

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

# (An Autonomous Institution) Puducherry - 605 107





# **OUTCOME BASED EDUCATION (OBE)**

MANUAL

# **OUTCOME BASED EDUCATION**

### **INTRODUCTION**

Sri Manakula Vinayagar Engineering College (SMVEC) envisions to foster knowledge, skills, attitude and values of the aspiring youth to enable them to become global citizens. To achieve this process, the institution has evolved a flexible integrated academic curriculum designed in accordance with the Outcome Based Education (OBE) which is acquired by the learners of a programme under 'Learner Centric' Model.

### **OBE and Accreditation in India**

From 13<sup>th</sup> June 2014, India has become the permanent signatory member of the Washington Accord in implementation of OBE in higher technical education. The National Board of Accreditation mandates establishing a culture of outcome-based education in institutions. In due course, National Board of Accreditation (NBA) and the National Assessment and Accreditation Council (NAAC) have started accrediting the Higher Educational Institutions and their programs with OBE since 2013 to achieve global quality standards.

OBE means focusing and organizing an institute's entire programmes and instructional efforts around the clearly defined outcomes that we want all students to demonstrate when they leave the institute as defined by William G.Spady in 1990. OBE is a system of education giving priority to ends, purposes, accomplishments and results. It is a realistic approach adopted worldwide today as part of the strategy of quality assurance, in which decisions about the curriculum and instruction are driven by the exit learning outcomes that the students should display at the end of a programme or a course.

The OBE approach is a continuous process of education wherein the curriculum, teaching and learning strategies, and assessment tools are improved continuously. The OBE learning process can be stated into four steps:

(a) Plan (Syllabus Writing/Review) — The Course Learning Outcomes are aligned with the ELGA, PEO and Student Outcomes. The syllabi reflect strategies (learning plan) for achieving the outcomes, as well as for measuring the outcomes (assessment).

(b) **Implement** (**Course Delivery**)- Carry out the learning plan and strategies planned for producing the outcomes.

(c) Measure / Assess (Assessment) – Carry out the strategies planned for measuring the learning outcomes and objectives. Collect this data and analyze it to determine the results. (Assessment Phase). This phase is where feedback is obtained.

(d) Respond / Improve (Continuous Quality Improvement) – Determine what needs to be changed

to make improvements. These changes are the basis of new or revised outcomes and objectives for the next cycle of the process. This process can be looked at on a program or course level

Outcome based education is seen a paradigm shift in the higher education that is student focused and outcome orientated. The table below provides a comparison of the traditional teaching approach and the outcome-based approach.

### **Outcomes**

Outcomes are the abilities that the students acquire at the end of a learning experience. Outcomes can be defined at three different levels in the case of general undergraduate programmes:

- **Programme Outcomes (POs)** or statements that describe what the students graduating from general programmes should be able to do,
- **Programme Specific Outcomes (PSOs)** which are statements that describe what the graduates of a specific programme should be able to do and
- Course Outcomes (COs) or statements that describe what the students should be able to do at the end of a course. The key parameters of OBE are described below:
- **Course:** Course is defined as a theory, practical or theory cum practical subject studied in a semester. For E.g. Programming in C
- **Programme:** It is defined as the specialization or discipline of a degree. It is a interconnected arrangement of courses, co-curricular and extracurricular activities to accomplish predetermined objectives leading to the awarding of a degree. For Example: B.Tech. Information Technology
- Assessment: Assessment is one or more processes carried out by the institution that identifies, collect, and prepare data to evaluate the achievement of Programme Specific Outcomes and Programme Outcomes.
- Attainment: Attainment is the action or fact of achieving a standard result towards the accomplishment of desired goals. Primarily attainment is the standard of academic attainment as observed through internal and external assessment
- **Programme Educational Objectives (PEOs):** The Programme Educational Objectives of the statements that describe the expected achievements of graduates in their career, and also in particular, what the graduates are expected to perform and achieve during the first few years after graduation.
- **Programme Outcomes (POs):** Programme Outcomes are narrower statements that describe what students are expected to be able to do by the time of graduation. POs are expected to be aligned closely with Graduate Attributes.

- **Programme Specific Outcomes (PSOs):** Programme Specific Outcomes are what the students should be able to do at the time of graduation with reference to a specific discipline. Usually there are two to four PSOs for a programme.
- **Course Outcomes (COs):** Course outcomes are statements that describe significant and essential learning that learners have achieved, and can be reliably demonstrated at the end of a course. Generally, three or more course outcomes may be specified for each course based on its weightage.

The graduates after their undergraduate program he /she is expected to possess knowledge, skills and attitudes in non-specific areas to their discipline besides their domain knowledge and skills. Such skills include the ability and attitude to work in a team, understanding the hierarchy in any organization, problem solving skills, communication abilities, writing skills with the peers and customers and understanding the impact of their actions on society. These graduate attributes expected from graduates are given in the form of POs. The POs are non-specific in nature indicating core competencies. The listed program outcomes are

## **1. Program Outcomes (POs)**

The program outcomes are the skills and competencies our graduates will be able to demonstrate the professional world. (National Board of Accreditation (NBA) has given Graduate Attributes (Gas) to be treated as POs).

PO1	<b>Engineering Knowledge:</b> Apply knowledge of mathematics and science, with fundamentals of Engineering and Technology to be able to solve complex engineering problems
PO2	<b>Problem Analysis:</b> Identify, Formulate, review research literature and analyze complex engineering problems and reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences
PO3	<b>Design/Development of solutions:</b> 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	<b>Conduct Investigations of Complex problems:</b> 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	<b>Modern Tool Usage:</b> Create, Select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to computer science related complex engineering activities with an understanding of the limitations
PO6	<b>The Engineer and Society:</b> Apply Reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the IT professional engineering practice
PO7	<b>Environment and Sustainability:</b> Understand the impact of the IT professional engineering solutions in societal and environmental contexts and demonstrate the knowledge of, and need for sustainable development
PO8	<b>Ethics:</b> Apply Ethical Principles and commit to professional ethics and responsibilities and norms of the engineering practice

	Outcome Based Education (OBE), SMVEC
PO9	<b>Individual and Team Work:</b> Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary Settings
PO10	<b>Communication:</b> Communicate effectively on complex engineering activities with the engineering community and with society at large such as able to comprehend and with write effective reports and design documentation, make effective presentations and give and receive clear instructions.
PO11	<b>Project Management and Finance:</b> Demonstrate knowledge and understanding of the engineering management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multi-disciplinary environments
PO12	<b>Life-Long Learning:</b> Recognize the need for and have the preparation and ability to engage in independent and life-long learning the broadest context of technological change



Process of defining PEOs of the Department



# 2. Program Specific Outcomes (PSOs)

These qualities are expected, a student is able to do at the time of graduation. The PSOs are program specific. PSOs are written by the department offering the program. There usually are two to four PSOs for a department. For example, the Program Specific Outcomes for Department of Information Technology is given below:

**PSO 1**: Establishment of Mathematical and computer systems concepts: To use mathematical and system concepts to solve multidisciplinary problems using appropriate mathematical analysis, system and programming concepts on various computing environments.

**PSO 2**: Establishment of Application and Information concepts: To inculcate good breadth of knowledge to create applications and enhance informatics with cutting edge technologies.

**PSO 3**: Establishment of Business, Technological concepts: The ability to interpret and respond to business agility with relevant software tools and skills and provide newer ideas and innovations in information technology research.

# **3. Program Educational Objectives (PEOS)**

While defining the PEOs you need to take into account

- What you are preparing your students for? Whether to pursue higher studies/research program, or to take jobs in local / global industries or to become entrepreneur
- What are the core competencies required to take up any of these options?
- What breadth of knowledge is required?
- What professional skills like effective communication, maintaining healthy interpersonal relationship, and ethical attitude needs to be developed?
- What learning environment you are capable of providing?

**Department Program Educational Objectives (Department of Information Technology)** 

- **PEO1**: To prepare the students with fundamental knowledge in programming languages and in developing applications.
- **PEO2**: To develop skill in understanding the complexity in networking, security, data mining, web technology and mobile communication so as to develop innovative applications and projects in these areas for the betterment of society, as well as to enable them to pursue higher education
- **PEO3**: To enable the students as full-fledged professionals by providing opportunities to enhance their analytical, communication skills and problem-solving skills along with organizing abilities
- **PEO4**: To familiarize the students with the ethical issues in engineering profession, issues related to the World-wide economy, nurturing of current job-related skills and emerging technologies

### 4. Course Outcomes (COs)

Course outcomes (COs) are statements that describe the knowledge or skills that students should acquire by the end of a particular course (unit of instruction). Courses are broadly classified into core courses, professional elective courses, employability enhancement courses and skill development courses. As the POS and PSOs attainment is done through course outcomes, the course outcomes should be observable and measurable. Cos should not be vague and it should be precise Utility of Cos



- **Specific**: Students can state what they should be able to achieve from reading the outcomes.
- > Measurable: Students can be able to recognize when they have achieved the outcomes.
- > Achievable: It is genuinely possible to complete the outcomes in the time and with the
- resources available.
- **Realistic**: Outcomes are appropriate for the student.
- > **Time bounded**: Outcomes have a time limit for completion

Six levels of cognitive learning as per modified Bloom's taxonomy.

### **Taxonomy of Learning**

**Benjamin Bloom** with his team developed a classification of levels of intellectual behaviour important in learning. This became a taxonomy, including three overlapping domains: the cognitive, psychomotor and affective. Bloom's taxonomy is most often used when designing educational, training, and learning processes.

The three domains of learning

- 1. Cognitive: Knowledge and intellectual skills)
- 2. Affective: growth in feelings or emotional areas (attitude or self)
- 3. Psychomotor: manual or physical skills

From the point of designing educational training cognitive domain of learning is required to be tocused as it is predominated in majority of courses. The six levels of intellectual skills identified as per revised Bloom's taxonomy:

- 1. **Remember:** Recalling specific facts, definitions
- 2. Understand: Grasp the meaning of facts, definitions, concepts.
- 3. Apply: Use the concepts to solve problems.
- 4. Analyze: Break information into component parts, make inference.
- 5. **Evaluate:** Judge the value of information.





- There are specific action words to be used in CO statements depending upon the level of intellectual skill the CO addresses.
- The action word used should clearly spell out what the learner(s) will be able to do upon completion of the course.
- There are some action words that are unclear, have multiple interpretations, and hence makes it difficult to observe and measure. (e.g., know, be aware of, appreciate, learn, understand, comprehend, become familiar with).

- Establish the correlation between the courses and the Program Outcomes (POs) and Program Specific Outcomes (PSOs)
- For example, please look at the following learning outcomes statements:
- The students will understand the theory of elasticity.
- The students will be able to appreciate relationships between Human Factors and Engineering task design. (ergonomics)
- How do you observe someone's "understanding" or "appreciating"?
- How easy will it be to measure "understanding" or "appreciation"
- These expected learning outcomes are more effectively stated the following way:
- The students will be able to describe the theory of elasticity.
- The students will be able to explain relationships between Human Factors and Engineering task design.

Definitions	I. Remembering	II. Understanding	III. Applying	IV. Analyzing	V. Evaluating	VI. Creating
Bloom's	Exhibit memory of	Demonstrate	Solve problems	Examine and break	Present and defend	Compile
Definition	Previously learned	Understanding of	to	information into parts	opinions by	information
Deminition	Material by	Facts and ideas by	new situations	by identifying	making judgments	together in a
	Recalling facts.	organizing.	by applying	motives or causes.	about information.	different way
	terms, basic	comparing.	acquired	make inferences and	validity of ideas.	by combining
	concepts.	translating.	knowledge, facts.	find evidence to	or quality of	elements in a
	and answers.	interpreting, giving	techniques and	techniques and support wo		new pattern or
		descriptions, and	rules in a	generalizations.	a set of criteria.	proposing
		stating main ideas.	different way.	E .		alternative
		0	,			solutions.
Verbs	Choose	Arrange	Act/React	Analyze	Agree	Adapt
	Cite	Ask	Administer	Appraise	Argue	Add to
	Сору	Calculate	Apply	Argue	Assess	Change
	Define	Classify	Assemble	Assume	Award	Combine
	Diagram	Communicate	Associate	Breakdown	Award	Compile
	Find	Compare	Build	Categorize	Bad	Convert
	Highlight	Comprehend	Collect	Cause and effect	Conclude	Create
	How	Construct	Combine	Conclusion	Consider	Delete
	Identify	Contrast	Complete	Debate	Convince	Discover
	Label	Demonstrate	Comply	Detect	Criteria	Formulate
	List	Describe	Compose	Devise	Criticize	Happen
	Listen	Differentiate	Conduct	Discover	Critique	Happen
	Locate	Discuss	Connect	Discriminate	Decide	Hypothesize
	Match	Disprove	Construct	Dissect	Deduct	Imagine
	Match	Draw	Correlate	Dissect	Defend	Imagine
	Memorize	Elaborate	Design	Distinct	Direct	Improve
	Mention	Estimate	Develop	Distinguish	Dispute	Invent
	Name	Explain	Do	Divide	Effective	Invent
	Observe	Express	Dramatize	Establish	Evaluate	Inventory
	Omit	Extend	Employ	Examine	Give reasons	Make up
	Plot	Extrapolate	Experiment	Focus	Good	Original
	Point	Give example	Experiment	Function	Grade	Original
	Quote	How	with	Group	How do we know?	Originate
	Read	Illustrate	Generalize	In-depth	Importance	Originate
	Recall	Indicate	Graph	Inference	Importance	Originate
	Recite	Inter	Group	Inspect	Influence	Plan
	Recognize	Interpret	Implement	Investigate	Influence	Reframe
	Record	Interrelate	Interview	Isolate	Interpret	Revise
	Relate	Outline	Interview	Motive	Judge	Set up
	Remember	Paraphrase	Link	Motive	Justify	Solution
	Repeat	Predict	Make use of	Order	Manage	Speculate
	Reproduce	Prove	Make use of	point out	Mark	Suppose

#### **Bloom's Taxonomy Action Verbs**

 Retell	Purpose	Manipulate	Prioritize	Opinion	Suppose
Select	Relate	Maximize	Quantify	Perceive	Theorize
Sketch	Rephrase	Measure	Question	Persuade	Theory
Specify	Report	Minimize	Rank	Present a case for	Think
Spell	Represent	Model	Rate	Recommend	Transform
State	Restate	Modify	Relationships	Report on	Visualize
Tell	Review	Operate	Reorganize	Rule on	
Trace	Reword	Organize	Research	Score	
Underline	Rewrite	Paint	See	Select	
What	Schedule	Perform	Separate	Support	
When	Show	Plan	Similar to	Useful	
Where	Simplify	Practice	subdivide	Validate	
Which	Distinguish	Prepare	Survey	Value	
Who	Determine	Produce	Take part in	Weight	
Why	Solve	Propose	Test for		
Write	Summarize	Respond	Theme		
	Tabulate	Shop	Theme		
	Translate	Simulate			
	What	Teach			
	Why	Test			
	-	Transfer			
		Use			
		Utilize			

#### SUGGESTED INSTRUCTIONAL STRATEGIES (SMVEC)

REMEMBER	UNDERSTAND	APPLY	ANALYZE	EVALUATE	CREATE		
Lecture,	Questions,	Exercises,	Problems,	Case Studies,	Projects,		
Test,	Discussions,	Practice,	Exercises,	Projects,	Problems,		
Visual,	Test,	Demonstrational,	Case Studies,	Exercises,	Case Studies,		
Films Strips,	Review,	Projects,	Critical	Critiques,	Creative		
Audio,	Assembles,	Sketches,	Incidents,	Simulations,	Exercise,		
Videos,	Reports,	Diagrams,	Discussions,	Self-evaluation,	Constructs,		
Examples,	Writing,	Simulations,	Questions,	Valuing,	Simulations,		
Illustrations,	Learners,	Role Plays,	Test,	Recommendations,	Article,		
Recordings,	Presentations,	Micro teach,	Survey,	Ratings,	Play,		
Newspaper,	Drama,	Map,	Report,	Appraisals,	Book,		
Plays,	Skit,	Illustrations,	Graph,	Mentoring,	Questions,		
Peoples,	Cartoon,	Forecast,	Support,	Panel,	Planning,		
Events,	Story,	Learning games,	Forums,	Group Discussions,	Reviewing,		
Analogical,	Tape,	Puzzle,	Advice,	Evaluations,	Collaborations,		
Magazine,	Recording,	Hierarchy,	Commercial,	Research Projects,	Play,		
Articles,	Speech,	Scrapbook,	Games,	Model Building,	Game,		
Text Reading,	Photograph,	Painting,	Focused	Reflective	Song,		
Explicit	Diagram,	Problem Solving,	Imagine,	Discussions	Machine,		
Teaching,	Statements,	Home Work,	Synaptic,		Set of rules,		
Essays,	Model,	Field Trips,	Field		Set of		
Reports,	Conclusion,	Conducting	Observations,		standards,		
Mastery	Summary,	Experiments,			invention,		
Lectures,	Compare,	Simulations,			Report		
Structured	Demonstration,	Drill and Practice,					
Overview,	Co-operative,	Tutorial Groups					
Inquiry,	Circle of						
Interviewing,	Knowledge,						
Reports,	Peer Practice,						
Learning	Debates,						
contracts,	Own Statements						
Computed							
associated							
Instructions							

# About SMVEC

Sri Manakula Vinayaga Educational Trust was founded to provide quality and affordable education to the weaker sections of society. The trust established Sri Manakula Vinayagar Engineering College (SMVEC) in 1999. SMVEC is an autonomous institution affiliated to Pondicherry University. It offers a variety of undergraduate, postgraduate, and research programs in engineering, Architecture, MBA and MCA programs. SMVEC has a sprawling green campus with well-furnished infrastructure. The college has a Wi-Fi enabled campus, central library, high-end computing facilities, individualized department buildings with advanced laboratories, centralized air-conditioned auditorium, campus security cameras and video surveillance system, mineral water plant, hostels for both boys and girls, and other essential amenities like ATM and post office.

SMVEC has been accredited by NAAC in two cycles and all eligible programs are accredited by NBA. The college has a good placement record with students getting job offers from top companies in India and abroad. SMVEC students have won many awards and accolades for their academic achievements.

Here are some of the key points of the text:

- SMVEC was established in 1999.
- It is an autonomous institution affiliated to Pondicherry University.
- It offers a variety of undergraduate, postgraduate, and research programs.
- It has a sprawling green campus with well-furnished infrastructure.
- It has been accredited by NAAC and NBA.
- It has a good placement record.
- SMVEC students have won many awards and accolades at regional and national level

#### **VISION and MISSION**

#### VISION

- To be recognized globally for providing high-quality education, innovation, and research.
- To transform lives and serve society.

### MISSION

The institution aims to provide:

- Quality education that combines cutting-edge technologies with best practices.
- **Research and innovation** that is value-based and collaborative with industries and institutions around the world.
- Employability and entrepreneurship skills through value and skill-based training.
- Ethical values that blend societal righteousness with academic professionalism.

### **Implementation of OBE at SMVEC**

### **Constituents of OBE at SMVEC**

- Vision & Mission Statements.
- Program Educational Objectives (PEOS)
- Program Outcomes (POs)
- Program Specific Outcomes (PSOs)
- Course Outcomes (COs)

### 1. Vision and Mission Statements

In SMVEC, The Process of drafting Vision and Mission Statements for the Departments is based on **SWOT** Analysis

### **SWOT Analysis**

- The steps to be followed are:
  - Set up teams of key stakeholders to carry out consultations/brainstorming
  - Carry out brainstorming in separate groups using an appropriate facilitator
  - o Ask each group to identify the internal strengths and weakness
  - Discuss the external opportunities and threats taking into account, the internal strengths and weaknesses identified by each group together
  - To identify the strengths, think of:
    - Capabilities
    - Recognition
    - Competitive advantage
    - Resources, assets, people
    - innovative aspects/practices
       The strengths should be realistic

### • To identify the weakness, think of:

- Disadvantages in capabilities
- Reputation
- Lack of competitive strengths
   The weaknesses should be such that there lies a scope for improvement or overcoming

### • To identify the opportunities, think in terms of:

- Market development
- Competitor's vulnerability
- Industry trends

Your action plan should try to cash on these opportunities.

### • To identify the threats, think in terms of:

- External forces that could inhibit the maintenance & attainment of a competitive advantage
- Unfavorable situation in external or internal environment.

Your action plan should address those threats having higher probabilities.

As a case study, Department of Information Technology has been discussed

### **Department Vision and Mission Statement (Department of Information Technology)**

### Vision

To be a pioneer in the field of Information Technology by exhibiting academic excellence, involving in research & development and promoting technical & professional expertise.

### Mission

- **Expertise:** To impart quality education and create excellent engineers with strong analytical, Programming and Problem-solving skills to meet the ever-changing demands of IT industry
- **Eminence:** To kindle creative thinking, innovation and foster value-based research in the field of information technology
- **Complaisant:** To enrich the employability skills, inculcate entrepreneurial ideology and promote professional expertise
- **Exemplar:** To instill human values, ethical responsibilities and empowering graduates to be socially responsible and technically competent

### CO PO/ PSO Mapping Factor (Correlation Level)

It indicates to what extent a certain component (either assessment method to CO or CO to PO or PO to PEO & PSO

- 3 indicates Substantial (high) mapping (high contribution towards attainment)
- 2 indicates Moderate (medium) mapping (medium contribution towards attainment)
- 1 -indicates Slight (low) mapping (some contribution towards attainment)

### Course Outcomes (Cos) for a Course: Programming in Java

After completion of the course, the students will be able to

CO1 - Write a maintainable java program for a given algorithm and implement the same. (K2)

- CO2 Demonstrate the use of inheritance, interface and package in relevant applications. (K3)
- **CO3 -** Create java applications using exception handling, thread and generic programming. **(K3)**
- CO4 Build java distributed applications using Collections and IO streams. (K3)
- CO5 Exemplify simple graphical user interfaces using GUI components and database programs. (K3)

COs	Program Outcomes (POs)											Program Specific Outcomes (PSOs)			
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
1	2	1	-	-	2	-	-	-	-	-	-	2	3	2	1
2	3	2	1	1	3	-	-	-	-	-	-	2	3	2	1
3	3	2	1	1	3	-	-	-	-	-	-	2	3	2	1
4	3	2	1	1	3	-	-	-	-	-	-	2	3	2	1
5	3	2	1	1	3	-	-	-	-	-	-	2	3	2	1
Average	2.8	1.8	1	1	2.8	-	-	-	-	-	-	2	3	2	1

### **CO-PO/PSO** mapping

#### Assessment of OBE at SMVEC

### **Assessment in OBE**

Assessment process is very important in OBE, and it should have following characteristics:

- It should be valid means it should allow assessment of what is intended to assess.
- It should be reliable means should give consistent results.
- It should be fair means it should not get influenced by factors like background of learner.
- The assessment can be direct or indirect



(PSOs) and Course Outcomes (COs)

### **Attainment of Course Outcomes**

In SMVEC, the Outcome Based Education (OBE) assessment is done through one or more than one processes, carried out by the institution, that identify, collect, and prepare data to evaluate the achievement of course outcomes (CO's).

#### List of assessment tools and processes

Assessment tools are categorized into two methods to assess the course outcomes as:

### **Direct and Indirect methods**

- **Direct method** display the student's knowledge and skills from their performance in the continuous assessment tests, semester examinations, and class room and laboratory assignments etc. These methods provide a sampling of what students know and/or can do and provide strong evidence of student learning.
- **Indirect methods** such as surveys and interviews ask the stakeholders to reflect on students' learning. They assess opinions or thoughts about the graduate's knowledge or skills and their valued by different stakeholders.



End Semester	End Semester Examination is much focused on attainment of course and program
Examination	outcomes using a descriptive exam

Lab Practical	This is a performance tool to access the students' practical knowledge
Examination	This is a performance tool to access the students practical knowledge

	Indirect Assessment methods
Course Exit Survey	To evaluate the success of program in providing students with opportunities to achieve the program outcome - every year
	achieve the program outcome - every year

CO Assessment tool	Assessment frequency	Assessed by	Reviewed by		
Continuous Assessment Test	Thrice in Semester	Course Faculty	Internal Exam Cell, HOD, Dean Academics		
Assignment	Twice in Semester	Course Faculty	Course Faculty		
End Semester Examination	Once in Semester	Institute Exam Cell	Institute Exam Cell		
Lab Practical Examination	Once in Semester	Course Faculty, Institute Exam Cell	HOD, Institute Exam Cell		
Course Exit Survey	Semester end	Programme Academic Coordinator	HOD		
Mini Project	Third Year (Sixth Semester)	Mini Project Coordinator	HOD		
Projects	Fourth Year (Seventh and Eighth Semester)	Guide, Project Coordinator	Guide, Project Coordinator, HOD		

### The quality or relevance of assessment tools/ processes used

### The attainment of Course Outcomes of all courses with respect to set attainment levels

#### verify the attainment levels as per the benchmark set for all courses

In SMVEC, The process of assessing the Course outcome and its attainment level is benchmarked based on the regulations framed by Department Advisory Committee (DAC).

Our institution is an autonomous institution and hence our syllabus is framed by our own Subject Experts based on industrial needs and same will be reviewed by Board of Studies and Academic Council twice in an Academic Year. As per the Autonomous regulation R2019 and R2020 the outcome of the course is graded for 100 marks. These 100 marks are split into 25 for internal evaluation and 75 for external evaluation. The assessment tool defined are categorized into

• Nano level – describes the various assessment tools used to measure the internal marks obtained for the course

Continuous Assessment Components											
Sl.No	Course Type	Test Marks	Average of Pre/Post Test/ Viva for each Experiment	Average of Marks for report for each Experiment	Model Exam/ Report/ Viva Voce	Assignment	Review - 1	Review - 2	Review - 3	Attendance	Total Marks
1	Theory	15	-	-	-	5	-	-	-	5	25
2	Practical	-	10	15	15	-	-	-	-	10	50
3	Project Phase – I	_	_	_	_	-	15	15	20	-	50
4	Project Phase – II	-	-	-	-	-	10	10	20	-	40

### Scheme for Continuous Assessment Marks

#### Sample Attainment Level (Department of Information Technology)

With reference to the DAC recommendation, the attainment level benchmarked for Nano level is mentioned below

#### 2 Marks

Threshold Value = 65% of 2 Marks (0.65 \* 2) Attainment Level 1: 50% to 60% of students scoring more than 1 Attainment Level 2: 61% to 70% of students scoring more than 1 Attainment Level 3: above 70% of students scoring more than 1

#### 5 Marks

#### Threshold Value = 65% of 5 Marks (0.65\*5)

Attainment Level 1: 50% to 60% of students scoring more than 3 Attainment Level 2: 61% to 70% of students scoring more than 3 Attainment Level 3: above 70% of students scoring more than 3

#### 10 Marks

#### Threshold Value = 65% of 10 Marks (0.65 \* 10)

Attainment Level 1: 50% to 60% of students scoring more than 7 Attainment Level 2: 61% to 70% of students scoring more than 7 Attainment Level 3: above 70% of students scoring more than 7 Assignment

#### 5 Marks

#### Threshold Value = 65% of 5 Marks (0.65 \* 5)

Attainment Level 1: 50% to 60% of students scoring more than 3 Attainment Level 2: 61% to 70% of students scoring more than 3 Attainment Level 3: above 70% of students scoring more than 3

### Attendance

The student is permitted to appear for End Semester Examinations, only if he/she maintains minimum 75% of attendance.

### 5 Marks (Theory)

(a). Theory courses for which there is an internal mark of 25 that includes 5 marks for attendance. The distribution of 5 marks for attendance is as follows:

5 marks for 95% and above

- 4 marks for 90% and above but below 95%
- 3 marks for 85% and above but below 90%
- 2 marks for 80% and above but below 85%
- 1 mark for 75% and above but below 80%

#### **10 Marks (Practical)**

(b). Practical courses for which there is an internal mark of 50 that includes 10 marks for attendance. The distribution of 10 marks for attendance is as follows:

10 marks for 95% and above

8 marks for 90% and above but below 95%

- $6\ marks$  for 85% and above but below 90%
- 4 marks for 80% and above but below 85%
- 2 marks for 75% and above but below 80%.

### • Micro level – describes the Internal Marks (25 Marks)

			Conti	nuous A	ssessme	nt Co	mpor	nents			
Sl.No	Course Type	Test Marks	Average of Pre/Post Test/ Viva for each Experiment	Average of Marks for report for each Experiment	Model Exam/ Report/ Viva Voce	Assignment	Review - 1	Review - 2	Review - 3	Attendance	Total Marks
1	Theory	15	-	-	-	5	-	-	-	5	25
2	Practical	-	10	15	15	-	-	-	-	10	50
3	Project Phase – I	-	-	-	_	-	15	15	20	-	50
4	Project Phase – II	-	-	-	-	-	10	10	20	-	40

#### Scheme for Continuous Assessment Marks

#### Weightage of Assessment for Theory Courses

S.No	Test	Portion for Test	Test Marks	Duration of Test	Weightage for Internal Marks
1	CAT - 1	1 <sup>1</sup> / <sub>2</sub> Units	50	$1 \frac{1}{2}$ hours	10
2	CAT - 2	1 <sup>1</sup> / <sub>2</sub> Units	50	$1 \frac{1}{2}$ hours	
3	CAT - 3	All 5 Units	75	3 hours	5
		Contin	uous Assessme	ent for Theory Courses	15

With reference to the DAC recommendation, the attainment level benchmarked for micro level is mentioned below

Threshold Value = 70% of Total Internal Marks (0.70 \* 25) and 70% of Practical Internal Marks (0.70 \* 50)

Attainment Level 1:50% to 60% of students scoring more than 18 (Theory Courses) and 35 (Practical Courses)

Attainment Level 2:61% to 70% of students scoring more than 18 (Theory Courses) and 35 (Practical Courses)

Attainment Level 3:above70of students scoring more than 18 (Theory Courses) and 35 (Practical Courses)

### • Macro level – describes the End Semester Examination Marks

Scheme for End Semester Examination

S.No	Course Type	Written Exam	Practical Exam	Practical Exam Viva	Report and Viva - Voce	Publication of papers/ Prototypes/ Patents etc	Total Marks
1	Theory	75	-	-	-	-	75
2	Practical		40	10	-	_	50
3	Project Phase - I	-	-	-	50	-	50
4	Project Phase - II	-	-	-	50	10	60

With reference to the DAC recommendation, the attainment level benchmarked for macro level are mentioned below

• the set attainment level is

Attainment Level 1:50% to below 60% of students secured C Grade and above.

Attainment Level 2:60% to 70% of students secured C Grade and above.

Attainment Level 3:above 70 % of students secured C Grade and above.

- Among the 70% of students, the next levels of attainment fixed are
  - 20% of students to secure S and A grade

### **CO ATTAINMENT COMPUTATION - SAMPLE**

#### **Course Name: Programming in Java**

Course Code: U20EST467 (2022-2023) Even Sem         COURSINATEMENT         At the end of the course, students will be able to         CO-1       Write a maintainable java program for a given algorithm and implement the same. (K2)         CO-2       Demonstrate the use of inheritance, interface and package in relevant applications. (K3)         CO-4       Build java applications using exception handling, thread and generic programming. (K3)         CO-4       Build java distributed applications using Collections and IO streams. (K3)         CO-5       Exemptify simple graphical user interfaces using GOU components and database programs. (K3)         CO'5 and PSO's Attainment         CO'1       PO-3       PO-6       PO-9       PO-10       PO-11       PO-12       PSO-1         CO'1       PO-3       PO-6       PO-9       PO-10       PO-11       PO-12       PSO-1         CO'1       PO-3       PO-6       PO-9       PO-10       PO-11       PO-12       PSO-1       CO-1       2	Course	Course Name : Programming in Java																				
COURSE OUTCOME STATEMENT         At the end of the course, students will be able to         CO-1       Write a maintainable java program for a given algorithm and implement the same. (K2)         CO-2       Demonstrate the use of inheritance, interface and package in relevant applications. (K3)         CO-4       Build java distributed applications using exception handling, thread and generic programming. (K3)         CO-4       Build java distributed applications using Collections and IO streams. (K3)         CO-4       Build java distributed applications using Collections and IO streams. (K3)         CO-5       Exemptify simple graphical user interfaces using Gull components and database programs. (K3)         CO's - PO's and PSO's Attainment         CO's - PO's and PSO's Attainment         CO-1       PO-2       PO-4       PO-5       PO-6       PO-7       PO-8       PO-10       PO-11       PO-2       80-9       PO-10       PO-11       PO-2       PSO-2       PSO-2         CO's - PO-3       PO-4       PO-7       PO-8       PO-10	Course	Code:	U20EST	[ <mark>467 (2</mark> 0	22-2023	3) Even	Sem															
COURSE OUTCOME STATEMENT         At the end of the course, students will be able to         CO-1       Write a maintainable java program for a given algorithm and implement the same. (K2)         CO-2       Demonstrate the use of inheritance, interface and package in relevant applications. (K3)         CO-3       Create java applications using exception handling, thread and generic programming. (K3)         CO-4       Build java distributed applications using Collections and IO streams. (K3)         CO-5       Exemptify simple graphical user interfaces using GUI components and database programs. (K3)         CO's - PO's and PSO's Attainment         CO's - PO's O's PO's PO's PO's PO's PO's PO's																						
At the end of the course, students will be able to         CO-1       Write a maintainable java program for a given algorithm and implement the same. (K2)         CO-2       Demonstrate the use of inheritance, interface and package in relevant applications. (K3)         CO-3       Create java applications using exception handling, thread and generic programming. (K3)         CO-4       Build java distributed applications using Collections and IO streams. (K3)         CO-5       Exemptify simple graphical user interfaces using GUL components and database programs. (K3)         CO's - PO's and PSO's Attainment         CO's - PO's and PSO's Attainment         CO-1       PO-2       PO-3       PO-6       PO-7       PO-8       PO-9       PO-11       PO-12       PSO's PSO'	COUR	SE OUT	COME	STATE	MENT																	
CO-1       Write a maintainable java program for a given algorithm and implement the same. (K2)         CO-2       Demonstrate the use of inheritance, interface and package in relevant applications. (K3)         CO-3       Create java applications using exception handling, thread and generic programming. (K3)         CO-4       Build java distributed applications using Collections and IO streams. (K3)         CO-4       Build java distributed applications using Collections and IO streams. (K3)         CO-5       Exemplify simple graphical user interfaces using GUI components and database grograms. (K3)         CO's and PSO's Attainment         CO's and PSO's Attainment         CO's and PSO's Attainment         CO's 10 PO-1       PO-3       PO-6       PO-7       PO-9       PO-10       PO-11       PSO-2       PSO-2         CO's 2       2       PO-1       PO-1       PO-1       PSO-1       PSO-1       PSO-1       PSO-1       PSO-2       PSO-2         CO's 2       2       2       3 <th <="" colspan="6" th=""><th></th><th>At the en</th><th>d of the c</th><th>ourse, stu</th><th>dents will</th><th>be able to</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></th>	<th></th> <th>At the en</th> <th>d of the c</th> <th>ourse, stu</th> <th>dents will</th> <th>be able to</th> <th></th>							At the en	d of the c	ourse, stu	dents will	be able to										
CO-2       Demonstrate the use of inheritance, interface and package in relevant applications. (K3)         CO-3       Create java applications using exception handling, thread and generic programming. (K3)         CO-4       Build java distributed applications using Collections and IO streams. (K3)         CO-5       Exemplify simple graphical user interfaces using GUL components and database programs. (K3)         CO-6       Evenplify simple graphical user interfaces using GUL components and database programs. (K3)         CO-7       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-2       PSO-2       PSO-2       PSO-3       PO-4       PO-5       PO-6       PO-7       PO-8       PO-9       PO-10       PO-11       PO-12       PSO-1       PSO-2       PSO-2       PSO-2       PSO-2       PSO-3       2       1         CO-1       2       1       1       3       -       -       -       2       3       2       1         CO-1       2       1       1       3       -       -       -       2       3       2       1         CO-3       3       2       1       1       3       -	CO-1	Write a m	aintainable	java progr	am for a g	iven algorit	hm and imp	plement the	e same. (K.	2)												
CO-3       Create applications using exception handling, thread and generic programming. (K3)         CO-4       Build java distributed applications using Collections and IO streams. (K3)         CO-5       Exemplify simple graphical user interfaces using GUL components and database programs. (K3)         CO's - PO's and PSO's Attainment       Non-	CO-2	Demonstra	ate the use	of inheritar	nce, interfa	ce and pac	kage in rel	evant appl	ications. (K	(3)												
Build java distributed applications using Collections and IO streams. (K3)         CO-6       Exemplify simple graphical user interfaces using GUI components and database programs. (K3)         CO's - PO's and PSO's Attainment         CO's - PO's and PSO's Attainment       PO-6       PO-7       PO-8       PO-10       PO-11       PO-12       PSO-1       PSO-2       PSO-2       PSO-2       PSO-2       PSO-2       PSO-2       PSO-2       PSO-1       PO-10       PO-11       PO-12       PSO-1       PSO-2       PSO-2         CO-1       2       1       1       3       -       -       -       -       2       3       2       1         CO-3       3       2       1       1       3       -       -       -       -       2       3       2       1         CO-3       3       2       1       3       -       -       -       -       2       3       2       1         CO-4       3       2       1       3       -       -       -       - </th <td>CO-3</td> <td>Create jav</td> <td>va applicati</td> <td>ons using e</td> <td>exception h</td> <td>andling, th</td> <td>read and ge</td> <td>eneric prog</td> <td>ramming. (</td> <td>K3)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	CO-3	Create jav	va applicati	ons using e	exception h	andling, th	read and ge	eneric prog	ramming. (	K3)												
Exemplify simple graphical user interfaces using GUI components and database programs. (K3)         CO-5       Exemplify simple graphical user interfaces using GUI components and database programs. (K3)         CO's -PO's and PSO's Attainment         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         CO-1       2       1       -       -       2       -       -       -       -       2       3       2       1         CO-1       2       1       -       -       2       -       -       -       -       2       3       2       1         CO-2       3       2       1       1       3       -       -       -       -       2       3       2       1         CO-3       3       2       1       1       3       -       -       -       -       2       3       2       1         CO-4       3       2       1       1       3       -       -       -       -       -       2       3       2       1 <t< th=""><td>CO-4</td><td>Build java</td><td>distributed</td><td>1 applicatio</td><td>ns using C</td><td>ollections a</td><td>und IO stre</td><td>ams. (K3)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	CO-4	Build java	distributed	1 applicatio	ns using C	ollections a	und IO stre	ams. (K3)														
CO's - PO's and PSO's Attainment         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       Q       Q       Q       PO-10       PO-11       PO-12       PSO-1       PSO-2       PSO-2       PSO-3       Q       Q       Q       Q       Q       DO-11       PO-12       PSO-1       PSO-2       PSO-2       PSO-3       Q	CO-5	5 Exemplify simple graphical user interfaces using GUI components and database programs. (K3)																				
CO's and PSO's Attainment         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       Q       1       1       2       1       -       -       -       -       -       -       2       3       2       1         CO-1       2       1       1       3       -       -       -       -       -       2       3       2       1         CO-3       3       2       1       1       3       -       -       -       -       -       2       3       2       1         CO-4       3       2       1       1       3       -       -       -       -       -       2       3       2       1         CO-5       3       2								5			•											
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-2       PSO-2       PSO-2       PSO-3       PO-10       PO-11       PO-11       PO-12       PSO-1       PSO-2       PSO-2       PSO-2       PSO-3       PO-12       PSO-11       PSO-12       PSO-13       PSO-12       PSO-13       PSO-12       PSO-13       PSO-12       PSO-13       PSO-14       PSO-13       PSO-14	CO's -	PO's an	d PSO's	s Attainn	nent																	
CO-1       2       1       -       -       2       -       -       -       -       -       2       3       2       1         CO-1       2       1       -       -       2       -       -       -       -       -       2       3       2       1         CO-2       3       2       1       1       3       -       -       -       -       -       2       3       2       1         CO-3       3       2       1       1       3       -       -       -       -       -       2       3       2       1         CO-3       3       2       1       1       3       -       -       -       -       2       3       2       1         CO-4       3       2       1       1       3       -       -       -       -       2       3       2       1         CO-5       3       2       1       1       3       -       -       -       -       2       3       2       1         Weigted Average       2.8       1.8       1 <th1< th=""> <th2.8< th=""> <th1< th=""></th1<></th2.8<></th1<>		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						
CO-2       3       2       1       1       3       -       -       -       -       -       2       3       2       1         CO-3       3       2       1       1       3       -       -       -       -       -       2       3       2       1         CO-3       3       2       1       1       3       -       -       -       -       2       3       2       1         CO-4       3       2       1       1       3       -       -       -       -       2       3       2       1         CO-5       3       2       1       1       3       -       -       -       -       2       3       2       1         Weigted Average       2.8       1.8       1       1       2.8       . <t< th=""><th>CO-1</th><th>2</th><th>10-2</th><th>-</th><th>-</th><th>2</th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th><th>-</th><th>2</th><th>3</th><th>2</th><th>1</th></t<>	CO-1	2	10-2	-	-	2	-	-	-	-	-	-	2	3	2	1						
CO-3       3       2       1       1       3       -       -       -       -       -       2       3       2       1         CO-4       3       2       1       1       3       -       -       -       -       -       2       3       2       1         CO-4       3       2       1       1       3       -       -       -       -       2       3       2       1         CO-5       3       2       1       1       3       -       -       -       -       2       3       2       1         Weigted Average       2.8       1.8       1       2.8       -       -       -       -       -       2       3       2       1	CO-2	3	2	1	1	3	-	-	-	-	-	-	2	3	2	1						
CO-4       3       2       1       1       3       -       -       -       -       2       3       2       1         CO-5       3       2       1       1       3       -       -       -       -       2       3       2       1         Weigted Average       2.8       1.8       1       2.8       .       .       .       .       .       .       .       2       3       2       1	CO-3	3	2	1	1	3	-	-	-	-	-	-	2	3	2	1						
CO-5       3       2       1       1       3       -       -       -       -       2       3       2       1         Weigted Average       2.8       1.8       1       1       2.8       .       .       .       .       .       .       .       2       3       2       1	CO-4	3	2	1	1	3	-	-	-	-	-	-	2	3	2	1						
Weigted Average2.81.8112.8Image: Constraint of the second sec	CO-5	3	2	1	1	3	-	-	-	-	-	-	2	3	2	1						
	Weigted Average	2.8	1.8	1	1	2.8							2	3	2	1						

### **Direct Method: CAT 1 CO Attainment Calculation**

#### Course Name : Programming in Java

Course Code: U20EST467 (2022-2023) Even Sem

										Continuo	us Assess	ment Det	ails				
			Test				_		CA	T1							
			Q. No.	1	2	3	4	5	6	7	8	9	10	11	12		
SLNo	Reg.No	Student	CO's	CO1	CO1	CO1	CO2	CO2	CO1	CO1	CO2	CO2	CO1	C01	C02	Total (50)	Total Marks
~	ree Brite	Name	POs	1,2,5,12	1,2,5,12	1,2,5,12	1,2,3,4,5,12	1,2,3,4,5,12	1,2,5,12	1,2,5,12	1,2,3,4,5,12	1,2,3,4,5,12	1,2,5,12	1,2,5,12	1,2,3,4,5,12	10111 (00)	in 100
			PSOs	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3		
1	21ITL003	KIRTHIGA R		2	2	2	2	1	3	3	0	1	9			25	50
2	21ITL006	NOORUL AMEEN J		2	2	1	2	1	4	4	3	4	9		8	40	80
3	21ITL007	RAHUL R		2	2		2	1	1		2	1	9		8	28	56
4	21ITL009	VIGNESHWARAN V		1	2		2	1	0	2			9		9	26	52
5	21UIT001	AASIYA BANU A J		2	2	2	2	1	3	4	4	2	9			31	62
6	21UIT003	ABISHA G		2	2	2	2	2	2	2	3	1	0	9	5	32	64
7	21UIT006	AKASH P		2	2	2	2	1	4	4	2			9	9	37	74
8	21UIT012	ANNIE ROSE A		2	2	2	2	1	4	5	5	5	9		8	45	90
9	21UIT014	ARAVINDAN R	2	2	1			3	4				9	9	30	60	
10	21UIT016	ARUN KUMAR S		2	2	2	2	1	3				7	7		26	52
11	21UIT018	ARUNACHALAM A		2	2	2	2		2	4	2	2	10	9		37	74
12	21UIT020	AVILA JAYA SEBASTINA V		2	2	2	2	1	4	4	4	2	9		9	41	82
13	21UIT023	BARANIRAJ G		2	1	2	2	1	3	3	3	3	7			27	54
60	21UIT174	UDHAYA RAJESHWAR R		2	2		2		3	3	3		10		8	33	66
61	21UIT179	VIVEKA N		2	2	2	2	1	5	5	4	4	10	9		46	92
		Number of Students Attempted		60	61	54	54	51	59	54	51	48	53	31	30		
		Maximum Aactual marks		2.0	2.0	2.0	2.0	2.0	5.0	5.0	5.0	5.0	10.0	10.0	10.0		
		65% of the actual marks (Threshold)	1.3	1.3	1.3	1.3	1.3	3.25	3.25	3.25	3.25	6.5	6.5	6.5			
	No	o of students secure > Threshold Marks		56	58	44	51	16	30	36	22	25	49	30	27		
	%	of students secured > Threshold Marks		0.93	0.95	0.81	0.94	0.31	0.51	0.67	0.43	0.52	0.92	0.97	0.90		
		Attainment Level		3	3	3	3	0	1	2	0	1	3	3	3		
CO1 Average																	
		CO2 Average		1.40													

### **Direct Method: CAT 2 CO Attainment Calculation**

### Course Name : Programming in Java

Cour	se Code: U20	EST467 (2022-2023) Even Sem															
			Co	ntinuous	Assess	ment D	etails										
			Test						CA	T 2							
			Q. No.	1	2	3	4	5	6	7	8	9	10	11	12		Total
SI.	Reg.No	Student	CO's	CO2	<b>CO2</b>	CO3	CO3	CO3	CO2	CO2	CO3	CO3	CO2	CO3	CO3	Total (50)	Marks in
No	5	Name	POs	1,2,3,4,5,12	1,2,3,4,5, 12	1,2,3,4,5,1 2	1,2,3,4,5,1	1,2,3,4,5,1	1,2,3,4,5,1 2	1,2,3,4,5,1	1,2,3,4,5,1 2	1,2,3,4,5,1 2	1,2,3,4,5,1	1,2,3,4,5,1	1,2,3,4,5,1 2		100
			PSOs	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3		
1	21ITL003	KIRTHIGA R		1	2	2	1	2	4	2	4	1	9	7		35	70
2	21ITL006	NOORUL AMEEN J		2	2	2	2	2	4	5	4	4		9	9	45	90
3	21ITL007	RAHUL R		2	2	2	2	1	4	4	4		8		6	35	70
4	21ITL009		2	2	1	2	1		4	3		9		9	33	66	
5	21UIT001	AASIYA BANU A J		2		2	2		4	4	5	4	9	7		39	78
6	21UIT003	ABISHA G		2	2	2	2	2	4	2	4	4	9	9		42	84
7	21UIT006	AKASH P			2	2	2		5	5	4	4	9	9		42	84
8	21UIT012	ANNIE ROSE A		2	2	2	2	2	5	4	4	4	9		9	45	90
9	21UIT014	ARAVINDAN R		0.5	0.5	2	2		4	5	1		9	9		33	66
10	21UIT016	ARUN KUMAR S		2	2		2	2	4	4	4		9	9		38	76
11	21UIT018	ARUNACHALAM A		2	1	2	2	1	4	4	4	3	9	10		42	84
12	21UIT020	AVILA JAYA SEBASTINA V		1	2	2	2	1	4		4	4	3		8	31	62
13	21UIT023	BARANIRAJ G		1	1	0	2	3	3	3	2	8	7			30	60
60	21UIT174	UDHAYA RAJESHWAR R		2	2	2	2	2	4	4	4	4	9	1		36	72
61	21UIT179	VIVEKA N		1	2	1	1	2	5	5	5	5	9	9		45	90
	Nu	mber of Students Attempted		58	55	55	58	50	52	58	59	54	48	48	24		
		Maximum Aactual marks		2.0	2.0	2.0	2.0	2.0	5.0	5.0	5.0	5.0	10.0	10.0	10.0		
	65%		1.3	1.3	1.3	1.3	1.3	3.25	3.25	3.25	3.25	6.5	6.5	6.5			
	No of st		38	43	46	53	32	46	41	41	33	44	44	20			
	% of stu	dents secured > Threshold Marks		0.66	0.78	0.84	0.91	0.64	0.88	0.71	0.69	0.61	0.92	0.92	0.83		
		Attainment Level		2	3	3	3	2	3	3	2	2	3	3	3		
		CO2 Average		2.80													
		CO3 Average		2.57													

### **Direct Method: MODEL CO Attainment Calculation**

### Course Name : Programming in Java

Cour	se Code:	U20EST467 (2022-2023) Even Sem																							
Continuous Assessment Details																									
			Test			I	I						Mod	el Examir	ation						I				
		Student	Q. No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Total
SI.No	Reg.No	Name	CO's	C01	C01	C02	C02	C03	C03	C04	C04	C05	C05	C01	CO2	CO3	CO4	CO5	C01	CO2	CO3	CO4	C05	(75)	Marks
		A TRADE OF	POs	1,2,5,12	1,2,5,12	2	1,2,3,4,5,12	12	2	,12	5,12	2	2	1,2,5,12	2	2	2	2	1,2,5,12	2	1,2,3,4,5,12	1,2,3,4,5,12	1,2,3,4,5,12	()	in 100
			PSOs	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3	1,2,3		$\square$
1	21ITL003	KIRTHIGA R		2	2	2	2	2	2	2	2	2	2	2	3	4	4	3	8	7		9		60	80
2	21ITL006	NOORUL AMEEN J		2	2	2	2	2	2	2	2	2	2	4	4	4	4	4	10		10		8	68	91
3	21ITL007	RAHUL R		2	2	2	2	2	2	2	2	2	2	4	4	4	3	4		9		8	9	65	87
4	21ITL009	VIGNESHWARAN V		2	2	2	2	2	2	2	2	2	2	2	3	4	4	4		9		8	9	63	84
5	21UIT001	AASIYA BANU A J		2	2	2	2	2	2	2	2	2	2	5	4	5		4	9		9		9	65	87
6	21UIT003	ABISHA G		2	2	2	2	2	2	2	2	2	2	5	4	4	4	4		9		9	9	68	91
7	21UIT006	AKASH P		2	2	2	2	2	2	2	2	2	2	4	4	4	4	4		9		9	9	67	89
8	21UIT012	ANNIE ROSE A		2	2	2	2	2	2	2	2	2	2	4	4	4	4	4	9	9	9			67	89
9	21UIT014	ARAVINDAN R		2	2	2	2	2		2	2	2	2	4	4	3		4		9	9		9	60	80
10	21UIT016	ARUN KUMAR S			0	2	2	2		2	2	2	2	4	4	4		4		9			9	48	64
11	21UIT018	ARUNACHALAM A		2	2	2	2	2	2	2	2	2	2	4	4	4	4	4	9	9			9	67	89
12	21UIT020	AVILA JAYA SEBASTINA V		2	2	2	2	2	2	2	1	1		3	4	5	4	3	9		9		9	62	83
13	21UIT023	BARANIRAJ G		2	2	2	2	2	2	2	2	2	2	4	4				9	8			8	53	71
60	21UIT174	UDHAYA RAJESHWAR R		2	2	2	2	2	2	2	2	2	2	4	4	4	3	4		8	8		8	63	84
61	21UIT179	VIVEKA N		2	2	2	2	2	2	2	2	2	2	5	5	5	5	5		9	9		9	72	96
		Number of Students Attempted		59	61	61	61	61	55	60	59	60	58	59	57	58	55	55	41	50	33	17	44		
		Maximum Aactual marks		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	10.0	10.0	10.0		
		55% of the actual marks (Threshold)		1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	3.25	3.25	3.25	3.25	3.25	6.5	6.5	6.5	6.5	6.5		
	No	of students secure > Threshold Marks		59	59	61	60	57	54	60	56	58	55	45	47	54	47	52	39	48	33	15	43		
	%	of students secured > Threshold Marks		1.00	0.97	1.00	0.98	0.93	0.98	1.00	0.95	0.97	0.95	0.76	0.82	0.93	0.85	0.95	0.95	0.96	1.00	0.88	0.98		
Attainment Level					3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
		CO1 Average		3.00																					
		CO2 Average		3.00																					
		CO3 Average		3.00																					
		CO4 Average		3.00																					
		CO5 Average		3.00																					

### **Direct Method: ASSIGNMENT CO Attainment Calculation**

Cour	Course Name : Programming in Java										
Cour	se Code: 1	U20EST467 (2022-2023) Even Se	em								
		Continuous Assess	ment D	etails							
-			Q. No.	Asgmt 1	Asgmt 2						
CI N		Student	CO's	CO2	CO3						
SI.No	Keg.No	Name	PO's	1,2,3,4,5,12	1,2,3,4,5,12						
			PSO's	1,2,3	1,2,3						
1	21ITL003	KIRTHIGA R		5	5						
2	21ITL006	NOORUL AMEEN J		5	5						
3	21ITL007	RAHUL R		5	5						
4	21ITL009	VIGNESHWARAN V		5	5						
5	21UIT001     AASIYA BANU A J     5     5										
6	21UIT003         ABISHA G         5         5										
7	21UIT006 AKASH P 5 5										
8	21UIT012 ANNIE ROSE A 5 5										
9	21UIT014         ARAVINDAN R         5         5										
10	21UIT016	ARUN KUMAR S		5	5						
11	21UIT018	ARUNACHALAM A		5	5						
12	21UIT020	AVILA JAYA SEBASTINA V		5	5						
13	21UIT023	BARANIRAJ G		5	5						
14	21UIT028	DEVASHRI G		5	5						
15	21UIT034	DIVINSTAR S		5	5						
16	21UIT035	DURGESHWAR M		5	5						
17	21UIT042	GOKULNATH S		5	5						
18	21UIT043	GOKULRAJ R		5	5						
60	50 21UIT174 UDHAYA RAJESHWAR R 5 5										
61	51 21UIT179 VIVEKAN 5 5										
Number of Students Attempted         61         61											
	Maximum Aactual marks 5.0 5.0										
	65% of the actual marks (Threshold) 3.25 3.25										
	No of students secure > Threshold Marks6161										
	% of students secured > Threshold Marks 1.00 1.00										
	Attainment Level 3 3										

### Direct Method: END SEMESTER EXAM ATTAINMENT

#### Course Name : Programming in Java

#### Course Code: U20EST467 (2022-2023) Even Sem

Sl. No 💌	REG. NO	NAME	GRADE	
1	21ITL003	KIRTHIGA R	А	
2	21ITL006	NOORUL AMEEN J	А	
3	21ITL007	RAHUL R	Α	
4	21ITL009	VIGNESHWARAN V	S	
5	21UIT001	AASIYA BANU A J	С	
6	21UIT003	ABISHA G	С	
7	21UIT006	AKASH P	С	
8	21UIT012	ANNIE ROSE A	В	
9	21UIT014	ARAVINDAN R	В	
10	21UIT016	ARUN KUMAR S	Α	
11	21UIT018	ARUNACHALAM A	В	
12	21UIT020	AVILA JAYA SEBASTINA V	В	
13	21UIT023	BARANIRAJ G	С	
60	21UIT174	UDHAYA RAJESHWAR R	С	
61	21UIT179	VIVEKA N	С	
Numbe	er of students a	ppeared for the exam	61	%
Numbe exam	er of students so	coring C grade and above in End Semester	59	0.97
Numbe	er of students so	coring A grade and S in End Semester exam	25	0.42
Numbe	er of students so	coring B grade and C in End Semester exam	34	0.58
		Attainment Level	3	

### **Indirect Method: COURSE EXIT SURVEY**

Course Name : Programming in Java										
Course Code: U20EST467 (2022-2023) Even Sem Total No of Students Filled Course Exit Survey 48										
Total No of Students Filled Course Exit Survey	48									
Computation of CO Indirect A	Attainment	in the	Course(CO	URSE EXI	IT SUR	VEY)				
Questions	Excellent Good Satisfactory Poor Yes No Applicable Octation of 3									
1. Quality of Course Content	36	12	0	0				2.81		
2. Relevance of the textbook to this course as prescribed in the syllabus	35	13	0	0				2.80		
6. Were the lectures clear/well organized and presented at a reasonable pace?					48	0		1.50		
7. Has the lectures stimulate you intellectually?	48 0 1.50									
9. Did the problems worked out in the classroom help you to understand to solve questions on your own?	48 0 0 2.25									
10. Is the grading scheme clearly outlined and reasonable?					48	0		1.50		
11. Are the assignments/lab experiments procedures clearly explained?					48	0	0	2.25		
CO1 - Explain the fundamentals of Design Thinking and innovation. (K2)	33	14	1	0				2.75	CO1	
CO2 - Empathize and analyze model action plan. (K2)	34	13	1	0				2.77	CO2	
CO3 - Describe the principles of innovation and idea generation for product design. (K2)	32	14	2	0				2.72	CO3	
CO4 - Apply design thinking techniques for given tasks. (K3)	31	13	4	0				2.67	CO4	
CO5 - Apply the design thinking techniques for solving problems in various sectors. (K3)	33 13 2 0 <b>2.73</b> CO5									
3. List the Ideas / Concepts that you have found difficult to grasp	AWT, Sw	ing, Ger	nerics				•		<u> </u>	
<ol> <li>List the Concepts / topics that should be removed from the syllabus</li> </ol>	JDBC, AV	VT, Sw	ing							
5. List the New inclusions in the syllabus that are recommended from your view	Game Dev	velopme	nt, JavaFX							
8. What approaches/aids facilitated your learning? Lectures, Programming, Assignments, Demonstration, Practical Exercises										

### **Final CO Attainment**

Course N	ame : Pro	gramming	in Java							3 = Abo	we Aver	age			
Course C	ode: U20	EST467 (2	022-2023)	Even S	em					2 = Ave	rage		1		
CO Attain	ment		,							l = Bel	ow Aver	age	1		
Direct Inter	Diree rnal Asses	ct CO Attai ment (20%)	nment Le Direct Ext	vel (DA) ernal Ass	essment (80% )	Indirect CO Attainment Level (IDA)	Overall CO Attainment Level ((0.8*DA) + (0.2 *IDA))					-			
COs	A Internal Marks	B = 20% of A	C External Marks	D = 80% of C	E=B+D	F IndirectAttainment	G= ((0.8*E) + (0.2 *F))								
CO-1	2.86	0.57	3.00	2.40	2.97	2.75	2.93								
CO-2	2.40	0.48	3.00	2.40	2.88	2.77	2.86								
CO-3	2.86	0.57	3.00	2.40	2.97	2.72	2.92								
CO-4	3.00	0.60	3.00	2.40	3.00	2.67	2.93								
CO-5	3.00	0.60	3.00	2.40	3.00	2.73	2.95								
			Average CO	Attainme	nt		2.92								
					POs	s and PSOs Attain	<u>ment Results</u>								
				PO =	(Weighted Av	erage Value of PO	* CO Attainment	Averag	ze)/3						
	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
CO-1	2	1	-	-	2							2	3	2	1
CO-2	3	2	1	1	3							2	3	2	1
CO-3	3	2	1	1	3							2	3	2	1
CO-4	3	2	1	1	3							2	3	2	1
CO-5	3	2	1	1	3							2	3	2	1
Weighted Average	2.8	1.8	1	1	2.8							2	3	2	1
Avg. Attainment	2.73	1.75	0.97	0.97	2.73	0.00	0.00	0.00	0.00	0.00	0.00	1.95	2.92	1.95	0.97
PO's	Avg. (H)										DSO	'e A++-ir	ment		
PO-1	2.73				PO	s Attainment					-30		ment		
PO-2	1.75		3.00	2.73	2.5	73				3.00		1			
PO-3	0.97									2 50					
PO-4	0.97		2.50							2.50					
PO-5	2.73							1.95		2 00					
PO-6	0.00		2.00	1.75						2.00					
PO-7	0.00									1.50	2.92				
PO-8	0.00		1.50												
PO-9	0.00				0.97 0.97					1.00		1.99			
PO-10	0.00		1.00												
PO-11	0.00		0.50							0.50			0.	97	
PO-12	1.95		0.50			0.00 0.00 0.00	0.00 0.00 0.00								
PSO-1	2.92		0.00			0.00 0.00 0.00	0.00			0.00	/		-		
PSO-2	1.95		PC	D-1 PO-2	PO-3 PO-4 PO-	5 PO-6 PO-7 PO-8	PO-9 PO-10 PO-11 PO	0-12							
PSO-3	0.97														

# Attainment of Program Outcomes and Program Specific Outcomes

The assessment tools and processes used for measuring the attainment of each of the Program Outcomes and Program Specific Outcomes

Direct Assessment methods a	re formative as well as summative
These rubrics can be used by stu	idents in revising and judging their own and progress
Course Outcome Attainment	Assessment tool which evaluates what the students are expected to know and will be able to do at the end of each course
Indirect Assessment methods	
Alumni Survey	From passed out students variety of information were collected every year to evaluate the programs satisfaction
Employer survey	Collecting information about the performance of the passed out students skills and capabilities every year
Parent Survey	To make sure the parental involvement exist for a student and

Ou	tcome Based Education (OBE), SMVEC
	how well he is able to apply his engineering knowledge
Graduate Exit Survey	This is a self-assessment tool which helps a student to analyze
	his potential towards the PEOs and Graduate attributes.
Faculty survey	This survey's objective is to relate the student's cognitive ability
	with relevance to his program (B.Tech – IT) knowledge
Placement data	This gives the outcome of this learning with respect his
	employability skill.
	Capacity to extrapolate from students have learned and applied
Higher Studies Record	their competencies to select their higher education in both
	national and international institutions.
Comnetitive Exams	This portrays the student's interest and involvement towards his
Competitive Exams	Numerical, Analytical and Programming skills.
Extra-curricular Activities	This portrays the students interest and involvement towards his
	extracurricular skills
Outreach/ Extension	This information gives the students involvement in society
Activities	related volunteer activities and healthy recreation
Co-curricular Activities	The students interest in team work and application of his
	knowledge towards engineering innovations

# The quality or relevance of assessment tools/ processes used

CO Assessment tool	Assessment frequency	Assessed by	Reviewed by
Alumni Survey	Yearly once after Graduation	Programme Academic Coordinator	HOD, DAC
Employer survey	Yearly once	Programme Academic Coordinator	HOD, DAC
Parent Survey	Yearly once	Programme Academic Coordinator	HOD, DAC
Graduate Exit Survey	Yearly once after Graduation	Programme Academic Coordinator	HOD, DAC
Faculty survey	Yearly once	Programme Academic Coordinator	HOD, DAC
Placement data	Yearly once	Programme Academic Coordinator	HOD, DAC
Higher Studies Record	Yearly once	Programme Academic Coordinator	HOD, DAC
Competitive Exams	Yearly once	Programme Academic Coordinator	HOD, DAC
Extra-curricular Activities	Yearly Twice	Class Advisor, Event Coordinator, Programme Academic Coordinator	HOD, DAC

	Outcome Based	Education (OBE), SMVEC	
Outreach/ Extension Activities	Yearly Twice	Class Advisor, Event Coordinator, Programme Academic Coordinator	HOD, DAC
Co-curricular Activities	Yearly Twice	Class Advisor, Event Coordinator, Programme Academic Coordinator	HOD, DAC

### **POs/PSOs ATTAINMENT ASSESSMENT**

	Assessment	Tools	Weight
	Direct Assessment	CO attainment of	80%
	Direct Assessment	courses	8078
POs / PSOs		Alumni Survey	
Attainment	Indirect Assessment	Employer survey	
		Parent Survey	20%
		Graduate Exit Survey	
		Faculty survey	

### Strategies for Slow, Average and Advanced Learners

### For Slow learners

- Remedial classes
- Specially designed assignment/ task
- Student study group for peer-to-peer learning
- Individual Mentoring (Tutor Guardian)

### For Medium Learners

- Additional assignment/ task
- Encouraging for timely and effective completion of work
- Conduction of quiz, orals etc.
- Solving previous year University question papers and test papers
- Presentation on technical topics/ case studies/mini projects

### For Advanced Learners

- Encouraging to present & publish papers in journals/conferences/competitions
- Guidance for GATE/competitive Examination
- Encouraging to participate in professional activities.
- Specially designed activities to improve the portfolio of students.
- Individual guidance for career building

#### PO and PSO ATTAINMENT COMPUTATION - SAMPLE

### **Direct Method: CO Attainment of all Courses**

- **Direct Assessment** is assessed by the attainment evaluated at the end of each semester.
- This assessment includes the student performance in CAT, ESE and Assignments for the theory, laboratory, projects, EEC and MC courses.
- The attainment of all courses is evaluated based on the performance of End Semester Examinations (ESE) and Continuous Assessment Test (CAT)

Course	PO4	P02	Po3	Pot	POS	POG	P07	PO8	P09	P010	P011	P012	PS01	PS02	PSO3
C101	2.96	2.56	2.96	0.99	2.56	2.96	1.58	0.99	0.99	1.97	2.17	2.96	2.96	1.97	-
C102	2.92	2.92	2.92	2.92	1.94	2.92	1.94	0.97	1.56	0.97	1.94	2.14	2.92	1.94	-
C103	1.38	1.38	1.48	1.28	0.49	1.08	0.49	0.49	1.18	0.49	0.49	1.08	-	-	-
C104	2.60	2.00	2.80	1.00	2.60	3.00	1.80	2.40	2.80	3.00	1.00	3.00	2.00	2.00	1.00
C105	3.00	3.00	3.00	3.00	1.00	3.00	2.80	2.00	1.00	2.00	1.00	3.00	-	-	-
C106	3.00	2.33	2.17	1.17	1.67	2.83	2.67	1.67	2.17	1.00	1.83	2.67	0.00	0.00	0.00
C107	3.00	2.60	3.00	1.00	2.60	3.00	1.60	1.00	1.00	2.00	1.60	3.00	3.00	1.00	-
C108	2.39	1.99	0.99	0.99	2.98	2.98	1.99	1.39	1.39	1.39	2.98	2.98	-	-	-
C109	1.00	-	-	-	-	-	-	2.00	2.00	-	-	-	-	-	-
C110	0.68	0.53	0.44	0.44	0.44	0.68	0.68	0.44	0.39	0.68	0.63	0.73	0.24	-	-
C111	3.00	3.00	3.00	3.00	2.00	3.00	2.20	1.00	1.80	1.00	2.40	2.20	3.00	2.60	2.00
C112	3.00	3.00	3.00	3.00	-	-	-	2.00	3.00	-	-	3.00	2.00	2.00	2.00
C113	2.88	2.11	2.30	2.30	2.68	1.92	2.88	0.96	1.92	2.88	1.92	1.92	1.92	1.92	0.96
C114	2.98	2.59	2.98	0.99	2.59	2.98	1.59	0.99	0.99	1.99	1.79	2.98	2.98	2.98	-
C115	2.60	3.00	2.60	3.00	1.80	3.00	3.00	3.00	1.80	2.00	1.60	3.00	-	-	-
C116	3.00	3.00	3.00	3.00	3.00	2.00	-	2.00	3.00	3.00	3.00	3.00	2.00	2.00	2.00
C117	2.80	1.80	2.80	1.60	1.80	2.80	1.80	1.80	1.60	2.80	2.20	3.00	-	-	-
C118	3.00	3.00	3.00	3.00	1.00	3.00	2.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C201	2.98	2.98	2.98	2.98	1.98	2.98	1.98	0.99	1.98	0.99	1.98	1.98	1.98	1.98	0.00

#### Direct Attainment: PO/PSO Attainment for the BATCH: 2017-21

#### **Indirect Method: Stakeholders Survey Analysis**

- Indirect assessment is carried out through survey forms received from various stakeholders as mentioned previously.
- Each question in the survey is mapped with corresponding PO and PSO for attainment calculation.

#### **Parent Form**

SF	SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE (An Autonomous Institution) Puducherry - 605 107									
	Department of Informa	tion Tech	nology	/						
	PARENT'S FEED	BACK	FOR	M						
DearF	Parent,	and a second s		,						
Ti intende feedba employ on you slow a	The college values your input as you provide feedback about the curriculum. This questionnaire is intended to oblect information relating to your satisfication towards the curriculum. The main objective of this feedback on curriculum is to update the curriculum by considering the needs and requirements for students' employability. Indure studies or entrepreneurship, Choose the appropriate poting against each question based on your agreement with the question. Excellent indicates strong agreement and Needs Improvement indicate slow agreement.									
Name	of the Parent :									
Design	nation :									
Name	of the Organization :									
Email	i									
Mobile	· :									
Addre	55									
Name Year/	of your ward :									
+			Please	mark (🗟 in the	relevant boxes					
SI.No.	Question	Excellent	Good	Satisfactory	Needs Improvement					
1	Structure and appropriateness of the curriculum									
2	Extent to which the Curriculum caters to all aspects of engineering problems									
3	Curriculum addresses the industrial requirements up to date									
4	Your rating regarding the development of soft skills, managerial skills and programming skills through the delivery of the curriculum.									
5	Incorporation of Problem-based learning in Curriculum									
6	Your rating related to the Curriculum dealing with understanding real-life problems and examples									

SL.No.	Question	Excellent	Good	Satisfactory	Needs Improvement
7	Availability of courses for the improvement of human values				
8	Satisfactory level with infrastructural facilities				
9	Interaction/treatment of parents in the Campus/Department				
10	Imparting care and discipline among students				
11	Life skill/training provided				
12	Knowledge of Mathematics, Science and Engineering Delivered through Curriculum				
13	Curriculum deal with awareness related to social, health, safety, legal, and cultural issues while solving engineering problems				

Please rate the Curriculum

Any Other Comments:

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Signature of Parent

Date:

### Alumni Form



Dear Alumni

We are glad that you spert valuable years as a student at Sri Manakula Vinsyagar Engineering College. Your ophion is important to us, and we would appreciate your feedback on this form. Our goal is to enhance the credibility of our institution, and we are specifically seeding your input on the curriculum. We wanto update and make it better to meet the needs and requirements of students for employability, higher studies, and entrepreneurship. Please indicate your level of agreement by choosing the appropriate option for each question. Excellent indicates strong agreement, while Needs Improvement indicates low agreement.

Name	of the Company currently working:				
Addres	55:				
Contac	ct Number:				_
Email i	d:				
SI.No.	Question	Excellent	Good	Satisfactory	Needs Improvem
1	The course curriculum framed by the Institution is relevant to the programme				
2	Allocations of the hours and credits to the courses are satisfied.				
3	Allocations of the hours and credits to the courses are satisfied.				
4	Experiments in the lab courses are related to real time applications.				
5	Electives offered in the syllabus are in relation to technological advancements.				
6	The institute/faculty helped me in placement / higher education				
7	The curriculum accommodates courses with experiential learning (hands-on)				
8	Assessment pattern is satisfied for students to face university exam in confidence.				
9	The course curriculum and activities (Guest Lecture, Industrial Visit) to bridgethe gap between academic and industrial needs.				
10	The learning ambience at the institute				

Suggestions for inclusion of various new courses for the upgradation of the latest technological concept among students  $\ensuremath{\mathbf{i}}$ 

ii.		
iii.		
iv.		
v.		

Suggestions for removal of various courses

i	i	Ŀ.	
i	i	i.	

н. Ш

III.
iv.
<b>v</b> .

. İ.

#### Date:

Signature of Alumnus

#### **Teacher Form**



SI.No.	Question	Excellent	Good	Satisfactory	Improvement
12	Satisfactory level with Mandatory and Skill Oriented / Employability Enhancement Courses				

Suggestions for inclusion of various new courses

E E N. V. Suggestions for removal of various courses L E E Tote: Date: Signature of the Teacher

#### **Academic expert Form**

Puducherry - 605 107  Department of Information[Technology  ACADEMIC EXPERT FEEDBACK FORM (Curriculum, Course, Teaching,Learning and Evaluation)  Dear Sir / Madam  This feedback are solved in information provided by you will be used for quality improvement the various generation of studies in the Institution. Excellentindicates strongagemententandN improvementindicates solve agreement.  Name of the Expert :	Puducherry - 605 107  Department of Information Technology  ACCOMPLEXATION  ACCOMPLEXATION  ACCOMPLEXATION  ACCOMPLEXATION  Destination  Account of the Counce, Teaching.Learning and Evaluation  And the teaching learning and evaluation. The information relating to your satisfaction towards the curriculu  action of the Cogenization. The information relating to your satisfaction towards the curriculu  action of the Expert  Account of the Cogenization.  Account of the Cogenization/Institution:	SR		AR ENG	SINE	ERING CO	OLLEGE
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courses in the curriculum across the				Improvement
semesters.				
Coverage of various domains of the programme through curriculum.				
Adequacy of proportion of lab courses in the curriculum				
Updation of the curriculum with the current trends in Industry and Academia to facilitate placements.				
Updation of the curriculum in collaboration with Industry				
Updation of the curriculum with Industrial training and internship.				
Relevance of Curriculumfor competitive examinations like Government Examinations (TNPSC, UPSC, Public sector) etc.,				
Adequacy of lecture hour allocation to each course in the curriculum.				
Availability of courses in the proposed curriculum to help the students to inculcate ethical and human values.				
Availability of courses in the proposed curriculum to help the students to inculcate Entrepreneurial Development				
Capability of curriculum to orient the students towards higher education GATE, GMAT etc.,				
Extent of curriculum in improving employability and placements				
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tions for removal of various courses				
bout overall organization of the curriculum				
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Date:

Signature of the Academician Official Seal

#### **Graduate Exit Survey Form**

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SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE	1.Educationalexperien
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Department of Information Technology	<ul> <li>Excellent</li> </ul>
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Dr.P.RAJA ProfessorandHead	Needs Im
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2. RegisterNumber:Batch:	5.StudentServices*
3. YearofAdmission:	Admin Offices
4. YearofGraduation:	Career Guidance and Pl
	Transportation
5. ContactemailID*:	Canteen
6. MobileNumber*:	Hostel
7PresentAddress	
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### **Student Form**



#### A. EducationalExperience

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$\bigcirc$	Excellent						
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	Excellent	Good	Satisfactory	Needs Improvement
Admin Offices				
Career Guidance and Placement				
Transportation				
Canteen				
Hostel				

# Indirect Attainment: Survey Analysis

#### Indirect Attainment: Batch 2017-21

Survey Type	Q.No.	PO	PO2	POS	<b>P04</b>	POS	906	P07	PO8	POG	PO10	PO11	P012	PSOI	PS02	PS03
	1	2.98														
	2		2.5													
	3		2.4	2.4	2.5											
	4				2.6	2.4						2.7				
EX	5															
uate	6						2.6	2.4	2.6				2.6			
Srad	7											2.4				
Ŭ	8												2.5			
	9						2.8			2.8	2.2			2.8		
	10														2.7	
	11															2.8
	1															
	2													2.8		2.5
	3	2.7	2.8	2.9												2.4
·=	4															2.5
<u>m</u>	5		2.7		2.7	2.8	2.8					2.6				
A	6										2.5	2.5		2.4	2.4	
	7												2.8	2.7	2.6	
	8							2.7		2.8		2.6				2.4
	9								2.7					2.6		
	1	2.9	2.9						2.8					2.8		2.9
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loye	3			2.7			2.9	2.9						2.9		2.8
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-	5	2.8									2.8					2.9
	6									2.9		2.8				2.9
Indi Atta er	rect inm nt	2.84	2.66	2.66	2.68	2.64	2.78	2.62	2.68	2.82	2.44	2.61	2.72	2.74	2.64	2.68

### Overall PO/PSO Attainment for the BATCH: 2017-21

		Program Outcome (POs)												Program Specific Outcome (PSOs)		
Final PO-PSO Attainment	PO1	PO2	PO3	PO4	POS	PO6	P07	PO8	60d	PO10	P011	PO12	PS01	PS02	P SO3	
Direct	2.81	2.42	2.53	2.22	2.33	2.53	2.31	1.63	2.41	2.40	2.21	2.46	2.67	2.42	1.86	
Indirect	2.84	2.66	2.66	2.68	2.64	2.78	2.62	2.68	2.82	2.44	2.61	2.72	2.74	2.64	2.68	
Direct (80%)	2.25	1.94	2.03	1.78	1.87	2.03	1.85	1.31	1.93	1.92	1.77	1.97	2.13	1.94	1.49	
Indirect (20%)	0.57	0.53	0.53	0.54	0.53	0.56	0.52	0.54	0.56	0.49	0.52	0.54	0.55	0.53	0.54	
Final PO- PSO Attainment	2.82	2.47	2.56	2.31	2.39	2.58	2.37	1.84	2.49	2.41	2.29	2.51	2.68	2.46	2.03	

# **Continuous Improvement in PO&PSO Attainment**

- Every Faculty needs to compute two main attainment values as mentioned below. Based on that if target is not attained hence appropriate actions should be taken.
  - Course attainment
  - Course with respect to PO and PSO attainment
- Department HOD needs to compute batch wise PO and PSO attainment and needs to analyze the gaps and take necessary actions.



### Sample Continuous Improvement Analysis

**PO2:** 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.

PO2	Target: 2	Target: 2	Target: 2	Although students are mostly capable
				to understanding and analysing text
				book literature, they are seen to
	Attainment:	Attainment:	Attainment:	slightly lag in amalgamating their
	1.90	1.88	1.96	knowledge with state of art research.
				There is a dip and then gradual
				improvement in attainment levels, to
				meet the target level in near future.

ACTION 1: Industrial visits are expected to help students gain knowledge on complex engineering problems

ACTION 2: Students are encouraged to observe, their homes and surroundings to gain insight into real life engineering problems and think of possible approaches/solutions to these problems.

ACTION 3: Research oriented final year B.Tech Projects are encouraged to develop and hone their research skills.

### **Steps to implement Outcome Based Education in Higher education**

There are various actions that can be taken to implement outcome-based education (OBE) in higher education. Here are the possible steps for successful OBE implementation



### • Determine the desired Learning Outcomes:

Identify the intended learning outcomes for the program by defining the program's learning outcomes. This ought to be measurable, precise, and in line with the purpose and objectives of the program.

### • Create a Curriculum Map:

Design a curriculum map that links the program's courses to the learning objectives. This map ought to make it easier to make sure that all courses cover the important learning objectives.

#### • Select Assessment Strategies:

These have to be in line with the program's learning objectives. These must be diverse and contain both formative and summative evaluations.

#### • Develop Rubrics:

Create rubrics to assess each learning outcome's performance by the students. These evaluation criteria must be precise, intelligible, and easy to follow.

### • Train Faculty:

Educate faculty on the new OBE strategy, including how to create efficient exams and evaluate student success using rubrics.

### • Implement Changes:

Update the program's OBE strategy. This can entail changing the material covered in the course, the assignments, and the exams.

### • Monitoring and assessing the new OBE strategy's efficacy:

Regular student and faculty assessments and surveys can be used to accomplish this.

#### • Continuous Improvement:

As the OBE strategy is being improved, use the evaluation data as a guide. This can entail changing the curriculum outline, assessment procedures, or the program's learning objectives.

#### Conclusion

Outcome-Based Education (OBE) is a student-centered approach that has gained popularity in higher education institutions due to its ability to improve student outcomes and institutional effectiveness. Implementing OBE can be challenging, but with the right tools and strategies, institutions can successfully transition to this new approach.