Acknowledgement

The work for the preparation of the OBE Revision 2021, started during April 2019. We would like to place on record our appreciation to all the contributors to the Revision process including experts from Industry, Academia and faculty of Polytechnic Colleges. The contribution of Ms.Yamini C.K, Lecturer in Computer Engineering, GWPC Thrissur and Sreeraj P, Lecturer in Eletronics, GPC Kalamassery in finalizing templates for syllabus, scheme etc., identifying assessment tools and other related documentation based on outcome based Education is especially commendable. The role of Dr. Aiju Thomas, Principal, GPC Perumbavur in the preparation of syllabi for the common subjects needs to be specially mentioned.

The efforts of the core committee members including the Chairmen of the programmes and first year courses are significant and noteworthy. We would also like to acknowledge and thank the Academic Committee members, in particular Dr. Suresh Babu, Prof & Dean Research, CET Trivandrum for guiding the Polytechnic faculty in correlating outcomes to the syllabus, Ms Ani Abraham, Principal, GPC Pala, and Ms. Geethadevi, Principal, GPC Kalamassery for their time and effort in corroborating various documents related to Curriculum Revision 2021.

Our special thanks are due to NITTTR Chennai, especially Dr. Janardhanan Gangathulasi, Head of Centre for Curriculum Development, Planning & Coordination, NITTTR Chennai for vetting the syllabus and the continued support in ensuring that our Polytechnic community is appropriately trained for the effective implementation of the Revision 2021 Curriculum.

Contents

1. Introduction

The Curriculum Revision 2021process was started in August 2019. Feedback from stake holders including students, parents, faculty etc. was collected. The requirements, developments and trends in the Industry were gathered through discussions with appropriate Industry personnel.

Curriculum Revision 2021 is envisaged as an outcome based model with student assessment based on stated objectives and outcomes. Formative assessment to assess progress of learning and Summative assessment to assess learning at the end of the process are included with a choice of number of tools. The End semester examination question paper pattern is expected to measure the learning based on the cognitive level of COs.

The Handbook consists of guidelines and formats to support faculty in the effective implementation of the 'Outcome based Revision 2021' and to enhance the quality of Polytechnic Diploma education in the state.

2. Outcome Based Education

Outcome based Curriculum is designed with the concepts of the desired outcomes as the basis of the entire Curriculum. The contents are developed with the desired outcomes in mind and the assessments are planned and prepared, to verify that the outcomes desired are attained. An Outcome Based Educational system aims at equipping each of its learner with knowledge, competence and skills in the particular programme, that are needed for success in the chosen field after they leave the Institution. By the end of the particular educational experience, every student would have attained the predefined outcomes. The concept of outcome based education or OBE as it is referred to, was pioneered by William G Spady and academician and education psychologist in 1988. In OBE the needs of the 'Learners' are of primary concern and importance.

A top down design approach is taken up in developing the OBE Curriculum. The Program outcomes are first defined, then learner centric teaching learning methods are used that adapt to learner needs and ensure that the stated outcomes are achieved and finally assessments that are aligned to the learning outcomes are followed.

3. Outcome based Revision 2021 Curriculum design (Program Outcomes – Competencies – Performance Indicators – Course List)

The top down approach for the Curriculum design is summarized in the Program Outcomes – Competencies – Performance Indicators – Course List Table included under each programme:

The outcome based Curriculum Revision 2021 adopted the nine Program outcomes published by the National Board of Accreditation (NBA) for Diploma programmes as the Program outcomes for each Diploma programme. The competencies required to attain each of these Program outcomes are identified separately, by the programmes. The performance Indicators to demonstrate the competencies were then identified. The course content for such Performance indicators were then determined.

Each course in the Curriculum of a programme has clearly defined course outcomes (COs) that is mapped to the defined program outcomes of NBA. Every programme in every Polytechnic College shall prepare its own Program Specific Outcome (PSO) based on the local speciality and the Institution vision. Each programme shall prepare clearly defined Program Educational Objectives (PEO) that gives an orientation to where the particular diploma programme is headed for. Wherever desired, Specific Learning Outcomes (SLOs) maybe defined for better Teaching – Learning. The progress of the learner maybe ascertained by using appropriate assessment tools and then validate the attainment of the intended POs and PSOs.

The Program Outcomes – Competencies – Performance Indicators – Course List prepared by the different programmes are included in the Handbook of each program.

4. Curriculum design Gap analysis

The prepared curriculum was verified to ensure that the CO PO gap was within limits, by the following procedure:

a. COs of each course is mapped to appropriate PO, starting from 1st CO of first course in scheme semester wise. The same is repeated for all the courses.
b. The sum of CO values of each column of PO is found
c. The Curriculum is designed such that, the sum of CO values in each column of PO is at least greater than 12 and that there are at least 4 entries in each column of POs.

The Curriculum design Gap analysis of each programme is included separately.

5. Internal Quality Assurance Cell (IQAC)

Every Institution should establish an Internal Quality Assurance Cell (IQAC) as a quality sustenance measure. Since quality enhancement is a continuous process, the IQAC will become a part of the institution's system and work towards realisation of the goals of quality enhancement and sustenance. The prime task of the IQAC is to develop a system for conscious, consistent and catalytic improvement in the overall performance of institutions. For this, during the post-accreditation period, institutions need to channelize its efforts and measures towards promoting the holistic academic excellence including the peer committee recommendations. The guidelines provided in the following pages will guide and facilitate the institution in the creation and operation of the Internal Quality Assurance Cell (IQAC). The work of the IQAC is the first step towards internalization and institutionalization of quality enhancement initiatives. Its success depends upon the sense of belongingness and participation in all the constituents of the institution. It will not be yet another hierarchical structure or a record-keeping exercise in the institution. It will be a facilitative and participative voluntary system/unit/organ of the institution. It has the potential to become a vehicle for ushering in quality enhancement by working out planned interventionist strategies by IQAC to remove deficiencies and enhance quality like the "Quality Circles" in industries.

IQAC – Vision To ensure quality culture as the prime concern for the Higher Education Institutions through institutionalizing and internalizing all the initiatives taken with internal and external support.

Objective

The primary aim of IQAC is

- To develop a system for conscious, consistent and catalytic action to improve the academic and administrative performance of the institution.
- To promote measures for institutional functioning towards quality enhancement through internalization of quality culture and institutionalization of best practices.

Strategies

IQAC shall evolve mechanisms and procedures for

a) Ensuring timely, efficient and progressive performance of academic, administrative and financial tasks;
b) Relevant and quality academic/ research programmes;
c) Equitable access to and affordability of academic programmes for various sections of society;
d) Optimization and integration of modern methods of teaching and learning;
e) The credibility of assessment and evaluation process;
f) Ensuring the adequacy, maintenance and proper allocation of support structure and services;
g) Sharing of research findings and networking with other institutions in India and abroad.

Functions

Some of the functions expected of the IQAC are:

a) Development and application of quality benchmarks
b) Parameters for various academic and administrative activities of the institution;
c) Facilitating the creation of a learner-centric environment conducive to quality education and faculty maturation to adopt the required knowledge and technology for participatory teaching and learning process;
d) Collection and analysis of feedback from all stakeholders on quality-related institutional processes;
e) Dissemination of information on various quality parameters to all stakeholders;
f) Organization of inter and intra institutional workshops, seminars on quality related themes and promotion of quality circles;
g) Documentation of the various programmes/activities leading to quality improvement;
h) Acting as a nodal agency of the Institution for coordinating quality-related activities, including adoption and dissemination of best practices;
i) Development and maintenance of institutional database through MIS for the purpose of maintaining /enhancing the institutional quality;

j) Periodical conduct of Academic and Administrative Audit and its follow-up

k) Preparation and submission of the Annual Quality Assurance Report (AQAR)

Benefits

IQAC will facilitate / contribute to

a) Ensure clarity and focus in institutional functioning towards quality enhancement;

b) Ensure internalization of the quality culture;

c) Ensure enhancement and coordination among various activities of the institution and institutionalize all good practices;

d) Provide a sound basis for decision-making to improve institutional functioning;

e) Act as a dynamic system for quality changes in HEIs;

f) Build an organised methodology of documentation and internal communication.

Composition of the IQAC

IQAC may be constituted in every institution under the Chairmanship of the Head of the institution with heads of important academic and administrative units and a few teachers and a few distinguished educationists and representatives of local management and stakeholders.

The composition of the IQAC may be as follows:

1. Chairperson: Head of the Institution
2. Teachers to represent all level (Three to eight)
3. One member from the Department/ Management
4. Few Senior administrative officers
5. One nominee each from local society, Students and Alumni
6. One nominee each from Employers /Industrialists/Stakeholders
7. One of the senior teachers as the coordinator/Director of the IQAC

The composition of the IQAC will depend on the size and complexity of the institution, accordingly the representation of teachers may vary. It helps the institutions in planning and monitoring. IQAC also gives stakeholders or beneficiaries a cross-sectional participation in the institution's quality enhancement activities. The guidelines given here are only indicative and will help the institutions for quality sustenance activities.

The membership of such nominated members shall be for a period of two years. The IQAC should meet at least once in every quarter. The quorum for the meeting shall be two-third of the total number of members. The agenda, minutes and Action Taken Reports are to be documented with official signatures and maintained electronically in a retrievable format.

It is necessary for the members of the IQAC to shoulder the responsibilities of generating and promoting awareness in the institution and to devote time for working out the procedural details. While selecting these members several precautions need to be taken. A few of them are listed below:

- It is advisable to choose persons from various backgrounds who have earned respect for integrity and excellence in their teaching and research. Moreover, they should be aware of the ground realities of the institutional environment. They should be known for their commitment to improving the quality of teaching and learning.

- It is advisable to change the co-ordinator after two to three years to bring new thoughts and activities in the institution.

- It would be appropriate to choose as senior administrators, persons in charge of institutional services such as library, computer center, estate, student welfare, administration, academic tasks, examination and planning and development.

- The department/ management representative should be a person who is aware of the institution's objectives, limitations and strengths and is committed to its improvement. The local society representatives should be of high social standing and should have made significant contributions to society and in particular to education.

The role of the Coordinator

The role of the coordinator of the IQAC is crucial in ensuring the effective functioning of all the members. The coordinator of the IQAC may be a senior/competent person with experience and exposure in quality aspects. She/he may be a full-time functionary or, to start with, she/he may be a senior academic /administrator entrusted with the IQAC as an additional responsibility. Secretarial assistance may be facilitated by the administration. It is essential that the coordinator may have sound knowledge about the computer, data management and its various functions such as usage for effective communication

Operational Features of the IQAC

Quality assurance is a by-product of ongoing efforts to define the objectives of an institution, to have a work plan to achieve them and to specify the checks and balances to evaluate the degree to which each of the tasks is fulfilled. Hence devotion and commitment to improvement rather than mere institutional control is the basis for devising procedures and instruments for assuring quality. The right balance between the health and growth of an institution needs to be struck. The IQAC has to ensure that whatever is done in the institution for "education" is done efficiently and effectively with high standards. In order to do this, the IQAC will have to first establish procedures and modalities to collect data and information on various aspects of institutional functioning. The coordinator of the IQAC will have a major role in implementing these functions. The IQAC may derive major support from the already existing units and mechanisms that contribute to the functions listed above. The operational features and functions discussed so far are broad-based to facilitate institutions towards academic excellence and institutions may adapt them to their specific needs.

The Institutions are requested to submit the AQAR after one year from date of Accreditation every year. A functional Internal Quality Assurance Cell (IQAC) and timely submission of Annual Quality Assurance Reports (AQARs) are the Minimum Institutional Requirements (MIR) to volunteer for second, third or subsequent cycle's accreditation.

The Annual Quality Assurance Report (AQAR) may be the part of the Annual Report. The AQAR shall be approved by the statutory bodies of the HEIs (such as Governing

Council/ Executive Council/Board of Management) for the follow up action for necessary quality enhancement measures.

The IQACs may create its exclusive window tab on its institutional website for keeping the records, Peer Team Reports, AQAR, and Certificate of Accreditation Outcomes and regularly upload/ report on its activities, as well as for hosting the AQAR.

***Link address:**

http://naac.gov.in/images/docs/AQAR_ONLINE/IQACAQAR_Guideline_Affiliated-constituent-April-2020.pdf.pdf

*** Institutions should ensure the latest available IQAC norms are followed.**

6. Mathematics - I

Bridge Course:

A bridge course as detailed below is suggested for semester 1 student.

Objectives	Syllabus	Outcome	Duration	Assessment
To acquire basic mathematical knowledge for solving problems	Algebra of Mathematical Operations, simplification, operations on fractions, LCM, Exponential laws, algebraic Identities, BODMAS rule, logarithmic law, Pythagoras theorem, roots and squares, factorization. Solution of linear Equation in one variable	Student will be able to solve basic mathematical problems	10 hours	Tutorial & written test

7. Internship I

Programme : **Diploma in Engineering and Technology / Commercial Practice / Management**	
Course Code : **3009**	Course Title: **Internship I**
Semester : **3 weeks after Semester 2**	Credits: **2**
Course Category: **Common Course**	

Course Objectives:

The objectives of internship training are to:

- Provide possible opportunities to learn and understand technical/supervisory skills required to be developed by the student as he advances the programme.
- Expose current technological developments relevant to the subject area.
- Utilize experience gained from the 'Internship' in classroom discussions.
- Create conditions conducive to the quest for knowledge and its applicability on the job.
- Apply technical knowledge in real industrial situations.
- Expose students to the engineer's responsibilities and ethics.
- Promote academic, professional, and/or personal development.
- Promote self-learning

Course Outcomes

On completion of the course student will be able to:

COn	Description	Duration (Hours)	Cognitive Level
CO1	Demonstrate the importance of teamwork in engineering.	120 periods	Applying
CO2	Demonstrate sustainable engineering practices for the benefit of the society.		Applying
CO3	Demonstrate the ability of learning current technological trends.		Applying
CO4	Assimilate engineering responsibilities and professional ethics.		Applying

CO-PO Mapping

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1						3	
CO2					3		
CO3							3
CO4					3		

3-Strongly mapped, 2-Moderately mapped, 1- Weakly mapped.

Course Outline:

The duration of summer internship 1 shall be three to four weeks during summer vacation and all procedures have to be completed within three weeks of the beginning of Semester 3.

The following activities will be considered as Summer Internship 1

- Inter/Intra Institutional/Industrial activities viz; Training with higher Institutions/industry
- Soft skill training organized by Training and Placement Cell of the respective institutions;
- Contribution at incubation/ innovation /entrepreneurship cell of the institute
- Participation in conferences/ workshops/ competitions etc
- Learning at Departmental Lab/Tinkering Lab/ Institutional workshop
- Working for consultancy/ research project within the institute/industry and
- Participation in all the activities of Institute's Innovation Council for eg: IPR workshop/Leadership Talks/ Idea/Design/ Innovation/ Business Completion/ Technical Expos etc.

Each student shall start her/his internship only after prior approval from respective HOD/Principal.

Text/Reference:

T/R	Book Title/Author
R1	AICTE Internship policy: Guidelines & Procedures

8. Internship II

Program : **Diploma in Engineering and Technology / Commercial Practice / Management**	
Course Code : **5009**	Course Title: **Summer Internship II**
Semester : **After Semester 4**	Credits: **3**
Course Category: **Summer Internship**	
Periods per week: **4 Weeks**	Periods per semester: **160**

Course Objectives:

The objectives of internship training are:

- Expose students to safety standards in industry.
- Provide possible opportunities to learn, understand, and sharpen the real time technical / supervisory skills required at the job.
- Provide exposure to the current technological developments relevant to the subject area of training.
- Apply the Technical knowledge in real industrial situations.
- Expose students to the engineer's responsibilities and ethics.
- Familiarize students with various materials, processes, products and their applications along with relevant aspects of quality control.
- Promote academic, professional and/or personal development.
- Expose the students tofuture employers.
- Introduce the social, economic and administrative considerations that influence the working environment of industrial organizations
- Expose students to the psychology of the workers and their habits, attitudesand approach to problem solving.

Course Outcomes:

COn	Description	Duration (Hours)	Cognitive Level
CO1	Apply theoretical concepts gathered from the classroom to practices followed in industry.		Applying

CO2	Identify industrial norms on safety, duties, responsibilities, and ethics of an engineer.	160 periods	Applying
CO3	Identify the social, economic and administrative factors that influence the working environment of industrial organizations.		Applying
CO4	Develop experience in writing Technical reports/projects.		Applying
CO5	Demonstrate the ability of learning current technological trends.		Applying

CO-PO Mapping

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3						
CO2					3		
CO3						3	
CO4						3	
CO5							3

3-Strongly mapped, 2-Moderately mapped, 1-Weakly mapped

Framework

Schedule	Duration	Activities	Credits
Summer Vacation after 4th Semester	**4 weeks**	Industrial/Govt./NGO/MSME/ Rural Internship/ Innovation / Online Internship/ Entrepreneurship/ Industry on Campus (IoC)	3

Summer Internship shall be started by a student only after prior approval of HOD/Principal. Summer internship II shall be scheduled during summer vacation after 4th semester. The credit requirement for summer internship II can be achieved through any one of the activities listed below.

Internship II can be undergone as follows:

1. **Industrial Internship Program:** The student can opt to undergo internship with Industry/ NGO's/ Government organizations/ Micro /Small /Medium enterprises depending upon their career plan. They are permitted to do internship only with organizations which have an industry attached to it.
2. **Entrepreneurial Internship Program:** The students can choose to undergo Innovation or Entrepreneurship related activities as part of the internship. The option to work on innovation or entrepreneurial activities resulting in a start-up can be encouraged. The student can work at incubation centers, start-up villages, maker villages throughout semester 5 over and above his academic hours.
3. **Social Internship Program**: Projects/Programs for the transformation of nearby villages through technological intervention for networking and localized employment, convergence, cost reduction, Youth and Women empowerment, etc. shall be identified for the social internship program. The internship shall be relevant to the program of study and should aim to apply technology to enhance the living standards of the community.
4. **Campus-Industry Internship Program:** Production centers/Industry supported centers on camps/ Manufacturing units for supporting MSME and entrepreneurs (These are centers setup on the campus using infrastructure including that of the Polytechnic college) can be utilized for Internship where students can involve throughout the semester or previous semesters outside the normal academic hours.
5. **Online Internship Program:** Online internship and certification programs offered by Multinational Companies/ Indian Companies with multinational visibility/ State or Central Government Establishments/ PSUs shall be accepted for the credit requirement of Summer Internship II. SITTTR shall issue an approved list of such internship programs on annual basis. In case no such list is published, the previous year's list shall prevail.
6. **Rural Internship Program:** There may be rural locations or locations where there is not sufficient industry to support internships specific to the program of study. In such a case, deviations from the mentioned norms in selecting industry may be permitted subject to the approval of the Academic Council of the institution.

Students shall submit report on the internship undergone. Feedback from officer in charge of cell /industry shall be collected.

Reference:

T/R	Book Title/Author
R1	AICTE Internship policy: Guidelines & Procedures

9. Sports and Yoga (Theory)

Syllabus:

Module	Topics	Periods
1	**Concept of Health and Physical Education** a) Health – Definition and spectrum of health b) Various aspects of health-physical health, mental health, social health, spiritual health c) Factors influencing health-Biological factors, environmental factors, socio-cultural factors, personal factors. d) Physical Education - Meaning and definition, aims, objectives and importance of physical education	5
2	**Introduction to fitness** a) Meaning and importance of physical fitness. b) Components of physical fitness-Health related and skill related fitness. c) Means of fitness development-aerobic and anaerobic activities, sports and games, yoga and recreational activities. d) Principles of use and disuse. Relationship between duration and severity of exercise – stitch, cramps. Oxygen debt and second wind e) Posture-Meaning and concepts of posture, classification of posture- Endomorph, Ectomorph and Mesomorph, Dynamic postures- sitting, standing, walking, running, lying - Postural deformities- Kyphosis, Lordosis, Scoliosis, Knock knee, Bow leg, Flat foot. f) Health risk behaviours- Effects of Drugs, Alcohol, Smoking, Dietary abuse and Inactivity.	10

3	**First Aid** a) Definition and purpose of first aid Principles and Ethics of First Aid b) First Aid – General Procedure -first aid kit. c) Wounds (types and its management) d) Fractures (types and its management) e) First aid for –burns, snake bite, drowning, unconsciousness, electric shock, chocking, sun stroke, bleeding. f) Bandaging techniques g) Techniques of carrying injured persons. h) Cardiopulmonary resuscitation (CPR). i) Doping- Meaning, concept,side effects	8
4	**Food and Nutrition** a) Classification of food b) Calories and daily requirement of calories. c) Balanced diet d) Food pyramid e) Caloric value of Indian foods	5
	Internal Test Paper	**2**
	Total Periods	**30**

Practical:

Module Outcomes	Description	Duration (Hours)	Cognitive level
CO1	**Apply warming up and warming down exercises in daily physical fitness activities.**		
M1.01	Understanding the effects and benefits of warming up and warming down before and after physical exercise on muscular, skeletal and cardiorespiratory system.	4	Applying
M1.02	Applying this physical training method habit in lifelong period.	2	Applying

CO2	**Apply stretching, rotation and flexibility exercises in daily physical fitness activities.**		
M2.01	Understanding the effects and benefits of flexibility through various types of stretching exercises.	2	Understanding
M2.02	Applying the methods of stretching exercises throughout the life for maintaining the quality of flexibility	2	Applying
CO3	**Make use of acquired yoga asana skills and pranayama methods in daily lifestyle.**		
M3.01	Understanding the effects and benefits of yoga asana and pranayama as preventive measures on various systems of human body.	8	Understanding
CO4	**Utilize the acquired weight training skills for the development of muscular strength and development.** **Utilize the acquired skills in playing sports & games.**		
M4.01	Understanding the effects and benefits of weight training for the development of muscular and skeletal systems of human body.	2	Understanding
M4.02	Applying the weight training methods for the development of muscular strength, power, and endurance	2	Applying
M4.03	Understanding the basic rules, regulations and various skills of sports games.	2	Understanding
M4.04	Utilizing the mental and social qualities acquired through sports and games practice and participation for solving the problems arising in life situation.	2	Remembering
M4.05	Utilizing the physical, mental and social qualities acquired through sports and games practice and participation for better social life	2	Remembering
M4.06	Utilizing the acquired qualities like leadership, coordinating ability, punctuality, cooperation, fair play, unity, tolerance etc. for functioning with various types of individuals or teams.	2	Remembering

10.Sample Rubrics

i) Rubrics for grading Case Study

Criteria	Excellent (5 pts)	Very good (4 pts)	Good (3 pts)	Average (2 pts)	Poor (1 pt)
Identification of main issues / problems	Identifies and demonstrates a sophisticated understanding of the main issues / problems in the case study	Identifies and demonstrates an accomplished understanding of most of the main issues / problems in the case study	Identifies and demonstrates an acceptable understanding of some of the main issues / problems in the case study	Identifies and demonstrates a weak understanding of some of the main issues / problems in the case study	Tries to do some identification off the main issues / problems in the case study
Analysis & evaluation of issues / problems	Presents an insightful and thorough analysis of all identified issues / problems	Presents a thorough analysis of most of the identified issues / problems	Presents a superficial analysis of some of the identified issues / problems	Presents an incomplete analysis of some of the identified issues / problems	Tries to do an analysis of the identification
Recommendations on effective solutions / strategies	Provides recommendations based on evidence provided in the case study	Provides recommendations with limited reasoning and evidence from the case study	Provides hasty recommendations without thought to the case study	Little actions suggested without thought to the case study	Inappropriate solutions proposed
Grammar, spelling, writing style & formatting	Free of errors. Writing is well organized and logically coherent	Occasional grammar, spelling and mechanical errors. Writing is well organized and generally logically consistent	Inconsistent grammar, spelling and punctuation. Writing is somewhat organized and less consistent logically	Several errors in grammar, spelling and mechanics. Writing is not well organized and not logically consistent	Full of grammar and spelling mistakes. Writing is rambling and often doesn't make sense

ii) Rubrics for grading Oral Presentation

Criteria	Excellent (4 pts)	Good (3 pts)	Average (2 pts)	Poor (1 pt)
Attention to audience	Engaged audience and held their attention throughout with creative articulation, enthusiasm and clearly focused presentation	Engaged audience and held their attention most of the time by remaining on topic and presenting facts with enthusiasm	Little attempt to engage audience	Did not attempt to engage audience
Clarity	Development of content is clear through the use of specific and appropriate examples; transitions are clear with a good flow	Sequence of information is well-organized for most part, but more clarity with transitions is needed	Content is loosely connected, transitions lack clarity	No apparent logical order of presentation; unclear focus
Content	Exceptional use of material that clearly relates to focused content; abundance of various supported materials	Information relates to clear content; many relevant points, but they are somewhat unstructured	Content is clear, but supporting information is disconnected	Content is unclear and information appears randomly chosen
Presentation length	Presented within the allotted time; presented all material	Remained close to the allotted time; may not have had time to present some material	Exceeding or falling short of allotted time or did not have time to present all material	Greatly exceeding or falling short of allotted time
Speaking skills	Exceptional confidence with material displayed through calm, clear articulation, eye contact, and enthusiasm	Clear articulation of ideas, but apparently lacks confidence with material	Little eye contact; fast speaking rate, little expression, mumbling	Monotone; speaker seemed uninterested in the material

iii) Developmental Rubrics for Assignment

Criteria	Excellent (3)	Good(2)	Unsatisfactory (1)	Marks Obtained (Max. 3)
Organization	Writing is coherent and logically organized with transitions used between ideas and paragraphs to create coherence. Overall unity of ideas is present.	Writing is coherent and logically organized. Some points remain misplaced and stray from the topic. Transitions evident but not used throughout essay.	Writing lacks logical organization. It shows some coherence but ideas lack unity. Serious errors.	x
Level of content	Content indicates original thinking and develops ideas with sufficient and firm evidence.	Content indicates thinking and reasoning applied with original thought on a few ideas.	Shows some thinking and reasoning but most ideas are underdeveloped and unoriginal.	x
Style of presentation	Attains college level style; tone is appropriate and rhetorical devices used to enhance content; sentence variety used effectively	Approaches college level usage of some variety in sentence patterns, diction, and rhetorical devices	Mostly in elementary form with little or no variety in sentence structure, diction, rhetorical devices or emphasis.	x
Format	Meets format and assignment requirements; margins, spacing, and indentations are correct; essay is neat and correctly assembled	Meets format and assignment requirements; generally correct margins, spacing, and indentations; essay is neat but may have some assembly errors.	Fails to follow format and assignment requirements; incorrect margins, spacing and indentation; neatness of essay needs attention.	x
Bibliography	All relevant	Bibliography	Bibliography	x

	bibliographic information is included	contains most relevant information	contains very little information	
TOTAL				**xx**

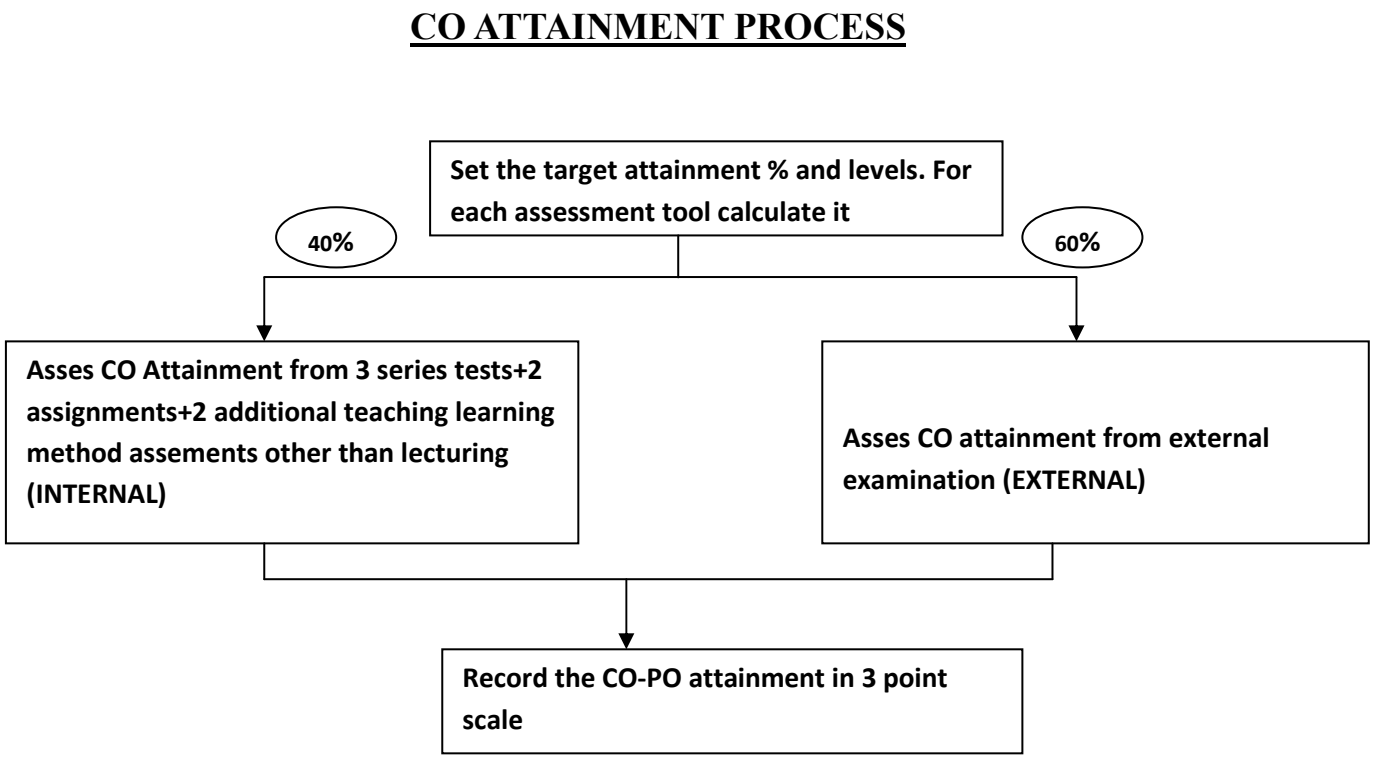
iv) Rubrics for assessing Student group activity

Skills	Excellent – Exceeds the expectations	Good - Meets expectations	Average - Does not fully meet expectations	Score
	3	2	1	
Commitment	Always focused on the task and what needs to be done. Self-directed.	Does not cause problems in the group. Focuses on the task and what needs to be done most of the time.	Sometimes focuses on the task and what needs to be done. Must be reminded to keep on task.	x
Team role fulfilment	Participated in all group meetings. Assumed leadership role as necessary. Did the work that was assigned by the group.	Participated in most group meetings. Provided leadership when asked. Did most of the work assigned by the group.	Participated in some group meetings. Provided some leadership. Did some of the work assigned by the group.	x
Attitude	Always displays positive attitude.	Generally, displays positive attitude.	Rarely displays positive attitude.	x
Communication skills	Listen and speak fair amount. Always listens to, shares with, and supports the efforts of others. Provided effective feedback to other members.	Listen but sometimes talk too much.Provide some effective feedback to others.	Talks good. Never show interest in listening. Provided little feedback to others.	x

Cooperation with Others	Highly productive and co-operative. Works extremely well with others. Never argues.	Cooperative. Works well with others. Rarely argues.	Not fully Cooperative. Requires directions and leadership. Argues sometimes.	x
TOTAL				**xx**

11. Sample CO Attainment

(This *is a sample CO attainment calculation method. Other methods could also be used.)*



(While calculating CO attainment different weightages can be considered for tests and assignments)

Target Attainment Level Setting

Program has to set course outcome attainment level for all courses. It is convenient to set a particular % for a batch rather than setting different % for each course, to make comparison between passout batches of a particular programme. For example if for 2013-16 batch, target attainment level is set as 60% then for the later batches, attainment level can be incremented gradually. Target attainment can be set based on students previous pass percentage, university average %, or average of past three year passed out batches.

Target Attainment level can also be set as different values for each course by considering previous student's performance in direct assessments in each course.

INTERNAL CO ATTAINMENT CALCULATION

Continuous internal assessments can include summative assessments such as class tests, open book tests, online tests, objective type tests etc. and formative assessments such as assignments, case studies, portfolios, group tasks etc. For each of these assessments record the attained mark towards each CO and perform the following steps:

1. Record the CO marks scored by each student, out of 100
2. Find the number of students (N) getting more than the target attainment % for each CO (e.g. more than 60% target (better not to set the target % below 50%)
3. Calculate % of No. of students' who attained (P) target attainment (e.g 60%) [N/(total no. of student)*100]
4. Record CO-PO attainment based on P on a scale of 3 as follows:

   For example If P>=70% then set as 3,

   If P is between 50% - 70 % then 2 ,

   If P is between 40% - 50% then set as 1,

   Less than 40% then set as 0.

   The above level settings can be modified depending on the students' performance

External CO Attainment Calculation

It is not possible to record CO assessment for external examination as it is centralized valuation conducted by SBTE.

For external examination do the following

1. For all students, record total marks scored by students out of 100 [If CGPA convert into %]
2. Find the number of students (N) getting more than the target attainment % for each CO (e.g. more than 60% target (better set the same target for CIA and ESE)

3. Calculate % of student's attained (P) target attainment (e.g. 60%) [N/(total no. of students)*100]
5. Record CO-PO attainment based on P. Convert the same to scale of 3 as follows:

For example: If P>=70% then set as 3

If P is between 50%-70 % then 2,

If P is between 40% -50% then set as 1

less than 40% then set as 0.

These levels can be set depending on the students' performance

TOTAL CO-PO attainment = 40% of CIA attainment + 60% of ESE attainment

(40% and 60% are set based on the syllabus mark distribution)

SAMPLE CALCULATION SHEET

INTERNAL MARKS SCORED TOWARDS EACH CO AND IT'S ATTAINMENT

		TS-1	**TS-2**	**TS-3**	**TS-3**	**AS-1**	**AS-2**	**AS-3**	**Other ass-1**	**Other ass-2**
		25	**25**	**27**	**23**	**15**	**15**	**15**	**15**	**15**
Roll no.	**Name of Student**	**C104.1**	**C104.2**	**C104.3**	**C104.4**	**C104.1**	**C104.2**	**C104.4**	**C104.2**	**C104.3**
1	AISWARYA M K	21.5	0	0	0	15	15	15	14	15
2	AKHILA K C	9	3	5	13	15	15	15	14	15
3	ALAN MARIYA C A	21	23.5	23	21.5	15	15	15	14	14
. . .										
62	VISMAYA BABU	23.5	19	18	13	15	15	15	14	14
No .of students Attained the target		**38**	**27**	**26**	**31**	**62**	**60**	**60**	**59**	**59**

60%										
Number of students attained converted to out of 3 point scale		**2**	**1**	**1**	**1**	**3**	**3**	**3**	**3**	**3**

After each assessment attainment level acquired shall be improved by conducting weaker coaching and retest.

		INTERNAL (converted to 100)				**EXTERNAL**	
		100	**100**	**100**	**100**		
Roll no.	**Name of Student**	**C104.1**	**C104.2**	**C104.3**	**C104.4**	**GPA (10)**	**GPA (100)**
1	AISWARYA M K	91.25	52.73	35.71	39.47	8	80
2	AKHILA K C	60	58.18	47.62	73.68	0	0
3	ALAN MARIYA C A	90	95.45	88.1	96.05	8	80
. . .		50	63.64	39.29	71.05	0	0
62	VISMAYA BABU	96.25	87.27	76.19	73.68	7	70
NO. of students Attained the target 60%		**48**	**55**	**39**	**51**		**45**
Number of students attained converted to out of 3 point scale		**3**	**3**	**2**	**3**		**3**

CO attainment			
	Direct (100)		**Total CO attainment (40% internal and 60% external)**
CO/PO	**INTERNAL**	**EXTERNAL**	
C104.1	3	3	3

C104.2	3	3	3
C104.3	2	3	2.6
C104.4	3	3	3

TARGET CO-PO MATRIX										
CO/PO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PSO1**	**PSO2**	**PSO3**
C104.1	3				1		1	1		1
C104.2	3				1		1	1		1
C104.3	3				1		1	1		1
C104.4	3				1		1	1		1
C104	**3**				**1**		**1**	1		1

CO-PO ATTAINMENT MATRIX											
CO/PO attained	**CO/PO**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
3	**C104.1**	3				1		1	1		1
3	**C104.2**	3				1		1	1		1
2.6	**C104.3**	2.6				0.87		0.87	0.87		0.87
3	**C104.4**	3				1		1	1		1
		2.9				**0.97**		**0.97**	**0.97**		**0.97**

***Consider C104.3 to PO5 correlation (where target is 1 and attainment of C104.3 is 2.6),C104.3 to PO5 attainment can be calculated as (2.6/3)*1 . Apply the same for all.**

(While calculating CO attainment, an indirect CO attainment component (eg: Course Exit Survey can also be considered. In such cases the indirect component may be limited to 20%)

12.Sample PO Attainment

(This is a sample. Other methods can be used)

SAMPLE PO ATTAINMENT CALCULATION

Total PO attainment=80% Direct assessment + 20% of Indirect assessment
= 80% of CO-PO attainment+20% of PROGRAM Exit survey

SAMPLE TOTAL PO ATTAINMENT SHEET

Total PO attainment can be obtained by taking 80% of CO-PO attainment and 20% of program exit survey. Toleration can be applied on the program exit survey.
The following steps maybe followed for PO attainment:

1. Set PO attainment target. PO attainment target can be set based on students' performance in the board exam. In the sample presented below, Average of previous three years board result for a particular programme is 70%, then PO attainment target is 70% and on a 3 point scale it is 2.1
2. Record CO-PO attainment calculated for each CO in the programme, against corresponding PO.
3. Sum the CO values on 3 point scale for each PO

CO PO and CO PSO ATTAINMENT OF 2015-2018 BATCH												
Sl. No	**CO**	**Course Name**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PSO 1**	**PSO 2**	**PSO 3**
1	C101	English for communication I										
2	C102	Engineering Mathematic sI	2									
3	C103	Engineering Physics I	3									

4	C104	Engineering Chemistry I	2.9				0.97		0.97	0.97		0.97
. . .												
7	C606	Smart Device Programming Lab	1	3	2	2	1			3		3

PO Direct(CO-PO attainment)	1.8	2.2	2.1	1.9	1.1	1.3	1.3	2.1	1.5	2.0
PO Indirect (Program Exit survey	2.1	2.2	2.2	2.2	2.3	2.3	2.4	2.4	2.4	2.4
Attained PO(80% Direct and 20%Indirect)	1.9	2.2	2.1	1.9	1.4	1.5	1.5	2.1	1.7	2.1

(The indirect component in the PO/CSO attainment calculation may be limited to 20%)

13.Student feedback about teacher (Theory course)

1. Knowledge of the teacher in the subject

Excellent Very Good Good Fair Poor

2. Clarity and understandability of Teacher's explanations

Excellent Very Good Good Fair Poor

3. Teacher's Willingness to help in all aspects of Personal, Academic, Extra Curricular

Yes No May be

4. Whether the teacher dictates note only without explanation

Yes No May be

5. Teacher's ability to organize lectures

Excellent Very Good Good Fair Poor

6. Speed of Presentation

Just Right Too fast Too slow

7. Behavior of the teacher

Partial Impartial Moderate

8. Whether the teacher promotes speaking in English through TLM (Teaching Learning Methods Group Discussion,Quiz etc)

Excellent Very Good Good Fair Poor

9. Whether teacher using ICT tools(Computers/laptops/LCD Projector/NPTEL videos)

Yes No May be

10. Does the teacher spend time for moral ethics

Yes No May be

11. Whether the teacher improves the leadership qualities

Always Often Sometimes Rarely Never

12. Does the teacher giving current industry aspect of the subject

Yes No May be

13. Overall Teaching effectiveness of the teacher

Excellent Very Good Good Fair Poor

14 .Any other relevant information

…….

14. Student feedback about teacher (Practical course)

1. Knowledge of the teacher in the lab

Excellent Very Good Good Fair Poor

2. Regular checking of laboratory Record books

Excellent Very Good Good Fair Poor

3. Were sufficient numbers of practical conducted to illustrate important topics of the course content?

Excellent Very Good Good Fair Poor

4. General interaction of teacher with students.

Partial Impartial Moderate

5. Does the teacher spend time for moral ethics

Yes No May be

6. Were tests evaluated objectively?

Just Right Too fast Too slow

7. Were test papers discussed in the class after the test?

Yes No May be

8. Does the teacher giving current industry aspect of the subject

Yes No May be

9. Overall Teaching effectiveness of the teacher

Excellent Very Good Good Fair Poor

10. Any other relevant information

……

14. Sample Course Exit Survey

(Courtesy GPC Kasargode)

The Course Exit survey maybe conducted for every course at the completion of each semester

Typically, questions are answered by the students on a scale of 1 to 5 – most negative to most positive response.

The Form can start with an appeal to the student:

"Your considered feedback on the course will be of great value to the concerned instructor and tothe department in enhancing the quality of learning.Thank you for your quality time."

Questionnaire	1	2	3	4	5
I. Course Management					
1. The course objectives were clear					
2. The course procedures and assignments support course objectives					
3. The course presentations explain the concepts of the course effectively					
4. The course syllabus was clear to understand and useful in my career					
5. The grading of the course was fair					
6. The use of technology during the course enhanced my understanding of the subject					
7. The course material was of high-quality and apt for learning					
8. The course was organized in a manner that helped me understand the underlying concepts					
9. The assignments given were fun to do and enhanced my learning experience					
10. There was no repetitive content in the course					
II. Instructor Evaluation					
1. Was the instructor considerate to you?					

2. Was the instructor effective in teaching in the course?					
3. Was the instructor enthusiastic about the course?					
4. Was the speed at which the instructor delivered the course material right?					
5. Was the instructor prepared to answer all queries related to the course?					
6. The instructor had excellent communication skills.					
7. The instructor encouraged the students to raise questions in the classroom.					
8. Instructor had mastery over the content.					
9. The general attitude of the instructor was quite supportive.					
III. Learning Environment					
1. Positive interaction between students and Instructor existed.					
2. Classroom discussions were encouraged and well moderated.					
3. Required learning resources were easily available.					
4. The instructional materials increased my knowledge and skills in the subject matter.					
IV. Course Outcomes					
1. Course outcomes were discussed in priori.					
2. Course outcomes were clear.					
3. Instructional activities helped in the attainment of the COs.					
4. Time devoted to each CO was quite adequate.					
5. Pace of coverage was comfortable throughout.					

6. Assessments were relevant to the stated COs.					
7. The course gave me the confidence to do more advanced work in the subject					
8. I would highly recommend this course to other students					
Total Score					

15. Sample Program exit survey

(Courtesy GWPC Thrissur)

The Survey is to be conducted for each batch, by the programme, at the end of their six semesters of study

The Department of xxxxx Engineering, Govt. Polytechnic College, xxxxx solicits feedback from our stakeholders (i.e. Alumni Members, Employers, parents and staff), to gauge whether the Diploma (xxxxx Engineering) programme offered by our department fulfils the requirements for the students to be a competent engineer in pursuing successful professional life after their diploma. The objective of the survey is to assess our diploma holders' accomplishments after graduation (PEOs) and, also, their attributes after completing the programme (POs).

We are grateful if you could spare some time to complete this survey.

NAME & REG. NO. OF STUDENT :

BATCH :

Rating Scale - **3-Excellent, 2- Good, 1-Average , 0 - Poor**

(Please put a tick 'v ' mark on relevant options)

1. Indicate how well do you agree with relevance of each Program Outcome (PO) of the programme.

No	Program Outcomes (POs)	Degree of relevance			
		3	2	1	0
1	**Basic knowledge and Discipline specific knowledge:** An ability to : Apply knowledge of basic mathematics, science and engineering fundamentals and engineering specialization to solve the engineering problems.	□	□	□	□
2	**Problem analysis:** An ability to identify and analyse well-defined engineering problems	□	□	□	□

	using codified standard methods				
3	**Design/development of solutions:** An ability to design solutions for well-defined technical problems and assist with the design of systems components or processes to meet specified needs.	□	□	□	□
4	**Engineering Tools, experimentation, testing**: Ability to apply modern engineering tools and appropriate technique to conduct standard tests and measurements.	□	□	□	□
5	**Engineering practices for society, sustainability and environment:** Ability to apply appropriate technology in context of society, sustainability, environment and ethical practices .	□	□	□	□
6	**Project Management:** Ability to use engineering management principles individually, as a team member or a leader to manage projects and effectively communicate about well-defined engineering activities..	□	□	□	□
7	**Life-long learning:** Ability to analyse individual needs and engage in updating in the context of technological changes.	□	□	□	□

2. Indicate how well do you agree with relevance of each Program Specific Outcome (PSO) of the programme.

No	Program Specific Outcomes (PSOs)	Degree of relevance			
		3	2	1	0
1	understand the structure and development of software systems and demonstrate adeptness in programming	□	□	□	□
2	apply understanding of basics in hardware and networking appropriately	□	□	□	□
3	provide technical solutions using acquired knowledge with concern for society and environment.	□	□	□	□

3. List a few courses or training that you wish to include in the Diploma (xxxxx) programme which you think are important for building up a good career.

Place: Name :

Date: Signature :

The Department of xxxxxxx Engineering would like to thank you for your willingness in spending your valuable time to complete this questionnaire. Your time and effort is much appreciated.

Head of the Department

16. Sample Course File Index (Theory course)

Sl. No.	Table of Contents	Page Number
1	Course File Facing Sheet	
2	Table of Contents	
3	Class Time table	
4	Faculty Workload	
5	Student List	
6	Course Syllabus with Recommended Books	
7	Institution Vision & Mission, Department Vision & Mission, PEOs , PO's and PSO	
8	CO-PSO / PO Mapping matrix	
9	Course Plan	
10	Course log and Attendance from TEAMS	
11	Internal Exam Question Papers with quality checking	
12	Internal Examination Result Analysis	
13	Weaker student coaching schedule and proof	
14	Two Formative Assesments (Teaching and Learning Methods Proof)	
15	Assesment of assignment	
16	CE Report	
17	Final Internal Mark Report	
18	Previous External Exam Question Papers	
19	Current External Exam Question Paper with CO PO, CO PSO mapping	
20	Result of External Exam	
21	Attainment of Course Outcome (CO)	
22	Attainment of PO/PSO	

17. Sample Course File Index (Practical course)

Sl. No.	Table of Contents	Page Number
1	Course File Facing Sheet	
2	Table of Contents	
3	Class Time table	
4	Faculty Workload	
5	Student List	
6	Course Syllabus with Recommended Books	
7	Institution Vision & Mission, Department Vision & Mission, PEOs, PO's and PSO	
8	CO-PSO / PO Mapping matrix	
9	Course Plan	
10	Course log and Attendance from TEAMS	
11	Internal Exam Question Papers	
12	Internal Examination Result Analysis	
13	Weaker student coaching schedule and proof	
14	Two Experimental methodology (Teaching and Learning Methods Proof)	
15	TEKerala CE Report	
16	TEKerala Internal Mark Report	
17	Attainment of Course Outcome(CO)	
18	Attainment of PO/PSO	
19	Lab log book	
20	Rough Record sample	
21	Fair record sample	

18. Sample Course File Index (Project)

PROJECT AND SEMINAR COURSE FILE INDEX	
1	Course File Face Sheet
2	Table of Contents
3	Class Time Table
4	Faculty Workload
5	Student List
6	University syllabus with Recommended books
7	Institution Vision and Mission
8	PEO & PO, PSO
9	CO-PO, CO-PSO Mapping
10	Course Plan
11	Student Classification
12	Project Abstract and Seminar Synopsis
13	Project and Seminar selection list
14	Allocation Guide for Project &Seminar
15	Project classification (based on Application, product, research, review etc) according to industry needs
16	Project review mark sheets (projects to monitor and evaluate (marksheet must specify individual marks (based on presentation skill, logics, development skill, marketing skill etc) and measure group skill of individual co-ordination, behavior etc.)
17	Seminar Marks Sheet
18	Ppt collected for Seminar
19	Specimen reports of Seminar and Project
20	Project Exhibition / Final Project evaluation
21	Final Internal and External Mark Sheet(tekerala)

19. First Semester CO – PO Mapping with Justification for all Courses in Engineering & Technology

Semester :**1**	Course Title: **Communication Skills in English**

CO	Description	Mapped POs	Mapped Values	Justification
CO1	The learners listen, identify and comprehend the main idea and supporting details of the listening passage	PO6	1	Active listening is a key factor in comprehending information, instructions and viewpoints of other members of the team and manage projects effectively
CO2	The learners apply different language functions and communicate effectively in the workplace and daily life	PO6	3	A good command of verbal communication skills is necessary to communicate effectively about well-defined engineering activities and to function productively in a team
CO3	The learners read, comprehend and analyze the ideas and concepts contained in articles, technical writings and narratives and express them in their own words	PO7	3	To keep oneself abreast of the technological advances and to engage constantly in lifelong learning, reading skill is an indispensable tool.
CO4	Learners apply the different techniques of writing and compose technical, documents like reports, emails and so on.	PO6	3	Fruitful project management and collaborative efforts require skill in written language to produce clear well-constructed and well supported written documents like slides, reports and so on.

Semester :**1**	Course Title: **Mathematics I**

CO	Description	Mapped POs	Mapped Values	Justification
CO1	Make use of complex numbers to solve mathematical problems. Extend the use of different forms of equations of straight lines in co-ordinate geometry	PO1	3	The basic knowledge of complex numbers, its operations and the concepts of straight lines in co-ordinate geometry are directly applied in solving engineering problems.
CO2	Solve mathematical problems related to trigonometry.	PO1	3	The concept of angles, its measurements, signs of trigonometric functions in four quadrants are directly applied in all branches of Engineering. Trigonometry as a whole is an essential tool for solving engineering problems such as calculating torque and forces on objects, decomposing the forces to horizontal and vertical components etc.
CO3	Utilize the concepts related to limits and derivatives to solve problems.	PO1	3	The knowledge of limits and derivatives is a requirement to understand calculus and also to solve engineering problems related to it.
CO4	Apply the concepts of differentiation of composite function, parametric equation, implicit function and successive differentiation to solve mathematical problems.	PO1	3	The topics in Calculus have wider application in technological field and are very much useful in solving engineering problems.

Semester :**1**	Course Title: **Applied Physics-I**

CO	Description	Mapped POs	Mapped Values	Justification
CO1	Apply laws of mechanics in rocket propulsion and recoil of gun.	PO1	3	Newton's laws of motion and conservation of linear momentum are used to describe rocket propulsion and recoil of gun
CO2	Apply concepts of circular motion and rotational motion	PO1	3	The concept of centripetal force is used to explain the importance of banking of roads/railway tracks
CO3	Make use the concepts of energy, power, work, temperature and friction to solve problems	PO1	3	Measurement and calculation of energy, power, temperature etc. are useful in solving problems of Mechanical, Thermal and Electrical engineering.
CO4	Use the theorems of fluid dynamics in atomiser and airfoil	PO1	3	Application of Bernoulli's theorem to explain the working of Atomiser and Air Foil

Semester :**1**	Course Title: **Applied Chemistry**

CO	Description	Mapped POs	Mapped Values	Justification
CO1	Explain atomic structure and chemical bonding			
CO2	Apply the fundamentals of analytical chemistry to solve the engineering problems and understand appropriate water treatment methods.	PO1	3	Various Engineering problems could be solved by applying fundamentals of analytical chemistry

CO3	Explain various engineering materials and fuels for domestic and industrial applications.	PO3	1	Knowledge about various engineering materials and fuels helps to assist with design of system components and processes to meet domestic and industrial needs.
CO4	Apply the concept of Electrochemistry and corrosion to solve engineering problems.	PO1	3	Concept of Electrochemistry and corrosion can be used to solve engineering problems.

Semester:**1**	Course Title: **Engineering Graphics**

CO	**Description**	**Mapped POs**	**Mapped Values**	**Justification**
CO1	Illustrate basic elements of Drawing.	PO1	2	Students will be able to familiarize drawing instruments, standards, symbols, dimensioning and geometric constructions.
CO2	Construct Projections of points and lines.	PO1	3	Students will be able to apply basic engineering fundamentals for proper constructions of projection of points and lines.
CO3	Build Orthographic projections and Sectional views of object.	PO1	3	Students will be capable of constructing Orthographic projections and Sectional views of object by applying knowledge of basic mathematics and engineering fundamentals.
CO4	DevelopIsometric Projections.	PO1	3	Students will be capable of constructing Isometric projections by applying knowledge of basic mathematics and engineering fundamentals.

Semester :**1 & 2**	Course Title: **Applied Physics Lab**

CO	Description	Mapped POs	Mapped Values	Justification
CO1	Select appropriate measuring tools and make measurements with accuracy and precision.	PO1	3	Basic knowledge of mathematics, science and engineering fundamentals are applied to make different kinds of measurements with accuracy and precision.
CO2	Apply and illustrate the concepts of mechanics and properties of matter through experiments	PO1	3	Basic knowledge of mathematics, science and engineering fundamentals are applied to illustrate the concepts of mechanics and properties of matter through experiments.
CO3	Experiment with lens, prism and glass slab to realize the basic laws of ray optics.	PO1	3	Knowledge of basic laws of ray optics are applied to perform various experiments with lenses and prisms.
CO4	Make use of V- I characteristics of conductors and semiconductors to determine the resistance of materials.	PO1	3	Basic knowledge of the semiconductors and insulators and knowledge in mathematics are applied to conduct experiments and determine resistance and other properties. .

Semester :**1**	Course Title: **Applied Chemistry Lab**

CO	Description	Mapped POs	Mapped Values	Justification
CO1	Quantitatively analyse solutionsaccurately	PO1	3	Quantitative analysis of solutions can be used to solve engineering problems.
CO2	Standardise EDTA and estimate the hardness of water	PO2	3	Standardisation of EDTA and estimation of hardness of water help to identify and analyse well

				defined engineering problems using codified standard methods.
CO3	Determine the pH of solutionsusing different techniques.	PO1	3	Various engineering problems canbe solved by determining pH of solutions using different techniques.
CO4	Apply the principles of electrochemistry in quantitative analysis	PO1	3	Application of the principles of electrochemistry in quantitative analysis can be used to solve engineering problems.

Semester : **1**	Course Title : **Introduction to IT Systems Lab**

CO	**Description**	**Mapped POs**	**Mapped Values**	**Justification**
CO1	Utilize the basic functions and features of Computer, Operating System and Internet applications.	PO1	3	Develop skills to solve problems by applying the knowledge about Computer Systems and the Internet. So strongly mapped.
CO2	Make use of Stand-alone and Cloud-based office tools to prepare documents, spreadsheets and presentations.	PO1	3	Students are imparted knowledge of office automation software to solve problems. Hence Strongly mapped.
		PO4	3	Students are exposed to office automation tools for solving problems. So strongly mapped.
CO3	Develop algorithms and flowcharts for solving simple problems.	PO1	3	By developing algorithms and flowcharts, students could apply basic knowledge for solving Engineering problems. So strongly mapped.
CO4	Develop Python programs to solve simple problems.	PO1	3	By learning Python programming, students are able to apply basic knowledge to solve simple problems. So strongly mapped.

		PO3	3	By doing open ended projects will help to develop solutions to problems. So strongly mapped.
		PO6	3	Students acquire communication and presentation skills by developing open ended projects. So strongly mapped

Semester : 1 & 2	**Course Title : Engineering Workshop Practice**

CO	**Description**	**Mapped POs**	**Mapped Values**	**Justification**
CO1	Identify the safety precautions, tools and devices required to make carpentry joints	PO1	3	The student will be able to do the planning and prepare wooden joints following all safety precautions.
CO2	Make use of various tools, machines, instruments and power tools used in the Fitting shop to make fitting joints	PO1	3	The student will be able to prepare fitting models on Mild steel (MS) flat following all safety precautions.
CO3	Experiment with an Arc welding machine to make Straight line welding and Butt joint Welding.	PO1	3	The student will be able to practice arc welding and prepare joints on MS flat following all safety precautions.
CO4	Utilize different sheet metal tools and measuring instruments to make sheet metal joints.	PO1	3	The student will be able to prepare sheet metal joints on GI Sheet following all safety precautions.
CO5	Make use of various tools and accessories to practice electrical wiring, motor connection and soldering	PO1	3	The student will be able to practice electrical wiring and joining following all safety precautions.

Semester : **1**	Course Title: **Sports and Yoga**

CO	Description	Mapped POs	Mapped Values	Justification
CO1	Apply warming up and warming down exercises in daily physical fitness activities	PO1	3	Understanding the effects and benefits of warming up and warming down before and after physical exercise on muscular, skeletal and cardiorespiratory system. .Applying this physical training method habit in lifelong period. Hence strongly mapped.
CO2	Apply stretching rotation and flexibility exercises in daily physical fitness activities	PO1	3	Understanding the effects and benefits of flexibility through various types of stretching exercises. Applying the methods of stretching exercises throughout the life for maintaining the quality of flexibility. Hence strongly mapped.
CO3	Make use of acquired yoga asanas skill and pranayama method in daily lifestyle	PO1	3	Understanding the effects and benefits of yoga asana and pranayama as preventive measures on various systems of human body.
CO4	Utilize the acquired weight training skills for the development of muscular strength and development. Utilize the acquired skills in playing sports and games.	PO1	3	Understanding the effects and benefits of weight training for the development of muscular and skeletal systems of human body. Applying the weight training methods for the development of muscular strength, power, and endurance

20. Second Semester CO – PO Mapping with Justification for all Courses in Engineering & Technology

Semester : **2**	Course Title: **Mathematics II**

CO	Description	Mapped POs	Mapped Values	Justification
CO1	Make use of Determinants and Matrices in finding the solutions of a linear system.	PO1	3	Basic knowledge of Determinants and matrices are directly applied in solving engineering problems such as solutions of linear equations, variance and co-variance etc.
CO2	Identify the concept of scalar and vector quantities and apply it in engineering problems.	PO1	3	Vector quantities and its operations have relevant application in solving engineering problems. The applications of Work and Moment are based on scalar and vector products.
CO3	Build the concept of integration as the inverse operation of differentiation	PO1	3	The concept of integration is an essential requirement to solve engineering problems. The Integral Calculus is frequently applied in higher engineering mathematics.
CO4	Apply integration techniques to solve different engineering problems and differential equations.	PO1	3	Basic knowledge of integration techniques is strongly applied in solving engineering problems such as Volumes of solids of revolution, Average function value, work done etc. Differential equations are mathematical tools to model engineering systems such as hydraulic flow, heat transfer, electrical circuits etc.

Semester :**2**	Course Title: **Applied Physics-II**

CO	Description	Mapped POs	Mapped Values	Justification
CO1	Calculate the characteristics of waves.	PO1	3	The concepts of wave motion can be used to calculate the characteristics of waves such as frequency, wavelength etc.
CO2	Compute the power of lens	PO1	3	Distance formula for lens is used to calculate the power of lens.
CO3	Convert galvanometer into ammeter and voltmeter	PO1	3	Basic knowledge of electricity and magnetism can be used to explain working of galvanometer and its conversion into ammeter and voltmeter
CO4	Explain the basic principles of semiconductor physics, photoelectric effect, LASER action and nanoscience	PO1	3	Basic concept of semiconductor physics, photoelectric effect and LASER action can be used to explain the working of photocells and lasers

Semester :**2**	Course Title: **Environmental Science**

CO	Description	Mapped POs	Mapped Values	Justification
CO1	Explain the ecosystem and terminology involved in it.			.
CO2	Explain air, water, soil and noise pollution, and control measures and acts.	PO5	2	Study of different types of pollutions and its control measures and acts are part of Engineering practices for society, sustainability and environment
CO3	Explain different renewable energy resources and efficient	PO5	3	Study of renewable energy resources and efficient process of harvesting are part of Engineering practices for society, sustainability and

	process of harvesting.			environment
CO4	Explain solid Waste Management, ISO 14000 & Environmental Management and conduct a case study on any one environmental problem / application of sustainable energy resources	PO6	3	Each student engages in a case study as a team member and can communicate among team members about well-defined engineering activities involved in the case study. Preparation and presentation of reports will also improve communication skills.
		PO7	3	To accomplish the case study, the students need to apply knowledge, identify and analyse problems, prepare and present reports which also needs further updation of knowledge.

Semester : **2**	Course Title: **Fundamentals of Electrical and Electronics Engineering**

CO	Description	Mapped POs	Mapped value	Justification
CO1	Identify various combinations of resistors and basic terms in ac systems	PO1	3	Students will be able to identify various combinations of resistors and can solve various quantities in ac systems
CO2	Solve various powers in ac circuits and calculate the monthly electricity bill.	PO1	3	Students can identify various powers in ac circuits and can calculate the monthly electricity bill
CO3	Identify various types of passive components, their colour coding and applications.	PO1	3	Students will be able to recognize the applications of various passive components and their colour coding
CO4	Summarize the working and applications of diodes, transistors and logic gates	PO1	2	Students can summarize the applications of diodes, transistors and logic gates in electronic circuits

Semester : 1 & 2	Course Title : Engineering Mechanics

CO	Description	Mapped POs	Mapped Values	Justification
CO1	Identify the force systems for given conditions by applying the basics of mechanics	PO1	3	Apply the knowledge of mathematics, science, engineering fundamentals to find out the components and resultants of force systems.
CO2	Apply conditions of static equilibrium to determine unknown force(s) of different structural elements.	PO1	3	Analyse engineering problems to reach substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences to compute the unknown forces by applying conditions of static equilibrium.
		PO2	2	Conditions of static equilibrium are used to calculate the unknown forces
CO3	To solve problems involving rigid bodies by applying the properties of distributed areas and masses.	PO1	3	Apply the knowledge of mathematics, science, engineering fundamentals to compute centre of gravity and moment of inertia.
CO4	Determine structural behavior of materials under various loading conditions.	PO1	3	Apply the knowledge of mathematics, science, engineering fundamentals to compute various elastic constants and stress strain behaviour of different materials of varying cross sections.

Semester :**2**	Course Title: **Communication Skills in English Lab**

CO	Description	Mapped POs	Mapped Values	Justification
CO1	Use words, phrases and sentences accurately and with	PO6	2	A good command of vocabulary with correct pronunciation is necessary to effectively

	correct pronunciation in real life situations			communicate about well-defined engineering activities and to function productively in a team.
CO2	Listen to and comprehends the substance and central idea of simple narratives and descriptions.	PO7	1	To make maximum utilisation of the online and offline platforms conducive to lifelong learning and update oneself of technological advancements good listening skill is an essential requisite.
CO3	Use apt language functions while making statements, asking questions, giving instructions, and reporting events.	PO6	3	A good command of appropriate language functions is necessary for smooth collaborative activities and projects involving engineering problems
CO4	Narrate simple experiences and series of events to convey its essence and intention and present ideas coherently, confidently and with clarity in debates, discussions and interviews.	PO6	3	Discussions, debates, interviews etc are inevitable aspects of team work and project management and help in communicating the problems and solutions in the field of engineering with clarity and confidence.

Semester :**1 & 2**	Course Title: **Applied Physics Lab**

CO	Description	Mapped POs	Mapped Values	Justification
CO1	Select appropriate measuring tools and make measurements with accuracy and precision.	PO1	3	Basic knowledge of mathematics, science and engineering fundamentals are applied to make different kinds of measurements with accuracy and precision.

CO2	Apply and illustrate the concepts of mechanics and properties of matter through experiments	PO1	3	Basic knowledge of mathematics, science and engineering fundamentals are applied to illustrate the concepts of mechanics and properties of matter through experiments.
CO3	Experiment with lens, prism and glass slab to realize the basic laws of ray optics.	PO1	3	Knowledge of basic laws of ray optics are applied to perform various experiments with lenses and prisms.
CO4	Make use of V- I characteristics of conductors and semiconductors to determine the resistance of materials.	PO1	3	Basic knowledge of the semiconductors and insulators and knowledge in mathematics are applied to conduct experiments and determine resistance and other properties. .

Semester : **2**	Course Title: **Fundamentals of Electrical and Electronics Engineering Lab**

CO	Description	Mapped POs	Mapped Values	Justification
CO1	Make use of various meters to measure basic parameters of an electric circuit	PO1	3	Knowledge of basic mathematics and engineering are applied to perform measurements of basic parameters of electric circuit. Hence strongly mapped.
		PO4	3	Various engineering tools and appropriate methods are applied to measure basic parameters of electric circuits. Hence strongly mapped.
CO2	Identify various methods to measure power and energy in electric circuit	PO1	3	Knowledge of basic mathematics and engineering are applied to perform measurements of power and energy in electric circuit. Hence strongly mapped.
CO3	Identify different types of components and electronic equipments used for conducting experiments.	PO1	3	Knowledge of basic mathematics and engineering are applied to identify electronic components and equipments to conduct experiments. Hence strongly mapped.

CO4	Experiment with different rectifier circuits, regulated power supply and logic gates	PO1	3	To conduct experiments with different rectifier circuits, regulated power supply and logic gates knowledge of basic mathematics and engineering are applied. Hence strongly mapped.

Semester : 1 & 2	**Course Title : Engineering Mechanics Lab**

CO	Description	Mapped POs	Mapped Values	JUSTIFICATION
CO1	Identify the force systems for given conditions by applying the basics of mechanics.	PO4	3	Applied appropriate engineering techniques to identify the force systems for given conditions.
CO2	Determine unknown forces of different engineering systems.	PO4	3	Applied appropriate engineering techniques and tools to find out unknown forces of given engineering systems.
CO3	Infer centre of gravity and mass moment of inertia.	PO4	3	Applied appropriate engineering techniques and tools to find out centre of gravity and mass moment of inertia.
CO4	Determine strains in mutually perpendicular directions under axial tension. Determine the co-efficient of friction on a plane through experimentation	PO4	3	Applied appropriate engineering techniques and tools to determine strains in mutually perpendicular directions under axial tension, co-efficient of friction on a plane through experimentation

Semester : 1 & 2	Course Title : Engineering Workshop Practice

CO	Description	Mapped POs	Mapped Values	Justification
CO1	Identify the safety precautions, tools and devices required to make carpentry joints	PO1	3	The student will be able to do the planning and prepare wooden joints following all safety precautions.
CO2	Make use of various tools, machines, instruments and power tools used in the Fitting shop to make fitting joints	PO1	3	The student will be able to prepare fitting models on Mild steel (MS) flat following all safety precautions.
CO3	Experiment with an Arc welding machine to make Straight line welding and Butt joint Welding.	PO1	3	The student will be able to practice arc welding and prepare joints on MS flat following all safety precautions.
CO4	Utilize different sheet metal tools and measuring instruments to make sheet metal joints.	PO1	3	The student will be able to prepare sheet metal joints on GI Sheet following all safety precautions.
CO5	Make use of various tools and accessories to practice electrical wiring, motor connection and soldering	PO1	3	The student will be able to practice electrical wiring and joining following all safety precautions.

21. Programme Core Committee

Diploma in Architecture		
Chairman : Vidhu P K, Head of Department, WPC Ernakulam		
Members		
Sujerine Head of Deapartment JDTPC, Calicut	Seena K A Lecturer in Arch WPC Ernakulam	Richu Thomas Lecturer in Arch WPC Ernakulam
Anjana Lecturer in Civil GPC Adoor	Sumeer Lecturer in Arch GPC Adoor	

Diploma in Biomedical Engineering		
Chairman : Dr. Asha N D, Head of Department, GPC Vechoochira		
Members		
Annie Jose Lecturer GPC Vechoochira	Hridhya A P Lecturer GPC Trikkaripur	Renya Raveendran Lecturer GPC Trikkaripur
Swapna K K Project Officer SITTTR Kalamassery		

Diploma in Computer Application & Business Management		
Chairman : Jyothis T S, Head of Department, GWPC Kottakkal		
Members		
Sumit Chandran Lecturer RWPC Payyannur	Heaba Fatima Ibrahim Lecturer GPC Vandiperiyar	Rajeev G Head of Deapartment GPC Neyyattinkara
Siraj T A Lecturer GPC Trikkaripur		

Diploma in Civil Engineering
Chairman : Titus C A, Head of Department, GPC Kottayam
Members

O K Sajeevan Head of Department GPC Kothamangalam	T G Santhoshkumar Head of Department GPC Kalamassery	Jayalakshmi C T Head of Department GPC Palakkad
Sureshbabu N Head of Department GPC Mananthavadi	Tony Paul Head of Department TPC Alagappanagar	Veena R Lecturer GPC Kalamassery
Meenu Mohan Lecturer GPC Kottayam	Nazif Nazeer Lecturer GPC Palakkad	Sarath D Lecturer GPC Kannur
Jaisa Jamal Lecturer GPC Kalamassery	Athira Jayaraj Lecturer GPC Kothamangalam	Anitha Nelson Lecturer CPTC Thiruvananthapuram
Amrutha S Lecturer KGPC Kozhikode		

Diploma in Chemical Engineering		
Chairman : Aneesh Raj, Lecturer, KGPC Kozhikode		
Members		
Sheela K K Lecturer GPC Kalamassery	JAYARANI M Lecturer KGPC Kozhikode	SUBHA K A Lecturer GPC Kalamassery
BEENA P M Lecturer GPC Kalamassery	SURYA SATHYAN Lecturer GPC Kalamassery	DEVI. P Lecturer KGPC Kozhikode
AKHILESH PRABHAKAR Lecturer GPC Kalamassery	NAJUMA A Lecturer KGPC Kozhikode	

Diploma in Computer Hardware Engineering		
Chairman : Venugopal S R, Head of Department, AKNMGPC Thirurangadi		
Members		
Thajbi P M Head of Department GPC Chelakkara	Lisha P P Head of Department GPC Cherthala	Shejin T R Lecturer SRGPC Thriprayar
Manila M V Lecturer GPC Palakkad		

Diploma in Commercial Practice		
Chairman : Jayamoni M, Lecturer in Commercial Practice, GWPC Kayamkulam		
Members		
Nufidath F M Lecturer in Commerce GWPC Kozhikode	Priya K Lecturer in Commerce GWPC Thrissur	Sumi Varghese Lecturer in Commerce GPC Kottayam
Vipin K P Lecturer in Commerce GWPC Kayamkulam	Sajana S Lecturer in Commerce GWPC Kalamassery	Jayakumar P P Senior Instructor in Shorthand GWPC Kalamassery
Anandmohan K Assistant Instructor in Shorthand GWPC Kalamassery		

Diploma in Computer Engineering		
Chairman : Chandrakumar.N.A, Head of Department, SRGPC Thriprayar		
Members		
Sajna k Poulose Head of Department GPC Muttom	Sunilkumar P M Head of Department GPC Kaduthuruthy	Yamini K P Lecturer GWPC Nedupuzha
Soumya K S Lecturer GPC Cherthala	Mohan S Lecturer CPT Trivandrum	Nimmy George Lecturer GPC kalamassery
Jyothinath K T Lecturer GWPC Ernakulam	Alias Itten Lecturer GPC Kaduthuruthy	Jiby P Joseph Lecturer GPC Kothamangalam
Glaxy George Lecturer GPC Perumbavoor	Robin Lecturer GPC Purappuzha	Sunil Kumar P Lecturer GPC Cherthala
Selbi M U Lecturer GPC Koratty	Mary Murphy Lecturer GPC kalamassery	Prabitha Lecturer GPC Cherthala
Subin Paul Lecturer MTI Thrissur		

Diploma in Electronics Engineering **Diploma in Electronics and Communication Engineering**
Chairman : Aiju Thomas, Head of Department, GPC Perumbavoor

Members		
Sreeraj K P Lecturer GPC Kalamasserry	Soman C.R Head of Department GWPC Nedupuzha	Dr. Ajitha S Project Officer SITTTR Kalamassery

Diploma in Electrical & Electronics Engineering		
Chairman : Binu B.R., Head of Department, GPC Pala		
Members		
Jayaram S Head of Department GPC Attingal	Jyothilal G Head of Department CPTC Thiruvanathapuram	Jaya P.S Head of Department GPC Kalamassery
Alias K.V. Head of Department MTI Thrissur	Muraleedharan M.T. Lecturer MTI Thrissur	Vineeth V Lecturer GPC Kalamassery
Jose K. J Lecturer GPC Kalamassery	Smitha Joseph Lecturer GPC Kalamassery	Shanmughan M. S. Lecturer GPC Muttom
Augustine Kuriakose Lecturer GPC Pala	Jayaprakasan P Lecturer KGPC Kozhikkode	Ajay Kumar E. P Lecturer SRGPC Triprayar
Unnikrishnan P Lecturer KGPC Kozhikkode	Layana K.A. Lecturer GPC Kalamassery	Earlice C.M Lecturer GPC Meenangadi
Nevin Jose Lecturer GPC Pala		

Diploma in Insrumentation Engineering		
Chairman : Dr. Ahamed Seyd P T, Head of Department, GPC Manjeri		
Members		
Pratheep TG Head of Department GPC Mattannur	Smitha I P Head of Department GPC Koratty	Sindhu Head of Department GEPC Kottakkal
Syamraj R L Lecturer GPC Pala	Roniya Abraham Lecturer GPC Pala	Smitha V Lecturer GPC Cherthala
Nighila Paul Lecturer GPC Koratty	Ashar A Lecturer GPC Cherthala	Abhilash Manjul Lecturer GPC Palakkad

Suresh Babu P Head of Department GPC Palakkad	Surendran E Head of Department GPTC Pala	Shyju S Lecturer GEPC Kottakkal
Ribin Raj Lecturer GEPC Kottakkal	Deepak VS Lecturer GPC Koratty	

Diploma in Information Technology		
Chairman : Dr K.M.Mohamed Sudheer, Head of Department, GPC Purapuzha		
Members		
Shiju K. Lecturer GPC Purapuzha	Sreena Sreedhar Guest Lecturer GPC Purapuzha	Jose V Francis Guest Lecturer GPC Purapuzha
Surumi Basheer Guest Lecturer GPC Purapuzha		

Diploma in Mechanical Engineering		
Chairman : ANOOP.C, Head of Department, GPC Manjeri		
Members		
P.K.Sivan Head of Department GPC Perumbavur	Abdul Salam Head of Department KGPC Kozhikode	M.V.Paulose Head of Department (Retd) GPC Kalamassery
Arun P Raj Lecturer GPC Punalur	Nidhin Roy Lecturer GPC Cherthala	Shybu Vargheese Lecturer Carmel PC Alappuzha
Sureshkumar M.P Lecturer GPC Meenangadi	Induraj R K Lecturer KGPC Kozhikode	Rajesh N P Lecturer KGPC Kozhikode
Subair P Lecturer SSMPC Tirur	Sathish Nambiar Lecturer SNPC Kanjangad	Pradeesh.S.V Lecturer GPC Attingal
Kishore S Lecturer GPC Kalamassery	SujilKumar C S Lecturer GPC Kothamangalam	Avarachan K P Lecturer GPC Perumbavur
Ravish M V Lecturer GPC Perumbavur	Pradeep M Head of Department GPC Perinthalmanna	

Diploma in Manufacturing Technology		
Chairman : Midhun Xavier, Head of Department, Keltrac Aroor		
Members		
Vishnuprasad S Lecturer Keltrac Aroor		

Diploma in Polymer Technology		
Chairman : Sreeja K K, Head of Department, GPC Koratty		
Members		
Sabu K K Lecturer GPC Kottayam	Sindhumole K Lecturer GPC Koratty	Dhanya V Lecturer GPC Adoor
Bindhu M G Lecturer GPC Adoor	Sindhu M K Lecturer GPC Koratty	Hafeez Muhammed Lecturer GPC Kottayam
Anitha T R Lecturer GPC Koratty	Sona Stanly Lecturer GPC Kottayam	Pious C V Lecturer GPC Adoor
Raina Ram Lecturer GPC Adoor	Adhub Bin A Salam Lecturer GPC Koratty	

Diploma in Printing Technology		
Chairman : Saritha P C, Lecturer in Printing Technology, IPT & GPC Shoranur		
Members		
Asha P Lecturer (HOS in charge) IPT & GPC Shoranur		

Diploma in Tool and Die Engineering		
Chairman : Ajayan G, Head of Department, GPC Kunnamkulam		
Members		
Jaison John Lecturer GPC Meenangadi	Renjith R Lecturer CPTC Trivandrum	Vipul suresh Demonstrator GPC Kunnamkulam

Justin Mohan Trade Instructor KGPC Kozhikode	Diveshkumar Lecturer GPC Mattannoor	

Diploma in Textile Techonology		
Chairman : Rajeev S, Lr,in Textile technology, CPTC Thiruvananthapuram		
Members		
Surendran KK Lecturer GPC Kannur	Reenamma John Lecturer GPC Kannur	Siva Krishna P Lecturer GPC Kannur
Suneesh CP Lecturer GPC Kannur	Abdul Lathif K M Lecturer GPC Koratty	Shihab Lecturer GPC Koratty
Shanish Mohan Lecturer GPC Koratty	Sreelal SR Lecturer CPTC Thiruvananthapuram	Azeem K Lecturer CPTC Thiruvananthapuram
Shajahan A Lecturer CPTC Thiruvananthapuram		

Diploma in Wood and Paper Technology		
Chairman : Prabhakaran.K, Head of Department, GPC Kannur		
Members		
Shinesh.T.M Lecturer GPC Kannur	Prabhisha.M Lecturer GPC Kannur	

Engineering Workshop Practice		
Chairman : SHIJATH T A, Workshop Superintendent, GPC Perumbavoor		
Members		
Noushad E A Workshop Superintendent GPC , Chelakkara	Subrahmanian K Workshop Instructor GPC Chelakkara	
Communication Skills in English		
Chairman : Dr Jalson Jacob, Associate Professor of English, MVGM GPC Vennikulam		
Members		

Smt Anupama Sivarajan Asst Prof of English WGPC Kalamaserry	Dr Arun George Asst Prof of English GPC Adoor	Dr Dhanya Ravindran Asst Prof of English GPC Kalamaserry
Dr Jayaprakash A Asst Prof of English WPC Nedupuzha	Smt Nijamol K N Asst Prof of English GPC Kalamaserry	Dr Niji C I Asst Prof of English GPC Cherthala

Applied Physics		
Chairman : Dr. Jayachandran K, Assistant Professor in Physics, GPC Cherthala		
Members		
Dr. Radhakrishnan AN Assistant Professor in Physics GPC Kaduthuruthy	Dr. Lakshmikanth KG Assistant Professor in Physics GWPC, Kalamassery	

Applied Chemistry		
Chairman : Dr. Vidya Raman, Associate professor, GPC Kalamassery		
Members		
Dr. Shoby Daniel Assistant professor GPC Thrissur	Jomol p John Assistant professor GPC Perumbavur	

Mathematics		
Chairman : Rajendran A S, Professor in Mathematics, NSSPC Pandalam		
Members		
Dolimma Thomas Professor in Mathematics Carmel PC, Allappey	Balaji M N Assistant Professor in Mathematics GWPC Ernakukam	Pournamy M Assistant Professor in Mathematics GPC Perumbavoor
Jenis T Joy Assistant Professor in Mathematics GPC Muttom		

Sports & Yoga
Chairman : Dr.Amrutha Raj M G, Instructor in Physical Education, GPC Pala
Members

Ranji E V Instructor in Phy: Edu: GWPC Kalamassery	Thomas K Thomas Instructor in Phy: Edu: GPC Kothamangalam	Rajesh Kumar Instructor in Phy: Edu: NSSPC Pandalam
Mohammed Shah Instructor in Phy: Edu: SRGPC Triprayar		

22. Handbook Committee

Diploma in Architecture		
Chairman : Vidhu P K, Head of Department, WPC Ernakulam		
Members		
Sujerine Head of Deapartment JDT PC, Calicut	Seena K A Lecturer in Arch WPC Ernakulam	Richu Thomas Lecturer in Arch WPC Ernakulam
Anjana Lecturer in Civil GPC Adoor	Baby Chacko Lecturer in Civil WPC Ernakulam	

Diploma in Biomedical Engineering		
Chairman : Dr. Asha N D, Head of Department, GPC Vechoochira		
Members		
Annie Jose Lecturer GPTC Vechoochira	Hridhya A P Lecturer GPTC Trikkaripur	Renya Raveendran Lecturer GPC Trikkaripur
Sheeja T.S Lecturer GPC Trikkaripur	Swapna K K Project Officer SITTTR Kalamassery	

Diploma in Computer Application & Business Management		
Chairman : Jyothis T S, Head of Department, GWPC Kottakkal		
Members		
Heaba Fatima Ibrahim Lecturer GPC Vandiperiyar	Rajeev G Head of Deapartment GPC Neyyattinkara	

Diploma in Computer Hardware Engineering		
Chairman : Venugopal S R, Head of Department, AKNMGPC Thirurangadi		
Members		
Thajbi P M Head of Department GPC Chelakkara	Shejin T R Lecturer SRGPC Thriprayar	

Diploma in Commercial Practice		
Chairman : Jayamoni M, Lecturer in Commercial Practice, GWPC Kayamkulam		
Members		
Nufidath F M Lecturer in Commerce GWPC Kozhikode	Priya K Lecturer in Commerce GWPC Thrissur	Sajana S Lecturer in Commerce GWPC Kalamassery
Vipin K P Lecturer in Commerce GWPC Kayamkulam		

Diploma in Computer Engineering		
Chairman : Chandrakumar.N.A, Head of Department, SRGPC Thriprayar		
Members		
Yamini K P Lecturer GWPC Nedupuzha	Soumya K S Lecturer GPC Cherthala	Mohan S Lecturer CPTC Trivandrum

Diploma in Electronics Engineering Diploma in Electronics and Communication Engineering		
Chairman : Aiju Thomas, Head of Department, GPC Perumbavoor		
Members		
Sreeraj K P Lecturer GPC Kalamasserry	Soman C.R Head of Department GWPC Nedupuzha	Dr. Ajitha S Project Officer SITTTR Kalamassery

Diploma in Electrical & Electronics Engineering		
Chairman : Binu B.R., Head of Department, GPC Pala		
Members		
Jayaram S Head of Department GPC Attingal	Mohankumar P Head of Department GPC Perinthalmanna	Muraleedharan M.T. Lecturer MTI Thrissur
Layana K.A. Lecturer GPC Kalamassery	Nevin Jose Lecturer GPC Pala	Vineeth V Lecturer GPC Kalamassery

Shithin P.V Lecturer GPC Kannur	Mohammed Shereeq M.T. Lecturer SRGPC Triprayar	Rahul Lecturer KGPC, Kozhikode
Nikhil V.T. Lecturer GPC Kannur	Rejith R Lecturer GPC Kannur	Deepak C Lecturer GPC Perinthalmanna
Rose Simon Lecturer GPC Meenangadi	Akhil Ahammed K.E Lecturer GPC Meenangadi	Anssa T.H Lecturer CPTC Thiruvananthapuram
Remya Mohanan Lecturer GWPC Thrissur	Rijil V. R Workshop Instructor GPC Meenangadi	Sanjay V Lecturer GPC Perinthalmanna
Prasanth Simon Lecturer GPC Palakkad	Chithra S.R. Lecturer GPC Punalur	Arun Raj N Lecturer KGPC Kozhikode
Girish P.R Lecturer GPC Nattakom	Ajmal M,M Lecturer GPC Muttom	Sakthidharan N.K Lecturer SRGPC Triprayar
Anuroop P Lecturer SRGPC Triprayar	Midhun M Lecturer GPC Nattakom	Sabareesan D Lecturer GPC Pala
Harikrishnan B.S Lecturer GPC Palakkad	Sreekumar T Lecturer GPC Pala	Manikumar N Lecturer GPC Palakkad
Sudheesh S.S Lecturer GPC Palakkad	Kuriakose T. S Lecturer GPC Muttom	Dhanish Mon N Lecturer GPC Perinthalmanna
Sasna N.A Lecturer SRGPC Triprayar	Betcy Babu Lecturer GGPC Muttom	Aravind M.S Lecturer GPC Attingal
Abdul Basith MB Lecturer GPC Attingal	Neethu Raj P.R Lecturer MTI Thrissur	Sajith B.S Lecturer GPC Attingal
Reshma V.R. Lecturer CPTC Thiruvananthapuram		

Diploma in Information Technology		
Chairman : Dr K.M.Mohamed Sudheer, Head of Department, GPC Purapuzha		
Members		
Shiju K. Lecturer GPC Purapuzha	Sreena Sreedhar Guest Lecturer GPC Purapuzha	Jose V Francis Guest Lecturer GPC Purapuzha

Surumi Basheer Guest Lecturer GPC Purapuzha		

Diploma in Manufacturing Technology		
Chairman : Midhun Xavier, Head of Department, Keltrac Aroor		
Members		
Vishnuprasad S Lecturer Keltrac Aroor		

Diploma in Polymer Technology		
Chairman : Sreeja K K, Head of Department, GPC Koratty		
Members		
Sabu K K Lecturer GPC Kottayam	Sindhumole K Lecturer GPC Koratty	Dhanya V Lecturer GPC Adoor
Bindhu M G Lecturer GPC Adoor	Sindhu M K Lecturer GPC Koratty	Hafeez Muhammed Lecturer GPC Kottayam
Anitha T R Lecturer GPC Koratty	Sona Stanly Lecturer GPC Kottayam	Pious C V Lecturer GPC Adoor
Raina Ram Lecturer GPC Adoor	Adhub Bin A Salam Lecturer GPC Koratty	Sabida V M Demonstrator GPC Koratty

Diploma in Tool and Die Engineering		
Chairman : Ajayan G, Head of Department, GPC Kunnamkulam		
Members		

Diploma in Wood and Paper Technology		
Chairman : Prabhakaran.K, Head of Department, GPC Kannur		
Members		
Shinesh.T.M Lecturer GPC Kannur	Prabhisha.M Lecturer GPC Kannur	