

2.6.2: Attainment of Programme Outcomes, Programme Specific Outcomes and Course Outcomes are evaluated by the institution.

2.6.2: Attainment of Programme Outcomes, Programme Specific Outcomes and Course Outcomes are evaluated by the institution.

Content

- Additional Information

NAAC CRITERIA 2.6.1/2.6.2

Batch 2016-20

DEPARTMENT

OF

COMPUTER

ENGINEERING

PROGRAM OUTCOMES (POs):**Engineering Graduates will be able to:**

P01. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

P02. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

P03. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

P04. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

P05. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

P06. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

P07. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

P08. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

P09. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

P010. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

P011. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

P012. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

The following are the program Specific outcomes:

PROGRAM SPECIFIC OUTCOMES (PSOs):

PSO1: Students shall demonstrate skills, the knowledge and competence in the analysis, design and development of computer based systems addressing industrial and social issues.

PSO2: Students shall have competence to take challenges associated with future technological issues associated with security, wearable devices, augmented reality, Internet of Anything etc.

PROGRAM ARTICULATION MATRIX: COURSES MAPPING WITH POs AND PSOs

Program Articulation Matrix:

The following table (Table 1.a) demonstrates the mapping/correlation of Courses of Program with all POs and PSOs of 2016 -2020 batch.

Table 1.a: Program Articulation Matrix

Sr. NO.	COURSE	COURSE CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	Computer Programming	01CE0101	3	2	2	0	0	0	0	0	0	0	0	2	2	1
2	Database Management System	01CE0302	3	2	2	2	1	0	0	2	2	2	1	2	1	0
3	Operating System	01CE0401	2	2	2	2	2	0	0	1	1	1	0	2	2	2
4	Object Oriented Programming with Java	01CE0403	3	3	2	3	3	0	0	0	3	2	2	2	2	2
5	Microprocessor Fundamental & Programming	01CE0501	3	3	3	2	2	0	0	1	1	2	0	3	0	1
6	Advanced Java Programming	01CE0502	3	2	1	0	1	0	0	1	2	2	1	2	2	2
7	Compiler Design	01CE0601	3	3	2	2	2	0	0	1	2	0	2	2	2	0
8	.Net Technologies	01CE0602	3	2	2	0	2	0	2	0	3	0	2	0	2	2
9	Artificial Intelligence	01CE0702	3	3	2	3	2	2	2	2	1	1	1	2	2	1
10	Data Mining And Information Retrieval	01CE0707	2	2	1	1	2	0	0	0	2	1	0	1	1	0

COURSE ARTICULATION MATRIX: COURSES AND COURSE OUTCOMES MAPPING WITH POS AND PSOS

- The following tables (Table 1.b.1 – Table 1.b.10) demonstrate the mapping/correlation of Course Outcomes of *Courses* with all POs and PSOs.
- Number of Outcomes for a course is expected to be 4 to 6.

Table 1.b.1: Course Articulation Matrix- Course Name: Computer Programming (01CE0101) (II Semester)

CO No	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Express programming problems logically through flow charts and algorithms (Understand).	3	2	2	0	0	0	0	0	0	0	0	2	2	1
CO2	Identify various conditional control structures and jumping structures and use them. (Remember)	3	2	2	0	0	0	0	0	0	0	0	2	2	1
CO3	Express and Distinguish various loops in C language (Analyze).	3	2	2	0	0	0	0	0	0	0	0	2	2	1
CO4	Demonstrate the usage of concepts like strings, arrays, pointers, Structures(Apply)	3	2	2	0	0	0	0	0	0	0	0	2	2	1
CO5	Select the appropriate user defined function category.(Evaluate)	3	2	2	0	0	0	0	0	0	0	0	2	2	1
CO6	Develop the programs on dynamic memory allocations and Files.(Create)	3	2	2	0	0	0	0	0	0	0	0	2	2	1
Average Correlation Levels:		3	2	2	0	0	0	0	0	0	0	0	2	2	1

CO - PO Mapping Justification		
PO Number	PO Level	Justification
PO1	3	In day to day applications recognizing importance of C language will directly or indirectly enriches engineering knowledge.
PO2	2	Being a graduate, engineer needs to analyze the existing problem through their mathematical and logical skills and apply through coding
PO3	2	The engineer needs to apply the concept of programming in order to develop various solutions like automatic lathe machine development, CNC machine, robots, PCB design machine, etc.

PO12	2	The programming skill is a life long learning for a mechanical engineer for development of various standard machines for the betterment of the health of the society
PSO1	2	C programming language is base of all next generation programming language, by learning this student can use this knowledge in future projects
PSO2	1	By learning this programming language, students will learn problem solving approach and it will prepare them by creating a base for future technologies.

Table 1.b.2: Course Articulation Matrix: Course Name: Database Management System (01CE0302) (III Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PS O2
CO1	Understand the basics of Relational Database Fundamentals and use the concept of database security and database queries.(Understand)	0	0	0	0	0	0	0	2	0	0	0	1	0	0
CO2	Sketch an ER Model for a given specification of the requirements for a database application and implement it in Oracle database.(Apply)	1	0	1	2	0	1	0	0	0	0	0	1	0	0
CO3	Construct relational algebra expressions for given problem statements.(Apply)	3	1	1	1	0	0	0	1	1	0	0	1	0	0
CO4	Compare and understand various normal forms and apply it to any database design to construct the data dictionary for it.(Apply)	2	3	3	2	2	1	2	1	3	3	3	3	0	0
CO5	Categorize and use the concepts of DDL, DML and DCL statements with formal SQL.(Analyze)	3	1	1	0	1	0	0	1	0	0	0	1	1	0
Average Correlation Levels:		3	2	2	2	1	0	0	2	2	2	1	2	1	0

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	3	This course enables designing and managing database for any real time system. Knowledge of Mathematics is used to solve complex queries.
PO2	2	Structured Query Language (SQL) and PL/SQL is used to analyze complex engineering problems. Principles of mathematics are used in Normalization of database.
PO3	2	ER models can be used to model real life health problems.

PO4	2	Normalization, E-R diagram, Relational data model and SQL are used for design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	1	Oracle with SQL or SQL developer like tools are used for modeling complex engineering activities.
PO8	2	Students are taught to work ethically throughout this course.
PO9	2	Open ended project enables conceptual database design process along with enhancing individual and team work abilities.
PO10	2	Open Ended projects helps in improving communication and building values for assisting team work.
PO11	1	Students have learned project management by working together on certain problems.
PO12	2	Lifelong learning is achieved by understanding and applying basic concepts of database design. (Conceptual Design, Normalization, R-Model, Query Evaluation and Optimization, Security)
PSO1	1	Analysis and Design of databases for real world problems are studied in this subject and also with the help of SQL, database creation in ORACLE is performed. Query processing considers time and space parameters for generating optimized query.

Table 1.b.3: Course Articulation Matrix: Course Name: Operating System (01CE0401) (IV Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PS O2
CO1	Understanding the role of operating system with its function and services. (Understanding)	1	1	0	0	0	0	0	1	1	0	0	0	0	0
CO2	Compare Various Algorithm used for CPU Scheduling, Memory management and Disk Scheduling Algorithm. (Evaluate)	3	3	3	3	2	0	0	0	1	1	0	0	2	2
CO3	Apply Various Concepts related with Deadlock to solve Problems. (Apply)	1	1	1	1	1	0	0	0	0	0	0	3	1	0
CO4	Analyze Protection and Security Mechanism in Operating System. (Analyze)	2	1	1	1	1	0	0	2	0	1	0	2	3	2
Average Correlation Levels:		2	2	2	2	2	0	0	1	1	1	0	2	2	2

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	2	Course outcome will improve the knowledge of different operating systems on virtual and physical environment.
PO2	2	Process Scheduling and Memory Management can be analyzed for multitasking and multithreading environment.
PO3	2	Designing & Development of scripts to improve the efficiency of operating system (Unix/Linux)
PO4	2	Investigation of Real time Unix Environment IPC, Deadlock, Memory Management and I/O Scheduling.
PO5	2	Exploration of Unix & Linux environment.

PO8	1	Ethical angle is touched in operating system Security
PO9	1	Individual and Team can design scripts for different IPC.
PO10	1	Interactive lectures and group discussion improves communication skills.
PO12	2	Understanding of different operating environment with the knowledge of IPC, Memory Management, I/O and Security.
PSO1	2	apply various concepts to solve the problems
PSO2	2	use the concepts in various technologies

Table 1.b.4: Course Articulation Matrix: Course Name: Object Oriented Programming with JAVA (01CE0403) (IV Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PS O2
CO1	Understand object oriented programming concepts in java	3	3	2	0	0	0	0	0	3	2	3	2	2	2
CO2	Comprehend building blocks of OOPs language, inheritance, package and interfaces.	3	3	2	0	0	0	0	0	3	2	2	2	2	2
CO3	Identify exception handling methods and collection framework.	3	3	2	0	0	0	0	0	3	2	3	2	2	2
CO4	Implement file handling and multithreading in object oriented programs.	3	3	2	0	0	0	0	0	3	2	2	2	2	2
CO5	Develop GUI based application using applet, awt and swing.	3	3	3	3	3	0	0	0	2	1	1	2	1	1
Average Correlation Levels:		3	3	2	3	3	0	0	0	3	2	2	2	2	2

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	3	By understanding the basic principles of OOP, students will be able to solve the complex problems of engineering
PO2	3	By gaining the ability to apply object oriented principles in software design process, the students will be able to analyze complex engineering problems in the domain of software development with better effectiveness.
PO3	2	By learning the GUI through Applet and swing, students will be able to design and develop the various applications for various domains
PO4	3	By learning this subject, students will be able to solve complex application and problem by using inbuilt packages of java programming
PO5	3	By learning the GUI through Applet and swing, students will be able to use the modern IDEs to develop GUI Applications
PO9	3	By learning this, students will come together while creating programs and fixing errors, which develops habit of working in

		teams in them.
PO10	2	By learning this subject students will develop curiosity to interact with each other while creating programs, solving errors and understanding the key concept of the subject, which improves effective communication between them.
PO11	2	By learning this subject, student will be able to make projects of multidisciplinary domain.
PO12	2	By learning this subject, student will be able to realize the need for OOP in todays real lifw applications and hence will continue to learn the OOP fundamentals
PSO1	2	By learning this subject, students gets knowledge of OOP which they can use in their entier life time in project development
PSO2	2	By learning this, students will develope a base for upcoming programming language like AJP,Android

Table 1.b.5: Course Articulation Matrix: Course Name: Microprocessor Fundamentals & Programming (01CE0501) (V Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PS O2
CO1	Understand the architecture and pin diagram of 8085 and advance Microprocessor. (Understand)	3	3	3	2	2	0	0	1	1	0	0	1	0	1
CO2	Implement Memory and I/O interfacing in 8085 Microprocessor. (Apply)	3	3	2	2	0	0	0	0	0	2	0	3	0	1
CO3	Sketch Timing diagram after getting brief with the addressing mode, byte and machine cycle of instructions.(Apply)	3	3	3	3	0	0	0	0	0	0	0	3	0	0
CO4	Apply the concepts of instruction to write, Debug & Simulate assembly language program of 8085 microprocessors. (Apply)	3	3	3	3	3	0	0	0	0	2	0	3	0	1
CO5	Analyze time delay generation, counter and waveform generation (Analyze).	3	3	3	3	3	0	0	0	0	0	0	3	0	0
Average Correlation Levels:		3	3	3	2	2	0	0	1	1	2	0	3	0	1

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	3	Student will get some of the basic knowledge of engineering science and mathematics.
PO2	3	Student will gain slight knowledge to identify, formulate and solve complex problems in engineering science
PO3	3	Student will gain slight knowledge to design system components that meet the requirement of public safety and also offers solution to the society
PO4	2	After learning this course students will apply the concept in research work & solving engineering problems and arrive at valid

		conclusions
PO5	2	After learning this course students will get knowledge in terms of various tools arrived in this course.
PO8	1	They have to draw the architecture of 8085 and advance processor and don't have to copy and paste .
PO9	1	They have to submit assignment individually
PO10	2	After learning this course student will participate into engineering activities and presentation.
PO12	3	After learning this course students will gain knowledge which will help him during advanced studies as well as in research work
PSO2	1	Student will gain knowledge regarding Embedded devices which used in wearable devices, IoT.

Table 1.b.6: Course Articulation Matrix: Course Name: Advanced Java Programming (01CE0502) (V Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the components of J2EE Architecture, MVC Framework and Multi-tier Application and Various Network Protocol (Understand)	3	2	1	0	1	0	0	1	1	0	0	2	2	1
CO2	To make use of Servlet and JSP API in the process of enterprise application deployment. (Apply)	3	2	1	0	1	0	0	1	2	2	0	2	2	2
CO3	Implement components such as Session, Filters, JSTL, Beans. (Apply)	3	2	1	0	1	0	0	2	2	1	1	2	2	2
CO4	Distinguish Application Server, Web Container, JDBC and ORM tools.(Analyse)	3	2	2	0	2	0	0	2	2	2	2	2	2	2
CO5	Design and Development of web application having collaboration of Servlets, JSPs, JSF, Spring and Hibernate base upon the requirement. (Create)	3	2	2	0	2	0	0	1	2	1	0	2	2	2
Average Correlation Levels:		3	2	1	0	1	0	0	1	2	2	1	2	2	2

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	3	By learning this course, learners will understand MVC Architecture, Networking Protocols, Web Servers, various advance JAVA Technologies and framework like Servlets , JSP, Swing , JDBC, Hibernate, RMI.... which directly or indirectly enrich engineering knowledge
PO2	2	By learning this subject, the learners will be able to analyze complex engineering problems in the domain of software

		development with better effectiveness.
PO3	1	By learning this subject, learners will be able to design and develop the various web based applications
PO5	1	By implementing project in laboratory will gives confidence to use modern days JDK 8.0 or above capable IDEs like Netbeans, Eclipse along with various APIs and drivers.
PO8	1	By learning this subject, learners will develop curiosity to interact with each other while creating programs, solving errors and understanding the key concept of the subject, which improves effective communication between them.
PO9	2	By learning this subject, learners will come together while creating programs and fixing errors, which develop harmony and alliance building in them.
PO10	2	By learning this subject, learners will develop curiosity to interact with each other while creating programs, solving errors and understanding the key concept of the subject, which improves effective communication between them.
PO11	1	By learning this subject, learners will be able to make projects of multidisciplinary domain.
PO12	2	By solving internal assessment, doing discussion and mini project implementation learners will develop life long learning.
PSO1	2	By learning this subject, learner will get knowledge of programming which they can use in their entire life time in project development
PSO2	2	By learning this subject, learner will develop skills, the knowledge and competence in developing secure web application

Table 1.b.7: Course Articulation Matrix: Course Name: Compiler Design (01CE0601) (VI Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PS O2
CO1	To be able to describe compiler and different phases. Using this translate program from source code to executable code and files. (Knowledge)	2	1	2	1	0	1	0	0	0	0	1	2	1	0
CO2	Able to explain lexical analysis phase and their connection to language definition through regular expressions and grammars. (Comprehensive)	3	3	1	2	0	0	0	0	2	0	0	2	2	0
CO3	Able to explain the syntax analysis phase and differentiate among various parsing techniques and grammar transformation techniques. (Comprehensive)	3	3	1	2	0	0	0	0	2	0	0	2	2	0
CO4	Able to apply formal attributed grammars for specifying the syntax and semantics of programming languages. (Application)	2	3	2	2	0	0	0	0	1	0	0	2	1	0

CO5	To be able to calculate the effectiveness of optimization and differences between machine dependent and independent translation. (Application)	3	3	2	1	0	0	0	0	1	0	0	2	3	0
CO6	Able to use the powerful compiler generation tools such as Lex and YACC. (Analysis)	2	2	2	2	2	0	0	2	2	0	2	2	3	0
Average Correlation Levels:		3	3	2	2	2	0	0	1	2	0	2	2	2	0

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	3	Defining different phases of compiler improves engineering knowledge.
PO2	3	Analysis structure and working of compilers.
PO3	2	Understanding run time environment and optimization technique improves design and development capabilities for solving complex problem.
PO4	2	Experimenting, analyzing and interpretation of data related to DFA and NFA
PO5	2	Constructing lexical analyzer and parser need to use LEX and YACC tools.
PO8	1	Constructing automata improves engineering practice.
PO9	2	Solving case study related to Parsing table and its calculation in team
PO11	2	Presenting on LEX and YACC tools as well perform Open Ended Project on LEX Program.
PO12	2	Compiler is used in any of the platforms and hence it supports life long learning and understanding.
PSO1	2	Analysis structure and working of compilers.

Table 1.b.8: Course Articulation Matrix: Course Name: .Net Technologies (01CE0602) (VI Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To develop applications with Dot-Net framework	3	1	2	0	2	0	2	0	3	0	0	0	1	0
CO2	To create Console based C# application	3	2	1	0	2	0	2	0	3	0	2	0	1	0
CO3	To create GUI based desktop application using C# Win-form application	3	2	3	0	3	0	2	0	3	0	3	0	1	1
CO4	To create basic database application using ADO.net technology	2	2	3	0	2	0	2	0	3	0	2	0	1	2

CO5	To Design and develop basic applications using WPF	2	1	2	0	2	0	1	0	2	0	2	0	2	2
Average Correlation Levels:		3	2	2	0	2	0	2	0	3	0	2	0	2	2

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	3	Student will apply his knowledge to create projects on their chosen definition
PO2	2	Creation of forms and database will require study of existing system
PO3	2	In future complex solution can also be made once learning dot net technology thoroughly
PO5	2	various version of visual studio will be used
PO7	2	Students will be able to develop applications that is beneficial to society
PO9	3	Project will inculcate team work
PO11	2	One project has been assigned in a group of 3 which will lead to project management skills
PSO1	2	Students will be able to create real world solutions that will help society in every aspects
PSO2	2	Students will learn new and upcoming technologies; also try to implement in their projects to make their projects more efficient

Table 1.b.9: Course Articulation Matrix: Course Name: Artificial Intelligence (01CE0702) (VII Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Assess critically the techniques presented and to apply them to real world problems(Analyze)	3	3	3	3	3	2	2	2	2	2	1	2	2	2
CO2	Mindful of the significant difficulties confronting AI and the multifaceted nature of run of the mill issues inside the field(remember)	3	3	1	1	1	1	1	1	1	1	1	1	2	2
CO3	Comprehend the significant zones and difficulties of AI(Understanding)	2	2	2	2	2	1	1	1	1	1	1	1	2	1
CO4	Apply fundamental AI calculations to take care of issues(Apply)	3	3	3	3	3	3	3	3	3	2	2	3	3	3
CO5	Get a learning of utilizations in various zones of registering including the web and	3	3	3	3	3	2	2	2	2	2	2	2	3	3

human communication(Evaluate)															
Average Correlation Levels:	3	3	2	3	2	2	2	2	2	1	1	1	2	2	1

CO - PO Mapping Justification		
PO Number	PO Level	Justification
PO1	3	The knowledge of basic concepts of AI will help the students to apply the same to formulate solutions for engineering problems
PO2	3	The knowledge of different ways of handling AI principles will help the students to apply the same to identify and analyze engineering problems.
PO3	2	The AI knowledge can be used to design and conduct experiments to provide valid conclusions.
PO4	3	The AI knowledge can be used to design and conduct experiments to provide valid conclusions.
PO5	2	The practice with existing tools of AI helps in understanding the limitations of the existing tools.
PO6	2	Knowledge of AI will help understand issues and societal problems related to the need of the assistance of self driven machines.
PO7	2	The knowledge AI and existing systems helps the students to come up with a sustainable solutions.
PO8	2	The AI systems are developed under the influence of human intelligence and professional ethics.
PO9	1	Expertise developed, which will enable the student to become a productive member of a design team.
PO10	1	The AI knowledge helps the students to communicate the complex engineering activities involved in developing a AI system.
PO11	1	The knowledge and group work in AI helps the students to understand the project management principles.
PO12	2	The knowledge and the advancements in the area of AI will lead the student to upgrade the technical knowledge through lifelong learning.
PSO1	2	Studying the concepts of AI and its applications can acquire skills to design, analyse and develop algorithms and implement them using high level programming languages.
PSO2	1	Knowledge of AI can contribute skills in Intelligent systems and knowledge engineering domain.

Table 1.b.10: Course Articulation Matrix: Course Name: Data Mining & Information Retrieval (01CE0707) (VII Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PS O2
CO1	Understand different indexing techniques on real data set. (Understand)	2	2	0	1	2	0	0	0	0	0	0	0	1	0
CO2	Demonstrate different classification methods on real and synthetic data set. (Apply)	3	3	0	0	0	0	0	0	0	0	0	2	1	0
CO3	Discover knowledge using various Data	3	2	0	0	0	0	0	0	2	1	0	1	1	0

	Mining methods for given system/application. (Apply)														
CO4	Analyze various data warehousing techniques used in industry. (Analyze)	1	2	1	3	0	0	0	0	0	0	0	0	1	0
Average Correlation Levels:		2	2	1	1	2	0	0	0	2	1	0	1	1	0

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	2	Competent to apply Data warehousing operations and data mining techniques on given dataset.
PO2	2	Competent to analyze information retrieval techniques and datasets for the identification of data mining techniques applicable on dataset for business intelligence.
PO3	1	Competent to analyze data cubes and design a solution for data mining.
PO4	1	Competent to analyze and apply the need to required technique to be performed on preprocessed data available in the forms of data cubes.
PO5	2	Competent to define problem definition on information retrieval and data mining and use data mining tools for data analysis and business intelligence.
PO9	2	This course is not dealing with any ethical aspects.
PO10	1	Competent to present identified definition, solution and performed data mining tasks.
PO12	1	Competent to have the basics knowledge of advanced data mining systems.
PSO1	1	Competent to apply Data warehousing operations and data mining techniques on given dataset.

2.6.2 Attainment of Course Outcomes, Program Outcomes & Program Specific Outcomes

A. Assessment Process:

Assessment is a systematic and on-going process of collecting, interpreting, and acting on information relating to the goals and outcomes developed to support the department and institution's mission and vision. The assessment process is depicted in the figure below.

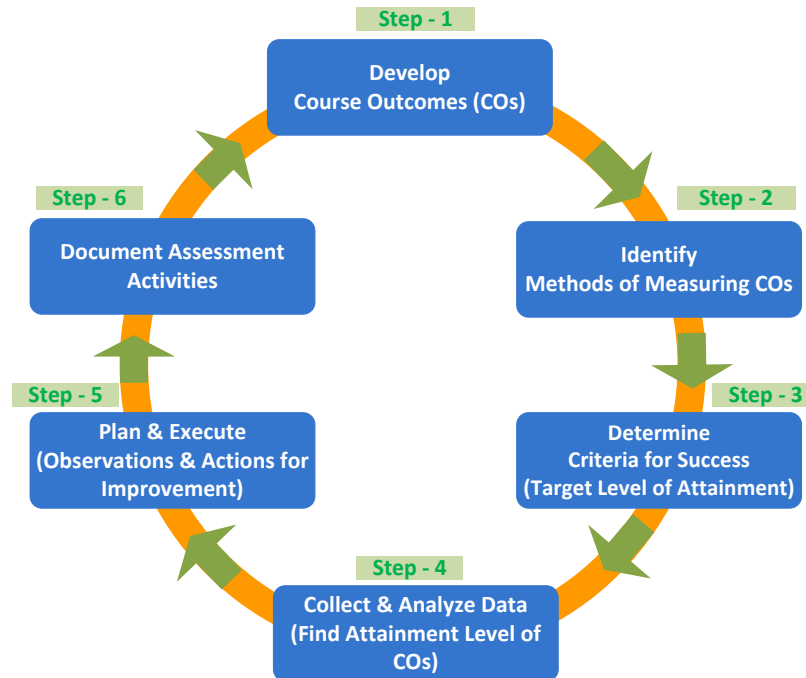


Fig. 2.1.a Assessment Cycle

The first step in the assessment cycle is the clear definition of course outcomes and its mapping to program outcomes. Course outcomes describe what students are able to demonstrate in terms of knowledge, skills, and values upon completion of the course, a span of several courses, or a program. Clear articulation of course outcomes serves as the foundation to evaluating the effectiveness of the teaching-learning process.

The second step is to identify appropriate assessment methods. Assessment methods are the tools and techniques used to determine the extent to which the stated course outcomes are achieved.

The third step is to determine the criteria for success i.e., the target levels for the attainment of course and program outcomes. The predetermined target levels range from 50% to 65% based on the complexity and relevance of the course to the program under consideration.

The fourth step is to collect data and analyze in order to verify whether the specified attainment levels are achieved or not. The attainment levels are calculated based on the assessment tools and weight ages.

The fifth step is to compare the attainment levels with the predetermined target levels and conclusions are made to decide the corrective measures so as to ensure the attainment of the course outcomes.

Finally, the assessment activities are documented and taken as a reference for further improvement and actions taken to redefine course outcomes and assessment methods.

The assessment methods and tools are tabulated below:

Table 2.1.a: Assessment Methods and Tools

Assessment Method	Assessment Tool	Maximum Marks	Duration	Direct / Indirect Tool
Continuous Internal Evaluation (CIE)	Mid Test - 1/ Canvas	30	90 Minutes	Direct
	Mid Test - 2/ Canvas	30	90 Minutes	Direct
	CSE	20		Direct
End Semester Examination (ESE)	Lab Terminal Exam	25	45 Minutes	Direct
Comprehensive Viva	External Evaluation	25	45 Minutes	
End Semester Examination (ESE)	External Evaluation	100	3 Hours	Direct
Project Work	Internal Evaluation	100	90 Minutes	Direct
	External Evaluation	100		

Table: 2.1.b. Course Assessment Tools and Weightage

	Assessment Tool	Weight age	Total
Theory Marks	Mid Test - 1	30%	100%
	Mid Test - 2		
	CSE- Internal	20%	
	SEE	50%	
Practical Marks	Viva	50%	100%
	Term work	50%	
Technical Seminar	Internal Evaluation	100%	100%
Comprehensive Viva	External Evaluation	100%	100%
Project Work	Internal Evaluation	50%	100%
	External Evaluation	50%	

B. Measuring Course Outcome attained through Continuous Internal Evaluation (CIE) and End Semester Examination (SEE)

CIE:

For each theory course of the program, two Mid Semester Tests and Online Objective Test are conducted. And for each laboratory, Technical Seminar, Mini Project and Project Work, internal examinations are conducted. The marks of each test are collected from controller of the examiner. The following tables give complete CO attainments of all courses through Continuous Internal Evaluation.

ESE:

For each course of the program including Comprehensive Viva and Project Work, CIE and End Semester Examination (ESE) is conducted and the marks of each course are collected from controller of the examiner for attainment of course outcomes. The following tables give complete CO attainments of all courses through End Semester Examination.

Table 2.1.a: CO Attainments of First Year courses through CIE and ESE

Subject code	Subject	CO	MID-1 (IA)	MID-2 (IA)	PR/INT (CSE)	PR/VA/TW	FINAL	WT ON MID-1 (10%)	WT ON MID-2 (10%)	MID-1, MID-2 (20%) (IA)	PR/INT (15%) (CSE)	PR/VIVA/TW (15%)	FINAL (50%)	TOTAL CO (100%)	Target
01MA0101	ENGINEERING MATHEMATICS-I	C01	69.43		96.48	92.25	44.85	6.94		13.89	14.47	13.84	22.43	64.62	YES
		C02	66.88		96.48	92.25	74.27	6.69		13.38	14.47	13.84	37.14	78.82	YES
		C03	56.85		96.48	92.25	50.03	5.69		11.37	14.47	13.84	25.02	64.69	YES
		C04		52.17	96.48	92.25	50.18		5.22	10.43	14.47	13.84	25.09	63.83	YES
		C05		53.86	96.48	92.25	31.01		5.39	10.77	14.47	13.84	15.51	54.59	YES
		C06		46.85	96.48	92.25	78.14		4.69	9.37	14.47	13.84	39.07	76.75	YES
01EE0101	ELEMENTS OF ELECTRICAL ENGINEERING	C01	69.48		69.72	92.25	61.85	6.95		13.90	10.46	13.84	30.93	69.12	YES
		C02	68.76		69.72	92.25	41.38	6.88		13.75	10.46	13.84	20.69	58.74	YES
		C03	58.29		69.72	92.25	45.48	5.83		11.66	10.46	13.84	22.74	58.69	YES
		C04		43.03	69.72	92.25	33.33		4.30	8.61	10.46	13.84	16.67	49.57	NO
		C05		45.11	69.72	92.25	21.20		4.51	9.02	10.46	13.84	10.60	43.92	NO
		C06		39.08	69.72	92.25	46.05		3.91	7.82	10.46	13.84	23.03	55.14	YES
01GS0101	PHYSICS	C01	61.26		98.59	96.48	64.96	6.13		12.25	14.79	14.47	32.48	73.99	YES
		C02	60.35		98.59	96.48	39.04	6.04		12.07	14.79	14.47	19.52	60.85	YES
		C03	47.92		98.59	96.48	57.86	4.79		9.58	14.79	14.47	28.93	67.77	YES
		C04		50.36	98.59	96.48	51.65		5.04	10.07	14.79	14.47	25.83	65.16	YES
		C05		49.94	98.59	96.48	28.66		4.99	9.99	14.79	14.47	14.33	53.58	YES
		C06		36.36	98.59	96.48	57.44		3.64	7.27	14.79	14.47	28.72	65.25	YES
01SL0101	COMMUNICATION SKILLS	C01	60.88		98.59	92.96	81.18	6.09		12.18	14.79	13.94	40.59	81.50	YES
		C02	67.37		98.59	92.96	59.18	6.74		13.47	14.79	13.94	29.59	71.80	YES
		C03	53.14		98.59	92.96	54.40	5.31		10.63	14.79	13.94	27.20	66.56	YES
		C04		64.57	98.59	92.96	89.22		6.46	12.91	14.79	13.94	44.61	86.26	YES
		C05		55.66	98.59	92.96	62.20		5.57	11.13	14.79	13.94	31.10	70.96	YES
01CE0102	COMPUTER WORKSHOP	C01				95.77	0.00	0.00	0.00	0.00	0.00	14.37	0.00	95.77	YES
		C02				95.77	0.00	0.00	0.00	0.00	0.00	14.37	0.00	95.77	YES
		C03				95.77	0.00	0.00	0.00	0.00	0.00	14.37	0.00	95.77	YES

		C04				95.77	0.00	0.00	0.00	0.00	0.00	14.37	0.00	95.77	YES
		C05				95.77	0.00	0.00	0.00	0.00	0.00	14.37	0.00	95.77	YES
		C06				95.77	0.00	0.00	0.00	0.00	0.00	14.37	0.00	95.77	YES
01ME0101	ELEMENTS OF MECHANICAL ENGINEERING	C01	69.01		95.77	91.55	42.66	6.90		13.80	14.37	13.73	21.33	63.23	YES
		C02	73.76		95.77	91.55	53.74	7.38		14.75	14.37	13.73	26.87	69.72	YES
		C03	64.33		95.77	91.55	63.90	6.43		12.87	14.37	13.73	31.95	72.91	YES
		C04		33.82	95.77	91.55	51.17		3.38	6.76	14.37	13.73	25.59	60.45	YES
		C05		28.55	95.77	91.55	43.55		2.86	5.71	14.37	13.73	21.78	55.58	YES
01CE0101	COMPUTER PROGRAMMING (Canvas or Other LMS)	C01	95.8			97.9	23.53			19.16		14.69	11.77	45.61	NO
		C02	95.8			97.9	23.53			19.16		14.69	11.77	45.61	NO
		C03	95.8		57.98	97.9	23.53			19.16	8.70	14.69	11.77	54.31	YES
		C04	95.8		68.07	97.9	23.53			19.16	10.21	14.69	11.77	55.82	YES
		C05	95.8		68.07	97.9	23.53			19.16	10.21	14.69	11.77	55.82	YES
		C06	95.8			97.9	23.53			19.16		14.69	11.77	45.61	NO
01CR0101	CAREER READINESS PROGRAM	C01				0	81.95			0.00		0.00	40.98	48.21	NO
		C02				0	85.91			0.00		0.00	42.96	50.54	YES
		C03				0	73.43			0.00		0.00	36.72	43.19	NO
		C04				0	68.28			0.00		0.00	34.14	40.16	NO
01MA0151	ENGINEERING MATHEMATICS-II	C01	72.35		87.12	96.97	70.44	7.24		14.47	13.07	14.55	35.22	77.30	YES
		C02	67.46		87.12	96.97	44.40	6.75		13.49	13.07	14.55	22.20	63.31	YES
		C03	58.74		87.12	96.97	63.82	5.87		11.75	13.07	14.55	31.91	71.27	YES
		C04		10.43	87.12	96.97	43.47		1.04	2.09	13.07	14.55	21.74	51.43	YES
		C05		29.94	87.12	96.97	55.66		2.99	5.99	13.07	14.55	27.83	61.43	YES
		C06		17.54	87.12	96.97	44.14		1.75	3.51	13.07	14.55	22.07	53.19	YES
01EN0101	BASICS OF ENVIRONMENTAL STUDIES	C01	55.81		97.73	0	78.65	5.58		11.16	14.66	0.00	39.33	76.64	YES
		C02	62.85		97.73	0	59.79	6.29		12.57	14.66	0.00	29.90	67.21	YES
		C03	44.68		97.73	0	65.38	4.47		8.94	14.66	0.00	32.69	66.22	YES
		C04		36.02	97.73	0	51.59		3.60	7.20	14.66	0.00	25.80	56.07	YES
		C05		51.48	97.73	0	56.81		5.15	10.30	14.66	0.00	28.41	62.78	YES
01EC0101	BASICS OF	C01	90.76		0	97.48	68.07			18.15	0.00	14.62	34.04	66.81	YES

	ELECTRONICS ENGINEERING (Canvas or Other LMS)	C02	90.76		0	97.48	68.07			18.15	0.00	14.62	34.04	66.81	YES	
		C03			39.08			68.07				5.86		34.04	39.90	NO
		C04	90.76		0						18.15	0.00			18.15	NO
		C05					97.48						14.62		14.62	NO
01ME0103	ENGINEERING DRAWING	C01	74.58		94.7	94.7	52.30	7.46		14.92	14.21	14.21	26.15	69.48	YES	
		C02	68.22		94.7	94.7	56.44	6.82		13.64	14.21	14.21	28.22	70.27	YES	
		C03	63.85		94.7	94.7	53.43	6.39		12.77	14.21	14.21	26.72	67.90	YES	
		C04		16.32	94.7	94.7	39.84		1.63	3.26	14.21	14.21	19.92	51.59	YES	
		C05		32.59	94.7	94.7	36.29		3.26	6.52	14.21	14.21	18.15	53.07	YES	
		C06		16.99	94.7	94.7	32.80		1.70	3.40	14.21	14.21	16.40	48.21	NO	
01EC0102	DIGITAL ELECTRONICS	C01	69.65		96.97	96.97	70.34	6.97		13.93	14.55	14.55	35.17	78.19	YES	
		C02	58.34		96.97	96.97	74.06	5.83		11.67	14.55	14.55	37.03	77.79	YES	
		C03	52.86		96.97	96.97	59.90	5.29		10.57	14.55	14.55	29.95	69.61	YES	
		C04		17.64	96.97	96.97	39.44		1.76	3.53	14.55	14.55	19.72	52.34	YES	
		C05		32.65	96.97	96.97	57.95		3.27	6.53	14.55	14.55	28.98	64.60	YES	

Table 2.2.a: Summary of CO attainments

Summary of CO attainments:	
Total No. of COs in the Program	71
No. of COs are attained	59
No. of COs are not attained	12
% of COs are attained	83.09
% of COs are not attained	16.90

Table 2.1.b: CO Attainments of *Second Year* courses through CIE and ESE

Subject code	Subject	CO	MID-1 (IA)	MID-2 (IA)	PR/INT (CSE)	PR/VA/TW	FINAL	WT ON MID-1 (10%)	WT ON MID-2 (10%)	MID-1, MID-2 (20%) (IA)	PR/INT (15%) (CSE)	PR/VIVA/TW (15%)	FINAL (50%)	TOTAL CO (100%)	Target
01MA0231	DISCRETE MATHEMATICS AND GRAPH THEORY	CO1	84.53		96.12	94.57	83.18	8.45		16.91	14.42	14.19	41.59	87.10	YES
		CO2	83.06		96.12	94.57	56.14	8.31		16.61	14.42	14.19	28.07	73.29	YES
		CO3	73.65		96.12	94.57	46.02	7.37		14.73	14.42	14.19	23.01	66.34	YES
		CO4		77.93	96.12	94.57	83.90		7.79	15.59	14.42	14.19	41.95	86.14	YES
		CO5		72.73	96.12	94.57	68.09		7.27	14.55	14.42	14.19	34.05	77.19	YES
01CE0301	DATA STRUCTURE (Canvas or Other LMS)	CO1				79.44	53.36					11.92	26.68	38.60	NO
		CO2	51.26		73.53	82.77	53.36			10.25	11.03	12.42	26.68	60.38	YES
		CO3	92.44		81.01	82.77	53.36			18.49	12.15	12.42	26.68	69.74	YES
		CO4	90.76			82.77	53.36			18.15		12.42	26.68	57.25	YES
		CO5				82.77	53.36					12.42	26.68	39.10	NO
		CO6	51.26			82.77	53.36			10.25		12.42	26.68	49.35	NO
01CE0302	DATABASE MANAGEMENT SYSTEM (Canvas or Other LMS)	CO1	97.48			99.16	43.91			19.50		14.87	21.96	56.33	YES
		CO2	97.48		97.48		23.88			19.50	14.62		11.94	46.06	NO
		CO3	97.48			99.16	23.15			19.50		14.87	11.58	45.95	NO
		CO4	97.48		97.48	99.16	49.02			19.50	14.62	14.87	24.51	73.50	YES
		CO5	97.48			99.16	17.17			19.50		14.87	8.59	42.96	NO
01IT0301	DATA COMMUNICATION AND NETWORKING (Canvas or Other LMS)	CO1	56.3		94.12	66.39	36.13			11.26	14.12	9.96	18.07	53.40	NO
		CO2	56.3		94.12	66.39	85.71			11.26	14.12	9.96	42.86	78.19	YES
		CO3	86.55		94.12	66.39	62.18			17.31	14.12	9.96	31.09	72.48	YES
		CO4	86.55		94.12	66.39	76.47			17.31	14.12	9.96	38.24	79.62	YES
		CO5	86.55		94.12	66.39	68.91			17.31	14.12	9.96	34.46	75.84	YES
		CO6	86.55		94.12	66.39	54.62			17.31	14.12	9.96	27.31	68.70	YES
01CE0303	OBJECT ORIENTED	CO1	79.48		64.44	97.48	44.09			15.90	9.67	14.62	22.05	62.23	YES
		CO2	72.3		61.34	97.48	34.97			14.46	9.20	14.62	17.49	55.77	YES

	DESIGN AND PROGRAMMING (Canvas or Other LMS)	C03	68.46			97.48	16.30			13.69		14.62	8.15	36.46	NO
		C04				97.48							14.62		14.62
01GS0301	ENGINEERING MANAGEMENT	C01	57.9		97.64	0	50.94	5.79		11.58	14.65	0.00	25.47	60.82	YES
		C02	44.13		97.64	0	44.74	4.41		8.83	14.65	0.00	22.37	53.93	YES
		C03		40.93	97.64	0	56.35		4.09	8.19	14.65	0.00	28.18	60.01	YES
		C04		37.91	97.64	0	49.82		3.79	7.58	14.65	0.00	24.91	55.46	YES
01MA0281	STATISTICAL & NUMERICAL METHODS	C01	83.89		100	99.1	55.84	8.39		16.78	15.00	14.87	27.92	74.56	YES
		C02	90.31		100	99.1	67.22	9.03		18.06	15.00	14.87	33.61	81.54	YES
		C03	71.4		100	99.1	61.08	7.14		14.28	15.00	14.87	30.54	74.69	YES
		C04		19.43	100	99.1	70.95		1.94	3.89	15.00	14.87	35.48	69.23	YES
		C05		30.64	100	99.1	66.72		3.06	6.13	15.00	14.87	33.36	69.35	YES
01CE0401	OPERATING SYSTEM (Canvas or Other LMS)	C01	98.76		99.08	72.94	42.02			19.75	14.86	10.94	21.01	66.57	YES
		C02	98.76		99.08	72.94	38.28			19.75	14.86	10.94	19.14	64.70	YES
		C03	98.76		99.08	72.94	23.30			19.75	14.86	10.94	11.65	57.21	YES
		C04	98.76		99.08	72.94	18.81			19.75	14.86	10.94	9.41	54.96	NO
01CE0402	COMPUTER ORGANIZATION AND ARCHITECTURE	C01	53.1		100	98.21	58.12	5.31		10.62	15.00	14.73	29.06	69.41	YES
		C02	50		100	98.21	35.02	5.00		10.00	15.00	14.73	17.51	57.24	YES
		C03	33.09		100	98.21	79.82	3.31		6.62	15.00	14.73	39.91	76.26	YES
		C04		24.33	100	98.21	64.07		2.43	4.87	15.00	14.73	32.04	66.63	YES
		C05		14.55	100	98.21	45.85		1.46	2.91	15.00	14.73	22.93	55.57	YES
		C06		21.34	100	98.21	43.33		2.13	4.27	15.00	14.73	21.67	55.66	YES
01IT0401	COMPUTER NETWORK (Canvas or Other LMS)	C01	97.25		99.08	98.62	99.08			19.45	14.86	14.79	49.54	98.65	YES
		C02	97.25		99.08	98.62	99.08			19.45	14.86	14.79	49.54	98.65	YES
		C03	97.25		99.08	98.62	99.08			19.45	14.86	14.79	49.54	98.65	YES
		C04	97.25		99.08	98.62	99.08			19.45	14.86	14.79	49.54	98.65	YES
		C05	97.25		99.08	98.62	99.08			19.45	14.86	14.79	49.54	98.65	YES
		C06	97.25		99.08	98.62	99.08			19.45	14.86	14.79	49.54	98.65	YES
01CE0403	OBJECT ORIENTED	C01	67.27		79.21	83.18	54.40			13.45	11.88	12.48	27.20	65.01	YES
		C02	67.08		80.7	83.18	61.22			13.42	12.11	12.48	30.61	68.61	YES

	PROGRAMMING WITH JAVA (Canvas or Other LMS)	C03	44.04		92.98	83.18	13.46			8.81	13.95	12.48	6.73	41.96	NO
		C04	41.45		92.98	83.18	8.65			8.29	13.95	12.48	4.33	39.04	NO
		C05	98.08		92.98	83.18	17.89			19.62	13.95	12.48	8.95	54.99	NO
01CE0404	MINI PROJECT	C01				98.2	0.00	0.00	0.00	0.00	0.00	14.73	0.00	98.20	YES
		C02				98.2	0.00	0.00	0.00	0.00	0.00	14.73	0.00	98.20	YES
		C03				98.2	0.00	0.00	0.00	0.00	0.00	14.73	0.00	98.20	YES
		C04				98.2	0.00	0.00	0.00	0.00	0.00	14.73	0.00	98.20	YES

Table 2.2.b: Summary of CO attainments

Summary of CO attainments:	
Total No. of COs in the Program	60
No. of COs are attained	47
No. of COs are not attained	13
% of COs are attained	78.33
% of COs are not attained	21.66

Table 2.1.c: CO Attainments of *Third Year* courses through CIE and ESE

Subject code	Subject	CO	MID-1 (IA)	MID-2 (IA)	PR/INT (CSE)	PR/VA/TW	FINAL	WT ON MID-1 (10%)	WT ON MID-2 (10%)	MID-1, MID-2 (20%) (IA)	PR/INT (15%) (CSE)	PR/VIVA/TW (15%)	FINAL (50%)	TOTAL CO (100%)	Target
01CE0502	ADVANCED JAVA PROGRAMMING (Canvas or Other LMS)	C01	93.33		100	78.5	90.50			18.67	15.00	11.78	45.25	90.69	YES
		C02	86.37		100	83.76	86.87			17.27	15.00	12.56	43.44	88.27	YES
		C03	75.88		100	88.54	97.83			15.18	15.00	13.28	48.92	92.37	YES
		C04	84.88		46.73	88.41	82.29			16.98	7.01	13.26	41.15	78.39	YES
		C05	81.92		100	84.85	85.20			16.38	15.00	12.73	42.60	86.71	YES
01CE0503	DESIGN AND ANALYSIS OF ALGORITHM (Canvas or Other LMS)	C01	54.21		85.41	100	42.44			10.84	12.81	15.00	21.22	59.87	YES
		C02	53.89			100	52.63			10.78		15.00	26.32	52.09	NO
		C03	56.95			100	24.30			11.39		15.00	12.15	38.54	NO
		C04	58.88			100	45.79			11.78		15.00	22.90	49.67	NO
		C05			80.37	100	97.20				12.06	15.00	48.60	75.66	YES
		C06			82.33	100	48.95				12.35	15.00	24.47	51.82	NO
01CE0504	THEORY OF AUTOMATA AND FORMAL LANGUAGES	C01	80.44		87.16	0	90.94	8.04		16.09	13.07	0.00	45.47	87.80	YES
		C02	60.24		87.16	0	47.45	6.02		12.05	13.07	0.00	23.73	57.47	YES
		C03	54.9		87.16	0	69.68	5.49		10.98	13.07	0.00	34.84	69.29	YES
		C04		12.36	87.16	0	77.02		1.24	2.47	13.07	0.00	38.51	63.60	YES
		C05		15.41	87.16	0	59.33		1.54	3.08	13.07	0.00	29.67	53.91	NO
		C06		14.07	87.16	0	67.63		1.41	2.81	13.07	0.00	33.82	58.47	YES
01IT0503	ADVANCED COMPUTER NETWORK (Canvas or Other LMS)	C01	80.7		76.56	97.66	29.69			16.14	11.48	14.65	14.85	57.12	NO
		C02	82.13		70.31	97.66	29.69			16.43	10.55	14.65	14.85	56.47	NO
		C03	80.88		62.5	97.66	29.69			16.18	9.38	14.65	14.85	55.05	NO
		C04	78.28		51.56	97.66	29.69			15.66	7.73	14.65	14.85	52.88	NO
		C05	75.31		23.44	97.66	29.69			15.06	3.52	14.65	14.85	48.07	NO
01CE0507	IMAGE PROCESSING	C01	77.12		100	97.67	65.48	7.71		15.42	15.00	14.65	32.74	77.81	YES
		C02	52.46		100	97.67	56.96	5.25		10.49	15.00	14.65	28.48	68.62	YES
		C03		22.23	100	97.67	17.44		2.22	4.45	15.00	14.65	8.72	42.82	NO
		C04		19.88	100	97.67	59.62		1.99	3.98	15.00	14.65	29.81	63.44	YES

01CE0508	REVERSE ENGINEERING	C01				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		C02				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		C03				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		C04				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
01IT0502	SEMINAR	C01				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		C02				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		C03				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		C04				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
01CE0501	MICROPROCESSOR OR FUNDAMENTALS & PROGRAMMING	C01	76.53		97.22	85.19	69.39	7.65		15.31	14.58	12.78	34.70	77.36	YES
		C02	54.72		97.22	85.19	71.38	5.47		10.94	14.58	12.78	35.69	74.00	YES
		C03	44.12		97.22	85.19	67.44	4.41		8.82	14.58	12.78	33.72	69.91	YES
		C04		11.4	97.22	85.19	63.13		1.14	2.28	14.58	12.78	31.57	61.21	YES
		C05		17.76	97.22	85.19	60.49		1.78	3.55	14.58	12.78	30.25	61.16	YES
01CR0501	BUSINESS BENCHMARK	C01				97.2	0.00	0.00	0.00	0.00	0.00	14.58	0.00	97.20	YES
		C02				97.2	0.00	0.00	0.00	0.00	0.00	14.58	0.00	97.20	YES
		C03				97.2	0.00	0.00	0.00	0.00	0.00	14.58	0.00	97.20	YES
		C04				97.2	0.00	0.00	0.00	0.00	0.00	14.58	0.00	97.20	YES
01IT0601	SOFTWARE ENGINEERING	C01	76.15		99.07	98.13	88.81	7.62		15.23	14.86	14.72	44.41	89.22	YES
		C02	59.04		99.07	98.13	65.69	5.90		11.81	14.86	14.72	32.85	74.23	YES
		C03	45.87		99.07	98.13	79.85	4.59		9.17	14.86	14.72	39.93	78.68	YES
		C04		16.99	99.07	98.13	72.15		1.70	3.40	14.86	14.72	36.08	69.05	YES
		C05		34.36	99.07	98.13	65.45		3.44	6.87	14.86	14.72	32.73	69.18	YES
		C06			99.07	98.13	32.91			0.00	14.86	14.72	16.46	46.04	NO
01CE0601	COMPILER DESIGN	C01	88.32		98.13	100	85.53	8.83		17.66	14.72	15.00	42.77	90.15	YES
		C02	72.17		98.13	100	75.03	7.22		14.43	14.72	15.00	37.52	81.67	YES
		C03	63.75		98.13	100	73.88	6.38		12.75	14.72	15.00	36.94	79.41	YES
		C04		6.01	98.13	100	63.75		0.60	1.20	14.72	15.00	31.88	62.80	YES
		C05		21.71	98.13	100	72.53		2.17	4.34	14.72	15.00	36.27	70.33	YES
		C06		10.79	98.13	100	76.00		1.08	2.16	14.72	15.00	38.00	69.88	YES
01IT0602	WEB	C01	69.81		92.06	89.25				13.96	13.81	13.39		41.16	NO

	TECHNOLOGY (Canvas or Other LMS)	C02	69.81			89.25				13.96		13.39		27.35	NO
		C03	69.81			89.25	75.57			13.96		13.39	37.79	65.13	YES
		C04	69.72		95.33	89.25	28.04			13.94	14.30	13.39	14.02	55.65	NO
		C05	75.79			89.25	28.04			15.16		13.39	14.02	42.57	NO
01CE0604	CYBER SECURITY [DEPARTMENT ELECTIVE - 2] (Canvas or Other LMS)	C01	93.28		94.86	98.6	92.06			18.66	14.23	14.79	46.03	93.71	YES
		C02	83.76		95.95	98.6	92.06			16.75	14.39	14.79	46.03	91.96	YES
		C03	91		97.2	98.6	92.06			18.20	14.58	14.79	46.03	93.60	YES
		C04	90.39		97.82	98.6	92.06			18.08	14.67	14.79	46.03	93.57	YES
		C05	81.78		96.73	98.6	92.06			16.36	14.51	14.79	46.03	91.69	YES
01CE0606	DESIGN ENGINEERING AND PROJECT MANAGEMENT	C01				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		C02				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		C03				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		C04				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		C05				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
01CE0602	.NET TECHNOLOGIES (Canvas or Other LMS)	C01	79.13		81.5	97.66	71.38			15.83	12.23	14.65	35.69	78.39	YES
		C02	78.97		78.5	97.66	70.87			15.79	11.78	14.65	35.44	77.65	YES
		C03	79.91		80.47	97.66	80.37			15.98	12.07	14.65	40.19	82.89	YES
		C04	79.13		66.54	97.66	76.17			15.83	9.98	14.65	38.09	78.54	YES
		C05	79.91			97.66	84.11			15.98		14.65	42.06	72.69	YES

Table 2.2.c: Summary of CO attainments

Summary of CO attainments:	
Total No. of COs in the Program	75
No. of COs are attained	59
No. of COs are not attained	16
% of COs are attained	78.66
% of COs are not attained	21.33

Table 2.1.d: CO Attainments of *Fourth Year* courses through CIE and ESE

Subject code	Subject	CO	MID-1 (IA)	MID-2 (IA)	PR/INT (CSE)	PR/VA/TW	FINAL	WT ON MID-1 (10%)	WT ON MID-2 (10%)	MID-1, MID-2 (20%) (IA)	PR/INT (15%) (CSE)	PR/VIVA/TW (15%)	FINAL (50%)	TOTAL CO (100%)	Target
01IT0701	ADVANCED WEB TECHNOLOGIES (Canvas or Other LMS)	C01	69.25		94.39	92.52	77.57			13.85	14.16	13.88	38.79	80.67	YES
		C02	61.59		94.39	92.52	23.36			12.32	14.16	13.88	11.68	52.03	NO
		C03	60.05		98.13	92.52	14.02			12.01	14.72	13.88	7.01	47.62	NO
		C04	76.7			92.52	40.68			15.34		13.88	20.34	49.56	NO
01CE0701	MOBILE COMPUTING	C01	50.65		99.07	99.07	85.46	5.07		10.13	14.86	14.86	42.73	82.58	YES
		C02	96.81		99.07	99.07	69.11	9.68		19.36	14.86	14.86	34.56	83.64	YES
		C03	69.54		99.07	99.07	74.45	6.95		13.91	14.86	14.86	37.23	80.85	YES
		C04	51.55		99.07	99.07	62.62	5.16		10.31	14.86	14.86	31.31	71.34	YES
		C05		23.97	99.07	99.07	51.09		2.40	4.79	14.86	14.86	25.55	60.06	YES
01CE0702	ARTIFICIAL INTELLIGENCE	C01	72.54		99.07	99.07	58.98	7.25		14.51	14.86	14.86	29.49	73.72	YES
		C02		31.18	99.07	99.07	62.34		3.12	6.24	14.86	14.86	31.17	67.13	YES
		C03	66.67		99.07	99.07	61.57	6.67		13.33	14.86	14.86	30.79	73.84	YES
		C04	96.43		99.07	99.07	69.79	9.64		19.29	14.86	14.86	34.90	83.90	YES
		C05	69.94		99.07	99.07	0.00	6.99		13.99	14.86	14.86	0.00	43.71	NO
01CE0704	ANDROID PROGRAMMING (Canvas or Other LMS)	C01	80.65			95.16	44.09			16.13		14.27	22.05	52.45	NO
		C02	38.71			95.16	44.09			7.74		14.27	22.05	44.06	NO
		C03	66.94			95.16	44.09			13.39		14.27	22.05	49.71	NO
		C04			96.77	95.16	44.09				14.52	14.27	22.05	50.83	NO
01CE0707	DATA MINING AND INFORMATION RETRIEVAL	C01	45.97		78.26	92.75	45.16	4.60		9.19	11.74	13.91	22.58	57.43	NO
		C02	66.26		78.26	92.75	44.72	6.63		13.25	11.74	13.91	22.36	61.26	NO
		C03		16.12	78.26	92.75	54.44		1.61	3.22	11.74	13.91	27.22	56.10	NO
		C04	53.33		78.26	92.75	68.15	5.33		10.67	11.74	13.91	34.08	70.39	YES
01CE0709	COMPUTATIONAL INTELLIGENCE	C01	68.3		97.37	97.37	53.05	6.83		13.66	14.61	14.61	26.53	69.40	YES
		C02	93.75		97.37	97.37	59.32	9.38		18.75	14.61	14.61	29.66	77.62	YES
		C03	85.48		97.37	97.37	0.00	8.55		17.10	14.61	14.61	0.00	46.31	NO
		C04	93.75		97.37	97.37	70.13	9.38		18.75	14.61	14.61	35.07	83.03	YES

01IT0703	MAJOR PROJECT - 1	C05		3.1	97.37	97.37	26.32		0.31	0.62	14.61	14.61	13.16	42.99	NO
		C01				99.07	0.00	0.00	0.00	0.00	0.00	14.86	0.00	99.07	YES
		C02				99.07	0.00	0.00	0.00	0.00	0.00	14.86	0.00	99.07	YES
		C03				99.07	0.00	0.00	0.00	0.00	0.00	14.86	0.00	99.07	YES
		C04				99.07	0.00	0.00	0.00	0.00	0.00	14.86	0.00	99.07	YES
		C05				99.07	0.00	0.00	0.00	0.00	0.00	14.86	0.00	99.07	YES
		C06				99.07	0.00	0.00	0.00	0.00	0.00	14.86	0.00	99.07	YES
01CE0705	PROGRAMMING WITH PYTHON (Canvas or Other LMS)	C01	76.28		65.79	96.71	56.84			15.26	9.87	14.51	28.42	68.05	YES
		C02	74.64		65.79	96.71	59.54			14.93	9.87	14.51	29.77	69.07	YES
		C03	71.8		65.79	96.71	17.11			14.36	9.87	14.51	8.56	47.29	NO
		C04	80.86		65.79	96.71	36.84			16.17	9.87	14.51	18.42	58.97	NO
01CE0802	BIG DATA AND ANALYTICS	C01	71.43		100	100	87.18	7.14		14.29	15.00	15.00	43.59	87.88	YES
		C02	61.91		100	100	87.18	6.19		12.38	15.00	15.00	43.59	85.97	YES
		C03		45.77	100	100	87.18		4.58	9.15	15.00	15.00	43.59	82.74	YES
		C04	63.89		100	100	87.18	6.39		12.78	15.00	15.00	43.59	86.37	YES
		C05	0		100	100	87.18	0.00		0.00	15.00	15.00	43.59	73.59	YES
01CE0803	CLOUD COMPUTING	C01		56.92	100	100	86.76		5.69	11.38	15.00	15.00	43.38	84.76	YES
		C02		54.55	100	100	86.76		5.46	10.91	15.00	15.00	43.38	84.29	YES
		C03		42.75	100	100	86.76		4.28	8.55	15.00	15.00	43.38	81.93	YES
		C04		50	100	100	86.76		5.00	10.00	15.00	15.00	43.38	83.38	YES
		C05	73.95		100	100	86.76	7.40		14.79	15.00	15.00	43.38	88.17	YES
		C06	36.6		100	100	86.76	3.66		7.32	15.00	15.00	43.38	80.70	YES
01CE0804	MACHINE LEARNING	C01	83.58	30.16	100	100	54.90	8.36	3.02	11.37	15.00	15.00	27.45	68.82	YES
		C02	56.69	57.14	100	100	54.90	5.67	5.71	11.38	15.00	15.00	27.45	68.83	YES
		C03	54.17	25.87	100	100	54.90	5.42	2.59	8.00	15.00	15.00	27.45	65.45	YES
		C04	78.72		100	100	54.90	7.87		15.74	15.00	15.00	27.45	73.19	YES
		C05	0		100	100	54.90	0.00		0.00	15.00	15.00	27.45	57.45	NO
01CE0805	BUSINESS INTELLIGENCE	C01	38.89		100	100	95.24	3.89		7.78	15.00	15.00	47.62	85.40	YES
		C02	55.42		100	100	95.24	5.54		11.08	15.00	15.00	47.62	88.70	YES
		C03	18.75		100	100	95.24	1.88		3.75	15.00	15.00	47.62	81.37	YES

		CO4		53.68	100	100	95.24		5.37	10.74	15.00	15.00	47.62	88.36	YES
		CO5		40.89	100	100	95.24		4.09	8.18	15.00	15.00	47.62	85.80	YES
01CE0806	INTERNET OF THINGS	CO1	61.41		100	100	100.00	6.14		12.28	15.00	15.00	50.00	92.28	YES
		CO2	70.6		100	100	100.00	7.06		14.12	15.00	15.00	50.00	94.12	YES
		CO3		52.86	100	100	100.00		5.29	10.57	15.00	15.00	50.00	90.57	YES
		CO4	66.67		100	100	100.00	6.67		13.33	15.00	15.00	50.00	93.33	YES
		CO5		64.25	100	100	100.00		6.43	12.85	15.00	15.00	50.00	92.85	YES
		CO6		65	100	100	100.00		6.50	13.00	15.00	15.00	50.00	93.00	YES
		01IT0801	MAJOR PROJECT - II	CO1			100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00
		CO2			100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES	
		CO3			100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES	
		CO4			100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES	
		CO5			100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES	

Table 2.2.d: Summary of CO attainments

Summary of CO attainments:	
Total No. of COs in the Program	69
No. of COs are attained	53
No. of COs are not attained	16
% of COs are attained	76.81
% of COs are not attained	23.19

Overall Course Outcomes Attainment through direct & indirect Assessment

S. No.	Course Name & Code	CO#	Total CO AT through DA in %	Total CO AT through IDA in %	70% OF Total CO AT through DA	30% OF Total CO AT through IDA	Total CO AT through DA & IDA in %	Target AT in %	CO Attained (YES/NO)
ATTAINMENT CALCULATIONS OF COs OF SECOND YEAR COURSES THROUGH DA & IDA FOR 2016-2020 BATCH									
I SEMESTER									
1	ENGINEERING MATHEMATICS- I (01MA0101)	CO1	64.62	57.47	45.23	17.24	62.48	50	YES
2		CO2	78.82	70.77	55.17	21.23	76.40	50	YES
3		CO3	64.69	51.77	45.29	15.53	60.81	50	YES
4		CO4	63.83	52.93	44.68	15.88	60.57	50	YES
5		CO5	54.59	46.90	38.21	14.07	52.28	50	YES
6		CO6	76.75	59.17	53.72	17.75	71.47	50	YES
7	ELEMENTS OF ELECTRICAL ENGINEERING (01EE0101)	CO1	69.12	61.00	48.38	18.30	66.68	50	YES
8		CO2	58.74	45.87	41.12	13.76	54.88	50	YES
9		CO3	58.69	47.57	41.09	14.27	55.35	50	YES
10		CO4	49.57	44.87	34.70	13.46	48.16	50	NO
11		CO5	43.92	38.33	30.74	11.50	42.24	50	NO
12		CO6	55.14	42.53	38.6	12.76	51.35	50	YES
13	PHYSICS (01GS0101)	CO1	73.99	67.07	51.79	20.12	71.91	50	YES
14		CO2	60.85	51.10	42.6	15.33	57.92	50	YES
15		CO3	67.77	61.17	47.44	18.35	65.80	50	YES
16		CO4	65.16	55.47	45.61	16.64	62.25	50	YES
17		CO5	53.58	45.70	37.5	13.71	51.22	50	YES
18		CO6	65.25	56.47	45.68	16.94	62.62	50	YES
19	COMMUNICATION SKILLS (01SL0101)	CO1	81.5	73.47	57.05	22.04	79.08	50	YES
20		CO2	71.8	53.47	50.26	16.04	66.29	50	YES
21		CO3	66.56	46.90	46.59	14.07	60.66	50	YES
22		CO4	86.26	76.30	60.38	22.89	83.27	50	YES
23		CO5	70.96	54.97	49.68	16.49	66.16	50	YES
24		CO6	95.77	83.87	67.04	25.16	92.20	50	YES
25	COMPUTER WORKSHOP (01CE0102)	CO2	95.77	87.73	67.04	26.32	93.36	50	YES
26		CO3	95.77	84.20	67.04	25.26	92.30	50	YES
27		CO4	95.77	85.37	67.04	25.61	92.65	50	YES
28		CO5	95.77	87.40	67.04	26.22	93.26	50	YES
29		CO6	95.77	86.07	67.04	25.82	92.85	50	YES
30		CO1	63.23	63.20	44.26	18.96	63.22	50	YES
31	ELEMENTS OF MECHANICAL ENGINEERING (01ME0101)	CO2	69.72	62.70	48.8	18.81	67.61	50	YES
32		CO3	72.91	65.57	51.04	19.67	70.70	50	YES
33		CO4	60.45	58.33	42.31	17.5	59.81	50	YES
34		CO5	55.58	54.30	38.91	16.29	55.20	50	YES

II SEMESTER									
1	COMPUTER PROGRAMMING (01CE0101)	CO1	45.61	36.30	31.93	10.89	42.82	50	NO
2		CO2	45.61	36.80	31.93	11.04	42.97	50	NO
3		CO3	54.31	43.70	38.01	13.11	51.12	50	YES
4		CO4	55.82	44.20	39.07	13.26	52.33	50	YES
5		CO5	55.82	44.20	39.07	13.26	52.33	50	YES
6		CO6	45.61	36.47	31.93	10.94	42.87	50	NO
7	CAREER READINESS PROGRAM (01CR0101)	CO1	48.21	38.97	33.74	11.69	45.44	50	NO
8		CO2	50.54	40.00	35.37	12.00	47.37	50	NO
9		CO3	43.19	37.10	30.24	11.13	41.36	50	NO
10		CO4	40.16	36.77	28.12	11.03	39.14	50	NO
11	ENGINEERING MATHEMATICS-II (01MA0151)	CO1	77.3	69.73	54.11	20.92	75.03	50	YES
12		CO2	63.31	48.03	44.31	14.41	58.72	50	YES
13		CO3	71.27	61.20	49.89	18.36	68.25	50	YES
14		CO4	51.43	47.37	36.00	14.21	50.21	50	YES
15		CO5	61.43	51.10	43.00	15.33	58.34	50	YES
16		CO6	53.19	44.63	37.23	13.39	50.62	50	YES
17	BASICS OF ENVIRONMENTAL STUDIES (01EN0101)	CO1	76.64	71.27	53.65	21.38	75.03	50	YES
18		CO2	67.21	38.47	47.04	11.54	58.58	50	YES
19		CO3	66.22	39.17	46.35	11.75	58.10	50	YES
20		CO4	56.07	43.27	39.25	12.98	52.22	50	YES
21		CO5	62.78	37.97	43.94	11.39	55.33	50	YES
22	BASICS OF ELECTRONICS ENGINEERING (01EC0101)	CO1	66.81	35.63	46.77	10.69	57.46	50	YES
23		CO2	66.81	37.13	46.77	11.14	57.91	50	YES
24		CO3	39.9	38.83	27.93	11.65	39.57	50	NO
25		CO4	18.15	36.30	12.71	10.89	23.60	50	NO
26		CO5	14.62	37.97	10.24	11.39	21.63	50	NO
27	ENGINEERING DRAWING (01ME0103)	CO1	69.48	49.07	48.63	14.72	63.35	50	YES
28		CO2	70.27	43.07	49.19	12.92	62.12	50	YES
29		CO3	67.9	42.73	47.53	12.82	60.35	50	YES
30		CO4	51.59	37.97	36.12	11.39	47.50	50	NO
31		CO5	53.07	37.77	37.15	11.33	48.49	50	NO
32		CO6	48.21	36.23	33.75	10.87	44.62	50	NO
33	DIGITAL ELECTRONICS (01EC0102)	CO1	78.19	71.47	54.73	21.44	76.17	50	YES
34		CO2	77.79	70.60	54.45	21.18	75.63	50	YES
35		CO3	69.61	61.20	48.73	18.36	67.09	50	YES
36		CO4	52.34	54.53	36.64	16.36	53.00	50	YES
37		CO5	64.6	53.50	45.22	16.05	61.27	50	YES
III SEMESTER									
1	DISCRETE MATHEMATICS AND GRAPH THEORY (01MA0231)	CO1	87.1	79.83	60.97	23.95	84.92	50	YES
2		CO2	73.29	63.37	51.3	19.01	70.31	50	YES
3		CO3	66.34	52.27	46.44	15.68	62.12	50	YES
4		CO4	86.14	80.50	60.3	24.15	84.45	50	YES
5		CO5	77.19	68.23	54.04	20.47	74.51	50	YES
6	DATA STRUCTURE	CO1	38.6	36.80	27.02	11.04	38.06	55	NO

7	(01CE0301)	CO2	60.38	60.33	42.26	18.1	60.37	55	YES
8		CO3	69.74	72.10	48.81	21.63	70.44	55	YES
9		CO4	57.25	55.30	40.07	16.59	56.66	55	YES
10		CO5	39.1	36.80	27.37	11.04	38.41	55	NO
11		CO6	49.35	47.23	34.54	14.17	48.71	55	NO
12	DATABASE MANAGEMENT SYSTEM (01CE0302)	CO1	56.33	57.83	39.43	17.35	56.77	55	YES
13		CO2	46.06	46.40	32.24	13.92	46.16	55	NO
14		CO3	45.95	45.37	32.16	13.61	45.78	55	NO
15		CO4	73.5	77.13	51.45	23.14	74.59	55	YES
16		CO5	42.96	42.37	30.07	12.71	42.77	55	NO
17	DATA COMMUNICATION AND NETWORKING (01IT0301)	CO1	53.4	42.70	37.38	12.81	50.19	55	NO
18		CO2	78.19	71.60	54.73	21.48	76.21	55	YES
19		CO3	72.48	67.07	50.73	20.12	70.85	55	YES
20		CO4	79.62	77.67	55.74	23.3	79.03	55	YES
21		CO5	75.84	72.60	53.09	21.78	74.87	55	YES
22		CO6	68.7	63.20	48.09	18.96	67.04	55	YES
23	OBJECT ORIENTED DESIGN AND PROGRAMMING (01CE0303)	CO1	62.23	58.67	43.56	17.6	61.16	55	YES
24		CO2	55.77	53.27	39.04	15.98	55.02	55	YES
25		CO3	36.46	38.50	25.52	11.55	37.07	55	NO
26		CO4	14.62	35.80	10.24	10.74	20.98	55	NO
27	ENGINEERING MANAGEMENT (01GS0301)	CO1	60.82	53.77	42.57	16.13	58.71	50	YES
28		CO2	53.93	43.37	37.75	13.01	50.76	50	YES
29		CO3	60.01	56.30	42.01	16.89	58.90	50	YES
30		CO4	55.46	47.73	38.82	14.32	53.14	50	YES
IV SEMESTER									
1	STATISTICAL & NUMERICAL METHODS (01MA0281)	CO1	74.56	72.67	52.19	21.8	73.99	50	YES
2		CO2	81.54	76.87	57.08	23.06	80.14	50	YES
3		CO3	74.69	67.33	52.28	20.2	72.48	50	YES
4		CO4	69.23	62.57	48.46	18.77	67.23	50	YES
5		CO5	69.35	62.57	48.55	18.77	67.32	50	YES
6	OPERATING SYSTEM (01CE0401)	CO1	66.57	67.53	46.6	20.26	66.85	55	YES
7		CO2	64.7	65.33	45.29	19.6	64.88	55	YES
8		CO3	57.21	54.13	40.04	16.24	56.28	55	YES
9		CO4	54.96	53.20	38.47	15.96	54.44	55	NO
10	COMPUTER ORGANIZATION AND ARCHITECTURE (01CE0402)	CO1	69.41	70.83	48.59	21.25	69.84	55	YES
11		CO2	57.24	58.17	40.07	17.45	57.52	55	YES
12		CO3	76.26	77.07	53.38	23.12	76.50	55	YES
13		CO4	66.63	69.37	46.64	20.81	67.45	55	YES
14		CO5	55.57	54.13	38.9	16.24	55.14	55	YES
15		CO6	55.66	53.77	38.97	16.13	55.09	55	YES
16	COMPUTER NETWORK (01IT0401)	CO1	98.65	95.77	69.05	28.73	97.79	55	YES
17		CO2	98.65	95.77	69.05	28.73	97.79	55	YES
18		CO3	98.65	95.77	69.05	28.73	97.79	55	YES
19		CO4	98.65	95.77	69.05	28.73	97.79	55	YES
20		CO5	98.65	95.77	69.05	28.73	97.79	55	YES
21		CO6	98.65	95.77	69.05	28.73	97.79	55	YES
22	MINI PROJECT	CO1	98.2	93.77	68.74	28.13	96.87	55	YES

23	(01CE0404)	CO2	98.2	94.87	68.74	28.46	97.20	55	YES
24		CO3	98.2	96.33	68.74	28.9	97.64	55	YES
25		CO4	98.2	92.83	68.74	27.85	96.59	55	YES
26	OBJECT ORIENTED PROGRAMMING WITH JAVA (01CE0403)	CO1	65.01	64.23	45.51	19.27	64.77	55	YES
27		CO2	68.61	60.37	48.03	18.11	66.14	55	YES
28		CO3	41.96	35.97	29.37	10.79	40.16	55	NO
29		CO4	39.04	34.87	27.33	10.46	37.79	55	NO
30		CO5	54.99	38.90	38.49	11.67	50.16	55	NO
V SEMESTER									
1	ADVANCED JAVA PROGRAMMING (01CE0502)	CO1	90.69	73.27	63.48	21.98	85.46	57.00	YES
2		CO2	88.27	87.87	61.79	26.36	88.15	57.00	YES
3		CO3	92.37	87.47	64.66	26.24	90.90	57.00	YES
4		CO4	78.39	79.63	54.87	23.89	78.76	57.00	YES
5		CO5	86.71	86.17	60.70	25.85	86.55	57.00	YES
6	DESIGN AND ANALYSIS OF ALGORITHM (01CE0503)	CO1	59.87	60.57	41.91	18.17	60.08	57.00	YES
7		CO2	52.09	41.67	36.47	12.50	48.97	57.00	NO
8		CO3	38.54	39.07	26.98	11.72	38.70	57.00	NO
9		CO4	49.67	50.27	34.77	15.08	49.85	57.00	NO
10		CO5	75.66	77.93	52.96	23.38	76.34	57.00	YES
11		CO6	51.82	71.76	36.27	21.53	57.80	57.00	YES
12	THEORY OF AUTOMATA AND FORMAL LANGUAGES (01CE0504)	CO1	87.80	82.43	61.46	24.73	86.19	57.00	YES
13		CO2	57.47	56.27	40.23	16.88	57.10	57.00	YES
14		CO3	69.29	69.90	48.50	20.97	69.47	57.00	YES
15		CO4	63.60	66.73	44.52	20.02	64.54	57.00	YES
16		CO5	53.91	53.83	37.73	16.15	53.88	57.00	NO
17		CO6	58.47	56.63	40.93	16.99	57.92	57.00	YES
18	ADVANCED COMPUTER NETWORK (01IT0503)	CO1	57.12	58.77	39.98	17.63	57.61	62.00	NO
19		CO2	56.47	57.50	39.53	17.25	56.78	62.00	NO
20		CO3	55.05	57.20	38.53	17.16	55.69	62.00	NO
21		CO4	52.88	53.77	37.02	16.13	53.14	62.00	NO
22		CO5	48.07	49.70	33.65	14.91	48.56	62.00	NO
23	IMAGE PROCESSING (01CE0507)	CO1	77.81	79.53	54.47	23.86	78.33	62.00	YES
24		CO2	68.62	70.70	48.04	21.21	69.25	62.00	YES
25		CO3	42.82	61.87	29.97	18.56	48.53	62.00	NO
26		CO4	63.44	64.20	44.41	19.26	63.66	62.00	YES
27	REVERSE ENGINEERING (01CE0508)	CO1	100.00	85.07	70.00	25.52	95.52	50.00	YES
28		CO2	100.00	87.30	70.00	26.19	96.19	50.00	YES
29		CO3	100.00	87.30	70.00	26.19	96.19	50.00	YES
30		CO4	100.00	87.10	70.00	26.13	96.13	50.00	YES
31	SEMINAR (01IT0502)	CO1	100.00	85.43	70.00	25.63	95.63	50.00	YES
32		CO2	100.00	83.93	70.00	25.18	95.18	50.00	YES
33		CO3	100.00	85.23	70.00	25.57	95.57	50.00	YES
34		CO4	100.00	86.53	70.00	25.96	95.96	50.00	YES
35	MICROPROCESSOR FUNDAMENTALS & PROGRAMMING (01CE0501)	CO1	77.36	78.70	54.15	23.61	77.76	57.00	YES
36		CO2	74.00	74.40	51.80	22.32	74.11	57.00	YES
37		CO3	69.91	69.53	48.93	20.86	69.79	57.00	YES
38		CO4	61.21	61.67	42.84	18.50	61.35	57.00	YES

39		CO5	61.16	64.87	42.81	19.46	62.27	57.00	YES
VI SEMESTER									
1	SOFTWARE ENGINEERING (01IT0601)	CO1	89.22	83.37	62.45	25.01	87.46	57.00	YES
2		CO2	74.23	75.90	51.96	22.77	74.73	57.00	YES
3		CO3	78.68	81.13	55.08	24.34	79.41	57.00	YES
4		CO4	69.05	71.40	48.34	21.42	69.76	57.00	YES
5		CO5	69.18	68.23	48.42	20.47	68.89	57.00	YES
6		CO6	46.04	45.80	32.22	13.74	45.96	57.00	NO
7	COMPILER DESIGN (01CE0601)	CO1	90.15	85.60	63.10	25.68	88.79	57.00	YES
8		CO2	81.67	82.80	57.17	24.84	82.01	57.00	YES
9		CO3	79.41	79.63	55.59	23.89	79.48	57.00	YES
10		CO4	62.80	62.80	43.96	18.84	62.80	57.00	YES
11		CO5	70.33	71.20	49.23	21.36	70.59	57.00	YES
12		CO6	69.88	71.40	48.91	21.42	70.33	57.00	YES
13	.NET TECHNOLOGIES (01CE0602)	CO1	78.39	78.33	54.87	23.50	78.37	57.00	YES
14		CO2	77.65	78.33	54.36	23.50	77.85	57.00	YES
15		CO3	82.89	81.87	58.02	24.56	82.58	57.00	YES
16		CO4	78.54	77.93	54.98	23.38	78.36	57.00	YES
17		CO5	72.69	74.40	50.88	22.32	73.20	57.00	YES
18	BUSINESS BENCHMARK (01CR0501)	CO1	97.20	81.87	68.04	24.56	92.60	50.00	YES
19		CO2	97.20	82.43	68.04	24.73	92.77	50.00	YES
20		CO3	97.20	84.10	68.04	25.23	93.27	50.00	YES
21		CO4	97.20	83.57	68.04	25.07	93.11	50.00	YES
22	WEB TECHNOLOGY (01IT0602)	CO1	41.16	46.53	28.81	13.96	42.77	57.00	NO
23		CO2	27.35	34.20	19.14	10.26	29.41	57.00	NO
24		CO3	65.13	67.10	45.59	20.13	65.72	57.00	YES
25		CO4	55.65	60.00	38.96	18.00	56.96	57.00	NO
26		CO5	42.57	48.40	29.80	14.52	44.32	57.00	NO
27	CYBER SECURITY [DEPARTMENT ELECTIVE - 2] (01CE0604)	CO1	93.71	85.60	65.59	25.68	91.28	62.00	YES
28		CO2	91.96	88.80	64.38	26.64	91.01	62.00	YES
29		CO3	93.60	85.80	65.52	25.74	91.26	62.00	YES
30		CO4	93.57	87.10	65.50	26.13	91.63	62.00	YES
31		CO5	91.69	87.30	64.18	26.19	90.37	62.00	YES
32	DESIGN ENGINEERING AND PROJECT MANAGEMENT (01CE0606)	CO1	100.00	85.97	70.00	25.79	95.79	50.00	YES
33		CO2	100.00	86.17	70.00	25.85	95.85	50.00	YES
34		CO3	100.00	87.87	70.00	26.36	96.36	50.00	YES
35		CO4	100.00	86.53	70.00	25.96	95.96	50.00	YES
36		CO5	100.00	89.73	70.00	26.92	96.92	50.00	YES
VII SEMESTER									
1	ADVANCED WEB TECHNOLOGIES (01IT0701)	CO1	80.67	79.43	56.47	23.83	80.30	57.00	YES
2		CO2	52.03	52.17	36.42	15.65	52.07	57.00	NO
3		CO3	47.62	48.23	33.33	14.47	47.80	57.00	NO
4		CO4	49.56	45.43	34.69	13.63	48.32	57.00	NO
5	MOBILE COMPUTING (01CE0701)	CO1	82.58	80.77	57.81	24.23	82.03	57.00	YES
6		CO2	83.64	83.17	58.55	24.95	83.50	57.00	YES
7		CO3	80.85	77.20	56.60	23.16	79.76	57.00	YES
8		CO4	71.34	73.47	49.94	22.04	71.98	57.00	YES
9		CO5	60.06	64.67	42.04	19.40	61.44	57.00	YES

10	ARTIFICIAL INTELLIGENCE (01CE0702)	CO1	73.72	74.03	51.60	22.21	73.81	57.00	YES
11		CO2	67.13	68.60	46.99	20.58	67.57	57.00	YES
12		CO3	73.84	74.20	51.69	22.26	73.95	57.00	YES
13		CO4	83.90	82.43	58.73	24.73	83.46	57.00	YES
14		CO5	43.71	42.80	30.60	12.84	43.44	57.00	NO
15	ANDROID PROGRAMMING (01CE0704)	CO1	52.45	54.83	36.71	16.45	53.17	62.00	NO
16		CO2	44.06	50.97	30.84	15.29	46.13	62.00	NO
17		CO3	49.71	54.20	34.79	16.26	51.05	62.00	NO
18		CO4	50.83	54.83	35.58	16.45	52.04	62.00	NO
19	DATA MINING AND INFORMATION RETRIEVAL (01CE0707)	CO1	57.43	61.17	40.20	18.35	58.55	62.00	NO
20		CO2	61.26	68.40	42.88	20.52	63.41	62.00	YES
21		CO3	56.10	62.03	39.27	18.61	57.88	62.00	NO
22		CO4	70.39	75.67	49.27	22.70	71.97	62.00	YES
23	COMPUTATIONAL INTELLIGENCE (01CE0709)	CO1	69.40	75.80	48.58	22.74	71.31	62.00	YES
24		CO2	77.62	76.33	54.33	22.90	77.23	62.00	YES
25		CO3	46.31	55.80	32.41	16.74	49.15	62.00	NO
26		CO4	83.03	83.17	58.12	24.95	83.07	62.00	YES
27		CO5	42.99	51.07	30.09	15.32	45.41	62.00	NO
28	PROGRAMMING WITH PYTHON (01CE0705)	CO1	68.05	71.57	47.64	21.47	69.11	62.00	YES
29		CO2	69.07	71.83	48.35	21.55	69.90	62.00	YES
30		CO3	47.29	52.63	33.10	15.79	48.89	62.00	NO
31		CO4	58.97	62.63	41.28	18.79	60.07	62.00	NO
32	MAJOR PROJECT - 1 (01IT0703)	CO1	99.07	87.47	69.35	26.24	95.59	57.00	YES
33		CO2	99.07	87.67	69.35	26.30	95.65	57.00	YES
34		CO3	99.07	85.07	69.35	25.52	94.86	57.00	YES
35		CO4	99.07	89.53	69.35	26.86	96.21	57.00	YES
36		CO5	99.07	85.43	69.35	25.63	94.98	57.00	YES
37		CO6	99.07	88.40	69.35	26.52	95.87	57.00	YES
VIII SEMESTER									
1	BIG DATA AND ANALYTICS (01CE0802)	CO1	87.88	84.10	61.51	25.23	86.74	62.00	YES
2		CO2	85.97	83.60	60.18	25.08	85.26	62.00	YES
3		CO3	82.74	86.67	57.92	26.00	83.92	62.00	YES
4		CO4	86.37	84.10	60.46	25.23	85.69	62.00	YES
5		CO5	73.59	74.37	51.51	22.31	73.82	62.00	YES
6	CLOUD COMPUTING (01CE0803)	CO1	84.76	83.23	59.33	24.97	84.31	62.00	YES
7		CO2	84.29	81.77	59.00	24.53	83.53	62.00	YES
8		CO3	81.93	80.30	57.35	24.09	81.44	62.00	YES
9		CO4	83.38	81.17	58.37	24.35	82.72	62.00	YES
10		CO5	88.17	82.67	61.72	24.80	86.51	62.00	YES
11		CO6	80.70	77.93	56.49	23.38	79.87	62.00	YES
12	MACHINE LEARNING (01CE0804)	CO1	68.82	74.13	48.18	22.24	70.41	62.00	YES
13		CO2	68.83	75.30	48.18	22.59	70.77	62.00	YES
14		CO3	65.45	74.90	45.82	22.47	68.29	62.00	YES
15		CO4	73.19	80.40	51.24	24.12	75.35	62.00	YES
16		CO5	57.45	64.30	40.22	19.29	59.51	62.00	NO
17	INTERNET OF THINGS (01CE0806)	CO1	92.28	91.43	64.60	27.43	92.03	62.00	YES
18		CO2	94.12	92.57	65.88	27.77	93.66	62.00	YES

19		CO3	90.57	89.13	63.40	26.74	90.14	62.00	YES
20		CO4	93.33	92.00	65.33	27.60	92.93	62.00	YES
21		CO5	92.85	93.13	65.00	27.94	92.94	62.00	YES
22		CO6	93.00	93.13	65.10	27.94	93.04	62.00	YES
23	BUSINESS INTELLIGENCE (01CE0805)	CO1	85.40	67.63	59.78	20.29	80.06	62.00	YES
24		CO2	88.70	72.37	62.09	21.71	83.81	62.00	YES
25		CO3	81.37	61.90	56.96	18.57	75.53	62.00	YES
26		CO4	88.36	71.43	61.85	21.43	83.28	62.00	YES
27		CO5	85.80	72.37	60.06	21.71	81.77	62.00	YES
28	MAJOR PROJECT – II (01IT0801)	CO1	100.00	86.17	70.00	25.85	95.85	57.00	YES
29		CO2	100.00	87.30	70.00	26.19	96.19	57.00	YES
30		CO3	100.00	85.43	70.00	25.63	95.63	57.00	YES
31		CO4	100.00	87.10	70.00	26.13	96.13	57.00	YES
32		CO5	100.00	87.30	70.00	26.19	96.19	57.00	YES

C. Attainment of Program Outcomes and Program Specific Outcomes

Program Outcomes and Program Specific Outcomes of the Program are attained by using two methods:

- Direct Assessment
- Indirect Assessment

➤ **Direct Assessment:**

Direct assessment of POs & PSOs is a systematic and on-going process of collecting, interpreting, and acting on information relating to the goals and outcomes developed to support the department and institution's mission and vision. The assessment methods and tools for PO and PSO attainments are tabulated below:

Table 3.1.a: Assessment Methods and Tools

Assessment Method	Assessment Tool	Maximum Marks	Duration	Direct / Indirect Tool
Continuous Internal Evaluation (CIE)	Mid Test - 1/ Canvas	30	90 Minutes	Direct
	Mid Test - 2/ Canvas	30	90 Minutes	Direct
	CSE	20		Direct
End Semester Examination (ESE)	Lab Terminal Exam	25	45 Minutes	Direct
Comprehensive Viva	External Evaluation	25	45 Minutes	
End Semester Examination (ESE)	External Evaluation	100	3 Hours	Direct
Project Work	Internal Evaluation	100	90 Minutes	Direct
	External Evaluation	100		

The assessment tools and weightage for POs and PSOs attainments are tabulated below:

A. Course Assessment Tools and Weightage

Table 3.1.b: Course Assessment Tools and Weightage

	Assessment Tool	Weight age	Total
Theory Marks	Mid Test - 1	30%	100%
	Mid Test - 2		
	CSE- Internal	20%	
	SEE	50%	
Practical Marks	Viva	50%	100%
	Term work	50%	

Technical Seminar	Internal Evaluation	100%	100%
Comprehensive Viva	External Evaluation	100%	100%
Project Work	Internal Evaluation	50%	100%
	External Evaluation	50%	

➤ **Indirect Assessment:**

The following Surveys/Feedbacks are conducted during the course of study of program in each semester or end of the program. Evaluated data in terms of attainment percentages of the students is collected from the Course/Program co-ordinator.

Table 3.1.c: Summary of Surveys Conducted

S. No.	Survey	Frequency of Assessment is done
1	Student Exit Survey	Once at the end of Program
2	Alumni Survey	Once in a year
3	Employer Survey	Once in a year
4	Parents Survey	Once in a year

The attainment levels by direct (student performance) and indirect (surveys) are presented through Program level Course-PO&PSO matrices as indicated. PO Attainment Program Outcomes of the program through direct assessment are shown in table 3.2.a

Table 3.2.a: COMPLETE PO ATTAINMENTS THROUGH DIRECT ASSESSMENT

S. NO.	COURSE NAME & COURSE CODE	PO AT Through DA in %													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	ENGINEERING MATHEMATICS- I (01MA0101)	68.35	65.58	63.57	61.93	64.62									
2	ELEMENTS OF ELECTRICAL ENGINEERING (01EE0101)	52.30	54.60	57.01	46.74		55.59	59.04		58.69			57.57		
3	PHYSICS (01GS0101)	63.79	65.18	65.21	61.62	65.25	66.14	64.46		65.25	64.56	65.25	64.56		
4	COMMUNICATION SKILLS (01SL0101)									75.42	75.42		75.42		
5	COMPUTER WORKSHOP (01CE0102)	95.77	95.77	95.77	95.77	95.77						95.77	95.77	95.77	95.77
6	ELEMENTS OF MECHANICAL ENGINEERING (01ME0101)	64.38	64.38										65.80		
7	COMPUTER PROGRAMMING (01CE0101)	50.46	50.46	50.46									50.46	50.46	50.46
8	CAREER READINESS PROGRAM (01CR0101)									46.11	48.21	40.16			
9	ENGINEERING MATHEMATICS-II (01MA0151)	63.03	63.30	67.29										63.03	
10	BASICS OF ENVIRONMENTAL STUDIES (01EN0101)	65.78	65.78	66.86			65.28	65.28	66.90	66.90	65.95	66.22	66.12		
11	BASICS OF ELECTRONICS ENGINEERING (01EC0101)	39.43	37.33	31.97	31.97	31.97	20.94	23.05	16.39	16.39	14.62	14.62	14.62		
12	DIGITAL ELECTRONICS (01EC0102)	64.60	64.60	62.90	65.79	58.47	52.34	71.73	69.57	52.34	52.34	52.34	55.40		
13	ENGINEERING DRAWING (01ME0103)	60.09	62.13	63.96		60.09					53.07				
14	DISCRETE MATHEMATICS AND GRAPH THEORY (01MA0231)	78.85	78.85	79.27	80.06	79.06								80.06	
15	DATA STRUCTURE (01CE0301)	55.16	56.31	56.19	56.59	54.93	59.54						54.64	55.28	44.22
16	DATABASE MANAGEMENT SYSTEM (01CE0302)	51.08	61.88	59.24	57.01	63.32	59.78	73.50	55.01	66.61	73.50	73.50	58.83	42.96	

17	DATA COMMUNICATION AND NETWORKING (01IT0301)	70.16	72.27	75.59	74.72	71.40			72.49	69.39	69.02		70.14	69.01	67.72
18	OBJECT ORIENTED DESIGN AND PROGRAMMING (01CE0303)	40.46	42.27	36.69	31.98					21.90	36.46	14.62	42.27	33.05	30.37
19	ENGINEERING MANAGEMENT (01GS0301)	57.73								60.01		57.73		60.01	
20	STATISTICAL & NUMERICAL METHODS (01MA0281)	73.87	73.87											74.09	
21	OPERATING SYSTEM (01CE0401)	61.11	62.14	61.25	61.25	60.39			58.83	65.63	59.83		56.31	58.58	59.83
22	COMPUTER ORGANIZATION AND ARCHITECTURE (01CE0402)	63.46	62.89	63.17	65.07	61.18		69.41		65.46				63.83	64.85
23	COMPUTER NETWORK (01IT0401)	98.65	98.65	98.65	98.65	98.65	98.65	98.65	98.65	98.65	98.65	98.65	98.65		
24	OBJECT ORIENTED PROGRAMMING WITH JAVA (01CE0403)	53.92	53.92	54.02	54.99	54.99				53.85	53.80	53.75	53.92	53.80	53.80
25	MINI PROJECT (01CE0404)	98.20	98.20	98.20		98.20	98.20			98.20	98.20	98.20	98.20	98.20	98.20
26	ADVANCED JAVA PROGRAMMING (01CE0502)	87.29	87.29	85.93		85.93			86.74	86.91	85.40	83.05	87.29	87.29	86.91
27	DESIGN AND ANALYSIS OF ALGORITHM (01CE0503)	55.17	55.17	53.99			62.66	38.54	45.32	50.48			59.87		
28	THEORY OF AUTOMATA AND FORMAL LANGUAGES (01CE0504)	65.30	62.37	62.37	59.85				67.66	62.82	87.80	87.80	62.09	67.10	68.45
29	ADVANCED COMPUTER NETWORK (01IT0503)	53.92	53.56	53.19	53.65	52.60	53.19	53.12	53.15	53.65	53.12	53.19	53.92	54.45	53.92
30	IMAGE PROCESSING (01CE0507)	63.17	63.17	63.17	63.17	63.08					63.15		63.15	63.17	63.17
31	REVERSE ENGINEERING (01CE0508)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
32	SEMINAR (01IT0502)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
33	MICROPROCESSOR FUNDAMENTALS & PROGRAMMING (01CE0501)	68.73	68.73	68.35	67.66	65.23			77.36	77.36	67.60		67.40		
34	BUSINESS BENCHMARK (01CR0501)									97.20	97.20	97.20			
35	SOFTWARE ENGINEERING (01IT0601)	73.25	69.42	73.46	70.02	65.62	60.13	77.50	64.99	73.07	71.49	76.25	70.65	71.07	70.38
36	COMPILER DESIGN (01CE0601)	75.99	74.17	74.74	74.80	69.88	90.15		69.88	74.38		76.63	75.70	74.64	

37	.NET TECHNOLOGIES (01CE0602)	78.40	78.65	78.55		78.47		78.63		78.41		78.49		77.14	77.07
38	WEB TECHNOLOGY (01IT0602)	48.08	50.58			53.12			54.21	49.52	54.45	54.45	46.37	47.89	41.86
39	CYBER SECURITY [DEPARTMENT ELECTIVE - 2] (01CE0604)	92.80	92.80	92.79	92.92	92.95	92.83		92.95	92.71			93.12	92.79	92.86
40	DESIGN ENGINEERING AND PROJECT MANAGEMENT (01CE0606)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
41	ADVANCED WEB TECHNOLOGIES (01IT0701)	57.47	57.96	58.56	55.00	55.00	66.35	66.35		48.59		48.59	62.11	57.47	57.47
42	MOBILE COMPUTING (01CE0701)	75.12	76.21	75.69	74.60	77.02	75.69	77.81	75.69	75.69	76.84	75.69	75.69	80.85	82.25
43	ARTIFICIAL INTELLIGENCE (01CE0702)	68.08	68.08	68.23	68.23	68.23	69.73	69.73	69.73	69.73	67.95	67.13	69.73	67.68	67.12
44	ANDROID PROGRAMMING (01CE0704)	49.26	49.74	48.01	49.20	50.27	49.26			50.83			50.06	51.37	48.20
45	DATA MINING AND INFORMATION RETRIEVAL (01CE0707)	59.70	61.29	70.39	67.15	57.43				56.10	56.10		59.54		
46	COMPUTATIONAL INTELLIGENCE (01CE0709)	63.87	63.87	63.87	65.05	61.34	62.11		62.27	63.87	73.51	63.87		63.87	63.87
47	MAJOR PROJECT - 1 (01IT0703)	99.07	99.07	99.07		99.07	99.07		99.07	99.07	99.07	99.07	99.07	99.07	99.07
48	PROGRAMMING WITH PYTHON (01CE0705)	62.77	62.11	62.11	58.52	58.44		62.00		62.29	60.85		68.05	59.34	61.02
49	BIG DATA AND ANALYTICS (01CE0802)	83.31	83.01	83.31	83.05	83.31	82.46	85.16	78.97	84.07	82.64	82.64	83.39	82.74	82.74
50	CLOUD COMPUTING (01CE0803)	83.87	84.01	83.51	84.04	83.63	83.01			84.08			84.39	84.31	83.20
51	MACHINE LEARNING (01CE0804)	66.84	66.10	67.31	67.34	66.30	66.23	67.62	71.01	70.28	65.98	69.08	67.71	66.23	66.23
52	INTERNET OF THINGS (01CE0806)	92.58	92.65	92.88	93.10	92.25	92.95		93.00	93.17	93.00	93.21	92.67	93.21	93.00
53	MAJOR PROJECT – II (01IT0801)	100.00	100.00	100.00		100.00	100.00		100.00	100.00	100.00	100.00	100.00	100.00	100.00
54	BUSINESS INTELLIGENCE (01CE0805)	85.88	85.93	85.62	87.24	87.06	87.24	88.36	84.49	87.06	87.06	87.06	86.88	87.49	87.49
	TOTAL PO DIRECT ATTAINMENTS IN %	70.60	71.13	71.75	69.70	72.79	74.81	72.27	74.44	70.96	72.41	73.46	71.11	72.49	73.08

Table 3.2.b: Overall Attainments of POs and PSOs

S NO	PO	PO ATTAINMENT THROUGH DA	PO ATTAINMENT THROUGH IDA	SUMMATION OF 70% OF DA & 30% OF IDA	TARGET	TARGET ATTAINED (YES/NO)
1	PO1	70.60	87.73	75.74	60	YES
2	PO2	71.13	88.84	76.56	60	YES
3	PO3	71.75	87.81	77.13	60	YES
4	PO4	69.70	88.55	75.75	60	YES
5	PO5	72.79	89.23	77.27	60	YES
6	PO6	74.81	89.69	77.24	60	YES
7	PO7	72.27	89.87	76.50	60	YES
8	PO8	74.44	87.70	79.12	60	YES
9	PO9	70.96	82.92	76.58	60	YES
10	PO10	72.41	86.35	77.34	60	YES
11	PO11	73.46	90.05	77.77	60	YES
12	PO12	71.11	89.70	76.34	60	YES
13	PSO1	72.49	64.56	70.12	60	YES
14	PSO2	73.08	58.53	68.71	60	YES

NAAC CRITERIA 2.6.1/2.6.2

Batch 2017-21

DEPARTMENT

OF

COMPUTER

ENGINEERING

CRITERION 2.6	Student Performance & Learning Outcomes	30
----------------------	--	-----------

PROGRAM OUTCOMES (POs):

Engineering Graduates will be able to:

P01. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

P02. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

P03. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

P04. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

P05. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

P06. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

P07. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

P08. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

P09. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

P010. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

P011. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

P012. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

The following are the program Specific outcomes:

PROGRAM SPECIFIC OUTCOMES (PSOs):

PSO1: Students shall demonstrate skills, the knowledge and competence in the analysis, design and development of computer based systems addressing industrial and social issues.

PSO2: Students shall have competence to take challenges associated with future technological issues associated with security, wearable devices, augmented reality, Internet of Anything etc.

PROGRAM ARTICULATION MATRIX: COURSES MAPPING WITH POs AND PSOs

Program Articulation Matrix:

The following table (Table 1.a) demonstrates the mapping/correlation of Courses of Program with all POs and PSOs of 2017 -2021 batch.

Table 1.a: Program Articulation Matrix

Sr. NO.	COURSE	COURSE CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
1	Computer Programming	01CE0101	3	2	2	0	0	0	0	0	0	0	0	2	2	1
2	Database Management System	01CE1302	3	2	2	2	1	0	0	2	2	2	1	2	1	0
3	Operating System	01CE0401	2	2	2	2	2	0	0	1	1	1	0	2	2	2
4	Object Oriented Programming with Java	01CE0403	3	3	2	3	3	0	0	0	3	2	2	2	2	2
5	Microprocessor Fundamental & Programming	01CE0501	3	3	3	2	2	0	0	1	1	2	0	3	0	1
6	Advanced Java Programming	01CE0502	3	2	1	0	1	0	0	1	2	2	1	2	2	2
7	Compiler Design	01CE0601	2	2	1	2	2	0	0	1	1	0	0	1	0	1
8	.Net Technologies	01CE0602	3	2	2	0	2	0	2	0	3	0	2	0	2	2
9	Artificial Intelligence	01CE0702	3	3	2	3	2	2	2	2	1	1	1	2	2	1
10	Data Mining And Information Retrieval	01CE0707	2	2	1	1	2	0	0	0	2	1	0	1	1	0

COURSE ARTICULATION MATRIX: COURSES AND COURSE OUTCOMES MAPPING WITH POS AND PSOS

- The following tables (Table 1.b.1 – Table 1.b.10) demonstrate the mapping/correlation of Course Outcomes of *Courses* with all POs and PSOs.
- Number of Outcomes for a course is expected to be 4 to 6.

Table 1.b.1: Course Articulation Matrix- Course Name: Computer Programming (01CE0101) (II Semester)

CO No	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Express programming problems logically through flow charts and algorithms (Understand).	3	2	2	0	0	0	0	0	0	0	0	2	2	1
CO2	Identify various conditional control structures and jumping structures and use them. (Remember)	3	2	2	0	0	0	0	0	0	0	0	2	2	1
CO3	Express and Distinguish various loops in C language (Analyze).	3	2	2	0	0	0	0	0	0	0	0	2	2	1
CO4	Demonstrate the usage of concepts like strings, arrays, pointers, Structures(Apply)	3	2	2	0	0	0	0	0	0	0	0	2	2	1
CO5	Select the appropriate user defined function category.(Evaluate)	3	2	2	0	0	0	0	0	0	0	0	2	2	1
CO6	Develop the programs on dynamic memory allocations and Files.(Create)	3	2	2	0	0	0	0	0	0	0	0	2	2	1
Average Correlation Levels:		3	2	2	0	0	0	0	0	0	0	0	2	2	1

CO - PO Mapping Justification		
PO Number	PO Level	Justification
PO1	3	In day to day applications recognizing importance of C language will directly or indirectly enriches engineering knowledge.
PO2	2	Being a graduate, engineer needs to analyze the existing problem through their mathematical and logical skills and apply through coding
PO3	2	The engineer needs to apply the concept of programming in order to develop various solutions like automatic lathe machine development, CNC machine, robots, PCB design machine, etc.

PO12	2	The programming skill is a life long learning for a mechanical engineer for development of various standard machines for the betterment of the health of the society
PSO1	2	C programming language is base of all next generation programming language, by learning this student can use this knowledge in future projects
PSO2	1	By learning this programming language, students will learn problem solving approach and it will prepare them by creating a base for future technologies.

Table 1.b.2: Course Articulation Matrix: Course Name: Database Management System (01CE1302) (III Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PS O2
CO1	Use Relational Database and different models of Database. (Apply)	0	0	0	0	0	0	0	2	0	0	0	1	0	0
CO2	Design ER Model for an Application. (Create)	1	0	1	2	0	1	0	0	0	0	0	1	0	0
CO3	Apply Concepts of normalization with functional dependency to construct Data dictionary. (Apply)	3	1	1	1	0	0	0	1	1	0	0	1	0	0
CO4	Implement Structured Query Language (SQL) and evaluate query expression. (Evaluate)	2	3	3	2	2	1	2	1	3	3	3	3	0	0
CO5	Differentiate and Execute transactional Concepts and locking mechanism (Analyze)	3	1	1	0	1	0	0	1	0	0	0	1	1	0
CO6	Use concepts of Database Security on Database. (Apply)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Average Correlation Levels:		3	2	2	2	1	0	0	2	2	2	1	2	1	0

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	3	This course enables designing and managing database for any real time system. Knowledge of Mathematics is used to solve complex queries.
PO2	2	Structured Query Language (SQL) and PL/SQL is used to analyze complex engineering problems. Principles of mathematics are used in Normalization of database.

PO3	2	ER models can be used to model real life health problems.
PO4	2	Normalization, E-R diagram, Relational data model and SQL are used for design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	1	Oracle with SQL or SQL developer like tools are used for modeling complex engineering activities.
PO8	2	Students are taught to work ethically throughout this course.
PO9	2	Open ended project enables conceptual database design process along with enhancing individual and team work abilities.
PO10	2	Open Ended projects helps in improving communication and building values for assisting team work.
PO11	1	Students have learned project management by working together on certain problems.
PO12	2	Lifelong learning is achieved by understanding and applying basic concepts of database design. (Conceptual Design, Normalization, R-Model, Query Evaluation and Optimization, Security)
PSO1	1	Analysis and Design of databases for real world problems are studied in this subject and also with the help of SQL, database creation in ORACLE is performed. Query processing considers time and space parameters for generating optimized query.

Table 1.b.3: Course Articulation Matrix: Course Name: Operating System (01CE0401) (IV Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PS O2
CO1	Understanding the role of operating system with its function and services. (Understanding)	1	1	0	0	0	0	0	1	1	0	0	0	0	0
CO2	Compare Various Algorithm used for CPU Scheduling, Memory management and Disk Scheduling Algorithm. (Evaluate)	3	3	3	3	2	0	0	0	1	1	0	0	2	2
CO3	Apply Various Concepts related with Deadlock to solve Problems. (Apply)	1	1	1	1	1	0	0	0	0	0	0	3	1	0
CO4	Analyze Protection and Security Mechanism in Operating System. (Analyze)	2	1	1	1	1	0	0	2	0	1	0	2	3	2
Average Correlation Levels:		2	2	2	2	2	0	0	1	1	1	0	2	2	2

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	2	Course outcome will improve the knowledge of different operating systems on virtual and physical environment.
PO2	2	Process Scheduling and Memory Management can be analyzed for multitasking and multithreading environment.
PO3	2	Designing & Development of scripts to improve the efficiency of operating system (Unix/Linux)
PO4	2	Investigation of Real time Unix Environment IPC, Deadlock, Memory Management and I/O Scheduling.

PO5	2	Exploration of Unix & Linux environment.
PO8	1	Ethical angle is touched in operating system Security
PO9	1	Individual and Team can design scripts for different IPC.
PO10	1	Interactive lectures and group discussion improves communication skills.
PO12	2	Understanding of different operating environment with the knowledge of IPC, Memory Management, I/O and Security.
PSO1	2	apply various concepts to solve the problems
PSO2	2	use the concepts in various technologies

Table 1.b.4: Course Articulation Matrix: Course Name: Object Oriented Programming with JAVA (01CE0403) (IV Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand object oriented programming concepts in java	3	3	2	0	0	0	0	0	3	2	3	2	2	2
CO2	Comprehend building blocks of OOPs language, inheritance, package and interfaces.	3	3	2	0	0	0	0	0	3	2	2	2	2	2
CO3	Identify exception handling methods and collection framework.	3	3	2	0	0	0	0	0	3	2	3	2	2	2
CO4	Implement file handling and multithreading in object oriented programs.	3	3	2	0	0	0	0	0	3	2	2	2	2	2
CO5	Develop GUI based application using applet, awt and swing.	3	3	3	3	3	0	0	0	2	1	1	2	1	1
Average Correlation Levels:		3	3	2	3	3	0	0	0	3	2	2	2	2	2

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	3	By understanding the basic principles of OOP, students will be able to solve the complex problems of engineering
PO2	3	By gaining the ability to apply object oriented principles in software design process, the students will be able to analyze complex engineering problems in the domain of software development with better effectiveness.
PO3	2	By learning the GUI through Applet and swing, students will be able to design and develop the various applications for various domains
PO4	3	By learning this subject, students will be able to solve complex application and problem by using inbuilt packages of java programming

PO5	3	By learning the GUI through Applet and swing, students will be able to use the modern IDEs to develop GUI Applications
PO9	3	By learning this, students will come together while creating programs and fixing errors, which develops habit of working in teams in them.
PO10	2	By learning this subject students will develop curiosity to interact with each other while creating programs, solving errors and understanding the key concept of the subject, which improves effective communication between them.
PO11	2	By learning this subject, student will be able to make projects of multidisciplinary domain.
PO12	2	By learning this subject, student will be able to realize the need for OOP in today's real life applications and hence will continue to learn the OOP fundamentals
PSO1	2	By learning this subject, students get knowledge of OOP which they can use in their entire life time in project development
PSO2	2	By learning this, students will develop a base for upcoming programming language like JSP, Android

Table 1.b.5: Course Articulation Matrix: Course Name: Microprocessor Fundamentals & Programming (01CE0501) (V Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the architecture and pin diagram of 8085 and advance Microprocessor. (Understand)	3	3	3	2	2	0	0	1	1	0	0	1	0	1
CO2	Implement Memory and I/O interfacing in 8085 Microprocessor. (Apply)	3	3	2	2	0	0	0	0	0	2	0	3	0	1
CO3	Sketch Timing diagram after getting brief with the addressing mode, byte and machine cycle of instructions.(Apply)	3	3	3	3	0	0	0	0	0	0	0	3	0	0
CO4	Apply the concepts of instruction to write, Debug & Simulate assembly language program of 8085 microprocessors. (Apply)	3	3	3	3	3	0	0	0	0	2	0	3	0	1
CO5	Analyze time delay generation, counter and waveform generation (Analyze).	3	3	3	3	3	0	0	0	0	0	0	3	0	0
Average Correlation Levels:		3	3	3	2	2	0	0	1	1	2	0	3	0	1

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	3	Student will get some of the basic knowledge of engineering science and mathematics.
PO2	3	Student will gain slight knowledge to identify, formulate and solve complex problems in engineering science

PO3	3	Student will gain slight knowledge to design system components that meet the requirement of public safety and also offers solution to the society
PO4	2	After learning this course students will apply the concept in research work & solving engineering problems and arrive at valid conclusions
PO5	2	After learning this course students will get knowledge in terms of various tools arrived in this course.
PO8	1	They have to draw the architecture of 8085 and advance processor and don't have to copy and paste .
PO9	1	They have to submit assignment individually
PO10	2	After learning this course student will participate into engineering activities and presentation.
PO12	3	After learning this course students will gain knowledge which will help him during advanced studies as well as in research work
PSO2	1	Student will gain knowledge regarding Embedded devices which used in wearable devices, IoT.

Table 1.b.6: Course Articulation Matrix: Course Name: Advanced Java Programming (01CE0502) (V Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the components of J2EE Architecture, MVC Framework and Multi-tier Application and Various Network Protocol (Understand)	3	2	1	0	1	0	0	1	1	0	0	2	2	1
CO2	To make use of Servlet and JSP API in the process of enterprise application deployment. (Apply)	3	2	1	0	1	0	0	1	2	2	0	2	2	2
CO3	Implement components such as Session, Filters, JSTL, Beans. (Apply)	3	2	1	0	1	0	0	2	2	1	1	2	2	2
CO4	Distinguish Application Server, Web Container, JDBC and ORM tools.(Analyse)	3	2	2	0	2	0	0	2	2	2	2	2	2	2
CO5	Design and Development of web application having collaboration of Servlets, JSPs, JSF, Spring and Hibernate base upon the requirement. (Create)	3	2	2	0	2	0	0	1	2	1	0	2	2	2
Average Correlation Levels:		3	2	1	0	1	0	0	1	2	2	1	2	2	2

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	3	By learning this course, learners will understand MVC Architecture, Networking Protocols, Web Servers, various advance JAVA Technologies and framework like Servlets , JSP, Swing , JDBC, Hibernate, RMI.... which directly or indirectly enrich engineering knowledge
PO2	2	By learning this subject, the learners will be able to analyze complex engineering problems in the domain of software development with better effectiveness.
PO3	1	By learning this subject, learners will be able to design and develop the various web based applications
PO5	1	By implementing project in laboratory will gives confidence to use modern days JDK 8.0 or above capable IDEs like Netbeans, Eclipse along with various APIs and drivers.
PO8	1	By learning this subject, learners will develop curiosity to interact with each other while creating programs, solving errors and understanding the key concept of the subject, which improves effective communication between them.
PO9	2	By learning this subject, learners will come together while creating programs and fixing errors, which develop harmony and alliance building in them.
PO10	2	By learning this subject, learners will develop curiosity to interact with each other while creating programs, solving errors and understanding the key concept of the subject, which improves effective communication between them.
PO11	1	By learning this subject, learners will be able to make projects of multidisciplinary domain.
PO12	2	By solving internal assessment, doing discussion and mini project implementation learners will develop life long learning.
PSO1	2	By learning this subject, learner will get knowledge of programming which they can use in their entire life time in project development
PSO2	2	By learning this subject, learner will develop skills, the knowledge and competence in developing secure web application

Table 1.b.7: Course Articulation Matrix: Course Name: Compiler Design (01CE0601) (VI Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To be able to describe compiler and different phases. Using this translate program from source code to executable code and files. (Knowledge)	2	1	2	1	0	1	0	0	0	0	1	1	0	1
CO2	Able to explain lexical analysis phase and their connection to language definition through regular expressions and grammars. (Comprehensive)	3	3	1	2	0	0	0	0	2	0	0	0	0	0

CO3	Able to explain the syntax analysis phase and differentiate among various parsing techniques and grammar transformation techniques. (Comprehensive)	3	3	1	0	0	0	0	0	2	0	0	0	0	1
CO4	Able to apply formal attributed grammars for specifying the syntax and semantics of programming languages. (Application)	2	3	2	2	0	0	0	0	1	0	0	0	0	0
CO5	To be able to calculate the effectiveness of optimization and differences between machine dependent and independent translation. (Application)	3	3	2	1	0	0	0	0	1	0	0	0	0	0
CO6	Able to use the powerful compiler generation tools such as Lex and YACC. (Analysis)	2	2	2	2	2	0	0	2	2	0	0	1	0	0
Average Correlation Levels:		2	2	1	2	2	0	0	1	1	0	0	1	0	1

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	2	Students can be able to solve the compiler related issues.
PO2	2	Students can be able to analyze the problem which is present in the program and can able to solve using some particular methods.
PO3	1	Students can be able to design new methods or error finding methods and can able to optimize the code.
PO4	2	Using some methodologies of Optimization process, students can able to write the proper and efficient code.
PO5	2	Students can be able to design efficient code.
PO8	1	Constructing automata improves engineering practice.
PO9	1	Students can be able to complete the task by itself using the different tools. Using the team task they can be able to solve the problem
PO12	1	In any of the platform compiler can be used, So it supports the life long understanding and learning.
PSO2	1	Using Concept of the compiler design students can be able to design the some part of compiler and using different tools student can find the solution for the better efficiency and security of the compiler.

Table 1.b.8: Course Articulation Matrix: Course Name: .Net Technologies (01CE0602) (VI Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PS O2
CO1	To develop applications with Dot-Net framework	3	1	2	0	2	0	2	0	3	0	0	0	1	0
CO2	To create Console based C# application	3	2	1	0	2	0	2	0	3	0	2	0	1	0
CO3	To create GUI based desktop application using C# Win-form application	3	2	3	0	3	0	2	0	3	0	3	0	1	1
CO4	To create basic database application using ADO.net technology	2	2	3	0	2	0	2	0	3	0	2	0	1	2
CO5	To Design and develop basic applications using WPF	2	1	2	0	2	0	1	0	2	0	2	0	2	2
Average Correlation Levels:		3	2	2	0	2	0	2	0	3	0	2	0	2	2

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	3	Student will apply his knowledge to create projects on their chosen definition
PO2	2	Creation of forms and database will require study of existing system
PO3	2	In future complex solution can also be made once learning dot net technology thoroughly
PO5	2	various version of visual studio will be used
PO7	2	Students will be able to develop applications that is beneficial to society
PO9	3	Project will inculcate team work
PO11	2	One project has been assigned in a group of 3 which will lead to project management skills
PSO1	2	Students will be able to create real world solutions that will help society in every aspects
PSO2	2	Students will learn new and upcoming technologies; also try to implement in their projects to make their projects more efficient

Table 1.b.9: Course Articulation Matrix: Course Name: Artificial Intelligence (01CE0702) (VII Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PS O2
CO1	Assess critically the techniques presented and to apply them to real world problems(Analyze)	3	3	3	3	3	2	2	2	2	2	1	2	2	2
CO2	Mindful of the significant difficulties	3	3	1	1	1	1	1	1	1	1	1	1	2	2

	confronting AI and the multifaceted nature of run of the mill issues inside the field(remember)														
CO3	Comprehend the significant zones and difficulties of AI(Understanding)	2	2	2	2	2	1	1	1	1	1	1	1	2	1
CO4	Apply fundamental AI calculations to take care of issues(Apply)	3	3	3	3	3	3	3	3	3	2	2	3	3	3
CO5	Get a learning of utilizations in various zones of registering including the web and human communication(Evaluate)	3	3	3	3	3	2	2	2	2	2	2	2	3	3
Average Correlation Levels:		3	3	2	3	2	2	2	2	1	1	1	2	2	1

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	3	The knowledge of basic concepts of AI will help the students to apply the same to formulate solutions for engineering problems
PO2	3	The knowledge of different ways of handling AI principles will help the students to apply the same to identify and analyze engineering problems.
PO3	2	The AI knowledge can be used to design and conduct experiments to provide valid conclusions.
PO4	3	The AI knowledge can be used to design and conduct experiments to provide valid conclusions.
PO5	2	The practice with existing tools of AI helps in understanding the limitations of the existing tools.
PO6	2	Knowledge of AI will help understand issues and societal problems related to the need of the assistance of self driven machines.
PO7	2	The knowledge AI and existing systems helps the students to come up with a sustainable solutions.
PO8	2	The AI systems are developed under the influence of human intelligence and professional ethics.
PO9	1	Expertise developed, which will enable the student to become a productive member of a design team.
PO10	1	The AI knowledge helps the students to communicate the complex engineering activities involved in developing a AI system.
PO11	1	The knowledge and group work in AI helps the students to understand the project management principles.
PO12	2	The knowledge and the advancements in the area of AI will lead the student to upgrade the technical knowledge through lifelong learning.
PSO1	2	Studying the concepts of AI and its applications can acquire skills to design, analyse and develop algorithms and implement them using high level programming languages.
PSO2	1	Knowledge of AI can contribute skills in Intelligent systems and knowledge engineering domain.

Table 1.b.10: Course Articulation Matrix: Course Name: Data Mining & Information Retrieval (01CE0707) (VII Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand different indexing techniques on real data set. (Understand)	2	2	0	1	2	0	0	0	0	0	0	0	1	0
CO2	Demonstrate different classification methods on real and synthetic data set. (Apply)	3	3	0	0	0	0	0	0	0	0	0	2	1	0
CO3	Discover knowledge using various Data Mining methods for given system/application. (Apply)	3	2	0	0	0	0	0	0	2	1	0	1	1	0
CO4	Analyze various data warehousing techniques used in industry. (Analyze)	1	2	1	3	0	0	0	0	0	0	0	0	1	0
Average Correlation Levels:		2	2	1	1	2	0	0	0	2	1	0	1	1	0

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	2	Competent to apply Data warehousing operations and data mining techniques on given dataset.
PO2	2	Competent to analyze information retrieval techniques and datasets for the identification of data mining techniques applicable on dataset for business intelligence.
PO3	1	Competent to analyze data cubes and design a solution for data mining.
PO4	1	Competent to analyze and apply the need to required technique to be performed on preprocessed data available in the forms of data cubes.
PO5	2	Competent to define problem definition on information retrieval and data mining and use data mining tools for data analysis and business intelligence.
PO9	2	This course is not dealing with any ethical aspects.
PO10	1	Competent to present identified definition, solution and performed data mining tasks.
PO12	1	Competent to have the basics knowledge of advanced data mining systems.
PSO1	1	Competent to apply Data warehousing operations and data mining techniques on given dataset.

2.6.2 Attainment of Course Outcomes, Program Outcomes & Program Specific Outcomes

A. Assessment Process:

Assessment is a systematic and on-going process of collecting, interpreting, and acting on information relating to the goals and outcomes developed to support the department and institution's mission and vision. The assessment process is depicted in the figure below.

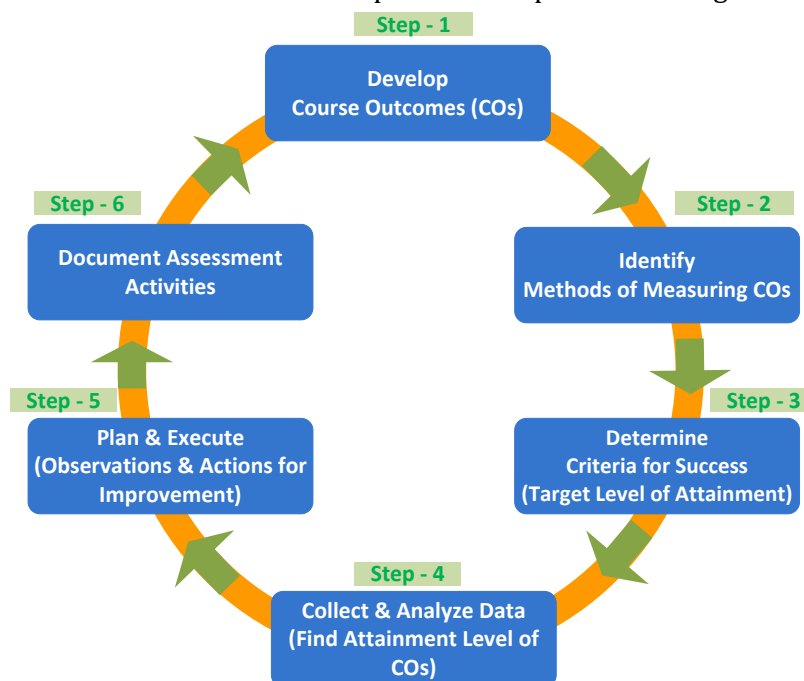


Fig. 2.1.a Assessment Cycle

The first step in the assessment cycle is the clear definition of course outcomes and its mapping to program outcomes. Course outcomes describe what students are able to demonstrate in terms of knowledge, skills, and values upon completion of the course, a span of several courses, or a program. Clear articulation of course outcomes serves as the foundation to evaluating the effectiveness of the teaching-learning process.

The second step is to identify appropriate assessment methods. Assessment methods are the tools and techniques used to determine the extent to which the stated course outcomes are achieved.

The third step is to determine the criteria for success i.e., the target levels for the attainment of course and program outcomes. The predetermined target levels range from 50% to 65% based on the complexity and relevance of the course to the program under consideration.

The fourth step is to collect data and analyze in order to verify whether the specified attainment levels are achieved or not. The attainment levels are calculated based on the assessment tools and weight ages.

The fifth step is to compare the attainment levels with the predetermined target levels and conclusions are made to decide the corrective measures so as to ensure the attainment of the course outcomes.

Finally, the assessment activities are documented and taken as a reference for further improvement and actions taken to redefine course outcomes and assessment methods.

The assessment methods and tools are tabulated below:

Table 2.1.a: Assessment Methods and Tools

Assessment Method	Assessment Tool	Maximum Marks	Duration	Direct / Indirect Tool
Continuous Internal Evaluation (CIE)	Mid Test - 1/ Canvas	30	90 Minutes	Direct
	Mid Test - 2/ Canvas	30	90 Minutes	Direct
	CSE	20		Direct
End Semester Examination (ESE)	Lab Terminal Exam	25	45 Minutes	Direct
Comprehensive Viva	External Evaluation	25	45 Minutes	
End Semester Examination (ESE)	External Evaluation	100	3 Hours	Direct
Project Work	Internal Evaluation	100	90 Minutes	Direct
	External Evaluation	100		

Table: 2.1.b. Course Assessment Tools and Weightage

	Assessment Tool	Weight age	Total
Theory Marks	Mid Test - 1	30%	100%
	Mid Test - 2		
	CSE- Internal	20%	
	SEE	50%	
Practical Marks	Viva	50%	100%
	Term work	50%	
Technical Seminar	Internal Evaluation	100%	100%
Comprehensive Viva	External Evaluation	100%	100%
Project Work	Internal Evaluation	50%	100%
	External Evaluation	50%	

B. Measuring Course Outcome attained through Continuous Internal Evaluation (CIE) and End Semester Examination (SEE)

CIE:

For each theory course of the program, two Mid Semester Tests and Online Objective Test are conducted. And for each laboratory, Technical Seminar, Mini Project and Project Work, internal examinations are conducted. The marks of each test are collected from controller of the examiner. The following tables give complete CO attainments of all courses through Continuous Internal Evaluation.

ESE:

For each course of the program including Comprehensive Viva and Project Work, CIE and End Semester Examination (ESE) is conducted and the marks of each course are collected from controller of the examiner for attainment of course outcomes. The following tables give complete CO attainments of all courses through End Semester Examination.

Table 2.1.a: CO Attainments of First Year courses through CIE and ESE

Subject code	Subject	CO	MID-1 (IA)	MID-2 (IA)	PR/INT (CSE)	PR/VA/TW	FINAL	WT ON MID-1 (10%)	WT ON MID-2 (10%)	MID-1, MID-2 (20%) (IA)	PR/INT (15%) (CSE)	PR/VIVA/TW (15%)	FINAL (50%)	TOTAL CO (100%)	Target
01MA0101	ENGINEERING MATHEMATICS-I	CO1	83.83		94.41	97.21	46.20	8.38		16.77	14.16	14.58	23.10	68.61	YES
		CO2	78.43		94.41	97.21	61.94	7.84		15.69	14.16	14.58	30.97	75.40	YES
		CO3	69.2		94.41	97.21	47.40	6.92		13.84	14.16	14.58	23.70	66.28	YES
		CO4		43.27	94.41	97.21	52.12		4.33	8.65	14.16	14.58	26.06	63.46	YES
		CO5		23.19	94.41	97.21	54.17		2.32	4.64	14.16	14.58	27.09	60.47	YES
		CO6		25.79	94.41	97.21	62.39		2.58	5.16	14.16	14.58	31.20	65.10	YES
01EE0101	ELEMENTS OF ELECTRICAL ENGINEERING	CO1	73.07		79.33	97.21	40.81	7.31		14.61	11.90	14.58	20.41	61.50	YES
		CO2	72.8		79.33	97.21	41.13	7.28		14.56	11.90	14.58	20.57	61.61	YES
		CO3	67.38		79.33	97.21	67.26	6.74		13.48	11.90	14.58	33.63	73.59	YES
		CO4		18.72	79.33	97.21	55.54		1.87	3.74	11.90	14.58	27.77	58.00	YES
		CO5		29.72	79.33	97.21	42.43		2.97	5.94	11.90	14.58	21.22	53.64	YES
		CO6		14.29	79.33	97.21	51.50		1.43	2.86	11.90	14.58	25.75	55.09	YES
01GS0101	PHYSICS	CO1	84.23		98.25	97.63	64.15	8.42		16.85	14.74	14.64	32.08	78.30	YES
		CO2	83.33		98.25	97.63	66.26	8.33		16.67	14.74	14.64	33.13	79.18	YES
		CO3	76.18		98.25	97.63	66.32	7.62		15.24	14.74	14.64	33.16	77.78	YES
		CO4		8.46	98.25	97.63	58.78		0.85	1.69	14.74	14.64	29.39	60.46	YES
		CO5		28.52	98.25	97.63	60.67		2.85	5.70	14.74	14.64	30.34	65.42	YES
		CO6		29.85	98.25	97.63	55.26		2.99	5.97	14.74	14.64	27.63	62.98	YES
01SL0102	READING & WRITING FOR TECHNOLOGY	CO1			93.83	89.02	0.00			0.00	14.07	13.35	0.00	54.86	YES
		CO2			93.83	89.02	0.00			0.00	14.07	13.35	0.00	54.86	YES
		CO3			93.83	89.02	0.00			0.00	14.07	13.35	0.00	54.86	YES
		CO4			93.83	89.02	0.00			0.00	14.07	13.35	0.00	54.86	YES
01CE0102	COMPUTER WORKSHOP	CO1				96.09	0.00	0.00	0.00	0.00	0.00	14.41	0.00	96.09	YES
		CO2				96.09	0.00	0.00	0.00	0.00	0.00	14.41	0.00	96.09	YES
		CO3				96.09	0.00	0.00	0.00	0.00	0.00	14.41	0.00	96.09	YES
		CO4				96.09	0.00	0.00	0.00	0.00	0.00	14.41	0.00	96.09	YES

		C05				96.09	0.00	0.00	0.00	0.00	0.00	14.41	0.00	96.09	YES
		C06				96.09	0.00	0.00	0.00	0.00	0.00	14.41	0.00	96.09	YES
01ME0101	ELEMENTS OF MECHANICAL ENGINEERING	C01	65.1		97.21	97.21	35.38	6.51		13.02	14.58	14.58	17.69	59.87	YES
		C02	63.97		97.21	97.21	59.22	6.40		12.79	14.58	14.58	29.61	71.57	YES
		C03	54.03		97.21	97.21	71.04	5.40		10.81	14.58	14.58	35.52	75.49	YES
		C04		25.45	97.21	97.21	62.03		2.55	5.09	14.58	14.58	31.02	65.27	YES
		C05		23.39	97.21	97.21	39.75		2.34	4.68	14.58	14.58	19.88	53.72	YES
		C06													
01CE0101	COMPUTER PROGRAMMING (Canvas or Other LMS)	C01	94.08		99.34	98.68	17.76			18.82	14.90	14.80	8.88	57.40	YES
		C02	86.84		99.34	98.68	38.16			17.37	14.90	14.80	19.08	66.15	YES
		C03	93.42		99.34	98.68	40.79			18.68	14.90	14.80	20.40	68.78	YES
		C04	93.42		99.34	98.68	40.79			18.68	14.90	14.80	20.40	68.78	YES
		C05	79.61		99.34	98.68	22.37			15.92	14.90	14.80	11.19	56.81	YES
		C06	79.61		99.34	98.68	22.37			15.92	14.90	14.80	11.19	56.81	YES
01SL0103	SPEAKING & PRESENTATION SKILLS	C01			100	100	0.00			0.00	15.00	15.00	0.00	60.00	YES
		C02			100	100	0.00			0.00	15.00	15.00	0.00	60.00	YES
		C03			100	100	0.00			0.00	15.00	15.00	0.00	60.00	YES
		C04			100	100	0.00			0.00	15.00	15.00	0.00	60.00	YES
01MA0151	ENGINEERING MATHEMATICS-II	C01	57.28		97.04	97.63	65.96	5.73		11.46	14.56	14.64	32.98	73.64	YES
		C02	64.96		97.04	97.63	78.12	6.50		12.99	14.56	14.64	39.06	81.25	YES
		C03	51.91		97.04	97.63	64.97	5.19		10.38	14.56	14.64	32.49	72.07	YES
		C04		48.77	97.04	97.63	62.43		4.88	9.75	14.56	14.64	31.22	70.17	YES
		C05		56.89	97.04	97.63	73.41		5.69	11.38	14.56	14.64	36.71	77.28	YES
		C06		50.45	97.04	97.63	38.09		5.05	10.09	14.56	14.64	19.05	58.34	YES
01EN0101	BASICS OF ENVIRONMENTAL STUDIES	C01	69.52		100	0	70.61	6.95		13.90	15.00	0.00	35.31	75.54	YES
		C02	69.94		100	0	60.76	6.99		13.99	15.00	0.00	30.38	69.84	YES
		C03	57.25		100	0	53.37	5.73		11.45	15.00	0.00	26.69	62.51	YES
		C04		40.07	100	0	86.65		4.01	8.01	15.00	0.00	43.33	78.05	YES
		C05		46.28	100	0	70.86		4.63	9.26	15.00	0.00	35.43	70.22	YES
01EC0101	BASICS OF	C01	87.33			90.79	44.08			17.47		13.62	22.04	53.12	YES

	ELECTRONICS ENGINEERING (Canvas or Other LMS)	CO2	87.38			90.79	5.26			17.48		13.62	2.63	33.72	NO	
		CO3	94.44		51.32	90.79				18.89	7.70	13.62			40.20	NO
		CO4	87.38			90.79	48.03			17.48		13.62	24.02	55.11	YES	
		CO5			100	93.6					15.00	14.04		29.04	NO	
01ME0103	ENGINEERING DRAWING	CO1	90.43		99.29	80.85	48.40			18.09	14.89	12.13	24.20	69.31	YES	
		CO2	78.77		99.29	80.85	40.43			15.75	14.89	12.13	20.22	62.99	YES	
		CO3	92.55		99.29	80.85	50.35			18.51	14.89	12.13	25.18	70.71	YES	
		CO4	83.09		99.29	80.85	40.96			16.62	14.89	12.13	20.48	64.12	YES	
		CO5	76.81		99.29	80.85	45.74			15.36	14.89	12.13	22.87	65.25	YES	
		CO6	84.14		99.29	80.85	67.02			16.83	14.89	12.13	33.51	77.36	YES	
01EC0102	DIGITAL ELECTRONICS	CO1	95.91		90.27	97.73	73.03			19.18	13.54	14.66	36.52	83.90	YES	
		CO2	95.79		90.27	96.11	75.00			19.16	13.54	14.42	37.50	84.62	YES	
		CO3	95.1		90.27	96.11	80.26			19.02	13.54	14.42	40.13	87.11	YES	
		CO4	97.57		90.27	96.11	88.82			19.51	13.54	14.42	44.41	91.88	YES	
		CO5	97.59			93.81				19.52		14.07		33.59	NO	
01CR0101	CAREER READINESS PROGRAM	CO1			100	0	0.00			0.00	15.00	0.00	0.00	100	YES	
		CO2			100	0	0.00			0.00	15.00	0.00	0.00	100	YES	
		CO3			100	0	0.00			0.00	15.00	0.00	0.00	100	YES	
		CO4			100	0	0.00			0.00	15.00	0.00	0.00	100	YES	

Table 2.2.a: Summary of CO attainments

Summary of CO attainments:	
Total No. of COs in the Program	74
No. of COs are attained	70
No. of COs are not attained	04
% of COs are attained	94.60
% of COs are not attained	05.40

Table 2.1.b: CO Attainments of *Second Year* courses through CIE and ESE

Subject code	Subject	CO	MID-1 (IA)	MID-2 (IA)	PR/INT (CSE)	PR/VA/TW	FINAL	WT ON MID-1 (10%)	WT ON MID-2 (10%)	MID-1, MID-2 (20%) (IA)	PR/INT (15%) (CSE)	PR/VIVA/TW (15%)	FINAL (50%)	TOTAL CO (100%)	Target
01MA0231	DISCRETE MATHEMATICS AND GRAPH THEORY	CO1	86.11		100	97.6	77.21	8.61		17.22	15.00	14.64	38.61	85.47	YES
		CO2	90.41		100	97.6	83.45	9.04		18.08	15.00	14.64	41.73	89.45	YES
		CO3	84.56		100	97.6	69.35	8.46		16.91	15.00	14.64	34.68	81.23	YES
		CO4		8.26	100	97.6	56.80		0.83	1.65	15.00	14.64	28.40	59.69	YES
		CO5		37.77	100	97.6	80.74		3.78	7.55	15.00	14.64	40.37	77.56	YES
01CE0301	DATA STRUCTURE	CO1	69.81		88.07	94.01	38.46	6.98		13.96	13.21	14.10	19.23	60.50	YES
		CO2	51.81		88.07	94.01	40.75	5.18		10.36	13.21	14.10	20.38	58.05	YES
		CO3	40.55		88.07	94.01	29.80	4.06		8.11	13.21	14.10	14.90	50.32	NO
		CO4		16.62	88.07	94.01	76.01		1.66	3.32	13.21	14.10	38.01	68.64	YES
		CO5		25.54	88.07	94.01	71.38		2.55	5.11	13.21	14.10	35.69	68.11	YES
		CO6		9.97	88.07	94.01	35.22		1.00	1.99	13.21	14.10	17.61	46.92	NO
01CE1302	DATABASE MANAGEMENT SYSTEM (Canvas or Other LMS)	CO1	79.25		98.76	75.16	33.68			15.85	14.81	11.27	16.84	58.78	YES
		CO2	86.34		98.11	70.56	41.57			17.27	14.72	10.58	20.79	63.35	YES
		CO3	79.25		98.76	72.64	43.69			15.85	14.81	10.90	21.85	63.41	YES
		CO4	86.34		98.76	70.56	69.02			17.27	14.81	10.58	34.51	77.18	YES
		CO5	79.25		98.76	75.16	77.79			15.85	14.81	11.27	38.90	80.83	YES
		CO6	80.25		98.76	73.28	62.35			16.05	14.81	10.99	31.15	73.00	YES
01IT0301	DATA COMMUNICATION AND NETWORKING (Canvas or Other LMS)	CO1	59.63		95.65	84.16	50.93			11.93	14.35	12.62	25.47	64.36	YES
		CO2	98.76		95.65	84.16	24.84			19.75	14.35	12.62	12.42	59.14	YES
		CO3	88.82		95.65	84.16	28.57			17.76	14.35	12.62	14.29	59.02	YES
		CO4	88.2		95.65	84.16	49.69			17.64	14.35	12.62	24.85	69.46	YES
		CO5	86.96		95.65	84.16	29.19			17.39	14.35	12.62	14.60	58.96	YES
		CO6	93.79		95.65	84.16	22.36			18.76	14.35	12.62	11.18	56.91	NO
01CE0303	OBJECT ORIENTED	CO1	95.03		85.71	91.93	36.65			19.01	12.86	13.79	18.33	63.98	YES
		CO2	95.03		85.71	91.93	36.65			19.01	12.86	13.79	18.33	63.98	YES

	DESIGN AND PROGRAMMING (Canvas or Other LMS)	C03	95.03		85.71	91.93	36.65			19.01	12.86	13.79	18.33	63.98	YES
		C04	79.15		85.71	94.8				15.83	12.86	14.22		42.91	NO
01CE0304	DESIGN THINKING AND PROBLEM SOLVING SKILLS	C01				95.21	0.00	0.00	0.00	0.00	0.00	14.28	0.00	95.21	YES
		C02				95.21	0.00	0.00	0.00	0.00	0.00	14.28	0.00	95.21	YES
		C03				95.21	0.00	0.00	0.00	0.00	0.00	14.28	0.00	95.21	YES
		C04				95.21	0.00	0.00	0.00	0.00	0.00	14.28	0.00	95.21	YES
		C05				95.21	0.00	0.00	0.00	0.00	0.00	14.28	0.00	95.21	YES
		C06				95.21	0.00	0.00	0.00	0.00	0.00	14.28	0.00	95.21	YES
01CR0302	PROFESSIONAL ETHICS	C01				95.21	0.00	0.00	0.00	0.00	0.00	14.28	0.00	95.21	YES
		C02				95.21	0.00	0.00	0.00	0.00	0.00	14.28	0.00	95.21	YES
		C03				95.21	0.00	0.00	0.00	0.00	0.00	14.28	0.00	95.21	YES
		C04				95.21	0.00	0.00	0.00	0.00	0.00	14.28	0.00	95.21	YES
01MA0281	STATISTICAL & NUMERICAL METHODS	C01	70.62		97.55	95.09	76.19	7.06		14.12	14.63	14.26	38.10	81.12	YES
		C02	69.58		97.55	95.09	64.63	6.96		13.92	14.63	14.26	32.32	75.13	YES
		C03	58.07		97.55	95.09	50.77	5.81		11.61	14.63	14.26	25.39	65.90	YES
		C04		31.33	97.55	95.09	62.96		3.13	6.27	14.63	14.26	31.48	66.64	YES
		C05		45.54	97.55	95.09	69.39		4.55	9.11	14.63	14.26	34.70	72.70	YES
		C06			97.55	95.09	60.01			0.00	14.63	14.26	30.01	58.90	YES
01CE0401	OPERATING SYSTEM	C01	75.06		77.71	69.94	65.74	7.51		15.01	11.66	10.49	32.87	70.03	YES
		C02	58.19	38.88	77.71	69.94	43.50	5.82	3.89	9.71	11.66	10.49	21.75	53.60	NO
		C03	47.62	17.7	77.71	69.94	42.44	4.76	1.77	6.53	11.66	10.49	21.22	49.90	NO
		C04		26.72	77.71	69.94	41.77		2.67	5.34	11.66	10.49	20.89	48.38	NO
01CE0402	COMPUTER ORGANIZATION AND ARCHITECTURE	C01	75.27		92.81	93.29	81.99	7.53		15.05	13.92	13.99	41.00	83.96	YES
		C02	71.43		92.81	93.29	69.39	7.14		14.29	13.92	13.99	34.70	76.90	YES
		C03	60.79		92.81	93.29	63.26	6.08		12.16	13.92	13.99	31.63	71.70	YES
		C04		10.11	92.81	93.29	70.49		1.01	2.02	13.92	13.99	35.25	65.18	YES
		C05		8.63	92.81	93.29	47.81		0.86	1.73	13.92	13.99	23.91	53.55	NO
		C06		23.12	92.81	93.29	43.59		2.31	4.62	13.92	13.99	21.80	54.33	NO

01IT0401	COMPUTER NETWORK (Canvas or Other LMS)	CO1	54.28		100	79.5	99.38			10.86	15.00	11.93	49.69	87.47	YES
		CO2	39.58		100	79.5	99.38			7.92	15.00	11.93	49.69	84.53	YES
		CO3	32.66		100	79.5	99.38			6.53	15.00	11.93	49.69	83.15	YES
		CO4	29.27		100	79.5	99.38			5.85	15.00	11.93	49.69	82.47	YES
		CO5	17.57		100	79.5	99.38			3.51	15.00	11.93	49.69	80.13	YES
		CO6	13.85		100	79.5	99.38			2.77	15.00	11.93	49.69	79.39	YES
01CE0403	OBJECT ORIENTED PROGRAMMING WITH JAVA (Canvas or Other LMS)	CO1	70.5		96.27	91.93	66.67			14.10	14.44	13.79	33.34	75.67	YES
		CO2	70.5		96.27	91.93	62.52			14.10	14.44	13.79	31.26	73.59	YES
		CO3	70.5		96.27	91.93	60.67			14.10	14.44	13.79	30.34	72.67	YES
		CO4	70.5		96.27	91.93	6.21			14.10	14.44	13.79	3.11	45.44	NO
		CO5	70.5		96.27	91.93	60.76			14.10	14.44	13.79	30.38	72.71	YES
01CE0405	HUMAN CENTRIC DESIGN APPROACH	CO1				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		CO2				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		CO3				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		CO4				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		CO5				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES

Table 2.2.b: Summary of CO attainments

Summary of CO attainments:	
Total No. of COs in the Program	69
No. of COs are attained	59
No. of COs are not attained	10
% of COs are attained	85.50
% of COs are not attained	14.49

Table 2.1.c: CO Attainments of *Third Year* courses through CIE and ESE

Subject code	Subject	CO	MID-1 (IA)	MID-2 (IA)	PR/INT (CSE)	PR/VA/TW	FINAL	WT ON MID-1 (10%)	WT ON MID-2 (10%)	MID-1, MID-2 (20%) (IA)	PR/INT (15%) (CSE)	PR/VIVA/TW (15%)	FINAL (50%)	TOTAL CO (100%)	Target
01CE0502	ADVANCED JAVA PROGRAMMING (Canvas or Other LMS)	CO1	82.19		66.69	92.31	75.04			16.44	10.00	13.85	37.52	77.81	YES
		CO2	46.34		46.22	92.31	71.62			9.27	6.93	13.85	35.81	65.86	YES
		CO3	45.41		68.93	92.31	73.88			9.08	10.34	13.85	36.94	70.21	YES
		CO4	74.51		62.67	92.31	69.12			14.90	9.40	13.85	34.56	72.71	YES
		CO5	89.22		99.09	92.31	17.94			17.84	14.86	13.85	8.97	55.52	NO
01CE0503	DESIGN AND ANALYSIS OF ALGORITHM (Canvas or Other LMS)	CO1	59.64		86.34	99.38	88.82			11.93	12.95	14.91	44.41	84.20	YES
		CO2	77.11		86.34	99.38	88.82			15.42	12.95	14.91	44.41	87.69	YES
		CO3	67.33		86.34	99.38	88.82			13.47	12.95	14.91	44.41	85.73	YES
		CO4	37.36		86.34	99.38	88.82			7.47	12.95	14.91	44.41	79.74	YES
		CO5	24.88		86.34	99.38	88.82			4.98	12.95	14.91	44.41	77.24	YES
01CE0504	THEORY OF AUTOMATA AND FORMAL LANGUAGES	CO1	70.86		99.38	0	89.08	7.09		14.17	14.91	0.00	44.54	86.61	YES
		CO2		12.33	99.38	0	67.64		1.23	2.47	14.91	0.00	33.82	60.23	YES
		CO3	56.04		99.38	0	63.18	5.60		11.21	14.91	0.00	31.59	67.89	YES
		CO4	76.76		99.38	0	85.79	7.68		15.35	14.91	0.00	42.90	86.06	YES
		CO5	85.21		99.38	0	0.00	8.52		17.04	14.91	0.00	0.00	37.59	NO
		CO6		23.21	99.38	0	0.00		2.32	4.64	14.91	0.00	0.00	23.00	NO
01IT0503	ADVANCED COMPUTER NETWORK (Canvas or Other LMS)	CO1	96.4		100	99.55	90.09			19.28	15.00	14.93	45.05	94.26	YES
		CO2	96.4		100	99.55	90.09			19.28	15.00	14.93	45.05	94.26	YES
		CO3	96.4		100	99.55	90.09			19.28	15.00	14.93	45.05	94.26	YES
		CO4	96.4		100	99.55	90.09			19.28	15.00	14.93	45.05	94.26	YES
		CO5	96.4		100	99.55	90.09			19.28	15.00	14.93	45.05	94.26	YES
01CE0507	IMAGE PROCESSING (Canvas or Other LMS)	CO1	70.59			90.91	13.73			14.12		13.64	6.87	34.62	NO
		CO2	49.02			90.91	54.90			9.80		13.64	27.45	50.89	NO
		CO3	47.06			90.91	21.57			9.41		13.64	10.79	33.83	NO
		CO4	60.78		100	93.15				12.16	15.00	13.97		41.13	NO
01CE0508	REVERSE	CO1				99.39	0.00	0.00	0.00	0.00	0.00	14.91	0.00	99.39	YES

	ENGINEERING	CO2				99.39	0.00	0.00	0.00	0.00	0.00	14.91	0.00	99.39	YES
		CO3				99.39	0.00	0.00	0.00	0.00	0.00	14.91	0.00	99.39	YES
		CO4				99.39	0.00	0.00	0.00	0.00	0.00	14.91	0.00	99.39	YES
01IT0502	SEMINAR	CO1				99.39	0.00	0.00	0.00	0.00	0.00	14.91	0.00	99.39	YES
		CO2				99.39	0.00	0.00	0.00	0.00	0.00	14.91	0.00	99.39	YES
		CO3				99.39	0.00	0.00	0.00	0.00	0.00	14.91	0.00	99.39	YES
		CO4				99.39	0.00	0.00	0.00	0.00	0.00	14.91	0.00	99.39	YES
01CE0501	MICROPROCESSOR OR FUNDAMENTAL S & PROGRAMMING	CO1	66.93		98.77	93.21	68.67	6.69		13.39	14.82	13.98	34.34	76.52	YES
		CO2		17.44	98.77	93.21	58.06		1.74	3.49	14.82	13.98	29.03	61.32	YES
		CO3		30.06	98.77	93.21	61.22		3.01	6.01	14.82	13.98	30.61	65.42	YES
		CO4	47.9		98.77	93.21	38.53	4.79		9.58	14.82	13.98	19.27	57.64	YES
		CO5		15.81	98.77	93.21	23.59		1.58	3.16	14.82	13.98	11.80	43.75	NO
01IT0601	SOFTWARE ENGINEERING	CO1	54.35		94.87	100	89.74	5.44		10.87	14.23	15.00	44.87	84.97	YES
		CO2	87.5	88.35	94.87	100	89.74	8.75	8.84	17.59	14.23	15.00	44.87	91.69	YES
		CO3	68.46	84.48	94.87	100	89.74	6.85	8.45	15.29	14.23	15.00	44.87	89.39	YES
		CO4	92.68		94.87	100	89.74	9.27		18.54	14.23	15.00	44.87	92.64	YES
		CO5		68.4	94.87	100	89.74		6.84	13.68	14.23	15.00	44.87	87.78	YES
		CO6			94.87	100	89.74			0.00	14.23	15.00	44.87	74.10	YES
01CE0601	COMPILER DESIGN	CO1	61.82		100	100	89.74	6.18		12.36	15.00	15.00	44.87	87.23	YES
		CO2	65.9		100	100	89.74	6.59		13.18	15.00	15.00	44.87	88.05	YES
		CO3	60.8		100	100	89.74	6.08		12.16	15.00	15.00	44.87	87.03	YES
		CO4		82.05	100	100	89.74		8.21	16.41	15.00	15.00	44.87	91.28	YES
		CO5		73.26	100	100	89.74		7.33	14.65	15.00	15.00	44.87	89.52	YES
		CO6		63.88	100	100	89.74		6.39	12.78	15.00	15.00	44.87	87.65	YES
01IT0602	WEB TECHNOLOGY	CO1		84.13	95.51	100	89.74		8.41	16.83	14.33	15.00	44.87	91.02	YES
		CO2	70.59		95.51	100	89.74	7.06		14.12	14.33	15.00	44.87	88.31	YES
		CO3	68.54		95.51	100	89.74	6.85		13.71	14.33	15.00	44.87	87.90	YES
		CO4	37.16		95.51	100	89.74	3.72		7.43	14.33	15.00	44.87	81.63	YES
		CO5		74.72	95.51	100	89.74		7.47	14.94	14.33	15.00	44.87	89.14	YES

01CE0604	CYBER SECURITY [DEPARTMENT ELECTIVE - 2]	CO1	84.13		100	100	89.74	8.41		16.83	15.00	15.00	44.87	91.70	YES
		CO2	90.88		100	100	89.74	9.09		18.18	15.00	15.00	44.87	93.05	YES
		CO3		75.74	100	100	89.74		7.57	15.15	15.00	15.00	44.87	90.02	YES
		CO4		74.2	100	100	89.74		7.42	14.84	15.00	15.00	44.87	89.71	YES
		CO5	88.82		100	100	89.74	8.88		17.76	15.00	15.00	44.87	92.63	YES
01CE0606	DESIGN ENGINEERING AND PROJECT MANAGEMENT	CO1				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		CO2				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		CO3				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		CO4				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		CO5				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
01CR0601	BUSINESS BENCHMARK	CO1				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		CO2				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		CO3				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		CO4				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
01CE0602	.NET TECHNOLOGIES	CO1	82.58		100	100	89.74	8.26		16.52	15.00	15.00	44.87	91.39	YES
		CO2	53.53		100	100	89.74	5.35		10.71	15.00	15.00	44.87	85.58	YES
		CO3		91.91	100	100	89.74		9.19	18.38	15.00	15.00	44.87	93.25	YES
		CO4		93.01	100	100	89.74		9.30	18.60	15.00	15.00	44.87	93.47	YES
		CO5		87.21	100	100	89.74		8.72	17.44	15.00	15.00	44.87	92.31	YES

Table 2.2.c: Summary of CO attainments

Summary of CO attainments:	
Total No. of COs in the Program	74
No. of COs are attained	66
No. of COs are not attained	08
% of COs are attained	89.19
% of COs are not attained	10.81

Table 2.1.d: CO Attainments of *Fourth Year* courses through CIE and ESE

Subject code	Subject	CO	MID-1 (IA)	MID-2 (IA)	PR/INT (CSE)	PR/VA/TW	FINAL	WT ON MID-1 (10%)	WT ON MID-2 (10%)	MID-1, MID-2 (20%) (IA)	PR/INT (15%) (CSE)	PR/VIVA/TW (15%)	FINAL (50%)	TOTAL CO (100%)	Target
01IT0701	ADVANCED WEB TECHNOLOGIES (Canvas or Other LMS)	CO1	87.18	55.77	100	100	94.87	8.72	5.58	14.30	15.00	15.00	47.44	91.73	YES
		CO2	87.18	55.77	100	100	94.87	8.72	5.58	14.30	15.00	15.00	47.44	91.73	YES
		CO3	87.18	55.77	100	100	94.87	8.72	5.58	14.30	15.00	15.00	47.44	91.73	YES
		CO4	87.18	55.77	100	100	94.87	8.72	5.58	14.30	15.00	15.00	47.44	91.73	YES
01CE0701	MOBILE COMPUTING	CO1	80.77	94.23	100	100	98.08	8.08	9.42	17.50	15.00	15.00	49.04	96.54	YES
		CO2	80.77	94.23	100	100	98.08	8.08	9.42	17.50	15.00	15.00	49.04	96.54	YES
		CO3	80.77	94.23	100	100	98.08	8.08	9.42	17.50	15.00	15.00	49.04	96.54	YES
		CO4	80.77	94.23	100	100	98.08	8.08	9.42	17.50	15.00	15.00	49.04	96.54	YES
		CO5	80.77	94.23	100	100	98.08	8.08	9.42	17.50	15.00	15.00	49.04	96.54	YES
01CE0702	ARTIFICIAL INTELLIGENCE	CO1	42.31	85.26	100	100	100.00	4.23	8.53	12.76	15.00	15.00	50.00	92.76	YES
		CO2	42.31	85.26	100	100	100.00	4.23	8.53	12.76	15.00	15.00	50.00	92.76	YES
		CO3	42.31	85.26	100	100	100.00	4.23	8.53	12.76	15.00	15.00	50.00	92.76	YES
		CO4	42.31	85.26	100	100	100.00	4.23	8.53	12.76	15.00	15.00	50.00	92.76	YES
		CO5	42.31	85.26	100	100	100.00	4.23	8.53	12.76	15.00	15.00	50.00	92.76	YES
01CE0704	ANDROID PROGRAMMING	CO1	92.11	22.37	94.74	94.74	96.05	9.21	2.24	11.45	14.21	14.21	48.03	87.90	YES
		CO2	92.11	22.37	94.74	94.74	96.05	9.21	2.24	11.45	14.21	14.21	48.03	87.90	YES
		CO3	92.11	22.37	94.74	94.74	96.05	9.21	2.24	11.45	14.21	14.21	48.03	87.90	YES
		CO4	92.11	22.37	94.74	94.74	96.05	9.21	2.24	11.45	14.21	14.21	48.03	87.90	YES
01CE0707	DATA MINING AND INFORMATION RETRIEVAL	CO1	73.08	59.62	94.23	100	97.12	7.31	5.96	13.27	14.13	15.00	48.56	90.96	YES
		CO2	73.08	59.62	94.23	100	97.12	7.31	5.96	13.27	14.13	15.00	48.56	90.96	YES
		CO3	73.08	59.62	94.23	100	97.12	7.31	5.96	13.27	14.13	15.00	48.56	90.96	YES
		CO4	73.08	59.62	94.23	100	97.12	7.31	5.96	13.27	14.13	15.00	48.56	90.96	YES
01CE0709	COMPUTATIONAL INTELLIGENCE	CO1	98.08	86.54	69.23	100	100.00	9.81	8.65	18.46	10.38	15.00	50.00	93.85	YES
		CO2	98.08	86.54	69.23	100	100.00	9.81	8.65	18.46	10.38	15.00	50.00	93.85	YES
		CO3	98.08	86.54	69.23	100	100.00	9.81	8.65	18.46	10.38	15.00	50.00	93.85	YES
		CO4	98.08	86.54	69.23	100	100.00	9.81	8.65	18.46	10.38	15.00	50.00	93.85	YES

01IT0703	MAJOR PROJECT - 1	C05	98.08	86.54	69.23	100	100.00	9.81	8.65	18.46	10.38	15.00	50.00	93.85	YES	
		C01				97.44	0.00	0.00	0.00	0.00	0.00	0.00	14.62	0.00	97.44	YES
		C02				97.44	0.00	0.00	0.00	0.00	0.00	0.00	14.62	0.00	97.44	YES
		C03				97.44	0.00	0.00	0.00	0.00	0.00	0.00	14.62	0.00	97.44	YES
		C04				97.44	0.00	0.00	0.00	0.00	0.00	0.00	14.62	0.00	97.44	YES
		C05				97.44	0.00	0.00	0.00	0.00	0.00	0.00	14.62	0.00	97.44	YES
		C06				97.44	0.00	0.00	0.00	0.00	0.00	0.00	14.62	0.00	97.44	YES
01CE0705	PROGRAMMING WITH PYTHON	C01	82.5	78.75	98.75	100	97.50	8.25	7.88	16.13	14.81	15.00	48.75	94.69	YES	
		C02	82.5	78.75	98.75	100	97.50	8.25	7.88	16.13	14.81	15.00	48.75	94.69	YES	
		C03	82.5	78.75	98.75	100	97.50	8.25	7.88	16.13	14.81	15.00	48.75	94.69	YES	
		C04	82.5	78.75	98.75	100	97.50	8.25	7.88	16.13	14.81	15.00	48.75	94.69	YES	
01CE0802	BIG DATA AND ANALYTICS	C01	40.74	100	100	100	100.00	4.07	10.00	14.07	15.00	15.00	50.00	94.07	YES	
		C02	35.04	100	100	100	100.00	3.50	10.00	13.50	15.00	15.00	50.00	93.50	YES	
		C03		100	100	100	100.00		10.00	20.00	15.00	15.00	50.00	100.00	YES	
		C04		100	100	100	100.00		10.00	20.00	15.00	15.00	50.00	100.00	YES	
		C05		100	100	100	100.00		10.00	20.00	15.00	15.00	50.00	100.00	YES	
01CE0803	CLOUD COMPUTING	C01	54.51	79.61	100	100	100.00	5.45	7.96	13.41	15.00	15.00	50.00	93.41	YES	
		C02	100	79.61	100	100	100.00	10.00	7.96	17.96	15.00	15.00	50.00	97.96	YES	
		C03	100	79.61	100	100	100.00	10.00	7.96	17.96	15.00	15.00	50.00	97.96	YES	
		C04	100	79.61	100	100	100.00	10.00	7.96	17.96	15.00	15.00	50.00	97.96	YES	
		C05	70.27	79.61	100	100	100.00	7.03	7.96	14.99	15.00	15.00	50.00	94.99	YES	
		C06	46.4	79.61	100	100	100.00	4.64	7.96	12.60	15.00	15.00	50.00	92.60	YES	
01CE0804	MACHINE LEARNING	C01	78.67	33.73	97.59	100	91.57	7.87	3.37	11.24	14.64	15.00	45.79	86.66	YES	
		C02	100	33.73	97.59	100	91.57	10.00	3.37	13.37	14.64	15.00	45.79	88.80	YES	
		C03	72.65	33.73	97.59	100	91.57	7.27	3.37	10.64	14.64	15.00	45.79	86.06	YES	
		C04	65.43	33.73	97.59	100	91.57	6.54	3.37	9.92	14.64	15.00	45.79	85.34	YES	
		C05	100	33.73	97.59	100	91.57	10.00	3.37	13.37	14.64	15.00	45.79	88.80	YES	
01CE0805	BUSINESS INTELLIGENCE	C01	78.47	16.67	100	98.63	100.00	7.85	1.67	9.51	15.00	14.79	50.00	89.31	YES	
		C02	46.9	16.67	100	98.63	100.00	4.69	1.67	6.36	15.00	14.79	50.00	86.15	YES	

		CO3	50	16.67	100	98.63	100.00	5.00	1.67	6.67	15.00	14.79	50.00	86.46	YES
		CO4	100	16.67	100	98.63	100.00	10.00	1.67	11.67	15.00	14.79	50.00	91.46	YES
		CO5	100	16.67	100	98.63	100.00	10.00	1.67	11.67	15.00	14.79	50.00	91.46	YES
011T0801	MAJOR PROJECT - II	CO1				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		CO2				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		CO3				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		CO4				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES
		CO5				100	0.00	0.00	0.00	0.00	0.00	15.00	0.00	100.00	YES

Table 2.2.d: Summary of CO attainments

Summary of CO attainments:	
Total No. of COs in the Program	63
No. of COs are attained	63
No. of COs are not attained	00
% of COs are attained	100.00
% of COs are not attained	00.00

Overall Course Outcomes Attainment through direct & indirect Assessment

S. No.	Course Name & Code	CO#	Total CO AT through DA in %	Total CO AT through IDA in %	70% OF Total CO AT through DA	30% OF Total CO AT through IDA	Total CO AT through DA & IDA in %	Target AT in %	CO Attained (YES/NO)
ATTAINMENT CALCULATIONS OF COs OF SECOND YEAR COURSES THROUGH DA & IDA FOR 2017-2021 BATCH									
I SEMESTER									
1	ENGINEERING MATHEMATICS- I (01MA0101)	CO1	68.61	60.93	48.03	18.28	66.31	50	YES
2		CO2	75.40	65.60	52.78	19.68	72.46	50	YES
3		CO3	66.28	59.20	46.40	17.76	64.16	50	YES
4		CO4	63.46	61.07	44.42	18.32	62.74	50	YES
5		CO5	60.47	46.93	42.33	14.08	56.41	50	YES
6		CO6	65.10	55.20	45.57	16.56	62.13	50	YES
7	ELEMENTS OF ELECTRICAL ENGINEERING (01EE0101)	CO1	61.50	52.27	43.05	15.68	58.73	50	YES
8		CO2	61.61	49.33	43.12	14.80	57.92	50	YES
9		CO3	73.59	60.67	51.51	18.20	69.71	50	YES
10		CO4	58.00	52.00	40.60	15.60	56.20	50	YES
11		CO5	53.64	39.07	37.55	11.72	49.27	50	NO
12		CO6	55.09	41.33	38.56	12.40	50.96	50	YES
13	COMPUTER WORKSHOP (01CE0102)	CO1	96.09	93.73	67.26	28.12	95.38	50	YES
14		CO2	96.09	93.73	67.26	28.12	95.38	50	YES
15		CO3	96.09	93.73	67.26	28.12	95.38	50	YES
16		CO4	96.09	93.73	67.26	28.12	95.38	50	YES
17		CO5	96.09	93.73	67.26	28.12	95.38	50	YES
18		CO6	96.09	93.73	67.26	28.12	95.38	50	YES
19	BASICS OF ELECTRONICS ENGINEERING (01EC0101)	CO1	53.12	41.87	37.19	12.56	49.75	50	NO
20		CO2	33.72	34.80	23.61	10.44	34.05	50	NO
21		CO3	40.20	35.73	28.14	10.72	38.86	50	NO
22		CO4	55.11	43.87	38.58	13.16	51.74	50	YES
23		CO5	29.04	32.00	20.33	9.60	29.93	50	NO
24	READING & WRITING FOR TECHNOLOGY (01SL0102)	CO1	54.86	51.43	38.40	15.43	53.83	50	YES
25		CO2	54.86	51.10	38.40	15.33	53.73	50	YES
26		CO3	54.86	49.83	38.40	14.95	53.35	50	YES
27		CO4	54.86	50.47	38.40	15.14	53.54	50	YES
28	SPEAKING & PRESENTATION SKILLS (01SL0103)	CO1	60.00	60.00	42.00	18.00	60.00	50	YES
29		CO2	60.00	60.70	42.00	18.21	60.21	50	YES
30		CO3	60.00	58.63	42.00	17.59	59.59	50	YES
31		CO4	60.00	61.83	42.00	18.55	60.55	50	YES
32	ELEMENTS OF MECHANICAL ENGINEERING (01ME0101)	CO1	59.87	54.67	41.91	16.40	58.31	50	YES
33		CO2	71.57	56.53	50.10	16.96	67.06	50	YES
34		CO3	75.49	61.73	52.84	18.52	71.36	50	YES
35		CO4	65.27	56.80	45.69	17.04	62.73	50	YES
36		CO5	53.72	43.33	37.60	13.00	50.60	50	YES

S. No.	Course Name & Code	CO#	Total CO AT through DA in %	Total CO AT through IDA in %	70% OF Total CO AT through DA	30% OF Total CO AT through IDA	Total CO AT through DA & IDA in %	Target AT in %	CO Attained (YES/NO)
II SEMESTER									
1	COMPUTER PROGRAMMING (01CE0101)	CO1	57.40	38.80	40.18	11.64	51.82	50	YES
2		CO2	66.15	48.00	46.31	14.40	60.71	50	YES
3		CO3	68.78	51.47	48.15	15.44	63.59	50	YES
4		CO4	68.78	50.67	48.15	15.20	63.35	50	YES
5		CO5	56.81	44.13	39.77	13.24	53.01	50	YES
6		CO6	56.81	44.13	39.77	13.24	53.01	50	YES
7	CAREER READINESS PROGRAM (01CR0101)	CO1	100	63.87	70	19.16	89.16	50	YES
8		CO2	100	67.47	70	20.24	90.24	50	YES
9		CO3	100	68.27	70	20.48	90.48	50	YES
10		CO4	100	67.33	70	20.20	90.2	50	YES
11	ENGINEERING MATHEMATICS-II (01MA0151)	CO1	73.64	60.53	51.55	18.16	69.70	50	YES
12		CO2	81.25	61.47	56.88	18.44	75.32	50	YES
13		CO3	72.07	61.07	50.45	18.32	68.77	50	YES
14		CO4	70.17	61.20	49.12	18.36	67.48	50	YES
15		CO5	77.28	72.00	54.10	21.60	75.70	50	YES
16		CO6	58.34	56.67	40.83	17.00	57.84	50	YES
17	BASICS OF ENVIRONMENTAL STUDIES (01EN0101)	CO1	75.54	65.47	52.88	19.64	72.52	50	YES
18		CO2	69.84	60.93	48.89	18.28	67.17	50	YES
19		CO3	62.51	52.80	43.76	15.84	59.60	50	YES
20		CO4	78.05	77.87	54.63	23.36	77.99	50	YES
21		CO5	70.22	59.60	49.15	17.88	67.03	50	YES
22	PHYSICS (01GS0101)	CO1	78.30	78.27	54.81	23.48	78.29	50	YES
23		CO2	79.18	67.07	55.42	20.12	75.55	50	YES
24		CO3	77.78	70.93	54.44	21.28	75.72	50	YES
25		CO4	60.46	55.73	42.32	16.72	59.04	50	YES
26		CO5	65.42	51.33	45.79	15.40	61.19	50	YES
27		CO6	62.98	57.07	44.09	17.12	61.21	50	YES
28	ENGINEERING DRAWING (01ME0103)	CO1	69.31	71.30	48.51	21.39	69.90	50	YES
29		CO2	62.99	64.37	44.09	19.31	63.40	50	YES
30		CO3	70.71	69.13	49.49	20.74	70.23	50	YES
31		CO4	64.12	65.23	44.88	19.57	64.45	50	YES
32		CO5	65.25	65.23	45.68	19.57	65.24	50	YES
33		CO6	77.36	77.40	54.15	23.22	77.37	50	YES
34	DIGITAL ELECTRONICS (01EC0102)	CO1	83.90	72.93	58.73	21.88	80.61	50	YES
35		CO2	84.62	73.07	59.23	21.92	81.15	50	YES
36		CO3	87.11	79.07	60.97	23.72	84.70	50	YES
37		CO4	91.88	79.60	64.32	23.88	88.20	50	YES
38		CO5	33.59	32.00	23.51	9.60	33.11	50	NO
III SEMESTER									
1	DISCRETE MATHEMATICS AND	CO1	85.47	79.63	59.83	23.89	83.72	50	YES
2		CO2	89.45	81.00	62.61	24.30	86.91	50	YES

S. No.	Course Name & Code	CO#	Total CO AT through DA in %	Total CO AT through IDA in %	70% OF Total CO AT through DA	30% OF Total CO AT through IDA	Total CO AT through DA & IDA in %	Target AT in %	CO Attained (YES/NO)
3	GRAPH THEORY (01MA0231)	CO3	81.23	74.50	56.86	22.35	79.21	50	YES
4		CO4	59.69	51.13	41.78	15.34	57.12	50	YES
5		CO5	77.56	67.77	54.29	20.33	74.62	50	YES
6	DATA STRUCTURE (01CE0301)	CO1	60.50	60.77	42.35	18.23	60.58	57	YES
7		CO2	58.05	60.77	40.63	18.23	58.86	57	YES
8		CO3	50.32	51.77	35.23	15.53	50.75	57	NO
9		CO4	68.64	70.13	48.05	21.04	69.09	57	YES
10		CO5	68.11	68.77	47.68	20.63	68.30	57	YES
11		CO6	46.92	46.87	32.84	14.06	46.91	57	NO
12	DATABASE MANAGEMENT SYSTEM (01CE1302)	CO1	58.78	47.87	41.14	14.36	55.51	57	NO
13		CO2	63.35	52.50	44.35	15.75	60.10	57	YES
14		CO3	63.41	45.87	44.38	13.76	58.15	57	YES
15		CO4	77.18	76.77	54.02	23.03	77.05	57	YES
16		CO5	80.83	70.77	56.58	21.23	77.81	57	YES
17		CO6	73.00	64.87	51.10	19.46	70.56	57	YES
18	DATA COMMUNICATION AND NETWORKING (01IT0301)	CO1	64.36	66.27	45.05	19.88	64.93	57	YES
19		CO2	59.14	59.87	41.40	17.96	59.36	57	YES
20		CO3	59.02	57.87	41.31	17.36	58.68	57	YES
21		CO4	69.46	71.27	48.62	21.38	69.99	57	YES
22		CO5	58.96	59.27	41.27	17.78	59.05	57	YES
23		CO6	56.91	56.13	39.84	16.84	56.68	57	NO
24	OBJECT ORIENTED DESIGN AND PROGRAMMING (01CE0303)	CO1	63.98	64.37	44.78	19.31	64.10	57	YES
25		CO2	63.98	64.37	44.78	19.31	64.10	57	YES
26		CO3	63.98	66.00	44.78	19.80	64.58	57	YES
27		CO4	42.91	47.13	30.03	14.14	44.17	57	NO
28	DESIGN THINKING AND PROBLEM SOLVING SKILLS (01CE0304)	CO1	95.21	88.13	66.65	26.44	93.09	50	YES
29		CO2	95.21	87.77	66.65	26.33	92.97	50	YES
30		CO3	95.21	86.63	66.65	25.99	92.64	50	YES
31		CO4	95.21	86.37	66.65	25.91	92.56	50	YES
32		CO5	95.21	85.77	66.65	25.73	92.37	50	YES
33		CO6	95.21	86.27	66.65	25.88	92.52	50	YES
34	PROFESSIONAL ETHICS (01CR0302)	CO1	95.21	69.27	66.65	20.78	87.42	50	YES
35		CO2	95.21	70.27	66.65	21.08	87.72	50	YES
36		CO3	95.21	70.87	66.65	21.26	87.91	50	YES
37		CO4	95.21	70.37	66.65	21.11	87.76	50	YES
IV SEMESTER									
1	STATISTICAL & NUMERICAL METHODS (01MA0281)	CO1	81.12	76.87	56.78	23.06	79.84	50	YES
2		CO2	75.13	65.77	52.59	19.73	72.31	50	YES
3		CO3	65.90	59.00	46.13	17.70	63.83	50	YES
4		CO4	66.64	65.37	46.65	19.61	66.26	50	YES
5		CO5	72.70	65.87	50.89	19.76	70.65	50	YES
6		CO6	58.90	51.37	41.23	15.41	56.64	50	YES

S. No.	Course Name & Code	CO#	Total CO AT through DA in %	Total CO AT through IDA in %	70% OF Total CO AT through DA	30% OF Total CO AT through IDA	Total CO AT through DA & IDA in %	Target AT in %	CO Attained (YES/NO)
7	OPERATING SYSTEM (01CE0401)	CO1	70.03	71.23	49.02	21.37	70.39	57	YES
8		CO2	53.60	52.83	37.52	15.85	53.38	57	NO
9		CO3	49.90	49.37	34.93	14.81	49.74	57	NO
10		CO4	48.38	47.77	33.86	14.33	48.20	57	NO
11	COMPUTER ORGANIZATION AND ARCHITECTURE (01CE0402)	CO1	83.96	82.73	58.77	24.82	83.59	57	YES
12		CO2	76.90	75.93	53.83	22.78	76.61	57	YES
13		CO3	71.70	73.83	50.19	22.15	72.34	57	YES
14		CO4	65.18	64.70	45.63	19.41	65.03	57	YES
15		CO5	53.55	54.07	37.48	16.22	53.70	57	NO
16		CO6	54.33	55.07	38.03	16.52	54.55	57	NO
17	COMPUTER NETWORK (01IT0401)	CO1	87.47	84.63	61.23	25.39	86.62	57	YES
18		CO2	84.53	84.37	59.17	25.31	84.49	57	YES
19		CO3	83.15	83.63	58.20	25.09	83.29	57	YES
20		CO4	82.47	81.13	57.73	24.34	82.07	57	YES
21		CO5	80.13	77.87	56.09	23.36	79.45	57	YES
22		CO6	79.39	80.13	55.57	24.04	79.61	57	YES
23	HUMAN CENTRIC DESIGN APPROACH (01CE0405)	CO1	100.00	85.37	70.00	25.61	95.61	50	YES
24		CO2	100.00	86.87	70.00	26.06	96.06	50	YES
25		CO3	100.00	87.87	70.00	26.36	96.36	50	YES
26		CO4	100.00	87.63	70.00	26.29	96.29	50	YES
27		CO5	100.00	83.77	70.00	25.13	95.13	50	YES
28	OBJECT ORIENTED PROGRAMMING WITH JAVA (01CE0403)	CO1	75.67	74.63	52.97	22.39	75.35	57	YES
29		CO2	73.59	73.87	51.51	22.16	73.68	57	YES
30		CO3	72.67	72.27	50.87	21.68	72.54	57	YES
31		CO4	45.44	44.37	31.80	13.31	45.12	57	NO
32		CO5	72.71	73.37	50.90	22.01	72.91	57	YES
V SEMESTER									
1	ADVANCED JAVA PROGRAMMING (01CE0502)	CO1	77.81	80.87	54.47	24.26	78.73	57	YES
2		CO2	65.86	76.90	46.10	23.07	69.17	57	YES
3		CO3	70.21	76.77	49.15	23.03	72.18	57	YES
4		CO4	72.71	75.27	50.90	22.58	73.48	57	YES
5		CO5	55.52	40.27	38.87	12.08	50.94	57	NO
6	DESIGN AND ANALYSIS OF ALGORITHM (01CE0503)	CO1	84.20	79.27	58.94	23.78	82.71	57	YES
7		CO2	87.69	80.00	61.38	24.00	85.38	57	YES
8		CO3	85.73	80.27	60.01	24.08	84.09	57	YES
9		CO4	79.74	76.50	55.82	22.95	78.77	57	YES
10		CO5	77.24	76.13	54.07	22.84	76.91	57	YES
11	THEORY OF AUTOMATA AND FORMAL LANGUAGES (01CE0504)	CO1	86.61	85.50	60.63	25.65	86.28	57	YES
12		CO2	60.23	60.00	42.16	18.00	60.16	57	YES
13		CO3	67.89	72.63	47.52	21.79	69.31	57	YES
14		CO4	86.06	83.27	60.24	24.98	85.22	57	YES
15		CO5	37.59	37.77	26.31	11.33	37.64	57	NO

S. No.	Course Name & Code	CO#	Total CO AT through DA in %	Total CO AT through IDA in %	70% OF Total CO AT through DA	30% OF Total CO AT through IDA	Total CO AT through DA & IDA in %	Target AT in %	CO Attained (YES/NO)
16		CO6	23.00	35.37	16.10	10.61	26.71	57	NO
17	ADVANCED COMPUTER NETWORK (01IT0503)	CO1	94.26	86.57	65.98	25.97	91.95	57	YES
18		CO2	94.26	88.90	65.98	26.67	92.65	57	YES
19		CO3	94.26	88.57	65.98	26.57	92.55	57	YES
20		CO4	94.26	84.57	65.98	25.37	91.35	57	YES
21		CO5	94.26	86.37	65.98	25.91	91.89	57	YES
22	IMAGE PROCESSING (01CE0507)	CO1	34.62	41.20	24.23	12.36	36.59	62	NO
23		CO2	50.89	51.20	35.62	15.36	50.98	62	NO
24		CO3	33.83	37.20	23.68	11.16	34.84	62	NO
25		CO4	41.13	37.20	28.79	11.16	39.95	62	NO
26	REVERSE ENGINEERING (01CE0508)	CO1	99.39	83.73	69.57	25.12	94.69	52	YES
27		CO2	99.39	87.97	69.57	26.39	95.96	52	YES
28		CO3	99.39	85.47	69.57	25.64	95.21	52	YES
29		CO4	99.39	87.20	69.57	26.16	95.73	52	YES
30	SEMINAR (01IT0502)	CO1	99.39	86.33	69.57	25.90	95.48	52	YES
31		CO2	99.39	87.33	69.57	26.20	95.77	52	YES
32		CO3	99.39	86.97	69.57	26.09	95.66	52	YES
33		CO4	99.39	87.07	69.57	26.12	95.70	52	YES
34	MICROPROCESSOR FUNDAMENTALS & PROGRAMMING (01CE0501)	CO1	76.52	75.87	53.56	22.76	76.33	57	YES
35		CO2	61.32	62.37	42.92	18.71	61.63	57	YES
36		CO3	65.42	65.37	45.79	19.61	65.41	57	YES
37		CO4	57.64	60.50	40.35	18.15	58.50	57	YES
38		CO5	43.75	49.13	30.63	14.74	45.37	57	NO
VI SEMESTER									
1	SOFTWARE ENGINEERING (01IT0601)	CO1	84.97	83.80	59.48	25.14	84.62	57	YES
2		CO2	91.69	87.47	64.18	26.24	90.42	57	YES
3		CO3	89.39	84.77	62.58	25.43	88.00	57	YES
4		CO4	92.64	87.07	64.85	26.12	90.97	57	YES
5		CO5	87.78	84.37	61.45	25.31	86.75	57	YES
6		CO6	74.10	76.47	51.87	22.94	74.81	57	YES
7	COMPILER DESIGN (01CE0601)	CO1	87.23	82.43	61.06	24.73	85.79	57	YES
8		CO2	88.05	86.10	61.64	25.83	87.47	57	YES
9		CO3	87.03	83.43	60.92	25.03	85.95	57	YES
10		CO4	91.28	87.27	63.90	26.18	90.07	57	YES
11		CO5	89.52	84.60	62.67	25.38	88.04	57	YES
12		CO6	87.65	84.97	61.35	25.49	86.84	57	YES
13	.NET TECHNOLOGIES (01CE0602)	CO1	91.39	84.37	63.97	25.31	89.28	57	YES
14		CO2	85.58	84.63	59.90	25.39	85.29	57	YES
15		CO3	93.25	88.47	65.28	26.54	91.81	57	YES
16		CO4	93.47	87.30	65.43	26.19	91.62	57	YES
17		CO5	92.31	87.83	64.62	26.35	90.96	57	YES
18	BUSINESS	CO1	100.00	88.73	70.00	26.62	96.62	52	YES

S. No.	Course Name & Code	CO#	Total CO AT through DA in %	Total CO AT through IDA in %	70% OF Total CO AT through DA	30% OF Total CO AT through IDA	Total CO AT through DA & IDA in %	Target AT in %	CO Attained (YES/NO)
19	BENCHMARK (01CR0501)	CO2	100.00	86.67	70.00	26.00	96.00	52	YES
20		CO3	100.00	84.50	70.00	25.35	95.35	52	YES
21		CO4	100.00	85.90	70.00	25.77	95.77	52	YES
22	WEB TECHNOLOGY (01IT0602)	CO1	91.02	89.03	63.72	26.71	90.43	57	YES
23		CO2	88.31	87.13	61.82	26.14	87.96	57	YES
24		CO3	87.90	88.63	61.53	26.59	88.12	57	YES
25		CO4	81.63	83.17	57.14	24.95	82.08	57	YES
26	CYBER SECURITY [DEPARTMENT ELECTIVE - 2] (01CE0604)	CO5	89.14	87.97	62.40	26.39	88.78	57	YES
27		CO1	91.70	88.53	64.19	26.56	90.75	62	YES
28		CO2	93.05	86.50	65.13	25.95	91.08	62	YES
29		CO3	90.02	84.20	63.01	25.26	88.27	62	YES
30		CO4	89.71	87.90	62.80	26.37	89.17	62	YES
31	CO5	92.63	89.30	64.84	26.79	91.63	62	YES	
32	DESIGN ENGINEERING AND PROJECT MANAGEMENT (01CE0606)	CO1	100.00	89.73	70.00	26.92	96.92	52	YES
33		CO2	100.00	86.93	70.00	26.08	96.08	52	YES
34		CO3	100.00	83.73	70.00	25.12	95.12	52	YES
35		CO4	100.00	87.70	70.00	26.31	96.31	52	YES
36		CO5	100.00	85.63	70.00	25.69	95.69	52	YES
VII SEMESTER									
1	ADVANCED WEB TECHNOLOGIES (01IT0701)	CO1	91.73	84.57	64.21	25.37	89.58	57	YES
2		CO2	91.73	84.37	64.21	25.31	89.52	57	YES
3		CO3	91.73	84.17	64.21	25.25	89.47	57	YES
4		CO4	91.73	83.83	64.21	25.15	89.36	57	YES
5	MOBILE COMPUTING (01CE0701)	CO1	96.54	85.47	67.58	25.64	93.21	57	YES
6		CO2	96.54	87.27	67.58	26.18	93.76	57	YES
7		CO3	96.54	86.17	67.58	25.85	93.43	57	YES
8		CO4	96.54	85.63	67.58	25.69	93.27	57	YES
9		CO5	96.54	87.10	67.58	26.13	93.71	57	YES
10	ARTIFICIAL INTELLIGENCE (01CE0702)	CO1	92.76	84.17	64.93	25.25	90.18	57	YES
11		CO2	92.76	84.73	64.93	25.42	90.35	57	YES
12		CO3	92.76	85.27	64.93	25.58	90.51	57	YES
13		CO4	92.76	83.63	64.93	25.09	90.02	57	YES
14		CO5	92.76	86.00	64.93	25.80	90.73	57	YES
15	ANDROID PROGRAMMING (01CE0704)	CO1	87.90	84.90	61.53	25.47	87.00	62	YES
16		CO2	87.90	85.27	61.53	25.58	87.10	62	YES
17		CO3	87.90	86.67	61.53	26.00	87.53	62	YES
18		CO4	87.90	86.33	61.53	25.90	87.42	62	YES
19	DATA MINING AND INFORMATION RETRIEVAL (01CE0707)	CO1	90.96	86.40	63.68	25.92	89.59	62	YES
20		CO2	90.96	85.00	63.68	25.50	89.18	62	YES
21		CO3	90.96	86.93	63.68	26.08	89.76	62	YES
22		CO4	90.96	85.27	63.68	25.58	89.26	62	YES
23	COMPUTATIONAL	CO1	93.85	80.53	65.69	24.16	89.85	62	YES

S. No.	Course Name & Code	CO#	Total CO AT through DA in %	Total CO AT through IDA in %	70% OF Total CO AT through DA	30% OF Total CO AT through IDA	Total CO AT through DA & IDA in %	Target AT in %	CO Attained (YES/NO)
24	INTELLIGENCE (01CE0709)	CO2	93.85	80.53	65.69	24.16	89.85	62	YES
25		CO3	93.85	79.47	65.69	23.84	89.53	62	YES
26		CO4	93.85	80.00	65.69	24.00	89.69	62	YES
27		CO5	93.85	80.53	65.69	24.16	89.85	62	YES
28		PROGRAMMING WITH PYTHON (01CE0705)	CO1	94.69	87.57	66.28	26.27	92.55	62
29	CO2		94.69	89.07	66.28	26.72	93.00	62	YES
30	CO3		94.69	89.80	66.28	26.94	93.22	62	YES
31	CO4		94.69	89.80	66.28	26.94	93.22	62	YES
32	MAJOR PROJECT - 1 (01IT0703)	CO1	97.44	85.63	68.21	25.69	93.90	57	YES
33		CO2	97.44	86.17	68.21	25.85	94.06	57	YES
34		CO3	97.44	85.27	68.21	25.58	93.79	57	YES
35		CO4	97.44	85.27	68.21	25.58	93.79	57	YES
36		CO5	97.44	86.37	68.21	25.91	94.12	57	YES
37		CO6	97.44	86.17	68.21	25.85	94.06	57	YES
VIII SEMESTER									
1	BIG DATA AND ANALYTICS (01CE0802)	CO1	94.07	86.27	65.85	25.88	91.73	62	YES
2		CO2	93.50	83.53	65.45	25.06	90.51	62	YES
3		CO3	100.00	83.93	70.00	25.18	95.18	62	YES
4		CO4	100.00	84.30	70.00	25.29	95.29	62	YES
5		CO5	100.00	85.10	70.00	25.53	95.53	62	YES
6	CLOUD COMPUTING (01CE0803)	CO1	93.41	87.30	65.39	26.19	91.58	62	YES
7		CO2	97.96	85.57	68.57	25.67	94.25	62	YES
8		CO3	97.96	86.17	68.57	25.85	94.42	62	YES
9		CO4	97.96	86.17	68.57	25.85	94.42	62	YES
10		CO5	94.99	86.17	66.49	25.85	92.34	62	YES
11		CO6	92.60	86.53	64.82	25.96	90.78	62	YES
12	MACHINE LEARNING (01CE0804)	CO1	86.66	83.60	60.66	25.08	85.75	62	YES
13		CO2	88.80	84.83	62.16	25.45	87.60	62	YES
14		CO3	86.06	83.87	60.24	25.16	85.40	62	YES
15		CO4	85.34	84.10	59.74	25.23	84.97	62	YES
16		CO5	88.80	82.67	62.16	24.80	86.95	62	YES
23	BUSINESS INTELLIGENCE (01CE0805)	CO1	89.31	88.60	62.52	26.58	89.10	62	YES
24		CO2	86.15	86.67	60.31	26.00	86.31	62	YES
25		CO3	86.46	88.07	60.52	26.42	86.94	62	YES
26		CO4	91.46	87.50	64.02	26.25	90.27	62	YES
27		CO5	91.46	88.07	64.02	26.42	90.44	62	YES
28	MAJOR PROJECT – II (01IT0801)	CO1	100.00	85.30	70.00	25.59	95.59	57	YES
29		CO2	100.00	85.03	70.00	25.51	95.51	57	YES
30		CO3	100.00	85.67	70.00	25.70	95.70	57	YES
31		CO4	100.00	86.57	70.00	25.97	95.97	57	YES
32		CO5	100.00	85.93	70.00	25.78	95.78	57	YES

C. Attainment of Program Outcomes and Program Specific Outcomes

Program Outcomes and Program Specific Outcomes of the Program are attained by using two methods:

- Direct Assessment
- Indirect Assessment

➤ **Direct Assessment:**

Direct assessment of POs & PSOs is a systematic and on-going process of collecting, interpreting, and acting on information relating to the goals and outcomes developed to support the department and institution's mission and vision. The assessment methods and tools for PO and PSO attainments are tabulated below:

Table3.1.a: Assessment Methods and Tools

Assessment Method	Assessment Tool	Maximum Marks	Duration	Direct / Indirect Tool
Continuous Internal Evaluation (CIE)	Mid Test - 1/ Canvas	30	90 Minutes	Direct
	Mid Test - 2/ Canvas	30	90 Minutes	Direct
	CSE	20		Direct
End Semester Examination (ESE)	Lab Terminal Exam	25	45 Minutes	Direct
Comprehensive Viva	External Evaluation	25	45 Minutes	
End Semester Examination (ESE)	External Evaluation	100	3 Hours	Direct
Project Work	Internal Evaluation	100	90 Minutes	Direct
	External Evaluation	100		

The assessment tools and weightage for POs and PSOs attainments are tabulated below:

A. Course Assessment Tools and Weightage

Table 3.1.b: Course Assessment Tools and Weightage

	Assessment Tool	Weight age	Total
Theory Marks	Mid Test - 1	30%	100%
	Mid Test - 2		
	CSE- Internal	20%	
	SEE	50%	
Practical Marks	Viva	50%	100%
	Term work	50%	
Technical Seminar	Internal Evaluation	100%	100%
Comprehensive Viva	External Evaluation	100%	100%
Project Work	Internal Evaluation	50%	100%
	External Evaluation	50%	

➤ **Indirect Assessment:**

The following Surveys/Feedbacks are conducted during the course of study of program in each semester or end of the program. Evaluated data in terms of attainment percentages of the students is collected from the Course/Program co-ordinator.

Table 3.1.c: Summary of Surveys Conducted

S. No.	Survey	Frequency of Assessment is done
1	Student Exit Survey	Once at the end of Program
2	Alumni Survey	Once in a Year
3	Employer	Once in a Year
4	Parents	Once in a Year

The attainment levels by direct (student performance) and indirect (surveys) are presented through Program level Course-PO&PSO matrices as indicated. PO Attainment Program Outcomes of the program through direct assessment are shown in table 3.2.a.

Table 3.2.a: COMPLETE PO ATTAINMENTS THROUGH DIRECT ASSESSMENT

S. NO.	COURSE NAME & COURSE CODE	PO AT Through DA in %													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	ENGINEERING MATHEMATICS- I (01MA0101)	65.37	66.37	67.27	63.01	63.46								66.28	
2	ELEMENTS OF ELECTRICAL ENGINEERING (01EE0101)	57.63	59.57	60.19	55.82		60.95	53.64		73.59			57.13		
3	PHYSICS (01GS0101)	70.85	66.42	61.72	67.39	62.98	74.02								
4	READING & WRITING FOR TECHNOLOGY (01SL0102)						54.86	54.86	54.86	54.86	54.86	54.86	54.86		
5	COMPUTER WORKSHOP (01CE0102)	96.09	96.09	96.09	96.09	96.09						96.09	96.09	96.09	96.09
6	ELEMENTS OF MECHANICAL ENGINEERING (01ME0101)	65.18	65.18										66.9		
7	COMPUTER PROGRAMMING (01CE0101)	62.46	62.46	62.46									62.46	62.46	62.46
8	SPEAKING & PRESENTATION SKILLS (01SL0103)						60			60	60		60		
9	ENGINEERING MATHEMATICS-II (01MA0151)	73.43	72.79	76.66										73.43	
10	BASICS OF ENVIRONMENTAL STUDIES (01EN0101)	71.23	71.23	70.48			70.89	70.89	71.47	71.47	72.82	70.53	71.53		
11	BASICS OF ELECTRONICS ENGINEERING (01EC0101)	41.46	40.57	41.81	41.81	41.81	31.83	32.76	42.07	42.07	29.04	29.04	29.04		
12	DIGITAL ELECTRONICS (01EC0102)	76.17	76.17	75.21	66.16	62.74	91.88	85.89	86.56	91.88	91.88	91.88	77.31	76.22	
13	ENGINEERING DRAWING (01ME0103)	68.29	70.35	70.09		68.29					65.25				
14	CAREER READINESS PROGRAM (01CR0101)									80.11	82.46	82.28	81.07		
15	DISCRETE MATHEMATICS AND GRAPH THEORY (01MA0231)	78.5	78.5	77.66	77.02	75.81								77.02	

16	DATA STRUCTURE (01CE0301)	58.41	57.71	56.29	56.29	57.27	48.62						55.85	58.28	57.51
17	DATABASE MANAGEMENT SYSTEM (01CE1302)	72.27	75.15	73.19	68.89	78.4	77.18	77.18	67.79	73.73	77.18	77.18	71.13	80.83	63.35
18	DATA COMMUNICATION AND NETWORKING (01IT0301)	63.26	57.93	61.12	61.77	62.45			61.77	62.42	61.99		61.21	61.38	59.94
19	OBJECT ORIENTED DESIGN AND PROGRAMMING (01CE0303)	58.23	58.71	56.95	53.44					49.93	63.98	42.91	58.71	53.44	53.44
20	DESIGN THINKING AND PROBLEM SOLVING SKILLS (01CE0304)	95.21	95.21	95.21	95.21	95.21	95.21	95.21	95.21	95.21	95.21	95.21	95.21	95.21	95.21
21	PROFESSIONAL ETHICS (01CR0302)						95.21		95.21	95.21	95.21				
22	STATISTICAL & NUMERICAL METHODS (01MA0281)	70.06	70.06											70.92	
23	OPERATING SYSTEM (01CE0401)	53.93	54.85	51.82	51.82	51.37			55.59	61.82	50.99		49.29	50.37	50.99
24	COMPUTER ORGANIZATION AND ARCHITECTURE (01CE0402)	67.6	66.73	67.82	68.69	64.12		83.96		67.81				71.05	70.91
25	COMPUTER NETWORK (01IT0401)	83.9	83.17	82.32	82.85	82.07	81.8	80.91	82.91	82.82	81.47	80.13	83.55		
26	OBJECT ORIENTED PROGRAMMING WITH JAVA (01CE0403)	68.01	68.01	68.44	72.71	72.7	72.67			67.68	67.49	68.7	68.01	67.49	67.49
27	HUMAN CENTRIC DESIGN APPROACH (01CE0405)	100	100	100	100	100	100	100		100	100		100		
28	ADVANCED JAVA PROGRAMMING (01CE0502)	68.42	68.42	67.19		67.19			69.29	67.38	67.14	71.88	68.42	68.42	67.38
29	DESIGN AND ANALYSIS OF ALGORITHM (01CE0503)	82.92	82.92	82.6			78.49		86.71	83.23			84.2	84	81.49
30	THEORY OF AUTOMATA AND FORMAL LANGUAGES (01CE0504)	59.75	58.45	58.45	56.43				61.28	54.27	86.61	86.61	55.91	58.87	64.48
31	ADVANCED COMPUTER NETWORK (01IT0503)	94.26	94.26	94.26	94.26	94.26	94.26	94.26	94.26	94.26	94.26	94.26	94.26	94.26	94.26
32	IMAGE PROCESSING (01CE0507)	40.12	40.12	40.12	40.12	39.78					40.12		40.12		
33	REVERSE ENGINEERING (01CE0508)	99.39	99.39	99.39	99.39	99.39	99.39	99.39	99.39	99.39	99.39	99.39	99.39	99.39	99.39

34	SEMINAR (01IT0502)	99.39	99.39	99.39	99.39	99.39	99.39	99.39	99.39	99.39	99.39	99.39	99.39	99.39	99.39
35	MICROPROCESSOR FUNDAMENTALS & PROGRAMMING (01CE0501)	60.93	60.93	60.9	59.7	57.15			76.52	76.52	59.48		58.53		
36	BUSINESS BENCHMARK (01CR0601)									100	100	100			
37	SOFTWARE ENGINEERING (01IT0601)	87.54	87.37	85.79	87.91	84.21	82.89	89.76	80.64	85.97	87.09	86.19	85.7	86.76	90.59
38	COMPILER DESIGN (01CE0601)	88.41	88.68	88.64	88.84	87.65	87.23		87.65	88.28		87.23	87.44		87.44
39	.NET TECHNOLOGIES (01CE0602)	90.94	91.04	92.1		91.39		91.08		91.12		91.39			
40	WEB TECHNOLOGY (01IT0602)	87.63	86.52			86.7			87.14	86.6	86.22	86.22	87.6	87.68	90.08
41	CYBER SECURITY [DEPARTMENT ELECTIVE - 2] (01CE0604)	91.66	91.66	91.51	91.27	90.79	92.37		90.79	91.35			92.15		
42	DESIGN ENGINEERING AND PROJECT MANAGEMENT (01CE0606)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
43	ADVANCED WEB TECHNOLOGIES (01IT0701)	91.73	91.73	91.73		91.73		91.73		91.73		91.73	91.73	91.73	91.73
44	MOBILE COMPUTING (01CE0701)	96.54	96.54	96.54	96.54	96.54	96.54	96.54	96.54	96.54	96.54	96.54	96.54	96.54	96.54
45	ARTIFICIAL INTELLIGENCE (01CE0702)	92.76	92.76	92.76	92.76	92.76	92.76	92.76	92.76	92.76	92.76	92.76	92.76	92.76	92.76
46	ANDROID PROGRAMMING (01CE0704)	87.9	87.9	87.9	87.9	87.9	87.9			87.9			87.9	87.9	87.9
47	DATA MINING AND INFORMATION RETRIEVAL (01CE0707)	90.96	90.96	90.96	90.96	90.96					90.96		90.96	90.96	90.96
48	COMPUTATIONAL INTELLIGENCE (01CE0709)	93.85	93.85	93.85	93.85	93.85	93.85	93.85	93.85	93.85	93.85	93.85	93.85	93.85	93.85
49	MAJOR PROJECT - 1 (01IT0703)	97.44	97.44	97.44		97.44	97.44		97.44	97.44	97.44	97.44	97.44		
50	PROGRAMMING WITH PYTHON (01CE0705)	94.69	94.69	94.69	94.69	94.69		94.69		94.69	94.69		94.69		
51	BIG DATA AND ANALYTICS (01CE0802)	96.15	96.87	97.74	97.71	97.8	96.94							97.2	97.2
52	CLOUD COMPUTING (01CE0803)	95.81	96.29	95.69	94.14	95.23	94.2			97.96		97.96			
53	MACHINE LEARNING (01CE0804)	87.13	87.13	87.13	87.01	87.13	87.76			86.49			87.64		
54	MAJOR PROJECT – II (01IT0801)	100	100	100	100	100	100		100	100	100	100		100	100
55	BUSINESS INTELLIGENCE (01CE0805)	88.97	88.97	90.22	89.6	88.71			89	89.03	90.39	88.97	88.26	88.97	89.6

TOTAL PO DIRECT ATTAINMENTS IN %	79.40	77.90	79.56	76.94	81.05	84.64	85.15	83.49	79.14	77.10	78.31	74.23	80.25	81.37
----------------------------------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

Table 3.2.b: Overall Attainments of POs and PSOs

S NO	PO	PO ATTAINMENT THROUGH DA	PO ATTAINMENT THROUGH IDA	SUMMATION OF 70% OF DA & 30% OF IDA	TARGET	TARGET ATTAINED (YES/NO)
1	PO1	79.40	87.56	81.85	60	YES
2	PO2	77.90	88.97	81.09	60	YES
3	PO3	79.56	89.01	82.54	60	YES
4	PO4	76.94	88.00	80.92	60	YES
5	PO5	81.05	88.54	83.15	60	YES
6	PO6	84.64	89.50	84.40	60	YES
7	PO7	85.15	90.22	85.98	60	YES
8	PO8	83.49	88.05	85.64	60	YES
9	PO9	79.14	83.84	82.35	60	YES
10	PO10	77.10	87.93	80.66	60	YES
11	PO11	78.31	90.65	81.52	60	YES
12	PO12	74.23	89.83	78.36	60	YES
13	PSO1	80.25	64.56	75.55	60	YES
14	PSO2	81.37	58.53	74.52	60	YES

NAAC CRITERIA 2.6.1/2.6.2

Batch 2018-22

DEPARTMENT

OF

COMPUTER

ENGINEERING

CRITERION 2.6	Student Performance & Learning Outcomes	30
----------------------	--	-----------

PROGRAM OUTCOMES (POs):

Engineering Graduates will be able to:

P01. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

P02. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

P03. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

P04. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

P05. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

P06. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

P07. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

P08. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

P09. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

P010. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

P011. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

P012. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

The following are the program Specific outcomes:

PROGRAM SPECIFIC OUTCOMES (PSOs):

PSO1: Students shall demonstrate skills, the knowledge and competence in the analysis, design and development of computer based systems addressing industrial and social issues.

PSO2: Students shall have competence to take challenges associated with future technological issues associated with security, wearable devices, augmented reality, Internet of Anything etc.

PROGRAM ARTICULATION MATRIX: COURSES MAPPING WITH POs AND PSOs

Program Articulation Matrix:

The following table (Table B3.1a) demonstrates the mapping/correlation of Courses of Program with all POs and PSOs of 2018 -2022 batch.

Table 1.a: Program Articulation Matrix

Sr. NO.	COURSE	COURSE CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
1	Computer Programming	01CE0101	3	2	2	0	0	0	0	0	0	0	0	2	2	1
2	Database Management System	01CE1302	3	2	2	2	1	0	0	2	2	2	1	2	1	0
3	Operating System	01CE0401	2	2	2	2	2	0	0	1	1	1	0	2	2	2
4	Object Oriented Programming with Java	01CE0403	3	3	2	3	3	0	0	0	3	2	2	2	2	2
5	Microprocessor Fundamental & Programming	01CE0501	3	3	3	2	2	0	0	1	1	2	0	3	0	1
6	Advanced Java Programming	01CE0502	3	2	1	0	1	0	0	1	2	2	1	2	2	2
7	Compiler Design	01CE0601	3	3	2	2	2	0	0	1	2	0	2	2	2	0
8	.Net Technologies	01CE0602	3	2	2	0	2	0	2	0	3	0	2	0	2	2
9	Artificial Intelligence	01CE0702	3	3	2	3	2	2	2	2	1	1	1	2	2	1
10	Data Mining And Information Retrieval	01CE0707	2	2	1	1	2	0	0	0	2	1	0	1	1	0

COURSE ARTICULATION MATRIX: COURSES AND COURSE OUTCOMES MAPPING WITH POS AND PSOS

- The following tables (Table 1.b.1 – Table 1.b.10) demonstrate the mapping/correlation of Course Outcomes of *Courses* with all POs and PSOs.
- Number of Outcomes for a course is expected to be 4 to 6.

Table 1.b.1: Course Articulation Matrix- Course Name: Computer Programming (01CE0101) (II Semester)

CO No	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Express programming problems logically through flow charts and algorithms (Understand).	3	2	2	0	0	0	0	0	0	0	0	2	2	1
CO2	Identify various conditional control structures and jumping structures and use them. (Remember)	3	2	2	0	0	0	0	0	0	0	0	2	2	1
CO3	Express and Distinguish various loops in C language (Analyze).	3	2	2	0	0	0	0	0	0	0	0	2	2	1
CO4	Demonstrate the usage of concepts like strings, arrays, pointers, Structures(Apply)	3	2	2	0	0	0	0	0	0	0	0	2	2	1
CO5	Select the appropriate user defined function category.(Evaluate)	3	2	2	0	0	0	0	0	0	0	0	2	2	1
CO6	Develop the programs on dynamic memory allocations and Files.(Create)	3	2	2	0	0	0	0	0	0	0	0	2	2	1
Average Correlation Levels:		3	2	2	0	0	0	0	0	0	0	0	2	2	1

CO - PO Mapping Justification		
PO Number	PO Level	Justification
PO1	3	In day to day applications recognizing importance of C language will directly or indirectly enriches engineering knowledge.
PO2	2	Being a graduate, engineer needs to analyze the existing problem through their mathematical and logical skills and apply through coding
PO3	2	The engineer needs to apply the concept of programming in order to develop various solutions like automatic lathe machine development, CNC machine, robots, PCB design machine, etc.

PO12	2	The programming skill is a life long learning for a mechanical engineer for development of various standard machines for the betterment of the health of the society
PSO1	2	C programming language is base of all next generation programming language, by learning this student can use this knowledge in future projects
PSO2	1	By learning this programming language, students will learn problem solving approach and it will prepare them by creating a base for future technologies.

Table 1.b.2: Course Articulation Matrix: Course Name: Database Management System (01CE1302) (III Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PS O2
CO1	Use Relational Database and different models of Database. (Apply)	0	0	0	0	0	0	0	2	0	0	0	1	0	0
CO2	Design ER Model for an Application. (Create)	1	0	1	2	0	1	0	0	0	0	0	1	0	0
CO3	Apply Concepts of normalization with functional dependency to construct Data dictionary. (Apply)	3	1	1	1	0	0	0	1	1	0	0	1	0	0
CO4	Implement Structured Query Language (SQL) and evaluate query expression. (Evaluate)	2	3	3	2	2	1	2	1	3	3	3	3	0	0
CO5	Differentiate and Execute transactional Concepts and locking mechanism (Analyze)	3	1	1	0	1	0	0	1	0	0	0	1	1	0
CO6	Use concepts of Database Security on Database. (Apply)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Average Correlation Levels:		3	2	2	2	1	0	0	2	2	2	1	2	1	0

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	3	This course enables designing and managing database for any real time system. Knowledge of Mathematics is used to solve complex queries.
PO2	2	Structured Query Language (SQL) and PL/SQL is used to analyze complex engineering problems. Principles of mathematics are used in Normalization of database.
PO3	2	ER models can be used to model real life health problems.
PO4	2	Normalization, E-R diagram, Relational data model and SQL are used for design of experiments, analysis and interpretation of

		data, and synthesis of the information to provide valid conclusions.
PO5	1	Oracle with SQL or SQL developer like tools are used for modeling complex engineering activities.
PO8	2	Students are taught to work ethically throughout this course.
PO9	2	Open ended project enables conceptual database design process along with enhancing individual and team work abilities.
PO10	2	Open Ended projects helps in improving communication and building values for assisting team work.
PO11	1	Students have learned project management by working together on certain problems.
PO12	2	Lifelong learning is achieved by understanding and applying basic concepts of database design. (Conceptual Design, Normalization, R-Model, Query Evaluation and Optimization, Security)
PSO1	1	Analysis and Design of databases for real world problems are studied in this subject and also with the help of SQL, database creation in ORACLE is performed. Query processing considers time and space parameters for generating optimized query.

Table 1.b.3: Course Articulation Matrix: Course Name: Operating System (01CE0401) (IV Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PS O2
CO1	Understanding the role of operating system with its function and services. (Understanding)	1	1	0	0	0	0	0	1	1	0	0	0	0	0
CO2	Compare Various Algorithm used for CPU Scheduling, Memory management and Disk Scheduling Algorithm. (Evaluate)	3	3	3	3	2	0	0	0	1	1	0	0	2	2
CO3	Apply Various Concepts related with Deadlock to solve Problems. (Apply)	1	1	1	1	1	0	0	0	0	0	0	3	1	0
CO4	Analyze Protection and Security Mechanism in Operating System. (Analyze)	2	1	1	1	1	0	0	2	0	1	0	2	3	2
Average Correlation Levels:		2	2	2	2	2	0	0	1	1	1	0	2	2	2

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	2	Course outcome will improve the knowledge of different operating systems on virtual and physical environment.
PO2	2	Process Scheduling and Memory Management can be analyzed for multitasking and multithreading environment.
PO3	2	Designing & Development of scripts to improve the efficiency of operating system (Unix/Linux)
PO4	2	Investigation of Real time Unix Environment IPC, Deadlock, Memory Management and I/O Scheduling.
PO5	2	Exploration of Unix & Linux environment.
PO8	1	Ethical angle is touched in operating system Security

PO9	1	Individual and Team can design scripts for different IPC.
PO10	1	Interactive lectures and group discussion improves communication skills.
PO12	2	Understanding of different operating environment with the knowledge of IPC, Memory Management, I/O and Security.
PSO1	2	apply various concepts to solve the problems
PSO2	2	use the concepts in various technologies

Table 1.b.4: Course Articulation Matrix: Course Name: Object Oriented Programming with JAVA (01CE0403) (IV Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PS O2
CO1	Understand object oriented programming concepts in java	3	3	2	0	0	0	0	0	3	2	3	2	2	2
CO2	Comprehend building blocks of OOPs language, inheritance, package and interfaces.	3	3	2	0	0	0	0	0	3	2	2	2	2	2
CO3	Identify exception handling methods and collection framework.	3	3	2	0	0	0	0	0	3	2	3	2	2	2
CO4	Implement file handling and multithreading in object oriented programs.	3	3	2	0	0	0	0	0	3	2	2	2	2	2
CO5	Develop GUI based application using applet, awt and swing.	3	3	3	3	3	0	0	0	2	1	1	2	1	1
Average Correlation Levels:		3	3	2	3	3	0	0	0	3	2	2	2	2	2

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	3	By understanding the basic principles of OOP, students will be able to solve the complex problems of engineering
PO2	3	By gaining the ability to apply object oriented principles in software design process, the students will be able to analyze complex engineering problems in the domain of software development with better effectiveness.
PO3	2	By learning the GUI through Applet and swing, students will be able to design and develop the various applications for various domains
PO4	3	By learning this subject, students will be able to solve complex application and problem by using inbuilt packages of java programming
PO5	3	By learning the GUI through Applet and swing, students will be able to use the modern IDEs to develop GUI Applications
PO9	3	By learning this, students will come together while creating programs and fixing errors, which develops habit of working in teams in them.

PO10	2	By learning this subject students will develop curiosity to interact with each other while creating programs, solving errors and understanding the key concept of the subject, which improves effective communication between them.
PO11	2	By learning this subject, student will be able to make projects of multidisciplinary domain.
PO12	2	By learning this subject, student will be able to realize the need for OOP in todays real lifw applications and hence will continue to learn the OOP fundamentals
PSO1	2	By learning this subject, students gets knowledge of OOP which they can use in their entier life time in project development
PSO2	2	By learning this, students will develop a base for upcoming programming language like AJP,Android

Table 1.b.5: Course Articulation Matrix: Course Name: Microprocessor Fundamentals & Programming (01CE0501) (V Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PS O2
CO1	Understand the architecture and pin diagram of 8085 and advance Microprocessor. (Understand)	3	3	3	2	2	0	0	1	1	0	0	1	0	1
CO2	Implement Memory and I/O interfacing in 8085 Microprocessor. (Apply)	3	3	2	2	0	0	0	0	0	2	0	3	0	1
CO3	Sketch Timing diagram after getting brief with the addressing mode, byte and machine cycle of instructions.(Apply)	3	3	3	3	0	0	0	0	0	0	0	3	0	0
CO4	Apply the concepts of instruction to write, Debug & Simulate assembly language program of 8085 microprocessors. (Apply)	3	3	3	3	3	0	0	0	0	2	0	3	0	1
CO5	Analyze time delay generation, counter and waveform generation (Analyze).	3	3	3	3	3	0	0	0	0	0	0	3	0	0
Average Correlation Levels:		3	3	3	2	2	0	0	1	1	2	0	3	0	1

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	3	Student will get some of the basic knowledge of engineering science and mathematics.
PO2	3	Student will gain slight knowledge to identify, formulate and solve complex problems in engineering science
PO3	3	Student will gain slight knowledge to design system components that meet the requirement of public safety and also offers solution to the society
PO4	2	After learning this course students will apply the concept in research work & solving engineering problems and arrive at valid conclusions

PO5	2	After learning this course students will get knowledge in terms of various tools arrived in this course.
PO8	1	They have to draw the architecture of 8085 and advance processor and don't have to copy and paste .
PO9	1	They have to submit assignment individually
PO10	2	After learning this course student will participate into engineering activities and presentation.
PO12	3	After learning this course students will gain knowledge which will help him during advanced studies as well as in research work
PSO2	1	Student will gain knowledge regarding Embedded devices which used in wearable devices, IoT.

Table 1.b.6: Course Articulation Matrix: Course Name: Advanced Java Programming (01CE502) (V Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the components of J2EE Architecture, MVC Framework and Multi-tier Application and Various Network Protocol (Understand)	3	2	1	0	1	0	0	1	1	0	0	2	2	1
CO2	To make use of Servlet and JSP API in the process of enterprise application deployment. (Apply)	3	2	1	0	1	0	0	1	2	2	0	2	2	2
CO3	Implement components such as Session, Filters, JSTL, Beans. (Apply)	3	2	1	0	1	0	0	2	2	1	1	2	2	2
CO4	Distinguish Application Server, Web Container, JDBC and ORM tools.(Analyse)	3	2	2	0	2	0	0	2	2	2	2	2	2	2
CO5	Design and Development of web application having collaboration of Servlets, JSPs, JSF, Spring and Hibernate base upon the requirement. (Create)	3	2	2	0	2	0	0	1	2	1	0	2	2	2
Average Correlation Levels:		3	2	1	0	1	0	0	1	2	2	1	2	2	2

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	3	By learning this course, learners will understand MVC Architecture, Networking Protocols, Web Servers, various advance JAVA Technologies and framework like Servlets , JSP, Swing , JDBC, Hibernate, RMI.... which directly or indirectly enrich engineering knowledge
PO2	2	By learning this subject, the learners will be able to analyze complex engineering problems in the domain of software development with better effectiveness.

PO3	1	By learning this subject, learners will be able to design and develop the various web based applications
PO5	1	By implementing project in laboratory will gives confidence to use modern days JDK 8.0 or above capable IDEs like Netbeans, Eclipse along with various APIs and drivers.
PO8	1	By learning this subject, learners will develop curiosity to interact with each other while creating programs, solving errors and understanding the key concept of the subject, which improves effective communication between them.
PO9	2	By learning this subject, learners will come together while creating programs and fixing errors, which develop harmony and alliance building in them.
PO10	2	By learning this subject, learners will develop curiosity to interact with each other while creating programs, solving errors and understanding the key concept of the subject, which improves effective communication between them.
PO11	1	By learning this subject, learners will be able to make projects of multidisciplinary domain.
PO12	2	By solving internal assessment, doing discussion and mini project implementation learners will develop life long learning.
PSO1	2	By learning this subject, learner will get knowledge of programming which they can use in their entire life time in project development
PSO2	2	By learning this subject, learner will develop skills, the knowledge and competence in developing secure web application

Table 1.b.7: Course Articulation Matrix: Course Name: Compiler Design (01CE0601) (VI Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PS O2
CO1	To be able to describe compiler and different phases. Using this translate program from source code to executable code and files. (Knowledge)	2	1	2	1	0	1	0	0	0	0	1	2	1	0
CO2	Able to explain lexical analysis phase and their connection to language definition through regular expressions and grammars. (Comprehensive)	3	3	1	2	0	0	0	0	2	0	0	2	2	0
CO3	Able to explain the syntax analysis phase and differentiate among various parsing techniques and grammar transformation techniques. (Comprehensive)	3	3	1	2	0	0	0	0	2	0	0	2	2	0
CO4	Able to apply formal attributed grammars for specifying the syntax and semantics of programming languages. (Application)	2	3	2	2	0	0	0	0	1	0	0	2	1	0
CO5	To be able to calculate the effectiveness of	3	3	2	1	0	0	0	0	1	0	0	2	3	0

	optimization and differences between machine dependent and independent translation. (Application)														
CO6	Able to use the powerful compiler generation tools such as Lex and YACC. (Analysis)	2	2	2	2	2	0	0	2	2	0	2	2	3	0
Average Correlation Levels:		3	3	2	2	2	0	0	1	2	0	2	2	2	0

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	3	Defining different phases of compiler improves engineering knowledge.
PO2	3	Analysis structure and working of compilers.
PO3	2	Understanding run time environment and optimization technique improves design and development capabilities for solving complex problem.
PO4	2	Experimenting, analyzing and interpretation of data related to DFA and NFA
PO5	2	Constructing lexical analyzer and parser need to use LEX and YACC tools.
PO8	1	Constructing automata improves engineering practice.
PO9	2	Solving case study related to Parsing table and its calculation in team
PO11	2	Presenting on LEX and YACC tools as well perform Open Ended Project on LEX Program.
PO12	2	Compiler is used in any of the platforms and hence it supports life long learning and understanding.
PSO1	2	Analysis structure and working of compilers.

Table 1.b.8: Course Articulation Matrix: Course Name: .Net Technologies (01CE0602) (VI Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To develop applications with Dot-Net framework	3	1	2	0	2	0	2	0	3	0	0	0	1	0
CO2	To create Console based C# application	3	2	1	0	2	0	2	0	3	0	2	0	1	0
CO3	To create GUI based desktop application using C# Win-form application	3	2	3	0	3	0	2	0	3	0	3	0	1	1
CO4	To create basic database application using ADO.net technology	2	2	3	0	2	0	2	0	3	0	2	0	1	2
CO5	To Design and develop basic applications using WPF	2	1	2	0	2	0	1	0	2	0	2	0	2	2

Average Correlation Levels:	3	2	2	0	2	0	2	0	3	0	2	0	2	2
------------------------------------	---	---	---	---	---	---	---	---	---	---	---	---	---	---

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	3	Student will apply his knowledge to create projects on their chosen definition
PO2	2	Creation of forms and database will require study of existing system
PO3	2	In future complex solution can also be made once learning dot net technology thoroughly
PO5	2	various version of visual studio will be used
PO7	2	Students will be able to develop applications that is beneficial to society
PO9	3	Project will inculcate team work
PO11	2	One project has been assigned in a group of 3 which will lead to project management skills
PSO1	2	Students will be able to create real world solutions that will help society in every aspects
PSO2	2	Students will learn new and upcoming technologies; also try to implement in their projects to make their projects more efficient

Table 1.b.9: Course Articulation Matrix: Course Name: Artificial Intelligence (01CE0702) (VII Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PS O2
CO1	Assess critically the techniques presented and to apply them to real world problems(Analyze)	3	3	3	3	3	2	2	2	2	2	1	2	2	2
CO2	Mindful of the significant difficulties confronting AI and the multifaceted nature of run of the mill issues inside the field(remember)	3	3	1	1	1	1	1	1	1	1	1	1	2	2
CO3	Comprehend the significant zones and difficulties of AI(Understanding)	2	2	2	2	2	1	1	1	1	1	1	1	2	1
CO4	Apply fundamental AI calculations to take care of issues(Apply)	3	3	3	3	3	3	3	3	3	2	2	3	3	3
CO5	Get a learning of utilizations in various zones of registering including the web and human communication(Evaluate)	3	3	3	3	3	2	2	2	2	2	2	2	3	3
Average Correlation Levels:		3	3	2	3	2	2	2	2	1	1	1	2	2	1

CO - PO Mapping Justification

PO Number	PO Level	Justification
PO1	3	The knowledge of basic concepts of AI will help the students to apply the same to formulate solutions for engineering problems
PO2	3	The knowledge of different ways of handling AI principles will help the students to apply the same to identify and analyze engineering problems.
PO3	2	The AI knowledge can be used to design and conduct experiments to provide valid conclusions.
PO4	3	The AI knowledge can be used to design and conduct experiments to provide valid conclusions.
PO5	2	The practice with existing tools of AI helps in understanding the limitations of the existing tools.
PO6	2	Knowledge of AI will help understand issues and societal problems related to the need of the assistance of self driven machines.
PO7	2	The knowledge AI and existing systems helps the students to come up with a sustainable solutions.
PO8	2	The AI systems are developed under the influence of human intelligence and professional ethics.
PO9	1	Expertise developed, which will enable the student to become a productive member of a design team.
PO10	1	The AI knowledge helps the students to communicate the complex engineering activities involved in developing a AI system.
PO11	1	The knowledge and group work in AI helps the students to understand the project management principles.
PO12	2	The knowledge and the advancements in the area of AI will lead the student to upgrade the technical knowledge through lifelong learning.
PSO1	2	Studying the concepts of AI and its applications can acquire skills to design, analyse and develop algorithms and implement them using high level programming languages.
PSO2	1	Knowledge of AI can contribute skills in Intelligent systems and knowledge engineering domain.

Table 1.b.10: Course Articulation Matrix: Course Name: Data Mining & Information Retrieval (01CE0707) (VII Semester)

CO Number	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand different indexing techniques on real data set. (Understand)	2	2	0	1	2	0	0	0	0	0	0	0	1	0
CO2	Demonstrate different classification methods on real and synthetic data set. (Apply)	3	3	0	0	0	0	0	0	0	0	0	2	1	0
CO3	Discover knowledge using various Data Mining methods for given system/application. (Apply)	3	2	0	0	0	0	0	0	2	1	0	1	1	0
CO4	Analyze various data warehousing	1	2	1	3	0	0	0	0	0	0	0	0	1	0

techniques used in industry. (Analyze)															
Average Correlation Levels:	2	2	1	1	2	0	0	0	2	1	0	1	1	0	

CO - PO Mapping Justification		
PO Number	PO Level	Justification
PO1	2	Competent to apply Data warehousing operations and data mining techniques on given dataset.
PO2	2	Competent to analyze information retrieval techniques and datasets for the identification of data mining techniques applicable on dataset for business intelligence.
PO3	1	Competent to analyze data cubes and design a solution for data mining.
PO4	1	Competent to analyze and apply the need to required technique to be performed on preprocessed data available in the forms of data cubes.
PO5	2	Competent to define problem definition on information retrieval and data mining and use data mining tools for data analysis and business intelligence.
PO9	2	This course is not dealing with any ethical aspects.
PO10	1	Competent to present identified definition, solution and performed data mining tasks.
PO12	1	Competent to have the basics knowledge of advanced data mining systems.
PSO1	1	Competent to apply Data warehousing operations and data mining techniques on given dataset.

2.6.2 Attainment of Course Outcomes, Program Outcomes & Program Specific Outcomes

A. Assessment Process:

Assessment is a systematic and on-going process of collecting, interpreting, and acting on information relating to the goals and outcomes developed to support the department and institution's mission and vision. The assessment process is depicted in the figure below.

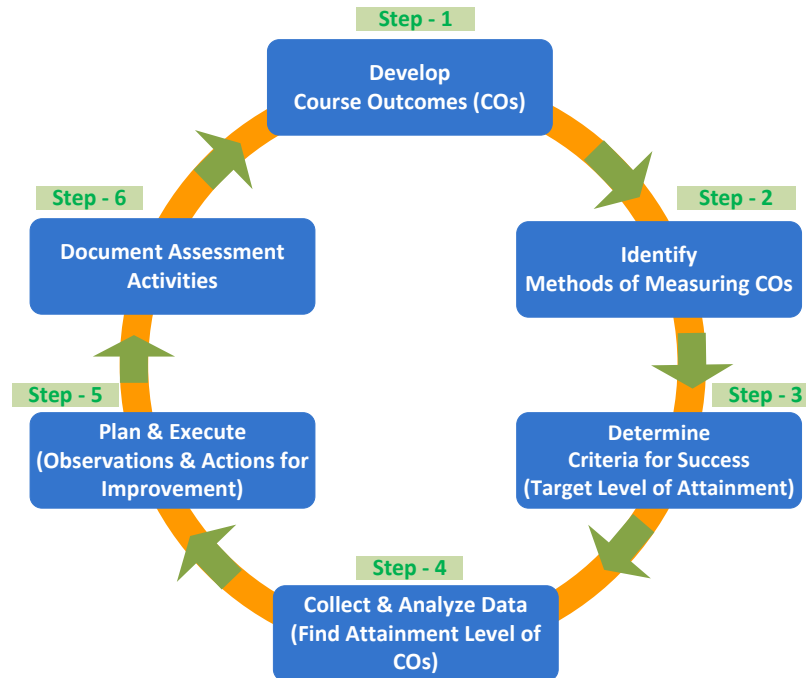


Fig. 2.1.a Assessment Cycle

The first step in the assessment cycle is the clear definition of course outcomes and its mapping to program outcomes. Course outcomes describe what students are able to demonstrate in terms of knowledge, skills, and values upon completion of the course, a span of several courses, or a program. Clear articulation of course outcomes serves as the foundation to evaluating the effectiveness of the teaching-learning process.

The second step is to identify appropriate assessment methods. Assessment methods are the tools and techniques used to determine the extent to which the stated course outcomes are achieved.

The third step is to determine the criteria for success i.e., the target levels for the attainment of course and program outcomes. The predetermined target levels range from 50% to 65% based on the complexity and relevance of the course to the program under consideration.

The fourth step is to collect data and analyze in order to verify whether the specified attainment levels are achieved or not. The attainment levels are calculated based on the assessment tools and weight ages.

The fifth step is to compare the attainment levels with the predetermined target levels and conclusions are made to decide the corrective measures so as to ensure the attainment of the course outcomes.

Finally, the assessment activities are documented and taken as a reference for further improvement and actions taken to redefine course outcomes and assessment methods.

The assessment methods and tools are tabulated below:

Table 2.1.a: Assessment Methods and Tools

Assessment Method	Assessment Tool	Maximum Marks	Duration	Direct / Indirect Tool
Continuous Internal Evaluation (CIE)	Mid Test - 1/ Canvas	30	90 Minutes	Direct
	Mid Test - 2/ Canvas	30	90 Minutes	Direct
	CSE	20		Direct
End Semester Examination (ESE)	Lab Terminal Exam	25	45 Minutes	Direct
Comprehensive Viva	External Evaluation	25	45 Minutes	
End Semester Examination (ESE)	External Evaluation	100	3 Hours	Direct
Project Work	Internal Evaluation	100	90 Minutes	Direct
	External Evaluation	100		

Table: 2.1.b. Course Assessment Tools and Weightage

	Assessment Tool	Weight age	Total
Theory Marks	Mid Test - 1	30%	100%
	Mid Test - 2		
	CSE- Internal	20%	
	SEE	50%	
Practical Marks	Viva	50%	100%
	Term work	50%	
Technical Seminar	Internal Evaluation	100%	100%
Comprehensive Viva	External Evaluation	100%	100%
Project Work	Internal Evaluation	50%	100%
	External Evaluation	50%	

B. Measuring Course Outcome attained through Continuous Internal Evaluation (CIE) and End Semester Examination (ESE)

CIE:

For each theory course of the program, two Mid Semester Tests and Online Objective Test are conducted. And for each laboratory, Technical Seminar, Mini Project and Project Work, internal examinations are conducted. The marks of each test are collected from controller of the examiner. The following tables give complete CO attainments of all courses through Continuous Internal Evaluation.

ESE:

For each course of the program including Comprehensive Viva and Project Work, CIE and End Semester Examination (ESE) is conducted and the marks of each course are collected from controller of the examiner for attainment of course outcomes. The following tables give complete CO attainments of all courses through End Semester Examination.

Table 2.1.a: CO Attainments of First Year courses through CIE and ESE

Subject code	Subject	CO	MID-1 (IA)	MID-2 (IA)	PR/INT (CSE)	PR/VA/TW	FINAL	WT ON MID-1 (10%)	WT ON MID-2 (10%)	MID-1, MID-2 (20%) (IA)	PR/INT (15%) (CSE)	PR/VIVA/TW (15%)	FINAL (50%)	TOTAL CO (100%)	Target
01MA1101	DIFFERENTIAL AND INTEGRAL CALCULUS	CO1	80.84		99.04	96.19	51.52	8.08		16.17	14.86	14.43	25.76	71.21	YES
		CO2	80.93		99.04	96.19	84.91	8.09		16.19	14.86	14.43	42.46	87.93	YES
		CO3	77.97		99.04	96.19	58.54	7.80		15.59	14.86	14.43	29.27	74.15	YES
		CO4		61.79	99.04	96.19	59.53		6.18	12.36	14.86	14.43	29.77	71.41	YES
		CO5		62.19	99.04	96.19	57.50		6.22	12.44	14.86	14.43	28.75	70.47	YES
		CO6		51.99	99.04	96.19	48.20		5.20	10.40	14.86	14.43	24.10	63.78	YES
01EE0101	ELEMENTS OF ELECTRICAL ENGINEERING	CO1	74.5		87.88	94.71	67.64	7.45		14.90	13.18	14.21	33.82	76.11	YES
		CO2	76.55		87.88	94.71	71.60	7.66		15.31	13.18	14.21	35.80	78.50	YES
		CO3	61.45		87.88	94.71	55.48	6.15		12.29	13.18	14.21	27.74	67.42	YES
		CO4		60.61	87.88	94.71	64.43		6.06	12.12	13.18	14.21	32.22	71.73	YES
		CO5		59.72	87.88	94.71	61.28		5.97	11.94	13.18	14.21	30.64	69.97	YES
		CO6		49.41	87.88	94.71	61.49		4.94	9.88	13.18	14.21	30.75	68.02	YES
01GS0101	PHYSICS	CO1	84.06		100	98.32	70.81	8.41		16.81	15.00	14.75	35.41	81.97	YES
		CO2	81.64		100	98.32	82.89	8.16		16.33	15.00	14.75	41.45	87.52	YES
		CO3	76.15		100	98.32	80.04	7.62		15.23	15.00	14.75	40.02	85.00	YES
		CO4		71.94	100	98.32	64.69		7.19	14.39	15.00	14.75	32.35	76.48	YES
		CO5		72.4	100	98.32	56.10		7.24	14.48	15.00	14.75	28.05	72.28	YES
		CO6		63.02	100	98.32	0.00		6.30	12.60	15.00	14.75	0.00	42.35	NO
01SL0102	READING & WRITING FOR TECHNOLOGY	CO1			97.56	96.39	0.00			0.00	14.63	14.46	0.00	58.19	YES
		CO2			97.56	96.39	0.00			0.00	14.63	14.46	0.00	58.19	YES
		CO3			97.56	96.39	0.00			0.00	14.63	14.46	0.00	58.19	YES
		CO4			97.56	96.39	0.00			0.00	14.63	14.46	0.00	58.19	YES
01SL0103	SPEAKING & PRESENTATION SKILLS	CO1			99.21	98.41	0.00			0.00	14.88	14.76	0.00	59.29	YES
		CO2			99.21	98.41	0.00			0.00	14.88	14.76	0.00	59.29	YES
		CO3			99.21	98.41	0.00			0.00	14.88	14.76	0.00	59.29	YES
		CO4			99.21	98.41	0.00			0.00	14.88	14.76	0.00	59.29	YES

01CE0102	COMPUTER WORKSHOP	C01				99.45	0.00	0.00	0.00	0.00	0.00	14.92	0.00	99.45	YES
		C02				99.45	0.00	0.00	0.00	0.00	0.00	14.92	0.00	99.45	YES
		C03				99.45	0.00	0.00	0.00	0.00	0.00	14.92	0.00	99.45	YES
		C04				99.45	0.00	0.00	0.00	0.00	0.00	14.92	0.00	99.45	YES
		C05				99.45	0.00	0.00	0.00	0.00	0.00	14.92	0.00	99.45	YES
		C06				99.45	0.00	0.00	0.00	0.00	0.00	14.92	0.00	99.45	YES
01CR0103	VALUE EDUCATION	C01				95.24	0.00	0.00	0.00	0.00	0.00	14.29	0.00	95.24	YES
		C02				95.24	0.00	0.00	0.00	0.00	0.00	14.29	0.00	95.24	YES
		C03				95.24	0.00	0.00	0.00	0.00	0.00	14.29	0.00	95.24	YES
		C04				95.24	0.00	0.00	0.00	0.00	0.00	14.29	0.00	95.24	YES
		C05				95.24	0.00	0.00	0.00	0.00	0.00	14.29	0.00	95.24	YES
01ME0101	ELEMENTS OF MECHANICAL ENGINEERING	C01	83.96		97.63	97.61	68.05	8.40		16.79	14.64	14.64	34.03	80.10	YES
		C02	86.48		97.63	97.61	80.93	8.65		17.30	14.64	14.64	40.47	87.05	YES
		C03	76.56		97.63	97.61	85.99	7.66		15.31	14.64	14.64	43.00	87.59	YES
		C04		60.97	97.63	97.61	81.07		6.10	12.19	14.64	14.64	40.54	82.02	YES
		C05		44.71	97.63	97.61	60.66		4.47	8.94	14.64	14.64	30.33	68.56	YES
01CE0101	COMPUTER PROGRAMMING (Canvas or Other LMS)	C01	94.19		97.09	96.8	94.19			18.84	14.56	14.52	47.10	95.02	YES
		C02	90.79		97.09	96.8	94.77			18.16	14.56	14.52	47.39	94.63	YES
		C03	96.12		97.09	96.8	94.19			19.22	14.56	14.52	47.10	95.40	YES
		C04	89.41		97.09	96.8	94.19			17.88	14.56	14.52	47.10	94.06	YES
		C05	89.61		97.09	96.8	95.93			17.92	14.56	14.52	47.97	94.97	YES
		C06	83.04		97.09	96.8	94.19			16.61	14.56	14.52	47.10	92.79	YES
01MA1151	MATRIX ALGEBRA AND VECTOR CALCULUS	C01	81.82		94.53	96.04	57.51	8.18		16.36	14.18	14.41	28.76	73.70	YES
		C02	82.1		94.53	96.04	71.40	8.21		16.42	14.18	14.41	35.70	80.71	YES
		C03	79.04		94.53	96.04	72.16	7.90		15.81	14.18	14.41	36.08	80.47	YES
		C04		53.99	94.53	96.04	53.68		5.40	10.80	14.18	14.41	26.84	66.22	YES
		C05		51.47	94.53	96.04	53.13		5.15	10.29	14.18	14.41	26.57	65.44	YES
		C06		42.6	94.53	96.04	87.03		4.26	8.52	14.18	14.41	43.52	80.62	YES
01EN0101	BASICS OF ENVIRONMENT	C01	90.89		99.44	0	88.94	9.09		18.18	14.92	0.00	44.47	91.25	YES
		C02	90.47		99.44	0	80.23	9.05		18.09	14.92	0.00	40.12	86.03	YES

	AL STUDIES	C03	86.85		99.44	0	83.08	8.69		17.37	14.92	0.00	41.54	86.85	YES
		C04		85.95	99.44	0	75.35		8.60	17.19	14.92	0.00	37.68	82.10	YES
		C05		87.36	99.44	0	86.46		8.74	17.47	14.92	0.00	43.23	88.96	YES
01EC0101	BASICS OF ELECTRONICS ENGINEERING (Canvas or Other LMS)	C01	94.23			96	62.07			18.85		14.40	31.04	64.28	YES
		C02	94.88			96	65.52			18.98		14.40	32.76	66.14	YES
		C03			68.57	96					10.29	14.40		24.69	NO
		C04	94.93			96	68.39			18.99		14.40	34.20	67.58	YES
		C05				97.14						14.57		14.57	NO
01ME0103	ENGINEERING DRAWING (Canvas or Other LMS)	C01	57.42		100	98.25	88.89			11.48	15.00	14.74	44.45	85.67	YES
		C02	78.29		100	98.25	88.16			15.66	15.00	14.74	44.08	89.48	YES
		C03	57.93		100	98.25	88.60			11.59	15.00	14.74	44.30	85.62	YES
		C04	70.65		100	98.25	84.65			14.13	15.00	14.74	42.33	86.19	YES
		C05	90.09		100	98.25	84.21			18.02	15.00	14.74	42.11	89.86	YES
		C06	77.19		100	98.25	100.00			15.44	15.00	14.74	50.00	95.18	YES
01EC0102	DIGITAL ELECTRONICS (Canvas or Other LMS)	C01	98.26		99.42	98.26	68.60			19.65	14.91	14.74	34.30	83.60	YES
		C02	98.37			98.26	77.33			19.67		14.74	38.67	73.08	YES
		C03	98.32			98.26	49.42			19.66		14.74	24.71	59.11	YES
		C04	98.36		99.42	98.45	40.12			19.67	14.91	14.77	20.06	69.41	YES
		C05	98.35		99.42	98.55				19.67	14.91	14.78		49.37	NO

Table 2.2.a: Summary of CO attainments

Summary of CO attainments:	
Total No. of COs in the Program	75
No. of COs are attained	71
No. of COs are not attained	4
% of COs are attained	94.67
% of COs are not attained	5.33

Table 2.1.b: CO Attainments of *Second Year* courses through CIE and ESE

Subject code	Subject	CO	MID-1 (IA)	MID-2 (IA)	PR/INT (CSE)	PR/VA/TW	FINAL	WT ON MID-1 (10%)	WT ON MID-2 (10%)	MID-1, MID-2 (20%) (IA)	PR/INT (15%) (CSE)	PR/VIVA/TW (15%)	FINAL (50%)	TOTAL CO (100%)	Target
01MA0231	DISCRETE MATHEMATICS AND GRAPH THEORY	CO1	58.5		97.2	95.79	60.49	5.85		11.70	14.58	14.37	30.25	70.89	YES
		CO2		81.22	97.2	95.79	57.44		8.12	16.24	14.58	14.37	28.72	73.91	YES
		CO3		68.97	97.2	95.79	38.20		6.90	13.79	14.58	14.37	19.10	61.84	YES
		CO4	67.19		97.2	95.79	80.16	6.72		13.44	14.58	14.37	40.08	82.47	YES
		CO5		57.65	97.2	95.79	65.91		5.77	11.53	14.58	14.37	32.96	73.43	YES
01CE0301	DATA STRUCTURE	CO1	50.19		91.24	90.7	49.50	5.02		10.04	13.69	13.61	24.75	62.08	YES
		CO2	43.97		91.24	90.7	52.53	4.40		8.79	13.69	13.61	26.27	62.35	YES
		CO3		63.13	91.24	90.7	52.56		6.31	12.63	13.69	13.61	26.28	66.20	YES
		CO4		48.31	91.24	90.7	48.28		4.83	9.66	13.69	13.61	24.14	61.09	YES
		CO5		34.51	91.24	90.7	20.68		3.45	6.90	13.69	13.61	10.34	44.53	NO
		CO6			91.24	90.7	76.77			0.00	13.69	13.61	38.39	65.68	YES
01CE1302	DATABASE MANAGEMENT SYSTEM (Canvas or Other LMS)	CO1			97.6	98.08	53.29				14.64	14.71	26.65	56.00	NO
		CO2	89.42				68.50			17.88			34.25	52.13	NO
		CO3			97.6	98.08	54.44				14.64	14.71	27.22	56.57	NO
		CO4	89.42		97.6	98.08	58.33			17.88	14.64	14.71	29.17	76.40	YES
		CO5			97.6	98.08	40.54				14.64	14.71	20.27	49.62	NO
		CO6			97.6	98.08	53.29				14.64	14.71	26.65	56.00	NO
01IT0301	DATA COMMUNICATION AND NETWORKING (Canvas or Other LMS)	CO1	55.29		73.56	88.7	29.81			11.06	11.03	13.31	14.91	50.30	NO
		CO2	55.29		69.5	90.86	32.69			11.06	10.43	13.63	16.35	51.46	NO
		CO3	55.77		69.5	90.86	22.12			11.15	10.43	13.63	11.06	46.27	NO
		CO4	56.01		69.5	90.86	25.96			11.20	10.43	13.63	12.98	48.24	NO
		CO5	68.23		69.5	90.86	36.54			13.65	10.43	13.63	18.27	55.97	NO
		CO6	53.85		69.5	90.86	32.21			10.77	10.43	13.63	16.11	50.93	NO
01CE1303	OBJECT	CO1	91.3		98.56	91.83	55.22			18.26	14.78	13.77	27.61	74.43	YES

	ORIENTED DESIGN AND PROGRAMMING (Canvas or Other LMS)	C02	91.3		98.56	91.83	45.65			18.26	14.78	13.77	22.83	69.64	YES
		C03	91.3		98.56	91.83	27.68			18.26	14.78	13.77	13.84	60.66	YES
		C04	88.94		98.56	91.83				17.79	14.78	13.77		46.35	NO
01CE0304	DESIGN THINKING AND PROBLEM SOLVING SKILLS	C01				91.59	0.00	0.00	0.00	0.00	0.00	13.74	0.00	91.59	YES
		C02				91.59	0.00	0.00	0.00	0.00	0.00	13.74	0.00	91.59	YES
		C03				91.59	0.00	0.00	0.00	0.00	0.00	13.74	0.00	91.59	YES
		C04				91.59	0.00	0.00	0.00	0.00	0.00	13.74	0.00	91.59	YES
		C05				91.59	0.00	0.00	0.00	0.00	0.00	13.74	0.00	91.59	YES
		C06				91.59	0.00	0.00	0.00	0.00	0.00	13.74	0.00	91.59	YES
01CR0302	PROFESSIONAL ETHICS	C01				97.2	0.00	0.00	0.00	0.00	0.00	14.58	0.00	97.20	YES
		C02				97.2	0.00	0.00	0.00	0.00	0.00	14.58	0.00	97.20	YES
		C03				97.2	0.00	0.00	0.00	0.00	0.00	14.58	0.00	97.20	YES
		C04				97.2	0.00	0.00	0.00	0.00	0.00	14.58	0.00	97.20	YES
01MA1281	STATISTICAL & NUMERICAL METHODS	C01		91.36	98.12	98.12	75.83		9.14	18.27	14.72	14.72	37.92	85.62	YES
		C02		88.58	98.12	98.12	75.83		8.86	17.72	14.72	14.72	37.92	85.07	YES
		C03		81.1	98.12	98.12	75.83		8.11	16.22	14.72	14.72	37.92	83.57	YES
		C04			98.12	98.12	75.83			0.00	14.72	14.72	37.92	67.35	YES
		C05	68.85		98.12	98.12	75.83	6.89		13.77	14.72	14.72	37.92	81.12	YES
		C06	49.23		98.12	98.12	75.83	4.92		9.85	14.72	14.72	37.92	77.20	YES
01CE0401	OPERATING SYSTEM	C01	64.78		97.65	98.12	75.36	6.48		12.96	14.65	14.72	37.68	80.00	YES
		C02	76.9		97.65	98.12	75.36	7.69		15.38	14.65	14.72	37.68	82.43	YES
		C03	57.29		97.65	98.12	75.36	5.73		11.46	14.65	14.72	37.68	78.50	YES
		C04		73.37	97.65	98.12	75.36		7.34	14.67	14.65	14.72	37.68	81.72	YES
01CE0402	COMPUTER ORGANIZATION AND ARCHITECTURE	C01	62.46		96.71	97.65	74.88	6.25		12.49	14.51	14.65	37.44	79.09	YES
		C02	37.57		96.71	97.65	74.88	3.76		7.51	14.51	14.65	37.44	74.11	YES
		C03		83.55	96.71	97.65	74.88		8.36	16.71	14.51	14.65	37.44	83.30	YES
		C04		74.53	96.71	97.65	74.88		7.45	14.91	14.51	14.65	37.44	81.50	YES
		C05		58.86	96.71	97.65	74.88		5.89	11.77	14.51	14.65	37.44	78.37	YES
		C06		69.6	96.71	97.65	74.88		6.96	13.92	14.51	14.65	37.44	80.51	YES

01IT0401	COMPUTER NETWORK (Canvas or Other LMS)	CO1	81.34		98.59	98.59	75.36	8.13		16.27	14.79	14.79	37.68	83.53	YES
		CO2	46.76		98.59	98.59	75.36	4.68		9.35	14.79	14.79	37.68	76.61	YES
		CO3	40.48		98.59	98.59	75.36	4.05		8.10	14.79	14.79	37.68	75.35	YES
		CO4	48.17		98.59	98.59	75.36	4.82		9.63	14.79	14.79	37.68	76.89	YES
		CO5		88.37	98.59	98.59	75.36		8.84	17.67	14.79	14.79	37.68	84.93	YES
		CO6		74.87	98.59	98.59	75.36		7.49	14.97	14.79	14.79	37.68	82.23	YES
01CE0403	OBJECT ORIENTED PROGRAMMING WITH JAVA	CO1	69.26		98.12	98.12	75.36	6.93		13.85	14.72	14.72	37.68	80.97	YES
		CO2	42.41		98.12	98.12	75.36	4.24		8.48	14.72	14.72	37.68	75.60	YES
		CO3		87.6	98.12	98.12	75.36		8.76	17.52	14.72	14.72	37.68	84.64	YES
		CO4		77.63	98.12	98.12	75.36		7.76	15.53	14.72	14.72	37.68	82.64	YES
		CO5		63.7	98.12	98.12	75.36		6.37	12.74	14.72	14.72	37.68	79.86	YES
01CE0405	HUMAN CENTRIC DESIGN APPROACH	CO1				98.12	0.00	0.00	0.00	0.00	0.00	14.72	0.00	98.12	YES
		CO2				98.12	0.00	0.00	0.00	0.00	0.00	14.72	0.00	98.12	YES
		CO3				98.12	0.00	0.00	0.00	0.00	0.00	14.72	0.00	98.12	YES
		CO4				98.12	0.00	0.00	0.00	0.00	0.00	14.72	0.00	98.12	YES
		CO5				98.12	0.00	0.00	0.00	0.00	0.00	14.72	0.00	98.12	YES

Table 2.2.b: Summary of CO attainments

Summary of CO attainments:	
Total No. of COs in the Program	69
No. of COs are attained	56
No. of COs are not attained	13
% of COs are attained	81.16
% of COs are not attained	18.84

Table 2.1.c: CO Attainments of *Third Year* courses through CIE and ESE

Subject code	Subject	CO	MID-1 (IA)	MID-2 (IA)	PR/INT (CSE)	PR/VA/TW	FINAL	WT ON MID-1 (10%)	WT ON MID-2 (10%)	MID-1, MID-2 (20%) (IA)	PR/INT (15%) (CSE)	PR/VIVA/TW (15%)	FINAL (50%)	TOTAL CO (100%)	Target
01CE0502	ADVANCED JAVA PROGRAMMING	C01	75.36	57.82	99.05	92.42	91.39	7.54	5.78	13.32	14.86	13.86	45.70	87.73	YES
		C02	75.36	57.82	99.05	92.42	91.39	7.54	5.78	13.32	14.86	13.86	45.70	87.73	YES
		C03	75.36	57.82	99.05	92.42	91.39	7.54	5.78	13.32	14.86	13.86	45.70	87.73	YES
		C04	75.36	57.82	99.05	92.42	91.39	7.54	5.78	13.32	14.86	13.86	45.70	87.73	YES
		C05	75.36	57.82	99.05	92.42	91.39	7.54	5.78	13.32	14.86	13.86	45.70	87.73	YES
01CE0503	DESIGN AND ANALYSIS OF ALGORITHM	C01	65.4	52.13	70.14	95.26	92.82	6.54	5.21	11.75	10.52	14.29	46.41	82.97	YES
		C02	65.4	52.13	70.14	95.26	92.82	6.54	5.21	11.75	10.52	14.29	46.41	82.97	YES
		C03	65.4	52.13	70.14	95.26	92.82	6.54	5.21	11.75	10.52	14.29	46.41	82.97	YES
		C04	65.4	52.13	70.14	95.26	92.82	6.54	5.21	11.75	10.52	14.29	46.41	82.97	YES
		C05	65.4	52.13	70.14	95.26	92.82	6.54	5.21	11.75	10.52	14.29	46.41	82.97	YES
		C06	65.4	52.13	70.14	95.26	92.82	6.54	5.21	11.75	10.52	14.29	46.41	82.97	YES
01CE0504	THEORY OF AUTOMATA AND FORMAL LANGUAGES	C01	27.49	15.17	88.63	0	74.16	2.75	1.52	4.27	13.29	0.00	37.08	64.28	YES
		C02	27.49	15.17	88.63	0	74.16	2.75	1.52	4.27	13.29	0.00	37.08	64.28	YES
		C03	27.49	15.17	88.63	0	74.16	2.75	1.52	4.27	13.29	0.00	37.08	64.28	YES
		C04	27.49	15.17	88.63	0	74.16	2.75	1.52	4.27	13.29	0.00	37.08	64.28	YES
		C05	27.49	15.17	88.63	0	74.16	2.75	1.52	4.27	13.29	0.00	37.08	64.28	YES
		C06	27.49	15.17	88.63	0	74.16	2.75	1.52	4.27	13.29	0.00	37.08	64.28	YES
01IT0503	ADVANCED COMPUTER NETWORK	C01	76.84	35.79	90.53	96.84	89.36	7.68	3.58	11.26	13.58	14.53	44.68	84.05	YES
		C02	76.84	35.79	90.53	96.84	89.36	7.68	3.58	11.26	13.58	14.53	44.68	84.05	YES
		C03	76.84	35.79	90.53	96.84	89.36	7.68	3.58	11.26	13.58	14.53	44.68	84.05	YES
		C04	76.84	35.79	90.53	96.84	89.36	7.68	3.58	11.26	13.58	14.53	44.68	84.05	YES
		C05	76.84	35.79	90.53	96.84	89.36	7.68	3.58	11.26	13.58	14.53	44.68	84.05	YES
01CE0507	IMAGE PROCESSING	C01	83.33	90	86.67	100	95.00	8.33	9.00	17.33	13.00	15.00	47.50	92.83	YES
		C02	83.33	90	86.67	100	95.00	8.33	9.00	17.33	13.00	15.00	47.50	92.83	YES
		C03	83.33	90	86.67	100	95.00	8.33	9.00	17.33	13.00	15.00	47.50	92.83	YES
		C04	83.33	90	86.67	100	95.00	8.33	9.00	17.33	13.00	15.00	47.50	92.83	YES

01CE0508	REVERSE ENGINEERING	C01				97.16	0.00	0.00	0.00	0.00	0.00	14.57	0.00	97.16	YES
		C02				97.16	0.00	0.00	0.00	0.00	0.00	14.57	0.00	97.16	YES
		C03				97.16	0.00	0.00	0.00	0.00	0.00	14.57	0.00	97.16	YES
		C04				97.16	0.00	0.00	0.00	0.00	0.00	14.57	0.00	97.16	YES
01IT0502	SEMINAR	C01				96.68	0.00	0.00	0.00	0.00	0.00	14.50	0.00	96.68	YES
		C02				96.68	0.00	0.00	0.00	0.00	0.00	14.50	0.00	96.68	YES
		C03				96.68	0.00	0.00	0.00	0.00	0.00	14.50	0.00	96.68	YES
		C04				96.68	0.00	0.00	0.00	0.00	0.00	14.50	0.00	96.68	YES
01CE0506	DISTRIBUTED OPERATING SYSTEM	C01	67.27	63.64	74.55	98.18	87.27	6.73	6.36	13.09	11.18	14.73	43.64	82.64	YES
		C02	67.27	63.64	74.55	98.18	87.27	6.73	6.36	13.09	11.18	14.73	43.64	82.64	YES
		C03	67.27	63.64	74.55	98.18	87.27	6.73	6.36	13.09	11.18	14.73	43.64	82.64	YES
		C04	67.27	63.64	74.55	98.18	87.27	6.73	6.36	13.09	11.18	14.73	43.64	82.64	YES
		C05	67.27	63.64	74.55	98.18	87.27	6.73	6.36	13.09	11.18	14.73	43.64	82.64	YES
01CE0501	MICROPROCESSOR OR FUNDAMENTALS & PROGRAMMING	C01	59.24	58.77	90.52	94.79	96.65	5.92	5.88	11.80	13.58	14.22	48.33	87.92	YES
		C02	59.24	58.77	90.52	94.79	96.65	5.92	5.88	11.80	13.58	14.22	48.33	87.92	YES
		C03	59.24	58.77	90.52	94.79	96.65	5.92	5.88	11.80	13.58	14.22	48.33	87.92	YES
		C04	59.24	58.77	90.52	94.79	96.65	5.92	5.88	11.80	13.58	14.22	48.33	87.92	YES
		C05	59.24	58.77	90.52	94.79	96.65	5.92	5.88	11.80	13.58	14.22	48.33	87.92	YES
01CR0601	BUSINESS BENCHMARK	C01				90.09	0.00	0.00	0.00	0.00	0.00	13.51	0.00	90.09	YES
		C02				90.09	0.00	0.00	0.00	0.00	0.00	13.51	0.00	90.09	YES
		C03				90.09	0.00	0.00	0.00	0.00	0.00	13.51	0.00	90.09	YES
		C04				90.09	0.00	0.00	0.00	0.00	0.00	13.51	0.00	90.09	YES
01IT0601	SOFTWARE ENGINEERING	C01	48.92	98.09	98.58	98.11	96.68	4.89	9.81	14.70	14.79	14.72	48.34	92.54	YES
		C02	50.19	98.09	98.58	98.11	96.68	5.02	9.81	14.83	14.79	14.72	48.34	92.67	YES
		C03	79.63	98.09	98.58	98.11	96.68	7.96	9.81	17.77	14.79	14.72	48.34	95.62	YES
		C04	100	98.09	98.58	98.11	96.68	10.00	9.81	19.81	14.79	14.72	48.34	97.65	YES
		C05	100	98.09	98.58	98.11	96.68	10.00	9.81	19.81	14.79	14.72	48.34	97.65	YES
		C06	100	98.09	98.58	98.11	96.68	10.00	9.81	19.81	14.79	14.72	48.34	97.65	YES
01CE0601	COMPILER DESIGN	C01	63.73	43.06	98.58	99.06	96.68	6.37	4.31	10.68	14.79	14.86	48.34	88.67	YES
		C02	76.87	43.06	98.58	99.06	96.68	7.69	4.31	11.99	14.79	14.86	48.34	89.98	YES

		C03	87.44	43.06	98.58	99.06	96.68	8.74	4.31	13.05	14.79	14.86	48.34	91.04	YES
		C04	77.78	43.06	98.58	99.06	96.68	7.78	4.31	12.08	14.79	14.86	48.34	90.07	YES
		C05	77.78	43.06	98.58	99.06	96.68	7.78	4.31	12.08	14.79	14.86	48.34	90.07	YES
		C06	77.78	43.06	98.58	99.06	96.68	7.78	4.31	12.08	14.79	14.86	48.34	90.07	YES
01IT0602	WEB TECHNOLOGY	C01	57.38	91.47	91.04	98.11	96.68	5.74	9.15	14.89	13.66	14.72	48.34	91.60	YES
		C02	95.24	91.47	91.04	98.11	96.68	9.52	9.15	18.67	13.66	14.72	48.34	95.38	YES
		C03	57.34	91.47	91.04	98.11	96.68	5.73	9.15	14.88	13.66	14.72	48.34	91.59	YES
		C04	95.24	91.47	91.04	98.11	96.68	9.52	9.15	18.67	13.66	14.72	48.34	95.38	YES
		C05	95.24	91.47	91.04	98.11	96.68	9.52	9.15	18.67	13.66	14.72	48.34	95.38	YES
01CE0604	CYBER SECURITY [DEPARTMENT ELECTIVE - 2]	C01	95.24	93.81	94.34	98.11	95.73	9.52	9.38	18.91	14.15	14.72	47.87	95.64	YES
		C02	95.24	93.81	94.34	98.11	95.73	9.52	9.38	18.91	14.15	14.72	47.87	95.64	YES
		C03	95.24	93.81	94.34	98.11	95.73	9.52	9.38	18.91	14.15	14.72	47.87	95.64	YES
		C04	95.24	93.81	94.34	98.11	95.73	9.52	9.38	18.91	14.15	14.72	47.87	95.64	YES
		C05	95.24	93.81	94.34	98.11	95.73	9.52	9.38	18.91	14.15	14.72	47.87	95.64	YES
01CE0606	DESIGN ENGINEERING AND PROJECT MANAGEMENT	C01				99.06	0.00	0.00	0.00	0.00	0.00	14.86	0.00	99.06	YES
		C02				99.06	0.00	0.00	0.00	0.00	0.00	14.86	0.00	99.06	YES
		C03				99.06	0.00	0.00	0.00	0.00	0.00	14.86	0.00	99.06	YES
		C04				99.06	0.00	0.00	0.00	0.00	0.00	14.86	0.00	99.06	YES
		C05				99.06	0.00	0.00	0.00	0.00	0.00	14.86	0.00	99.06	YES
01CE0602	.NET TECHNOLOGIES	C01	62.67	67.31	99.06	99.53	96.68	6.27	6.73	13.00	14.86	14.93	48.34	91.13	YES
		C02	46.44	67.31	99.06	99.53	96.68	4.64	6.73	11.38	14.86	14.93	48.34	89.50	YES
		C03	85.71	67.31	99.06	99.53	96.68	8.57	6.73	15.30	14.86	14.93	48.34	93.43	YES
		C04	85.71	67.31	99.06	99.53	96.68	8.57	6.73	15.30	14.86	14.93	48.34	93.43	YES
		C05	85.71	67.31	99.06	99.53	96.68	8.57	6.73	15.30	14.86	14.93	48.34	93.43	YES

Table 2.2.c: Summary of CO attainments

Summary of CO attainments:	
Total No. of COs in the Program	80
No. of COs are attained	80
No. of COs are not attained	00

% of COs are attained	100.00
% of COs are not attained	0.00

Table 2.1.d: CO Attainments of *Fourth Year* courses through CIE and ESE

Subject code	Subject	CO	MID-1 (IA)	MID-2 (IA)	PR/INT (CSE)	PR/VA/TW	FINAL	WT ON MID-1 (10%)	WT ON MID-2 (10%)	MID-1, MID-2 (20%) (IA)	PR/INT (15%) (CSE)	PR/VIVA/TW (15%)	FINAL (50%)	TOTAL CO (100%)	Target
01IT0701	ADVANCED WEB TECHNOLOGIES	C01	38.04		99.53	93.84	42.13	3.80		7.61	14.93	14.08	21.07	57.68	YES
		C02	25.5		99.53	93.84	41.69	2.55		5.10	14.93	14.08	20.85	54.95	NO
		C03		51.64	99.53	93.84	37.08		5.16	10.33	14.93	14.08	18.54	57.87	YES
		C04		19.94	99.53	93.84	45.71		1.99	3.99	14.93	14.08	22.86	55.85	NO
01CE0701	MOBILE COMPUTING	C01	39.11	48.01	99.53	98.58	43.96	3.91	4.80	8.71	14.93	14.79	21.98	60.41	YES
		C02	42.46	39.15	99.53	98.58	46.86	4.25	3.92	8.16	14.93	14.79	23.43	61.31	YES
		C03		33.91	99.53	98.58	48.98		3.39	6.78	14.93	14.79	24.49	60.99	YES
		C04			99.53	98.58	22.36			0.00	14.93	14.79	11.18	40.90	NO
		C05		45.51	99.53	98.58	51.82		4.55	9.10	14.93	14.79	25.91	64.73	YES
01CE0702	ARTIFICIAL INTELLIGENCE	C01	47.8	69.68	99.53	99.05	66.12	4.78	6.97	11.75	14.93	14.86	33.06	74.60	YES
		C02	55.49		99.53	99.05	74.00	5.55		11.10	14.93	14.86	37.00	77.89	YES
		C03	53.86	35.47	99.53	99.05	53.87	5.39	3.55	8.93	14.93	14.86	26.94	65.66	YES
		C04	58.75	60.42	99.53	99.05	39.61	5.88	6.04	11.92	14.93	14.86	19.81	61.51	YES
		C05		28.95	99.53	99.05	44.84		2.90	5.79	14.93	14.86	22.42	58.00	YES
01CE0704	ANDROID PROGRAMMING	C01	49.43	37.63	97.14	97.14	47.21	4.94	3.76	8.71	14.57	14.57	23.61	61.45	NO
		C02	73.91	38.71	97.14	97.14	26.34	7.39	3.87	11.26	14.57	14.57	13.17	53.57	NO
		C03	61.96		97.14	97.14	0.00	6.20		12.39	14.57	14.57	0.00	41.53	NO
		C04	22.53	26	97.14	97.14	36.76	2.25	2.60	4.85	14.57	14.57	18.38	52.38	NO
01CE0707	DATA MINING AND INFORMATION RETRIEVAL	C01			99.53	98.58	18.31			0.00	14.93	14.79	9.16	38.87	NO
		C02		36.64	99.53	98.58	90.59		3.66	7.33	14.93	14.79	45.30	82.34	YES
		C03	46.15	50.83	99.53	98.58	42.09	4.62	5.08	9.70	14.93	14.79	21.05	60.46	NO
		C04	39.94		99.53	98.58	58.42	3.99		7.99	14.93	14.79	29.21	66.91	YES
01IT0703	MAJOR PROJECT - 1	C01				93.36	0.00	0.00	0.00	0.00	0.00	14.00	0.00	93.36	YES
		C02				93.36	0.00	0.00	0.00	0.00	0.00	14.00	0.00	93.36	YES
		C03				93.36	0.00	0.00	0.00	0.00	0.00	14.00	0.00	93.36	YES
		C04				93.36	0.00	0.00	0.00	0.00	0.00	14.00	0.00	93.36	YES

		C05				93.36	0.00	0.00	0.00	0.00	0.00	14.00	0.00	93.36	YES
		C06				93.36	0.00	0.00	0.00	0.00	0.00	14.00	0.00	93.36	YES
01CE0705	PROGRAMMING WITH PYTHON	C01	43.67		93.18	98.3	64.55	4.37		8.73	13.98	14.75	32.28	69.73	YES
		C02	50.21		93.18	98.3	52.96	5.02		10.04	13.98	14.75	26.48	65.24	YES
		C03		48.14	93.18	98.3	48.49		4.81	9.63	13.98	14.75	24.25	62.60	YES
		C04		62.71	93.18	98.3	55.60		6.27	12.54	13.98	14.75	27.80	69.06	YES
01CE0803	CLOUD COMPUTING	C01	26.87		98.58	99.53	20.86	2.69		5.37	14.79	14.93	10.43	45.52	NO
		C02		23.04	98.58	99.53	22.98		2.30	4.61	14.79	14.93	11.49	45.81	NO
		C03			98.58	99.53	0.00			0.00	14.79	14.93	0.00	29.72	NO
		C04			98.58	99.53	0.00			0.00	14.79	14.93	0.00	29.72	NO
		C05	31.22	22.27	98.58	99.53	28.71	3.12	2.23	5.35	14.79	14.93	14.36	49.42	NO
		C06	39.93		98.58	99.53	31.42	3.99		7.99	14.79	14.93	15.71	53.41	NO
01CE0804	MACHINE LEARNING	C01	42.91		19.38	100	49.61	4.29		8.58	2.91	15.00	24.81	51.29	NO
		C02			19.38	100	0.00			0.00	2.91	15.00	0.00	17.91	NO
		C03	13.03	42.05	19.38	100	44.55	1.30	4.21	5.51	2.91	15.00	22.28	45.69	NO
		C04	19.98	19.46	19.38	100	39.54	2.00	1.95	3.94	2.91	15.00	19.77	41.62	NO
		C05		24.7	19.38	100	48.06		2.47	4.94	2.91	15.00	24.03	46.88	NO
01CE0806	INTERNET OF THINGS	C01	40.6	17.07	82.93	89.02	34.40	4.06	1.71	5.77	12.44	13.35	17.20	48.76	NO
		C02	44.68		82.93	89.02	37.50	4.47		8.94	12.44	13.35	18.75	53.48	NO
		C03	17.76		82.93	89.02	19.13	1.78		3.55	12.44	13.35	9.57	38.91	NO
		C04		15	82.93	89.02	21.66		1.50	3.00	12.44	13.35	10.83	39.62	NO
		C05		7.14	82.93	89.02	20.25		0.71	1.43	12.44	13.35	10.13	37.35	NO
		C06			82.93	89.02	25.95			0.00	12.44	13.35	12.98	38.77	NO
01IT0801	MAJOR PROJECT - II	C01				96.21	0.00	0.00	0.00	0.00	0.00	14.43	0.00	96.21	YES
		C02				96.21	0.00	0.00	0.00	0.00	0.00	14.43	0.00	96.21	YES
		C03				96.21	0.00	0.00	0.00	0.00	0.00	14.43	0.00	96.21	YES
		C04				96.21	0.00	0.00	0.00	0.00	0.00	14.43	0.00	96.21	YES
		C05				96.21	0.00	0.00	0.00	0.00	0.00	14.43	0.00	96.21	YES

Table 2.2.d: Summary of CO attainments

Summary of CO attainments:	
Total No. of COs in the Program	54
No. of COs are attained	28
No. of COs are not attained	26
% of COs are attained	51.85
% of COs are not attained	48.15

Overall Course Outcomes Attainment through direct & indirect Assessment

S. No.	Course Name & Code	CO#	Total CO AT through DA in %	Total CO AT through IDA in %	70% OF Total CO AT through DA	30% OF Total CO AT through IDA	Total CO AT through DA & IDA in %	Target AT in %	CO Attained (YES/NO)
ATTAINMENT CALCULATIONS OF COs OF SECOND YEAR COURSES THROUGH DA & IDA FOR 2018-2022 BATCH									
I SEMESTER									
1	DIFFERENTIAL AND INTEGRAL CALCULUS (01MA1101)	CO1	71.21	63.97	49.85	19.19	69.04	50	YES
2		CO2	87.93	75.40	61.55	22.62	84.17	50	YES
3		CO3	74.14	67.67	51.9	20.3	72.2	50	YES
4		CO4	71.41	64.40	49.99	19.32	69.3	50	YES
5		CO5	70.47	62.23	49.33	18.67	68	50	YES
6		CO6	63.79	57.97	44.65	17.39	62.04	50	YES
7	ELEMENTS OF ELECTRICAL ENGINEERING (01EE0101)	CO1	76.11	74.83	53.28	22.45	75.72	50	YES
8		CO2	78.50	70.00	54.95	21	75.95	50	YES
9		CO3	67.41	57.47	47.19	17.24	64.43	50	YES
10		CO4	71.73	66.20	50.21	19.86	70.07	50	YES
11		CO5	69.97	60.70	48.98	18.21	67.19	50	YES
12		CO6	68.01	56.77	47.61	17.03	64.64	50	YES
13	BASICS OF ELECTRONICS ENGINEERING (01EC0101)	CO1	64.29	51.17	45	15.35	60.34	50	YES
14		CO2	66.14	54.37	46.3	16.31	62.61	50	YES
15		CO3	24.69	34.37	17.28	10.31	27.59	50	NO
16		CO4	67.59	58.97	47.31	17.69	65	50	YES
17		CO5	14.57	34.60	10.2	10.38	20.58	50	NO
18	READING & WRITING FOR TECHNOLOGY (01SL0102)	CO1	58.19	59.23	40.73	17.77	58.5	50	YES
19		CO2	58.19	58.97	40.73	17.69	58.42	50	YES
20		CO3	58.19	58.97	40.73	17.69	58.42	50	YES
21		CO4	58.19	58.70	40.73	17.61	58.34	50	YES
22	VALUE EDUCATION (01CR0103)	CO1	95.24	82.77	66.67	24.83	91.5	50	YES
23		CO2	95.24	81.83	66.67	24.55	91.22	50	YES
24		CO3	95.24	83.47	66.67	25.04	91.71	50	YES
25		CO4	95.24	82.50	66.67	24.75	91.42	50	YES
26		CO5	95.24	82.67	66.67	24.8	91.47	50	YES
27	COMPUTER WORKSHOP (01CE0102)	CO1	99.46	86.23	69.62	25.87	95.49	50	YES
28		CO2	99.46	84.73	69.62	25.42	95.04	50	YES
29		CO3	99.46	82.90	69.62	24.87	94.48	50	YES
30		CO4	99.46	83.23	69.62	24.97	94.59	50	YES
31		CO5	99.46	83.57	69.62	25.07	94.69	50	YES
32		CO6	99.46	83.70	69.62	25.11	94.73	50	YES
33	ELEMENTS OF MECHANICAL ENGINEERING (01ME0101)	CO1	80.10	69.07	56.07	20.72	76.8	50	YES
34		CO2	87.04	74.07	60.93	22.22	83.16	50	YES
35		CO3	87.60	76.43	61.32	22.93	84.24	50	YES
36		CO4	82.01	71.73	57.41	21.52	78.93	50	YES
37		CO5	68.56	56.03	47.99	16.81	64.8	50	YES

S. No.	Course Name & Code	CO#	Total CO AT through DA in %	Total CO AT through IDA in %	70% OF Total CO AT through DA	30% OF Total CO AT through IDA	Total CO AT through DA & IDA in %	Target AT in %	CO Attained (YES/NO)
--------	--------------------	-----	-----------------------------	------------------------------	-------------------------------	--------------------------------	-----------------------------------	----------------	----------------------

II SEMESTER									
1	COMPUTER PROGRAMMING (01CE0101)	CO1	95.01	84.20	66.51	25.26	91.77	50	YES
2		CO2	94.63	83.27	66.24	24.98	91.22	50	YES
3		CO3	95.40	82.67	66.78	24.80	91.58	50	YES
4		CO4	94.06	82.10	65.84	24.63	90.47	50	YES
5		CO5	94.97	80.70	66.48	24.21	90.69	50	YES
6		CO6	92.79	77.33	64.95	23.20	88.15	50	YES
7	MATRIX ALGEBRA AND VECTOR CALCULUS (01MA1151)	CO1	73.70	64.87	51.59	19.46	71.05	50	YES
8		CO2	80.70	67.83	56.49	20.35	76.85	50	YES
9		CO3	80.47	65.37	56.33	19.61	75.94	50	YES
10		CO4	66.23	58.57	46.36	17.57	63.92	50	YES
11		CO5	65.44	53.80	45.81	16.14	61.95	50	YES
12		CO6	80.61	67.00	56.43	20.10	76.54	50	YES
13	BASICS OF ENVIRONMENTAL STUDIES (01EN0101)	CO1	91.26	81.87	63.88	24.56	88.43	50	YES
14		CO2	86.03	77.33	60.22	23.20	83.42	50	YES
15		CO3	86.86	75.93	60.80	22.78	83.58	50	YES
16		CO4	82.10	77.10	57.47	23.13	80.59	50	YES
17		CO5	88.96	76.63	62.27	22.99	85.26	50	YES
18	PHYSICS (01GS0101)	CO1	81.97	76.87	57.38	23.06	80.43	50	YES
19		CO2	87.51	81.40	61.26	24.42	85.68	50	YES
20		CO3	85.00	76.97	59.50	23.09	82.59	50	YES
21		CO4	76.49	70.47	53.54	21.14	74.68	50	YES
22		CO5	72.27	62.67	50.59	18.80	69.40	50	YES
23		CO6	42.36	38.83	29.65	11.65	41.30	50	NO
24	ENGINEERING DRAWING (01ME0103)	CO1	85.67	49.77	59.97	14.93	74.90	50	YES
25		CO2	89.47	51.97	62.63	15.59	78.23	50	YES
26		CO3	85.63	51.07	59.94	15.32	75.25	50	YES
27		CO4	86.19	51.97	60.33	15.59	75.93	50	YES
28		CO5	89.86	50.70	62.90	15.21	78.11	50	YES
29		CO6	95.17	50.70	66.62	15.21	81.83	50	YES
30	DIGITAL ELECTRONICS (01EC0102)	CO1	83.60	76.87	58.52	23.06	81.58	50	YES
31		CO2	73.07	68.73	51.15	20.62	71.77	50	YES
32		CO3	59.11	51.97	41.38	15.59	56.97	50	YES
33		CO4	69.41	62.90	48.59	18.87	67.46	50	YES
34		CO5	49.37	53.60	34.56	16.08	50.64	50	YES
III SEMESTER									
1	DISCRETE MATHEMATICS AND GRAPH THEORY (01MA0231)	CO1	70.90	72.03	49.63	21.61	71.24	52	YES
2		CO2	73.91	76.30	51.74	22.89	74.63	52	YES
3		CO3	61.84	62.63	43.29	18.79	62.08	52	YES
4		CO4	82.47	79.13	57.73	23.74	81.47	52	YES
5		CO5	73.43	73.10	51.40	21.93	73.34	52	YES
6	DATA STRUCTURE	CO1	62.09	64.67	43.46	19.40	62.85	57	YES

S. No.	Course Name & Code	CO#	Total CO AT through DA in %	Total CO AT through IDA in %	70% OF Total CO AT through DA	30% OF Total CO AT through IDA	Total CO AT through DA & IDA in %	Target AT in %	CO Attained (YES/NO)
7	(01CE0301)	CO2	62.36	63.00	43.65	18.90	62.55	57	YES
8		CO3	66.20	66.13	46.34	19.84	66.17	57	YES
9		CO4	61.10	58.83	42.77	17.65	60.41	57	YES
10		CO5	44.53	44.77	31.17	13.43	44.60	57	NO
11		CO6	65.67	66.20	45.97	19.86	65.84	57	YES
12	DATABASE MANAGEMENT SYSTEM (01CE1302)	CO1	56.00	56.30	39.20	16.89	56.09	57	NO
13		CO2	52.13	52.43	36.49	15.73	52.22	57	NO
14		CO3	56.57	57.57	39.60	17.27	56.87	57	NO
15		CO4	76.40	77.00	53.48	23.10	76.58	57	YES
16		CO5	49.63	50.40	34.74	15.12	49.85	57	NO
17	CO6	56.00	66.90	39.2	20.07	59.27	57	NO	
18	DATA COMMUNICATION AND NETWORKING (01IT0301)	CO1	50.30	47.67	35.21	14.30	49.51	57	NO
19		CO2	51.46	48.37	36.02	14.51	50.52	57	NO
20		CO3	46.27	43.20	32.39	12.96	45.35	57	NO
21		CO4	48.24	45.43	33.77	13.63	47.40	57	NO
22		CO5	55.97	50.10	39.18	15.03	54.21	57	NO
23	CO6	50.93	48.07	35.65	14.42	50.07	57	NO	
24	DESIGN THINKING AND PROBLEM SOLVING SKILLS (01CE0304)	CO1	91.59	80.57	64.11	24.17	88.29	52	YES
25		CO2	91.59	81.47	64.11	24.44	88.55	52	YES
26		CO3	91.59	81.57	64.11	24.47	88.58	52	YES
27		CO4	91.59	79.70	64.11	23.91	88.03	52	YES
28		CO5	91.59	80.87	64.11	24.26	88.37	52	YES
29	CO6	91.59	81.27	64.11	24.38	88.49	52	YES	
30	OBJECT ORIENTED DESIGN AND PROGRAMMING (01CE1303)	CO1	74.43	61.17	52.10	18.35	70.45	57	YES
31		CO2	69.64	59.60	48.75	17.88	66.63	57	YES
32		CO3	60.66	53.97	42.46	16.19	58.65	57	YES
33		CO4	46.34	52.53	32.44	15.76	48.20	57	NO
34	PROFESSIONAL ETHICS (01CR0302)	CO1	97.20	83.80	68.04	25.14	93.18	52	YES
35		CO2	97.20	82.03	68.04	24.61	92.65	52	YES
36		CO3	97.20	82.03	68.04	24.61	92.65	52	YES
37		CO4	97.20	82.23	68.04	24.67	92.71	52	YES
IV SEMESTER									
1	STATISTICAL & NUMERICAL METHODS (01MA1281)	CO1	85.63	78.10	59.94	23.43	83.37	52	YES
2		CO2	85.07	82.27	59.55	24.68	84.23	52	YES
3		CO3	83.57	81.13	58.50	24.34	82.84	52	YES
4		CO4	67.36	69.87	47.15	20.96	68.10	52	YES
5		CO5	81.11	78.10	56.78	23.43	80.21	52	YES
6		CO6	77.20	79.53	54.04	23.86	77.90	52	YES
7	OPERATING SYSTEM (01CE0401)	CO1	80.00	79.73	56.00	23.92	79.92	57	YES
8		CO2	82.43	79.63	57.70	23.89	81.58	57	YES
9		CO3	78.50	78.00	54.95	23.40	78.36	57	YES
10		CO4	81.71	80.37	57.20	24.11	81.32	57	YES
11	COMPUTER	CO1	79.09	78.57	55.36	23.57	78.93	57	YES

S. No.	Course Name & Code	CO#	Total CO AT through DA in %	Total CO AT through IDA in %	70% OF Total CO AT through DA	30% OF Total CO AT through IDA	Total CO AT through DA & IDA in %	Target AT in %	CO Attained (YES/NO)
12	ORGANIZATION AND ARCHITECTURE (01CE0402)	CO2	74.11	76.20	51.88	22.86	74.74	57	YES
13		CO3	83.30	80.47	58.31	24.14	82.45	57	YES
14		CO4	81.50	77.43	57.05	23.23	80.28	57	YES
15		CO5	78.37	77.90	54.86	23.37	78.23	57	YES
16		CO6	80.51	76.97	56.36	23.09	79.45	57	YES
17	COMPUTER NETWORK (01IT0401)	CO1	83.53	77.53	58.47	23.26	81.73	57	YES
18		CO2	76.61	76.50	53.63	22.95	76.57	57	YES
19		CO3	75.36	75.73	52.75	22.72	75.47	57	YES
20		CO4	76.89	76.03	53.82	22.81	76.63	57	YES
21		CO5	84.93	81.13	59.45	24.34	83.79	57	YES
22	CO6	82.23	81.23	57.56	24.37	81.93	57	YES	
23	HUMAN CENTRIC DESIGN APPROACH (01CE0405)	CO1	98.11	86.53	68.68	25.96	94.65	52	YES
24		CO2	98.11	84.47	68.68	25.34	94.02	52	YES
25		CO3	98.11	82.83	68.68	24.85	93.54	52	YES
26		CO4	98.11	85.40	68.68	25.62	94.30	52	YES
27	CO5	98.11	82.93	68.68	24.88	93.57	52	YES	
28	OBJECT ORIENTED PROGRAMMING WITH JAVA (01CE0403)	CO1	80.97	79.73	56.68	23.92	80.59	57	YES
29		CO2	75.60	74.50	52.92	22.35	75.27	57	YES
30		CO3	84.64	80.00	59.25	24.00	83.25	57	YES
31		CO4	82.64	77.83	57.85	23.35	81.20	57	YES
32		CO5	79.86	77.90	55.90	23.37	79.27	57	YES
V SEMESTER									
1	ADVANCED JAVA PROGRAMMING (01CE0502)	CO1	87.73	83.07	61.41	24.92	86.33	57	YES
2		CO2	87.73	81.47	61.41	24.44	85.85	57	YES
3		CO3	87.73	80.33	61.41	24.10	85.52	57	YES
4		CO4	87.73	80.10	61.41	24.03	85.45	57	YES
5		CO5	87.73	80.67	61.41	24.20	85.62	57	YES
6	DESIGN AND ANALYSIS OF ALGORITHM (01CE0503)	CO1	82.97	80.33	58.08	24.10	82.18	57	YES
7		CO2	82.97	80.23	58.08	24.07	82.15	57	YES
8		CO3	82.97	78.87	58.08	23.66	81.74	57	YES
9		CO4	82.97	79.33	58.08	23.80	81.88	57	YES
10		CO5	82.97	79.33	58.08	23.80	81.88	57	YES
11	CO6	82.97	79.33	58.08	23.80	81.88	57	YES	
12	THEORY OF AUTOMATA AND FORMAL LANGUAGES (01CE0504)	CO1	64.29	73.80	45.00	22.14	67.14	57	YES
13		CO2	64.29	73.47	45.00	22.04	67.03	57	YES
14		CO3	64.29	73.33	45.00	22.00	67.00	57	YES
15		CO4	64.29	72.53	45.00	21.76	66.76	57	YES
16		CO5	64.29	73.10	45.00	21.93	66.93	57	YES
17	CO6	64.29	73.00	45.00	21.90	66.90	57	YES	
18	ADVANCED COMPUTER NETWORK (01IT0503)	CO1	84.04	76.60	58.83	22.98	81.81	62	YES
19		CO2	84.04	78.30	58.83	23.49	82.32	62	YES
20		CO3	84.04	76.83	58.83	23.05	81.88	62	YES
21		CO4	84.04	76.33	58.83	22.90	81.74	62	YES

S. No.	Course Name & Code	CO#	Total CO AT through DA in %	Total CO AT through IDA in %	70% OF Total CO AT through DA	30% OF Total CO AT through IDA	Total CO AT through DA & IDA in %	Target AT in %	CO Attained (YES/NO)
22		CO5	84.04	75.87	58.83	22.76	81.59	62	YES
23	IMAGE PROCESSING (01CE0507)	CO1	92.83	75.00	64.98	22.50	87.48	62	YES
24		CO2	92.83	74.57	64.98	22.37	87.36	62	YES
25		CO3	92.83	75.00	64.98	22.50	87.48	62	YES
26		CO4	92.83	75.00	64.98	22.50	87.48	62	YES
27	REVERSE ENGINEERING (01CE0508)	CO1	97.16	80.57	68.01	24.17	92.18	52	YES
28		CO2	97.16	79.43	68.01	23.83	91.84	52	YES
29		CO3	97.16	80.90	68.01	24.27	92.28	52	YES
30		CO4	97.16	81.57	68.01	24.47	92.49	52	YES
31	SEMINAR (01IT0502)	CO1	96.69	80.80	67.68	24.24	91.91	52	YES
32		CO2	96.69	80.57	67.68	24.17	91.84	52	YES
33		CO3	96.69	80.67	67.68	24.20	91.88	52	YES
34		CO4	96.69	80.57	67.68	24.17	91.84	52	YES
35	DISTRIBUTED OPERATING SYSTEM (01CE0506)	CO1	82.63	84.67	57.84	25.40	83.25	62	YES
36		CO2	82.63	82.97	57.84	24.89	82.74	62	YES
37		CO3	82.63	82.57	57.84	24.77	82.61	62	YES
38		CO4	82.63	82.13	57.84	24.64	82.48	62	YES
39		CO5	82.63	80.00	57.84	24.00	81.84	62	YES
40	MICROPROCESSOR FUNDAMENTALS & PROGRAMMING (01CE0501)	CO1	87.93	82.50	61.55	24.75	86.29	57	YES
41		CO2	87.93	80.80	61.55	24.24	85.78	57	YES
42		CO3	87.93	80.23	61.55	24.07	85.61	57	YES
43		CO4	87.93	79.33	61.55	23.80	85.34	57	YES
44		CO5	87.93	78.63	61.55	23.59	85.14	57	YES
VI SEMESTER									
1	SOFTWARE ENGINEERING (01IT0601)	CO1	92.54	81.43	64.78	24.43	89.21	57	YES
2		CO2	92.67	81.93	64.87	24.58	89.45	57	YES
3		CO3	95.61	81.63	66.93	24.49	91.42	57	YES
4		CO4	97.66	81.53	68.36	24.46	92.81	57	YES
5		CO5	97.66	80.70	68.36	24.21	92.57	57	YES
6		CO6	97.66	81.23	68.36	24.37	92.72	57	YES
7	COMPILER DESIGN (01CE0601)	CO1	88.67	79.80	62.07	23.94	86.01	57	YES
8		CO2	89.99	79.10	62.99	23.73	86.71	57	YES
9		CO3	91.04	80.20	63.73	24.06	87.79	57	YES
10		CO4	90.07	79.30	63.05	23.79	86.84	57	YES
11		CO5	90.07	78.77	63.05	23.63	86.68	57	YES
12		CO6	90.07	78.47	63.05	23.54	86.59	57	YES
13	.NET TECHNOLOGIES (01CE0602)	CO1	91.13	81.53	63.79	24.46	88.24	57	YES
14		CO2	89.50	81.63	62.65	24.49	87.14	57	YES
15		CO3	93.43	81.63	65.40	24.49	89.89	57	YES
16		CO4	93.43	81.73	65.40	24.52	89.92	57	YES
17		CO5	93.43	82.13	65.40	24.64	90.04	57	YES
18	BUSINESS BENCHMARK	CO1	90.09	84.87	63.06	25.46	88.52	52	YES
19		CO2	90.09	85.27	63.06	25.58	88.65	52	YES

S. No.	Course Name & Code	CO#	Total CO AT through DA in %	Total CO AT through IDA in %	70% OF Total CO AT through DA	30% OF Total CO AT through IDA	Total CO AT through DA & IDA in %	Target AT in %	CO Attained (YES/NO)
20	(01CR0601)	CO3	90.09	83.97	63.06	25.19	88.25	52	YES
21		CO4	90.09	84.77	63.06	25.43	88.49	52	YES
22	WEB TECHNOLOGY (01IT0602)	CO1	91.60	79.90	64.12	23.97	88.09	57	YES
23		CO2	95.39	78.27	66.77	23.48	90.25	57	YES
24		CO3	91.60	78.97	64.12	23.69	87.81	57	YES
25		CO4	95.39	78.07	66.77	23.42	90.19	57	YES
26		CO5	95.39	77.87	66.77	23.36	90.13	57	YES
27	CYBER SECURITY [DEPARTMENT ELECTIVE - 2] (01CE0604)	CO1	95.64	82.33	66.95	24.70	91.65	62	YES
28		CO2	95.64	83.57	66.95	25.07	92.01	62	YES
29		CO3	95.64	83.47	66.95	25.04	91.98	62	YES
30		CO4	95.64	83.17	66.95	24.95	91.89	62	YES
31		CO5	95.64	82.43	66.95	24.73	91.68	62	YES
32	DESIGN ENGINEERING AND PROJECT MANAGEMENT (01CE0606)	CO1	99.06	80.60	69.34	24.18	93.53	52	YES
33		CO2	99.06	80.80	69.34	24.24	93.59	52	YES
34		CO3	99.06	81.13	69.34	24.34	93.68	52	YES
35		CO4	99.06	81.03	69.34	24.31	93.65	52	YES
36		CO5	99.06	81.23	69.34	24.37	93.71	52	YES
VII SEMESTER									
1	ADVANCED WEB TECHNOLOGIES (01IT0701)	CO1	57.67	81.17	40.37	24.35	64.73	57	YES
2		CO2	54.96	80.40	38.47	24.12	62.58	57	YES
3		CO3	57.87	79.60	40.51	23.88	64.39	57	YES
4		CO4	55.84	79.13	39.09	23.74	62.83	57	YES
5	MOBILE COMPUTING (01CE0701)	CO1	60.41	78.93	42.29	23.68	65.96	57	YES
6		CO2	61.31	78.73	42.92	23.62	66.53	57	YES
7		CO3	60.99	78.03	42.69	23.41	66.10	57	YES
8		CO4	40.90	78.33	28.63	23.50	52.13	57	NO
9		CO5	64.73	78.33	45.31	23.50	68.81	57	YES
10	ARTIFICIAL INTELLIGENCE (01CE0702)	CO1	74.60	77.27	52.22	23.18	75.39	57	YES
11		CO2	77.89	77.67	54.52	23.30	77.81	57	YES
12		CO3	65.66	77.77	45.96	23.33	69.28	57	YES
13		CO4	61.51	78.03	43.06	23.41	66.47	57	YES
14		CO5	58.00	77.17	40.60	23.15	63.75	57	YES
15	ANDROID PROGRAMMING (01CE0704)	CO1	61.46	76.37	43.02	22.91	65.93	62	YES
16		CO2	53.57	78.17	37.50	23.45	60.96	62	NO
17		CO3	41.53	76.37	29.07	22.91	51.98	62	NO
18		CO4	52.37	77.57	36.66	23.27	59.94	62	NO
19	DATA MINING AND INFORMATION RETRIEVAL (01CE0707)	CO1	38.87	79.60	27.21	23.88	51.09	62	NO
20		CO2	82.34	79.30	57.64	23.79	81.43	62	YES
21		CO3	60.46	79.60	42.32	23.88	66.20	62	YES
22		CO4	66.91	80.50	46.84	24.15	70.99	62	YES
23	PROGRAMMING WITH PYTHON (01CE0705)	CO1	69.73	80.80	48.81	24.24	73.05	62	YES
24		CO2	65.24	81.63	45.67	24.49	70.16	62	YES
25		CO3	62.60	81.07	43.82	24.32	68.13	62	YES

S. No.	Course Name & Code	CO#	Total CO AT through DA in %	Total CO AT through IDA in %	70% OF Total CO AT through DA	30% OF Total CO AT through IDA	Total CO AT through DA & IDA in %	Target AT in %	CO Attained (YES/NO)
26		CO4	69.06	80.80	48.34	24.24	72.59	62	YES
27	MAJOR PROJECT - 1 (01IT0703)	CO1	93.36	81.07	65.35	24.32	89.68	57	YES
28		CO2	93.36	80.97	65.35	24.29	89.65	57	YES
29		CO3	93.36	81.07	65.35	24.32	89.68	57	YES
30		CO4	93.36	81.77	65.35	24.53	89.88	57	YES
31		CO5	93.36	80.87	65.35	24.26	89.62	57	YES
32		CO6	93.36	80.10	65.35	24.03	89.38	57	YES
VIII SEMESTER									
1	CLOUD COMPUTING (01CE0803)	CO1	45.51	81.43	31.86	24.43	56.30	62	NO
2		CO2	45.81	80.67	32.07	24.20	56.27	62	NO
3		CO3	29.71	80.87	20.80	24.26	45.06	62	NO
4		CO4	29.71	79.80	20.80	23.94	44.74	62	NO
5		CO5	49.41	79.53	34.59	23.86	58.45	62	NO
6		CO6	53.41	79.53	37.39	23.86	61.24	62	NO
7	MACHINE LEARNING (01CE0804)	CO1	51.30	74.73	35.91	22.42	58.32	62	NO
8		CO2	17.90	74.43	12.53	22.33	34.86	62	NO
9		CO3	45.69	72.87	31.98	21.86	53.84	62	NO
10		CO4	41.61	73.50	29.13	22.05	51.18	62	NO
11		CO5	46.87	72.87	32.81	21.86	54.67	62	NO
12	INTERNET OF THINGS (01CE0806)	CO1	48.76	79.00	34.13	23.70	57.83	62	NO
13		CO2	53.47	82.00	37.43	24.60	62.03	62	YES
14		CO3	38.91	84.27	27.24	25.28	52.51	62	NO
15		CO4	39.63	83.77	27.74	25.13	52.86	62	NO
16		CO5	37.34	84.00	26.14	25.20	51.34	62	NO
17		CO6	38.77	84.00	27.14	25.20	52.34	62	NO
18	MAJOR PROJECT – II (01IT0801)	CO1	96.21	80.30	67.35	24.09	91.43	57	YES
19		CO2	96.21	80.87	67.35	24.26	91.61	57	YES
20		CO3	96.21	81.07	67.35	24.32	91.66	57	YES
21		CO4	96.21	80.47	67.35	24.14	91.49	57	YES
22		CO5	96.21	80.57	67.35	24.17	91.52	57	YES

C. Attainment of Program Outcomes and Program Specific Outcomes

Program Outcomes and Program Specific Outcomes of the Program are attained by using two methods:

- Direct Assessment
- Indirect Assessment

➤ **Direct Assessment:**

Direct assessment of POs & PSOs is a systematic and on-going process of collecting, interpreting, and acting on information relating to the goals and outcomes developed to support the department and institution's mission and vision. The assessment methods and tools for PO and PSO attainments are tabulated below:

Table 3.1.a: Assessment Methods and Tools

Assessment Method	Assessment Tool	Maximum Marks	Duration	Direct / Indirect Tool
Continuous Internal Evaluation (CIE)	Mid Test - 1/ Canvas	30	90 Minutes	Direct
	Mid Test - 2/ Canvas	30	90 Minutes	Direct
	CSE	20		Direct
End Semester Examination (ESE)	Lab Terminal Exam	25	45 Minutes	Direct
Comprehensive Viva	External Evaluation	25	45 Minutes	
End Semester Examination (ESE)	External Evaluation	100	3 Hours	Direct
Project Work	Internal Evaluation	100	90 Minutes	Direct
	External Evaluation	100		

The assessment tools and weightage for POs and PSOs attainments are tabulated below:

A. Course Assessment Tools and Weightage

Table 3.1.b: Course Assessment Tools and Weightage

	Assessment Tool	Weight age	Total
Theory Marks	Mid Test - 1	30%	100%
	Mid Test - 2		
	CSE- Internal	20%	
	SEE	50%	
Practical Marks	Viva	50%	100%

	Term work	50%	
Technical Seminar	Internal Evaluation	100%	100%
Comprehensive Viva	External Evaluation	100%	100%
Project Work	Internal Evaluation	50%	100%
	External Evaluation	50%	

➤ **Indirect Assessment:**

The following Surveys/Feedbacks are conducted during the course of study of program in each semester or end of the program. Evaluated data in terms of attainment percentages of the students is collected from the Course/Program coordinator.

Table 3.1.c: Summary of Surveys Conducted

S. No.	Survey	Frequency of Assessment is done
1	Student Exit Survey	Once at the end of Program
2	Alumni Survey	Once in a year
3	Employer Survey	Once in a year
4	Parents Survey	Once in a year

The attainment levels by direct (student performance) and indirect (surveys) are presented through Program level Course-PO&PSO matrices as indicated. PO Attainment Program Outcomes of the program through direct assessment are shown in table 3.2.a.

Table 3.2.a COMPLETE PO ATTAINMENTS THROUGH DIRECT ASSESSMENT

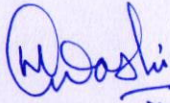
S. NO.	COURSE NAME & COURSE CODE	PO AT Through DA in %													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	ELEMENTS OF ELECTRICAL ENGINEERING (01EE0101)	72.66	71.55	72.33	70.85		69.86	73.65		67.42			71.54		
2	PHYSICS (01GS0101)	73.65	64.91	59.42	73.2	42.35	74.79								
3	COMPUTER WORKSHOP (01CE0102)	99.45	99.45	99.45	99.45	99.45						99.45	99.45	99.45	99.45
4	ELEMENTS OF MECHANICAL ENGINEERING (01ME0101)	81.06	81.06										82.15		
5	COMPUTER PROGRAMMING (01CE0101)	94.48	94.48	94.48									94.48	94.48	94.48
6	BASICS OF ENVIRONMENTAL STUDIES (01EN0101)	87.04	87.04	87.59			87.17	87.17	87.68	87.68	86.93	86.92	86.92		
7	BASICS OF ELECTRONICS ENGINEERING (01EC0101)	46.25	44.86	40.99	40.99	40.99	17.1	17.94	41.08	41.08	14.57	14.57	14.57		
8	DIGITAL ELECTRONICS (01EC0102)	64.65	64.65	62.28	60.07	59.39	69.41	80.06	78.87	69.41	69.41	69.41	64.4		
9	ENGINEERING DRAWING (01ME0103)	88.67	90.09	88.99		88.67					89.86				
10	READING & WRITING FOR TECHNOLOGY (01SL0102)						58.19			58.19	58.19		58.19		
11	SPEAKING & PRESENTATION SKILLS (01SL0103)						59.29			59.29	59.29		59.29		
12	VALUE EDUCATION (01CR0103)						95.24	95.24	95.24	95.24	95.24				
13	DIFFERENTIAL AND INTEGRAL CALCULUS (01MA1101)	71.62	73.25	74.79	69.22	71.31									
14	MATRIX ALGEBRA AND VECTOR CALCULUS (01MA1151)	75.41	77.07	80.59										75.41	
15	DISCRETE MATHEMATICS AND GRAPH THEORY (01MA0231)	73.27	73.27	73.22	73.67	74.06								73.67	

S. NO.	COURSE NAME & COURSE CODE	PO AT Through DA in %													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
16	DATA STRUCTURE (01CE0301)	59.97	61.07	62.08	63.95	59.85	65.94						59.69	60.68	55.1
17	DATA COMMUNICATION AND NETWORKING (01IT0301)	50.13	53.45	51.65	51.71	50.62			51.5	51.36	50.81		51.23	50.53	52.27
18	OPERATING SYSTEM (01CE0401)	81.32	81.25	81.5	81.5	81.27			81.15	81.21	82.07		79.79	81.42	82.07
19	COMPUTER ORGANIZATION AND ARCHITECTURE (01CE0402)	79.48	79.38	79.3	79.78	79.07		79.09		80.21				78.74	79.26
20	COMPUTER NETWORK (01IT0401)	79.64	79.9	79.24	79.47	79.5	79.49	82.25	79.88	79.6	80.53	76.89	78.09	79.48	79.49
21	OBJECT ORIENTED PROGRAMMING WITH JAVA (01CE0403)	80.74	80.74	80.66	79.86	79.86				80.8	80.84	81.2	80.74	80.84	80.84
22	DATABASE MANAGEMENT SYSTEM (01CE1302)	58.17	67.08	64.59	62.73	67.47	76.4	76.4	58.92	71.44	76.4	76.4	63.36	49.62	52.13
23	OBJECT ORIENTED DESIGN AND PROGRAMMING (01CE1303)	61.71	62.77	59.68	56.95					51.12	60.66	46.35	62.77		
24	DESIGN THINKING AND PROBLEM SOLVING SKILLS (01CE0304)	91.59	91.59	91.59	91.59	91.59	91.59	91.59	91.59	91.59	91.59	91.59	91.59	91.59	91.59
25	PROFESSIONAL ETHICS (01CR0302)						97.2		97.2	97.2	97.2				
26	HUMAN CENTRIC DESIGN APPROACH (01CE0405)	98.12	98.12	98.12	98.12	98.12	98.12	98.12		98.12	98.12		98.12	98.12	98.12
27	STATISTICAL AND NUMERICAL METHODS (01MA1281)	79.99	79.99											81.14	
28	ADVANCED JAVA PROGRAMMING (01CE0502)	87.73	87.73		87.73	87.73			87.73	87.73	87.73	87.73	87.73		
29	DESIGN AND ANALYSIS OF ALGORITHM (01CE0503)	82.97	82.97	82.97									82.97	82.97	82.97
30	THEORY OF AUTOMATA AND FORMAL LANGUAGES (01CE0504)				64.28										
31	IMAGE PROCESSING (01CE0507)	92.83	92.83	92.83	92.83	92.83					92.83		92.83		
32	SEMINAR (01IT0502)	96.68	96.68	96.68	96.68	96.68	96.68	96.68	96.68	96.68	96.68		96.68	96.68	96.68

S. NO.	COURSE NAME & COURSE CODE	PO AT Through DA in %													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
33	MICROPROCESSOR FUNDAMENTALS & PROGRAMMING (01CE0501)	87.92	87.92	87.92	87.92	87.92			87.92		87.92		87.92		
34	SOFTWARE ENGINEERING (01IT0601)	95.45	95.75	95.04	96.14	95.73	95.16	95.1	95.23	95.26	95.22	95.5	95.18	95.4	95.19
35	COMPILER DESIGN (01CE0601)	90.06	90.15	89.88	90.1	90.07			90.07	90.29		89.6	89.98		89.37
36	.NET TECHNOLOGIES (01CE0602)	91.99	92.16	92.65		92.3		92.05		92.1		92.56		92.26	92.15
37	WEB TECHNOLOGY (01IT0602)	93.66	93.7			93.87			93.7	93.49	93.49	93.49	93.87		
38	CYBER SECURITY [DEPARTMENT ELECTIVE - 2] (01CE0604)	95.64	95.64	95.64	95.64	95.64	95.64		95.64	95.64			95.64	95.64	
39	DESIGN ENGINEERING AND PROJECT MANAGEMENT (01CE0606)	99.06	99.06	99.06	99.06	99.06	99.06	99.06	99.06	99.06	99.06	99.06	99.06	99.06	99.06
40	ADVANCED WEB TECHNOLOGIES (01IT0701)	56.59	56.59	56.59		56.59		56.59		56.59		56.73	56.59	56.59	56.59
41	MOBILE COMPUTING (01CE0701)	57.3	55.79	57.67	59.2	58.27	57.67	58.58	57.67	57.67	58.12	57.67	57.67	60.99	61.15
42	ARTIFICIAL INTELLIGENCE (01CE0702)	66.88	66.88	66.88	66.88	64.7							66.88	66.88	66.88
43	ANDROID PROGRAMMING (01CE0704)	52.23	52.11	47.35	53.76	46.95	52.23			52.38			53.79		
44	PROGRAMMING WITH PYTHON (01CE0705)	66.66	68.24	66.38	68.24	67.61	69.4	65.83	69.06	66.16	66.74				
45	MAJOR PROJECT – II (01IT0801)	96.21	96.21	96.21	96.21	96.21	96.21		96.21	96.21	96.21	96.21	96.21		
46	MAJOR PROJECT – I (01IT1703)	93.36	93.36	93.36	93.36	93.36	93.36		93.36	93.36	93.36	93.36	93.36		
	TOTAL PO DIRECT ATTAINMENTS IN %	79.32	79.53	78.37	77.54	78.15	78.05	79.14	82.97	78.50	79.97	79.19	77.73	80.07	80.24

Table 3.2.b: Overall Attainments of POs and PSOs

S NO	PO	PO ATTAINMENT THROUGH DA	PO ATTAINMENT THROUGH IDA	SUMMATION OF 70% OF DA & 30% OF IDA	TARGET	TARGET ATTAINED (YES/NO)
1	PO1	79.32	82.77	80.36	60	YES
2	PO2	79.53	83.05	82.35	60	YES
3	PO3	78.37	87.02	81.60	60	YES
4	PO4	77.54	84.58	81.00	60	YES
5	PO5	78.15	88.94	80.78	60	YES
6	PO6	78.05	89.13	78.52	60	YES
7	PO7	79.14	89.08	79.32	60	YES
8	PO8	82.97	86.92	84.61	60	YES
9	PO9	78.50	79.63	80.13	60	YES
10	PO10	79.97	79.75	80.89	60	YES
11	PO11	79.19	88.43	81.54	60	YES
12	PO12	77.73	83.91	79.78	60	YES
13	PSO1	80.07	64.56	75.42	60	YES
14	PSO2	80.24	58.53	73.73	60	YES


Head of the Department
Computer Engineering
Marwadi University