JERUSALEM COLLEGE OF ENGINEERING, CHENNAI

(An Autonomous Institution affiliated to Anna University)
(Approved by AICTE, Affiliated to Anna University,
Accredited by NBA and NAAC with 'A' Grade)

PROCESS DOCUMENTS

Prepared by

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CONTENTS

S. No.	Description	Page Nos.
1	Process for Defining the Vision & Mission of Department	1
2	Process for Defining the PEOs of the Program	1
3	Process for Designing the Curriculum	2
4	Proctorial System	3
5	Course Outcomes - Programe Outcomes(CO – PO) Mapping And Attainment Process	7

1. PROCESS FOR DEFINING THE VISION & MISSION OF DEPARTMENT

- The Vision & Mission of Department has been evolved in tune with Vision & Mission of the Institution using input from all stakeholders like Industry experts, Employers, Alumni, and Faculty Members through the Department Advisory Board.
- The Department Advisory Board consists of members representing all strata of stakeholders.
- A draft copy of the Vision & Mission of the Department is prepared by senior faculty members of the department with aspirations of all the programs offered by the department and Vision & Mission of the Institution as key input.
- This draft is then presented in the Department Advisory Board for brainstorming review and feedback is collected for further action.
- This review happens in a few iterations until the final version of the Vision & Mission of the Department is finalized by the Department Advisory Board.
- The final version of Vision & Mission of the Department is then presented to the Board of Studies (BoS) and Academic Council for final approval.

**Process of Defining Vision and Mission of the Department**
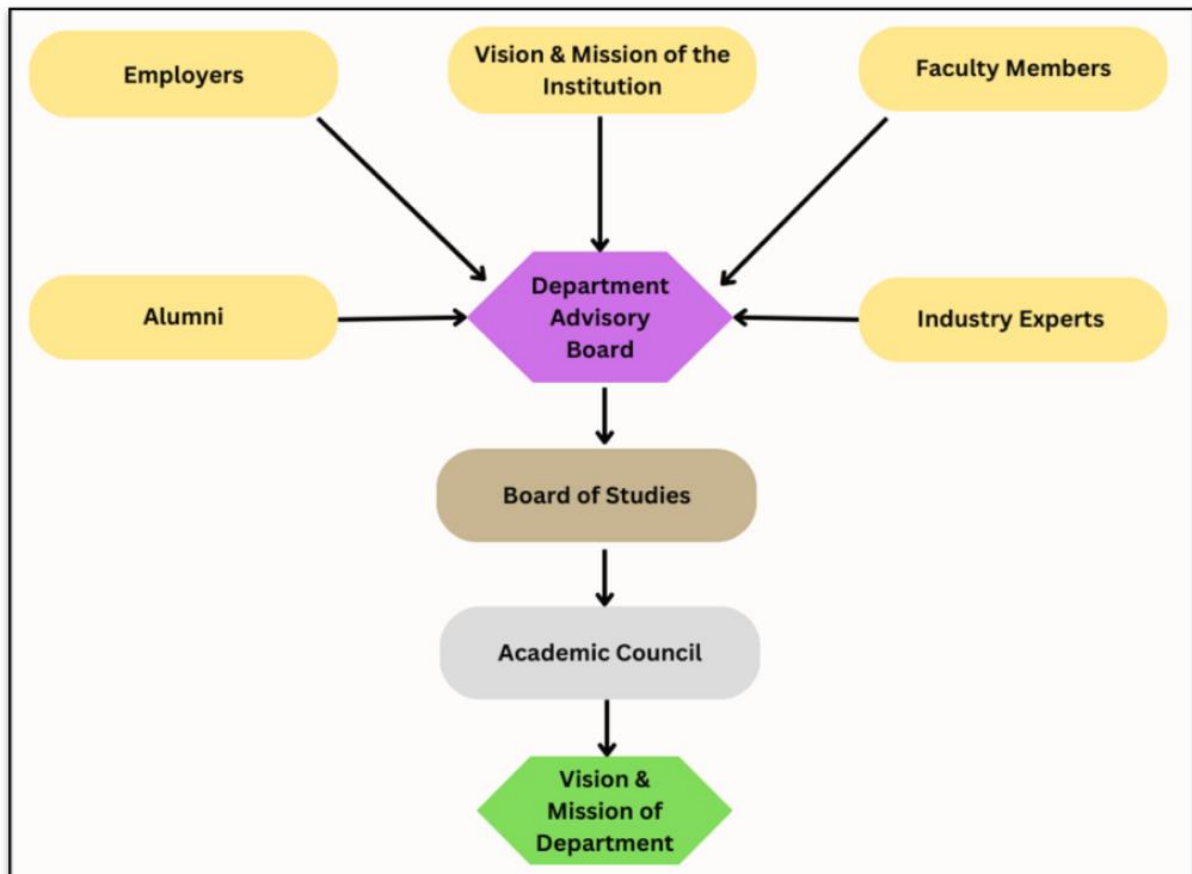
2. PROCESS FOR DEFINING THE PEOS OF THE PROGRAM

The PEOs of the department are framed using the Vision & Mission of the department through input from all stakeholders like Industry experts, Employers, Alumni, and Faculty Members through the Department Advisory Board.
- A draft copy of the PEOs is framed by senior faculty members/internal domain experts

that contains industry requirements, technology development etc.

- This draft copy of PEOs of various programs offered by the department is put up in the Department Advisory Board for review.
- This review happens in a few iterations until the final version of the PEOs is finalized by the Department Advisory Board.
- The final version of PEOs is then presented to the Board of Studies (BoS) and Academic Council for final approval
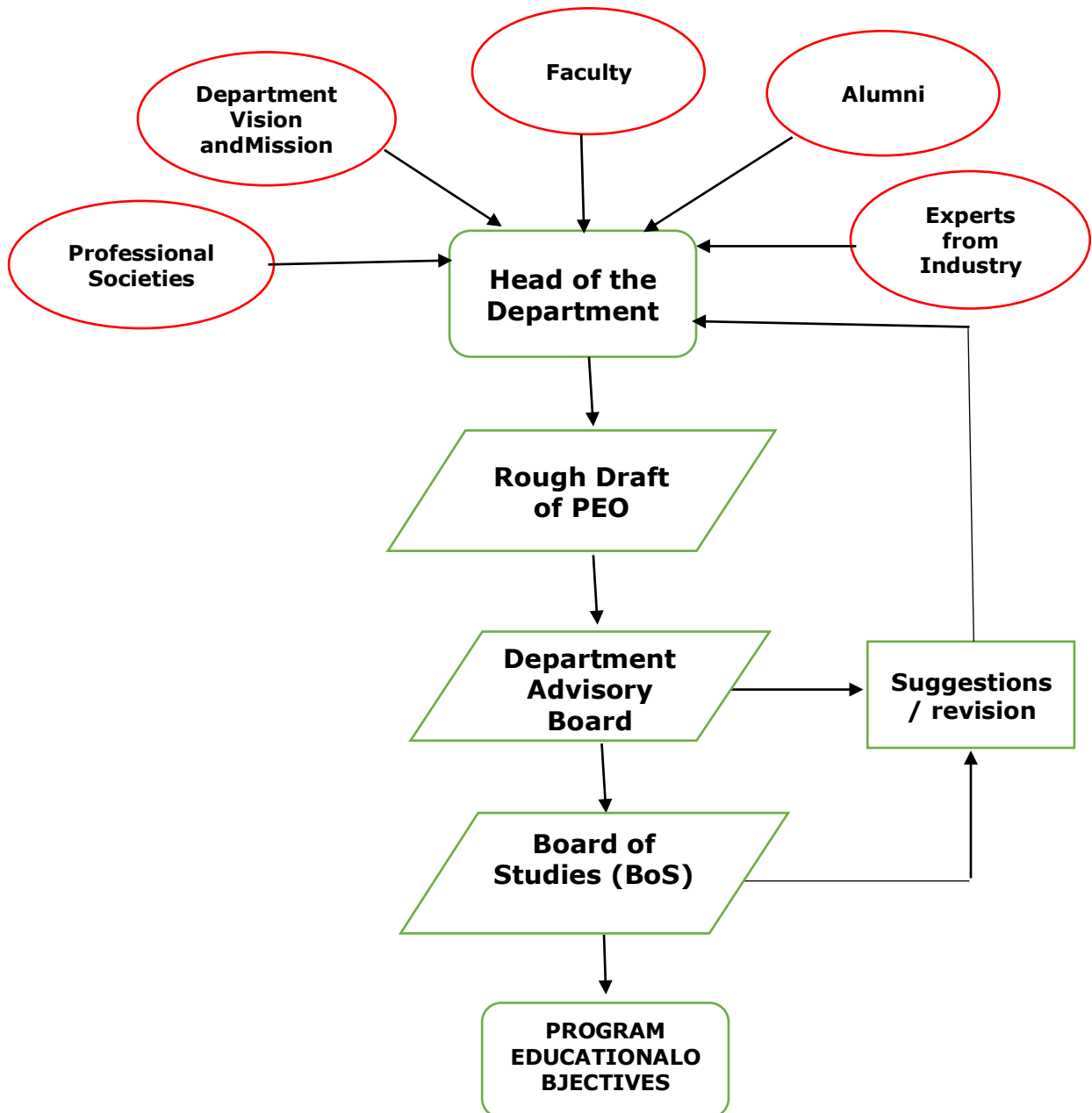

3. PROCESS FOR DESIGNING THE CURRICULUM

The objective of the curriculum is to provide improved flexibility and wider coverage of courses with specific outcomes mapping with program outcomes to achieve the PEOs and PSOs of the department. The curriculum and syllabi of a program has been designed based on

the guidelines of the AICTE/Affiliating University in consistence with the vision and mission of the department and in compliance with the Program Educational Objectives and Program Specific Outcomes of the department. The institution follows choice-based credit system (CBCS), following the regulations of Anna University

- The department Program Assessment Committee (PAC) is constituted under the head of the department comprising of senior faculty members with expertise in various domains. The committee collects suggestions from other faculty members of the department, gaps that have been identified from previous regulation syllabi, feedback from Alumni and other stakeholders to frame the curriculum and syllabi.
- These suggestions are incorporated into the syllabus by the course instructor. The tentative draft syllabus is prepared and submitted to the PAC and is analyzed by them for alignment with POs, PEOs and PSOs.
- The final draft is presented in the Board of Studies Meeting by the Head of the Department for final approval and forwarded to academic council.
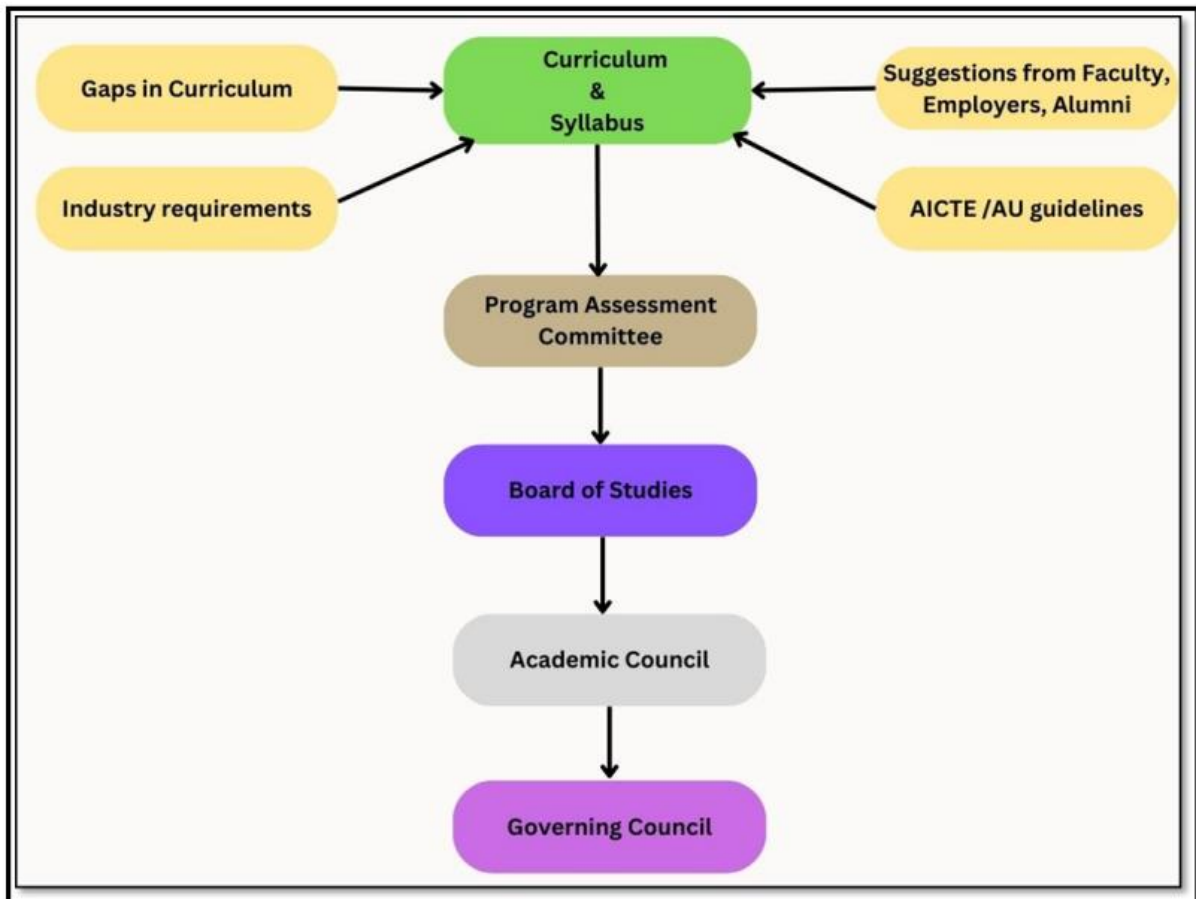

4. PROCTORIAL SYSTEM

Jerusalem College of Engineering has developed a novel Proctorial System. It is a proven and a successful system meant for the overall development of the students. A senior faculty member is nominated as Chief Proctor of the college and all faculty members are

serving as Proctors. A group of 15 to 20 students are assigned to each Proctor to guide and monitor them on academic and personal matters. It is a transparent system enables the parents to monitor their wards' progress in terms of attendance, punctuality, discipline, performance and learning abilities. Continuous improvement of the student is consistently monitored by the proctor. The proctors maintain Student Academic Record (SAR) of each student allotted to him or her.

Student's Academic Record (SAR) – A Testimony of the student which is maintained by the concerned Proctor for the entire period of study.

- SAR depicts Student's Personal Information, Marks secured in Assessment Tests, Attendance percentage, End Semester Examination results and the details of student's academic achievements (participation in conferences, work-shops, symposium, Internship, Online courses, Value Added Courses within and outside college).
- Extra Curricular and sports activities etc, are also recorded in SAR.
- Particulars of Disciplinary issues/Action Taken-Lack of attendance, Malpractice etc., are also monitored through SAR.
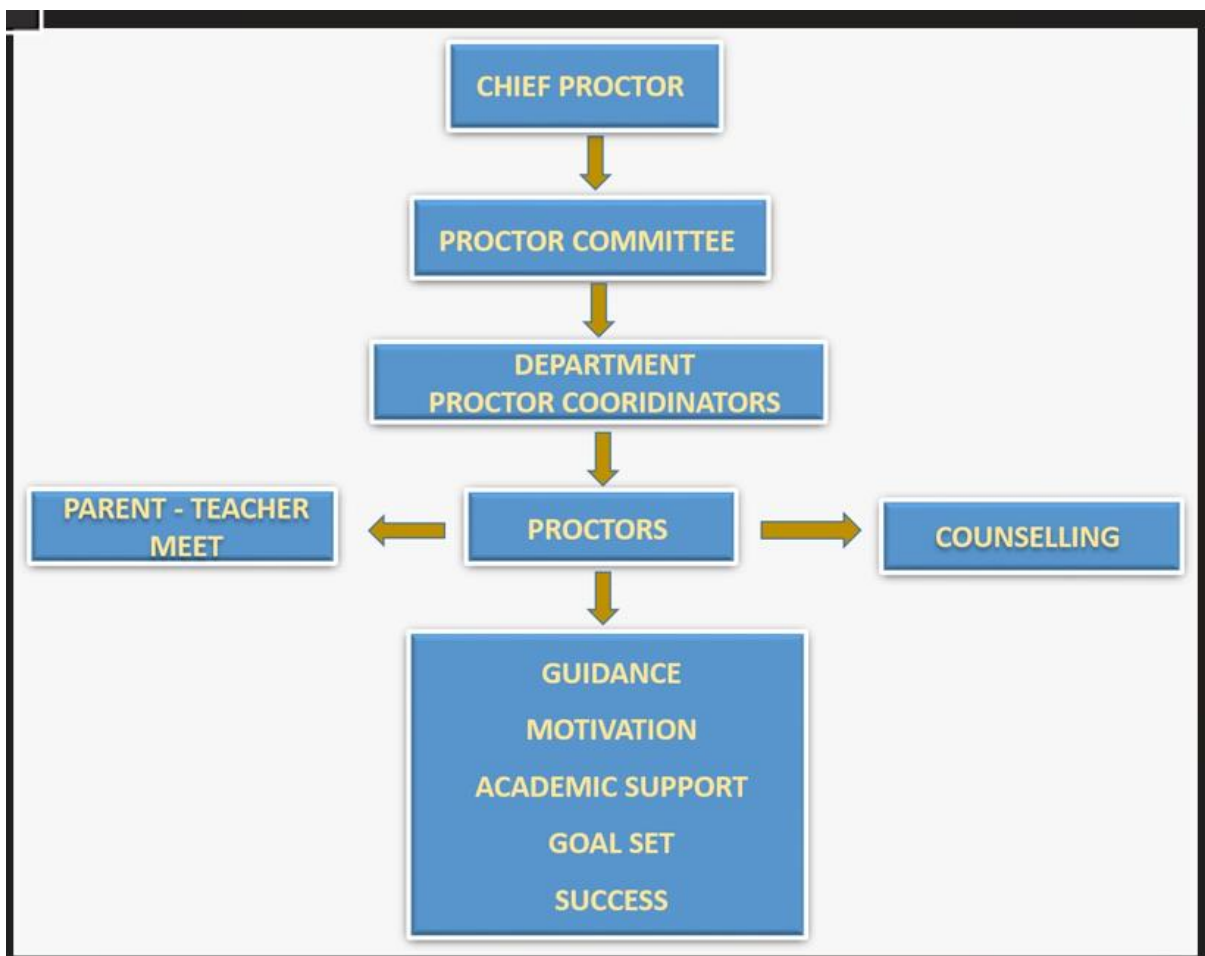
4.1. Proctor Committee

A proctor committee is constituted with the Chief Proctor as Chairperson and one faculty Member from each department as member of the committee and one of the members act as Member-Secretary.

Before commencement of every semester, Chief proctor conduct proctor committee meeting. The schedule of the meeting with agenda is intimated in advance to all the department proctor coordinators. Purpose of the meeting is to discuss and plan various activities to be carried out through proctors. Thereafter, minutes of the meeting (MoM) is prepared and circulated.

4.1.1. Responsibility of the Chief Proctor

- To coordinate with the Head of the Institution and Dean student affairs and provide the details of activities of proctorial system periodically
- To conduct coordinator meeting once in a semester.
- To organize Parent – Teacher Meeting for all B.E/B.Tech students
- To analyze the feedback given by the parents and prepare a report on actions to be taken at the department and college level. The report should be submitted to the Dean student affairs for taking actions.
- To identify a professional counselor and organize students counseling program for the needy students.
- To prepare and maintain various documentations related to the system.

4.1.2. Responsibility of Proctor Coordinator

- To attend the meeting conducted by the Chief Proctor.
- To allocate proctors for each class.
- To organize PTM at department level.
- To analyze the feedback at and submit the same to the Chief proctor for the action to be taken.
- To circulate all the necessary documents among the proctors.
- To submit necessary documents to the Chief proctor(list of proctors, PTM report etc.,)
- To collect the list of students for counseling program at department level.
- To prepare case study after the counseling session.

4.1.3. Responsibility of the Proctor

- To monitor their proctored students towards academic performance, discipline, etc.
- To sanction leave to the students with parents confirmation.
- To monitor the attendance everyday and make phone call to the parents whose ward is absent for the college without prior information.
- To send an official letter to the parents for long absenteeism.

- To call parents whenever there is a necessity (taking leave without prior intimation, involves in disciplinary issue etc)
- To inform about the PTM schedule and to collect feedback from the parents during PTM.
- To interact with parents and students of allotted students during PTM.
- To maintain the SAR with necessary entries.
- To communicate all the necessary details to the parents (PTM schedule, Exam related matters etc.,)
- To identify and suggest the students for counseling.

4.2. Activities of Proctor System

4.2.1. Parent-Teacher Meeting

- Parent-Teacher Meeting (PTM) is organized in the college premises once in a semester for all the B.E/B.Tech and I year of MBA students. PT meeting is scheduled as per the academic calendar, after the first assessment test.
- Official circular is released by the Head of the Institution for PTM,
- PTM schedule is intimated to the parents by the respective proctors over phone.
- The day of the meeting is announced as open day for all the students.
- During PTM, proctors interact with the parents on one to one basis to explain their ward overall performance in the Assessment test, attendance percentage, disciplinary matters etc. During discussion, Student Academic Record (SAR), having all the subjects' marks secured in the AT is shown to the concerned parent.
- Students with poor performance are directed to meet the HoD along with the parents for further discussion.
- Parent signatures are obtained in the respective column given in the SAR after the meeting.
- Feedback form is circulated to each parent and the filled up forms are collected back for analysis and action to be taken.
- For PT meet, Attendance for parents is maintained by the respective proctors and same is filed.
- During the meeting, refreshment is arranged for both parents and staffs.

4.2.2. Students Counseling Program

- A professional counselor is arranged by the Management for the students who struggle with their studies due to some personal issues.
- Counseling sessions are organized for the students' volunteer in the beginning of even semester.
- List of needy students are prepared by the proctors and submit the same to the Chief Proctor. Based on the students' strength, counseling sessions are planned.
- Counseling session is arranged in a separate room to provide privacy for the student and the counselor.
- Counselor attends one candidate at a time.

- Counselor prepares the client profile during interaction and all the Client Profiles are kept confidential after the counseling session.
- After 3 months, a Case study is prepared by the concerned proctor for the student who attends the counseling session.
- From the Case study, attitude change, behavioral change and improvement in the academics are analyzed.
- Finally a case study report with the signatures of the proctor, department proctor coordinator and HoD is prepared and filed in the department.

5. COURSE OUTCOMES - PROGRAME OUTCOMES(CO – PO) MAPPING AND ATTAINMENT PROCESS

5.1. Course Outcomes

The syllabus of a course is designed based on course objectives and expected course outcomes.

Course objectives: A detailed description of what a faculty member will cover in a course.

Course outcomes (CO): A detailed description of what a student must be able to do at the conclusion of a course.

While writing COs for a course, the following points must be considered:
1. Course outcomes should begin with an action verb from Bloom's taxonomy followed by learning statement
2. COs should be expressed in terms of measurable, specific and achievable terminology.
3. The COs should be written by faculty who have demonstrated considerable expertise in that course and should drive program outcomes.
4. All the courses in the department should have 5 COs.
5. The syllabus book should have course articulation matrix for CO-PO mapping of all the courses.

Example:

Course Code: JHSXXXX

CO	Course outcome statement
	Students will be able to
CO1	Comprehend reading passages and express themselves
CO2	Communicate their thoughts confidently and skillfully
CO3	Respond to the needs in social contexts convincingly
CO4	Be creative and critical in expressing themselves
CO5	Write the given tasks in a clear and persuasive manner

[Blooms taxonomy (Knowledge levels)
K1 – Remember
K2 – Understand
K3 – Apply
K4 – Analyse
K5 – Evaluate
K6 – Create]

5.2. Programe Outcomes

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

ii. **Problem Analysis:** Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

iii. **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

iv. **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 for complex problems

v. **Modern Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

vi. **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.

vii. **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.

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

ix. **Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings

x. **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.

xi. **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.

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

5.3. CO – PO Mapping (Course Articulation Matrix)

Course Articulation Matrix is the mapping of each Course Outcome of a Course with PO/PSO of the program. It also shows the level (strength) of correlation between each Course Outcomes and Program Outcomes/ Program specific outcomes for a Course. It is to be noted that COs may not address all POs/PSOs and in such cases the correlation will be Nil.

The level of correlation is assigned as follows:
      Level 3 – High correlation
      Level 2 – Medium correlation

Level 1 – Low correlation
' – '   - No correlation

Example :

Course Articulation Matrix

Subject Code: JHSXXXX (C101)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C101.1	-	-	-	1	-	1	-	1	1	3	-	1			
C101.2	-	-	-	1	-	1	-	1	1	3	-	1			
C101.3	-	-	-	1	-	1	-	1	1	3	-	1			
C101.4	-	-	-	1	-	1	-	1	1	3	-	1			
C101.5	-	-	-	1	-	1	-	1	1	3	-	1			
C101	-	-	-	1	-	1	-	1	1	3	-	1			

5.3.1. Mapping Level and its Justification

The assignment of mapping level of CO with POs/PSOs   and its justification is done by following the guidelines given below.

- Three Key features (Justification statement) for each PO are identified and given in table 1. For PSOs, three key features for each PSO are to be identified by the respective departments and must be included in the table.
- Each CO of a particular course is mapped with key features of all POs/PSOs and indicated by 'Tick' mark. The number of ticks will be assigned as the   level (Strength) of correlation of CO with each PO/PSO. If mapping is not possible with any POs/PSOs then correlation level will be assigned as ' - ' . These values will be given in the CO-PO/PSO articulation matrix

Rubrics for CO – PO/PSO Mapping COURSE CODE

PO No.	NBA Statement / Key Features (Mark 'Tick' for mapping with the CO)	No. of Key Features correlated with CO ( ) 1/2/3/Nil	Level of correlation 1/2/3/'-'
PO 1	Apply the knowledge of mathematics, science, Engineering fundamentals, and anEngineering specialization to the solution of complex Engineering problems (**Engineering Knowledge**). CO( ): Students will be able to apply 1. **Knowledge of basic Science** 2. **Knowledge of Mathematics** 3. **Engineering fundamentals and specialization** *to provide solution to complex engineering problems.*		

PO 2.	Identify, formulate, review research literature, and analyse complex Engineering problems reaching substantiated conclusions using first principles of mathematics natural sciences, and Engineering sciences (**Problem Analysis).** CO( ) : Students will be able to identify/ formulate/ review research literature/ analyse engineering problems using **1. Principles of Mathematics** **2. Fundamentals of natural sciences** **3. Concepts of engineering sciences** *for reaching substantiated conclusions*		
PO 3.	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 (**Design/Development of Solutions).** CO( ) : Students will be able to **1. Design solutions** **2. Design system components** **3. Design process** **considering public health and safety with the cultural, societal and Environmental considerations**		
PO 4.	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 (**Conduct Investigations of Complex Problems).** CO( ) :Students will be able to **1. Carry out Research based knowledge and research methods including design of experiments** **2. Do Analysis and interpretation of data** **3. Do Synthesis of the information** *to provide valid conclusions for complex problems*		
PO 5.	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 (**Modern ToolUsage).** CO( ) : Students will be able to **1. Create techniques, resource and IT tools** **2. Select techniques, resources and IT tools** **3. Apply techniques, resources and IT tools** *to complex engineering activities*		
PO 6.	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 (**The Engineer and Society**). CO( ) : Students will be able to 1. Practice engineering activities to promote societal and cultural values 2. Apply relevant legal requirements for governing engineering activities. 3. Apply contextual knowledge to assess health and safety issues relevant to the professional engineering practice		

PO 7.	Understand the impact of the professional Engineering solutions in societal and Environmental contexts, and demonstrate the knowledge of, and need for sustainable development (**Environment and Sustainability).** CO( ): Students will be able to implement 1. Socio economic engineering practices 2. Professional engineering in Environmental context 3. Engineering practices for sustainable development		
PO 8.	Apply ethical principles and commit to professional ethics and responsibilities and norms of the Engineering practice (**Ethics).** CO( ) : Students will be able to 1. Provide knowledge of professional codes of ethics 2. Evaluates the ethical dimensions of professional practice **3. Demonstrates ethical behavior.**		
PO 9.	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings (**Individual and Teamwork).** CO( ) : Students will be able to 1. Achieve Independence and Self-direction (take a vaguely defined problem and systematically work to resolution) 2. Work well with a team as a member 3. Work with all levels of people in an organization as a leader		
PO 10	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 (**Communication).** CO( ): Students will have 1. Communication skill (technical)with clarity 2. Report writing and documentation skills 3. Presentation and listening skills		
PO 11	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 (**Project Management and Finance).** CO( ) : Students will be able to 1. Implement engineering and management principles to one's own work 2. Apply management skills to manage projects 3. Apply management skills in multidisciplinary environments		
PO 12	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 (**Life - Long Learning).** CO( ) Students will have 1. Lifelong learning aptitude 2. Ability to update with latest technology 3. Ability to modify engineering practices considering Social and environmental issues.		

PSO1			
PSO2			
PSO3			

5.3.1. *Program Articulation Matrix*

Program articulation matrix is mapping of all Courses in the curriculum of a batch to Program outcomes / Program Specific Outcomes

For example , for a batch of students completing the programme in the academic year 'AY', we need to consider all the Courses in the curriculum pertaining to the following academic years.

- ➤ 4th year - VII Semester & VIII Semester courses of AY Academic year
- ➤ 3rd year - V Semester & VI Semester courses of AYm1 Academic year
- ➤ 2nd year - III Semester & IV Semester courses of AYm2 Academic year
- ➤ 1st year - I Semester & II Semester courses of AYm3 Academic year

5.4.CO – PO Attainment Calculations

5.4.1. *CO Attainment*

Two components are involved in the calculation of CO attainment of a course

1. CO attainment(Internal)
2. CO attainment (External) .

The weightage of CO attainment(Internal) and CO attainment(External) are 40:60 for theory courses, 50:50 for Integrated courses and 60 : 40 for laboratory courses.

5.4.2. *Assessment tools for CO attainment (Internal)*

Following are the internal assessment tools
1. Assessment test, Class test, Assignment and activities (for theory course)
2. Continuous assessment and Model examinations (for Laboratory course)

Assessment test: Two assessment tests(descriptive type) are conducted every semester with question items covering all levels of Bloom's Taxonomy such as Remembering(K1), Understanding(K2), Applying(K3), Analysing(K4), Evaluating(K5) and Creating(K6). However descriptive type tests have little focus on K5 and K6 level of Bloom's Taxonomy for majority of the theory courses.

Class test: Class test are conducted frequently (weekly or fortnightly) to test understanding of a small portion covered during that period and to identify and correct any misconception of the learners.

Assignments : Assignments are designed to test the higher cognitive levels (K3, K4, K5 and K6) of students through providing exercises focusing on Problem solving ability, latest technologies survey, case studies etc.
Activity: Activities like Viva voce, Quiz with multiple choice questions, Group discussion, Presentations etc. are conducted to test analytical skills, technical communication and presentation skills of students.

FLOW CHARTS OF ASSESSMENT TOOLS USED FOR CO ATTAINMENT (INTERNAL)

Theory Courses

Assessment Tools

CO attainment (Internal) (40%)	INTERNAL ASSESSMENT 1 (100 marks) (CO1, CO2 & CO3)	Assessment test (60 marks)
		Class test (20 marks)
		Assignment (10 marks)
		Activity(10 marks)
	INTERNAL ASSESSMENT 2 (100 marks) (CO3, CO4 & CO5)	Assessment test (60 marks)
		Class test (20 marks)
		Assignment (10 marks)
		Activity(10 marks)
CO attainment (External) (60%)	End semester examination	Descriptive type examination (100marks)

Integrated courses (Theory Integrated with Laboratory)

Assessment Tools

CO attainment (Internal) (50%)	Theory component (25%)	Internal Assessment 1 (100 Marks) (Co1, Co2 & Co3)	Assessment test (60 marks)
			Class test (20 marks)
			Assignment (10 marks)
			Activity (10 marks)
		Internal Assessment 2 (100 Marks) (Co3, Co4 & Co5)	Assessment test (60 marks)
			Class test (20 marks)
			Assignment (10 marks)
			Activity (10 marks)
	Laboratory components (All experiments) (25%)	Continuous assessment (75 marks)	
		Model examination (25 marks)	
CO attainment (External) (50%)	End semester examination	Descriptive type examination on theory component (100marks)	

Laboratory Courses

Assessment Tools

CO attainment (Internal) (60%)	All experiments	Continuous assessment (75 marks)
		Model examination (25 marks)
CO attainment (External) (40%)	All experiments	End semester examination (100marks)

5.4.3. CO Attainment (Internal) Calculation Procedure

The Assessment test question papers are prepared covering all COs with equal weightage of marks taking into considerations of all levels of Blooms Taxonomy. After evaluation of answer sheets the marks scored by each student corresponding to the respective COs are recorded. The following sheets are used for the record of mark entry.

JERUSALEM COLLEGE OF ENGINEERING (AUTONOMOUS)

MARK ENTRY FOR ASSESSMENT TEST I

SUBJECT CODE:JCY1101   SEM: I   YEAR: I   BRANCH: CSE B

S.No.	Reg. No	Name	CO 1	1	2	2	3	1	1	2	2	3	3	Total(60)	CO1(24)	CO2(24)	CO3(12)
			Maximum marks 2	2	2	2	2	16	16	16	16	8	8				
			1	2	3	4	5	6(a)	6(b)	7(a)	7(b)	8(a)	8(b)				
1	130722104054	PARTHASARTHY. M.P.	2				2	3		5				14.4	6	6	2.4
2	130722104055	PAVITHRA J	2	2	0	1	1	10			9		8	39.6	16.8	12	10.8
3	130722104056	PAVITHRA P	2	2	2	1	2	13		8			7	44.4	20.4	13.2	10.8
4	130722104057	PRADEEP.T	2	2		1		10			7		8	36	16.8	9.6	9.6
5	130722104058	PRAGADEESH.A	2	2	2			16		6			8	43.2	24	9.6	9.6
6	130722104059	PRIYADHARSHINI.V	2	1				11			1		2	20.4	16.8	1.2	2.4
7	130722104060	RAJALAKSHMI.R	2	1	2	2	2	16		16			8	58.8	22.8	24	12
8	130722104061	RAJESH P	2	1	2	2		14			8		8	44.4	20.4	14.4	9.6
9	130722104062	RAKSHANA M				2	1		8		5		8	28.8	9.6	8.4	10.8
10	130722104063	RAM HARISH N.S.						1			1		3	6	1.2	1.2	3.6
11	130722104064	RAMADEVI.N	2	2	2	2	2	16			16		8	60	24	24	12
12	130722104065	RISHIAKASH.M			1		2		6		7		8	28.8	7.2	9.6	12
13	130722104066	RIYAZ AHMED .S	2	1		2		16			9		7	44.4	22.8	13.2	8.4

JERUSALEM COLLEGE OF ENGINEERING (AUTONOMOUS)
MARK ENTRY FOR ASSESSMENT TEST II

SUBJECT CODE: JCY1101			SEM: I				YEAR: I				BRANCH: CSE B			

		CO	3	4	4	5	5	4	4	5	5	3	3				
	Maximum marks		2	2	2	2	2	16	16	16	16	8	8				
S.No.	Register No	Name	1	2	3	4	5	6(a)	6(b)	7(a)	7(b)	8(a)	8(b)	Total(60)	CO3(12)	CO4(24)	CO5(24)
1	130722104054	PARTHASARATHY M P			2		1	9			10	8		36	9.6	13.2	13.2
2	130722104055	PAVITHRA J			2			7			12		7	33.6	8.4	10.8	14.4
3	130722104056	PAVITHRA P	2	2	2	1	1	7			14		8	44.4	12	13.2	19.2
4	130722104057	PRADEEP T	2	2	1	1	1	11			12		7	44.4	10.8	16.8	16.8
5	130722104058	PRAGADEESH A		2	2		1	7			15	8		42	9.6	13.2	19.2
6	130722104059	PRIYADHARSHINI V						7			16	4		32.4	4.8	8.4	19.2
7	130722104060	RAJALAKSHMI R			2		2	10			12	8		40.8	9.6	14.4	16.8
8	130722104061	RAJESH P						8			15	7		36	8.4	9.6	18
9	130722104062	RAKSHANA M		2	2		2	9			16	7		45.6	8.4	15.6	21.6
10	130722104063	RAM HARISH N S			1		1	4			6	4		19.2	4.8	6	8.4
11	130722104064	RAMADEVI N	1	1	2		1	14			15	8		50.4	10.8	20.4	19.2
12	130722104065	RISHIAKASH M	1	2			1	7			13	8		38.4	10.8	10.8	16.8
13	130722104066	RIYAZ AHMED S	2	2	2	2	1	13			16	7		54	10.8	20.4	22.8
14	130722104067	ROHITH K			2		1	10			10	7		36	8.4	14.4	13.2
15	130722104068	SAFIYA NAAZ	2	1	2	1	2	9			16	8		49.2	12	14.4	22.8

The marks scored by the students in class test, Assignment and activities corresponding to each COs are then included. The CO attainment levels are assigned based on the targets set by the PAC. A model calculation procedure for overall CO attainment (Internal) is given in the following Excel sheet.

JERUSALEM COLLEGE OF ENGINEERING(AUTONOMOUS)
DEPARTMENT: S&H (CHEMISTRY)
SUBJECT NAME & CODE: ENGINEEERING CHEMISTRY - JCY1101

Name	Reg No.	CO - 1						CO - 2						Assesment Test -1 (12)	Assesment Test -2 (12)	Clas
		Assesment Test (24)	Class Test (8)	Assignment (4)	Activity (4)	Total (40)	%	Assesment Test (24)	Class Test (8)	Assignmen t (4)	Activity (4)	Total (40)	%			
PARTHASART HY. M.P.	130722104054	6	6	4	4	20	50	6	7	4	4	21	52.5	2.4	9.6	
PAVITHRA J	130722104055	16.8	8	4	4	32.8	82	12	8	4	4	28	70	10.8	8.4	
PAVITHRA P	130722104056	20.4	7	4	4	35.4	88.5	13.2	8	4	4	29.2	73	10.8	12	
PRADEEP.T	130722104057	16.8	8	4	4	32.8	82	9.6	8	4	4	25.6	64	9.6	10.8	
PRAGADEESH. A	130722104058	24	8	4	3	39	97.5	9.6	8	4	4	25.6	64	9.6	9.6	
PRIYADHARSH INI.V	130722104059	16.8	8	4	4	32.8	82	1.2	8	4	4	17.2	43	2.4	4.8	
RAJALAKSHMI. R	130722104060	22.8	8	4	3	37.8	94.5	24	8	4	4	40	100	12	9.6	
RAJESH P	130722104061	20.4	8	4	4	36.4	91	14.4	8	3	4	29.4	73.5	9.6	8.4	
RAKSHANA M	130722104062	9.6	7	4	3	23.6	59	8.4	8	4	4	24.4	61	10.8	8.4	
RAM HARISH N.S.	130722104063	1.2	8	4	4	17.2	43	1.2	8	4	4	17.2	43	3.6	4.8	
RAMADEVI.N	130722104064	24	8	4	4	40	100	24	8	4	4	40	100	12	10.8	
RISHIAKASH.M	130722104065	7.2	7	4	4	22.2	55.5	9.6	8	4	4	25.6	64	12	10.8	
THIRUKKUMAR AVELU.P.	130722104095	24	8	4	4	40	100	21.6	8	4	4	37.6	94	12	8.4	
THIRUKUMARA N.K	130722104096	24	8	4	4	40	100	22.8	8	4	4	38.8	97	12	12	
VEDHADIVYA. L	130722104097	22.8	8	4	4	38.8	97	20.4	8	4	4	36.4	91	10.8	10.8	
VENKATESWA RAN.D	130722104098	22.8	8	4	4	38.8	97	24	8	4	4	40	100	12	12	
VETRISELVAN. A	130722104099	14.4	8	4	4	30.4	76	10.8	8	4	4	26.8	67	10.8	4.8	
VIDHYA.R	130722104100	21.6	8	4	4	37.6	94	20.4	8	4	4	36.4	91	12	12	
VIJAY.M	130722104101	7.2	6	4	3	20.2	50.5	2.4	8	4	4	18.4	46	9.6	8.4	
VIMAL.R.	130722104102	8.4	7	4	3	22.4	56	2.4	8	4	4	18.4	46	0	9.6	
VINOTH.K	130722104103	10.8	6	4	2	22.8	57	14.4	8	4	4	30.4	76	12	9.6	
VISHALL.R	130722104104	15.6	8	4	4	31.6	79	19.2	8	4	4	35.2	88	12	12	
VISWA JEETH. M.N.	130722104105	21.6	8	4	3	36.6	91.5	22.8	8	4	4	38.8	97	12	8.4	
YUVARAJ P	130722104106	21.6	6	4	3	34.6	86.5	1.2	8	4	4	17.2	43	2.4	9.6	
	Total no. of students						52						52			
	No. of students scored more than 60%						41						42			
	percentage						78.8						80.7			
	Attainment						2						3			

The CO attainment (Internal) = Attainment average of (CO1 +CO2+CO3+CO4+CO5) / 5 = X

5.4.4. CO Attainment (External) Calculation Procedure

The same calculation procedure as like CO attainment (Internal) is followed for CO attainment (External) The   marks scored by each student corresponding to the respective COs are recorded and the CO attainment for each CO are calculated.

The CO attainment (External) = Attainment average of (CO1 + O2 + CO3 + CO4 + CO5) / 5 = Y. The final CO attainment of the course = X+Y /2 = Z

5.5. Attainment of POs and PSOs

Two component are involved in the calculation of POs/PSOs
1. Direct attainment (80%)
2. Indirect attainment (20%)

5.5.1. Procedure for Computation of Direct of Attainment of POs/PSOs

Direct attainment of PO is computed from the performance of all courses (CO attainment) and mapping level of each course in the program articulation Matrix

All the mapping values of a course   corresponding to each POs/PSOs in the Program articulation matrix are multiplied with Z/3 ,where Z is the course attainment of that course. Similar procedure is followed for all the courses by using the respective course attainment values for multiplication.

Assessment tools
1. Internal Assessments
    (i)   Theory courses : Assessment tests, Class test, Assignments and activities
    (ii) Laboratory course : Continuous assessment and Model examinations
    (iii) Project work : Continuous reviews (Thrice in a semester), Model Project viva-voce exams.
2. End semester examination

5.5.2. Procedure for Computation of Indirect of Attainment of POs/PSOs

Evaluation for the indirect assessment is done using the following tools:
1. Alumni feedback which is collected from the alumni of the department during the alumni meet held annually.
2. Employer's feedback which is collected from the employers annually.

5.5.3. Additional Activities to Attain Domain Independent POs Apart from Curriculum

1. Industrial visit
2. Club activities
3. Technical activities (symposium, workshop, seminar etc.)
4. Co- curricular activities (NSS/YRC/ ROTRACT Club / Sports)
5. Extra curricular activities (Cultural programs)
6. Student membership in institutional and department level committees and Professional bodies