KOTTAKKAL FAROOK ARTS AND SCIENCE COLLEGE

POST GRADUATE DEPARTMENT OF PHYSICS

ANNUAL REPORT

2021-22

2124

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 (2021-2022)

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	A 01	Common Course I – English	72	4	4
	A 02	Common Course II – English	90	5	3
	A 07	Common Course III – Language other than English	72	4	4
	PHY1 B01	Core course I - Mechanics I	36	2	2
		Core Course V - Practical I	36	2	*
		1st Complementary Course I - Mathematics	72	4	3
		2nd Complementary Course I	36	2	2
		2nd Complementary Course Practical I	36	2	*
	EO1	Environment Studies	-	-	4**
		Total	450	25	18
2	A 03	Common Course IV – English	72	4	4
	A 04	Common Course V – English	90	5	3
	A 08	Common Course VI – Language other than English	72	4	4
	PHY2 B02	Core Course II - Mechanics II	36	2	2
		Core Course V - Practical I	36	2	*
		1st Complementary Course II - Mathematics	72	4	3
		2nd Complementary Course II	36	2	2
		2nd Complementary Course Practical II	36	2	*
	E02	Disaster Management			4**
		Total	450	25	18

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3	A 05	Common Course VI – English	90	5	4
	A 09	Common Course VIII - Language other than English	90	5	4
	PHY3 B03	Core Course III – Electrodynamics-I	54	3	3
		Core Course VI– Practical I	36	2	*
		1st Complementary Course III – Mathematics	90	5	3
		2nd Complementary Course III	54	3	2
		2nd Complementary Course Practical III	36	2	*
	E03	Human Rights or Intellectual Property Rights or Consumer protection			4**
		Total	450	25	16
	A 06	Common Course IX – English	90	5	4
	A 10	Common Course X - Language other than English	90	5	4
	PHY4 B04	Core Course IV - Electrodynamics II	54	3	3
	PHY4 B05	Core Course Practical V – Practical I	36	2	5
		1st Complementary Course IV– Mathematics	90	5	3
		2nd Complementary Course IV	54	3	2
		2nd Complementary Course Practical IV	36	2	4
	E04	Gender studies or Gerontology			4**
		Total	450	25	25
	PHY5 B06	Core Course VI - Computational Physics	54	3	3
	PHY5 B07	Core Course VII - Quantum Mechanics	54	3	3
	PHY5 B08	Core Course VIII - Optics	54	3	3
	PHY5 B09	Core Course IX- Electronics (Analog and Digital)	54	3	3
		Open Course – (course from other streams)	54	3	3
		Core Course Practical XIV - Practical II	72	4	*
		Core Course Practical XV- Practical III	72	4	*
		Core Course XVII Project/Research methodology	36	2	*

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		Total	450	25	15
	PHY6 B10	Core Course X - Thermodynamics	54	3	3
	PHY6 B11	Core Course XI -Statistical Physics, Solid State Physics, Spectroscopy and Photonics	54	3	3
	PHY6 B12	Core Course XII - Nuclear Physics and Particle Physics	54	3	3
	PHY6 B13	Core Course XIII - Relativistic Mechanics and Astrophysics	54	3	3
	PHY6 B14	Core Course XIV (Elective:EL1 / EL2 / EL3)	54	3	3
	PHY6 B15	Core Course Practical XV – Practical II	72	4	5
	PHY6 B16	Core Course Practical XVI – Practical III	72	4	5
	PHY6 B17 (P/R)	Core Course XVII Project/Research methodology Tour report	36	2	2 1
		Total	450	25	28
Total Credits					120
	PHY6 B13	Core Course XIII - Relativistic Mechanics and Astrophysics	54	3	3
	PHY6 B14	Core Course XIV (Elective:EL1 / EL2 / EL3)	54	3	3
	PHY6 B15	Core Course Practical XV – Practical II	72	4	5
	PHY6 B16	Core Course Practical XVI – Practical III	72	4	5
	PHY6 B17 (P/R)	Core Course XVII Project/Research methodology Tour report	36	2	2 1
		Total	450	25	28
Total Credits					120

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M.SC PHYSICS PROGRAMME DETAILS

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

The programme 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.

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.
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.

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)

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(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)

Viva Voce (Comprehensive) (4C)

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Semest er	No. of Theory Papers	Practica ls	Theory		Practical		Project		Semina r/Tutori al	Viva Cred.	Total hours	Total Cred
			Hrs	Cred	Hrs	Cred	Hrs	Cred	Hrs			
I	4	1. Gen. Phys I 2. Electro nics I	16	16	8	0	0	0	1	0	25	16
II	4	1. Gen. Phys II 2. Electro nics 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**

Certificate Course Curriculum

This section gives an overview of a list of certificate programmes conducted and new certificate courses introduced in the academic year, and the total number of students who benefitted from the programmes.

- **Certificate programmes conducted**

  Two courses

- **PHYCCAP01 : CERTIFICATE COURSE IN ASTROPHYSICS**
- **PHYCCEP02: CERTIFICATE COURSE IN EXPERIMENTAL PHYSICS**

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COURSE OVERVIEW IN ASTROPHYSICS

The course is divided into six modules, each focusing on a different aspect of astrophysics. The modules are designed to build on each other, starting with basic concepts and moving on to more advanced topics. The course includes both lecture-based and hands-on activities, including observational assignments, data analysis, and problem-solving exercises.

Understand the basic concepts of astrophysics, including celestial mechanics and the properties of astronomical objects. Apply mathematical and physical principles to solve astrophysical problems. Analyze observational data and interpret astronomical phenomena. Discuss current theories and advancements in astrophysics research. Develop critical thinking skills through problem-solving exercises and independent research.

COURSE OUTLINE :

Module 1: Celestial Mechanics (6 hours)

- Kepler's Laws of Planetary Motion
- Newton's Laws of Motion
- Orbital Dynamics
- Gravitational Interactions
- Escape Velocity

Module 2: Stellar Astrophysics (8 hours)

- Stellar Formation and Evolution
- Stellar Spectra
- Stellar Classification
- Stellar Atmospheres

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- Stellar Mass and Radius Determination

Module 3: Galactic Astrophysics (6 hours)

- Galactic Structure and Dynamics
- Dark Matter
- Interstellar Medium
- Star Clusters and Associations
- Supernovae and their remnants

Module 4: Cosmology (6 hours)

- Big Bang Theory
- Cosmic Microwave Background Radiation
- Dark Energy
- Large Scale Structure of the Universe
- Galaxy Formation and Evolution

Module 5: Observational Techniques (6 hours)

- Telescopes and Observatories
- Imaging and Spectroscopy
- Photometry
- Data Reduction and Analysis
- Astronomical Imaging Software

Module 6: Current Topics and Research (4 hours)

- Exoplanets
- Black Holes
- Gravitational Waves
- Multi-Messenger Astronomy
- Astrobiology

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Reference:

1)Astrophysics – stars and galaxies by K D Abhyankar, University Press. (First edition)

2) Astrophysics for physicist by Arnab Rai Choudhari, Cambridge University Press. (First South Asian edition)

3) Galactic Astronomy by James Binney & Merrifield, Princeton University Press. (First edition)

COURSE OVERVIEW IN EXPERIMENTAL PHYSICS

The course will cover various experimental techniques in physics, including measurements, data analysis, and instrumentation. Students will also learn about the scientific method, experimental design, and the interpretation of experimental result.

Understand the principles of experimental physics. Plan and conduct experiments in different fields of physics. Use various experimental techniques and instruments. Analyze experimental data and interpret results. Communicate experimental results effectively

Course Outline:

Module 1: Introduction to Experimental Physics (2 hours)

- Scientific method
- Experimental design
- Measurement and uncertainty

Module 2: Mechanics (8 hours)

- Motion in one and two dimensions
- Force and motion
- Energy and momentum

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Module 3: Waves and Optics (8 hours)

- Wave properties
- Interference and diffraction
- Geometrical optics

Module 4: Electricity and Magnetism (8 hours)

- Electric fields and potentials
- Capacitance and resistance
- Magnetic fields and forces

Module 5: Quantum Mechanics (4 hours)

- Wave-particle duality
- Uncertainty principle

Module 6: Data Analysis and Instrumentation (6 hours)

- Statistical analysis
- Error analysis
- Instrumentation and measurement techniques

REFERENCES

1.Scientific foundations of vacuum techniques – S. Dushman and J.M. Laffer, John Wiley New York (1962) 2. Thin film phenomena – K.L. Chopra, Mc Graw Hill (1983)

3. R. Sreenivasan – Approach to absolute zero - Resonance magazine Vol 1 no 12, (1996), vol 2 nos 2, 6 and 10 (1997)

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DEPARTMENT FACULTIES

NAME	QUALIFICATION	DESIGNATION
Mubarak N	MSc	HEAD OF DEPARTMENT
JAYASREE P	.MSc. ,B.Ed , SET,KTET	ASSISTANT PROFESSOR
RESHMA P	MSc	ASSISTANT PROFESSOR
MUHAMMED ASHRAF PA	MSc,NET,SET	ASSISTANT PROFESSOR
Muhammed Shameem K	MSc	ASSISTANT PROFESSOR
Suhail k	MSc. ,B.Ed,SET	ASSISTANT PROFESSOR
Sairabanu O	MSc.	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

Name	Designation
Mubarak N	Chairperson
Sairabanu .O	First year course coordinator
Muhammed Ashraf PA	Convener
Sameera K	Ex-officio
Nubla (MET arts and science college ,Naasapuram)	External faculty
Jithinraj I J (2017-2019 MSC)	Alumni representee
Lukumanul Hakeem M (2021-2024B.Sc)	Student representee

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	:	JAYASREE P
FACULTY MEMBERS	:	SUHAIL K,SAIRABANU O

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 : MUHAMMED ASHRAF PA

Faculty members: JAYASREE P,SUHAIL K

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 : MUHAMMED ASHRAF PA

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Experiential Learning committee

Experiential Learning Committees oversee the implementation of experiential learning programs that provide practical exposure to students. physics Department has conducted Experiential Learning Projects during the academic year of 2021-2022. It has planned to give different topics related on theoretical physics and experimental physics among students in each semesters. Every students in each semesters submitted their projects on time

Chairperson : MUBARAK N

Coordinator : RESHMA P

Faculty members : SUHAIL K, SAIRABANU O

EXPERIENTIAL LEARNING PROJECT 2021-2022

Class	Name of giude	Project title	Assigned date	Objective	No. of students submitted
1st Bsc Physics	Mubarak N	Refractive index of prism using spectrometer	09-10-2021	To delve into the principles of optics and provide a hands-on exploration of the properties of light as it passes through a refracting medium.	15
	Jayasree P	Solar pannel and its importance	18-01-2022	To explore the technology, functionality, and significance of solar panels in the	14

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				context of renewable energy.	
2nd BSc Physics	Reshma P	The electric field and potential of a charged sphere	18-01-2022	To investigate and analyze the electrostatic properties of a uniformly charged sphere and to explore the distribution of electric charge on the surface of the sphere and its correspondin g electric field and potential.	30
3rd BSc Physics	Suhail K	Ploting of graphs using python	09-08-2021	To develop proficiency in utilizing Python programming for data visualization through graph plotting.	34
		Simulation of projectile motion using python	07-05-2021	To leverage computationa l methods to model and analyze the trajectory of a projectile under the influence of gravitational forces.	35

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ROLES AND RESPONSIBILITIES ALLOTTED TO THE FACULTY

Department Head	Mubarak N
Department Coordinator	Jayasree P
Library committee	Muhammed Ashraf PA
Department Exam Coordinator	Reshma P
Program Coordinator	Muhammed Shameem K
Class Advisors	**B.Sc. Programme**
	I Semester :Sairabanu
	II Semester: Sairabanu
	III Semester: Reshma P
	IV Semester : Reshma P
	V Semester: Muhammed Shameem K
	VI Semester: Muhammed Shameem K
	M.Sc.Programme
	I Semester :Suhail k
	II Semester: Suhail k
	II Semester:Muhammed Ashraf PA
	IV Semester :Muhammed Ashraf PA
Mentor Mentee for various Classes	I Year : Sairabanu
	II Year: Reshma P
	III Year:Muhammed Shameem K
College Council	Mubarak N

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Anti Ragging Squad	Mubarak N
Anti Ragging Committee	Suhail K
Tour Co-ordinator	Muhammed Shameem K
Lab in Charge	B.Sc.First year :Sairabanu B.ScSecondYear: Muhammed Shameem K B.Sc Final Year : Jayasree P B.sc Complimentary First year:Mubarak N B.sc complimentary Second year: :Muhammed Ashraf PA M.sc First Year : Suhail k M.sc Second Year : Reshma P
Alumni coordinator	Sairabanu
Complaints and grievance Cell	Muhammed Ashraf PA
File in Charge (NAAC)	**Mubarak N** : • Advisors list Year wise Question papers • Year wise time table • Minutes book • Year wise details of teachers
	Jayasree P: • photo album • Year wise external marks • Teachers examination duty • Year wise duty chart • Year wise annual report
	Muhammed Ashraf PA • Alumni register • Department alumni report • Annual report of study tour

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	• Reportofseminar,workshop.... • Year wise details of teachers attended examination duty
	Sairabanu • 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
	Muhammed Shameem 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
	Suhail K: • Year wise details of advanced learners • Year wise details of slow learners • Annual report of extension activities • Teachers diary • Stock register department • Certificate course developed by department

WEBINAR ORGANIZED BY THE DEPARTMENT OF PHYSICS

on the 10th of january 2022, the Department of physics at Kottakkal farook college organized an enriching webinar, focusing on "different material characterization techniques. the webinar was inaugurated Prof.Abdul azeez ,Principal Of Kfasc. " the webinar featured Assistant Professor Dr. Sanoj Varghese from the department of physics at Mstm Arts & Science College Perithalmana as the esteemed resource person. the webinar commenced with a warm welcome extended by the HOD of physics Mubarak n, acknowledging the global audience comprising students, academicians, and professionals eager to delve into the realm of material characterization techniques.the other dignitaries were Mr. Labeeb, Vice Principal, Kfasc, Mr. Sreeenath M, Chief Superintendent Of Exam, Kfasc. And Mr. Mujeeb Department Of Commerce And Management. finally the program ended with vote of thanks Mr.Suhail K department of physics. assistant professor Dr. Sanoj Varghese, a seasoned expert in the field, initiated the session by delivering an insightful presentation, delving into the diverse spectrum of material characterization methodologies

The webinar was structured to provide a comprehensive understanding of various material characterization techniques, ranging from spectroscopic and microscopic methods to imaging technologies. Dr. Varghese meticulously explained the principles behind techniques such as X-ray diffraction, scanning electron microscopy, atomic force microscopy, and Fourier-transform infrared spectroscopy. Each method was highlighted for its ability to unveil intricate details about material properties, enabling attendees to grasp their diverse applications across industries. Emphasizing practical utility, the webinar showcased how these characterization techniques offer crucial insights into material behaviours and performances. Dr. Varghese navigated through compelling case studies demonstrating the pivotal role of these methods in nanotechnology, biomedical engineering, and various other fields. Attendees were captivated by real-world instances illustrating the impact of these techniques on material innovation and industrial advancements.

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PG DEPARTMENT OF PHYSICS

International Webinar

Resource Person :- Dr. Sanoj Varghese

Date:- 10/01/2022

Time- 10.30am

Google Meet :- https://meet.google.com/bbn-ceah-pee

Welcome

MOOC/SWAYAM/COURSERA:

Some of the faculties completed online course during academic year .


THE UNIVERSITY OF TOKYO

COURSE CERTIFICATE

MUHAMMED SHAMEEM K

coursera

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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
- Effective handling in lab class
- How to make qualitative project FOR undergraduate students
- How does student-teacher & student-student interaction affect learning
- The procedure of government bailouts and its implications
- A discussion on the interim Union Budget

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.

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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.

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.

LEARNER CENTRIC INITIATIVES

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.

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FIRST YEAR M.Sc PHYSICS	:	SUHAIL K
SECOND YEAR M.Sc PHYSICS	:	MUHAMMED ASHRAF PA
THIRD YEAR B.SC PHYSICS	:	MUHAMMED SHAMEEM
SECOND YEAR B.SCPHYSICS	:	RESHMA P
FIRST YEAR B.SC PHYSICS	:	SAIRABANU

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.

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.

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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. 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.

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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.

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.

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ONLINE CLASSES

The importance of online classes during COVID-19 is substantial, contributing significantly to education continuity and addressing the challenges posed by the pandemic. Online classes enable uninterrupted learning during lockdowns and social distancing measures, ensuring students can continue their education without disruption. Online classes mitigate the risk of virus transmission by eliminating the need for physical presence in crowded classrooms, promoting the safety and well-being of students, teachers, and the community. Online classes make education accessible to a broader audience, including those who may face geographical barriers, health issues, or other challenges that limit their ability to attend traditional in-person classes

STUDENT SUPPORT AND DEVELOPMENT ACTIVITIES

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

1. Mentoring for students
2. Bridge /orientation program
3. Digital Textbook Support
4. Physics lab

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5. Project Skilling Orientation for 5th Sem UG& 3rd Sem PG.
6. Placement workshops for students
7. Student Placement Information
8. 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.

- **MID SEM 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.

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In the weekly departmental meetings issues related to these students were discussed.

For instance, 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

DEPARTMENT OF PHYSICS MENTOR-MENTEE REPORT

Mentoring has become a necessity to resolve problems relating to academics and other related issues faced by the students. Mentoring can build a healthy relationship between the students and teachers in building their discipline, performances and also for the overall positive growth of the students.

	MENTOR-SALU K		
SL NO.	NAME OF THE STUDENT	REGISTER NUMBER	CONTACT NUMBER
1.	HANNA	FPAVSPH002	8113024729
2.	NASHMIYA K	FPAVSPH003	9895522083
3.	MURSHIDA	FPAVMPH009	9061787849
4.	NASMA A	FPAVMPH010	9656367991

	MENTOR-MUBARAK N			
Sl. No.	Register No.	class	Name	Phone No.
1	FPAVSPH015	MSC	MUFEEDA P K	9495151374
2	FPAVSPH006	BSC	WAFA M K	7356085144
3	FPAVMPH015	MSC	SRUTHI P	7994307345
4	FPAVMPH016	MSC	VASEEMA NARGHESE	9645750405
	MENTOR-JAYASRE .P			
Sl No	NAME OF THE STUDENT		REGISTER NO	PHONE NO
1	SHAMEELA FAHMI	BSC	FPAVSPH005	8714507135
2	MOHAMMED FASAL	BSC	FPAVSPH013	7994277209
3	BASIMA NAJLA	MSC	FPAVMPH002	9846209505
4	MIDHUN T	MSC	FPAVMPH017	8606694781

	MENTOR-SUHAIL K			
Sl.No	Name of student	Class	Register No.	Phone No.
1	SHAHIN M	BSc	FPAVSPH012	7736872054
2	RISAL SHAN	BSc	FPAVSPH011	8281105384
3	MOHAMMED DILSHAD T	BSc	FPAVSPH014	9961031337
4	SHABNA PARAMBATH	MSc	FPAVMPH012	9061452291
5	FATHIMA RASANA M P	MSc	FPAVMPH005	7902542947
6	LIYANA T	MSc	FPAVMPH018	9895649966
	MENTOR-RESHMA			
Sl.No	Name of student	Class	Register No.	Phone No.
1	SHAMNA P	BSC	FPAVSPH016	8086236224
2	MOHAMMED SAHAL	BSC	FPAVSPH009	9633080044

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3	FATHIMA RIFA	MSC	FPAVMPH006	9961222225
4	MANEESA KK	MSC	FPAVMPH007	8281364667
5	FAHMINA A	MSC	FPAVMPH003	9895648964

2)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 19/09/2021, 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.

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The Induction Program is designed with objects:

Planned event to educate the new entrants about the environment of the college, and connect them with the people in it. The incumbents learn about the institutional policies, processes, practices, culture and values. To make the newly joined students feel comfortable in their new environment. Create confidence to slow learners that they are supported continually. To give a summary of the program outcomes, program specific outcomes and course outcomes. To bridge the gap between previous knowledge and the course opted. Set a healthy daily routine. Develop awareness, sensitivity and understanding of the self, about people around them, about society at large, and nature. Sensitize them towards exploring their academic interests and activities. Reducing competition and making them work for excellence, and to achieve skills. Promote bonding within them. Build relations between teachers and students. Form a broader view of life, and building of character. Vision, mission and values of the college.

The time during the Induction Program is:

1) To identify slow learners and advanced learners.
2) Used to overcome deficiency in English Communication.
3) Periods can be used to overcome some critical lacunas that students might have, in their main subjects by running crash courses, so when the normal courses start after the induction program, the student can overcome the lacunas substantially.
4) Campus rules and regulations, attendance leave, discipline uniform rules, etiquette, exam rules, hall ticket, canteen, parking rules, anti-ragging initiatives etc.
5) Provision of anti-ragging cell/squad, complaints grievances redressal cell, etc.
6) Familiarization to Dept., /digital library/sports /arts facilities clubs/student support activities.
7) Familiarization of student activities in various areas.

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8) The students are oriented on the system environment followed in the college (ERP, LMS, MAILING&MESSAGING, online exams etc).

9) Method of study of coaching and guidance offered and what they want to acquire additionally. (add on courses)

10) Importance of writing exams and completion of the course in time, to mend their future.

11) They are also shown the laboratories, & other facilities in the campus.

Student's Induction thus could cover a number of different aspects (SAGE):

Socializing: Meeting other new students, senior students, student's union, Lectures by Eminent People.

Associating: Visits to college premises, visits to Dept./Branch/ Programme of study & important places on campus,local area, and city and so on.

Governing: Rules and regulations, student support etc.

Experiencing: Subject lectures, study skills, small-group activities, physical activity, creative and performing arts, literary activities, universal human values,etc.

DEPARTMENT OF PHYSICS INDUCTION PROGRAMME 2021-2022

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

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The objectives of the Department of physics Student Induction Programme 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.
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 academic and professional goals.

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INDUCTION PROGRAMM SCHEDULE

Date	Time	Resource Person	Activity
27-10-2021 Wednesday	10.00 am – 11.00 am 12.00 pm – 1.00 pm 2.00 pm – 3.00 pm	Suhail KP Reshma P Muhammed Ashraf PA	Sets Where Math Meets Physics Through the World of Alpha, Beta&Gamma–
28-10-2021 Thursday	10.00 am – 11.00 am 12.00 pm – 1.00 pm 2.00 pm – 3.00 pm	Aishwarya K Saira Banu Muhammed Shameem K	It's called ChemisTRY, not ChemiSUICIDE Relativity Electromagnetic Induction
29-10-2021 Friday	10.00 am – 11.00 am 12.00 pm – 1.00 pm 2.00 pm – 3.00 pm	Muhammed Ashraf PA Saira Banu Muhammed Shameem K	Does the combination of Light always give More Brightness Classical Mechanics Introduction From a charge to a LAKE(of)TRONICS

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30-10-2021 Saturday	10.00 am – 11.00 am 12.00 pm – 1.00 pm 2.00 pm – 3.00 pm	Suhail K Reshma P Mubarak N	In to the World of Python Electrodynamics- A union of Four Realms of Mechanics In to the World Of Thermo's
01-11-2021 Monday	10.00 am – 11.00 am 12.00 pm – 1.00 pm 2.00 pm – 3.00 pm	Suhail KP Suhail K Aishwarya K	Limits Continuity & Differentiation Describing the Motion of Macroscopic Objects It's called ChemisTRY, not ChemiSUICIDE
02-11-2021 Tuesday	10.00 am – 11.00 am 12.00 pm – 1.00 pm 2.00 pm – 3.00 pm	Muhammed Shameem K Jayasree P Saira Banu	Familiarization of Modern Physical Equipments Familiarization of CRO Newtonian Mechanics
03-11-2021 Wednesday	10.00 am – 11.00 am 12.00 pm – 1.00 pm 2.00 pm – 3.00 pm	Muhammed Ashraf PA Jayasree P Suhail K	How can we Communicate Through Light- Everything we Thought was Physical is Not Physical Boolean Algebra & Logic Gates

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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:

These are 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:

These 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:

These 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..etc

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Nuclear and Particle Physics Laboratories:

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

Condensed Matter Physics experiments:

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

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 programmes 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 programmes implemented by the physics Department.

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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.

Certificate

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B.Sc PHYSICS PROJECT DETAILS 2021-2022

ROLL NO.	Reg. No	Name	Project Topic	Research thrust area	Project advisor
1	FPATSPH004	MUSHRIFA OP	The bing bang theory	Astrophysics	Jubairiya K T
2	FPATSPH009	SHAHNA CP	Holographic principle and its applications	Optics	Suhail k
3	FPATSPH012	AYISHA NASRA P	Plasma physics	Plasma physics	Sairabanu O
4	FPATSPH013	RIYA MARIYAM M	The end of universe	Astrophysics	Jayasree P
5	FPATSPH016	SEFEELA NASRI O	Geothermal energy	Nonconventional energy	Salu K
6	FPATSPH023	FATHIMA HUDA	Possible effects of electromagnetic radiation on human health	Electromagnetism	Suhail K
7	FPATSPH024	FATHIMA	Carbon nano	Nanotechnology	Sairabanu O

		JILNA A	tubes		
8	FPATSPH025	FATHIMA MUFEEDA N	Phenomenology of jets in astrophysics	Astrophysics	Muhammed Shameem K
9	FPATSPH026	FATHIMA SHAHNA	Quantum entanglement	Quantum mechanics	Jubairiya K T
10	FPATSPH027	FATHIMA SHANA C	Time travel in modern physics	Modern physics	Muhammed Shameem K
11	FPATSPH028	FATHIMA VAFA MK	Mechanics of Tesla model S	Electromagnetism	Jubairiya K T
12	FPATSPH030	HRIDIKA KP	Nanosponges that flight climate change	Nanoscience	Salu K
13	FPATSPH032	MUHSINA THESNI T	Nanotechnology in medical field	Nanoscience	Jayasree P
14	FPATSPH033	NAEEMA M	Password based circuit breaker with GSM module	Electronics	Suhail K
15	FPATSPH034	SAFWANA AK	Solar powered mobile charger using buck converter	Electronics	Suhail K
16	FPATSPH037	SHAHANA T	Study of radar system	Electromagnetism	Reshma P

M.SC PHYSICS PROJECT DETAILS 2021-2022

Roll No	Reg.No	Name	Project Topic	Research thrust area	Project advisor
1	FPAUMPH001	ANANTHUKRISHNA N R	Preparation and characterization of cotton fabrics to enhance the antimicrobial efficacy through the application of neem oil	Spectroscopy	Dr. Abduraoof K, MSTM arts and science college, poopalam
2	FPAUMPH002	ANJUSHA ARAVIND K K	Structural ,Optical And Magnetic Properties of Magnesium doped Zinc Ferrite	Solid state physics	Dr.Suneesh P U,MES college of Engineering

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					Kuttippuram
3	FPAUMPH003	ASNA THASNEEM AC	Fabrication and Characterisation of PVA-Iodine & PVA -Ferrous Sulphate Polymer Composite Solar Cells	Solarcell	Dr. Abdul kareem Thottoli,PSMO tirurangadi
4	FPAUMPH005	FATHIMA CP	SYnthesis and Characterisation of PIEZOELECTRIC PVDF (polyvinylidene Fluride) film using DMF (Dimethyl Formamide)	Piezoelectricity	Dr. Abduraoof K, MSTM arts and science college, poopalam
5	FPAUMPH007	FATHIMA UMAIRA	To Determine Age of Globular Cluster	AStrophysics	NAJIYA MARYAM ,PSMO college Tirurangadi
6	FPAUMPH008	HIBA UMMER CP	Structural studies of Gd2CO3Al9 compound using Rietveld Refinement of XRD Data	Crystal physics	Dr Rashid TP,PSMO Tirurangadi
7	FPAUMPH009	JIJAY K SAJEEV	Synthesis and characterisation of ferroelectric Barium Strontium Titanate	Ferroelectricity	Dr. Abduraoof K, MSTM arts and science college, poopalam
8	FPAUMPH010	MASHOORA FARVIN KP	An extensive review on globular clusters and its revolution	Astrophysics	NAJIYA MARYAM ,PSMO college Tirurangadi
9	FPAUMPH011	MOHAMMED JUNAID P	Recrystallization of Benzoic acid	Crystal physics	Dr. Abduraoof K, MSTM arts and science college, poopalam
10	FPAUMPH012	MUHSINA KK	Synthesis of zinc oxide nano particle using leaf	nanotechnology	Dr.Suneesh P U,MES college of

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			extract of lantana camara by microwave combustion method		Engineering Kuttippuram
11	FPAUMPH013	PRIYANKA KM	Preparation of CdO-ZnO-MgO by rapid microwave irradiation method	nanotechnology	Dr.Suneesh P U,MES college of Engineering Kuttippuram
12	FPAUMPH014	REHNA K	Comparative vibrational spectroscopic investigations of 7-hydroxy coumarinand 7-methoxy coumarin	Spectroscopy	Dr Shiney A ,PSMO College Tirurangadi
13	FPAUMPH015	SAFWAAN C	A study on the synthesis and uv-visible absorption of nanocrystalline CaCO3	spectroscopy	Dr.K Maniammal , MES KVM Valanchery
14	FPAUMPH016	SAHLA THAIKKADAN	FAbrication and characterization of PVA :Zinc Acetate polymer composite solar cell	Solar cell	Dr. Abdul kareem Thottoli,PSMO tirurangadi
15	FPAUMPH017	SHADIYA FEBIN C	Structural studies of Dy10C020Si70 alloy using reitveld refinement of powder XRD data	Crystal physics	Dr Rashid TP,PSMO Tirurangadi
16	FPAUMPH018	SRUTHY A P	Preparation of cuprous oxide nano particle by microwave irradiation method	Nanotechnology	Dr.Suneesh P U,MES college of Engineering Kuttippuram

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SEMINAR ON COMPUTATIONAL PHYSICS

On the 3rd March 2022, the PG Department of Physics at Kottakkal Farook College organized an seminar on Computational Physics. The seminar was inaugurated chief gust Mr. MOHAMMED SHAFI , Assistant Professor ,Department of physics PSMO COLLEGE TIRURANGADI . Seminar commenced with a warm welcome extended by the HOD OF PHYSICS Mr. MUBARAK N, acknowledging the importance of python programming, The seminar presided by PRINCIPAL ,Professor, ABDUL ASEES sir . The other dignitaries were felicitated to the program MR. LABEEB, vice principal, KFASC. MR. SREEENATH M, chief superintendent of exam, KFASC, and MR. NAHA ,Department of mathematics. Finally the program ended with vote of thanks Ms. RESHMA P ,Department of physics.

The seminar on Computational Physics conducted by Shafi Ollakan, Assistant Professor at PSMO College THIRURANGADI, provided a comprehensive exploration of the applications and significance of computational techniques in the field of physics. Shafi Ollakan commenced the seminar with an introduction, emphasizing his expertise in computational physics. The presentation covered various aspects, including numerical simulations, data analysis, and modelling , showcasing the practical applications of computational methods.

The seminar witnessed enthusiastic participation from students across various academiclevels. Their engagement was evident through lively discussions and a keen interest in the practical demonstrations. This active involvement highlighted the students curiosity and eagerness to understand the intersection of physics and computational techniques.

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PG DEPARTMENT OF PHYSICS

INTERNATIONAL WEBINAR

Resource Person :- Shafi Ollakkan

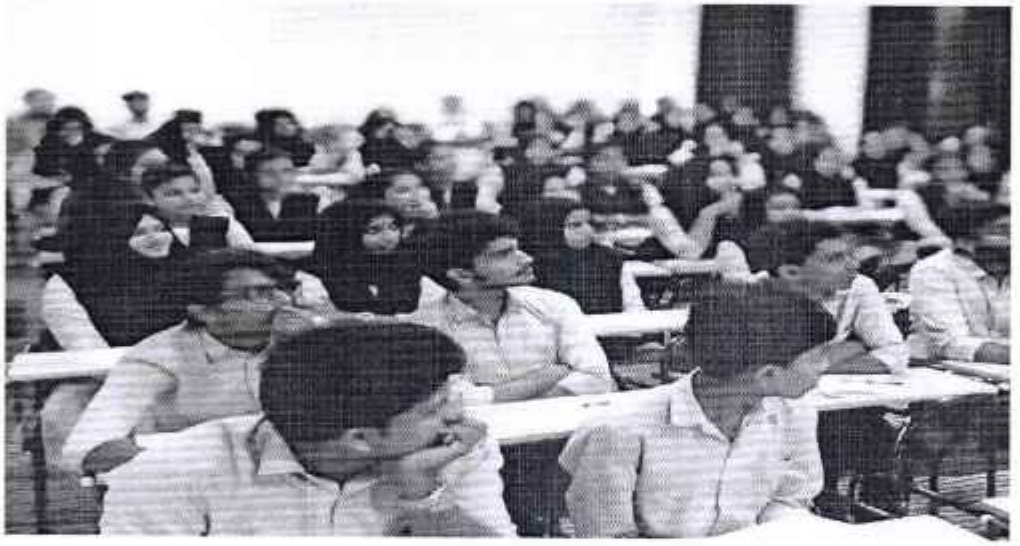
Topic:-Computational Physics

@ Seminar Hall

Date :-03/03/2022

Time- 10.30am

Welcome



The students attend the seminar on computational physics

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

Report of one-day student's seminar on'MODERN TRENDS IN PHYSICS "

PG department of physics, KOTTAKAL FAROOK ARTS AND SCIENCE COLLEGE organized a student's seminar on "Modern trends in Physics " on March 1, 2022 in college media room. The seminar focused on various sophistications on physics that have been arisen for these years.

The program started at 11:00 AM with the welcome address by Mrs. Jayashree P (assistant professor).The session was inaugurated by Mr. Mohammed Labeeb , Vice Principal, KFASC. Opening remarks and introduction of the program was given by Mr. MUBARAK N (HOD of department of physics). He welcomed all students attended there and expressed his gratitude especially towards those who are presenting the seminar. Students of PG stream were presented their papers. The important remark was all students in PG presented one topic.

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Department of Physics Kottakkal Farook Arts and Science College Annual Study Tour Report- 2021-2022

Introduction:

In response to the persisting challenges posed by the COVID-19 pandemic and the continued need for flexible and accessible learning opportunities, the Board of Studies of Physics at the University of Calicut has advised all physics teachers to share the links to the webinar series conducted in the academic year 2020-2021. This strategic move is aimed at providing students with an extended opportunity to benefit from the valuable insights and knowledge shared during the previous year's virtual tour.

Objectives:

1. **Mitigate Learning Disruptions**: Acknowledge and address the ongoing disruptions caused by the pandemic, ensuring that students have access to educational resources despite potential limitations on in-person learning.
2. **Connect students with renowned physicists**:Facilitate virtual interactions with leading physicists, researchers, and academicians to inspire and motivate students in their academic pursuits.
3. **Adaptability in Learning:** Recognize the importance of adaptability in the face of evolving circumstances, offering an alternative means for students to engage with high-quality educational content.
4. **Facilitate Self- Paced Learning:** Empower students to engage with the content at their own pace, allowing for flexibility in scheduling and accommodating various learning styles.

Implementation

1. **Communication to Physics Teachers:** The Board of Studies communicated the directive to all physics teachers, emphasizing the importance of sharing the links to the recorded sessions of the 2020-2021 webinar series with their respective students.

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2. **Inclusion in Course Materials:** Teachers were encouraged to integrate the webinar links into relevant course materials, ensuring seamless access for students alongside their regular academic curriculum.

3. **Promotion through Department channels:** The department utilized various communication channels, such as official websites, social media platforms, and departmental newsletters, to promote the availability of the webinar links.

Webinar – I

https://www.youtube.com/live/ieT0RzwhGvM?feature=shared

Institute: National Centre for Radio Astrophysics (NCRA), Pune

Resource Person: Dr. ISHWARA CHANDRA CH (Associate Professor –NCRA)

Webinar – II

https://www.youtube.com/live/Eeq3oBoFd9M?feature=shared

Institute: Inter-University Accelerator Centre (IUAC), New Delhi

Resource Person: Dr. SUGATHAN PULLANHIOTAN (Scientist-H,IUAC)

Webinar - III

https://www.youtube.com/live/NgPwArM5Pdw?feature=shared

Institute: Indian Institute of Space Science and Technology (IIST), Trivandrum

Resource Persons:

1. Dr.Anand Narayanan (Astronomy & Astrophysics),

2. Dr. Rajesh VJ (Geosciences),

3. Dr.GovindanKutty (Atmospheric Sciences)

4. Dr. K B Jinesh (Solid state physics)

Monitoring and feedback:

1. **Tracking Participation:** Metrics such as the number of clicks, views, and overall engagement with the shared links were monitored to assess the extent of student participation.

2. **Gathering feedback:** Teachers and students were encouraged to provide feedback on the effectiveness of the initiative, gauging its impact on their learning experience.

Impact Assessment

Continued Accessibility: The ongoing effort to share links ensured that the valuable content from the previous academic year remained accessible to students, supporting their educational journey.

Flexibility in Learning: Students appreciated the flexibility offered by the initiative, allowing them to engage with the content at their own pace and on their own schedule.

Adaptation to Pandemic Challenges: The initiative demonstrated the adaptability of the academic community to the challenges posed by the pandemic, showcasing a commitment to ensuring continuous and accessible learning opportunities.

Conclusion:

The decision to extend the sharing of webinar links from the previous academic year into the current year reflects the resilience and adaptability of the Department of Physics at Kottakkal Farook Arts and Science College. In the face of ongoing challenges posed by the COVID-19 pandemic, this initiative serves as a testament to the commitment to providing students with a rich and accessible learning experience.

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DEPARTMENT OF PHYSICS EXTENSION ACTIVITIES

TOPIC.
1. Workshop on energy efficiency and conservation
2. Tutoring and membership
3. Workshop on maintenance of home appliances
4.Science fair and exhibition
5.Workshop contact knowledge and communication initiatives.

Activity 1: "Energy Efficiency and Conservation" Workshop

Date: 15th January 2022
Location: Ward 14, Parappur Panchayath
Organized by: Second-year students, Department of Physics
Participants: 40 local residents, 15 college students

Objectives:

- Raise awareness about energy efficiency.
- Demonstrate practical energy-saving methods.
- Educate on environmental and economic benefits of reducing energy consumption.
- Provide tools for energy monitoring.
- Foster community commitment to sustainable practices.

Activities:

- Educational presentations on energy basics.
- Hands-on demonstrations of energy-efficient appliances and insulation techniques.
- Interactive workshops on identifying energy waste and conducting home energy audits.
- Group discussions on energy-saving strategies.
- Q&A sessions with experts.

Outcomes: The workshop successfully increased awareness of energy efficiency and provided residents with practical knowledge on reducing energy consumption. Participants learned about energy-efficient appliances and insulation techniques, encouraging behavioral changes and fostering community engagement. Positive feedback highlighted

the practical advice and interactive format, empowering residents to adopt sustainable energy practices.

Activity 2: "Tutoring and Mentorship" Program

Date: 23rd December 2021
Location: Ward 14, Parappur Panchayath
Organized by: PG Department of Physics
Participants: 35 students, 32 residents

Objectives:

- Address academic needs of students in Physics and Math through personalized tutoring.
- Establish strong mentor-mentee relationships to foster a supportive learning environment.
- Encourage students to pursue further studies in scientific subjects.

Activities:

- Personalized tutoring sessions.
- Mentorship and interactive learning activities.

Outcomes: The program effectively improved students' understanding of concepts, academic performance, and problem-solving skills. The establishment of strong mentor-mentee relationships provided a supportive learning environment, encouraging further studies in scientific subjects. The program was a resounding success, fulfilling its objectives and leaving a lasting positive impact on the participants' academic journeys.

Activity 3: Workshop on Maintenance of Home Appliances

Date: January 24th, 2022
Organized by: Department of Physics, Kottakkal Farook Arts and Science College
Location: Ward 14, Parappur Panchayath
Attendance: 25 residents, 20 students

Objective:

- Educate on the importance of regular maintenance of home appliances.

Content:

- Practical demonstrations and theoretical explanations on:
  - Cleaning refrigerator coils
  - Using self-cleaning ovens
  - Removing lint from dryers

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- Microwave maintenance
- Efficient air conditioner usage
- Garbage disposal care
- Impact of water type on appliances
- Washing machine maintenance

Outcome:

- Positive feedback from participants
- Enhanced knowledge and practical skills
- Addressed common appliance issues
- Fostered community engagement through shared experiences

Activity 4: Science Fair and Exhibition

Date: February 10th, 2022
Organized by: PG Department of Physics, Kottakkal Farook Arts and Science College
Location: Kottakkal Farook Arts and Science College
Attendance: 42 residents from Ward 14, Kottakkal Municipality; 38 UG students

Objective:

- Bridge academic research with community engagement

Content:

- Showcase of research projects
- Science-related competitions
- Interactive activities

Outcome:

- Promoted scientific literacy
- Engaged the local community
- Provided a platform for student skill development
- Fostered knowledge sharing and community engagement
- Participants appreciated interactive exhibits and showed enthusiasm for future events

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ACTIVITY 5

The Department of Physics at Kottakkal Farook Arts and Science College organized a workshop titled "Technology and Communication Initiatives" on 17th February 2022.Aimed at enhancing digital literacy and social media awareness among Ward 1 residents of Kottakkal Municipality, the event attracted 42 locals and 30 students. Divided into segments covering digital literacy, social media usage, technology's impact, and smartphone usage, the workshop provided practical knowledge and interactive learning opportunities. OUTCOME : Participants gained insights into digital tools, safe social media practices, and the effects of technology on daily life. The session concluded with improved digital skills and heightened awareness among attendees, meeting the workshop's objectives effectively.

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