SOUNDARYA
INSTITUTE OF
MANAGEMENT &
SCIENCE

SOUNDARYA
EDUCATIONAL TRUST

CO - PO

Attainment Handbook

1. VISION & MISSION STATEMENT

VISION

Nurture Future Leaders Through
Academic Excellence and
Holistic Development

MISSION

Facilitate and Foster Individuals
To Attain Intellectual and Societal Growth
To be a Global Citizen

CORE VALUES

| Joyful learning | | Kindness | | Integrity | | Compassion | | Service to mankind |

Sl.No.	Program	Program Educational Objective (PEO)	Program Outcome (PO) / Program Specific Outcome (PSO)
1	B. Com	**PEO 1:** Develop students' analytical skills for effective decision-making in Commerce, Trade, and Industry **PEO 2:** Develop proficiency in leveraging data-driven insights and emerging technologies to drive strategic goals in dynamic business environments. **PEO 3:** Demonstrate leadership skills among students in their chosen professional fields for achieving personal and professional excellence **PEO 4:** Inspire students to acquire skills for societal progress, emphasizing values, accountability, and lifelong learning	**PO 1:** Develop proficiency in fundamental concepts of accounting, finance, taxation, marketing and business management. **PO 2:** Demonstrate proficiency in analysing and interpreting financial statements and data using higher-order thinking skills **PO 3:** Leverage technological advancements to identify and capitalize on market trends, fostering innovative entrepreneurship in dynamic business landscapes. **PO 4:** Contribute commerce knowledge for societal growth, social welfare, and sustainable progress. **PO 5:** Acquire employability opportunities through practical skill development, networking, and industry engagement initiatives within the commerce sector.
2	B.B.A + B.B.A (Aviation)	**PEO 1:** To equip with skills for contributing to business success in diverse ecosystem. **PEO 2:** To strengthen the leadership capabilities in evaluating and devise modern business. **PEO 3:** To engage in continuous learning by blending academic knowledge and research insights.	**PO1:** Graduates will integrate theoretical knowledge with practical applications to address real-world business challenges. **PO 2:** Graduates will possess the ability to identify opportunities and challenges in business ecosystems. **PO 3:** Graduates as global leaders, will exhibit critical thinking skills in assessing business strategies.
3	B.C. A	**PEO 1:** Equip graduates with foundational knowledge and practical skills in computer science, programming languages, and information technology to meet the demands of the industry. **PEO 2:** Foster critical thinking and problem-solving abilities, enabling graduates to analyse and address computing challenges through cutting edge technologies.	**PO 1: Computational Knowledge**: Ability to apply knowledge of Mathematics, Computing Fundamentals and Specialization. **PO 2: Problem Analysis:** Ability to identify, formulate and analyse complex computing Problems.

		PEO 3: Graduates will integrate computing expertise with entrepreneurial insight, design thinking, and domain knowledge to foster innovative solutions and interdisciplinary collaboration	**PO 3: Design/Development of Solutions:** Ability to design, solve and evaluate solutions for complex computing problems. **PO 4: Conduct investigations of complex computing problems:** Ability to conduct systematic investigations of systems and data during design & development to derive valid conclusions. **PO 5: Modern Tool Usage:** Ability to use the techniques, skills, and modern tools necessary for complex computing techniques.
4	B. Sc (Pure Science)	**PEO 1:** Demonstrate proficiency in fundamental scientific principles and methodologies across various disciplines. **PEO 2:** Apply critical thinking and problem-solving skills to analyse complex scientific problems and develop innovative solutions. **PEO 3:** Collaborate effectively in interdisciplinary teams to address scientific challenges and achieve common goals. **PEO 4:** Demonstrate entrepreneurial leadership and effective communication skills, promoting collaboration and teamwork in scientific contexts.	**PO 1: Disciplinary Knowledge**: Graduates will demonstrate expertise in their scientific discipline's core concepts, theories, and methodologies. **PO 2: Communication Skills:** Graduates will proficiently communicate innovative ideas and discoveries across scientific platforms. **PO 3: Critical Thinking and Problem-Solving:** Graduates will critically analyse complex problems and apply scientific tools to develop solutions. **PO 4: Research Skills:** Graduates will excel in research methodologies, data analysis, and interpretation to contribute to scientific advancements.
5	B. Sc (Forensic Science)	**PEO 1:** Equip graduates with advanced scientific knowledge and cutting-edge technological skills to effectively analyze and solve criminal investigations **PEO 2:** Cultivate graduates' ability to differentiate between facts, opinions, and judgments through a multi-disciplinary lens, fostering Analyzing and Evaluating skills **PEO 3:** Foster ethical and professional conduct among graduates, emphasizing the importance of impartiality and objectivity in recognizing and interpreting evidence.	**PO1:** Graduates will integrate theoretical knowledge with practical applications to address real-world business challenges. **PO2:** Graduates will possess the ability to identify opportunities and challenges in business ecosystems. **PO3:** Graduates as global leaders, will exhibit critical thinking skills in assessing business strategies.

6	B. A	**PEO 1:** Contribute to social research and innovation through multi-faceted methodologies **PEO 2:** Cultivate the practice of self-discovery and personal growth **PEO 3:** Pursue employability in multidisciplinary domains **PEO 4:** Demonstrate social accountability and effective communication	**PO 1:** Apply Critical Thinking and constructive solutions for social challenges **PO 2:** Understand self-analysis process and identify areas of development **PO 3:** Perform the required hard and soft skills at workplace **PO 4:** Understand social responsibilities and initiate appropriate measures for Social Welfare
7	M.Com	**PEO 1:** Nurturing Analytical Thinking, Research Prowess and Professional Competencies for a Thriving Career. **PEO 2:** Empowering Graduates for Diverse Corporate Roles with Essential Employability Skills	**PO 1:** Ability to Develop An Entrepreneurial Skills and Thrive in the Domain of Commerce. **PO 2:** Possess the Capability to Collaborate Within Teams with Enhanced Interpersonal Skills and Communication. **PO 3:** Ability to Utilise Acquired Knowledge for Problem Solving.
8	M.B. A	**PEO 1:** Graduates will be able to equip skills and knowledge to navigate through an eco-system to solve contemporary business issues **PEO 2:** Graduates will be able to cultivate critical thinking skills to make business decisions **PEO 3:** Graduates will be encouraged to attain academic and research proficiency as lifelong learning	**PO1:** Apply knowledge of management theories and practice to solve business problems **PO2:** Foster analytical and critical abilities for data-based decision making **PO3**: Ability to develop value-based leadership style **PO4:** Ability to understand, analyse, communicate global economic, legal and ethical aspects of business **PO5:** Ability to lead themselves and others in the achievement of organizational goals, contributing effectively to the team environment **PO6**: Ability to foster entrepreneurial thinking to solve business and societal problems PO7: Ability to develop research

*	Sample Technical Course	**PEO-1:** Graduates will be able to perform in technical / managerial roles ranging from design, development, problem solving to production support in software industries and R&D sectors **PEO-2:** Graduates will be able to successfully pursue higher education in reputed institutions. **PEO-3:** Graduates will have the ability to adapt, contribute and innovate new technologies and systems in the key domains of Computer Science and Engineering. **PEO-4:** Graduates will be ethically and socially responsible solution providers and entrepreneurs in Computer Science and other engineering disciplines**.**	**PO-1**: **Computational Knowledge**: Ability to apply knowledge of Mathematics, Computing Fundamentals and Specialization for the solution of complex engineering problems. **PO-2: Problem analysis:** Identify, formulate, research literature, and analyse complex problems reaching substantiated conclusions using first principles of mathematics and applied sciences. **PO-3: Design/Development of Solutions**: Ability to design, solve and evaluate solutions for complex computing problems **PO-4: Conduct investigations of complex computing 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. **PO-5: Modern Tool Usage:** Ability to use the techniques, skills, and modern tools necessary for complex computing techniques. **PO-6: Life-long learning:** Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Outcome-Based Education (OBE)	OBE is a system where all the parts and aspects of education are focused on the outcomes of the course. The students take up courses with a certain goal of developing skills or gaining knowledge and they have to complete the goal by end of the course
Programme Educational Objectives (PEO)	These are broad statements that describe what graduates are expected to attain within the four years of graduation
Programme Outcomes (PO)	Programme outcomes are statements that describe what the knowledge, skills and attitudes students should have at the time of graduation from an engineering program. And at present POs are 12 in number and they are identified by NBA and are applicable to all engineering programmes
Programme Specific Outcomes (PSO)	PSOs are outcomes that are specific to a Domain/Specialization. PSOs characterize the specificity of the core courses of a programme. PSOs can be 2 to 4 in number
Course Outcomes (CO)	Course Outcomes are specific and measurable statements that define the knowledge, skills, and attitudes learners will demonstrate by the completion of a course
Course Articulation Matrix (CAM)	This is the mapping between Course Outcomes and the Programme Outcomes of a specific Course
Program Articulation Matrix (PAM)	This is the mapping between the courses of a Programme with Programme outcomes of a specific programme
Course Assessment Plan (CAP)	A well planned layout that shows how assessment methods are aligned to the Course Outcomes(CO)
Level of Thinking	Bloom's Six Levels of Thinking. They are Remember(1), Understand(2), Apply(3), Analyse(4), Evaluate(5) and Create(6)
Expected Proficiency %	The Expected percentage of scores to attain a particular CO or PO. For ex., if the Expected Proficiency is 60% for CO1 of a course, then 60% of CO1 mark is needed to attain the CO
Expected Attainment %	The expected percentage of students to get the expected proficiency. For ex., if Expected Attainment is 70% for CO1 of a course, the 70% of students are expected to get the expected proficiency % in CO1
Continuous Internal Assessment (CIA)	Continuous Internal Assessment evaluates a student's progress throughout a prescribed course. There are 2 CIAs namely C1 and C2 for all theory and lab courses

Example : Course Articulation Matrix

Course objective	The purpose of learning this course is to :
1]	Introduce the key role of Operating System
2]	Insist the Process Management of an Operating System
3]	Management Concepts of Operating System
4]	Realize the significance of Device Management part of Operating System
5]	Comprehend the need of File Management functions of an Operating System
6]	Explore the services offered by the Operating System practically

Course Outcomes (CO)	At the end of this course, learners will be able to :	Levels of thinking (1)	Expected Proficiency (%) (2)	Expected Attainment (%) (3)	Computational Knowledge (1)	Problem Analysis (2)	Design / Development of Solution (3)	Conduct investigations of complex computing (4)	Modern tools usage (5)	Life - long learning (6)
CO 1	Express the fundamental concepts in Operating System	2	60	70	3		3			
CO 2	Implement synchronization and scheduling in Operating System	3	70	75	2	1	3			
CO 3	Apply fragmentation, paging and segmentation in memory management	3	70	75	3	2	2			
CO 4	Incorporate page fault handling, demand paging and page buffering techniques in Operating System	4	60	70	3	2	2			
CO 5	Demonstrate the storage management techniques through various File management techniques	3	60	70	3		2			

Course Outcome

Bloom's Level of thinking

Expected Proficiency(%)

Expected Attainment (%)

CO - PO Mapping

Example : Course Assessment Plan

Learning Assessment

	Bloom's Level of thinking	Continuous Learning Assessment(40 %)								Final Examination (60 %)
		CLA -1 (10 %)		CLA -2 (10 %)		CLA -3 (10 %)		CLA -4 (10 %)		
		Theory (5%)	Practice (5%)	Theory (5%)	Practice (5%)	Theory (5%)	Practice (5%)	Theory (5%)	Practice (5%)	
Level 1	Remember	20%		15%		15%				15%
Level 2	Understand	20%		25%		25%		25%		20%
Level 3	Apply	45%	30%	40%	35%	40%	40%	20%	20%	35%
Level 4	Analyze	15%	40%	20%	35%	20%	30%	20%	50%	20%
Level 5	Evaluate		30%		30%		30%	25%	30%	10%
Level 6	Create									
	Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Bloom's Level

Continuous Learning Assessment

End Semester Examination

4. CO MAPPING WITH PO / PSO

CO - PO Mapping with PO						
CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO 1	3	2	1	-	-	-
CO 2	3	3	3	2	-	-
CO 3	2	1	2	2	1	-
CO 4	2	1	3	1	1	1
CO 5	2	1	2	2	2	1
Average	2.4	1.6	2.2	1.75	1.34	1

3 -> High   2-> Medium   1-> Low

5. LEVEL OF CORRELATION & ATTAINMENT

Level of Correlation/Mapping Factor

- It indicates to what extent a certain component mapped with the other. The correlation between CO - PO describes the level at which a particular PO is addressed through a CO.

  3 - indicates Substantial/High mapping (high correlation towards attainment)

  2 - indicates Moderate mapping (moderate correlation towards attainment)

  1 - indicates Low mapping (low correlation towards attainment)

CO Attainment Targets

- Targets are quantized into certain levels, 3 being the most common number of levels. CO Attainment targets are finalized by the course coordinator before commencing course delivery in a semester.

For Example, we can set a target as below:

Level 3: x% Students scoring >= p% of max marks allocated to CO

Level 2 : y% Students scoring >= p% of max marks allocated to CO

Level 1 : z% Students scoring >= p% of max marks allocated to CO

p% à The expected Proficiency % to attain a CO. For ex. It can be 60%

x% à The High expected Attainment %. For ex., it can be set as 85%

y% à The moderate expected attainment %. For ex., it can be set as 70%

z% à The low expected attainment %. For ex., it can be set as 60%

- Attainment of COs can be measured *directly* and *indirectly*
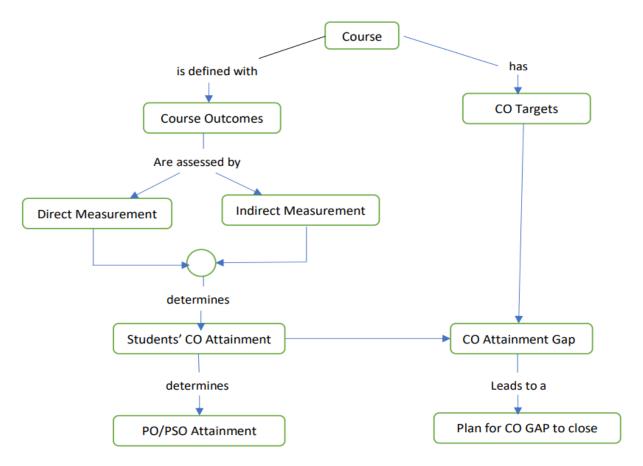
Direct CO attainment

- Direct attainment of COs is determined from the performances of students in Continuous Internal Assessment (CIA) and Semester End Examination (SEE).
- Continuous Internal Assessment (CIA) is conducted and evaluated by the relevant department itself based on the various criteria set by the department.
- When questions are tagged with relevant COs, the department has access to performances of students with respect to each CO
- For the Semester End Examinations, the direct attainment is calculated from the final mark for all COs

Indirect CO attainment

- Indirect attainment of COs can be determined from the course exit survey.
- The exit survey form should be designed to get feedback from students on all the COs

GAP ANALYSIS

- If targets are achieved for that year, higher targets can be set (increase the target by 2% to 5%) for the following academic year as a part of continuous improvement.
- If targets are not achieved, an action plan should be performed to attain the target in the subsequent years

Step 1: For every course, course outcomes (CO) are defined and mapped to Program outcomes (PO) on a scale of 1 to 3. The average of each POs are calculated.

CO attainment targets are finalized by the course coordinators before commencement of the course delivery.

CO - PO Mapping with PO

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO 1	3	2	1	-	-	-
CO 2	3	3	3	2	-	-
CO 3	2	1	2	2	1	-
CO 4	2	1	3	1	1	1
CO 5	2	1	2	2	2	1
Average	**2.4**	**1.6**	**2.2**	**1.75**	**1.34**	**1**

3 -> High   2-> Medium   1-> Low

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1															
2						III Semester BCA		CA-C11T: OPERATING SYSTEM							
3						INTERNAL ASSESSMENT -1 (CLA-1)									
4		**Max. Marks**			2	2	2	5	5	5	8	8	8		
5		CO			CO - 1	CO-1	CO-2	CO-1	CO-2	CO-2	CO-2	CO-3	CO-3	**TOTAL**	
6		SL.No.	USN	Student Name	Q1	Q2	Q3	Q3	Q4	Q5	Q6	Q7	Q8		
8		1	U03KU21S0093	Smitha S	2	2		4	5			7	7	**27**	
9		2	U03KU21S0094	Priyanka A	2		2	4		3	6	6		**23**	
10		3	U03KU21S0095	Sharadhi B.P	2	2		5	4		6		0	**19**	
11		4	U03KU21S0096	Danish	1	0		3		2	0	4		**10**	
12		5	U03KU21S0001	Madhushree M		2	2	3	4		7		6	**24**	
13															
14					Max. marks for each Question			Marks earned by each student				CO for each question			
15															
16		Number of Student attempted			4	4	2	5	3	2	4	3	3		
17		No. of students who have scored more than 60% of marks			3	3	2	5	3	1	3	2	2		
18		Percentage of students who got more than 60% of marks			75%	75%	100%	100%	100%	50%	75%	67%	67%		
19		Average Percentage of students who got more than 60% of marks for each CO			CO-1	83%		CO-2	75%		CO-3	67%			
20		CO ATTAINTMENT LEVEL			3			2			1				
21															

Step 2: For every CIA, Enter maximum marks for each question and its corresponding CO in the relevant columns.

Step 3: Enter mark for each student question-wise. Mark zero(0) if the student failed to answer for mandatory questions. Leave blank only for choice questions. We find the total mark of the students in last column.

Step 4: Compute

Number of Student attempted	=COUNTA(E8:E12)
No. of students who have scored more than 60% of marks	=COUNTIF(E8:E12,">="&0.6*E4)
Percentage of students who got more than 60% of marks	=E17/E16
Average Percentage of students who got more than 60% of marks for each CO	=AVERAGE(E18,F18,H18)
CO ATTAINTMENT LEVEL	=IF(F19>=80%,3,IF(AND(F19>=70%,F19<80%),2,1))

CO Attainment Level = 3, if (the avg. % of students who got >=p% for each CO) >=x [>=80%]

= 2, if (the avg. % of students who got >=p% for each CO) >=y [70 – 79%]

= 1, if (the avg. % of students who got >=p% for each CO) >=z [<70%]

Above table illustrate on E cell. Copy and Paste the formula for other cells also.

Step 5: Repeat steps 2 to 4 for each CIA components. Use separate sheet for each CIA

Step 6 : : Enter the marks earned by the students in Semester End Examinations. Also compute the percentage of students who got more than 60% of marks in Semester End Examinations

	A	B	C	D	E	F
1						
2		Academic Year :		2022-23		
3		Course Code :		CA-C11T		
4		Course title :		OPERATING SYSTEM		
5		Year & Semester :		II Year & III Semester		
6		Name of the Faculty :		Prof. Megha Potdar		
7		Max. Marks		60		
8		SL.No.	USN	Student Name	Marks	
10		1	U03KU21S0093	Smitha S	54	
11		2	U03KU21S0094	Priyanka A	39	
12		3	U03KU21S0095	Sharadhi B.P	26	
13		4	U03KU21S0096	Danish	41	
14		5	U03KU21S0001	Madhushree M	44	
15						
16		No. of students who have scored more than 60% of marks			4	
17						
18				=COUNTIF(E10:E14,">="&0.6*D7)		
19						
20		Percentage of students who have scored more than 60% of marks			80.00%	
21						
22				=E16/5		
23						

Indirect assessment: refers to the exit feedback survey taken by students / faculty / employers. The exit feedback survey must be taken up before the end of the semester. The exit survey may be based on a marking scheme (1-3) for each CO.

- The course exit survey samples are given below for student/faculty/employer
  (Kindly note the respective course teacher may modify these templates according to the requirements of the course)

Sample 1 : Course outcome exit survey for students

	Course outcome	1 (Low)	2(Moderate)	3 (High)
CO 1	Express the fundamental concepts in Operating System			
CO 2	Implement synchronization and scheduling in Operating System			
CO 3	Apply fragmentation, paging and segmentation in memory management			
CO 4	Incorporate page fault handling, demand paging and page buffering techniques in Operating System			
CO 5	Demonstrate the storage management techniques through various File management techniques			

Sample 2 : Course content exit survey for students

	Questions	1 (Low)	2(Moderate)	3 (High)
1	Quality of Course Content			
2	Relevance of the textbook to this course			
3	Were lecture clear/well organized and presented at a reasonable pace?			
4	Did the lectures stimulate you intellectually?			
5	Are the assisgnment/lab experiment procedures clearly explained?			

Sample 3 : Faculty / Employer Survey

	Questions	1 (Low)	2(Moderate)	3 (High)
1	Satisfaction with the caliber of the graduates			
2	Courses are relevant to the organization's vision and mission			
3	Satisfaction with the speed at which course content is being adapted to meet changing industrial needs			
4	Relevant subject or discipline knowledge			
5	Quality of employability skills and attributes			

Example :

Here we shall consider only Course out come exit survey as indirect assessment parameter

	A	B	C	D	E	F	G	H	I	J
34										
35										
36			Course outcome		1 (Low)	2(Moderate)	3 (High)	No. of students responded	% of Survey response	Attainment level
37		CO 1	Express the fundamental concepts in Operating		2	1	1	4	80.00%	3
38		CO 2	Implement synchronization and scheduling in		1	2	1	4	80.00%	3
39		CO 3	Apply fragmentation, paging and segmentation in		1	2	2	5	100.00%	3
40		CO 4	Incorporate page fault handling, demand paging and		2	1	0	3	60.00%	1
41		CO 5	Demonstrate the storage management techniques		2	0	0	2	40.00%	1
42										
43								=SUM(E37:G3)	=H37/5	
44										
45								=IF(I37>=80%,3,IF(AND(I37>=70%,I37<80%),2,1))		
46										

Final Course Attainment Calculation :

				III Semester BCA CA-C11T: OPERATING SYSTEM										
				CIA				DA = (40% CIA + 60% Sem end exam)				FA = 80% DA + 20% IA		Target
		Course outcome		IA-1 %	Attainment level	Preparatory %	Attainment level	Direct Assessment %	Attainment level	Indirect Assessment %	Attainment level	Final Assessment %	Attainment level	
	CO 1	Express the fundamental concepts in Operating System		83	3	91	3	82.80	3	80.00	3	82.24	3	2.5
	CO 2	Implement synchronization and scheduling in Operating System		75	2	87	3	80.40	3	80.00	3	80.32	3	2.5
	CO 3	Apply fragmentation, paging and segmentation in memory management		67	1	74	2	76.20	2	100.00	3	80.96	3	2.5
	CO 4	Incorporate page fault handling, demand paging and page buffering techniques in Operating System				72	2	76.80	2	60.00	1	73.44	2	2.5
	CO 5	Demonstrate the storage management techniques through various File management techniques				68	1	75.20	2	40.00	1	68.16	1	2.5
								FINAL COURSE ATTAINMENT				2.4		

	IA-1 % & Attainment level	Refer Step-1
	Preparatory % & Attainment level	Assumed
	(80% from sem end exam refer Step-6)	=(E5+G5)/2 *0.4 + 80*0.6
	Attainment level	=IF(I5>=80,3,IF(AND(I5>=70,I5<80),2,1))
	Indirect Assessment %	refer exit survey example
	Attainment level	=IF(K5>=80,3,IF(AND(
	Final Assessment	=I5*0.8 +K5*0.2
	Attainment level	=IF(M5>=80,3,IF(AND(M5>=70,M5<80),2,1))
	Final Course Attainment	=AVERAGE(N5:N9)

8. CALCULATION OF PO / PSO ATTAINMENT

Step 1 : To calculate PO attainment we refer the following values.

(i)   Final Attainment Level of COs [Refer previous section]
(ii)   CO-PO mapping correlations. [Refer Step 1 in the previous section]
(iii)   Maximum Correlation Value. ie; 3 Step 2

	Course outcome	FA = 80% DA + 20% IA Final Assessment %	Attainment level	Target
CO 1	Express the fundamental concepts in Operating System	82.24	3	2.5
CO 2	Implement synchronization and scheduling in Operating System	80.32	3	2.5
CO 3	Apply fragmentation, paging and segmentation in memory management	80.96	3	2.5
CO 4	Incorporate page fault handling, demand paging and page buffering techniques in Operating System	73.44	2	2.5
CO 5	Demonstrate the storage management techniques through various File management techniques	68.16	1	2.5

CO - PO Mapping with PO

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO 1	3	2	1	-	-	-
CO 2	3	3	3	2	-	-
CO 3	2	1	2	2	1	-
CO 4	2	1	3	1	1	1
CO 5	2	1	2	2	2	1
Average	**2.4**	**1.6**	**2.2**	**1.75**	**1.34**	**1**

3 -> High   2-> Medium   1-> Low

Step 2 : The PO attainment for each CO is calculated as follows:

$$\text{PO/PSO Attainment} = \frac{\text{Final CO Attainment Level}}{\text{Max. Correlation Value}} * \text{CO-PO Mapping Correlation value}$$

i.e, Final Attainment for CO5 is 1, CO5-PO1 mapping is 2, So the PO1 attainment w.r.to CO5 is = [1/ 3] * 2 = 0.7

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO 1	3	2	1	-	-	-
CO 2	3	3	3	2	-	-
CO 3	2	1	2	2	1	-
CO 4	1.3	0.7	2.0	0.7	0.7	0.7
CO 5	0.7	0.3	0.7	0.7	0.7	0.3
Average	**2.0**	**1.4**	**1.7**	**1.3**	**1.3**	**0.5**

Step 3 : Repeat the calculation for all POs/PSOs

Step 4 : Compute the average PO attainment for each POs/PSOs

9. PROGRAM LEVEL PO / PSO ATTAINMENT

The PO attainments of all the core courses are listed and the average PO attainments are calculated. Then the average PO attainments are compared with the target PO to check whether the POs are attained at programme level or not.

SL.NO	COURSE CODE	COURSE TITLE	PO-1	PO-2	PO-3	PO-4	PO-5
		BCA (ODD Semester) Program Attainment					
1	CA-C1T	Discrete Structure	2.83	2.8	2.2	2.9	2
2	CA-C2T	Problem Solving Technique	3	3	2	3	3
3	CA-C3T	Data Structure	2.21	2.2	2.8	2.3	2
4	CA-C11T	Operating System	2	2	2	2.3	2.8
5	CA-C12T	Computer Networks	2.42	2	2	2	2
6	CA-C13T	Python Programming	3	2	2	2	2.3
7	CA-C17T	Artificial Intelligence	3	3	3	3	2
8	CA-C18T	Internet Technologies	3	2	2.2	2.9	3
9	CA-C21T	Design and Analysis of Algorithm	2	2	3	3	2
10	CA-C22T	Data Analytics	2	2	2	2.6	2
11	CA-C23T	Web Programming	2.3	2.7	2.5	2.3	3
12		Project	2	2	2	3	3
13		Internship	3	3	2	3	3
14		Industrial Training	3	3	2	2	2
15		Value added program	3	3	3	3	3
16		Seminar / Workshop	3	3	2.5	2.7	2.8
		Average	**2.61**	**2.48**	**2.33**	**2.63**	**2.49**

Target = 2.5

Hence : (PO1 + PO2 + PO3 + PO4 + PO5)/5 = **2.51 Target attained**