CECA54A	DATA MINING		1.84				2.7	2.8
	CCA51	MOBILE APPLICATION DEVELOPMENT		2				2.1	2.18
	CCA52	OPERATING SYSTEM		2.03				2.7	2.18
	CSCA55	SOFTWARE ENGINEERING		2.2				2.3	2.1
VI	CECA63B	CRYPTOGRAPHY		2.03				2.1	2.8
	CECA64C	MOBILE COMPUTING		2.4				2.1	2.1
	CCA61	OPEN SOURCE SOFTWARE		2				2.9	2.8
	CCA62	PYTHON PROGRAMMING		2.03				2.18	2.19
Average CO-PO Attainment			**2.6**	**2.24**	**2.4**	**2.4**	**2.42**	**2.11**	**2.15**

Graphical representation of overall CO-PO Attainment



Slow learners may include personalized teaching approaches , extra practice sessions , breaking down complex concept , providing visual aids and offering positive reinforcement to boost confidence.