KOTTAKKAL FAROOK ARTS AND SCIENCE COLLEGE

POST GRADUATE DEPARTMENT OF PHYSICS

ANNUAL REPORT

2018-19

KOTTAKKAL FAROOK ARTS & SCIENCE COLLEGE PARAPPUR P.O. Pin: 676 503

Prof. M. ABDUL AZEEZ
PRINCIPAL
KOTTAKKAL FAROOK ARTS & SCIENCE COLLEGE
PARAPPUR(P.O) - 676 503

DEPARTMENT OF PHYSICS - ANNUAL REPORT (2018-2019)

PG Department of Physics of our college offers UG (BSc. Physics) and PG (MSc. Physics)Courses. Our department is dedicated to providing a high-quality education that equips students with the knowledge and skills necessary to succeed in the dynamic and ever-changing world .

At our department, students can expect to engage with a diverse faculty that brings a wealth of experience and expertise in the areas of Physics .Our faculty members are committed to providing a comprehensive and challenging curriculum that prepares students for a wide range of career opportunities in the present world.

We also offer a range of extracurricular activities, including clubs, societies which provide students with the opportunity to develop their leadership, teamwork, and communication skills while pursuing their interests outside the classroom.

At our Physics UG Department, we believe in providing a holistic education that nurtures the intellectual, social, and personal development of our students. We are committed to fostering a culture of excellence, innovation, and lifelong learning that prepares our graduates to become leaders and change-makers in the business world and beyond.

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BSC. PHYSICS (CORE ,COMPLIMENTARY AND AUDIT)
PROGRAMME DETAILS

Semester	Course Code	Course Title	Total hours	Hours / Week	Credits
I	A01	Common Course I– English	72	4	4
	A02	Common Course II– English	90	5	3
	A07	Common Course III–Language other than English	72	4	4
	PH1B01	Core course I-Methodology of Science and Physics	36	2	2
		Core Course V -Practical I	36	2	*
		1st ComplementaryCourseI-Mathematics	72	4	3
		2nd ComplementaryCourseI	36	2	2
		2nd ComplementaryCoursePracticalI	36	2	*
		Total	450	**25**	**18**
II	A03	Common Course IV– English	72	4	4
	A04	Common Course V– English	90	5	3
	A08	Common Course VI–Language other than English	72	4	4
	PH2B02	Core Course II-Properties of Matter, Waves and Acoustics	36	2	2
		Core Course V-Practical I	36	2	*
		1st ComplementaryCourseII -Mathematics	72	4	3
		2nd ComplementaryCourseII	36	2	2
		2nd ComplementaryCoursePracticalII	36	2	*

		Total	450	**25**	**18**
III	A05	Common Course VI–English	90	5	4
	A09	Common Course VIII-Language other than English	90	5	4
	PH3B03	Core Course III– Mechanics	54	3	3
		Core Course VI–Practical I	36	2	*
		1st ComplementaryCourseIII– Mathematics	90	5	3
		2nd ComplementaryCourseIII	54	3	2
		2nd ComplementaryCoursePracticalIII	36	2	*
		Total	450	**25**	**16**
IV	A06	Common Course IX– English	90	5	4
	A10	Common Course X-Language other than English	90	5	4
	PH4B04	Core Course IV-Electrodynamics I	54	3	3
	PH4B05	Core Course Practical V–Practical I	36	2	5
		1stComplementaryCourseIV– Mathematics	90	5	3
		2ndComplementaryCourseIV	54	3	2
		2ndComplementaryCoursePracticalIV	36	2	4
		Total	450	25	25
V	PH5B06	Core Course VI- Electrodynamics II	54	3	3
	PH5B07	Core Course VII-Quantum Mechanics	54	3	3
	PH5B08	Core Course VIII-Physical Optics and ModernOptics	54	3	3
	PH5B09	Core Course IX-Electronics(Analogue and Digital)	72	4	4
		Open Course–(course from other streams)	54	2	2
		Core Course Practical X IV-Practical II	72	4	*
		Core Course Practical XV-Practical III	72	4	*
		Project	36	2	*

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		Total	450	25	15
VI	PH6B10	Core Course X-Thermal and Statistical Physics	72	4	4
	PH6B11	Core Course XI-Solid State Physics, Spectroscopy And Laser physics	72	4	4
	PH6B12	Core Course XII-Nuclear Physics, Particle Physics and Astrophysics	72	4	4
	PH6B13	Core Course XIII(Elective)	54	3	3
	PH6B14	Core Course Practical XIV–Practical II	72	4	5
	PH6B15	Core Course Practical XV–Practical III	72	4	5
	PH6B16	Course XVI Project& Tour report	36	2	3
		Total	450	25	28
Total Credits					120

M.SC PHYSICS PROGRAMME DETAILS

The duration of the M. Sc (Physics) program shall be 2 years, split into 4 semesters. Each course in a semester has 4 credits (4C) with Practical having 3 credits (3C). The total credits for the entire program (Core &Elective) is 80. The credits for audit courses is 8. The Program structure ,Courses and credit distribution summary are given below

The program shall include three types of courses : Core courses, Elective courses and Audit Courses. In which there will be two Audit Courses (Ability Enhancement Course & Professional Competency Course) with 4 credits each. These have to be done one each in the first two semesters.

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Semester	Course Title	Suggested Area	Details
I	Ability Enhancement Course (AEC)	internship / Seminar presentation / Publications / Industrial or Practical Training /Community linkage programme / Book reviews etc.	Seminar: Each student has to present a seminar on a selected topic in physics. A report has to be prepared and submitted before presenting the seminar. The abstract of the seminar has to be sent to the head of the department through the teacher in charge. Or It can be a course related to any topic from the suggested areas.

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2	Professional Competency Course (PCC)	To test the skill level of students like testing the application level of different soft wares such as Latex/Data visualization/ Python/Any software relevant to the programme of study /Translations etc.	The students in their second semester will be trained on the use of Latex scientific document preparation system. (The syllabus will be part of the second semester). The latex codes for preparing the following items will be developed. 1. A question paper 2. A review paper on a topic related to the seminar given in the first semester 3. A power point presentation Evaluation of this will be based on a multiple choice written examination and an internal practical exam. Or It can be a course related to any topic from the suggested areas.

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COURSES IN VARIOUS SEMESTERS

Semester – I (16C)

(PHY1C01) Classical Mechanics (4C)

(PHY1C02) Mathematical Physics – I (4C)

(PHY1C03) Electrodynamics and Plasma Physics (4C)

(PHY1C04) Electronics (4C) (PHY1L01)

General Physics Practical -I *

(PHY1L02) Electronics Practical – I**

(PHY1A01 Ability Enhancement Course (4C)

Semester – II (22C)

(PHY2C05) Quantum Mechanics –I (4C)

(PHY2C06) Mathematical Physics – II (4C)

(PHY2C07) Statistical Mechanics (4C)

(PHY2C08) Computational Physics (4C)

(PHY2L03) General Physics Practical - II (3C)*

(PHY2L04) Electronics Practical – II (3C)**

(PHY2A02 Professional Competency Course (4C)

*External Practical Exam for PHY1L01&PHY2L03 together will be conducted at the end of 2nd semester

*External Practical Exam for PHY1L02&PHY2L04 together will be conducted at the end of 2nd semester.

Semester -III (16C)

(PHY3C09) Quantum Mechanics -II (4C)

(PHY3C10) Nuclear and Particle Physics (4C)

(PHY3C11) Solid State Physics (4C)

Elective -I (4C) - (PHY3E05) Experimental Techniques

Project

#(PHY3L05) Modern Physics Practical –I

Semester -IV (26C)

Elective -II (4C)- (PHY4E13) Laser Systems, Optical Fibers and Applications

Elective -III (4C)- (PHY4E20) Microprocessors, Microcontrollers and Applications

(PHY4P01) Project (4C)

(PHY4L06) Modern Physics Practical –II (3C)

(PHY4L07) Computational Physics Practical (3C)

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Viva Voce (Comprehensive) (4C)

Semester	No. of Theory Papers	Practicals	Theory		Practical		Project		Seminar/Tutorial	Viva Cred.	Total hours	Total Cred
			Hrs	Cred	Hrs	Cred	Hrs	Cred	Hrs			
I	4	1. Gen. Phys I 2. Electronics I	16	16	8	0	0	0	1	0	25	16
II	4	1. Gen. Phys II 2. Electronics II	16	16	8	6	0	0	1	0	25	22
III	4	1. Mod. Phys I	16	16	4	0	4	0	1	0	25	16
IV	3	1. Mod Phys II 2. Comp. Phys	12	12	8	6	4	4	1	4	25	26
Total Credits for the Programme												**80**

DEPARTMENT FACULTIES

NAME	QUALIFICATION	DESIGNATION
MUBARAK N	MSc	Head of Department
SUHAIL K	MSc,B.Ed,SET	Assistant Professor
RESHMA P	MSc	Assistant Professor
SALU	MSc	Assistant Professor
FOUSIYA	MSc	Assistant Professor
JAYASREE	MSc. ,B.Ed,SET	Assistant Professor

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FUNCTIONING OF THE COMMITTEES

Departmental Academic Committee (Board of Studies)

The Department Academic Committee is responsible for overseeing the academic programs and curricular activities. It made discussions on curriculum updates, faculty feedback, examination patterns, and the implementation of academic policies

Chairperson	MUBARAK N
Staff representatives	FOUSIYA RESHMA P JAYASREE SALU K
External faculty	NUBLA (Assistant Professor: M E T Arts and Science College)
Office staff	SAMEERA K
Alumni representee	BASILA AC (2015-2017 BSc Physics)
Student representees	Vinaya P (1ST year BSc Physics) Anjana anand (1 year MSc Physics)

Internal Exam Committee

The Internal Examination Committee is responsible for evaluating students' performance in internal assessments and projects. It includes discussions on assessment methods, grading criteria, assessment schedules, and student performance analysis.

CHAIRPERSON : MUBARAK N
EXAM COORDINATOR : SUHAIL K
FACULTY MEMBERS : SALU, FOUSIYA K

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Grievance Redressal Cell

The Grievances and Redressal Committee deals with student grievances and ensures their timely resolution. During committee meetings a discussion made on grievances raised, actions taken, and decisions made to address student concerns

Chairperson	:	MUBARAK N
Coordinator	:	MISHIDA SHERIN
FACULTY MEMBERS	:	SALU,JAYASREE P

Tour/ IV Committee

The Tour or Industrial Visit (IV) Committee is responsible for organizing educational tours and industrial visits for students. It gave an outline of the planning, budgeting, and execution of such tours/IV

CHAIRPERSON	: MUBARAK N
TOUR COORDINATOR	: SUHAIL K

ROLES AND RESPONSIBILITIES ALLOTTED TO THE FACULTY

Department Head	Mubarak N
Department Coordinator	Suhail K
Library Committee	Jayasree
Department Exam Coordinator	Reshma P
Program Coordinator	Jaseena R
Class Advisors	**B.Sc Programme**
	I Semester :Reshma
	Ii Semester: Reshma
	Iii Semester: Fousiya K
	Iv Semester : Fousiya K
	V Semester: Suhail K
	Vi Semester: Suhail K

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	M.Sc.Programme
	I Semester :Salu K
	Ii Semester: Salu K
	Ii Semester: Jayasree P
	Iv Semester : Jayasree P
Mentor Mentee For Various Classes	I Year : Salu
	Ii Year: Reshma P
	Iii Year:Suhail K
College Council	Mubarak N
Anti Ragging Squad	Mubarak N
Anti Ragging Committee	Suhail K
Tour Co-Ordinator	Suhail K
Lab In Charge	B.Sc.First Year :Reshma B.Sc Secondyear: Reshma ,Fousiya B.Sc Complimentary First Year:Mubarak N B.Sc Complimentary Second Year: :Jayasree P M.Sc First Year : Suhail K M.Sc Second Year : Reshma P
Alumni Coordinator	Salu
Complaints And Grievance Cell	Reshma
File In Charge (Naac)	**Mubarak N** : Advisors List Year Wise Question Papers Year Wise Time Table Minutes Book Year Wise Details Of Teachers
	Suhail K Photo Album Year Wise External Marks Teachers Examination Duty Year Wise Duty Chart

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	Year Wise Annual Report
	Fousiya K Alumni Register Department Alumni Report Annual Report Of Study Tour Reportofseminar,Workshop.... Year Wise Details Of Teachers Attended Examination Duty
	Jayasree P Year Wise Report Of Bridge Course Visual Media ,Print Media, Video Graphs Clippings And Cuttings Complaint Redressel And Grievances Cell Files Course Out Line Digital Content
	Reshma P Details Of Teacher Evaluation By Students Details Of Programme Evaluation By Pass Out Students Alumni.... Details Of Online Class Conducted-Content Developed By Staff
	Salu K Updated Biodata Of Faculty Members Progression To Higher Studies Progression To Employment Year Wise Details Of Net\Slet\Jrf\Set\Ca And Similar Qualifying Examination Files
	Jaseena R Year Wise Details Of Advanced Learners Year Wise Details Of Slow Learners

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	Annual Report Of Extension Activities Teachers Diary Stock Register Department Certificate Course Developed By Department

SEMINAR ON PRACTICAL RELEVANCE OF CLASSICAL PHYSICS PRINCIPLES IN DAILY ACTIVITIES

The seminar aimed to enlighten students about the practical relevance of classical physics principles in daily activities. It featured a presentation by Basim MB, who is known for his contributions to physics education. The event saw enthusiastic participation from undergraduate and postgraduate students.

The seminar began with a welcome address by the Head of the Physics Department, Mr. Mubarak N, who introduced Basim MB and highlighted his contributions to the field. The purpose of the seminar was to bridge the gap between theoretical physics concepts and their practical applications.

Keynote Session is below

1. **Mechanics**:
   - **Newton's Laws of Motion**: Governing everyday activities such as walking, driving, and playing sports.
   - **Friction and Its Effects**: Role in activities like cycling, using brakes, and writing with a pen.
2. **Thermodynamics**:
   - **Heat Transfer**: Applications in cooking, refrigeration, and climate control.
   - **Energy Conversion**: Utilization in engines, power plants, and household appliances.
3. **Waves and Oscillations**:
   - **Sound Waves**: Use in communication devices, musical instruments, and medical diagnostics (e.g., ultrasounds).

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- **Light Waves**: Behavior in lenses, mirrors, and optical instruments like cameras and glasses.

4. **Electricity and Magnetism**:
   - **Electromagnetic Principles**: Essential for electrical appliances, wireless communication, and medical imaging devices (e.g., MRI).
   - **Circuits and Currents**: Basics of electrical circuits and their applications in home wiring and electronic devices.
5. **Fluid Dynamics**:
   - **Principles of Fluid Mechanics**: Applications in hydraulics, aerodynamics (e.g., airplane flight), and tasks like drinking through a straw.
6. **Real-World Applications**:
   - **Engineering and Technology**: Importance in engineering disciplines and technological advancements.
   - **Everyday Problem-Solving**: Encouragement for students to analyze everyday situations through classical physics to enhance problem-solving skills.

An interactive session followed the keynote presentation, allowing students to engage with Basim MB. Questions covered specific applications of classical physics principles and inquiries about further studies and careers in physics. Basim MB provided insightful answers and motivated students to explore practical aspects of their physics education.

The seminar concluded with a vote of thanks to Basim MB for his enlightening presentation and to the students for their active participation. The Head of the Physics Department emphasized the importance of understanding the practical applications of theoretical concepts and encouraged students to apply their classical physics knowledge in real-world situations.

The seminar effectively highlighted the practical importance of classical physics principles. Basim MB's expertise and engaging presentation provided valuable insights into how physics underpins many aspects of daily life, inspiring students to further explore the practical applications of their physics education.

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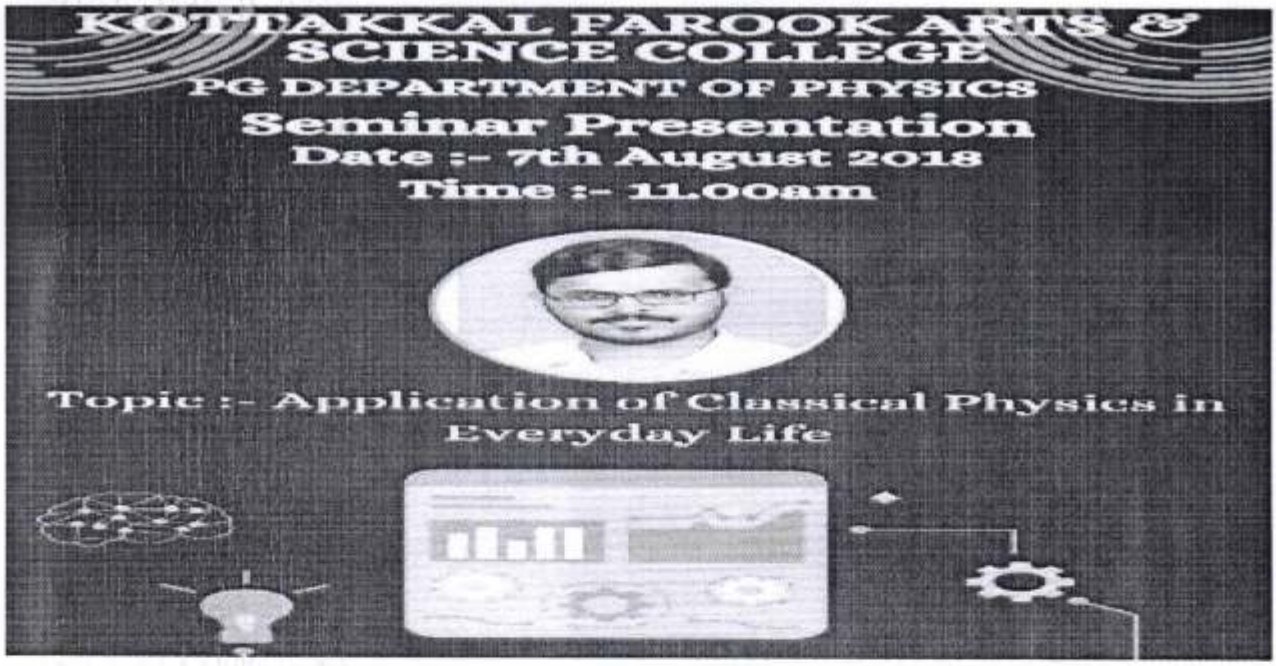

FACULTY LEARNING FORUM

It is an internal sit-together discussion forum of faculty members scheduled casually or a casual sit-together on a particular day, or say Friday's last hour or week's last working day if Saturday happens to be. This forum's objectives are to discuss aspects of daily work schedules, happenings, problems related to academics, and discipline issues. It is to explore various pedagogies in higher education, to provide a platform for professional dialogues on new developments in the realm of commerce, and to encourage and foster the research culture amongst faculty members

Topics discussed in the Learning Circles during the year:

- Assessment tied with course goals
- Teaching mistakes in a classroom
- Sharing the best practices in teaching and learning in online
- Effective handling in lab class
- How to make qualitative project FOR undergraduate students
- How does student-teacher & student-student interaction affect learning

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FACULTY PROFESSIONAL DEVELOPMENT PROGRAMMES

The Faculty Professional Development programs are held on the last Friday of every month and are coordinated and conducted by representatives from the Department of physics and attended by all faculties in the department. Mr suhail K facilitated as the faculty coordinator for the Department of physics. The various topics came under the discussion are:

- A talk based on the implementation of certificate courses and its curriculum
- Virtual classroom facilities
- Orientation program for newly joined faculty members on Master soft, LMS,SOP etc.
- Scope, flexibility and availability of digital resources
- Effective implementation of mentor-mentee policies

STUDENTSHIP

This section carries information about students, academic monitoring to ensure timely handling of classes, learner-centric initiatives taken by the department, and student development and support services. The cultural and extracurricular activities, the industrial and village visits, and extension activities are also mentioned.

1) ACADEMIC MONITORING

Effective management and delivery of classes are essential for ensuring comprehensive coverage of the syllabus within the stipulated time frame each semester. Timely handling and structured delivery of topics are paramount. To achieve this, it is crucial to adhere to a well-defined semester plan, analyzing results periodically to identify areas needing improvement. When challenges arise, such as potential delays in covering the syllabus, proactive measures like scheduling extra hours, conducting online classes, and providing additional study materials can help maintain the pace. Supplemental learning through group activities also enhances understanding and retention.

Documenting academic activities meticulously is vital for tracking progress and maintaining transparency. Keeping an up-to-date teacher diary aids in recording daily teaching activities, student progress, and any adjustments made to the schedule. This documentation becomes particularly important when managing class adjustments during faculty leave, ensuring continuity and minimal disruption to the learning process.

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Monitoring student attendance is another critical aspect, as consistent attendance is closely linked to academic performance. Class teachers play a key role in mentoring students, addressing attendance issues, and providing support to those who may need it. Properly organized lab work is also essential, ensuring that students can apply theoretical knowledge practically, which reinforces learning and fosters a deeper understanding of the subject matter. By maintaining high standards in these areas, educators can create a structured, supportive, and effective learning environment.

2) LEARNER CENTRIC INITIATIVES

1) ADVISORY SYSTEM

Class advisory sessions are an integral part of the academic support system and play a vital role in the holistic development of students. The class advisor or tutor is an experienced faculty member assigned to a specific group of students to provide academic and personal guidance. They act as mentors and facilitators, ensuring the overall well-being and academic success of their assigned students.

FIRST YEAR M.Sc PHYSICS	:	SALU K
SECOND YEAR M.SC PHYSICS	:	DEVIKA RANI
THIRD YEAR B.SC PHYSICS	:	SUHAIL K
SECOND YEAR B.SCPHYSICS	:	MISHIDA SHERIN
FIRST YEAR B.SC PHYSICS	:	RESHMA

2) SLOW LEARNER-CENTRIC CLASSES

Department of physics conducted an Induction programme and a test based on it to find out slow learners and advanced learners. This ten days programme gave a picture of these two categories. Identification Process for Slow Learners: Department also conducted periodic assessments to track students' academic progress and identify those who may be struggling to keep up with the pace of the curriculum. Our teachers closely observe students' performance in class, their engagement level, and participation to identify signs of slow learners.

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ACTION TAKEN REPORT FOR SLOW LEARNERS

Once identified, slow learners are provided with additional support through remedial classes, tutoring, or special education programs tailored to their individual needs. Department implemented various learning support systems, such as study groups and peer tutoring, to assist slow learners in catching up with their peers. Department created personalized learning plans for each identified slow learner to address their specific learning challenges and set achievable goals. Progress of slow learners is regularly monitored, and adjustments are made to their learning plans as needed to ensure steady improvement.

ADVANCED LEARNER-CENTRIC ACTIVITIES:

Identification Process for Advanced Learner

The process of identifying and assessing slow and advanced learners is crucial in creating an inclusive educational environment that caters to the diverse needs of students. This report outlines the criteria and methodology employed in the identification and assessment process, as well as the classification of students into slow and advanced learners.

Identification and Assessment Criteria:

1. **Class Test Result (Weightage 50%):** An examination was conducted, either offline or online, consisting of at least fifty objective type questions based on the higher secondary syllabus and bridge classes covered till date. This assessment carries the highest weightage of 50%.
2. **Preceding Examination Overall Result (Weightage 25%):** The performance of students in their preceding higher secondary board examination was considered, carrying a weightage of 25%. This provides insight into their academic history and baseline performance.
3. **Class Observation of Subject Teacher (Weightage 25%):** Each subject teacher evaluated students on a scale of 1 to 10, considering their classroom behavior and participation. This qualitative assessment contributes 25% to the overall evaluation.

Assessment and Classification: Based on the assessment parameters and their respective weightage, the total assessment percentage for each student was calculated. Students securing marks below 40% were categorized as Slow Learners, indicating a need for additional support and personalized attention.

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Conversely, students scoring above 70% were classified as Advanced Learners, signifying their proficiency and potential for further enrichment.

The identification and assessment process outlined in the College Process Manual for Slow Learners and Advanced Learners provides a systematic approach to recognize students' academic abilities and learning needs. By utilizing a combination of objective and subjective assessment measures, educators can effectively tailor instruction and support to maximize each student's potential for success.

Supplemental learning

Supplemental learning physics Department implemented supplemental learning system to provide additional support and enrichment to students. There are two essential components of the system: peer tutoring and the role of advanced learners in facilitating supplemental learning. These initiatives aim to foster a conducive learning environment that caters to the diverse needs of students and promotes collaborative learning within the department.

Peer Tutoring

The physics Department has established a peer tutoring program to enable students to receive academic assistance from their peers who excel in specific subjects or skills. Peer tutors are carefully selected based on their academic achievements, communication skills, and willingness to help others. The peer tutoring sessions provide one-on-one or small group support to struggling students, enabling them to overcome challenges and improve their understanding of course material.

Role of Advanced Learners in Supplemental Learning

Advanced learners in the physics Department play a vital role in the supplemental learning system. They act as mentors and facilitators, supporting their fellow students' academic growth through various means.

Mentoring Slow Learners

Advanced learners assist slow learners by providing additional explanations, sharing study strategies, and offering constructive feedback on their assignments. This peer-to-peer support empowers slow learners and helps them build confidence in their abilities.

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Leading Study Groups

Advanced learners organize and lead study groups where students collaboratively discuss and analyze course material. These study sessions encourage active participation and promote a deeper understanding of the subject matter.

STUDENT SUPPORT AND DEVELOPMENT ACTIVITIES

The student support and student development initiatives that have been undertaken in this academic year are presented.

Mentoring for students
Bridge /orientation program
Digital Textbook Support
Physics lab
Project Skilling Orientation for 5th Sem UG& 3rd Sem PG.
Placement workshops for students
Student Placement Information
Class wise Placement Statistics

MENTORING

Special mentoring done

Extra time for Exams- The special students who needed extra time were mentored and with the help of the office of examinations extra time was provided both for mid-semester and end-semester exams

Mentoring for weak subjects

The students were continuously mentored regarding their academics. They were motivated and continuously encouraged to seek help from the teachers of the subjects in which they are weak

Encouragement to participate in association and cultural activities

The students were constantly encouraged to participate in all the co-curricular and inter-class events to help them develop self-confidence. One of the special students is also a member of the Theatre Club of the department

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Mid semester result analysis

Result analysis of Mid-semester exams of the special students was done separately to know their performance. It was found that compared to the first year, the second-year students fared better In the weekly departmental meetings issues related to these students were discussed

The teachers were requested to go a little slow while speaking to these students as they found it difficult to grasp. In another instance, the teachers were requested to give extra time for the completion of written assignments to first-year students who had problems comprehending and articulating using the English language. This was observed more in the case of Malayalam medium students.

The students of the first semester found the subject of mathematics and physics to be tough. After speaking to them it was concluded that lack of practice and not being able to grasp fast during the lecture hours were the main reasons for not being able to cope with the subject. The teachers teaching the subject were met in person and were requested to take a few one-to-one sessions for these students. The teachers obliged and some students even managed to get help during study holidays

An effort was made to bring them together to study problem-based papers on campus with assistance from teachers and a few senior students (supplemental learning) who were good at the subject. It was observed that this group study helped them in looking at each other's notes and getting their doubts cleared. Buddies were identified from their own classes to help them with any doubts regarding the subjects or any other thing. They became friendly with their seniors during meetings and so took help from them too. At the end of each semester their scores in all subjects were taken note of and they were advised and helped accordingly. Students who had attendance issues were constantly monitored and mentored and helped to sort out the same

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MENTOR-MENTEE FILE 2018-2019

Name of mentor :SALU K

Sl No	Name of the student	Contact Number
1	FATHIMA SHAHNA T	9446386716
2	NASLA THASNI	9526226058
3	NASMA A	9656367991
4	DANISH MOHAMMED THOOMBATH	7034182033
5	SANIYA THASNIM AC	7356217184
6	VISHNUPRIYA K	7561800196

Name of mentor: RESHMA P

Sl No	Name of the student	Contact Number
1	LIYANA T	9895649966
2	RISANA THASNI K	9061866929
3	SABEELA TK	9846231253
4	SREERAJ AH	8129915220
5	SHIFLA SANAM KK	8943052505
6	VISHNUPRASAD C	8086419465

Name of mentor: JAYASREE P

Sl No	Name of the student	Contact Number
1	NAJEEBA PP	7034672203
2	SHAHALA MP	9745475196
3	SAFA CV	7592870013
4	BASIMA NAJLA AC	9846209505
5	SNEHA P	7510104480
6	MOHAMMED ISMAIL C	9061916238

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Name of mentor: MUBARAK N

Sl No	Name of the student	Contact Number
1	NAJMA THASNI	9544634043
2	SAMEELA TK	9074104504
3	SREELAKSHMI C P	9447335324
4	BILSHA	7994758760
5	DHANUSREE OK	8157070694
6	UMER MUQTHAR A	7736547592
7	VINAYA P	8089750766

Name of mentor: SUHAIL K

Sl No	Name of the student	Contact Number
1	NAJMUNNISA KK	7559057557
2	SANA KM	9847092709
3	THASJIDA BASHEER M	6235536122
4	MOHAMED IRSHAD P	9744521397
5	SAFNA K	8714351884
6	NAJVA K	7736978795

Name of mentor: FOUSIYA K

Sl No	Name of the student	Contact Number
1	FATHIMA HIBA AC	7558897183
2	FATHIMA RIFA	9961222225
3	NASEERA M	9539424437
4	SHAHNA RAHIM	7012176266
5	FATHIMA HATHIRA CM	9446303180
6	NIDHA RAHMAN K	9895532013

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ORIENTATION PROGRAMMES FOR FIRST YEARS

A ten-day departmental-level orientation for the first semester physics students was organized with a special timetable before the commencement of regular sessions. The main objective was to orient the students to KFASC academic culture with a focus on presentation , writing and reference skill. This is a time for everyone students, parents, faculty, and staff- to meet one another, talk about the college, and articulate some of the ideals that define us as a place of learning and growth. it give basic idea of subject and lab skill.

On the first-year students were given a college-level induction program in the main auditorium along with the PTA gathering. Here the students were briefed about the rules and regulations of the department with respect to dress- code, discipline, attendance, the various clubs, associations, and other activities. This was clubbed with the Fresher's "welcome program" organized by the senior students.

SCHEDULE OF INDUCTION AND BRIDGE COURSES

On 29/08/2018, the first-year students were given a college-level induction program in the main auditorium along with the PTA gathering. Here the students were briefed about the rules and regulations of the department with respect to dress- code, discipline, attendance, the various clubs, associations, and other activities. This was clubbed with the Freshers" welcome program" organized by the senior students.

The following are the activities proposed under this Programme in which the student would be fully engaged throughout the days for the entire duration of the programme. The activities during the Induction Program would have an Initial Phase, a Regular Phase and a Closing Phase. The Initial and Closing Phases would be two days each. Normal classes start only after the induction program is over

The Induction Program is designed with objects:

The induction and bridge program at Kottakkal Farook Arts & Science College aims to integrate first-year students into college life, providing them with necessary tools and support for their academic journey.

Objectives:

- Familiarize students with the college environment, policies, and values.
- Make new students comfortable and confident in their new setting.
- Bridge the gap between high school and college education.
- Develop daily routines, academic interests, and reduce competition.

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- Build relationships between students, faculty, and staff.

Structure:

The induction program is divided into:

- **Initial Phase**: Introduction to college rules, facilities, and support systems.
- **Regular Phase**: Sessions on communication, stress, time management, and academic skills.
- **Closing Phase**: Review and wrap-up activities.

Activities:

- **Ice-breaking Sessions**: Facilitated by trainers to foster student interaction.
- **Communication and Soft Skills Training**: Enhances students' interpersonal abilities.
- **Stress and Time Management Workshops**: Provides strategies to handle academic pressures.
- **Departmental Familiarization**: Introduces students to their respective departments and faculty.
- **Creative and Physical Activities**: Engages students in arts, sports, and literary activities.

Outcomes:

- Improved integration and adaptation to college life.
- Enhanced team-building and leadership skills.
- Positive relationships between peers and faculty.
- Development of critical reading, analytical writing, and communication skills through the bridge course in the English department.

The program ensures that new students start their college life with confidence, clarity, and a supportive community, ready to tackle their academic challenges.

DEPARTMENT OF PHYSICS INDUCTION PROGRAMME 2018-2019

Department of physics Student Induction Program aims to ensure that students feel welcomed, supported, and prepared to begin their studies in the physics Department.

The objectives of the Department of physics Student Induction Program are:

1. To introduce students to the faculty, staff, and resources available within the physics Department.
2. To provide students with an overview of the academic programs and courses offered by the physics Department.

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3. To familiarize students with the expectations and requirements for successful study in the physics Department.
4. To help students develop the skills necessary to succeed academically, including critical reading, writing, and research skills.
5. To provide students with information about academic and professional opportunities available to them within the physics Department, as well as outside of the department.
6. To encourage students to become active members of the physics Department community and to participate in departmental events and activities.
7. To provide students with the support and guidance necessary to achieve their

INDUCTION PROGRAMM SCHEDULE

10.00am	Registration of Students
10.30am	Welcome Address by Principal **Prof. M. Abdul Azeez**
11.00am	Inauguration by **PUsmanKutty** (President –Farook Educational Society)
11.30am	**TP Kunhu Sahib** (Vision& Mission Statement of Farook Institutions)
12.00 pm	Felicitation Adress by **T.E Marakkar Kutty Haji** (Treasurer–Farook Educational Society)
12.15pm	Presentation of the Schedule of Forthcoming sessions, induction and bridge classes by **Labeeb Mancheri** (Vice Principal)
12.45pm	Vote of Thanks by **Mubarak N** (Staff Secretary)

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DEPARTMENTAL BRIDGE COURSES 2018-2019

	10am-11.30am	11.30am-1pm	2pm-4pm
Tuesday **11-09-2018**	Course Outline **(Mubarak N)**	CBCSS Regulations **(Mubarak N)**	Syllabus **(Mubarak N)**
Wednesday 12-09-2018	Into the world of physics **(Mubarak N)**	Newton's laws of physics **(Salu K)**	Work,energy and power **(Jayasree P)**
Thursday 13-09-2018	Limits Continuity & Differentiation **(Suhail KP)**	How can we Communicate Through Light **(Salu K)**	Basis of Quantum Mechanics **(Jayasree P)**
Monday17-09-2018	Electronics **(Suhail K)**	Electromagnetic Induction **(Fousiya K)**	Nuclear Physics **(Reshma P)**
Tuesday 18-09-2018	Where Math Meets Physics **(Reshma P)**	Magnetism & Matter **(Fousiya K)**	Familiarisation of CRO **(Suhail K)**
Wednesday19-09-2018	**Chemistry** **(Jaseena RV)**	Relativity **(Salu K)**	Organic chemistry **(Jaseena RV)**

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DIGITAL TEXTBOOK SUPPORT

The Department of physics provides digital textbooks to the students of the department to broaden their intellectual horizons and to aid in their regular classroom teachings. The list of textbooks is given in DSPACE and students can download or read a book, either prescribed or recommended from their home or a place of their ease. Free textbook references are available at D Space.

LABORATORY FACILITIES IN DEPARTMENT OF PHYSICS

General Physics Experiments:

The most common types of labs in a physics department. They are used for introductory physics courses and cover a wide range of topics, from mechanics and electromagnetism to optics and thermodynamics. These experiments are equipped with basic equipment like optics benches, oscilloscopes, and data acquisition systems, cantilever, prism etc..

Optics and Laser Experiments:

The experiments focus on experiments related to optics, lasers, and photonics. They may have high-power lasers, optical tables, and various optical components for experiments in optics and laser physics.

Electronics experiments:

The experiments are equipped for designing and building electronic circuits and instrumentation. Students can work on projects related to the development of scientific instruments and data acquisition systems. These experiments are equipped with various electronics component and devices like Transistor, resistors, CRO, function generator, DSO..et

Nuclear and Particle Physics Laboratories:

The lab are equipped for experiments related to nuclear and particle physics, including GM counter, ESR, detectors, and associated infrastructure.

Condensed Matter Physics experiments:

The experiments are focused on the study of solid and soft matter, including the use of various techniques such as diffraction, electron microscopy, and spectroscopy.

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Computational Physics Facilities:

Physics departments also have computational physics facilities use high performance computers for simulations of python programs. These labs often have clusters of computers and access to software for numerical simulations.

PROJECT SKILLING ORIENTATION FOR FIFTH SEMESTER B.Sc PHYSICS AND THIRD SEMESTER MSc PHYSICS

Physics Department offered project orientation program to the final year UG and PG students. These initiatives aim to enhance students' research and analytical skills, encourage independent thinking, and provide practical exposure to real-world applications of different branches of physics. There are various project orientation program implemented by the physics Department.

PROJECT CERTIFICATION

The final year Project undertaken by our students revolves around the central theme of improving educational quality through innovative initiatives. The project aligns with the mission of our institution to foster holistic development and academic excellence

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B.Sc PROJECT DETAILS 2018-2019

ROLL NO.	Name	Project Topic	Research thrust area	Project advisor
1.	IRFANATH	Study Over The Dielectric Property Of Materials And Its Applications And Calculation Of Dielectric Constant Of Certain Liquids	Solid State	Reshma P
2.	JAHANA SHERIN A P	A Study Of Solar cell Characteristics	Energy Sources	Salu K
3.	MUHSINA CP	Laser And Its Applications In Some Biological Specimen	Laser Physics	Jayasree P
4.	MUNEEBA T P	Applications Of OPAMP	Electronics	Suhail K
5.	RAMSHEENA C P	Laser And Its Applications In Some Biological Specimen	Laser Physics	Jayasree P
6.	IRFANATH	A Study Of Solar cell Characteristics	Energy Sources	Salu K
7.	JAHANA SHERIN A P	Refractive Index Of Different Liquids	Optics	Fousiya K
8.	RIHANATH P P	A Study Of Solarcell	Energy Sources	Salu K

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		Characteristics		
9.	SA-ADA P	Study Over The Dielectric Property Of Materials And Its Applications And Calculation Of Dielectric Constant Of Certain Liquids	Solid State	Reshma P
10.	SAHLA P	Laser And Its Applications In Some Biological Specimen	Laser Physics	Jayasree P
11.	MOHAMMED JASIM P T	A Study Of Solarcell Characteristics	Energy Sources	Salu K
12.	AISWARYA. C. T	Laser And Its Applications In Some Biological Specimen	Laser Physics	Jayasree P
13.	FABINA MK	Refractive Index Of Different Liquids	Optics	Fousiya K
14.	FATHIMA AFARA KV	Laser And Its Applications In Some Biological Specimen	Laser Physics	Jayasree P
15.	SEERSHA .P	A Study Of Solar cell Characteristics	Energy Sources	Salu K
16.	SHIBITHA.PK	Study Over The Dielectric Property Of	Solid State	Reshma P

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		Materials And Its Applications And Calculation Of Dielectric Constant Of Certain Liquids		
17.	ANJALI V V	Applications Of OPAMP	Electronics	Suhail K
18.	ATHIRA V P	Young's Modulus Of Different Woods	Material Science	Mubarak N
19.	DEEPIKA T	Applications Of OPAMP	Electronics	Suhail K
20.	HAMIDA SHERIN.P	Refractive Index Of Different Liquids	Optics	Fousiya K
21.	MEGHA M K	Young's Modulus Of Different Woods	Material Science	Mubarak N
22.	MURSHIDA KALATHINGAL	Applications Of OPAMP	Electronics	Suhail K
23.	NAFLA P	Young's Modulus Of Different Woods	Material Science	Mubarak N
24.	NAJMATH P	Young's Modulus Of Different Woods	Material Science	Mubarak N
25.	SHAHMA YOUSUF K	Refractive Index Of Different Liquids	Optics	Fousiya K
26.	SHERIL SHANA C P	Applications Of OPAMP	Electronics	Suhail K
27.	THASHREEFA SHIRIN P	Study Over The Dielectric	Solid State	Reshma P

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		Property Of Materials And Its Applications And Calculation Of Dielectric Constant Of Certain Liquids		
28.	YASAR K	Young's Modulus Of Different Woods	Material Science	Mubarak N

M.Sc PROJECT DETAILS 2018-2019

ROLL NO.	Reg. No	Name	Project Topic	Research thrust area	Project advisor
1	FPARMPHOO1	AFIRA A	Studies On Zno And Zno Reduced Graphene Oxide Hybrids For Photocatalytic Applications	Nano Technology	Prof. Dr M. K Jayaraj, CUSAT
2	FPARMPHOO2	ATHIRA P	FT- Raman Spectral Study And Molecular Rocking Of Acetohexamide	Spectroscopy	Prof. Aboo Thahir Afsal, Govt.Arts College Calicut
3	FPARMPHOO3	BASILA AC	Synthesis, Structural And Optical Studies On Mgo Nano Particles	Nanotechnology	Dr. P. Jayaram. M. E. S College Ponnani
4	FPARMPHOO4	FAREEHA K	Synthesis And Characterizatio	Nanotechnology	Prof. Dr. M. K.

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			n Of Tio2 And Tio2-Reduced Graphene Oxide Hybrids For Self - Cleaning Applications		Jayaraj, CUSAT
5	FPARMPHOO 5	HARSHINI V	FT-IR Spectroscopy And Molecular Docking Of Bezafibrate	Spectroscopy	Prof Aboo Thahir Afsal, Govt. Arts College, Calicut
6	FPARMPHOO 6	JITHINRAJ IJ	Studies On Histamine H2-Receptor Antagonists By Using Density Functional Theory	Solid State Physics	Dr. Sailaja U, MES KVM Valanchery
7	FPARMPHOO 8	RUBEENA PARANGODATH	Synthesis And Characterisation Of Fe2O3 Nano Particles	Nanotechnology	Dr. P. Jayaram, MES, Ponnani
8	FPARMPHOO 9	SAFANA MN	Structural Analysis And Morphology Of Lead Zirconate Titanate	Solid State Physics	Dr. Abduraoof K, MSTM Arts And Science College, Poopalam
9	FPARMPHO1 0	SHAFNA SHERIN AC	UV-VIS Spectroscopic Studies And Molecular Docking Of Acetohexamide And 5-	Spectroscopy	Mr. Aboo Thahir Afsal, Govt Arts College, Calicut

			Flourouacil		
10	FPARMPHO1 1	SRUTHY V	FT-IR Spectroscopic Analysis And Molecular Docking Of Acetohexamid e	Spectroscopy	Mr. Abu Thahir Afsal, Govt. Arts College, Calicut

CO-CURRICULAR, CULTURAL AND EXTRACURRICULAR ACTIVITIES, THE INDUSTRIAL AND VILLAGE VISITS, AND EXTENSION ACTIVITIES

1)B.Sc PHYSICS INDUSTRIAL VISIT REPORT

The Department of Physics, Kottakkal Farook Arts and Science College conducted its annual study tour to HAL Heritage centre and Aerospace Museum and Visvesvaraya Industrial & Technological Museum from 06/02/2019 to 09/02/2019.The tour aimed to provide students with valuable academic insights, foster collaborations, and enhance their practical knowledge. A total of 23 students and 5 faculty members from the Physics Department participated in the study tour .This report summarizes the key activities, observations, and outcomes of the study tour.

The study tour to HAL heritage centre and Aerospace Museum is a virtual wonderland of Aviation enthusiasts. The visit entertains and delighting the students at the same time. By this visit students are able to understand the different types of aircraft and identify the difference between LCA and MCA and also understand the different types of materials used for fabrication of LCA and MCA. Visvesvaraya museum has so many sub divisions like electronics, ignition, power generation and transmission, and space technology etc.

Objectives:

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The specific objectives of the study tour were:

- To observe a particular environment that enables first-hand experience of what they are learning.
- To facilitate interactions with experts at HAL .
- To enhance students' understanding of theoretical concepts from what they exposed to.
- To gain more practical knowledge and awareness about the technologies.
- Tointeract,learnandunderstandthetraditionalculturesandlifestylesof different parts of India.

Academic Insights:

The study tour enriched participants' academic perspectives and takes the students on an exciting journey through the Heritage of Aerospace & Aviation Industry in India. The Visvesvaraya Industrial & Technical Museum, has so many sub divisions like electronics, electrical, ignition, power generation and transmission. The practical exposure complemented theoretical learning, fostering a holistic understanding of physics concepts.

Facilities and Resources:

The state-of-the-art facilities and resources at Karnataka Universitywere instrumentalinbroadeningourstudents'academichorizons.Thewell-equipped laboratories and research centers were particularly noteworthy.

Outcomes and Achievements:

The study tour provided outcomes and achievements, including:

- Enhanced practical knowledge and awareness about the technologies.
- Provides opportunity to trace the exciting development of the industry since the 1940s
- Broadened perspectives and insights gained from exposure to diverse fields of Physics.
- Learnedandunderstoodthetraditionalculturesandlifestylesofdifferent parts of India

Conclusion:

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The annual study tour to HAL and Visvesvaraya Museum resounding success, providingatransformativelearningexperienceforourstudents.Weexpressour gratitude to the authorities of HAL and visvesaraya

DEPARTMENT OF PHYSICS EXTENTION ACTIVITIES

1) Title: Workshop on Science Education Outreach

- **Venue:** Farook English Medium Higher Secondary School, Ward 14, Parappur Panchayath
- **Date:** March 8th, 2019
- **Organized by:** Department of Physics, Kottakkal Farook Arts and Science College

Participants:

- 30 school students
- 10 college students

Objectives:

- Foster interest and understanding of physics among school students
- Promote collaborative learning between college and school students
- Enhance critical thinking and curiosity through interactive and hands-on activities

Activities:

- Interactive demonstrations
- Hands-on experiments
- Group activities

Feedback and Outcome:

- Increased interest in science
- Improved understanding of physics concepts
- Positive impact of collaborative learning
- Insights for further improvement

Summary: The workshop successfully engaged students in physics through practical demonstrations and interactive sessions. It fostered curiosity, critical thinking, and collaboration, enriching students' understanding and passion for science. The feedback indicated a heightened interest and better comprehension of

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physics concepts, affirming the workshop's success in promoting active learning and curiosity in science education.

2)Workshop on Renewable Energy and Sustainable Practices

Venue: Parappur Panchayath
Date: August 5th, 2018

The Department of Physics at Kottakkal Farook Arts and Science College organized a workshop on August 5th, 2018, in Parappur Panchayath to educate residents about renewable energy sources and promote sustainable living practices. The event was attended by 35 local residents and 15 college students.

The workshop aimed to enhance understanding and practical skills related to renewable energy and energy conservation. It included educational presentations, hands-on demonstrations, interactive workshops, group discussions, and Q&A sessions. Participants learned about renewable energy sources, how to set up renewable energy systems, and the importance of sustainable practices in daily life. The event was successful in fostering awareness and practical skills related to renewable energy adoption and sustainability. It provided a platform for interactive learning and knowledge exchange, empowering participants to implement renewable energy solutions and encouraging collective action to reduce carbon footprints. Positive feedback from participants highlighted the effectiveness of the workshop in addressing community concerns and promoting sustainable living practices.

Outcome: The workshop successfully raised awareness and equipped participants with practical skills for adopting renewable energy solutions and promoting

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sustainable living. The positive feedback emphasized enhanced community engagement and a commitment to reducing carbon footprints, illustrating the workshop's impact on fostering environmental consciousness and action.

3)Title:Light and optics community outreach program
Venue: Ward14,ParappurPanchayath
Date: June ,25, 2018

Overview

The PG Department of Physics at Kottakkal Farook Arts and Science College organized a Light and Optics Community Outreach Program on June 25, 2018, in Ward 14 of Parappur, Panchayath. The event saw the participation of 35 physics students and 20 local residents.

Objectives and Activities

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The program aimed to educate the community about fundamental principles in light and optics through hands-on experiments and demonstrations. Key concepts such as reflection, refraction, dispersion, and total internal reflection were explained in an interactive and engaging manner.

Impact and Feedback

The hands-on approach and interactive sessions received positive feedback from residents, resulting in an enhanced understanding of complex physics concepts and their real-world applications. Participants appreciated the practical demonstrations and the opportunity to clarify their doubts, particularly regarding optical instruments and total internal reflection.

Conclusion

The Light and Optics Community Outreach Program successfully bridged the gap between academia and society, fostering a deeper understanding and appreciation for physics concepts among the community. The program's positive impact highlighted the importance of community outreach in promoting scientific literacy and encouraging interest in physics.

Outcome: The program effectively educated residents on light and optics principles, enhancing scientific literacy and interest in practical applications, and emphasizing the significance of connecting academic knowledge with everyday experiences.

4)Title:Solar Energy Awareness and Demonstration Program

Venue: Community Hall, Ward 10, Parappur Panchayath

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Date: January 11, 2019

Organizers: First-year BSc Physics students, PG Department of Physics, Kottakkal Farook Arts and Science College

Participants: 30 physics students, 25 local residents

Objectives:

- To enlighten the community about the significance of solar energy.
- To demonstrate practical applications of solar energy.

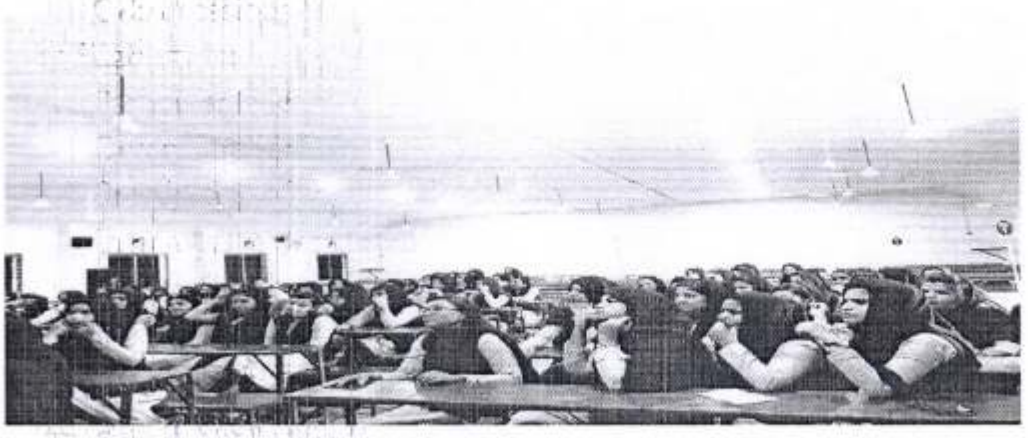
Activities:

- Educational sessions
- Hands-on demonstrations
- Interactive workshops
- Q&A sessions

Key Highlights:

- Participants learned about the benefits of solar energy.
- Demonstrations included assembling solar circuits and understanding the functioning of solar panels.
- Increased awareness and interest in renewable energy solutions for sustainable living.

Outcome: The program effectively educated participants on solar energy's benefits and practical applications. The community showed positive engagement and a readiness to explore further aspects of solar technology, such as initial costs, maintenance requirements, and efficiency. This highlights a growing interest in adopting renewable energy solutions for a sustainable future.



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5)Title: Understanding Magnetism: Community Outreach Program

- **Venue:** Local Community Center, Ward 14, Parappur Panchayath
- **Date:** September 10, 2018

Organizers:

- First Year students of the PG Department of Physics, Kottakkal Farook Arts and Science College

Participants:

- 30 physics students
- 35 local students

Program Overview: The "Understanding Magnetism" Community Outreach Program aimed to explain fundamental principles of magnetism and its practical applications. The event included hands-on activities and interactive sessions, which introduced basic magnetism concepts, demonstrated magnet properties, and explained electromagnets.

Activities:

- Basic concepts of magnetism
- Properties and behaviors of magnets
- Principles behind electromagnets
- Hands-on activities
- Interactive sessions

Outcomes:

- Enhanced understanding of magnetism among participants
- Increased interest in physics within the community
- Positive feedback from attendees
- Inquiries about practical applications of electromagnets and safety concerns

Impact: The program successfully educated the community on magnetism, fostering scientific literacy and enthusiasm for learning. Attendees appreciated the practical demonstrations and workshops, which facilitated a deeper comprehension of magnetic phenomena. The positive engagement and curiosity among residents highlighted the program's effectiveness in promoting physics education.

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