NAAC CRITERIA

Batch 2016-20

DEPARTMENT

OF

COMPUTER

ENGINEERING

CRITERION 2.6	Student Performance & Learning Outcomes	30

PROGRAM OUTCOMES (POs):

Engineering Graduates will be able to:

PO1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. 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.

PO3. 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.

PO4. 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.

PO5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11. 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.

PO12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological 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 lake 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	PO10	PO11	PO12	PSO1	PSO2
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 heath 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	PO10	PO11	PO12	PSO1	PSO2
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 deveoples 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	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	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

CO	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
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	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	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.
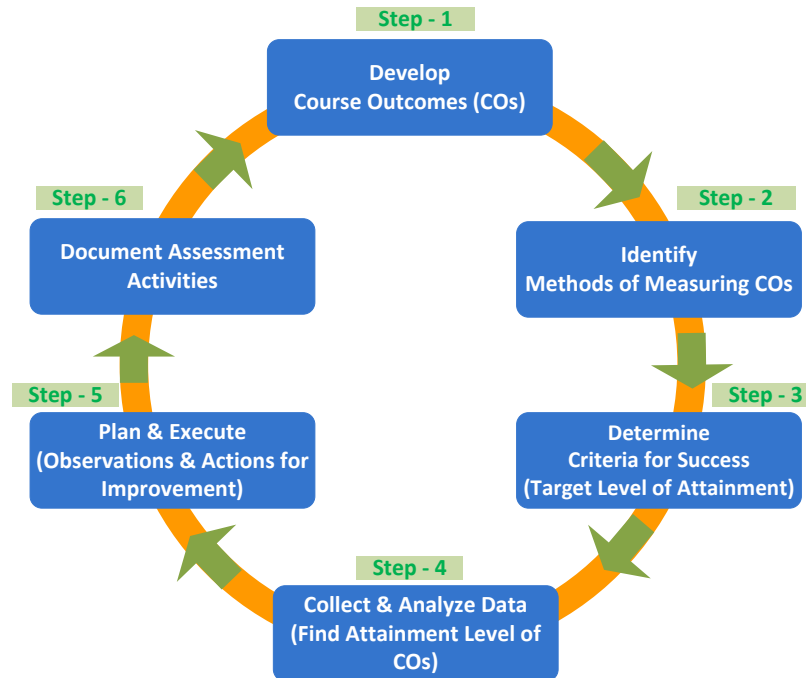
Fig. 2.1.a Assessment Cycle

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	Weightage	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	69.43		96.48	92.25	44.85	6.94		13.89	14.47	13.84	22.43	64.62	YES
		CO2	66.88		96.48	92.25	74.27	6.69		13.38	14.47	13.84	37.14	78.82	YES
		CO3	56.85		96.48	92.25	50.03	5.69		11.37	14.47	13.84	25.02	64.69	YES
		CO4		52.17	96.48	92.25	50.18		5.22	10.43	14.47	13.84	25.09	63.83	YES
		CO5		53.86	96.48	92.25	31.01		5.39	10.77	14.47	13.84	15.51	54.59	YES
		CO6		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	CO1	69.48		69.72	92.25	61.85	6.95		13.90	10.46	13.84	30.93	69.12	YES
		CO2	68.76		69.72	92.25	41.38	6.88		13.75	10.46	13.84	20.69	58.74	YES
		CO3	58.29		69.72	92.25	45.48	5.83		11.66	10.46	13.84	22.74	58.69	YES
		CO4		43.03	69.72	92.25	33.33		4.30	8.61	10.46	13.84	16.67	49.57	NO
		CO5		45.11	69.72	92.25	21.20		4.51	9.02	10.46	13.84	10.60	43.92	NO
		CO6		39.08	69.72	92.25	46.05		3.91	7.82	10.46	13.84	23.03	55.14	YES
01GS0101	PHYSICS	CO1	61.26		98.59	96.48	64.96	6.13		12.25	14.79	14.47	32.48	73.99	YES
		CO2	60.35		98.59	96.48	39.04	6.04		12.07	14.79	14.47	19.52	60.85	YES
		CO3	47.92		98.59	96.48	57.86	4.79		9.58	14.79	14.47	28.93	67.77	YES
		CO4		50.36	98.59	96.48	51.65		5.04	10.07	14.79	14.47	25.83	65.16	YES
		CO5		49.94	98.59	96.48	28.66		4.99	9.99	14.79	14.47	14.33	53.58	YES
		CO6		36.36	98.59	96.48	57.44		3.64	7.27	14.79	14.47	28.72	65.25	YES
01SL0101	COMMUNICATION SKILLS	CO1	60.88		98.59	92.96	81.18	6.09		12.18	14.79	13.94	40.59	81.50	YES
		CO2	67.37		98.59	92.96	59.18	6.74		13.47	14.79	13.94	29.59	71.80	YES
		CO3	53.14		98.59	92.96	54.40	5.31		10.63	14.79	13.94	27.20	66.56	YES
		CO4		64.57	98.59	92.96	89.22		6.46	12.91	14.79	13.94	44.61	86.26	YES
		CO5		55.66	98.59	92.96	62.20		5.57	11.13	14.79	13.94	31.10	70.96	YES
01CE0102	COMPUTER WORKSHOP	CO1				95.77	0.00	0.00	0.00	0.00	0.00	14.37	0.00	95.77	YES
		CO2				95.77	0.00	0.00	0.00	0.00	0.00	14.37	0.00	95.77	YES
		CO3				95.77	0.00	0.00	0.00	0.00	0.00	14.37	0.00	95.77	YES

Course Code	Course Name	CO													Status
		CO4				95.77	0.00	0.00	0.00	0.00	0.00	14.37	0.00	95.77	YES
		CO5				95.77	0.00	0.00	0.00	0.00	0.00	14.37	0.00	95.77	YES
		CO6				95.77	0.00	0.00	0.00	0.00	0.00	14.37	0.00	95.77	YES
01ME0101	ELEMENTS OF MECHANICAL ENGINEERING	CO1	69.01		95.77	91.55	42.66	6.90		13.80	14.37	13.73	21.33	63.23	YES
		CO2	73.76		95.77	91.55	53.74	7.38		14.75	14.37	13.73	26.87	69.72	YES
		CO3	64.33		95.77	91.55	63.90	6.43		12.87	14.37	13.73	31.95	72.91	YES
		CO4		33.82	95.77	91.55	51.17		3.38	6.76	14.37	13.73	25.59	60.45	YES
		CO5		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)	CO1	95.8			97.9	23.53			19.16		14.69	11.77	45.61	NO
		CO2	95.8			97.9	23.53			19.16		14.69	11.77	45.61	NO
		CO3	95.8		57.98	97.9	23.53			19.16	8.70	14.69	11.77	54.31	YES
		CO4	95.8		68.07	97.9	23.53			19.16	10.21	14.69	11.77	55.82	YES
		CO5	95.8		68.07	97.9	23.53			19.16	10.21	14.69	11.77	55.82	YES
		CO6	95.8			97.9	23.53			19.16		14.69	11.77	45.61	NO
01CR0101	CAREER READINESS PROGRAM	CO1				0	81.95			0.00		0.00	40.98	48.21	NO
		CO2				0	85.91			0.00		0.00	42.96	50.54	YES
		CO3				0	73.43			0.00		0.00	36.72	43.19	NO
		CO4				0	68.28			0.00		0.00	34.14	40.16	NO
01MA0151	ENGINEERING MATHEMATICS-II	CO1	72.35		87.12	96.97	70.44	7.24		14.47	13.07	14.55	35.22	77.30	YES
		CO2	67.46		87.12	96.97	44.40	6.75		13.49	13.07	14.55	22.20	63.31	YES
		CO3	58.74		87.12	96.97	63.82	5.87		11.75	13.07	14.55	31.91	71.27	YES
		CO4		10.43	87.12	96.97	43.47		1.04	2.09	13.07	14.55	21.74	51.43	YES
		CO5		29.94	87.12	96.97	55.66		2.99	5.99	13.07	14.55	27.83	61.43	YES
		CO6		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	CO1	55.81		97.73	0	78.65	5.58		11.16	14.66	0.00	39.33	76.64	YES
		CO2	62.85		97.73	0	59.79	6.29		12.57	14.66	0.00	29.90	67.21	YES
		CO3	44.68		97.73	0	65.38	4.47		8.94	14.66	0.00	32.69	66.22	YES
		CO4		36.02	97.73	0	51.59		3.60	7.20	14.66	0.00	25.80	56.07	YES
		CO5		51.48	97.73	0	56.81		5.15	10.30	14.66	0.00	28.41	62.78	YES
01EC0101	BASICS OF	CO1	90.76			0	97.48	68.07			18.15	0.00	14.62	34.04	66.81	YES

Code	Course	CO													
	ELECTRONICS ENGINEERING (Canvas or Other LMS)	CO2	90.76		0	97.48	68.07			18.15	0.00	14.62	34.04	66.81	YES
		CO3			39.08		68.07				5.86		34.04	39.90	NO
		CO4	90.76		0					18.15	0.00			18.15	NO
		CO5				97.48						14.62		14.62	NO
01ME0103	ENGINEERING DRAWING	CO1	74.58		94.7	94.7	52.30	7.46		14.92	14.21	14.21	26.15	69.48	YES
		CO2	68.22		94.7	94.7	56.44	6.82		13.64	14.21	14.21	28.22	70.27	YES
		CO3	63.85		94.7	94.7	53.43	6.39		12.77	14.21	14.21	26.72	67.90	YES
		CO4		16.32	94.7	94.7	39.84		1.63	3.26	14.21	14.21	19.92	51.59	YES
		CO5		32.59	94.7	94.7	36.29		3.26	6.52	14.21	14.21	18.15	53.07	YES
		CO6		16.99	94.7	94.7	32.80		1.70	3.40	14.21	14.21	16.40	48.21	NO
01EC0102	DIGITAL ELECTRONICS	CO1	69.65		96.97	96.97	70.34	6.97		13.93	14.55	14.55	35.17	78.19	YES
		CO2	58.34		96.97	96.97	74.06	5.83		11.67	14.55	14.55	37.03	77.79	YES
		CO3	52.86		96.97	96.97	59.90	5.29		10.57	14.55	14.55	29.95	69.61	YES
		CO4		17.64	96.97	96.97	39.44		1.76	3.53	14.55	14.55	19.72	52.34	YES
		CO5		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

Code	Course Name	CO													
	DESIGN AND PROGRAMMING (Canvas or Other LMS)	CO3	68.46			97.48	16.30			13.69		14.62	8.15	36.46	NO
		CO4				97.48						14.62		14.62	NO
01GS0301	ENGINEERING MANAGEMENT	CO1	57.9		97.64	0	50.94	5.79		11.58	14.65	0.00	25.47	60.82	YES
		CO2	44.13		97.64	0	44.74	4.41		8.83	14.65	0.00	22.37	53.93	YES
		CO3		40.93	97.64	0	56.35		4.09	8.19	14.65	0.00	28.18	60.01	YES
		CO4		37.91	97.64	0	49.82		3.79	7.58	14.65	0.00	24.91	55.46	YES
01MA0281	STATISTICAL & NUMERICAL METHODS	CO1	83.89		100	99.1	55.84	8.39		16.78	15.00	14.87	27.92	74.56	YES
		CO2	90.31		100	99.1	67.22	9.03		18.06	15.00	14.87	33.61	81.54	YES
		CO3	71.4		100	99.1	61.08	7.14		14.28	15.00	14.87	30.54	74.69	YES
		CO4		19.43	100	99.1	70.95		1.94	3.89	15.00	14.87	35.48	69.23	YES
		CO5		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)	CO1	98.76		99.08	72.94	42.02			19.75	14.86	10.94	21.01	66.57	YES
		CO2	98.76		99.08	72.94	38.28			19.75	14.86	10.94	19.14	64.70	YES
		CO3	98.76		99.08	72.94	23.30			19.75	14.86	10.94	11.65	57.21	YES
		CO4	98.76		99.08	72.94	18.81			19.75	14.86	10.94	9.41	54.96	NO
01CE0402	COMPUTER ORGANIZATION AND ARCHITECTURE	CO1	53.1		100	98.21	58.12	5.31		10.62	15.00	14.73	29.06	69.41	YES
		CO2	50		100	98.21	35.02	5.00		10.00	15.00	14.73	17.51	57.24	YES
		CO3	33.09		100	98.21	79.82	3.31		6.62	15.00	14.73	39.91	76.26	YES
		CO4		24.33	100	98.21	64.07		2.43	4.87	15.00	14.73	32.04	66.63	YES
		CO5		14.55	100	98.21	45.85		1.46	2.91	15.00	14.73	22.93	55.57	YES
		CO6		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)	CO1	97.25		99.08	98.62	99.08			19.45	14.86	14.79	49.54	98.65	YES
		CO2	97.25		99.08	98.62	99.08			19.45	14.86	14.79	49.54	98.65	YES
		CO3	97.25		99.08	98.62	99.08			19.45	14.86	14.79	49.54	98.65	YES
		CO4	97.25		99.08	98.62	99.08			19.45	14.86	14.79	49.54	98.65	YES
		CO5	97.25		99.08	98.62	99.08			19.45	14.86	14.79	49.54	98.65	YES
		CO6	97.25		99.08	98.62	99.08			19.45	14.86	14.79	49.54	98.65	YES
01CE0403	OBJECT ORIENTED	CO1	67.27		79.21	83.18	54.40			13.45	11.88	12.48	27.20	65.01	YES
		CO2	67.08		80.7	83.18	61.22			13.42	12.11	12.48	30.61	68.61	YES

Code	Subject	CO													
	PROGRAMMING WITH JAVA (Canvas or Other LMS)	CO3	44.04		92.98	83.18	13.46			8.81	13.95	12.48	6.73	41.96	NO
		CO4	41.45		92.98	83.18	8.65			8.29	13.95	12.48	4.33	39.04	NO
		CO5	98.08		92.98	83.18	17.89			19.62	13.95	12.48	8.95	54.99	NO
01CE0404	MINI PROJECT	CO1				98.2	0.00	0.00	0.00	0.00	0.00	14.73	0.00	98.20	YES
		CO2				98.2	0.00	0.00	0.00	0.00	0.00	14.73	0.00	98.20	YES
		CO3				98.2	0.00	0.00	0.00	0.00	0.00	14.73	0.00	98.20	YES
		CO4				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)	CO1	93.33		100	78.5	90.50			18.67	15.00	11.78	45.25	90.69	YES
		CO2	86.37		100	83.76	86.87			17.27	15.00	12.56	43.44	88.27	YES
		CO3	75.88		100	88.54	97.83			15.18	15.00	13.28	48.92	92.37	YES
		CO4	84.88		46.73	88.41	82.29			16.98	7.01	13.26	41.15	78.39	YES
		CO5	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)	CO1	54.21		85.41	100	42.44			10.84	12.81	15.00	21.22	59.87	YES
		CO2	53.89			100	52.63			10.78		15.00	26.32	52.09	NO
		CO3	56.95			100	24.30			11.39		15.00	12.15	38.54	NO
		CO4	58.88			100	45.79			11.78		15.00	22.90	49.67	NO
		CO5			80.37	100	97.20				12.06	15.00	48.60	75.66	YES
		CO6			82.33	100	48.95				12.35	15.00	24.47	51.82	NO
01CE0504	THEORY OF AUTOMATA AND FORMAL LANGUAGES	CO1	80.44		87.16	0	90.94	8.04		16.09	13.07	0.00	45.47	87.80	YES
		CO2	60.24		87.16	0	47.45	6.02		12.05	13.07	0.00	23.73	57.47	YES
		CO3	54.9		87.16	0	69.68	5.49		10.98	13.07	0.00	34.84	69.29	YES
		CO4		12.36	87.16	0	77.02		1.24	2.47	13.07	0.00	38.51	63.60	YES
		CO5		15.41	87.16	0	59.33		1.54	3.08	13.07	0.00	29.67	53.91	NO
		CO6		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)	CO1	80.7		76.56	97.66	29.69			16.14	11.48	14.65	14.85	57.12	NO
		CO2	82.13		70.31	97.66	29.69			16.43	10.55	14.65	14.85	56.47	NO
		CO3	80.88		62.5	97.66	29.69			16.18	9.38	14.65	14.85	55.05	NO
		CO4	78.28		51.56	97.66	29.69			15.66	7.73	14.65	14.85	52.88	NO
		CO5	75.31		23.44	97.66	29.69			15.06	3.52	14.65	14.85	48.07	NO
01CE0507	IMAGE PROCESSING	CO1	77.12		100	97.67	65.48	7.71		15.42	15.00	14.65	32.74	77.81	YES
		CO2	52.46		100	97.67	56.96	5.25		10.49	15.00	14.65	28.48	68.62	YES
		CO3		22.23	100	97.67	17.44		2.22	4.45	15.00	14.65	8.72	42.82	NO
		CO4		19.88	100	97.67	59.62		1.99	3.98	15.00	14.65	29.81	63.44	YES

Code	Course	CO													
01CE0508	REVERSE ENGINEERING	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
01IT0502	SEMINAR	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
01CE0501	MICROPROCESSOR FUNDAMENTALS & PROGRAMMING	CO1	76.53		97.22	85.19	69.39	7.65		15.31	14.58	12.78	34.70	77.36	YES
		CO2	54.72		97.22	85.19	71.38	5.47		10.94	14.58	12.78	35.69	74.00	YES
		CO3	44.12		97.22	85.19	67.44	4.41		8.82	14.58	12.78	33.72	69.91	YES
		CO4		11.4	97.22	85.19	63.13		1.14	2.28	14.58	12.78	31.57	61.21	YES
		CO5		17.76	97.22	85.19	60.49		1.78	3.55	14.58	12.78	30.25	61.16	YES
01CR0501	BUSINESS BENCHMARK	CO1				97.2	0.00	0.00	0.00	0.00	0.00	14.58	0.00	97.20	YES
		CO2				97.2	0.00	0.00	0.00	0.00	0.00	14.58	0.00	97.20	YES
		CO3				97.2	0.00	0.00	0.00	0.00	0.00	14.58	0.00	97.20	YES
		CO4				97.2	0.00	0.00	0.00	0.00	0.00	14.58	0.00	97.20	YES
01IT0601	SOFTWARE ENGINEERING	CO1	76.15		99.07	98.13	88.81	7.62		15.23	14.86	14.72	44.41	89.22	YES
		CO2	59.04		99.07	98.13	65.69	5.90		11.81	14.86	14.72	32.85	74.23	YES
		CO3	45.87		99.07	98.13	79.85	4.59		9.17	14.86	14.72	39.93	78.68	YES
		CO4		16.99	99.07	98.13	72.15		1.70	3.40	14.86	14.72	36.08	69.05	YES
		CO5		34.36	99.07	98.13	65.45		3.44	6.87	14.86	14.72	32.73	69.18	YES
		CO6			99.07	98.13	32.91			0.00	14.86	14.72	16.46	46.04	NO
01CE0601	COMPILER DESIGN	CO1	88.32		98.13	100	85.53	8.83		17.66	14.72	15.00	42.77	90.15	YES
		CO2	72.17		98.13	100	75.03	7.22		14.43	14.72	15.00	37.52	81.67	YES
		CO3	63.75		98.13	100	73.88	6.38		12.75	14.72	15.00	36.94	79.41	YES
		CO4		6.01	98.13	100	63.75		0.60	1.20	14.72	15.00	31.88	62.80	YES
		CO5		21.71	98.13	100	72.53		2.17	4.34	14.72	15.00	36.27	70.33	YES
		CO6		10.79	98.13	100	76.00		1.08	2.16	14.72	15.00	38.00	69.88	YES
01IT0602	WEB	CO1	69.81		92.06	89.25				13.96	13.81	13.39		41.16	NO

Code	Subject	CO												Attained
	TECHNOLOGY (Canvas or Other LMS)	CO2	69.81		89.25				13.96		13.39		27.35	NO
		CO3	69.81		89.25	75.57			13.96		13.39	37.79	65.13	YES
		CO4	69.72	95.33	89.25	28.04			13.94	14.30	13.39	14.02	55.65	NO
		CO5	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)	CO1	93.28	94.86	98.6	92.06			18.66	14.23	14.79	46.03	93.71	YES
		CO2	83.76	95.95	98.6	92.06			16.75	14.39	14.79	46.03	91.96	YES
		CO3	91	97.2	98.6	92.06			18.20	14.58	14.79	46.03	93.60	YES
		CO4	90.39	97.82	98.6	92.06			18.08	14.67	14.79	46.03	93.57	YES
		CO5	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	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
01CE0602	.NET TECHNOLOGIES (Canvas or Other LMS)	CO1	79.13	81.5	97.66	71.38			15.83	12.23	14.65	35.69	78.39	YES
		CO2	78.97	78.5	97.66	70.87			15.79	11.78	14.65	35.44	77.65	YES
		CO3	79.91	80.47	97.66	80.37			15.98	12.07	14.65	40.19	82.89	YES
		CO4	79.13	66.54	97.66	76.17			15.83	9.98	14.65	38.09	78.54	YES
		CO5	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

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	69.25		94.39	92.52	77.57			13.85	14.16	13.88	38.79	80.67	YES
		CO2	61.59		94.39	92.52	23.36			12.32	14.16	13.88	11.68	52.03	NO
		CO3	60.05		98.13	92.52	14.02			12.01	14.72	13.88	7.01	47.62	NO
		CO4	76.7			92.52	40.68			15.34		13.88	20.34	49.56	NO
01CE0701	MOBILE COMPUTING	CO1	50.65		99.07	99.07	85.46	5.07		10.13	14.86	14.86	42.73	82.58	YES
		CO2	96.81		99.07	99.07	69.11	9.68		19.36	14.86	14.86	34.56	83.64	YES
		CO3	69.54		99.07	99.07	74.45	6.95		13.91	14.86	14.86	37.23	80.85	YES
		CO4	51.55		99.07	99.07	62.62	5.16		10.31	14.86	14.86	31.31	71.34	YES
		CO5		23.97	99.07	99.07	51.09		2.40	4.79	14.86	14.86	25.55	60.06	YES
01CE0702	ARTIFICIAL INTELLIGENCE	CO1	72.54		99.07	99.07	58.98	7.25		14.51	14.86	14.86	29.49	73.72	YES
		CO2		31.18	99.07	99.07	62.34		3.12	6.24	14.86	14.86	31.17	67.13	YES
		CO3	66.67		99.07	99.07	61.57	6.67		13.33	14.86	14.86	30.79	73.84	YES
		CO4	96.43		99.07	99.07	69.79	9.64		19.29	14.86	14.86	34.90	83.90	YES
		CO5	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)	CO1	80.65			95.16	44.09			16.13		14.27	22.05	52.45	NO
		CO2	38.71			95.16	44.09			7.74		14.27	22.05	44.06	NO
		CO3	66.94			95.16	44.09			13.39		14.27	22.05	49.71	NO
		CO4			96.77	95.16	44.09				14.52	14.27	22.05	50.83	NO
01CE0707	DATA MINING AND INFORMATION RETRIEVAL	CO1	45.97		78.26	92.75	45.16	4.60		9.19	11.74	13.91	22.58	57.43	NO
		CO2	66.26		78.26	92.75	44.72	6.63		13.25	11.74	13.91	22.36	61.26	NO
		CO3		16.12	78.26	92.75	54.44		1.61	3.22	11.74	13.91	27.22	56.10	NO
		CO4	53.33		78.26	92.75	68.15	5.33		10.67	11.74	13.91	34.08	70.39	YES
01CE0709	COMPUTATIONAL INTELLIGENCE	CO1	68.3		97.37	97.37	53.05	6.83		13.66	14.61	14.61	26.53	69.40	YES
		CO2	93.75		97.37	97.37	59.32	9.38		18.75	14.61	14.61	29.66	77.62	YES
		CO3	85.48		97.37	97.37	0.00	8.55		17.10	14.61	14.61	0.00	46.31	NO
		CO4	93.75		97.37	97.37	70.13	9.38		18.75	14.61	14.61	35.07	83.03	YES

Code	Subject	CO													
		CO5		3.1	97.37	97.37	26.32		0.31	0.62	14.61	14.61	13.16	42.99	NO
01IT0703	MAJOR PROJECT – 1	CO1				99.07	0.00	0.00	0.00	0.00	0.00	14.86	0.00	99.07	YES
		CO2				99.07	0.00	0.00	0.00	0.00	0.00	14.86	0.00	99.07	YES
		CO3				99.07	0.00	0.00	0.00	0.00	0.00	14.86	0.00	99.07	YES
		CO4				99.07	0.00	0.00	0.00	0.00	0.00	14.86	0.00	99.07	YES
		CO5				99.07	0.00	0.00	0.00	0.00	0.00	14.86	0.00	99.07	YES
		CO6				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)	CO1	76.28		65.79	96.71	56.84			15.26	9.87	14.51	28.42	68.05	YES
		CO2	74.64		65.79	96.71	59.54			14.93	9.87	14.51	29.77	69.07	YES
		CO3	71.8		65.79	96.71	17.11			14.36	9.87	14.51	8.56	47.29	NO
		CO4	80.86		65.79	96.71	36.84			16.17	9.87	14.51	18.42	58.97	NO
01CE0802	BIG DATA AND ANALYTICS	CO1	71.43		100	100	87.18	7.14		14.29	15.00	15.00	43.59	87.88	YES
		CO2	61.91		100	100	87.18	6.19		12.38	15.00	15.00	43.59	85.97	YES
		CO3		45.77	100	100	87.18		4.58	9.15	15.00	15.00	43.59	82.74	YES
		CO4	63.89		100	100	87.18	6.39		12.78	15.00	15.00	43.59	86.37	YES
		CO5	0		100	100	87.18	0.00		0.00	15.00	15.00	43.59	73.59	YES
01CE0803	CLOUD COMPUTING	CO1		56.92	100	100	86.76		5.69	11.38	15.00	15.00	43.38	84.76	YES
		CO2		54.55	100	100	86.76		5.46	10.91	15.00	15.00	43.38	84.29	YES
		CO3		42.75	100	100	86.76		4.28	8.55	15.00	15.00	43.38	81.93	YES
		CO4		50	100	100	86.76		5.00	10.00	15.00	15.00	43.38	83.38	YES
		CO5	73.95		100	100	86.76	7.40		14.79	15.00	15.00	43.38	88.17	YES
		CO6	36.6		100	100	86.76	3.66		7.32	15.00	15.00	43.38	80.70	YES
01CE0804	MACHINE LEARNING	CO1	83.58	30.16	100	100	54.90	8.36	3.02	11.37	15.00	15.00	27.45	68.82	YES
		CO2	56.69	57.14	100	100	54.90	5.67	5.71	11.38	15.00	15.00	27.45	68.83	YES
		CO3	54.17	25.87	100	100	54.90	5.42	2.59	8.00	15.00	15.00	27.45	65.45	YES
		CO4	78.72		100	100	54.90	7.87		15.74	15.00	15.00	27.45	73.19	YES
		CO5	0		100	100	54.90	0.00		0.00	15.00	15.00	27.45	57.45	NO
01CE0805	BUSINESS INTELLIGENCE	CO1	38.89		100	100	95.24	3.89		7.78	15.00	15.00	47.62	85.40	YES
		CO2	55.42		100	100	95.24	5.54		11.08	15.00	15.00	47.62	88.70	YES
		CO3	18.75		100	100	95.24	1.88		3.75	15.00	15.00	47.62	81.37	YES

Code	Name	CO													
		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	0.00	15.00	0.00	100.00	YES
		CO2				100	0.00	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	0.00	15.00	0.00	100.00	YES
		CO4				100	0.00	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	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

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	COMPUTER WORKSHOP (01CE0102)	CO1	95.77	83.87	67.04	25.16	92.20	50	YES
25		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	ELEMENTS OF MECHANICAL ENGINEERING (01ME0101)	CO1	63.23	63.20	44.26	18.96	63.22	50	YES
31		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

#	Course	CO							
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

<p style="text-align:center">**Table 3.2.a: COMPLETE PO ATTAINMENTS THROUGH DIRECT ASSESSMENT**</p>

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	

#	Subject														
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	

#	Subject														
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