

2.6.2 Attainment of Program Outcomes and Course Outcomes are Evaluated

CO-PO/PSO ASSESSMENT METHOD

Assessment method is categorized into direct and indirect methods as shown in Figure 1, to assess the program-specific outcomes, program outcomes, and course outcomes.

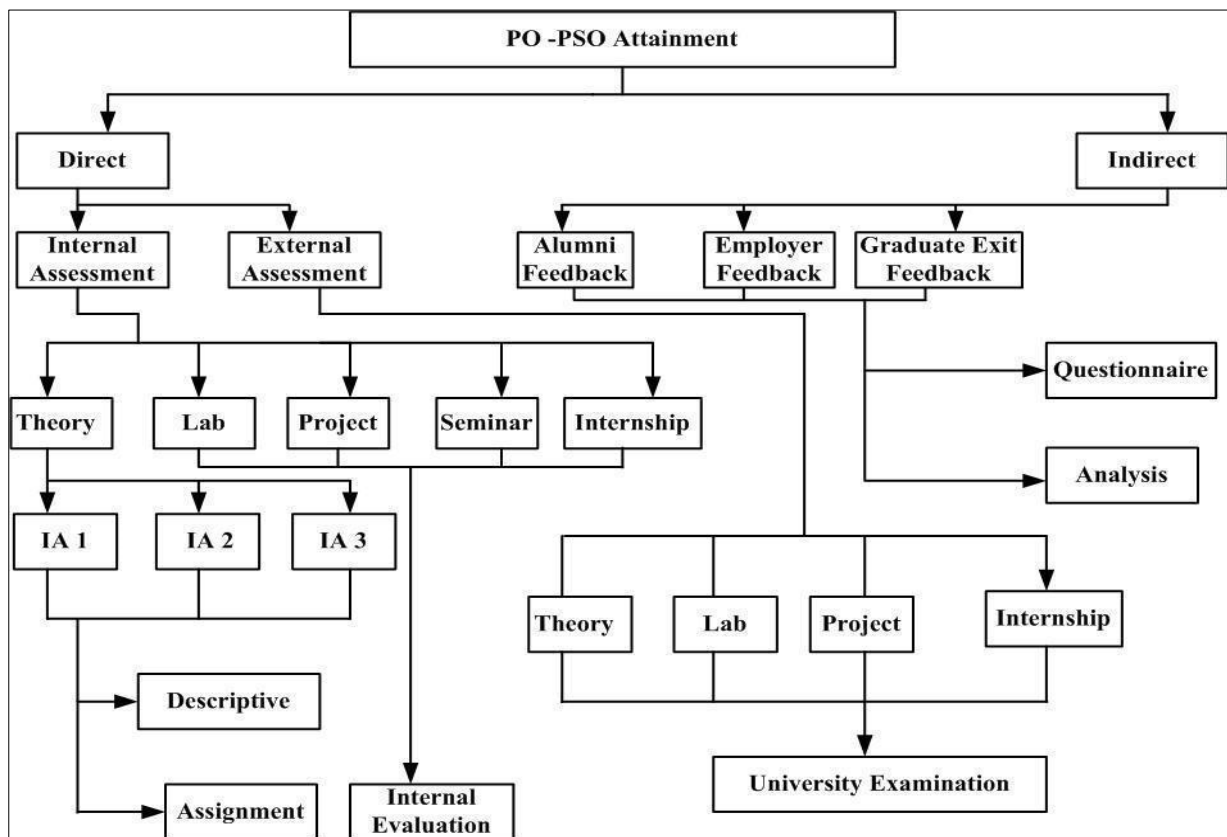


Figure 1: CO-PO/PSO Attainment Process

1. Direct Methods:

Direct methods evaluate students' knowledge and skills through continuous internal assessments, semester exams, seminars, projects, internships, and class/lab assignments.

- a. **Theory Exam Evaluation:** Theory courses are assessed via Continuous Internal Evaluation (CIE) and Semester End Exams according to the VTU's scheme. CIE

includes test marks and marks for seminars, assignments, mini-projects, or industry certifications.

Table 1: Scheme-wise Weightage of CIE & SEE

Scheme	CIE weightage	Assignment	SEE weightage
2015	20%	-	80%
2017 & 2018	30%	10%	60%
2021 & 2022	30%	20%	50%

- b. Laboratory Exam Evaluation:** At each semester's start, essential software is installed for labs. Instructors introduce the syllabus, objectives, grading, and software use before lab sessions. Lab manuals, prepared per university guidelines, are reviewed by the department's academic committee. Students receive the manual with experiment details and design considerations before labs. Each three-hour session covers algorithms, circuit/logic design, and experiment operation. Students document, implement, and analyze experiments in observation books and record books. Completed experiments, outputs, theory, and algorithms are recorded for continuous assessment. Viva-voce questions are administered during labs to ensure evaluation.
- c. Seminar Evaluation:** In the eighth semester, students undertake a Technical Seminar per VTU guidelines. A Seminar Coordinator, appointed by the HoD, assigns guides, schedules presentations, and forms review committees with the guide and two senior faculty. Topics align with emerging technical areas. Internal Assessment is conducted by the guide and review committee.
- d. Internship Evaluation:** Internships are vital for enhancing students' employability skills, aligning with VTU's mandate of a minimum 4-week program during semester breaks. Coordinators assign internal guides, aiding students with industry interactions and support. University examinations in the VIII semester include internship credits.
- e. Project Work Evaluation:** Project work is split into Phase I (seventh semester) and Phase II (eighth semester). Continuous Internal Evaluation (CIE) for each phase, worth 100 marks, is conducted by a review committee consisting of the guide and two senior

faculty. Phase I CIE assesses the report (literature survey, problem identification, objectives, methodology), presentation skills, and Q&A. Phase II CIE evaluates the demonstration, report, and Q&A.

2. Indirect methods

Indirect Methods such as surveys ask the stakeholders to reflect on students' learning. They assess opinions and thoughts about the graduate's knowledge or skills they learnt during their 4 years program. The indirect methods in practice are:

- Graduate Exit Feedback
- Alumni Feedback
- Employers Feedback

The following section explains the attainment evaluation process using one subject as an example.

a) Syllabus

ROBOTIC PROCESS AUTOMATION DESIGN & DEVELOPMENT (Effective from the academic year 2018-2019)

SEMESTER-VII

CourseCode	18CS745	CIEMarks	40
NumberOfContactHours/Week	3:0:0	SEEMarks	60
TotalNumberOfContactHours	40	ExamHours	3Hrs
		CREDITS	03

Course Learning Objectives: This course(18CS745) will enable students to:

1. To understand basic concepts of RPA
2. To Describe RPA, where it can be applied and how it implemented
3. To Describe the different types of variables, Control Flow and data manipulation techniques
4. To Understand Image,Text and Data Tables Automation
5. To Describe various types of Exceptions and strategies to handle

Module-1

Contact Hours
08

RPA Foundations- What is RPA - Flavors of RPA- History of RPA- The Benefits of RPA- The downsides of RPA- RPA Compared to BPO, BPM and BPA - Consumer Willingness for Automation- The Workforce of the Future- RPA Skills-On-Premise Vs. the Cloud- Web Technology- Programming Languages and Low Code- OCR-Databases-APIs- AI-Cognitive Automation-Agile, Scrum, Kanban and Waterfall0 DevOps- Flowcharts.

Textbook 1: Ch 1, Ch 2, RBT:L1,L2

Module-2

RPA Platforms- Components of RPA- RPA Platforms-About Ui Path- About UiPath - The future of automation - Record and Play - Downloading and installing UiPath Studio -Learning Ui Path Studio- - Task recorder - Step-by-step examples using the recorder.

Textbook 2: Ch 1, Ch 2, RBT: L1, L2

Module-3

Sequence, Flowchart, and Control Flow-Sequencing the workflow- Activities-Control flow, various types of loops, and decision making-Step-by-step example using Sequence and Flowchart-Step-by-step example using Sequence and Control flow-Data Manipulation-Variables and Scope-Collections-Arguments - Purpose and use-Data table usage with examples- Clipboard management-File operation with step-by-step example-CSV/Excel to data table and vice versa (with a step-by-stepexample).

Textbook 2: Ch 3, Ch 4, RBT:L1,L2

Module-4

Taking Control of the Controls- Finding and attaching windows- Finding the control- Techniques for waiting for a control- Act on controls - mouse and keyboard activities- Working with UiExplorer- Handling events- Revisit recorder- Screen Scraping- When to use OCR- Types of OCR available- How to use OCR- Avoiding typical failure points.

Text book 2: Ch 5 RBT:L1,L2

Module-5

Exception Handling, Debugging, and Logging- Exception handling- Common exceptions and ways to handle them- Logging and taking screenshots- Debugging techniques- Collecting crash dumps- Error reporting- Future of RPA

Text book 2: Ch 8 Text book 1: Ch 13 RBT:L1,L2



b) Course Outcome

Table 1: Course Outcomes of Robotic Process Automation

Course Code / Name: C404 / Robotic Process Automation		
Subject Code	Course Code	Course Outcomes
Robotic Process Automation/ 18CS745	C404.1	Demonstrate understanding of the fundamental concepts of Robotic Process Automation and its applications.
	C404.2	Understand different components and service providers of RPA.
	C404.3	Demonstrate the concept of sequence, flowcharts, control flow, data manipulation and excel automation with example.
	C404.4	Describe different control methods and OCR in RPA.
	C404.5	Analyse various exceptions and methods for handling exceptions and errors.

c) CO and PO / PSO mapping

Mapping is the process of representing, preferably in matrix form, the correlation among the parameters. It may be done for one-to-many, many-to-one, and many-to-many parameters. The following table shows the correlation matrix between CO and PO/PSO which finally leads to PO/PSO attainment.

There are three correlation levels: **1 (LOW), 2 (MEDIUM), 3(HIGH)**

Year / SEM: 4th year / 7thSem

Course Code & Subject code: C404 / 18CS745

Subject name: Robotic Process Automation

Table 2: CO-PO/PSO mapping

CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C404.1	2	-	-	-	-	-	-	-	-	-	-	2	-	3	3
C404.2	2	2	1	1	3	-	-	-	-	-	-	2	1	3	3
C404.3	3	3	2	1	3	-	-	-	-	-	-	2	2	3	3
C404.4	3	3	2	1	3	-	-	-	-	-	-	2	2	3	3
C404.5	3	3	1		3	-	-	-	-	-	-	2	1	3	3
AVG	2.6	2.75	1.5	1	3	-	-	-	-	-	-	2	1.5	3	3



USN I E P

Department of Computer Science Engineering

Internal Assessment -1

Sem/Sec: VII (A&B)
 Subject: Robotic Process Automation
 Subject Code: 18CS745

Date:
 Duration: 90 min
 Max. Marks: 50

Course Outcome

CO2: Understand different components and service providers of RPA. Familiarize the usage of UiPath Studio

CO3: Demonstrate the concept of sequence, flowcharts, control flow, data manipulation and excel automation with example

Answer any 5 full Questions

Sl. No	Questions	Marks	BL	CO	PO												
1a	Explain the types of projects supported by UiPath Studio with a neat diagram.	5	L2	CO2	PO1												
1b	Describe Property panel and Variable panel in detail.	5	L2	CO2	PO1												
2	Solve the below problems by using the concept of task recorder in UiPath Studio. a). Emptying the trash folder in Gmail. b). Emptying Recycle Bin.	10	L3	CO2	PO2												
3	Develop a task recorder with necessary examples. (Use notepad Automation as example).	10	L3	CO2	PO2												
4	Write the steps for creating a project that perform addition of 2 numbers based on the concept of arguments.	10	L2	CO3	PO1												
5a	Identify the different types of loopactivities of UiPath with examples.	5	L3	CO3	PO2												
5b	Demonstrate an automation for creating the below mentioned table <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Student name</th> <th>Roll number</th> <th>Class</th> </tr> </thead> <tbody> <tr> <td>Andrew Jose</td> <td>1</td> <td>3</td> </tr> <tr> <td>Jorge Martinez</td> <td>2</td> <td>3</td> </tr> <tr> <td>Stephen Cepps</td> <td>3</td> <td>2</td> </tr> </tbody> </table>	Student name	Roll number	Class	Andrew Jose	1	3	Jorge Martinez	2	3	Stephen Cepps	3	2	5	L3	CO3	PO2
Student name	Roll number	Class															
Andrew Jose	1	3															
Jorge Martinez	2	3															
Stephen Cepps	3	2															
6	Solve the below problem. Create automation for extracting data from Amazon's website and display the extracted information in form of a table.	10	L3	CO3	PO2												


 Course Instructor


 Reviewer

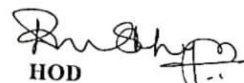

 HOD

Figure 1: Sample Question Paper

EPCET - 00046

BLUE BOOK

Name of the Student (In Block Letters)

G A N A S H R E E K R

Program Computer Science Sem 7 Section A

USN : 1 E P 1 9 C S O 2 S

Course Robotic Process Automation Course Code 18CS745

Test	Max Marks : 30			Average IA Marks Max: 30	Assignment Marks Max: 10	Final IA Marks: 40
	I	II	III			
Date	07/11/22	07/11/22	08/11/22	28 30	10 10	38 40
Time	2:00 - 3:30	2:00 - 3:30	2:00 - 3:30			
Invigilator Sign	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>			
Marks Obtained	42/50	33/50	47/50			
Faculty Sign	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>			

[Signature]
Signature of the Student

[Signature]
Name & Signature of Faculty

[Signature]
Signature of HoD

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48 Pages

Figure 2: Sample Blue Book



Internal Assessment Evaluation Sheet
 Internal Assessment - I

Q.No	1	2	3	4	5	6	7	8	9	10
a	5	8.5	9	8.5	10	2				
b	0					4				
c										
d										
Total	5	8.5	9	8.5	10	6				42/50

Internal Assessment II

Q.No	1	2	3	4	5	6	7	8	9	10
a	5	10.5	8.5		12	10				
b		5								
c										
d										
Total	5	10	8.5		12	10				33/50

Internal Assessment - III

Q.No	1	2	3	4	5	6	7	8	9	10
a	12	10	10	5	7	10				
b	5			5						
c										
d										
Total	62	10	10	10	7	10				47/50

Bloom's Taxonomy



Figure 3: Sample Blue book -Marks distribution



Table 3: Course-wise Target attained / Not Attained matrix

2019-2023 CO Attainment, Target Percentage is 67%									
Course Code	Subject Code	CO1	CO2	CO3	CO4	CO5	Average of COs	% of Attainment	Target attained/ Not attained
C101	18MAT11 Calculus and Linear Algebra	2.1	1.7	2.4	2.4	2.4	2.2	73	Target attained
C102	18PHY12 Engineering Physics	3	3	2.1	2.1	3	2.6	87	Target attained
C103	18ELE13 Basic Electrical Engineering	1.4	1.2	1.8	1.7	1.5	1.5	50	Target not attained
C104	18CIV14 Elements of Civil Engineering And Mechanics	0.3	0.5	0.3	1.2	1.2	0.7	23	Target not attained
C105	18EGDL15 Engineering graphics	2.4	2.2	2.4	2.1	-	2.3	77	Target attained
C106	18PHYL16 Engineering Physics Lab	3	3	3	3	3	3	100	Target attained
C107	18ELEL17 Basic Electrical Engineering Lab	3	3	3	3	-	3	100	Target attained
C108	18EGH18 Technical English	3	3	3	3	3	3	100	Target attained
C109	18MAT21 Advanced Calculus and Numerical Methods	3	3	3	2.7	3	2.9	97	Target attained
C110	18CHE22 Engineering Chemistry	2.7	3	2.7	3	2.7	2.8	93	Target attained
C111	18CPS23 Problem Solving Through C Programming	1.7	1.7	1.8	1.8	1.8	1.8	60	Target attained
C112	18ELN24 Basic Electronics	2.9	3	3	3	3	3	100	Target attained
C113	18EME25 Engineering Graphics	2.6	3	3	3	3	2.9	97	Target attained
C114	18CHEL26 Engineering Chemistry Lab	3	3	3			3	100	Target attained
C115	18CPL27 C Programming Lab	3	3	3	3	3	3	100	Target attained

C116	18EGH28-II Technical English	3	3	3	3	3	3	100	Target attained
C201	18MAT31 Calculus, Fourier Series & Num Tech	2.3	1.8	2.4	2.4	2.4	2.3	75	Target attained
C202	18CS32 Data Structures and Applications	1.8	1.8	1.8	1.5	1.9	1.8	60	Target attained
C203	18CS33 Analog and Digital Electronics	0.4	0.6	0.3	1.2	0.8	0.7	22	Target not attained
C204	18CS34 Computer Organization	1.2	0.6	0.5	1.2	0.9	0.9	29	Target not attained
C205	18CS35 Software Engineering	1.2	0.8	1.2	1.2	1.2	1.1	37	Target not attained
C206	18CS36 Discrete Mathematical Structures	2.4	2.0	2.4	2.4	2.4	2.4	80	Target attained
C207	18CSL37 Analog and Digital Electronics Laboratory	1.8	1.8	1.8	1.8	1.8	1.8	60	Target attained
C208	18CSL38 Data Structures Laboratory	1.8	1.8	1.8	1.8	1.8	1.8	60	Target attained
C209	18KVK39 Vyavaharika Kannada	2.4	2.0	2.4	2.4	2.4	2.4	80	Target attained
C210	18MAT41 Complex Analysis, Probability and Statistical Methods	1.5	1.5	1.5	1.4	1.5	1.5	50	Target not attained
C211	18CS42 Design and Analysis Of Algorithms	2.3	2.2	2.4	2.4	2.4	2.3	77	Target attained
C212	18CS43 Operating Systems	1.2	1.2	1.2	1.2	1.2	1.2	40	Target not attained
C213	18CS44 Microcontroller and Embedded Systems	2.1	2.6	3.0	3.0	3.0	2.7	90	Target attained
C214	18CS45 Objected Oriented Concepts	1.8	1.8	1.5	1.8	1.5	1.7	57	Target not attained
C215	18CS46 Data Communication	2.4	2.4	2.4	2.4	2.4	2.4	80	Target attained
C216	18CSL47 DAA Lab	1.2	1.2	1.2	1.2	1.2	1.2	40	Target not attained
C217	18CSL48 Microcontroller and	1.7	1.8	1.8	1.8	1.8	1.8	60	Target attained

	Embedded Systems Lab								
C218	18CPC49 Constitution of India, Professional Ethics And Cyber Law	3.0	3.0	3.0	3.0	3.0	3.0	100	Target attained
C301	18CS51 Management Entrepreneurship for It Industry	2.4	2.4	2.4	2.4	2.4	2.4	80	Target attained
C302	18CS52 Computer Network Security	2.9	2.9	2.8	2.8	2.9	2.8	93	Target attained
C303	18CS53 Database Management Systems	1.2	0.8	1.2	1.2	1.2	1.1	37	Target not attained
C304	18CS54 Automata Theory and Computability	1	1	1.1	1.1	1	1	33	Target not attained
C305	18CS55 Application Development Using Python	1.2	1.2	1.2	1.2	1.2	1.2	40	Target not attained
C306	18CS56 Unix Programming	3	3	3	3	3	3	100	Target attained
C307	18CSL57 Computer Networks Lab	3.0	3.0	3.0	3.0	3.0	3.0	100	Target attained
C308	18CSL58 DBMS Lab	3.0	3.0	3.0	3.0	3.0	3.0	100	Target attained
C309	18CIV59 Environmental Studies	3.0	3.0	3.0	3.0	3.0	3.0	100	Target attained
C310	18CS61 System Software and Compilers	1.7	1.8	1.8	1.8	1.8	1.8	60	Target attained
C311	18CS62 Computer Graphics and Visualization	2.9	2.9	3.0	3.0	3.0	3.0	100	Target attained
C312	18CS63 Web Technology and its applications	1.2	1.2	1.1	1.2	1.1	1.2	40	Target not attained
C313	18CS643 Cloud Computing and its Applications	1.2	1.2	1.2	1.2	1.2	1.2	40	Target not attained
C314	18ME653 Supply Chain Management	2.9	2.9	3.0	3.0	3.0	3.0	100	Target attained

C315	18CSL66 System Software Laboratory	3	3	3	3	3	3	100	Target attained
C316	18CSL67 Computer Graphics Laboratory with mini project	3.0	3.0	3.0	3.0	3.0	3.0	100	Target attained
C317	18CSMP68 Mobile Application Development	3.0	3.0	3.0	3.0	3.0	3.0	100	Target attained
C401	18CS71 Artificial Intelligence & Machine Learning	1.8	1.7	1.8	1.8	1.5	1.7	57	Target not attained
C402	18CS72 Big Data Analytics	1.8	1.8	1.8	1.8	1.8	1.8	60	Target attained
C403	18CS734 User Interface Design	2.3	2.4	2.4	2.4	2.3	2.3	77	Target attained
C404	18CS745 Robotic Process Automation	2.9	3	3	3	2.9	2.9	97	Target attained
C405	18CS751 Energy & Environment	3.0	3.0	3.0	3.0		3.0	100	Target attained
C406	18CSL76 AI & ML Lab	3	3	3	3	3	3	100	Target attained
C407	18CSP78 Project Phase-1	3	3	3	3	3	3	100	Target attained
C408	18CS81 Internet of Things	2.8	3	3	3	3	3	100	Target attained
C409	18CS822 Storage Area Networks	3.0	3.0	3.0	3.0	3.0	3.0	100	Target attained
C410	18CSP83 Project Phase-2	3.0	3.0	3.0	3.0	3.0	3.0	100	Target attained
C411	18CSS84 Technical Seminar	3.0	2.9	2.9	3.0	3.0	3.0	100	Target attained
C412	18CSI85 Internship	3	2.9	2.9	3	3	3	100	Target attained

Table 4: Results of evaluation of each PO & PSO for 2019-23 Batch

Course Code	Subject Code	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
C101	18MAT11 Calculus and Linear Algebra	2.2	2.1	0.7	1.2	-	-	-	-	-	-	-	2.2	-	-	-
C102	18PHY12 Engineering Physics	2.6	1.9	-	1.8	-	-	-	-	-	-	-	1.9	-	-	-
C103	18ELE13 Basic Electrical Engineering	1.5	1.5	1.2	0.9	0.9	-	-	-	-	-	-	1	-	-	-
C104	18CIV14 Elements of Civil Engineering and Mechanics	0.7	0.5	0.5	0.5	-	-	-	-	-	-	-	0.5	-	-	-
C105	18EGDL15 Engineering graphics	2.3	1.9	1.7		2.3	0.8	-	-	-	-	-	1.5	-	-	-
C106	18PHYL16 Engineering Physics Lab	3	-	-	1.5	2	-	-	2	-	-	-	3	-	-	-
C107	18ELEL17 Basic Electrical Engineering Lab	3	3	3	3	2	-	-	-	-	-	-	2	-	-	-
C108	18EGH18 Technical English	-	-	-	-	-	-	-	-	-	3	-	3	-	-	-
C109	18MAT21 Advanced Calculus and Numerical Methods	2.9	2.7	1	2	-	-	-	-	-	-	-	2.9	-	-	-
C110	18CHE22 Engineering Chemistry	2.8	1.7	0.9	-	-	-	1.7	-	-	-	-	0.9	-	-	-
C111	18CPS23 Problem Solving Through C Programming	1.2	1.4	1.5	-	-	-	-	-	-	-	-	1.2	1.5	1.5	1.5
C112	18ELN24 Basic Electronics	2.7	2	2.6	-	-	-	-	-	-	-	-	-	-	-	-
C113	18EME25 Engineering Graphics	2.1	1.6	1	-	-	1.8	1.9	-	-	-	-	1.8	-	-	-



C114	18CHEL26 Engineering Chemistry Lab	3	1.3	1	-	-	-	1	-	-	-	-	1	-	-	-
C115	18CPL27 C Programming Lab	3	2	3	1	1	-	-	-	1	-	-	1	3	3	3
C116	18EGH28-II Technical English	-	-	-	-	-	-	-	-	3	-	-	3	-	-	-
C201	18MAT31 Transform Calculus, Fourier Series & Num Tech	2.2	2.1	0.7	1.2	-	-	-	-	-	-	-	2.2	-	-	-
C202	18CS32 Data Structures and Applications	1.8	2	2	-	-	-	-	-	-	-	-	1.2	2	2	2
C203	18CS33 Analog and Digital Electronics	1.7	1	1	1	-	-	-	-	-	-	-	-	2	-	-
C204	18CS34 Computer Organization	1.2	1	1	1	-	-	-	-	-	-	-	-	1	1	1
C205	18CS35 Software Engineering	1.0	1.0	1.0	0.9	-	0.7	0.0	0.4	0.7	0.2	0.1	0.7	1.1	1.1	1.1
C206	18CS36 Discrete Mathematical Structures	2.3	2	2	2	-	-	-	-	-	-	-	2.3	-	-	-
C207	18CSL37 Analog and Digital Electronics Laboratory	1.8	1.8	1.5	1.4	1.3	-	-	-	-	-	-	-	1.8	-	-
C208	18CSL38 Data Structures Laboratory	1.8	1.8	1.6	-	-	-	-	-	0.6	-	-	1	2	1.8	1.8
C209	18KVK39 Vyavaharika Kannada	-	-	-	-	-	-	-	3	-	2	-	-	-	-	-
C210	18MAT41 Complex Analysis, Probability and Statistical Methods	1.5	1.5	-	-	-	-	-	-	-	-	-	1.5	-	-	-





C211	18CS42 Design And Analysis of Algorithms	2.3	2.3	2.3	2.3	-	-	-	-	-	-	-	-	2.3	2.3	2.3
C212	18CS43 Operating Systems	1	1	1	-	-	-	-	-	-	-	-	-	1	1	1
C213	18CS44 Microcontroller and Embedded Systems	2.13	2	2	-	2	-	-	-	-	-	-	1.82	2	2	-
C214	18CS45 Objected Oriented Concepts	1.7	1.3	1.1	-	1.5	-	-	-	-	-	-	1.5	2	1.1	
C215	18CS46 Data Communication	2.4	2	2	1	2				1.3	1.3	1.5	1.3	1	1.3	1.3
C216	18CSL47 DAA Lab	1.2	1.2	1	0.6	1.2	-	-	-	-	-	-	-	1.2	1.2	1.2
C217	18CSL48 Microcontroller and Embedded Systems Lab	1.8	1.8	1.6	1.2	1.8	-	-	-	-	-	-	-	2	0.6	-
C218	18CPC49 Constitution of India, Professional Ethics and Cyber Law	-	-	-	-	-	3	-	3	3	-	-	3	-	-	-
C301	18CS51 Management Entrepreneurship for It Industry	1.6	2	2	1	-	-	-	-	-	-	-	0.8	2	-	
C302	18CS52 Computer Network Security	1.9	1.9	1	-	-	-	-	-	-	-	-	0.6	1	2	2
C303	18CS53 Database Management Systems	1.4	1.2	1.2	1	-	-	-	-	1.4	-	1.4	1.4	1.4	1.4	-
C304	18CS54 Automata Theory and Computability	1	1	1	0.7	0.6	-	-	-	0.6	-	-	-	1	-	-
C305	18CS55 Application	1.2	1.2	1.2	1	1.2	-	-	1	1	0.8	0.8	1	1.2	1	1.2





	Development Using Python															
C306	18CS56 Unix Programming	2	2	1.2	1	1	-	-	-	1	-	-	-	1.2	1.2	1.2
C307	18CSL57 Computer Networks Lab	3	3	3	3	3	-	-	-	2	3	2	3	3	3	3
C308	18CSL58 DBMS Lab	3	3	2	2	3	-	-	-	3	3	3	3	3	2	-
C309	18CIV59 Environmental Studies	2	-	-	1	-	2	3	-	-	-	-	-	-	-	-
C310	18CS61 System Software and Compilers	1.8	1.6	1.4	1.2	1.8	-	-	-	-	-	-	-	1.2	-	1.2
C311	18CS62 Computer Graphics and Visualization	3	3	2	1	-	-	-	-	3	2	3	3	3	3	3
C312	18CS63 Web Technology and its applications	1.2	1.2	0.9	0.5	1.2	-	-	-	0.2	-	-	0.8	1.2	1.2	0.9
C313	18CS643 Cloud Computing and its Applications	1.2	1.2	0.9	0.8	0.8	-	-	-	0.8	-	-	-	1.2	0.9	0.9
C314	18ME653 Supply Chain Management	2.4	2.0	2.0	1.4	-	-	-	-	-	-	-	1.0	2.0	-	1.0
C315	18CSL66 System Software Laboratory	3	2.6	2.2	2.4	2.4	-	-	-	-	-	-	-	3	1	1
C316	18CSL67 Computer Graphics Laboratory with mini project	3	3	3	2	3	-	-	-	2.6	2.6	2.6	2.2	2.4	2.8	2.6
C317	18CSMP68 Mobile Application Development	3	3	3	-	3	-	-	1	3	-	-	1	3	-	-
C401	18CS71 Artificial Intelligence & Machine Learning	1.7	2	1	1	2	-	-	-	-	-	-	-	1	1.1	2
C402	18CS72	1.7	1.6	1.1	0.6	1	-	-	-	1.2	1.2	-	1.2	2	1.6	1.1



	Big Data Analytics															
C403	18CS734 User Interface Design	1.6	1.6	0.8	0.8	-	-	-	-	-	-	-	-	1	1.6	1.6
C404	18CS745 Robotic Process Automation	2.6	2.2	1.2	0.6	2.4	-	-	-	-	-	-	2	1.2	2.6	2.6
C405	18CS751 Energy & Environment	3	3	-	-	-	3	2	-	-	-	-	2	-	-	-
C406	18CSL76 AI & ML Lab	3	3	3	2	2	-	-	-	2	-	-	1	2	2	2
C407	18CSP78 Project Phase-1	3	3	3	3	2.8	3	2	3	3	3	2	3	3	3	3
C408	18CS81 Internet of Things	3	2.8	2.4	1.2	-	-	-	-	3	2	-	2	2	3	-
C409	18CS822 Storage Area Networks	3	3	3	2	3	3	-	-	3	2	3	2	3	3	3
C410	18CSP83 Project Phase-2	3	3	3	3	2.8	3	2	3	3	3	2	3	3	2	3
C411	18CSS84 Technical Seminar	3	3	3	3	-	3	2	3	3	3	3	3	2	3	3
C412	18CSI85 Internship	3	3	3	3	2.8	3	2	3	3	3	2	3	3	3	3
Sum of PO's		128	114	92	65	58	26	18	22	49	35	26	83	80	65	59
No. of Courses Mapped		59	57	54	44	30	11	10	10	25	16	13	46	42	35	31
Direct Attainment of POs(A)		2.2	2.0	1.7	1.5	1.9	2.4	1.8	2.2	2.0	2.2	2.0	1.8	1.9	1.9	1.9
Indirect Attainment of POs (B)		2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Final PO Attainment (80%A+20%B)		2.3	2.1	1.9	1.7	2.1	2.4	1.9	2.3	2.1	2.3	2.1	2.0	2.1	2.0	2.0
Target		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2



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d) Attainment Analysis:

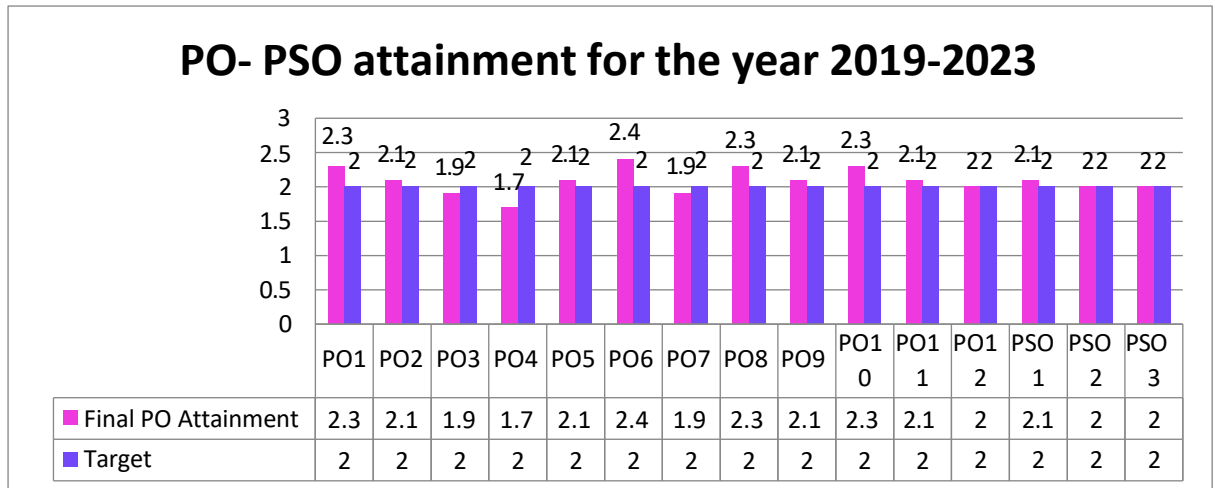


Figure 4: PO-PSO attainment analysis for 2019-23 batch

Table 4: Year-wise Target and Attained

Acad emic Year	PO's	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
2019-2023	Attained	2.3	2.1	1.9	1.7	2.1	2.4	1.9	2.3	2.1	2.3	2.1	2.0	2.1	2.0	2.0
	Target	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
2018-2022	Attained	2.3	2.1	2	1.7	2.1	2.5	1.9	2.4	2.3	2.4	2.3	1.8	2.1	2	1.9
	Target	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
2017-2021	Attained	2.4	2.3	2.1	1.7	2.2	2	1.9	2.3	2.2	2.2	2.2	2.1	2.3	1.9	2.1
	Target	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
2016-2020	Attained	2.5	2.3	2.2	1.9	2.1	2.2	1.9	2.4	2.4	2.1	2.1	2.1	2.4	2	2
	Target	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
2015-2019	Attained	2.6	2.3	2.2	1.8	2.1	2.2	2.0	2.6	2.2	2.0	2.0	2.1	2.3	1.9	1.8
	Target	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

PSOs Attainment Analysis:

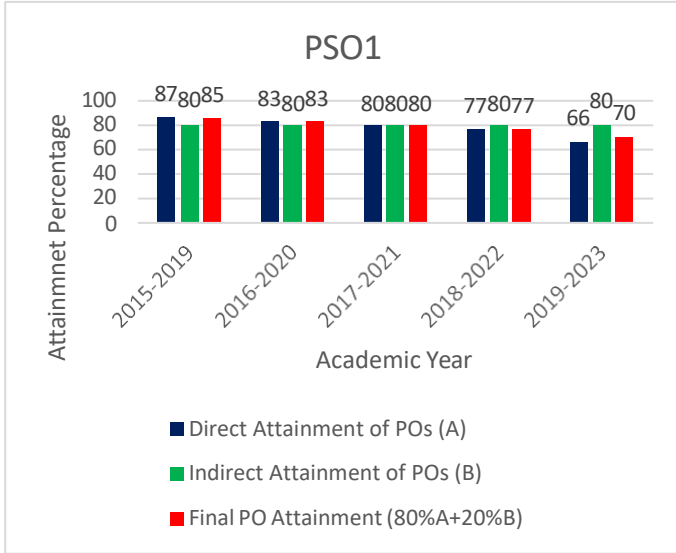


Figure 5: PSO1 year-wise Attainment analysis

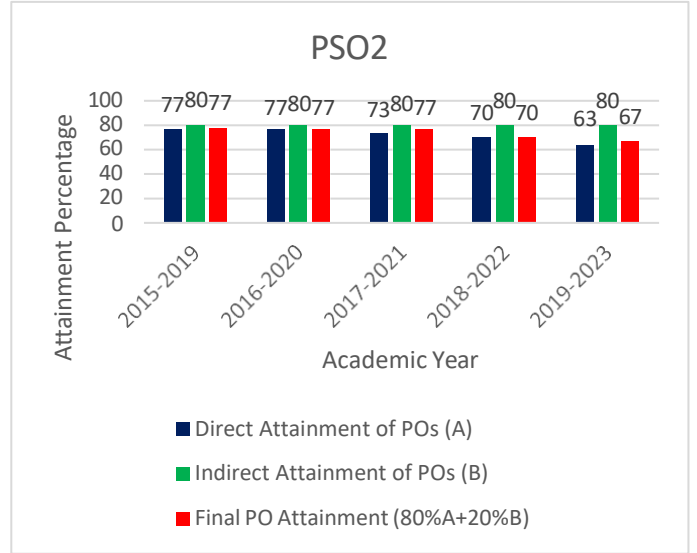


Figure 6: PSO1 year-wise Attainment analysis

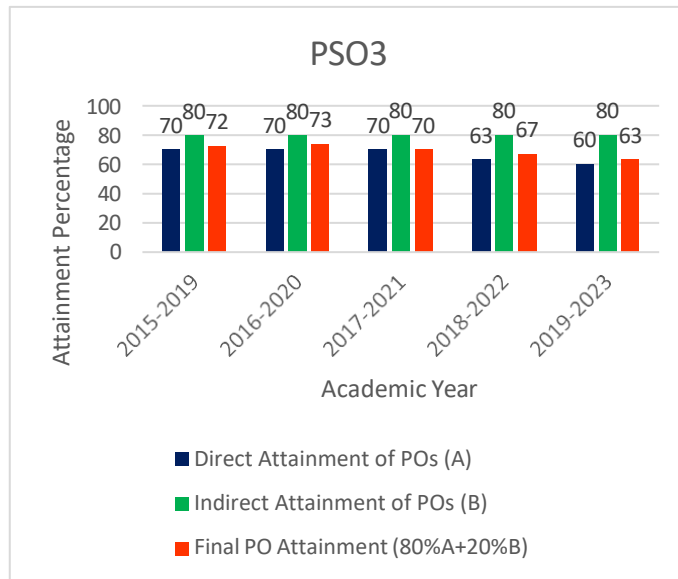


Figure 7: PSO3 year-wise Attainment analysis

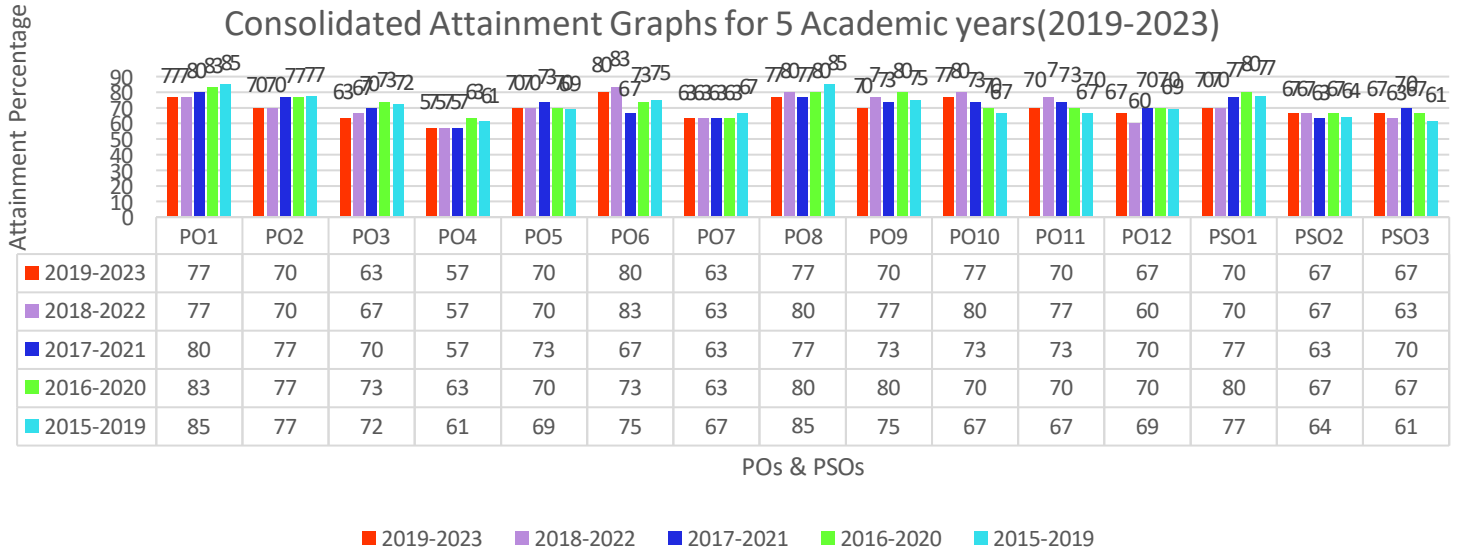


Figure 8: Consolidated Attainment analysis for the batch 2019-2023


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