



**SELF- ASSESSMENT REPORT
FOR
NATIONAL BOARD OF ACCREDITATION
(NBA)**

**Samarth Educational Trust
Arvind Gavali College of Engineering
At- Panmalewdi, Post- Varye, Tal-Dist. Satara-415015**

e-SAR Department of Electrical Engineering

CRITERION 01	Vision, Mission and Program Educational Objectives	60
-------------------------	---	-----------

1.1. State the Program Educational Objectives (PEOs) (5)

The Program Educational Objectives of Electrical Engineering program is listed below:

PEO1: The graduates will be able to gain a good fundamental knowledge in science and engineering, to solve electrical engineering problems.

PEO2: The graduates will be able to demonstrate the professional skills to succeed in a competitive environment.

PEO3: The graduates will be able to build ethical values, sensitivity towards society and environment.

The program's educational objectives are designed to include five core values: professionalism, core competency, society and environment, industrial skills, and depth of knowledge. The contexts of PEOs are as given below.

PEO1: Describes the significance of mathematics in analyzing industry-related problems and solving them using various algorithms learned. It also emphasizes fundamental competencies and teamwork skills. PEO1 consists of four major components; core competency, individual, employability and team work.

PEO2: PEO2 emphasizes the graduate's ability to apply knowledge across multiple settings in the long run, as well as possess in-depth functional and disciplinary abilities to solve daily life problems in society, using modern engineering tools and emerging technologies. PEO2 is made possible by diverse professionalism, the environment and society, interpersonal skills, investigations, analysis and solutions.

PEO3: Exhibits the characteristics of a graduate interested in ethical profession for societal progress and environmental respect. The graduates use a variety of computing disciplines to create sustainable solutions in areas such as energy, agriculture, transportation forecasting etc. PEO3 consists of three major components: core competency, societal progress, and the environmental sustainability.

1.4 State the process for defining the Vision and Mission of the Department and PEOs of the program (25)**• Process of Defining the Vision and Mission of the Department**

- The department formulated its vision and mission statements through a consultative process by interacting with all the stakeholders of the department, taking into consideration the long and short-term goals of the department and the societal requirements as shown in the figure **1.4a** given below. The vision and mission statements of the department were formulated in the year 2020. The new Outcome Based Education (OBE) accreditation process has given an opportunity to review and modify the vision and mission statements of the department considering the Graduate Attributes. The Internal stakeholders involve students, staff members etc. whereas external stakeholders involve industries /employers, parents, alumni, professional bodies etc. The following steps were followed:
- **Step1:** Head of Department, along with the faculty members formulate and coordinate the vision and mission statement of the department, based on the continuous feedback from internal and external stakeholders in line with vision and mission of the Institute.
- **Step2:** The formulated statements of vision and mission are presented in the DAB meeting for their recommendations or suggestions. If any suggestions from DAB are received necessary modifications are incorporated and again forwarded to DAB. This process is continued till the final modifications from DAB are received.
- **Step3:** Recommended vision and mission statements from DAB are sent to the IQAC in coordination with the governing body. Once it is accepted by IQAC, the governing body approves it.
- **Step 4:** Finally, the vision and mission statements are published through digital and print media for the internal and external stakeholders.

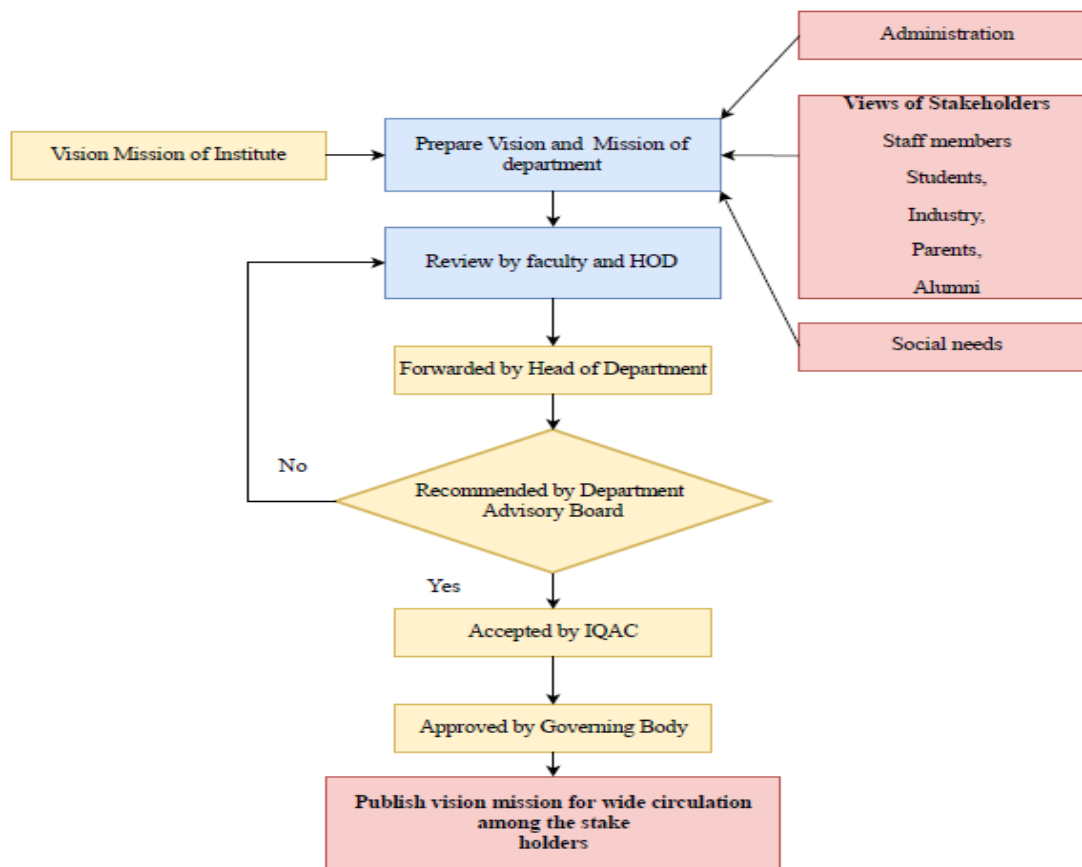


Figure 1.4 a: Process of defining the Vision and Mission of Department

- **Process of Defining the Program Educational Outcomes (PEOs) of the Program**

- The process of defining PEOs is in conjunction with vision, mission of program and inputs received from a committee comprising representatives of all internal and external stakeholders as shown in figure 1.4 b. The PEOs were defined through following steps.
- **Step 1:** PEOs were formulated by HoD in consultation staff members, students, alumni, and industrial experts, professional bodies and taking into consideration the data on current and future trends.
- **Step 2:** The formulated PEOs are forwarded to Departmental Advisory Board (DAB) for their recommendation or suggestions in the formulated PEOs. If any suggestions from DAB are received necessary modifications are incorporated and again forwarded to DAB. This process is continued till the final modifications from DAB are received.
- **Step 3:** Modified PEOs statements from DAB are sent to the IQAC in coordination with the governing body. Once it is accepted by IQAC, the governing body approves it.

- **Step 4:** Finally, the Program Educational Outcomes (PEOs) statements are published through digital and print media for the internal and external stakeholders.

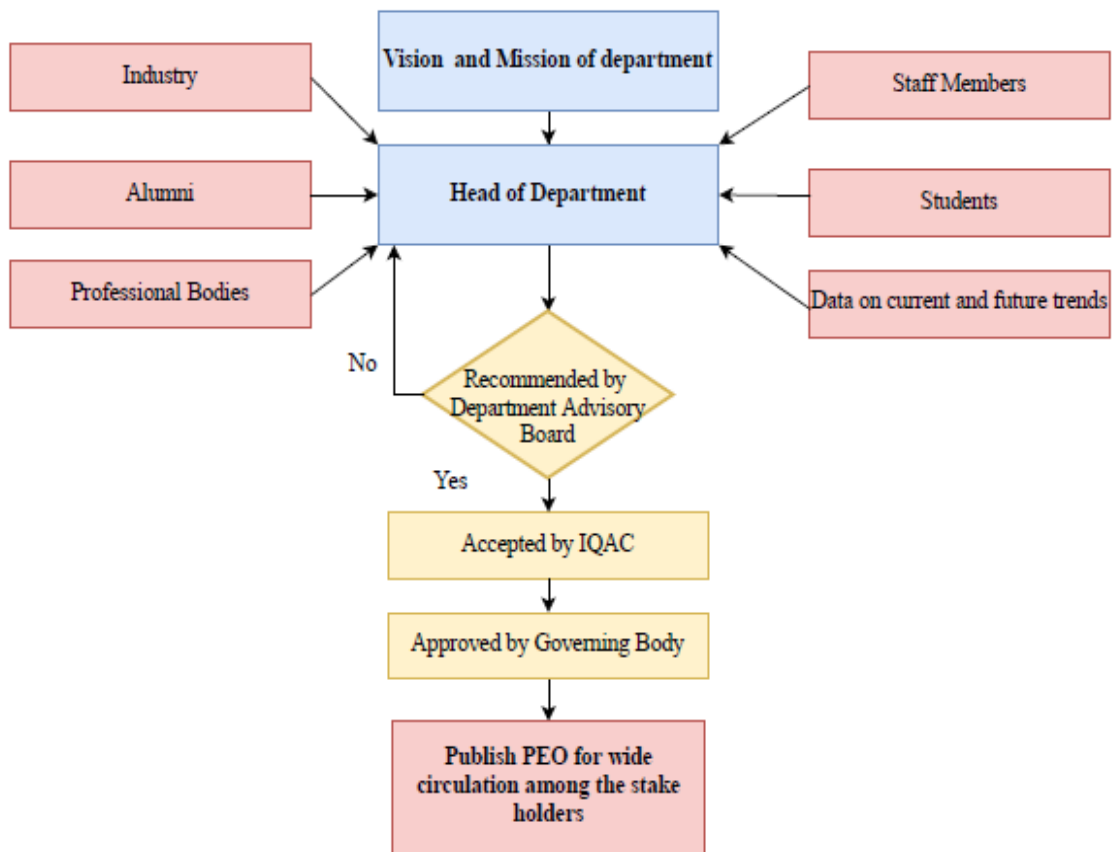


Figure 1.4 b: Process of defining PEOs of the program

The following documents are maintained at the department

1. Committee minutes of meeting
2. Stakeholder's feedback/form
3. Parents feedback
4. Alumni inputs
5. DAB: Minutes of meeting

1.5. Establish consistency of PEOs with Mission of the Department (15)
(Generate a “Mission of the Department – PEOs matrix” with justification and rationale of the mapping)

PEO Statements	M1	M2	M3
Graduates will have expertise in problem analysis, problem solving, design, as well as the skills and knowledge required for a successful career in the field of Electrical Engineering.	3	3	1
Graduates will be capable of providing smart, sustainable solutions in Electrical Engineering by utilizing modern tools and technologies.	2	3	2
Graduates shall excel in a competitive environment by demonstrating leadership and life-long learning skills required for a successful professional career.	2	2	3

The Program Educational Objectives are consistent with the Mission statement of the department which is stated in following table 3.

	M1	M2	M3	
PEO Statements	M1: To impart quality education in electrical engineering using effective teaching learning process.	M2: To develop skills & ability to achieve a successful career.	M3: To inspire students for becoming socially committed professionals with ethical values.	Justification
PEO1: Graduates will have expertise in problem analysis, problem solving, design, as well as the skills and knowledge required for a successful career	3	3	1	M1 highly correlates with PEO1 as quality education is based on the fundamental concept and skills required for a successful career in the field of Electrical Engineering.

in the field of Electrical Engineering.				<p>M2 is highly associated with PEO1 as it provides skill set and knowledge for success in the career.</p>
PEO2: Graduates will be capable of providing smart, sustainable solutions in Electrical Engineering by utilizing modern tools and technologies.	2	3	2	<p>M3 slightly mapped with PEO1 as it covers technical skills and knowledge.</p> <p>M1 moderately correlates with PEO2, for overall development of graduates and to strengthen their technical knowledge.</p> <p>M2 highly correlates with PEO2, as it deals with the advancement in skills among the students for their successful career.</p> <p>M3 moderately correlates with PEO2 as there is more significance on solving real time problem using technical and soft skills rather than imbibing ethical values, respect for the environment, and social</p>

				responsibility among the students.
PEO3: Graduates shall excel in a competitive environment by demonstrating leadership and life-long learning skills required for a successful professional career.	2	2	3	M1 moderately correlate with PEO3 as it emphasizes on quality education however the PEO3 focuses on awareness ethical values, sensitivity towards society and environment.
				M2 moderately correlates with PEO3 as it highlights the development of professional skills among the students to serve the society.
				M3 highly mapped with PEO3 for establishing the society to meet social challenges.

1: **Slightly** related2: **Moderately** related3: **Highly** related

PEOs	Mission Component		
	M1	M2	M3
	To impart quality education in electrical engineering using an effective teaching learning process.	To develop skills & attitude to achieve a successful career.	To inspire students to become socially committed professionals with ethical values.
PEO-1 The graduates will be able to gain a good fundamental knowledge in science and engineering, to solve electrical engineering problems.	3 PEO- Gain a fundamental knowledge M- An effective teaching learning process	3 PEO- To solve electrical engineering problems M- To develop skills & attitude	1 PEO- To solve industrial and societal problems M- To inspire students to become socially committed.
PEO-2 The graduates will be able to demonstrate the professional skills to succeed in a competitive environment.	2 PEO- To demonstrate the professional skills. M- To impart quality education.	3 PEO- To demonstrate the professional skills. M-.To nurture skills	2 PEO- To succeed in a competitive environment. M-To instil sensitivity towards society
PEO-3 The graduates will be able to build ethical values, sensitivity towards society and environment.	2 PEO- To build ethical values. M- Imparting quality education.	2 PEO- To develop awareness towards ethical issues. M- Succeed and progress in their skills & attitude to achieve a successful career	3 PEO- To build ethical values, sensitivity towards society and environment. M- To become ethically, socially committed professionals.

Level 3- Above 70%, **Level 2-** 50 To 70%, **Level 1-** 30 To 50%

PEOs	Mission Component
<p>PEO-1 The graduates will be able to gain a good fundamental knowledge in science and engineering, to solve electrical engineering problems.</p>	<p>M1 - To impart quality education in electrical engineering using an effective teaching learning process.</p>
	<p>M2 - To develop skills & attitude to achieve a successful career.</p>
	<p>M3 - To inspire students to become socially committed professionals with ethical values.</p>
<p>PEO-2 The graduates will be able to demonstrate the professional skills to succeed in a competitive environment.</p>	<p>M1 - To impart quality education in electrical engineering using an effective teaching learning process.</p>
	<p>M2 - To develop skills & attitude to achieve a successful career.</p>
	<p>M3 - To inspire students to become socially committed professionals with ethical values.</p>
<p>PEO-3 The graduates will be able to build ethical values, sensitivity towards society and environment.</p>	<p>M1 - To impart quality education in electrical engineering using an effective teaching learning process.</p>
	<p>M2 - To develop skills & attitude to achieve a successful career.</p>
	<p>M3 - To inspire students to become socially committed professionals with ethical values.</p>

CRITERION 03	Course Outcomes and Program Outcomes	120
---------------------	---	------------

3.1.3 Program level Course-PO matrix of all courses INCLUDING first year courses (10)

CO-PO correlation matrix for all courses in the program is given below. Course code is mentioned in the first column and correlation with POs is indicated as 1) slight, 2) moderate and 3) High. Courses not having any correlation is indicated by '-'. This correlation is derived from CO-PO mapping of the individual course. Average of all COs is taken and mapped at level 1, 2 and 3.

Class	Course	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
FY- SEM-I	BTBS101	Engineering Mathematics- I	1.5	2.25	2									1.5
	BTBS102	Engineering Physics	2	2	2			3		3				2
	BTES103	Engineering Graphics	1.67	3.00	2.50	3.00	1.67				2.50	2.50		2.50
	BTHM104	Communication Skills					1.00	1.00		1.5	2.5	2.75		
	BTES105	Energy and Environment Engineering	2.33		2.50			1.50	3.00	2.00		2.00		
	BTES106	Basic Civil and Mechanical Engineering	2	3	2	2		2	2			2	3	
	BTBS107L	Engineering Physics Lab	2	2	2			3.00		3				2
	BTES108L	Engineering Graphics Lab	1.67	3.00	2.50	3.00	1.67				2.50	2.50		2.50
	BTHM109L	Communication Skills Lab.	1					1	1		2	3	3	

FY- SEM-II	BTBS201	Engineering Mathematics-II	1.5	2.25	2	2								1.50
	BTBS202	Engineering Chemistry	2.25	2.00				1.00	2.00					
	BTES203	Engineering Mechanics	2.67	3.00	2.00						2.00			
	BTES204	Computer Programming in C	2	2	2						2	3		
	BTES205	Workshop Practices	3				2.33				2	1		
	BTES206	Basic Electrical and Electronics Engineering	2.5						1			1		1.00
	BTES207L	Computer Programming Lab	2	2	2						2	3		
	BTBS208L	Engineering Chemistry Lab	2.25	2.00				1.00	2.00					
	BTES209L	Engineering Mechanics Lab	2.67	3.00	2.00						2.00			
	BTES210P	Mini Project	1	1			1	1	1	1	3	3		
	BTES211P	Field Training / Internship/Industrial Training (minimum of 4 weeks which can be completed partially in first semester and second												

		Semester or in at one time).												
SY- SEM-III	BTBS301	Engineering Mathematics-III	2.50	2.25	2.50			2.00				2.00		1.25
	BTEEC302	Network Analysis and Synthesis	2.75	2.67	2.00		2.00	2.00			3.00	2.00		2.00
	BTEEC303	Fluid Mechanics and Thermal Engineering	3.00	2.00			2.00				2.00	2.00		
	BTEEC304	Measurement and Instrumentatio n	2.75	2.00	3.00			2.00			2.00	2.00		2.00
	BTEEE305A	Elective –I (A) Electrical Engineering Materials	2.75	3.00				2.00				1.67		1.00
	BTHM3401	Basic Human Rights	3	2				6			2	2		
	BTHM306	Engineering Economics	2.67	2.33								2.25		2.00
	BTEEL307	Network Analysis and Synthesis Lab	2.25	2.00	2.00		3.00	2.00			2.00	2.50		2.00
	BTEEL308	Measurement and Instrumentatio n Lab	2	3	2		2	2			1	1		1
	BTEEM309	Electrical workshop/ Mini project	2	2	2	1	2	2			1	1		2

	BTEEF310	Field Training/ Internship/ Industrial Training Evaluation	2	2	2	2	2	2	2	2	1	1		1
SY- SEM-IV	BTEEC401	Electrical Machine-I	2.75	2.75	2.00			2.00			1.75	1.50		2.00
	BTEEC402	Power System-I	2.25	3.00	2.00		3.00	2.00	2.00		2.00	2.00		2.00
	BTEEC403	Electrical Installation and Estimation	2.50	2.67	3.00		3.00	2.00	2.00	3	2.50	2.00	2	2.33
	BTEEC404	Numerical Methods and Programming	2.25	3.00			2.50				2.00	1.67		2.00
	BTID405	Product Design Engineering	2.50	2.00			2.00				1.00	2.00		1.50
	BTEEE-406A	Elective –II- (A) Solid State Devices	2.75	2.00			2.00				1.25	2.00		
	BTEEOE407-B	Elective –III (B) Introduction to Non- Conventional energy sources	2.50	2.33	2.00			3.00	2.33		2.00	2.50		2.00
	BTEEL408	Electrical Machine-I Lab	3	3	2			2		3	2	2		2
	BTEEL409	Power System lab-I	2.25	2.00	2.00	2.00	3.00	2.00			2.00		2.00	2.00

	BTEEL410	Numerical Methods and Programming Lab	2	3	2		3				2	2		2
	BTEEL411A	Elective-II Lab (A) Solid State Devices Lab	3	2			2				1	2		
		Field Training / Internship/ Industrial Training (minimum 4 weeks which can be completed partially in Third semester and Fourth Semester or in at one time.)												
TY-SEM-V	BTEEC501	Electrical Machine-II	3	3	3						2	2		2
	BTEEC502	Power System-II	3	3			2	2						
	BTEEL503	Microprocessor and micro Controller	3	3			2							2
	BTHM504	Value Education, Human Rights and Legislative Procedures [MOOC/Swayam/NPTEL]						3	3	2		2		
	BTEEE505	Elective-IV- Illumination engineering	2	3										

	BTEEOE506	Elective-V- Electrical Mobility	3												
	BTEEL507	Electrical Machine-II Lab	3	3	2					2	2		2		
	BTEEL508	Power System-II Lab	3	2		2	2								
	BTEEL509	Microprocessor and micro Controller Lab	3	2		2							2		
	BTEEF510	Industrial Training	3	3	2	2	2	2	2	2	2	2	2	2	
TY- SEM-VI	BTEEC601	Control System	3	3			2					2			
	BTEEC602	Principles of Electrical Machine Design	3	3	2		2					2			
	BTEEC603	Power Electronics	3	3	3	3	3	2	2	2	3	2	2	2	
	BTEEE604	Elective-VI- Industrial automation and Control	2	2											
	BTEEC605	Elective-VII- Switch Gear and Protection	2	2			2		2		2	2			
	BTEEOE606	Elective-VIII- Project Management [MOOC/Swaya m/NPTEL]	3	3				3				3	2		

	BTEEL607	Control System- Lab	3	2			2					2		
	BTEEL608	Principles of Electrical Machine Design Lab	3	2	2		2					2		
	BTEEL609	Power Electronics Lab	3	3	3	3	3	2	2	2	3	2	2	2
B.Tech- SEM-VII	BTEEC701	Power System Operation & Control	2.25	3.00			2.50	2.00				2.00		
	BTEEC702	High Voltage Engineering	3.00	2.75		3		2.50	2.25			2.00		
	BTEEC703	Electrical Drives	2.50	2.50				2.33				2.50		2.50
	BTEEE704B	Elective-IX- (B) Electrical Traction and Utilization	2.75	2.75				2.25						
	BTEEE705D	Elective-X- (D) HVDC Transmission and FACTS	3.00	2.50		3		2.50				2.50		
	BTEEL706	Power System Operation & Control Lab	2.50	3.00			2.50					2.75		
	BTEEL707	High Voltage Engineering Lab	2.50	2.33			3.00	2.67	3.00			3.00		
	BTEEL708	Electrical Drives Lab	3.00	3.00			3.00	2.50				2.00		
	BTEES709	Seminar	2.33	2.50				2.25		2.00		2.33		

	BTEEP710	Project Part-I	2.50	2.50	2.00		3.00	2.00	2.00	2.00	2.00	2.33	3.00	2.00
	BTEEF711	Field Training/Internship/Industrial Training III	2.25	3.00	2.50	2.33	2.00	2.00	2.67	3.00	2.50	2.50	2.50	2.00
B.Tech- SEM-VIII	BTEEP801	High Power Multilevel Converters	2.25	2.33	2.33		2.33					3.00	2	2.00
	BTEEP802	Entrepreneurship Essentials	2.33	2.50				2.00				2.00		
	BTEEP803	Project - II	2.50	2.50	2.00		3.00	2.00	2.00	2.00	2.00	2.33	3.00	2.00
AVERAGE VALUE			2.43	2.48	2.15	2.28	2.18	2.12	2.10	2.13	2.00	2.08	2.35	1.84
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

Program level Course- PSO matrix:

CO-PSO correlation matrix for all courses in the program is given below. Course code is mentioned in the first column and correlation with PSOs is indicated as 1) slight, 2) moderate and 3) High. Courses not having any correlation are indicated by-. This correlation is derived from CO-PSO mapping of the individual course. Average of all Cos is taken and mapped at level 1, 2 and 3

Class	Course Code	Course Name	PSO-1	PSO-2
FY- SEM-I	BTBS101	Engineering Mathematics- I		
	BTBS102	Engineering Physics	1	
	BTES103	Engineering Graphics		
	BTHM104	Communication Skills		
	BTES105	Energy and Environment Engineering	1.00	
	BTES106	Basic Civil and Mechanical Engineering		

	BTBS107L	Engineering Physics Lab	1	
	BTES108L	Engineering Graphics Lab		
	BTHM109L	Communication Skills Lab.		
FY- SEM- II	BTBS201	Engineering Mathematics-II		
	BTBS202	Engineering Chemistry		
	BTES203	Engineering Mechanics		
	BTES204	Computer Programming in C		
	BTES205	Workshop Practices	1.00	
	BTES206	Basic Electrical and Electronics Engineering	1.00	
	BTES207L	Computer Programming Lab		
	BTBS208L	Engineering Chemistry Lab		
	BTES209L	Engineering Mechanics Lab		
	BTES210P	Mini Project	1	1
	BTES211P	Field Training / Internship/Industrial Training (minimum of 4 weeks which can be completed partially in first semester and second Semester or in at one time).		
SY- SEM- III	BTBS301	Engineering Mathematics-III		
	BTEEC302	Network Analysis and Synthesis	2.00	
	BTEEC303	Fluid Mechanics and Thermal Engineering		
	BTEEC304	Measurement and Instrumentation	1.50	
	BTEEE305A	Elective –I (A) Electrical Engineering Materials	1.25	
	BTHM3401	Basic Human Rights		
	BTHM306	Engineering Economics		
	BTEEL307	Network Analysis and Synthesis Lab	2.00	

	BTEEL308	Measurement and Instrumentation Lab		
	BTEEM309	Electrical workshop/ Mini project	2	
	BTEEF310	Field Training/ Internship/ Industrial Training Evaluation		
SY- SEM- IV	BTEEC401	Electrical Machine-I	2.00	2.00
	BTEEC402	Power System-I	2.00	2.00
	BTEEC403	Electrical Installation and Estimation	2.67	2.33
	BTEEC404	Numerical Methods and Programming	1.00	
	BTID405	Product Design Engineering	1.50	
	BTEEE-406A	Elective –II- (A) Solid State Devices	1.25	
	BTEEOE407-B	Elective –III (B) Introduction to Non- Conventional energy sources	2.33	2.33
	BTEEL408	Electrical Machine-I Lab		
	BTEEL409	Power System lab-I	2.00	2.00
	BTEEL410	Numerical Methods and Programming Lab		
	BTEEEL411A	Elective-II Lab (A) Solid State Devices Lab		
			Field Training / Internship/ Industrial Training (minimum 4 weeks which can be completed partially in Third semester and Fourth Semester or in at one time.)	
TY- SEM- V	BTEEC501	Electrical Machine-II	2	
	BTEEC502	Power System-II	3	
	BTEEL503	Microprocessor and micro Controller	3	
	BTHM504	Value Education, Human Rights and Legislative Procedures [MOOC/Swayam/NPTEL]		
	BTEEE505	Elective-IV- Illumination engineering	2	
	BTEEOE506	Elective-V- Electrical Mobility	2	

	BTEEL507	Electrical Machine-II Lab	2	
	BTEEL508	Power System-II Lab	2	2
	BTEEL509	Microprocessor and micro Controller Lab	2	
	BTEEF510	Industrial Training	2	
TY- SEM- VI	BTEEC601	Control System	3	
	BTEEC602	Principles of Electrical Machine Design	2	2
	BTEEC603	Power Electronics	2	2
	BTEEE604	Elective-VI- Industrial automation and Control	2	
	BTEEC605	Elective-VII- Switch Gear and Protection	2	
	BTEEOE606	Elective-VIII- Project Management [MOOC/Swayam/NPTEL]		
	BTEEL607	Control System- Lab	2	
	BTEEL608	Principles of Electrical Machine Design Lab	2	2
	BTEEL609	Power Electronics Lab	2	2
B.Tech- SEM-VII	BTEEC701	Power System Operation & Control	2.00	
	BTEEC702	High Voltage Engineering	2.75	
	BTEEC703	Electrical Drives	2.25	2.00
	BTEEE704B	Elective-IX- (B) Electrical Traction and Utilization	2.25	
	BTEEE705D	Elective-X- (D) HVDC Transmission and FACTS	2.00	
	BTEEL706	Power System Operation & Control Lab	2.50	
	BTEEL707	High Voltage Engineering Lab	2.00	
	BTEEL708	Electrical Drives Lab	2.50	
	BTEES709	Seminar	2.25	
	BTEEP710	Project Part-I	2.50	

	BTEEF711	Field Training/Internship/Industrial Training III	3.00	
B.Tech- SEM-VIII	BTEEP801	High Power Multilevel Converters (Elective-I)	2.00	
	BTEEP802	Entrepreneurship Essentials (Elective-II)		1.00
	BTEEP803	Project - II	2.50	
AVERAGE VALUES			1.97	1.85
			PSO-1	PSO-2

3.2 Attainment of Course Outcomes (50)

3.2.1 Describe the assessment processes used to gather the data upon which the evaluation of Course Outcome is based (10)

(Examples of data collection processes may include, but are not limited to tutorial questions, assignments, laboratory tests, project evaluation, student portfolios (A portfolio is a collection of artifacts that demonstrate skills, personal characteristics and accomplishments created by the student during study period), internally developed assessment exams, project presentations, oral exams etc.)

The key aspects in Outcome Based Education (OBE) are the assessment of course outcomes. At the initial stage of OBE implementation, the Course Outcomes (COs) for each course are defined based on the Program Outcome (POs) and other requirements. At the end of each course, the COs need to be assessed and evaluated, to check whether it has been attained or not. Assessment is one more process, carried out by the department, that identifies, collects, and prepares data to evaluate the achievement of program educational objectives and program outcomes. Attainment is the action or fact of achieving a standard result towards accomplishment of desired goals. Primarily attainment is the standard of academic attainment as observed by test or examination result. Attainment of the COs can be measured by using direct and indirect tools. Direct attainment basically displays the student's knowledge and skills from their academic performance. It can be determined from the performance of the students in all the relevant assessment tools – like internal assessments, assignments, quiz and final university examination etc. These methods provide a sampling of what students know and/or actions they can perform, offering substantial.

This program consists of various types of courses for fulfillment of POs and PSOs. The process of data collection for attainment of COs is properly identified depending on the type of course. Major types of courses are

1. Practical/Oral/TW
2. Tutorial
3. Seminar
4. Project
5. Audit course

The Institution strives hard to ensure that the Learning across all the courses of the curriculum is Outcome oriented. There is continuous assessment of learning outcomes attainment and this procedure has been refined over a period of time.

The following are the two broadly classified tools used for assessment of Learning Outcome Attainment

- Direct Assessment Method:

Data collection mechanism includes direct assessment process which is

Theory

1. Continuous Assessment Test 1
2. Mid Semester Examination
3. Continuous Assessment Test 2
4. End Semester Examination

Laboratory

1. Continuous Assessment Test 1
2. Continuous Assessment Test 2
3. End Semester Examination

Data collection process for all above type of courses is clearly defined in table 3.2.1a given below.

Table 3.2.1a: Assessment Tools

Sr. No.	Assessment tools	Tool type	Time Span
1	Continuous Assessment Test1[CA1]	Direct Assessment	One test/semester
2	Mid Semester Examination [MSE]		One test/semester
3	Continuous Assessment Test 2 [CA2]		One/Semester
4	End Semester Examination [ESE]		One/Semester

Laboratory

Sr. No.	Assessment tools	Tool type	Time Span
1	Continuous Assessment Test1[CA1]	Direct Assessment	One test/semester
2	Continuous Assessment Test 2[CA2]		One test/semester
3	End Semester Examination [ESE]		One/Semester

Course Outcomes for the entire course are defined and they are 4 in number. As the program is affiliated to DBATU, external assessment is done as per the evaluation scheme of university and internal assessment is done as per the policy of the program.

All courses are categorized into 2 categories

1. Courses with theory examination: CO attainment is calculated considering 60 % of university examination and 40% of internal semester evaluation (CA1, MSE CA2)
2. Courses with practical examination: CO attainment is calculated considering 60% internal evaluation and 40% university examination evaluation

Attainment levels are assigned based on performance in Internal Semester Evaluation and University examinations

Theory

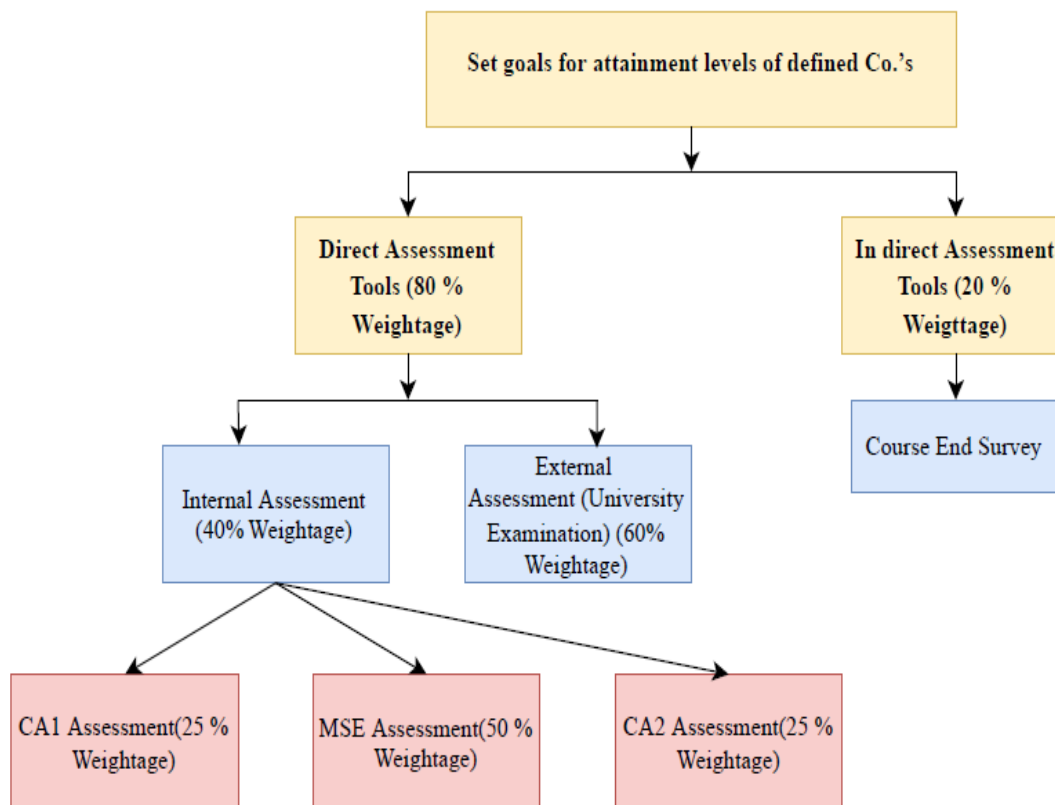


Fig. 1: Process of defining CO attainment theory examination

Sr. No.	Assessment tools	Tool type	Attainment Level
1	ContinuousAssessmentTest1[CA1]	Direct Assessment	3 - 67%-100% 2 - 55%-66% 1 - 40%-54%
2	Mid Semester Examination [MSE]		3 - 67%-100% 2 - 55%-66% 1 - 40%-54%
3	Continuous Assessment Test 2[CA2]		3 - 67%-100% 2 - 55%-66% 1 - 40%-54%
4	End Semester Examination [ESE]		3 - 67%-100% 2 - 55%-66% 1 - 40%-54%

Laboratory

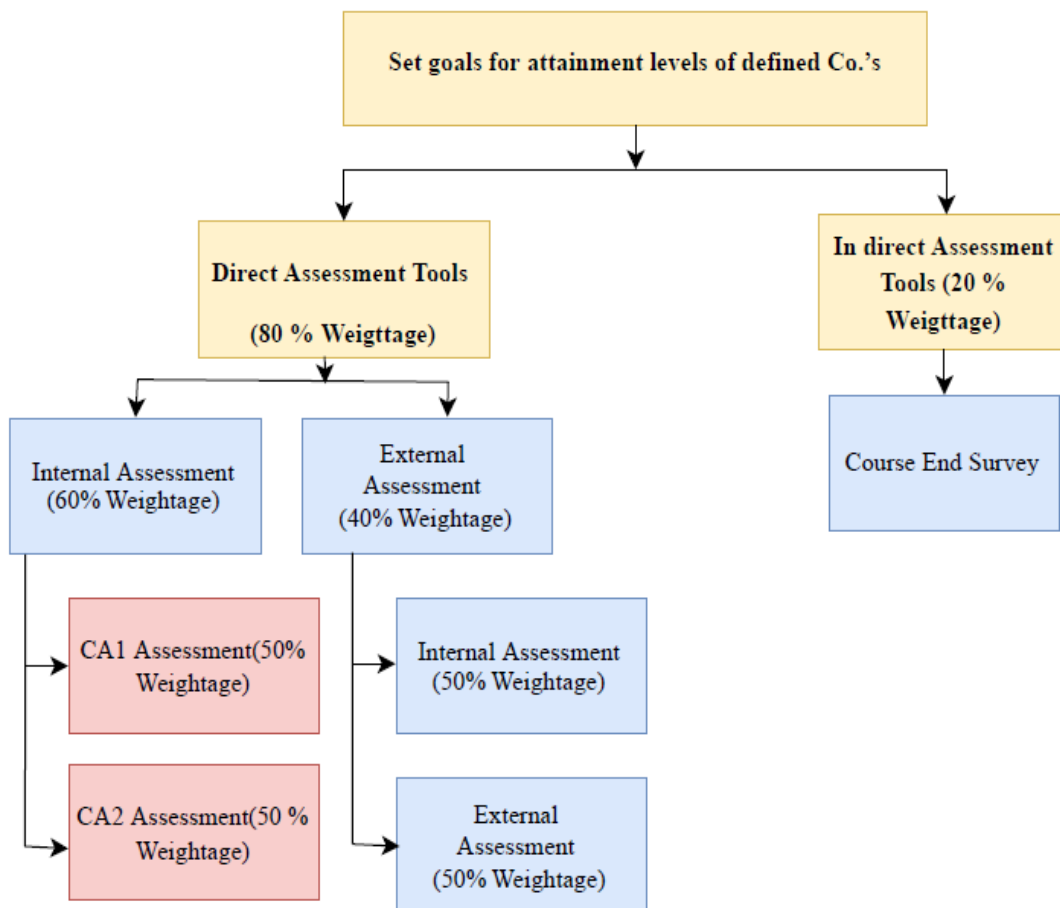


Fig. 2: Process of defining CO attainment practical examination

Sr.No.	Assessment tools	Tool type	Attainment Level
1	ContinuousAssessmentTest1 [CA1]	Direct Assessment	3 - 81% -100% 2 - 61%-80% 1 - 40%-60%
2	Continuous Assessment Test 2 [CA2]		3 - 81%-100% 2 - 61%-80% 1 - 40%-60%
3	End Semester Examination [ESE]		3 - 81%-100% 2 - 61%-80% 1 - 40%-60%

i. Record of the attainment of Course Outcomes of all courses with respect to set attainment levels (40)

Course Name: Network Analysis and Synthesis					Year: 2019-20	
Course Name: BTEEC302					Sem-III	
Course Outcomes	Assessment Tools	Internal Assessment Attainment	University Result Attainment	Final Direct Course Attainment	Target	Remark
BTEEC302.1	[CA1]/ [CA2]/ [ESE]	1.2	3	3.00	1.8	Attained
BTEEC302.2		1.2	3	3.00	1.8	Attained
BTEEC302.3		1.2	3	3.00	1.8	Attained
BTEEC302.4		1.1	3	2.90	1.8	Attained

**Course Outcome
Attainment: 2.98**

Course Name: Power System-I				Year: 2019-20		
Course Code: BTEEC402				Sem-IV		
Course Outcomes	Assessment Tools	Internal Assessment Attainment	University Result Attainment	Course Attainment	Target	Remark
BTEEC402.1	[CA1]/ [CA2]/ [ESE]	1.2	3	3.00	1.8	Attained
BTEEC402.2		1.05	3	2.85	1.8	Attained
BTEEC402.3		0.95	3	2.75	1.8	Attained
BTEEC402.4		1.1	3	2.90	1.8	Attained

Course Outcome**Attainment: 2.88**

Course Name: Electrical Machine-II				Year- 2020-21		
Course Code: BTEEC501				Sem-V		
Course Outcomes	Assessment Tools	Internal Assessment Attainment	University Result Attainment	Course Attainment	Target	Remark
BTEEC501.1	[CA1]/ [CA2]/ [ESE]	0.80	3	2.60	1.95	Attained
BTEEC501.2		1.40	3	2.50	1.95	Attained
BTEEC501.3		1.87	3	2.73	1.95	Attained
BTEEC501.4		1.10	3	2.90	1.95	Attained

Course Outcome**Attainment: 2.68**

Course Name: Control System				Year: 2020-21		
Course Code: BTEEC601				Sem-VI		
Course Outcomes	Assessment Tools	Internal Assessment Attainment	University Result Attainment	Course Attainment	Target	Remark
BTEEC601.1	[CA1]/ [CA2]/ [ESE]	0.9	3	2.70	1.95	Attained
BTEEC601.2		1.2	3	2.40	1.95	Attained
BTEEC601.3		2.0	3	2.78	1.95	Attained
BTEEC601.4		0.9	3	2.70	1.95	Attained

Course Outcome**Attainment: 2.65**

Course Name: Electrical Drives				Year: 2021-22		
Course Code: BTEEC703				Sem-VII		
Course Outcomes	Assessment Tools	Internal Assessment Attainment	University Result Attainment	Course Attainment	Target	Remark
BTEEC703.1	[CA1]/ [CA2]/ [ESE]	1.2	3	3.00	2.1	Attained
BTEEC703.2		1.1	3	2.90	2.1	Attained
BTEEC703.3		1.15	3	2.95	2.1	Attained
BTEEC703.4		1.2	3	3.00	2.1	Attained

Course Outcome**Attainment: 2.96**

Course Name: High Power Multilevel Converters					Year: 2021-22	
Course Code: BTEEPE801					Sem-VIII	
Course Outcomes	Assessment Tools	Internal Assessment Attainment	University Result Attainment	Course Attainment	Target	Remark
BTEEPE801.1	[CA1]/ [CA2]/ [ESE]	1.2	3	3.00	2.1	Attained
BTEEPE801.2		1.1	3	2.90	2.1	Attained
BTEEPE801.3		1.15	3	2.95	2.1	Attained
BTEEPE801.4		1.2	3	3.00	2.1	Attained

**Course Outcome
Attainment: 2.96**

SL.NO	COURSE NO.	COURSE NAME	CO1	CO2	CO3	CO4	Average CO Attainment
1	BTBS301	Engineering Mathematics-III	2.94	2.95	2.93	2.95	2.94
			Attained	Attained	Attained	Attained	Attained
2	BTEEC302	Network Analysis and Synthesis	2.97	2.96	2.94	2.87	2.94
			Attained	Attained	Attained	Attained	Attained
3	BTEEC303	Fluid Mechanics and Thermal Engineering	2.95	2.96	2.96	2.88	2.94
			Attained	Attained	Attained	Attained	Attained
4	BTEEC304	Measurement and Instrumentation	2.96	2.94	2.96	2.86	2.93
			Attained	Attained	Attained	Attained	Attained
5	BTEEE305A	Elective –I (A) Electrical Engineering Materials	2.96	2.94	2.94	2.90	2.94
			Attained	Attained	Attained	Attained	Attained
6	BTHM3401	Basic Human Rights	2.48	2.48	2.98	2.01	2.49
			Attained	Attained	Attained	Attained	Attained
7	BTHM306	Engineering Economics	2.95	2.91	2.93	2.96	2.94
			Attained	Attained	Attained	Attained	Attained
8	BTEEL307	Network Analysis and Synthesis Lab	2.96	2.95	2.97	2.94	2.96
			Attained	Attained	Attained	Attained	Attained
9	BTEEL308	Measurement and Instrumentation Lab	2.48	2.47	2.95	2.00	2.48
			Attained	Attained	Attained	Attained	Attained
10	BTEEM309	Electrical workshop/ Mini project	2.47	2.48	2.96	2.01	2.48
			Attained	Attained	Attained	Attained	Attained
11	BTEEF310		2.46	2.48	2.96	1.99	2.47

		Field Training/ Internship/ Industrial Training Evaluation	Attained	Attained	Attained	Attained	Attained
12	BTEEC401	Electrical Machine-I	2.97	2.96	2.91	2.91	2.94
			Attained	Attained	Attained	Attained	Attained
13	BTEEC402	Power System-I	2.96	2.84	2.76	2.88	2.86
			Attained	Attained	Attained	Attained	Attained
14	BTEEC403	Electrical Installation and Estimation	2.96	2.84	2.81	2.90	2.88
			Attained	Attained	Attained	Attained	Attained
15	BTEEC404	Numerical Methods and Programming	2.96	2.96	2.95	2.93	2.95
			Attained	Attained	Attained	Attained	Attained
16	BTID405	Product Design Engineering	2.94	2.89	2.87	2.94	2.91
			Attained	Attained	Attained	Attained	Attained
17	BTEEE-406A	Elective –II- (A) Solid State Devices	2.88	2.91	2.88	2.86	2.88
			Attained	Attained	Attained	Attained	Attained
18	BTEEOE407- B	Elective –III (B) Introduction to Non- Conventional energy sources	2.95	2.92	2.85	2.87	2.90
			Attained	Attained	Attained	Attained	Attained
19	BTEEL408	Electrical Machine-I Lab	2.97	2.96	2.91	2.91	2.94
			Attained	Attained	Attained	Attained	Attained
20	BTEEL409	Power System lab-I	2.34	2.33	2.29	2.30	2.32
			Attained	Attained	Attained	Attained	Attained
21	BTEEL410	Numerical Methods and Programming Lab	2.46	2.46	2.95	1.98	2.46
			Attained	Attained	Attained	Attained	Attained

22	BTEEL411A	Elective-II Lab (A) Solid State Devices Lab	2.46	2.46	2.93	1.97	2.46
			Attained	Attained	Attained	Attained	Attained
23		Field Training / Internship/ Industrial Training (minimum 4 weeks which can be completed partially in Third semester and Fourth Semester or in at one time.)					
24	BTEEC501	Electrical Machine-II	2.64	2.50	2.68	2.81	2.66
			Attained	Attained	Attained	Attained	Attained
25	BTEEC502	Power System-II	2.61	2.47	2.67	2.74	2.62
			Attained	Attained	Attained	Attained	Attained
26	BTEEL503	Microprocessor and micro Controller	2.60	2.43	2.69	2.83	2.64
			Attained	Attained	Attained	Attained	Attained
27	BTHM504	Value Education, Human Rights and Legislative Procedures [MOOC/Swayam/NPTEL]	2.98	2.88	2.10	2.07	2.51
			Attained	Attained	Attained	Attained	Attained
28	BTEEE505	Elective-IV- Illumination engineering	2.61	2.43	2.69	2.74	2.62
			Attained	Attained	Attained	Attained	Attained
29	BTEEOE506	Elective-V- Electrical Mobility	2.61	2.50	2.67	2.75	2.63
			Attained	Attained	Attained	Attained	Attained
30	BTEEL507	Electrical Machine-II Lab	2.62	2.06	2.58	2.03	2.32
			Attained	Attained	Attained	Attained	Attained
31	BTEEL508	Power System-II Lab	2.93	2.38	2.92	2.38	2.65
			Attained	Attained	Attained	Attained	Attained

32	BTEEL509	Microprocessor and micro Controller Lab	2.95	2.39	2.90	2.35	2.65
			Attained	Attained	Attained	Attained	Attained
33	BTEEF510	Industrial Training	2.64	2.54	2.59	2.51	2.57
			Attained	Attained	Attained	Attained	Attained
34	BTEEC601	Control System	2.73	2.50	2.68	2.58	2.62
			Attained	Attained	Attained	Attained	Attained
35	BTEEC602	Principles of Electrical Machine Design	2.62	2.43	2.64	2.58	2.57
			Attained	Attained	Attained	Attained	Attained
36	BTEEC603	Power Electronics	2.97	2.76	2.74	2.48	2.74
			Attained	Attained	Attained	Attained	Attained
37	BTEEE604	Elective-VI- Industrial automation and Control	2.95	2.78	2.89	2.65	2.82
			Attained	Attained	Attained	Attained	Attained
38	BTEEC605	Elective-VII- Switch Gear and Protection	2.96	2.79	2.93	2.69	2.84
			Attained	Attained	Attained	Attained	Attained
39	BTEEOE606	Elective-VIII- Project Management [MOOC/Swayam/NPTEL]	2.95	2.78	2.82	2.61	2.79
			Attained	Attained	Attained	Attained	Attained
40	BTEEL607	Control System- Lab	2.95	2.89	2.93	2.88	2.91
			Attained	Attained	Attained	Attained	Attained
41	BTEEL608	Principles of Electrical Machine Design Lab	1.98	2.35	1.93	2.83	2.27
			Attained	Attained	Not Attained	Attained	Attained
42	BTEEL609	Power Electronics Lab	2.92	2.83	2.89	2.83	2.87
			Attained	Attained	Attained	Attained	Attained

43	BTEEC701	Power System Operation & Control	2.93	2.83	2.85	2.89	2.87
			Attained	Attained	Attained	Attained	Attained
44	BTEEC702	High Voltage Engineering	2.93	2.86	2.92	2.89	2.90
			Attained	Attained	Attained	Attained	Attained
45	BTEEC703	Electrical Drives	2.90	2.84	2.85	2.89	2.87
			Attained	Attained	Attained	Attained	Attained
46	BTEEE704B	Elective-IX- (B) Electrical Traction and Utilization	2.94	2.88	2.88	2.92	2.90
			Attained	Attained	Attained	Attained	Attained
47	BTEEE705D	Elective-X- (D) HVDC Transmission and FACTS	2.93	2.86	2.91	2.97	2.92
			Attained	Attained	Attained	Attained	Attained
48	BTEEL706	Power System Operation & Control Lab	2.93	2.47	2.93	2.47	2.70
			Attained	Attained	Attained	Attained	Attained
49	BTEEL707	High Voltage Engineering Lab	2.95	2.46	2.94	2.46	2.70
			Attained	Attained	Attained	Attained	Attained
50	BTEEL708	Electrical Drives Lab	2.95	2.47	2.94	2.44	2.70
			Attained	Attained	Attained	Attained	Attained
51	BTEES709	Seminar	2.94	2.47	2.94	2.47	2.71
			Attained	Attained	Attained	Attained	Attained
52	BTEEP710	Project Part-I	2.95	2.44	2.91	2.96	2.82
			Attained	Attained	Attained	Attained	Attained
53	BTEEF711	Field Training/Internship/Industrial Training III	2.95	2.94	2.92	2.95	2.94
			Attained	Attained	Attained	Attained	Attained

54	BTEEP801	High Power Multilevel Converters (Elective-I)	2.94	2.86	2.90	2.94	2.91
			Attained	Attained	Attained	Attained	Attained
55	BTEEP802	Entrepreneurship Essentials (Elective-II)	2.94	2.87	2.91	2.93	2.91
			Attained	Attained	Attained	Attained	Attained
56	BTEEP803	Project - II	2.96	2.94	2.91	2.95	2.94
			Attained	Attained	Attained	Attained	Attained
AVERAGE VALUE			2.81	2.69	2.82	2.66	2.75
			CO1	CO2	CO3	CO4	AVERAGE

3.3 Attainment of Program Outcomes and Program Specific Outcomes (50)**3.3.1 Describe assessment tools and processes used for measuring the attainment of each of the Program Outcomes and Program Specific Outcomes (10)**

(Describe the assessment tools and processes used to gather the data upon which the evaluation of each of the Program Outcomes and Program Specific Outcomes is based indicating the frequency with which these processes are carried out.

Describe the assessment processes that demonstrate the degree to which the Program Outcomes and Program Specific Outcomes are attained and document the attainment levels)

List of PO and PSO Assessment Tools:

Assessment tools are categorized into two types for Program Outcomes (POs), Program Specific Outcomes (PSOs).

1. Direct Assessment Method– Through CO attainment in relevant courses.
2. Indirect Assessment Method –Employer Feedback, Alumni feedback, Program Exit Survey.

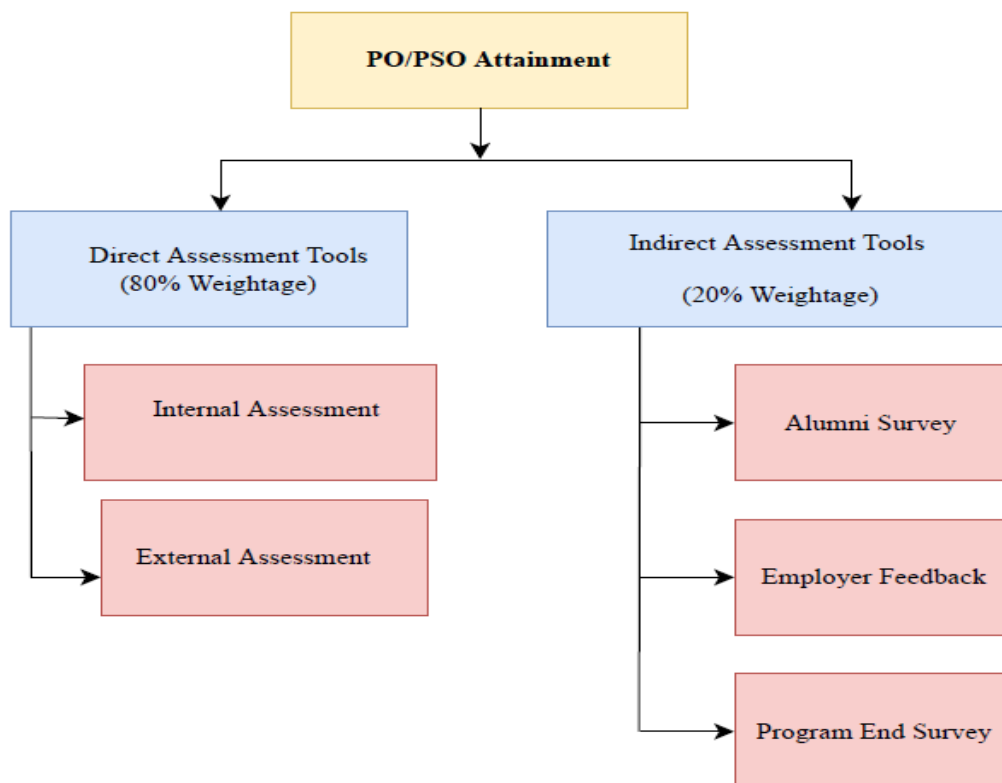


Fig. 3: Process of defining PO/PSO Attainment

Direct Assessment methods:

CO attainment of course shows knowledge and skills obtained by students from respective courses derived from their performance in the continuous assessment, unit tests, online examinations, in-semester examinations, end-semester examinations, reviews, assignments etc. These methods provide strong evidence of student learning.

Indirect Assessment methods:

Surveys of students are taken to know their learning. Feedback of various stake holders like employer, alumni etc is taken to know the capabilities and necessary improvements.

For example,

Employer survey: To provide information about our graduate's skills and capability.

Program exit survey: To evaluate the success of programme in providing students with opportunities to achieve the POs and PSOs every year.

Process for Evaluation and Assessment of POs & PSOs

- The activity, questionnaires' and frequency of feedback is defined by the Program for POs and PSOs attainment through in direct tools.
- The CO-PO mapping and CO attainment is considered as reference for PO attainment as a part of direct tool. If the CO average attainment (Internal & External) is achieved at level 3 then the PO attainment level is same CO-PO mapping level.
- If CO attainment level is 2/1/0 then CO - PO mapping level is transformed as per the CO attainment level as given below,

1. If CO attainment level is 1 and CO-PO mapping is at level 2 then PO attainment level will be $(2*1)/3 = 0.667$, here value 3 is maximum CO attainment level.

2. The same process is followed to calculate PSO attainment.

PO and PSO attainment are calculated by considering 80% weightage to direct assessment and 20% weightage to indirect assessment through surveys as shown in following figure

$$\text{PO/PSO Attainment} = 0.8 * \text{Direct Attainment} + 0.2 * \text{Indirect Attainment}$$

➤ Direct Assessment Tools:

Continuous Assessment Test1[CA1]
Mid Semester Examination [MSE]
Continuous Assessment Test 2[CA2]
End Semester Examination [ESE]
Lab Continuous Assessment Test 1
Lab Continuous Assessment Test 2

➤ Indirect Assessment Tools:

Course End Survey
Program End Survey
Employer Feedback
Examiner Feedback

3.3.2 Provide results of evaluation of each PO&PSO**(40)**

Program shall set Program Outcome attainment levels for all POs & PSOs.

(The attainment levels by direct (student performance) and indirect (surveys) are to be presented through Program level Course–PO & PSO matrix as indicated).

PO Attainment:

Subject Code	Name of Subject	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
BTBS101	Engineering Mathematics-I	2.92	2.82	2.66	2.90		2.90					2.93	2.87
BTBS102	Engineering Physics	2.83	2.75	2.90	2.74		2.57	2.57					2.84
BTES103	Engineering Graphics	2.95	2.74	2.58	2.61	2.74				2.79	2.85		3.00
BTHM104	Communication Skills	2.95				2.73	2.73		2.63	2.72	2.77		
BTES105	Energy and Environment Engineering	2.83	2.64	2.73	2.81		2.60	2.77	2.84		2.79	2.84	
BTES106	Basic Civil and Mechanical Engineering	2.97	2.97	2.97	2.97		2.97	2.97			2.97	2.97	
BTBS107L	Engineering Physics Lab	2.96	2.93	2.95	2.98		3.00	3.00					2.95
BTES108L	Engineering Graphics Lab	2.95	2.97	2.97	2.97	2.97				2.98	2.94		2.96
BTHM109L	Communication Skills Lab.	2.95				2.45	2.45		2.78	2.94	2.68		
BTBS201	Engineering Mathematics-II	2.92	2.82	2.66	2.90		2.90					2.93	2.87
BTBS202	Engineering Chemistry	2.79	2.75				2.75	2.84		2.75			
BTES203	Engineering Mechanics	2.87	2.86	2.65			2.77			2.95			
BTES204	Computer Programming in C	2.09	2.91	2.90						2.86	2.86		
BTES205	Workshop Practices	2.95				2.96				2.95	2.95		
BTES206	Basic Electrical and Electronics Engineering	2.77					2.81	2.65			2.77		2.77
BTES207L	Computer Programming Lab	2.83	2.80	2.81						2.48	2.49		
BTBS208L	Engineering Chemistry Lab	2.93	2.90				2.90	2.93		2.90			

BTES209L	Engineering Mechanics Lab	2.95	2.95	2.97			2.93			2.97			
BTES210P	Mini Project	2.19	2.17			2.17	2.19	2.17	2.17	2.18	2.18		
BTES211P	Field Training / Internship/Industrial Training (minimum of 4 weeks which can be completed partially in first semester and second Semester or in at one time).												
BTBS301	Engineering Mathematics-III	2.94	2.94	2.94	2.94		2.93				2.95	2.95	2.94
BTEEC302	Network Analysis and Synthesis	2.93	2.96	2.96		2.94	2.96			2.94	2.96		2.94
BTEEC303	Fluid Mechanics and Thermal Engineering	2.94	2.94			2.96				2.96	2.96		
BTEEC304	Measurement and Instrumentation	2.94	2.93	2.96			2.95			2.93	2.94	2.96	2.92
BTEEE305A	Elective –I (A) Electrical Engineering Materials	2.94	2.95				2.94				2.94		2.92
BTHM3401	Basic Human Rights	2.49	2.55				2.98			2.65	2.57		
BTHM306	Engineering Economics	2.95	2.93								2.94		2.94
BTEEL307	Network Analysis and Synthesis Lab	2.96	2.95	2.96		2.96	2.94			2.96	2.97		2.96
BTEEL308	Measurement and Instrumentation Lab	2.59	2.43	2.48		2.57	2.48			2.71	2.36		2.32
BTEEM309	Electrical workshop/ Mini project	2.60	2.32	2.48	2.01	2.56	2.48			2.72	2.36		2.40
BTEEF310	Field Training/ Internship/ Industrial Training Evaluation	2.59	2.31	2.47	2.72	2.56	2.67	2.72	2.47	2.71	2.35		2.31
BTEEC401	Electrical Machine-I	2.94	2.94	2.94			2.91		2.91	2.94	2.94		2.94
BTEEC402	Power System-I	2.85	2.90	2.88		2.80	2.86	2.84		2.84	2.90		2.86
BTEEC403	Electrical Installation and Estimation	2.88	2.88	2.96		2.89	2.89	2.90	2.88	2.92	2.89	2.93	2.89
BTEEC404	Numerical Methods and Programming	2.95	2.95			2.95				2.95	2.95		2.96

BTID405	Product Design Engineering	2.92	2.91			2.89				2.92	2.94		2.91
BTEEE-406A	Elective –II- (A) Solid State Devices	2.89	2.88			2.88				2.88	2.88		
BTEEOE407-B	Elective –III (B) Introduction to Non-Conventional energy sources	2.91	2.89	2.86	2.89		2.87	2.90	2.87	2.87	2.94	2.95	2.86
BTEEL408	Electrical Machine-I Lab	2.94	2.94	2.94			2.91		2.91	2.94	2.94		2.94
BTEEL409	Power System lab-I	2.85	2.90	2.88		2.80	2.86	2.84		2.84	2.90		2.86
BTEEL410	Numerical Methods and Programming Lab	2.41	2.46	2.95		2.46				2.46	2.30		2.46
BTEEL411A	Elective-II Lab (A) Solid State Devices Lab	2.41	2.46			2.46				2.46	2.46		
	Field Training / Internship/ Industrial Training (minimum 4 weeks which can be completed partially in Third semester and Fourth Semester or in at one time.)												
BTEEC501	Electrical Machine-II	2.66	2.66	2.66						2.70	2.71		2.71
BTEEC502	Power System-II	2.62	2.62			2.61	2.63						
BTEEL503	Microprocessor and micro Controller	2.64	2.64			2.63							2.71
BTHM504	Value Education, Human Rights and Legislative Procedures [MOOC/Swayam/NPTEL]						2.42	2.54	2.35		2.64		
BTEEE505	Elective-IV- Illumination engineering	2.59	2.58										
BTEEOE506	Elective-V- Electrical Mobility	2.66											
BTEEL507	Electrical Machine-II Lab	2.71	2.73	2.70						2.71	2.71		2.63
BTEEL508	Power System-II Lab	2.71	2.78			2.74	2.79						
BTEEL509	Microprocessor and micro Controller Lab	2.77	2.71			2.63							2.95
BTEEF510	Industrial Training	2.71	2.73	2.70	2.95	2.47	2.71	2.71	2.79	2.71	2.71	2.68	2.71

BTEEC601	Control System	2.63	2.59			2.64					2.66		
BTEEC602	Principles of Electrical Machine Design	2.56	2.55	2.55		2.54					2.51		
BTEEC603	Power Electronics	2.76	2.73	2.83	2.65	2.74	2.71	2.61	2.61	2.71	2.73	2.61	2.69
BTEEE604	Elective-VI- Industrial automation and Control	2.83	2.82										
BTEEC605	Elective-VII- Switch Gear and Protection	2.84	2.80			2.89		2.96		2.81	2.89		
BTEEOE606	Elective-VIII- Project Management [MOOC/Swayam/NPTEL]	2.78	2.81				2.77				2.77	2.89	
BTEEL607	Control System- Lab	2.71	2.73			2.71					2.71		
BTEEL608	Principles of Electrical Machine Design Lab	2.56	2.55	2.55		2.54					2.51		
BTEEL609	Power Electronics Lab	2.73	2.73	2.83	2.65	2.71	2.68	2.72	2.72	2.59	2.74	2.72	2.56
BTEEC701	Power System Operation & Control	2.88	2.87			2.87	2.87				2.87		
BTEEC702	High Voltage Engineering	2.90	2.90				2.90	2.90			2.90		
BTEEC703	Electrical Drives	2.86	2.89				2.86				2.87		2.87
BTEEE704B	Elective-IX- (B) Electrical Traction and Utilization	2.91	2.90				2.91						
BTEEE705D	Elective-X- (D) HVDC Transmission and FACTS	2.92	2.92				2.92				2.92		
BTEEL706	Power System Operation & Control Lab	2.70	2.47			2.70					2.68		
BTEEL707	High Voltage Engineering Lab	2.66	2.60				2.77	2.95			2.71		
BTEEL708	Electrical Drives Lab	2.71	2.78				2.70				2.86		
BTEES709	Seminar	2.68	2.76				2.73		2.94		2.81		
BTEEP710	Project Part-I	2.75	2.65	2.44		2.95	2.96	2.70	2.78	2.77	2.72	2.91	2.95
BTEEF711	Field Training/Internship/Industrial Training III	2.94	2.93	2.93	2.94	2.95	2.95	2.94	2.95	2.94	2.94	2.94	2.95

BTEEP801	High Power Multilevel Converters (Elective-I)	2.91	2.93	2.90		2.93					2.86	2.94	2.92
BTEEP802	Entrepreneurship Essentials (Elective-II)	2.91	2.91			2.93					2.92		
BTEEP803	Project - II	2.95	2.95	2.94		2.96	2.95	2.95	2.95	2.94	2.93	2.91	2.96
AVERAGE VALUES		2.79	2.77	2.80	2.79	2.73	2.80	2.79	2.74	2.80	2.77	2.88	2.82
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

FINAL PO-ATTAINMENT:

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO Attainment	2.68	2.66	2.69	2.66	2.66	2.64	2.70	2.69	2.76	2.74	2.73	2.69
Direct Attainment	2.79	2.77	2.80	2.79	2.73	2.80	2.79	2.74	2.80	2.77	2.88	2.82
Indirect Attainment	2.26	2.23	2.29	2.16	2.35	2.03	2.36	2.47	2.62	2.58	2.16	2.21

PSO Attainment:

Subject Code	Name of Subject	PSO-1	PSO-2
BTBS101	Engineering Mathematics- I		
BTBS102	Engineering Physics	2.93	
BTES103	Engineering Graphics		
BTHM104	Communication Skills		
BTES105	Energy and Environment Engineering	2.95	
BTES106	Basic Civil and Mechanical Engineering		

BTBS107L	Engineering Physics Lab	2.97	
BTES108L	Engineering Graphics Lab		
BTHM109L	Communication Skills Lab.		
BTBS201	Engineering Mathematics-II		
BTBS202	Engineering Chemistry		
BTES203	Engineering Mechanics		
BTES204	Computer Programming in C		
BTES205	Workshop Practices	2.93	
BTES206	Basic Electrical and Electronics Engineering	2.78	
BTES207L	Computer Programming Lab		
BTBS208L	Engineering Chemistry Lab		
BTES209L	Engineering Mechanics Lab		
BTES210P	Mini Project	2.17	2.17
BTES211P	Field Training / Internship/Industrial Training (minimum of 4 weeks which can be completed partially in first semester and second Semester or in at one time).		
BTBS301	Engineering Mathematics-III		
BTEEC302	Network Analysis and Synthesis	2.93	
BTEEC303	Fluid Mechanics and Thermal Engineering		
BTEEC304	Measurement and Instrumentation	2.94	
BTEEE305A	Elective –I (A) Electrical Engineering Materials	2.94	
BTHM3401	Basic Human Rights		
BTHM306	Engineering Economics		
BTEEL307	Network Analysis and Synthesis Lab	2.96	

BTEEL308	Measurement and Instrumentation Lab	2.48	
BTEEM309	Electrical workshop/ Mini project	2.48	
BTEEF310	Field Training/ Internship/ Industrial Training Evaluation	2.47	2.96
BTEEC401	Electrical Machine-I	2.94	2.91
BTEEC402	Power System-I	2.96	2.86
BTEEC403	Electrical Installation and Estimation	2.88	2.91
BTEEC404	Numerical Methods and Programming	2.95	
BTID405	Product Design Engineering	2.94	
BTEEE-406A	Elective –II- (A) Solid State Devices	2.88	
BTEEOE407-B	Elective –III (B) Introduction to Non- Conventional energy sources	2.89	2.89
BTEEL408	Electrical Machine-I Lab	2.94	2.91
BTEEL409	Power System lab-I	2.96	2.86
BTEEL410	Numerical Methods and Programming Lab	2.30	
BTEEEL411A	Elective-II Lab (A) Solid State Devices Lab	2.36	
	Field Training / Internship/ Industrial Training (minimum 4 weeks which can be completed partially in Third semester and Fourth Semester or in at one time.)		
BTEEC501	Electrical Machine-II	2.65	
BTEEC502	Power System-II	2.61	
BTEEL503	Microprocessor and micro Controller	2.69	

BTHM504	Value Education, Human Rights and Legislative Procedures [MOOC/Swayam/NPTEL]		
BTEEE505	Elective-IV- Illumination engineering	2.60	
BTEEOE506	Elective-V- Electrical Mobility	2.63	
BTEEL507	Electrical Machine-II Lab	2.47	
BTEEL508	Power System-II Lab	2.94	2.48
BTEEL509	Microprocessor and micro Controller Lab	2.46	
BTEEF510	Industrial Training	2.70	
BTEEC601	Control System	2.64	
BTEEC602	Principles of Electrical Machine Design	2.57	2.57
BTEEC603	Power Electronics	2.74	2.64
BTEEE604	Elective-VI- Industrial automation and Control	2.82	
BTEEC605	Elective-VII- Switch Gear and Protection	2.81	
BTEEOE606	Elective-VIII- Project Management [MOOC/Swayam/NPTEL]		
BTEEL607	Control System- Lab	2.47	
BTEEL608	Principles of Electrical Machine Design Lab	2.57	2.57
BTEEL609	Power Electronics Lab	2.71	2.66
BTEEC701	Power System Operation & Control	2.87	
BTEEC702	High Voltage Engineering	2.90	
BTEEC703	Electrical Drives	2.87	2.84
BTEEE704B	Elective-IX- (B) Electrical Traction and Utilization	2.91	
BTEEE705D	Elective-X- (D) HVDC Transmission and FACTS	2.92	
BTEEL706	Power System Operation & Control Lab	2.70	

BTEEL707	High Voltage Engineering Lab	2.70	
BTEEL708	Electrical Drives Lab	2.70	
BTEES709	Seminar	2.68	
BTEEP710	Project Part-I	2.75	
BTEEF711	Field Training/Internship/Industrial Training III	2.94	
BTEEP801	High Power Multilevel Converters (Elective-I)	2.93	
BTEEP802	Entrepreneurship Essentials (Elective-II)		2.93
BTEEP803	Project - II	2.95	
AVERAGE VALUES		2.76	2.74
		PSO-1	PSO-2

FINAL PSO-ATTAINMENT:

Course	PSO1	PSO2
CO Attainment	2.68	2.63
Direct Attainment	2.76	2.74
Indirect Attainment	2.38	2.17

CRITERION 05	Faculty Information and Contributions	200
---------------------	--	------------

5.8 Faculty Performance Appraisal and Development System (FPADS) (30)

Faculty members of Higher Educational Institutions today have to perform a variety of tasks pertaining to diverse roles. In addition to instruction, faculty members need to innovate and conduct research for their self-renewal, keep abreast with changes in technology, and develop expertise for effective implementation of curricula. They are also expected to provide services to the industry and community for understanding and contributing to the solution of real-life problems in industry. Another role relates to the shouldering of administrative responsibilities and co-operation with other Faculty, Heads-of-Department and the Head of Institute. An effective performance appraisal system for Faculty is vital for optimizing the contribution of individual Faculty to institutional performance.

The assessment is based on:

A well-defined system for faculty appraisal for all the assessment years (10)

Its implementation and effectiveness (20)

1. Performance appraisal system of the faculty:

Annual self-assessment for the performance-based appraisal system is adopted as per the UGC notification 30th June 2010 approved by the Govt. of Maharashtra state vide GR dated 15th February 2011. Hence it is ensured that information on multiple activities is appropriately captured.

Category I: Teaching, Learning and Evaluation Related Activities

Brief Explanation:

Based on the teacher's self-assessment, API scores are proposed for (a) teaching related activities, (b) domain knowledge, (c) participation in examination and evaluation, (d) contribution to innovative teaching, new courses, etc. The minimum API score required by teachers from this category is 75. The self-assessment score should be based on objectively verifiable criteria wherever possible and will be finalized by the screening/selection committee.

Category II: Co-curricular, Extension and Professional Development Related Activities

Brief Explanation:

Based on the teacher's self-assessment, category II API scores are proposed for co-curricular and extension activities and Professional development related contributions. The minimum API required by teachers for eligibility for promotion is 15. A list of items and proposed scores is given below. It will be noticed that all teachers can earn scores from a number of items, whereas some activities will be carried out only by one or a few teachers. The list of activities is broad enough for the minimum API score required (15) in this category to accrue to all teachers. As before, the self-assessment score should be based on objectively verifiable criteria and will be finalized by the screening/selection committee.

Category III: Research and Academic Contributions**Brief Explanation:**

Based on the teacher's self-assessment, API scores are proposed for research and academic contributions. The minimum API score required by teachers from this category is different for different levels of promotion and between university and colleges. The self-assessment score will be based on verifiable criteria and will be finalized by the screening/selection committee.

Review of Performance Appraisal:

The Performance-based Appraisal System (PBAS) forms are submitted through the Head of Department to the Academic Monitoring Committee (AMC), R&D and IPR Committee, and IQAC Committee. The Head of Department along with the AMC, R&D and IPR Committee, and IQAC form the review committee.

The advantage of PBAS is that each faculty becomes aware of self-weakness and tries to improve oneself in those areas so that he/she can score better in the next year.

Faculty with good API scores is given letters of appreciation and the faculty members having low API scores are personally counseled by the Head of the Institute.

APPRAISAL AND 360° FEEDBACK FORM

Name : Dr. B. M. Nayals
 Date of Birth : 04/03/1986
 Highest Qualification : UG / PG / Ph.D.
 Designation : Associate professor
 Experience : Teaching: 12 Industrial: - Total: 12
 Program : Electrical Engg.
 Mobile No. : 775966254
 Email : bnayals.agce@gmail.com
 Permanent Address (with pin code) : Alp. Satara
 Academic Year : 2022-23

SCORES FOR ACADEMIC PERFORMANCE INDICATORS (APIs) IN RECRUITMENTS AND CAREER ADVANCEMENT SCHEME (CAS) PROMOTIONS OF UNIVERSITY / COLLEGE TEACHERS

CATEGORY I: TEACHING, LEARNING AND EVALUATION RELATED ACTIVITIES

Brief Explanation: Based on the teacher's self-assessment, API scores are proposed for (a) teaching related activities; (b) domain knowledge; (c) participation in examination and evaluation; (d) contribution to innovative teaching, new courses etc. The minimum API score required by teachers from this category is 75. The self assessment score should be based on objectively verifiable criteria wherever possible and will be finalized by the screening/selection committee.

- Lectures, seminars, tutorials, practical's, contact hours undertaken taken as percentage of lectures allocated.
- Lectures or other teaching duties in excess of the UGC norms.
- Preparation and Imparting of knowledge / Instruction as per curriculum; syllabus enrichment by providing additional resources to students.
- Use of participatory and Innovative teaching-learning methodologies; updating of subject content, course improvement etc.
- Examination duties (Invigilation; question paper setting, evaluation/assessment of answer scripts) as per allotment.

Sr. No.	Performance Indicator	Max points	Description	Self-Assessment Score (to be filled by applicant)	Verified API Score (for official use)
1.A	Excellent course file for the subject, teaching plan displayed	20	Course file per subject completed.	18	16
1.B	Conducting practical lab. / tutorials; work nicely with lab innovations	20	EM-I, EM-II, EMD lab conducted by SY, 4TY. Laboratory prepared. Excellent feedback	19	17
1.C	Student Feedback outcome	10	Excellent feedback	09	08
2.A	Remedial Classes OR Extra lectures for DSE students	4	Extra lecture conducted for all DSE, TY. Stud.	04	04
2.B	Content beyond syllabus	6	Necessary extra part covered by notes of (C, EMD)	05	04
3.A	Preparation and Imparting of knowledge / instruction as per curriculum;	10	All subjects EM-I, EM-II, CSE, EMD conducted as per curriculum.	10	09
3.B	syllabus enrichment by providing additional resources to students	10	NPTEL video links, Virtual lab links, PPT.	09	08
4.A	Number of ICT Based Teaching material	5	60% Lecture conducted through ICT.	04	04
4.B	Number of Interactive Courses	5	NPTEL	03	02
4.C	Effective use of MOODLE	10	All instructive materials attendance taken through moodle	09	08
5.A	At Institute Level	15	HOD, Alumni Co-Ordinator of College.	13	13
5.B	At University Level	10	Paper setter (EM-I, II) Research grants.	08	08
Total Score		125		111	101
Minimum API Score Required		75			

Figure 5.8 (a) Performance Appraisal Form Page 1

CATEGORY II: CO-CURRICULAR, EXTENSION AND PROFESSIONAL DEVELOPMENT RELATED ACTIVITIES.

Brief Explanation: Based on the teacher's self-assessment, category II API scores are proposed for co-curricular and extension activities; and Professional development related contributions. The minimum API required by teachers for eligibility for promotion is 15. A list of items and proposed scores is given below. It will be noticed that all teachers can earn scores from a number of items, whereas some activities will be carried out only by one or a few teachers. The list of activities is broad enough for the minimum API score required (15) in this category to accrue to all teachers. As before, the self-assessment score should be based on objectively verifiable criteria and will be finalized by the screening/selection committee.

1. Student related co-curricular, extension and field based activities (such as extension work through NSS/NCC and other channels, cultural activities, subject related events, advisement and counseling)
2. Contribution to Corporate life and management of the department and institution through participation in academic and administrative committees and responsibilities.
3. Professional Development activities (such as participation in seminars, conferences, short term, training courses, talks, lectures, membership of associations, dissemination and general articles, not covered in Category III below)

Sr. No.	Performance Indicator	Max points	Description	Self-Assessment Score (to be filled by applicant)	Verified API Score (for official use)
1.A	Guidance to a project in exhibition / competition won any prize. Industry Sponsored projects.	4	Guided to four project group's. one group went to Dtex.	03.	03
1.B	Industry tour / visit, Visit to technical Exhibition	4	1. Mumbai - Padage. 2. AG Electro Services	04.	04
1.C	Arranged the invited talks / Expert lecturers at Department / Institute level	4	yes. Guest lecture arranged to ST, TV Students	03.	03
1.D	VAP (Value addition training Program) conducted by a staff 40hrs / FBL/ New tech with projects. Conducted the lectures in GATE Forum OR Recourse persons for Skill Development Program.	4	-	00.	-
1.E	extension work through NSS/NCC and other channels, cultural activities	4	Admission 04	04.	02
2.A	Institute level Responsibilities (Deans/COE: 05, Heads:3, other:02)	5	Head Institute level alumni Co-ordinator	05.	03
2.B	Event Coordinators (Institute Level: 05, Department Level: 03, Participation:02)	5	project competitions. Institute level. (Budget Co-ordinator)	05.	05
2.C	Department Level Responsibilities: 05, Participation:02	5	All responsibilities	05	05
3.A	Participation in short term training courses, curriculum development, training courses, talks, lectures	5	yes, participated in workshop, EV (today's) training online	05	05
3.B	Membership of professional associations committees, Boards of Studies, editorial committees of journals / institutional publications.	5	Two Bodies like - time membership	03	03
3.C	Participation in subject associations, conferences, and seminars without paper presentation.	5	-	-	-
Total Score		50		37	33
Minimum API Score Required		20			

Figure 5.8 (b) Performance Appraisal Form Page 2

CATEGORY-III: RESEARCH AND ACADEMIC CONTRIBUTIONS

Brief Explanation: Based on the teacher's self-assessment, API scores are proposed for research and academic contributions. The minimum API score required by teachers from this category is different for different levels of promotion and between university and colleges. The self-assessment score will be based on verifiable criteria and will be finalized by the screening/selection committee.

1. Research Papers published in:
2. Research Publications (books, chapters in books, other than refereed journal articles)
3. RESEARCH PROJECTS
4. RESEARCH GUIDANCE
5. TRAINING COURSES AND CONFERENCE /SEMINAR/WORKSHOP PAPERS
 - A. Refresher courses, Methodology workshops, Training, Teaching Learning Evaluation Technology Programs, Soft Skills development Program, Faculty Development Programs (Max: 30 points)
 - B. Papers in Conferences/ Seminars/ workshops etc.**
 - C. Invited lectures or presentations for conferences/ symposia

Sr. No.	Performance Indicator	Max points	Description	Self-Assessment Score (to be filled by applicant)	Verified API Score (for official use)
1.A	Refereed Journals *	20/ 2 publication	EEE, IJEEER, ^{technology} IEEE	20	20
1.B	Non-refereed but recognized and reputable journals and periodicals, having ISBN/ISSN numbers	10/ 2 Publication	ICIRTES	10	10
1.C	Conference proceedings as full papers, etc. (Abstracts not to be included)	5/ 2 publication	ICICHNN	05	05
2.A	Text or Reference Books Published by International Publishers with an established peer review system	20 /sole author; 5 /chapter in an edited book	Grid Connected Converter topology for renewable power generation	15	15
2.B	Subjects Books by National level publishers/State and Central Govt. Publications with ISBN/ISSN numbers.	15/sole author, and 5/ chapter in edited books	-	-	-
2.C	Subject Books by Other local publishers with ISBN/ISSN numbers.	10/ sole author, and 2 / chapter in edited books	-	-	-
2.D	Chapters contributed to edited knowledge based volumes published by International Publishers	5 /Chapter	-	-	-
2.E	Chapters in knowledge based volumes by Indian/National level publishers with ISBN/ISSN numbers and with numbers of national and international directories	3 / Chapter	-	-	-
Sponsored Projects carried out/ ongoing					
3.A	a) Major Projects amount mobilized with grants in between Rs.10,000 to Rs.50,000/-	10 /2 major project	DBATU (3L) Project research funding	5	5
	b) Minor Projects (Amount mobilized with grants upto Rs.10,000/-	7 /2 minor Project	-	-	-
3.B	Consultancy Projects carried out / ongoing: Amount mobilized with upto Rs.15,000/-	10 consultancy	Consultancy work carried out (20,000)	5	5
3.C	Completed projects Quality Evaluation: Completed project Report(Acceptance from funding agency)	7 /each major project and 5 /each minor project	-	-	-
3.D	Projects Outcome / Outputs: Patent/Technology transfer/ Product/Process	7 / each state level output or patent /3 / each for national level	-	-	-

Figure 5.8 (c) Performance Appraisal Form Page 3

4.A	M.Tech/M.Phil- Degree awarded only	2 /each			
4.B	Ph.D.		Ph.D	2	2
	a) Degree awarded	4 /each	-	4	2
	b) Thesis submitted	1 /each			
5.A	a) Not less than two weeks duration	7/each			
	b) One week duration	5/each			
5.B	Participation and Presentation of research papers (oral/poster) in				
	a) International conference	8 each	03 Conference papers	24.	24
	b) National conference	6/ each	-		
	c) Regional/State level	4 /each	-		
	d) Local – University/College	2 /each	-		
5.C	a) National level	5 /each	-		
	b) State level	2/each	-		
Total Score		175		90.	84
Minimum API Score Required		70			

*Wherever relevant to any specific discipline, the API score for paper in refereed journal would be augmented as follows: (i) indexed journals – by 5 points; (ii) papers with impact factor between 1 and 2 by 10 points; (iii) papers with impact factor between 2 and 5 by 15 points; (iv) papers with impact factor between 5 and 10 by 25 points.

** If a paper presented in Conference/Seminar is published in the form of Proceedings, the points would accrue for the publication (III (a)) and not under presentation (III (e)(ii)). Note: The API for joint publications will have to be calculated in the following manner: Of the total score for the relevant category of publication by the concerned teacher, the first/Principal author and the corresponding author/supervisor/mentor of the teacher would share equally 60% of the total points and the remaining 40% would be shared equally by all other authors.

supporting documents, wherever required be attached.

	Category I	Category II	Category III	Total Score
Total Score	125	50	175	350
Minimum API Score Required	75	20	70	165
Total Self-Assessment Score	111	37.	90.	238.
Score by Screening/ selection committee	101	83	84	218

Date: 12/09/2023

Place: AGCE, Satara.

[Signature]
Signature of Faculty

Recommendation by screening team (Academic Monitoring Committee):

Excellent patent filing activity.

[Signature]
Member AMC

[Signature]
Head of Department

[Signature]
Registrar

[Signature]
Principal

Figure 5.8 (d) Performance Appraisal Form Page 4

Figure 5.8: (a), (b), (c), and (d) Performance appraisal form of Dr. B. M. Nayak

APPRAISAL AND 360° FEEDBACK FORM

Name : Miss. Mali Ashlesha Bhimrao
 Date of Birth : 18/11/1995
 Highest Qualification : UG/PG/Ph.D. - PG
 Designation : Assistant Professor
 Experience : Teaching: 1.9 Industrial: 1 Total: 2.9
 Program : Electrical Engineering
 Mobile No. : 7083743002
 Email : ashleshamali1995@gmail.com
 Permanent Address (with pin code) : N/P - Kasegaon Tal - Wadwa Dist - Sangli
 Academic Year : 2022-23

SCORES FOR ACADEMIC PERFORMANCE INDICATORS (APIs) IN RECRUITMENTS AND CAREER ADVANCEMENT SCHEME (CAS) PROMOTIONS OF UNIVERSITY / COLLEGE TEACHERS

CATEGORY I: TEACHING, LEARNING AND EVALUATION RELATED ACTIVITIES

Brief Explanation: Based on the teacher's self-assessment, API scores are proposed for (a) teaching related activities; (b) domain knowledge; (c) participation in examination and evaluation; (d) contribution to innovative teaching, new courses etc. The minimum API score required by teachers from this category is 75. The self assessment score should be based on objectively verifiable criteria wherever possible and will be finalized by the screening/selection committee.

- Lectures, seminars, tutorials, practical's, contact hours undertaken taken as percentage of lectures allocated.
- Lectures or other teaching duties in excess of the UGC norms.
- Preparation and Imparting of knowledge / instruction as per curriculum; syllabus enrichment by providing additional resources to students.
- Use of participatory and innovative teaching-learning methodologies; updating of subject content, course improvement etc.
- Examination duties (Invigilation; question paper setting, evaluation/assessment of answer scripts) as per allotment.

Sr. No.	Performance Indicator	Max points	Description	Self-Assessment Score (to be filled by applicant)	Verified API Score (for official use)
1.A	Excellent course file for the subject, teaching plan displayed	20	course file completed as per syllabus	18	18
1.B	Conducting practical lab. / tutorials; work nicely with lab innovations	20	All lab practical conducted	18	17
1.C	Student Feedback outcome	10	Very good remark from students	9	9
2.A	Remedial Classes OR Extra lectures for DSE students	4	Yes for EMS sub Extra lectures is taken	4	3
2.B	Content beyond syllabus	6	Yes taken sum extra	6	5
3.A	Preparation and Imparting of knowledge / instruction as per curriculum;	10	All syllabus conducted as per curriculum	10	10
3.B	syllabus enrichment by providing additional resources to students	10	video/animation shows in class	9	9
4.A	Number of ICT Based Teaching material	5	> 0 % ICT based material is used	5	4
4.B	Number of Interactive Courses	5	promoted students to complete NPTEL courses	5	5
4.C	Effective use of MOODLE	10	uploaded All material in moodle & mark exam	9	8
5.A	At Institute Level	15	SRPD of Extra curricular activity	15	15
5.B	At University Level	10	SRPD of university exam	8	8
Total Score		125		116	109
Minimum API Score Required		75			

Figure 5.8 (a) Performance Appraisal Form Page 1

CATEGORY II: CO-CURRICULAR, EXTENSION AND PROFESSIONAL DEVELOPMENT RELATED ACTIVITIES.

Brief Explanation: Based on the teacher's self-assessment, category II API scores are proposed for co-curricular and extension activities; and Professional development related contributions. The minimum API required by teachers for eligibility for promotion is 15. A list of items and proposed scores is given below. It will be noticed that all teachers can earn scores from a number of items, whereas some activities will be carried out only by one or a few teachers. The list of activities is broad enough for the minimum API score required (15) in this category to accrue to all teachers. As before, the self-assessment score should be based on objectively verifiable criteria and will be finalized by the screening/selection committee.

1. Student related co-curricular, extension and field based activities (such as extension work through NSS/NCC and other channels, cultural activities, subject related events, advisement and counseling)

2. Contribution to Corporate life and management of the department and institution through participation in academic and administrative committees and responsibilities.

3. Professional Development activities (such as participation in seminars, conferences, short term, training courses, talks, lectures, membership of associations, dissemination and general articles, not covered in Category III below)

Sr. No.	Performance Indicator	Max points	Description	Self-Assessment Score (to be filled by applicant)	Verified API Score (for official use)
1.A	Guidance to a project in exhibition / competition won any prize. Industry Sponsored projects.	4	Guide one B-Tech project of one TY. mini project. won 1st prize in project competition.	4	3
1.B	Industry tour / visit, Visit to technical Exhibition	4	1) HVDC substation 2) AG, Etebo surveys road.	4	4
1.C	Arranged the invited talks / Expert lecturers at Department / Institute level	4	Arranged online HVE Exposed teleconfered for B-Tech students	4.	4
1.D	VAP (Value addition training Program) conducted by a staff 40hrs / FBL/ New tech with projects. Conducted the lectures in GATE Forum OR Recourse persons for Skill Development Program.	4	—	00	—
1.E	extension work through NSS/NCC and other channels, cultural activities	4	5 students from PG & FH batch participated in NSS camp.	04.	4
2.A	Institute level Responsibilities (Deans/COE: 05, Heads:3, other:02)	5	1) SRPD incharge. 2) Period of girls hostel	02.	2
2.B	Event Coordinators (Institute Level: 05, Department Level: 03, Participation: 02)	5	cultural event coordinator	05.	5
2.C	Department Level Responsibilities: 05, Participation: 02	5	1) Exam coordinator 2) NBA criteria - 4 + 6 3) Extra-curricular	05.	5
3.A	Participation in short term training courses, curriculum development, training courses, talks, lectures	5	FOP & workshop	04.	3
3.B	Membership of professional associations committees, Boards of Studies, editorial committees of journals / institutional publications.	5	—	—	—
3.C	Participation in subject associations, conferences, and seminars without paper presentation.	5	—	—	—
Total Score		50		32.	30
Minimum API Score Required		20			

Figure 5.8 (b) Performance Appraisal Form Page 2

CATEGORY-III: RESEARCH AND ACADEMIC CONTRIBUTIONS

Brief Explanation: Based on the teacher's self-assessment, API scores are proposed for research and academic contributions. The minimum API score required by teachers from this category is different for different levels of promotion and between university and colleges. The self-assessment score will be based on verifiable criteria and will be finalized by the screening/selection committee.

1. Research Papers published in:
2. Research Publications (books, chapters in books, other than refereed journal articles)
3. RESEARCH PROJECTS
4. RESEARCH GUIDANCE
5. TRAINING COURSES AND CONFERENCE /SEMINAR/WORKSHOP PAPERS:
 - A. Refresher courses, Methodology workshops, Training, Teaching Learning, Evaluation Technology Programs, Soft Skills development Program, Faculty Development Programs (Max: 30 points):
 - B. Papers in Conferences/ Seminars/ workshops etc.**
 - C. Invited lectures or presentations for conferences/ symposia

Sr. No.	Performance Indicator	Max points	Description	Self-Assessment Score (to be filled by applicant)	Verified API score (for official use)
1.A	Refereed Journals *	20/ 2 publication	-	00	-
1.B	Non-refereed but recognized and reputable journals and periodicals, having ISBN/ISSN numbers	10/ 2 Publication	-	10	10
1.C	Conference proceedings as full papers, etc. (Abstracts not to be included)	5/1 publication	-	-	-
2.A	Text or Reference Books Published by International Publishers with an established peer review system	20 /sole author; 5 /chapter in an edited book	-	-	-
2.B	Subjects Books by National level publishers/State and Central Govt. Publications with ISBN/ISSN numbers.	15/sole author, and 5/ chapter in edited books	-	-	-
2.C	Subject Books by Other local publishers with ISBN/ISSN numbers.	10/ sole author, and 2 / chapter in edited books	-	-	-
2.D	Chapters contributed to edited knowledge based volumes published by International Publishers	5 /Chapter	-	-	-
2.E	Chapters in knowledge based volumes by Indian/National level publishers with ISBN/ISSN numbers and with numbers of national and international directories	3 / Chapter	-	-	-
3.A	Sponsored Projects carried out/ ongoing				
	a) Major Projects amount mobilized with grants in between Rs.10,000 to Rs.50,000/-	10 /2 major project	-	-	-
	b) Minor Projects (Amount mobilized with grants upto Rs.10,000/-)	7 /2 minor Project	-	-	-
3.B	Consultancy Projects carried out / ongoing: Amount mobilized with upto Rs.15,000/-	10 consultancy	-	-	-
3.C	Completed projects Quality Evaluation: Completed project Report(Acceptance from funding agency)	7 /each major project and 5 /each minor project	-	-	-
3.D	Projects Outcome / Outputs: Patent/Technology transfer/ Product/Process	7 / each state level output or patent /14 /each for national level	-	-	-

Figure 5.8 (c) Performance Appraisal Form Page 3

4.A	M.Tech/M.Phil- Degree awarded only	2 /each	H. Tech EPS.	2	2
4.B	Ph.D.		-	-	
	a) Degree awarded	4 /each	-	-	
	b) Thesis submitted	1 /each	-	-	
5.A	a) Not less than two weeks duration	7 /each	-	-	
	b) One week duration	5 /each	-	-	
5.B	Participation and Presentation of research papers (oral/poster) in				
	a) International conference	8 each	two papers	16	14
	b) National conference	6 /each	-	-	
	c) Regional/State level	4 /each	-	-	
	d) Local - University/College	2 /each	-	-	
5.C	a) National level	5 /each	-	-	
	b) State level	2 /each	-	-	
Total Score		175		30	26
Minimum API Score Required		70			

*Wherever relevant to any specific discipline, the API score for paper in refereed journal would be augmented as follows: (i) Indexed journals - by 5 points; (ii) papers with impact factor between 1 and 2 by 10 points; (iii) papers with impact factor between 2 and 5 by 15 points; (iv) papers with impact factor between 5 and 10 by 25 points.

** If a paper presented in Conference/Seminar is published in the form of Proceedings, the points would accrue for the publication (III (a)) and not under presentation (III (e)(ii)). Note: The API for joint publications will have to be calculated in the following manner: Of the total score for the relevant category of publication by the concerned teacher, the first/Principal author and the corresponding author/supervisor/mentor of the teacher would share equally 60% of the total points and the remaining 40% would be shared equally by all other authors.

supporting documents, wherever required be attached.

	Category I	Category II	Category III	Total Score
Total Score	125	50	175	350
Minimum API Score Required	75	20	70	165
Total Self-Assessment Score	116	32	30	178
Score by Screening/ selection committee	109	30	26	165

Date: 12/09/23
Place: Satara.

Ashlesha Mali
Signature of Faculty

Recommendation by screening team (Academic Monitoring Committee):

* Increase the paper publications.
* If possible register for PhD.

[Signature]
Member AMC

[Signature]
Head of Department

[Signature]
Registrar

[Signature]
Principal

(d) Performance Appraisal Form Page 4

Figure 5.8: (a), (b), (c), and (d) Performance appraisal form of Ms. Ashlesha Mali

CRITERION	06	Facilities and Technical Support	80
------------------	-----------	---	-----------

6.1 Adequate and well equipped laboratories, and technical manpower (30)**A. Adequate well-equipped laboratories to run all program-specific curriculum (20)**

Sr. No.	Name of the Laboratory	No. of students per setup (Batch Size)	Name of the Important / Major equipment	Weekly utilization on status (all The courses for which the lab is utilized)	Technical Manpower support		
					Name of the technical staff	Designation	Qualification
1.	Power electronics and Electrical drives laboratory	15	1.Single phase full controlled bridge converter trainer kit 2.Three Phase controlled converter kit 3. DC drive trainer 4. Digital Storage oscilloscope 100 MHz Two channel Model 403 Sl.No. 061587	8 Hr	Mr. Kirtikudave K	Lab assistant	ITI Electrical
2.	Electrical machines (AC)laboratory	15	1.Single phase transformer (Tapping on both side)230V/230V,2KV A 2. 3 Phase Transformer (tapping on both side)440/440V, 1KVA 3. Three phase	4Hr	Mr. Shaikh A.A	Lab Assistant	Diploma in Electrical

			<p>induction motor 3 HP 415 V 1440rpm With control panel</p> <p>4.Synchronous motor,3HP,3phase 415V-DC shunt Generator2.2kw,220V, 1500RPM with control panel</p> <p>5. 3 HP,230V,1500RPM DC shunt motor coupled to 3 phase /2KVA 415V/1500RPM/150H Z Alternator with base and coupling with control panel</p>				
3.	Electrical machines (DC)laboratory	15	<p>1. 3HP/230V/1551 RPM DC Shunt Motor with Control panel</p> <p>2. 3HP/230 V/1500 RPM DC shunt motor coupled with each other with base & coupling with control panel</p> <p>3. 3HP/230V/1500 RPM DC series motor coupled with each other with base & coupling with control</p>	4Hr	Mr. Shaikh A.A	Lab Assistant	Diploma in Electrical

			<p>panel</p> <p>4. DC compound motor 3HP/230V 1500 RPM with mechanical loading arrangement with control panel</p> <p>5. Transformer rectifier unit input, 3 phase 415V AC Supply(50A)</p>				
4.	Electrical power system and Simulation laboratory	15	.ACER ASP4760 Core 2 duo, 2 GB DDR2 RAM, 500 GB HDD, Dell 17" Square LCD Acer Keyboard, Mouse, DVD RW	12 Hr	Mr. Shaikh A.A	Lab Assistant	Diploma in Electrical
5.	Electrical and Electronics Measurements & Analog & digital electronics laboratory	15	1.Power factor meter (1.5 amp 250 V) 2.Earth tester with complete setup 3.Insulation Tester with Accessories 5.LVDT trainer kit	4hr	Mr. Kirtikudave K	Lab assistant	ITI Electrical
6.	Network Theory laboratory	20	1. RC,RL Circuit Kit 2. Maximum power transfer theorem , Norton's ,	4Hr	Mr. Kirtikudave K	Lab Assistant	ITI Electrical

			Thevenins theorem kit 3. Series resonance (RLC) AND RLC parallel resonance kit				
7	Switchgear and Protection & Basic Electrical Engineering laboratory	20	1.IDMT Over-Current Relay Trainer kit 2.Directiona Over-Current Relay Trainer kit 3.Microprocessor Based Over-Current Relay Trainer kit	4hr	Mr. Shaikh A.A	Lab Assistant	Diploma in Electrical

Table. 6.1 Adequate and well equipped laboratories, and technical man power

6.3 Laboratories: Maintenance and overall ambiance (10)

Each laboratory maintains a dead stock register with details of all equipment's in laboratory. On regular basis maintenance of laboratory is carried out by in-house maintenance engineer. One lab assistant is assigned for two labs.

6.3.1 Maintenance and Records

6.3.1.1 Maintenance:

1. All the equipment in the Laboratory is maintained on a regular basis by the concerned laboratory technicians under the guidance and supervision of the laboratory in charge
2. Equipment is marked with indelible ink marking to identify.
3. General servicing is done during summer vacation before commencement of academic year.

Servicing is also done whenever necessary. Electrical fitting is checked in on regular basis by electrician.

4. As per the requirement, minor repairs are carried out by the lab assistant.
5. Any equipment which is found defective or out of calibration shall be immediately
6. Withdrawn from services.
7. The fire extinguisher is available and mounted properly.
8. In case of maintenance of equipment and other facilities
 - i. Regular check-up of equipment is carried out.
 - ii. Breakdowns are registered in the laboratories.
 - iii. As per the requirement, minor repairs are carried out by the lab assistant.
 - iv. Maintenance of computers is taken care by IT and COMPUTER department.
 - v. Major repairs are done by authorized outsourced by following the procedure of the institute

6.3.1.2 Records:

- 1) Laboratories with an appropriate maintenance record system to suit its particular requirements.
- 2) Laboratories are retained on record all original observations, calculations and derived data, calibration record for an appropriate period preferably not Less than 3 years.
- 3) Storage of data and records is readily available in soft copy as well as hard copy.

4) Records are maintained for each equipment/ instrument stating the commissioning date, capacity, accuracy, calibration etc.

5) Stock records for equipment and consumables are maintained in the departments.

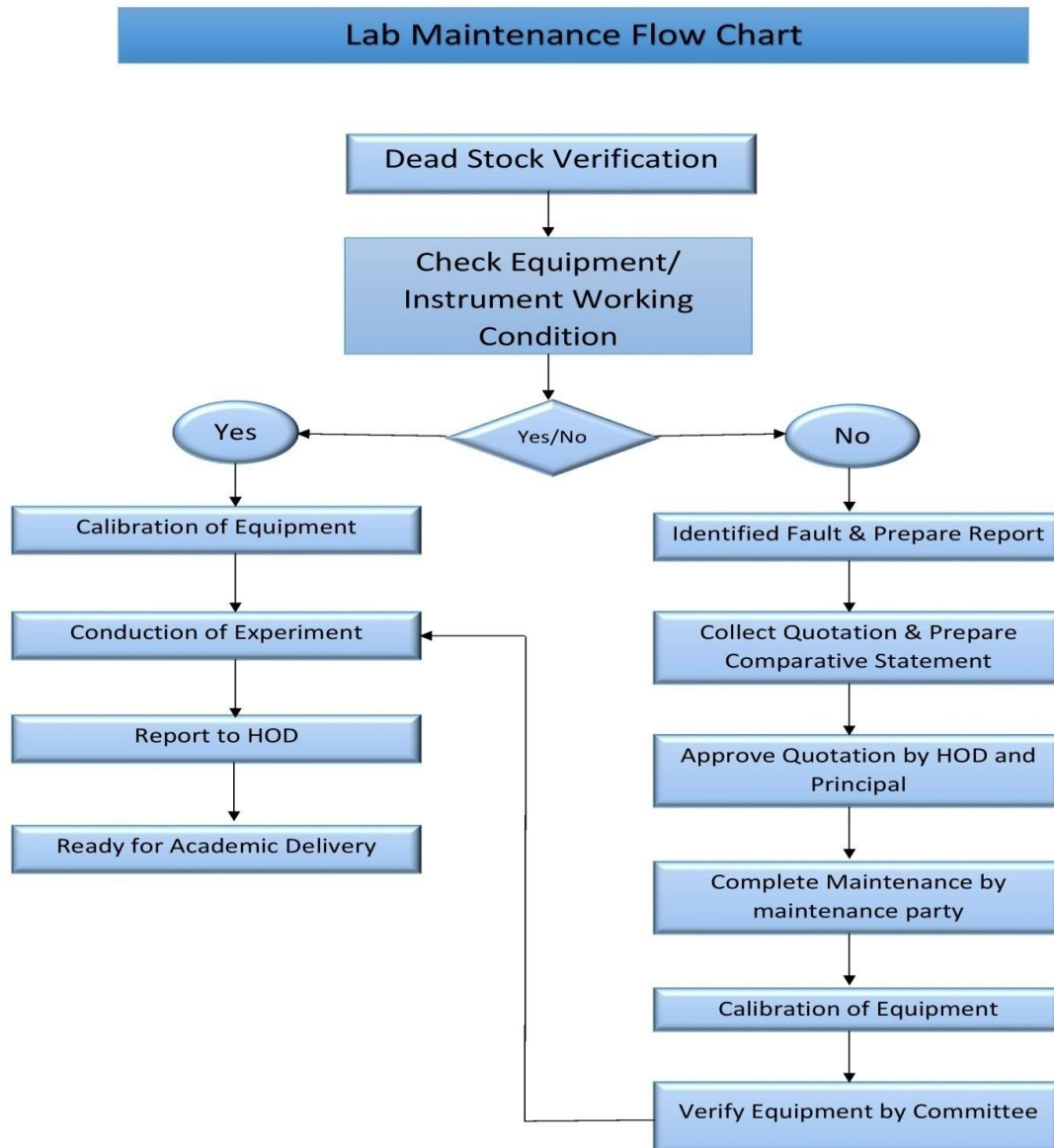


Fig.6.3.1 Lab Maintenance Flow Chart

6.3.1.3: Ambience

1. Laboratory area is spacious and furnished.
2. All laboratories have sufficient natural light and good ventilation.
3. Labs are also equipped with notice boards, black boards
4. Dusting and cleaning is done on regular basis

6.3.2 Measurement Traceability and Calibration:

S N	Maintenan ce/Record facility	Details	Purpose	Utilization	Available /lab	Responsible Person al	Ambiance
1	Dead Stock Register	A register containing Details of equipment, tools, facility, And supplier with perspectives With date, time, purpose and signature.	To maintain inward record of all equipment, tooling and facilitates in a proper way	Lab assistant, Lab In charge	01	Lab In charge/ Lab Assistant	Good and Updated

2	Logbook	A register hard copy containing details of user with perspectives with date, time, purpose and signature.	To maintain lab utilization details systematically in the proper way of recording. To get an indication to regulate maintenance of the equipment and facilities provided in the lab	All S.E., T.E., B.E. Students, Faculty, Staff of department	01	Lab Assistant	Good and updated
3	Laboratory Manual	Individual hard copy	To provide a stepwise experiment procedure to conduct experiments safely and a written format to make a report of lab experiment	All S.E., T.E., B.E. Students, Lab personnel, Assigned faculty of lab	01	Lab In charge	Good and updated

4	Laboratory preventive and breakdown register	A register containing details of maintenance done on the lab equipment	Experience collected over a long period to utilize the lab equipment properly and neatly to avoid any hazards to user and condition of the equipment.	Lab Assistant/ Technical staff and assigned Lab In charge.	01	Lab Assistant	Good and updated
5	Laboratory time-table	Timetables of student batches of all courses for which the lab is utilized along with the name and contact no of staff and technical lab assistant available.	To know the engagement of the students as well staff and technical manpower concerned to the lab so the floating of the lab utilization can be managed time to time.	All S.E., T.E., B.E. Students, Faculty, Staff of department	As per utilization	Lab In charge	Good and updated

6	Purchase orders and bills	Photocopy/Xerox of: Purchase orders and billing details of lab equipment, tools, facility, maintenance and consumable materials, etc.	To maintain the records of purchase and billing for further contact and maintenance aspects	Lab assistant, Lab In charge	As per condition	Lab In-Charge/ Lab Assistant	Good and updated
7	Consumable material record at	Hardcopy and details of consumable materials	To maintain the records of consumables	In-charge Faculty	01	In- charge Faculty	Good and updated.

Table. 6.3.2 Measurement Traceability and Calibration

A) Sample of Dead stock register

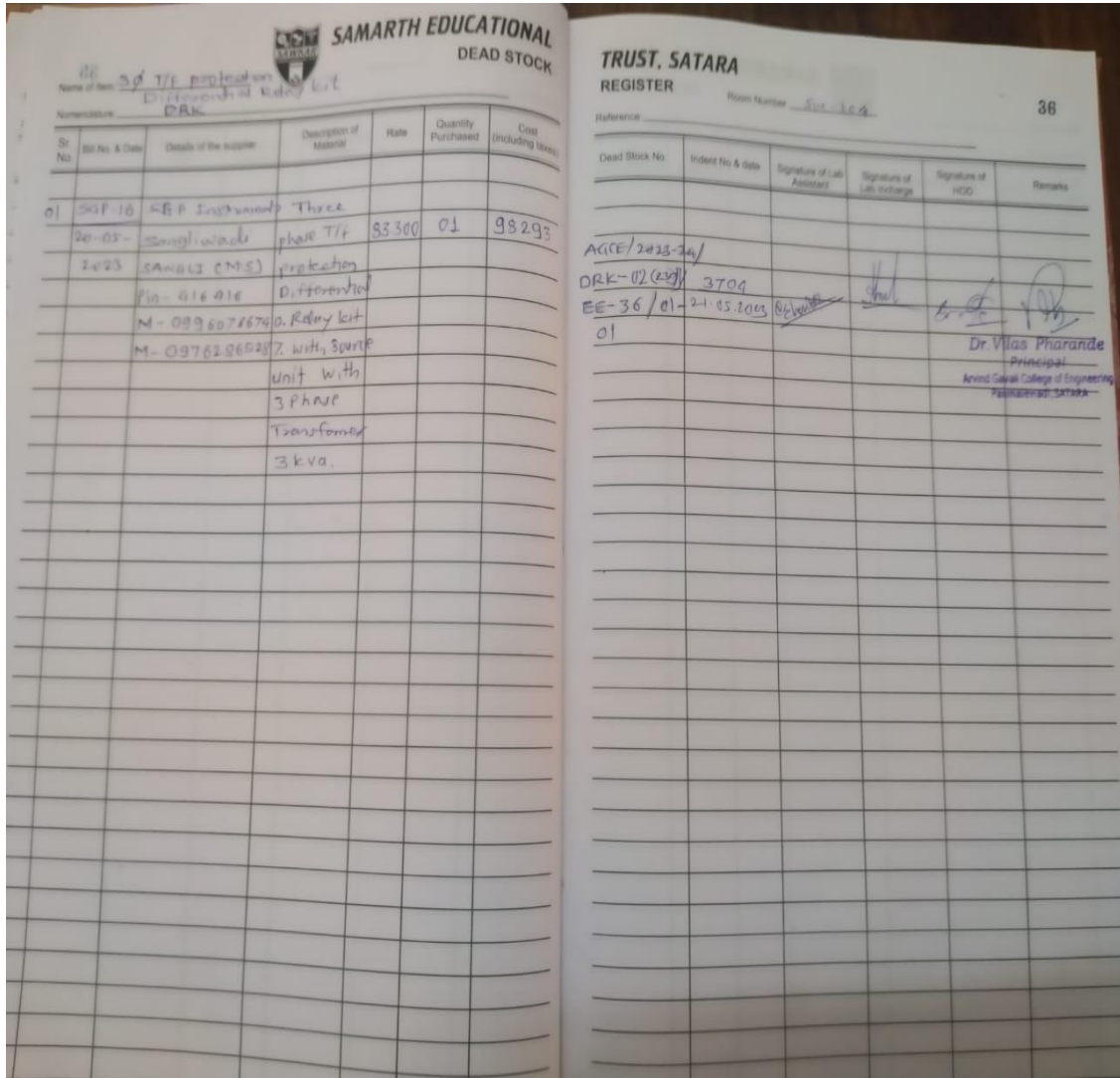


Fig 6.3.2 .A. Sample Copy of Dead stock register

B) Logbook :-

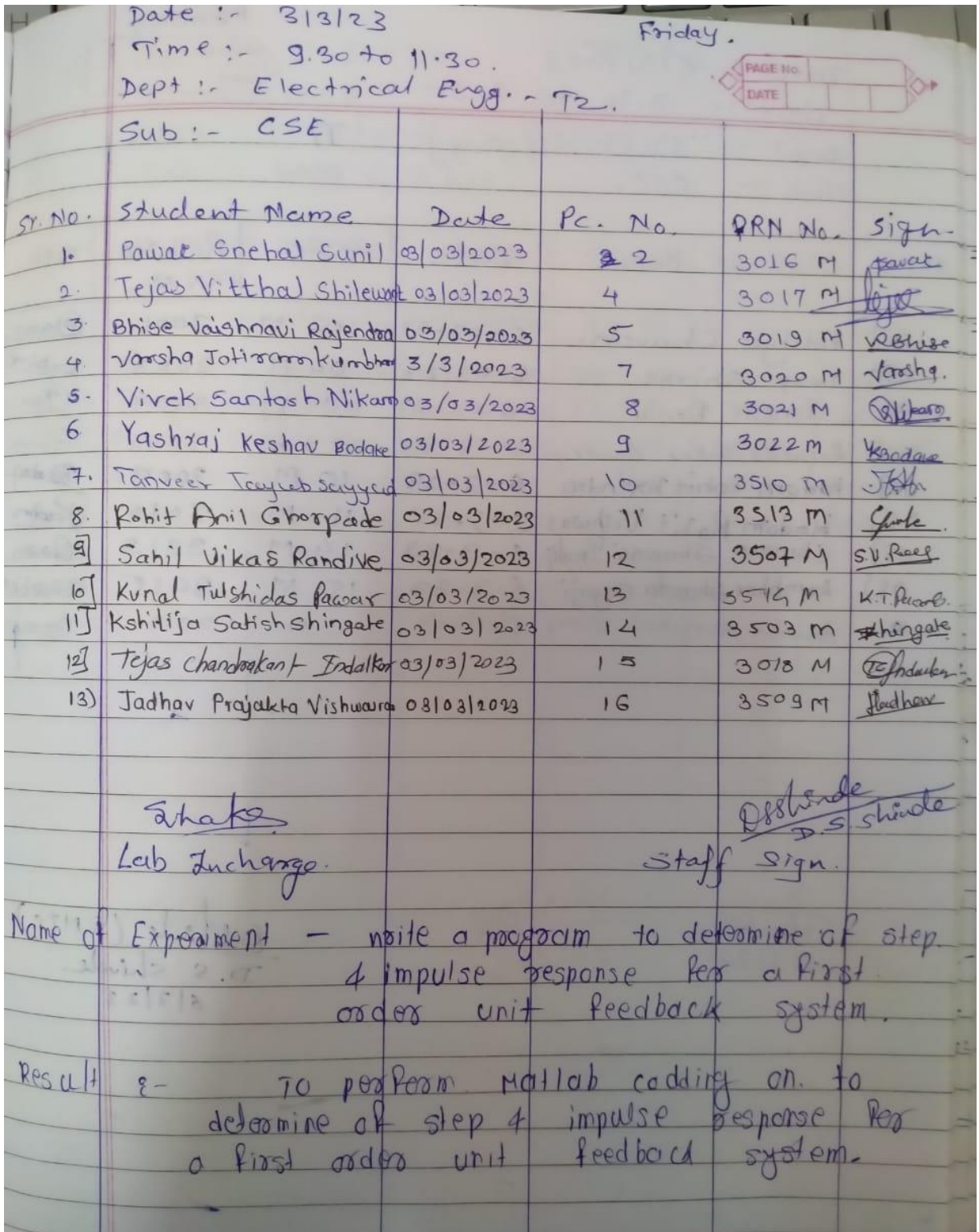


Fig 6.3.2 .B. Logbook

C] Sample Lab Manual

Arvind Gavali College of Engineering, Satara.
Affiliated to Dr B.A. Technological University, Lonere,
Maharashtra.

Department Of Electrical Engineering

LAB MANUL

Program(UG/PG) : UG

Year : Second Year

Semester : IV

Course Code : BTEEC406

Course Title : Network Theory Lab

Presented By
Ms. Mali A.B
Assistant Professor
Department of Electrical Engineering

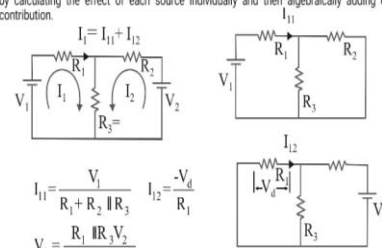
EXPERIMENT NO: 1

VERIFICATION OF THE SUPERPOSITION THEOREM

AIM- Verification of the Norton's theorem

APPARATUS- 1) Network Theorem Trainer Kit
2) Patch Cord
3) Digital Multimeter

THEORY-
The total current in any part of a linear circuit equals the algebraic sum of the currents produced by each source separately. The Superposition Theorem is an important concept in circuit analysis. It allows you to determine a voltage across a component or a branch current by calculating the effect of each source individually and then algebraically adding each contribution.



$$I_1 = I_{11} + I_{12}$$

$$I_{11} = \frac{V_1}{R_1 + R_2 \parallel R_3} \quad I_{12} = \frac{-V_d}{R_1}$$

$$V_d = \frac{R_1 \parallel R_3 V_2}{R_2 + R_1 \parallel R_3}$$

Figure 1 Superposition may be considered for

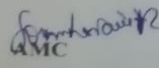
circuit analysis when
There are two or more energy sources.
The sources are either voltage or current sources. The circuit is not too complex.
There are seven steps used in applying the Superposition Theorem to a circuit.

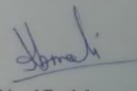
1. Select one energy source
2. Remove all other sources by:
3. Replacing voltage source with a short while retaining any internal source resistance
4. Replacing current source with an open while retaining any internal resistances
5. Calculate the desired voltage drops or branch currents paying attention to the voltage polarities and c/n directions.
6. Repeat steps 1 through 3 for each other source individually.
7. Algebraically add the contributions of each voltage or current.

Fig 6.3.2 .C. Sample Lab Manual

D] Sample Lab Time Table:

Samarth Educational Trust Arvind Gavali College of Engineering, Satara DEPARTMENT OF ELECTRICAL ENGINEERING TIME - TABLE Academic Year 2022-23 (ODD Semester)											
Day	Time Class	9.30-10.30	10.30-11.30	11.30 to 12.1	12.10-1.10	1.10-2.10	2.10-3.10	3.10-3.30	3.30-4.30	4.30-5.30	
MONDAY	S.E. SW-101			LUNCH					SY-MP-I Lab-(WW-108)		
	T.E. SW-102										
	D.E. SW-103										
TUESDAY	S.E. SW-101										
	T.E. SW-102									TY-MP-II-T2 Lab-(WW-108)	
	D.E. SW-103										
WEDNESDAY	S.E. SW-101										
	T.E. SW-102									TY-PSA Lab-T2-(WW-108)	
	D.E. SW-103										
THURSDAY	S.E. SW-101										
	T.E. SW-102									TY-PSA Lab-T1-(WW-108)	
	D.E. SW-103										
FRIDAY	S.E. SW-101										
	T.E. SW-102									TY-MP-II-T1 Lab-(WW-108)	
	D.E. SW-103										


AMC


Verified by

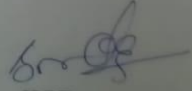

HOD

Fig 6.3.2 .D. Lab Time Table

E] Sample purchase orders and bills-

SAMARTH EDUCATIONAL TRUST
ARVIND GAVALI COLLEGE OF ENGINEERING

NAAC Accredited
Approved by AICTE, New Delhi, Recognised by Govt. Of Maha. DTE Mumbai & Affiliated to
Dr. Babasaheb Ambedkar Technological University (BATU), Lonere.
Website - www.agce.edu.in

* Address : At Panmalwadi, Post - Vayta,
Tal & Dist. - Satara - 415 015 (Maharashtra)
* Phone : 02162 - 281122 , 280100
* e-mail : agceengg@satara@gmail.com

* Institute Code : Engg. DTE EN-6545
* Poly/Code : DTE DN-6545
* Poly MSBTE-1617

Ref No.: AGCE/ EIE/2023/267 Date: 12/4/2023

Purchase Order

To,
S.G.P instruments,
Sangliwadi, sangli, Maharashtra-416416
Email: -harshaiphalle@gmail.com
Mob: 8660449210

Subject: Purchase order for Switch Gear and Protection Lab.

Respected Sir/Madam,

As per the above subject we need some instruments for Switch Gear and Protection Lab, so that we are placing this order for the following list of material required for lab.

Sr.No.	List of Materials	Quantity	Purchase Cost	Cost
1	Electromechanical Type Over Voltage Relay With Source Unit 3R* 2R. Panel With All Accesess.	1	64,000	64,000/-
2	Three Phase T/F Protection Differential Relay Kit With Source Unit. With 3 Phase Transformer 3kva. 3R * 2R. Panel With All Accesess.	1	98,000	98,000/-
3	Relay Test Kit With Source Unit, Fuse, HRC Fuse, Ekcb, Mccb Test Set. 3R * 2R. Panel With All Accesess.	1	69,000	69,000/-
Total				2,31,000
Discount (15%)				-34650
Total Amount				196350

So, kindly fulfil the same as earliest.

Terms & Conditions:

1. Payment terms are as per the discussion with the secretary.
2. Transportation is free.
3. No other installation & training or demonstration charges.
4. All legal terms subjected to satara jurisdiction.

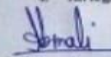
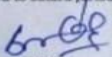


 Lab In-charge
  H.O.D
  Principal
  Secretary

Fig. a.

S.G.P. INSTRUMENT'S

TAX-INVOICE

SANGLIWADI, SANGLI. 09960766740, 09762865287. E-mail- harshalphalle@gmail.com
 Designing & Manufacturing of AC & DC machine lab, Switch Gear lab, Power lab, Measurement lab, Control lab, Industrial lab, Instrumentation lab Educational Instruments.

To- ARVIND GAVALI COLLEGE OF ENGG. SATARA	Bill No-SGP-16. Date- 20.05.2023.
PARTY GSTIN No.-	PO R. No. - AGCE/ELE/2023/267.

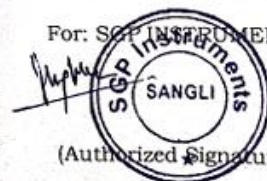
Sr. No.	Name of Materials.	Qty.	Cost	Amount
1.	Electromechanical Type Over Voltage Relay With Source Unit	1No.	54,400-00	54,400-00
2.	Three Phase T/F Protection Differential Relay Kit With Source Unit. With 3 Phase Transformer 3kva.	1No.	83,300-00	83,300-00
3.	Relay Test Kit With Source Unit. Fuse, HRC Fuse, Elcb, Mccb Test Set	1No.	58,650-00	58,650-00
TOTAL				1,96,350-00
SGST @09%				+17,671-00
CGST @ 09%				+17,671-00
TOTAL AMOUNT				2,31,692-00

GSTIN NO.-27BACPP3863R1ZX.

Rs. In Words-Two Lakh Thirty-One Thousand Six Hundred Ninety Two Only.

I/we here by certify that my/our registration certificate under the GST ACT 2017 is in force on the data on which the sales of goods specified in this tax invoice is made by me/us.

For: SGP INSTRUMENT'S



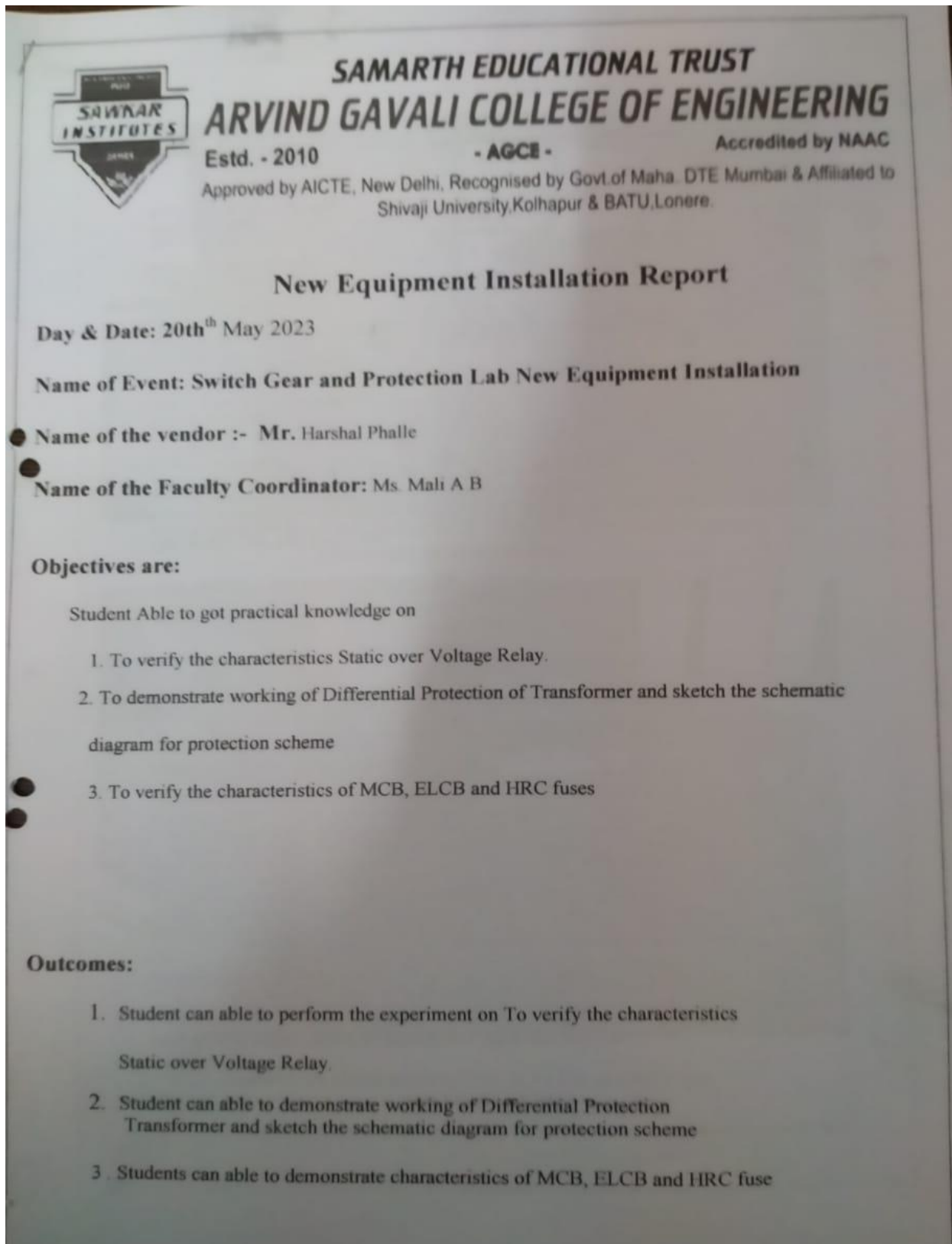
(Authorized Signatures)

NOTE:- ALL MATERIAL ARE RECEIVED IS GOOD CONDITION AND DEMONSTRATION IS SATISFIDE.

[Signature]
 Head of Electrical Engineering
 ARVIND GAVALI COLLEGE OF ENGINEERING
 SATARA, Panmalewad (Varye)

paid

Fig. b.



SAMARTH EDUCATIONAL TRUST
ARVIND GAVALI COLLEGE OF ENGINEERING
Estd. - 2010 - AGCE - Accredited by NAAC
Approved by AICTE, New Delhi, Recognised by Govt. of Maha. DTE Mumbai & Affiliated to Shivaji University, Kolhapur & BATU, Lonere.

New Equipment Installation Report

Day & Date: 20thth May 2023

Name of Event: Switch Gear and Protection Lab New Equipment Installation

Name of the vendor :- Mr. Harshal Phalle

Name of the Faculty Coordinator: Ms. Mali A B

Objectives are:

Student Able to got practical knowledge on

1. To verify the characteristics Static over Voltage Relay.
2. To demonstrate working of Differential Protection of Transformer and sketch the schematic diagram for protection scheme
3. To verify the characteristics of MCB, ELCB and HRC fuses

Outcomes:

1. Student can able to perform the experiment on To verify the characteristics Static over Voltage Relay
2. Student can able to demonstrate working of Differential Protection Transformer and sketch the schematic diagram for protection scheme
3. Students can able to demonstrate characteristics of MCB, ELCB and HRC fuse

Fig. c.

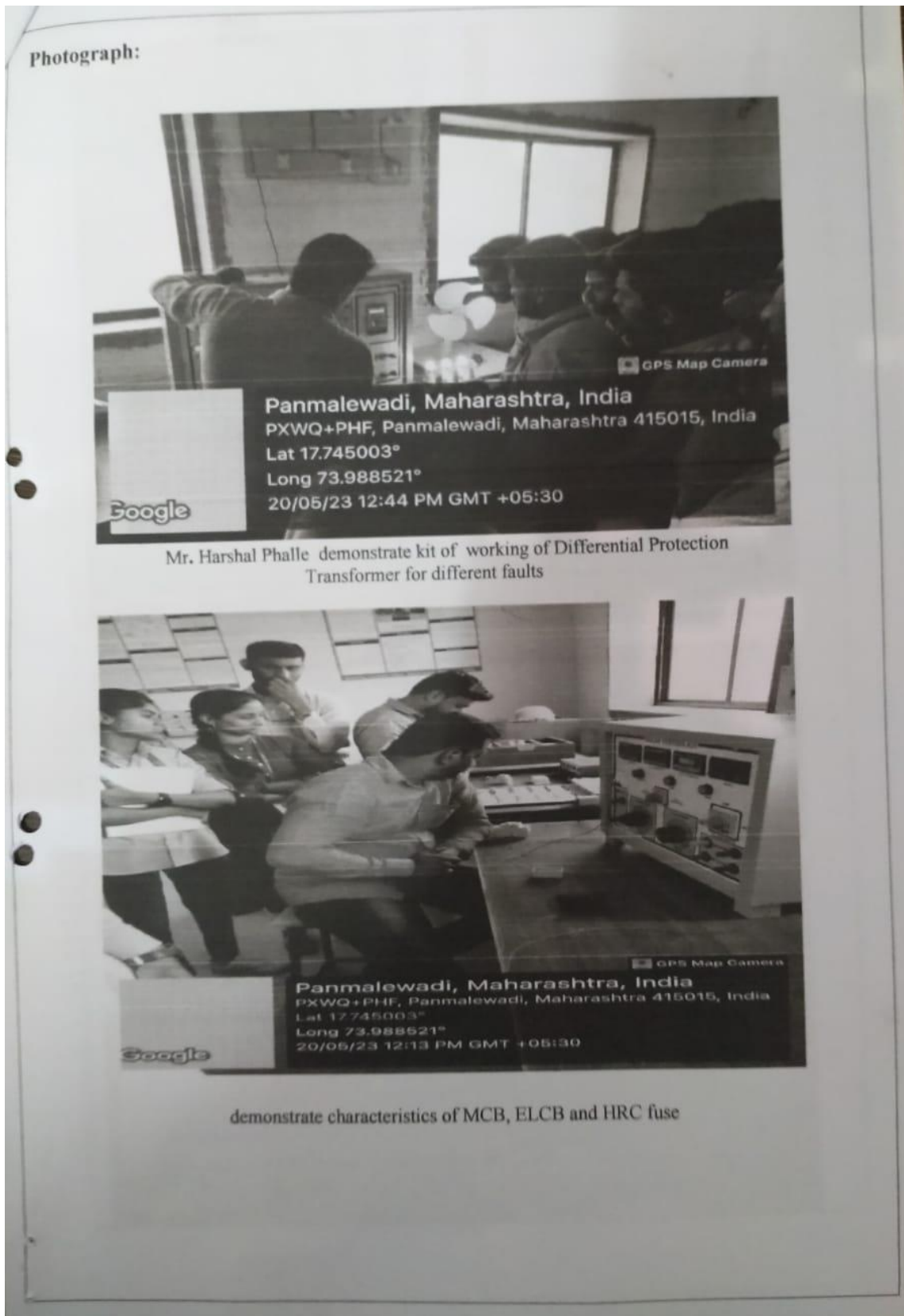


Fig. d.

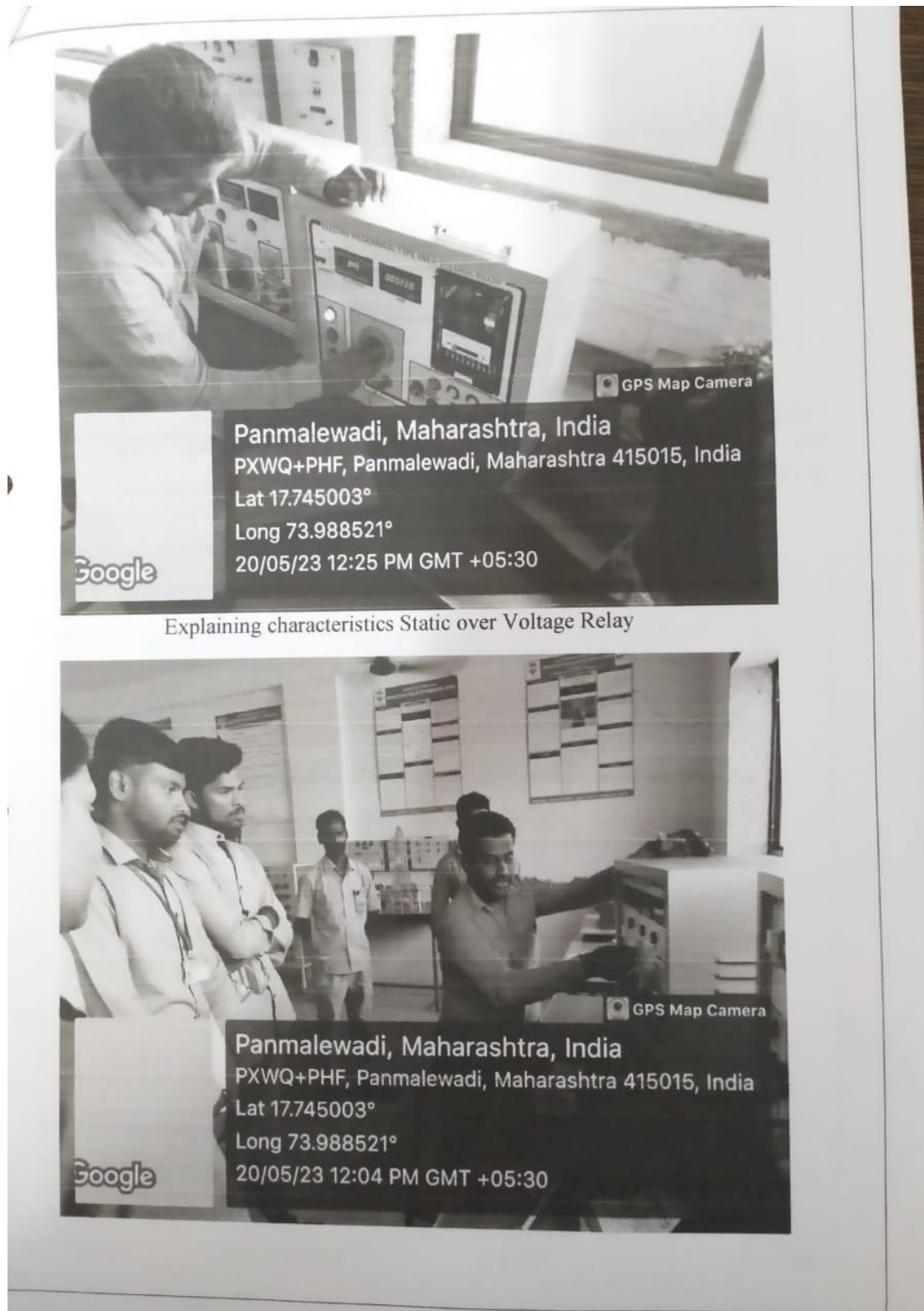


Fig. e.

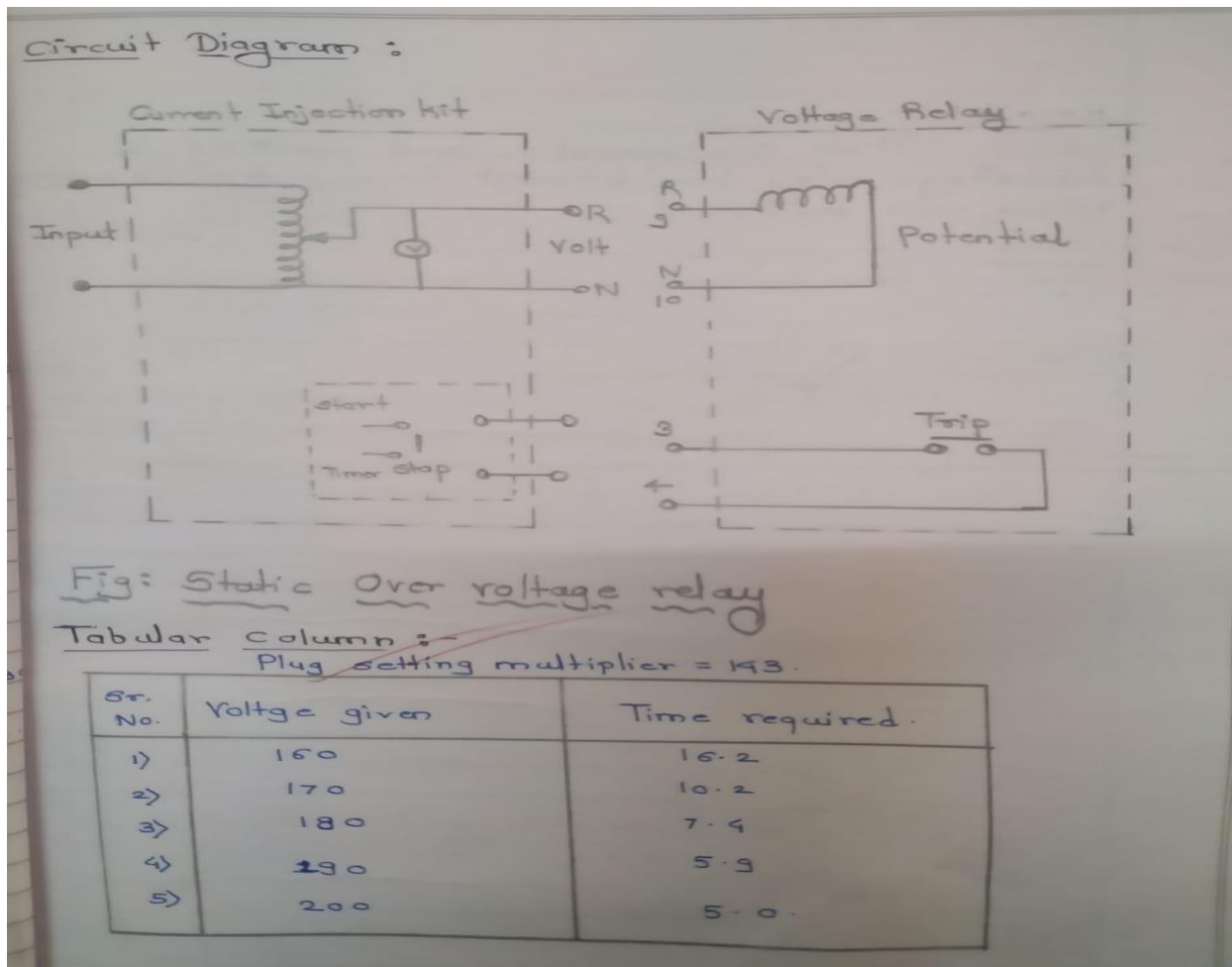


Fig. f.

Result :

Thus the operation and working of overvoltage relay for different time multiplier setting values was understood.

~~don't~~

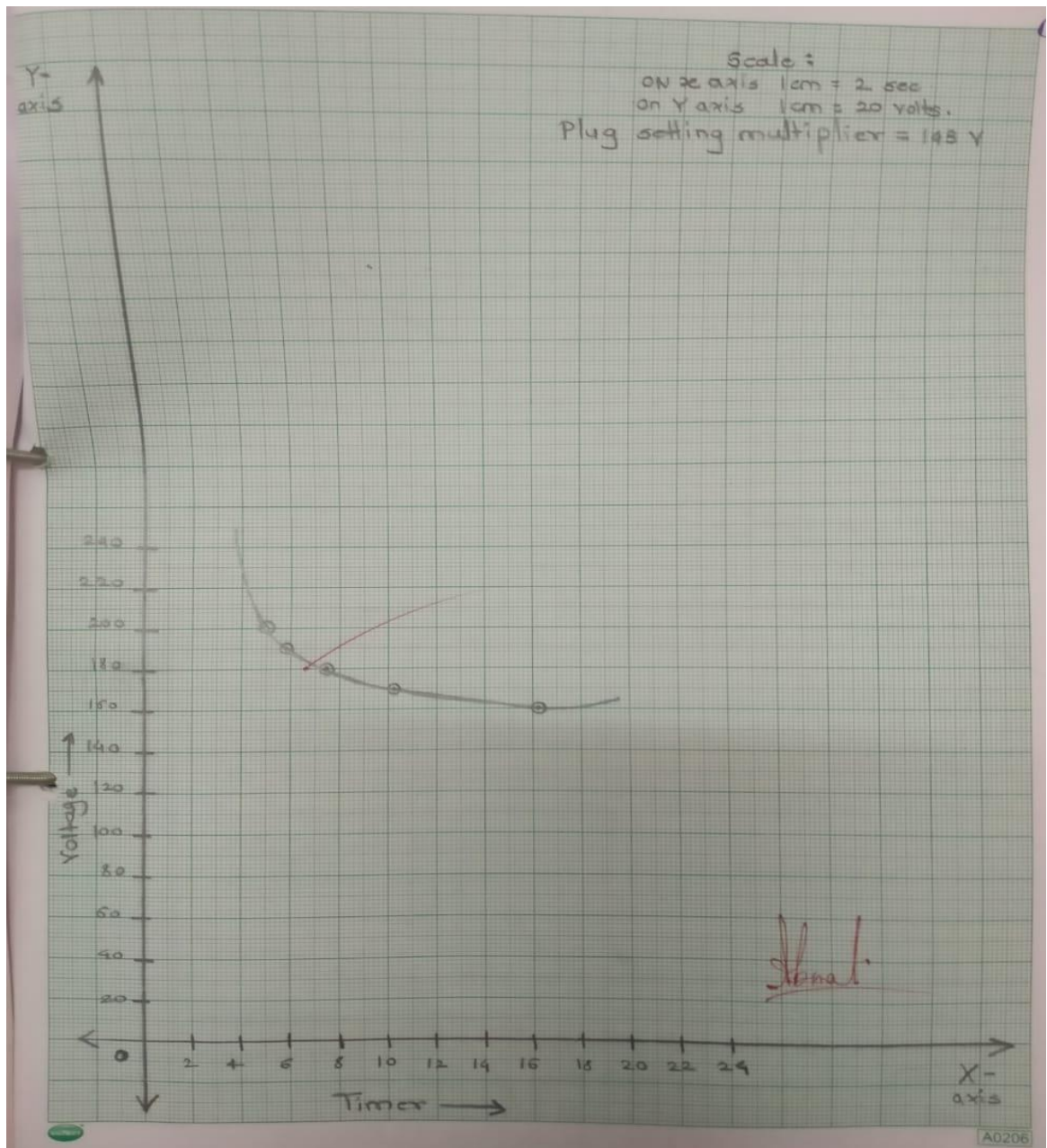


Fig. g.

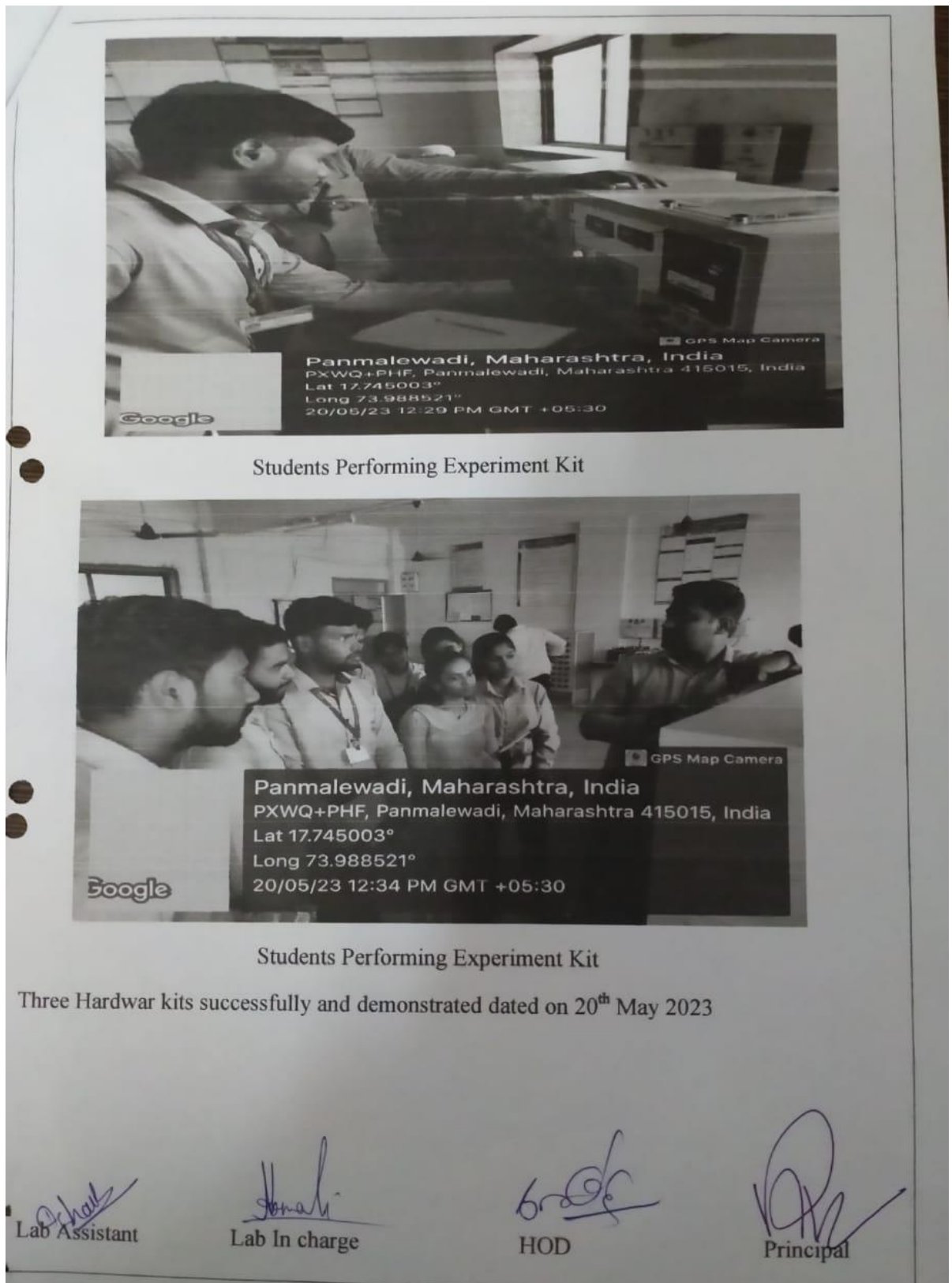


Fig 6.3.2 .E. a, b, c, d, f, g Sample purchase orders, bills and report.

F] Sample consumable material record of department level:

Samarth Educational Trust, Satara						
Name of Item: Patch card Board						
Nomenclature						
Sr. No.	Bill No. & Date	Details of the supplier	Description of Material	Rate	Quantity Purchased	Cost (including taxes)
01	166 31-7-17	Hede Electronics Satara	Patch cards Domino type SDT		06	300/-
02	491 9-11-17	Hede electronics Satara	Domino fuses with note		40	240
03	757 21-10-18	Hede electronics Satara	Domino fuses with with side index		50	200/-
04	278/19 11-11-19				70	280/-

TRUST, SATARA REGISTER					
Reference					
Distribution Details	Indent No. & Date	Signature of Lab Assistant	Signature of Lab Incharge	Signature of HOD	Remarks
ASUP Lab	115 01/10/17				Head of Electrical Engineering ARVIND GAVALI COLLEGE OF ENGINEERING SATARA, Panvelwar (Village)
BEE Lab will do					Head of Electrical Engineering ARVIND GAVALI COLLEGE OF ENGINEERING SATARA, Panvelwar (Village)
WPS/ASUP Lab					Head of Electrical Engineering ARVIND GAVALI COLLEGE OF ENGINEERING SATARA, Panvelwar (Village)
ASUP Lab					Head of Electrical Engineering ARVIND GAVALI COLLEGE OF ENGINEERING SATARA, Panvelwar (Village)

Fig. 6.3.2.F. Sample consumable material record of department level

G] Laboratory preventive and breakdown register:-

Department of Electrical Engg AGCE Panmalewadi Satara.

Lab Name: Advanced switchgear And protection Lab.

Date	Room No.	Lab Name	Name of equipment D.R. no., Eteat problem	Remedial done	Unit Asst	Lab In-charge	Head	Remarks
17/8/20	sw 104	Advanced switchgear & protection Lab	1) IDMT OVR current Relay Transmitt n.w. 2) secondary current injection bit n.w. 3) microcontroller base overcurrent Relay Transmitt n.w.	Remedial done by V.S.H. Engg. Fine. fuse re				
27/11/19	sw 104	Advanced switchgear & protection Lab	1) Panel type double pole switch with indicator burnt dty-2	Tejodap Eteat Pnc dty-2 Reod. & installed Runn				

Head of Electrical Engineering
ARVIND GAVALI COLLEGE OF ENGINEERING
SATARA, Panmalewadi (Varje)

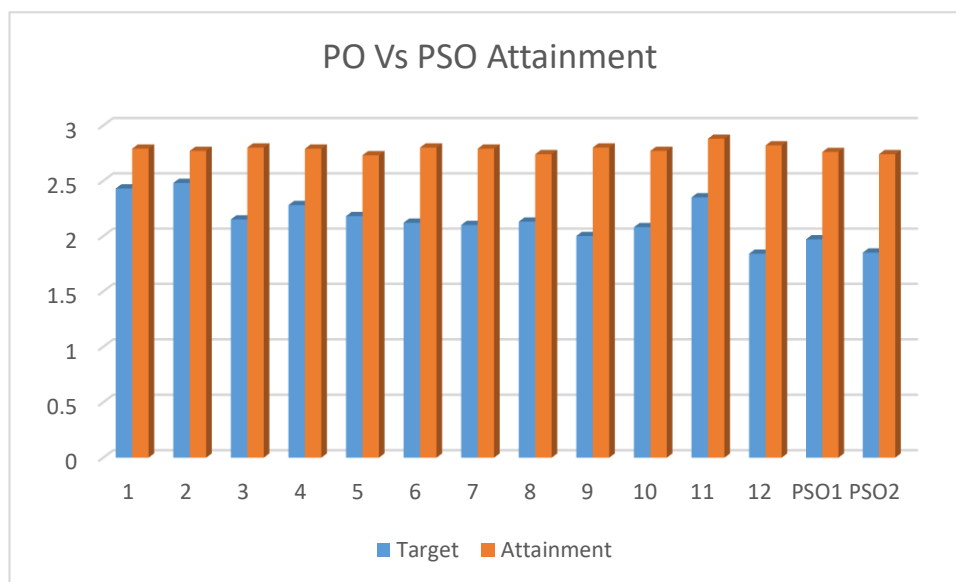
Head of Electrical Engineering
ARVIND GAVALI COLLEGE OF ENGINEERING
SATARA, Panmalewadi (Varje)

Fig. 6.3.2.G. Sample consumable material record of department level

CRITERION 07	Continuous Improvement	50
---------------------	-------------------------------	-----------

7.1 Actions taken based on the results of evaluation of each of the POs & PSOs (20)**Pos and PSOs Attainment Levels and Actions for improvement: 2021-22**

PO/PSO	1	2	3	4	5	6	7	8	9	10	11	12	PSO1	PSO2
Target	2.43	2.48	2.15	2.28	2.18	2.12	2.10	2.13	2.00	2.08	2.35	1.84	1.97	1.85
Attainment	2.79	2.77	2.80	2.79	2.73	2.80	2.79	2.74	2.80	2.77	2.88	2.82	2.76	2.74

**Figure.7.1a PO Target vs. PSO Attainment for year 2021-22**

PO's	Target Level	Attainment Level	Observations
PO1: Engineering knowledge: Apply knowledge of mathematics, science and engineering to solve engineering problems			
PO1	2.43	2.79	<ul style="list-style-type: none"> Target is achieved due to engineering knowledge and solving engineering problems.
<p>Action 1: Separate class is arranged for all lateral entry direct second year admitted students to cover entire syllabus from starting with prerequisites.</p> <p>Action 2: Department has been taken effort for slow and advance learner.</p> <p>Action 3: More prominence given on assignment solving, discussed case studies and puzzles.</p>			
PO2: Problem analysis: Identify, formulate and analyze engineering problems			
PO2	2.48	2.77	<ul style="list-style-type: none"> Target achieved first and second year students secure problem solving and analyzing skills through various basic courses like Engineering Mathematics-III, Numerical Methods, programming, Network Analysis and Synthesis & Power System.
<p>Action 1: To solve different level of numerical assignments to identify, formulate and analyze engineering problems students need to do.</p> <p>Action 2: For slow learners remedial coaching class is provided for subject like Network Analysis & Mathematics-III.</p> <p>Action3: Effort has been made for development of mini projects.</p>			
PO3: Design/development of solutions: Design and develop solution for systems or processes that meet the specified needs for health & safety, cultural, societal and environmental considerations			
PO3	2.15	2.80	<ul style="list-style-type: none"> Target achieved, Some of courses like Projects, Audit Courses (Engineering Economics, Basic Human Rights & Value Education, Human Rights and Legislative Procedures)

<p>Action 1: Students are involved in various social events organized by electrical engineering department like vidyut suraksha abhiyan, tree plantation, no vehicle day, blood donation camp, swachta abhiyan</p> <p>Action 2: NSS organizes regularly various events such as PUC camp, Women's Safety measure workshop, traffic awareness program. Geo tagging. etc.</p> <p>Action 3: Road safety awareness events organized by college with the in association RTO.</p>			
<p>PO4: Conduct investigations of problems: Design and Conduct experiments as well as to analyze and interpret data to provide valid conclusions</p>			
PO4	2.28	2.79	<ul style="list-style-type: none"> • Target achieved, university curriculum directly less contributing to attainment of this PO. • Indirect attainment is achieved.
<p>Action 1 : Students are exposed to practical problems through project based learning and industry sponsor projects.</p> <p>Action 2: More attempt to do on planning and execution of internship has been carried out.</p>			
<p>PO5: Modern tool usage: Use the techniques, skills and modern engineering tools necessary practice</p>			
PO5	2.18	2.73	<ul style="list-style-type: none"> • Target achieved, in most of subjects use of open source tool is online expert/industrial talks, spoken tutorial, virtual labs, MOOC courses like NPTEL, Course etc.
<p>Action 1: Department has been initiated for faculty members to focusing on utilizing modern tools for effective teaching which includes online expert/industrial talks, spoken tutorial, virtual labs, NPTEL, Course etc.</p> <p>Action 2: Focuses on availability of modern equipment & tools like availability smart class room and projectors in classroom, industrial training, and industry supported labs the department will take care helped to achieved target.</p>			

PO6: The engineer and society: Apply the broad education necessary to understand the impact of engineering solutions in a global, economic and societal context			
PO6	2.12	2.80	<ul style="list-style-type: none"> Target achieved, it is observed that adding of responsibilities towards solving societal and health issues needs to be focused.
<p>Action 1: Safety concerns and social aspects, open elective courses (Introduction to Non-Conventional energy sources & Electrical Mobility) selected for understanding.</p> <p>Action 2: Projects oriented on Industry (Electrical Power System/ Electrical Machine), Renewable energy sources (Solar), security and social issues were importance is given.</p> <p>Action 3: Industry expert talks are arranged & Industry visit, Field training/industry internship to make students aware about power sector problems related issues.</p> <p>Action 4: Few students are going abroad for completing their post-graduation (MS) in reputed universities in specific domain of their own choice.</p>			
PO7: Environment and sustainability: Understand the impact of engineering solutions in environmental contexts and demonstrate the need of sustainable development			
PO7	2.10	2.79	<ul style="list-style-type: none"> Target is achieved, environment and sustainability related various activities.
<p>Action 1: Different initiatives such as tree plantation, no vehicle day, PUC camp organized.</p> <p>Action 2: Students are encouraged to select their projects to reduce environmental impact by conserving energy, environmental friendly fluids / processes for sustainable Environment.</p> <p>Action 3: Promoted paperless work through online submission to MOODLE and use of one sided paper for notices on notices board etc.</p>			
PO8: Ethics: Carry out professional and ethical responsibility			
PO8	2.13	2.74	<ul style="list-style-type: none"> Target is achieved through good margin. University curriculum offered few courses like Value Education, Human Rights and Legislative Procedures.

Action 1: Individual GFM (Guardian Faculty Member) is appointed for batch of 20 students for personal issues address, for counseling, for teaching ethics.

Action 2: Different industry culture awareness programs are organized to make students aware about industrial ethics which includes session on paper publication, IPR, Plagiarism free content in seminar and project report.

Action 3: In institute student have proper uniform dress code which indirectly contribute to teach ethical values of uniformity.

PO9: Individual and Team work: Function effectively as an individual and as a member or leader in multidisciplinary activities

PO9

2.00

2.80

- Target is achieved; courses like seminar, project, business communication, project based learning courses involve individual and teamwork.

Action 1: Continues presentations are kept for seminar and project to enhance individual and team work.

Action 2: Encouragement to participate in various state/national, zonal, university level competition of project, sports. Participation in social activities. Various days/event origination and management.

Action 3: Students are participating in intercollegiate and university level sport competitions.

Action 4: Projects pertaining to the latest problems were analyzed with frequent interactions from industrial experts and to distribute the work within the team towards its execution of through academic projects.

Action 5: Participation in various extra-curricular activities in other colleges and Promotion of various clubs and activities.

Action 6: Participation in Conferences/Seminars/Workshops/Symposiums.

PO10: Communication: Communicate effectively with engineering community and society at large			
PO10	2.08	2.77	<ul style="list-style-type: none"> Target is achieved, Skills of documentation, communication, presentation during project and seminar is satisfactory but due to rural background there is scope for improvement.
<p>Action 1: Student participated in various online soft skill development courses offered by various MOOC platforms like NPTEL, Course etc.</p> <p>Action 2: Different cultural events, sports, social activities, project competition, industrial visits, Industrial training contributed in students overall development.</p> <p>Action 3: In academic time table separate time slot allotted for soft skill improvement session. Special couch is appointed for the same.</p>			
PO11: Project management and finance: Demonstrate engineering and management principles to carry out projects in multidisciplinary environment, as a member/leader in a team			
PO11	2.35	2.88	<ul style="list-style-type: none"> Target is achieved; students are able to apply knowledge and understanding of the engineering and management principles to their project work, as a member and are able to work effectively in a team.
<p>Action 1: Electrical engineering students participated in various competition project competitions and secured prizes.</p> <p>Action 2: Electrical engineering department is having MOUs with various industries. Numbers of projects are industry sponsored projects which helps student to learn project management and finance.</p>			
PO12: Lifelong learning: Recognize the need for and an ability to engage in life-long learning			
PO12	1.84	2.82	<ul style="list-style-type: none"> Target is achieved, student have demonstrated their lifelong learning ability

<p>Action1: Department Intimated to Students to do MOOC courses like NPTEL, Course Mandatory.</p> <p>Action 2: Students participation in various activities like extracurricular, project competition developed their lifelong learning ability.</p>			
<p>PSO1 Demonstrate knowledge and hands-on experience with electrical machines, power/energy systems, power electronics, and automation problems.</p>			
PSO1	1.97	2.76	<ul style="list-style-type: none"> Target is achieved, student have to undergo domain based learning such as electrical power system, electrical machine etc.
<p>Action1: Guidance given to students and directed to apply knowledge of core Electrical Engineering subjects and recent modern technology in their projects.</p> <p>Action2: Industry or Academic Expert's lecturers from industry are organized for various subjects.</p> <p>Action3: Weak students are supported through various activities like personal counseling, action plan as per there weakness, remedial classes, to solve questions of previous year's university papers.</p> <p>Action4: Department proved different facilities to encourage bright students which involves advanced courses of NPTEL, Course.</p>			
<p>PSO2 Develop the professionals and entrepreneurs in Renewable Energy system, electrical contracting and consultancy using modern tools and techniques.</p>			
PSO2	1.85	2.74	<ul style="list-style-type: none"> Target is achieved, enhanced exposure on concepts and techniques adopted in power plants and industries, courses such as renewable energy resources, electrical consultancy related activities, power system and integrated circuits through NPTEL

Action1: More emphasis is given on student's exposure to industry culture through industrial visit, internship, industry mentorship for project, industry expert's sessions

Action2: Created awareness among student about environmental and societal needs through activities included in open elective national social services, core subject basic human rights & Value Education, Human Rights and Legislative Procedures.

Action3: Students are guided to use latest technology like PLC, SCADA, AUTOCAD, IOT and use them in their projects by considering societal and environmental need.

Action4: Awareness is provided among faculty and students to involve consultancy related activities such as renewable energy resources, department need to take initiative towards energy audit for industry/ organization and also if possible to take any contract for residential wiring etc.