FATIMA COLLEGE (AUTONOMOUS)

Re-Accredited with "A" Grade by NAAC (3rd Cycle)
74th Rank in India Ranking 2020 (NIRF) by MHRD
Maryland, Madurai- 625 018, Tamil Nadu, India

NAME OF THE DEPARTMENT : THE RESEARCH CENTRE OF PHYSICS

NAME OF THE PROGRAMME : M.Sc. PHYSICS

PROGRAMME CODE : PAPH

ACADEMIC YEAR : 2020 - 2021

PHYSICS - BOARD OF STUDIES - 7th March 2020

Board of Studies meeting held in the dept of physics, Fatima College Madurai - 18 on 7th March 2020.

List of Board members:

1. Dr. S. Rajasekhar
   Head, Dept of Theoretical physics
   School of Physics
   Madurai Kamaraj University - 625021

2. Dr. S. Ari Ponnammal
   Professor of physics
   Gandhigram Rural Institute (Deemed to be uty)
   Gandhigram - 624302

3. Dr. A. Jegatha Christy
   Asst. Professor Dept of Physics ABSENT.
   Jeyaraj Annapackiam College
   Periyakulam

4. Dr. K. Gnanasekar
   Associate Prof, Dept of Physics
   The American College, Madurai - 625002

5. Ms. Malarvizhi
   Managing Director
   Vejil Sakthi Solar
   2, Sonai muthu Servai Tower
   Melur Main Road
   Y. Othakkadai, Madurai - 625107

6. Mrs. Arulmozhi Packiaseeli
Associate Professor

7. Dr. Mathavi Manickam
Associate Professor

8. Dr. A. Sheela Vimala Rani
Associate Professor

9. Dr. L. Caroline Sugirtham
Associate Professor

10. Dr. G. Dheva Shantha Kumari
Associate Professor

11. Mrs. R. Alphonsa Fernando
Associate Professor

12. Dr. M. V. Leena Chandra
Assistant Professor

13. Mrs. I. Jeyasheela
Assistant Professor

14. Dr. Arcanna Joseph
Assistant Professor

15. Dr. M. Ragam
Assistant Professor

16. Dr. Sr. Jenita Rani
Assistant Professor

17. Dr. Jothimani R.
Asst Professor

18. Dr. Niranjana Devi R.
Asst. Professor

Minutes of the meeting:

UG Papers

* Change of title for P2CC5. Advanced mechanics changed as Applied Mechanics.
* 10% Self study included in all the UG papers.
* Syllabus for Semesters III – VI are passed
* No of hours Reduced from 7 to 5 for Electromagnetism & Electronics in III & IV Sem Respectively. (19P3CC7 & 19P4CC10)
* Hence New papers Solid State Physics and Materials Science are introduced in III & IV Semester Respectively (19P3CC8, 19P4CC11)
* It is suggested to include Types of diodes in the Analog Electronics paper.
* On P4CC11 – Material Science – Suggested to include Certain Specific materials in all the units
* On P4CC12 & P3CC9 Suggested to include Simulation Experiments of FET.
* On P5CC13 – Digital Electronics & Communication Suggested to include Sub titles (Uplink & Down link)
* P5CC14 – Optics – Suggested to change Book for Study (Jenkins & White, Ghatak)
* P6CC19 – Suggested to include EX-OR, EX-NOR, & Non binary Counters

- PGCC20 – Suggested to include particle size determination using LASER Ultrasonic experiments, Bio mass based Experiments
- Suggested to base wind mill Construction & Study.
- Titles changed for skill based papers.
- Syllabus for Advanced learner Course (Nano Science and Nano technology) passed.
- In PGM53 unit III optical fibers and cables replaced by optical fibre Sensors.

PG Papers.

- 20% of Self Study included in all PG papers.
- Titles changed for PG1P1 – Mathematical Physics
  PG2P6 – Advanced Mathematical Physics.
  PG3P11 – Condensed matter Physics.
  PG4P16 – Advanced Condensed Matter Physics.
  PG4P17 – Spectroscopy
- Suggested to buy DIGITAL POLARIMETER for practical purpose, (19PG1P4 – Non electronics)

- PG4PE2A – certification has been changed. Suggested to include dynamic Scattering method
- Title changed for PG4PE2A – Materials Synthesis and Characterisation –
- PG4PE2B – Suggested to include X ray astronomy.
- Suggested to buy data logger for daily data Collection using astronomical Telescope. which can be used for PG experiments & Projects.
- all UG and PG practicals revised and Semester

wise practicals implemented.

- Advanced learner Course – Instrumentation and Experimental methods Syllabus passed
- ~~P.Hd~~ – Closed
- Ph.D – Course Work – Syllabus Passed.
- Syllabus for Certificate Course (Cell phone Servicing), Crash Course (Digital Photography) are passed.
- Action taken on suggestions given by BOS 2019 is discussed.

1. Dr. S. RAJASHABALA	S. Rajashabala
2. Dr. S. ARIPONNAMMAL	S.R.P.L.
3. Dr. K. GHANASEKAR.	
4. Ms. MALARVIZHI.	Malarvizhi
5. Mrs. S. Arulmozhi Packiaseeli	S. Arulmozhi Packiaseeli
6. Dr. A. Sheela Vimala Rani	A. Sheela Vimala Rani
7. Dr Mathavi Manisekar	Mathavi Manisekar
8. Dr. L. CAROLINE SUGIRTHAM.	L. Caroline Sugirtham
9. Dr. G. Deva Shantha Kumari.	G. Deva Shantha Kumari
10. R. ALPHONSA FERNANDO	R. Alphonsa Fernando.
11. Dr. M. V. Leena Chandra	M. V. Leena Chandra
12. I. Jeya Sheela	I. Jeya Sheela
13. Dr. ANCEMMA JOSEPH	Ancemma Joseph
14. Dr. M. Ragam	M. Ragam
15. Dr. Sr. G. Jenita Rani	Sr. G. Jenita Rani
16. Dr R. Jothi Mani	R. Jothi Mani
17. Dr R. Niranjana Devi	R. Niranjana Devi
18.	

7/3/2020

FAIMA COLLEGE (AUTONOMOUS), MADURAI-18

DEPARTMENT OF PHYSICS

For those who joined in June 2019 onwards

PROGRAMME CODE : PAPH

COURSE CODE	COURSE TITLE	HRS / WK	CREDIT	CIA Mks	ESE Mks	TOT. MKs
SEMESTER – I						
19PG1P1	Introduction to Mathematical Physics	6	4	40	60	100
19PG1P2	Applied Electronics	6	4	40	60	100
19PG1P3	Classical Mechanics	6	4	40	60	100
19PG1P4	Practicals-I Non Electronics	4	2	40	60	100
19PG1P5	Practicals-II Electronics	4	2	40	60	100
19PG1EDC	Modern Photography	3	3	40	60	100
	Library	1	-	-	-	-
Total		**30**	**19**			
SEMESTER – II						
19PG2P6	Principles in advanced Mathematical Physics	6	4	40	60	100
19PG2P7	Quantum Mechanics	6	4	40	60	100
19PG2P8	Electromagnetic Theory	6	4	40	60	100
19PG2P9	Practicals-III Non Electronics	4	2	40	60	100
19PG2P10	Practicals-IV Electronics	4	2	40	60	100
19PG2EDC	Modern Photography	3	3	40	60	100
	Library	1		-	-	-

COURSE CODE	COURSE TITLE	HRS / WK	CREDIT	CIA Mks	ESE Mks	TOT. MKs
Total		**30**	**19**			
SEMESTER – III						
19PG3P11	Condensed Matter Physics	6	5	50	50	100
19PG3P12	Statistical Mechanics	6	5	40	60	100
19PG3P13	Nuclear and Particle Physics	6	5	40	60	100
19PG3PE1A/ 19PG3PE1B	Communication system/ Numerical methods and Programming in C++	4	4	40	60	100
19PGSLP1	Adv.Learning Course Instrumentation & Experimental Methods	-	3	40	60	100
19PG3P14	Practicals - V	4	2	40	60	100
19PG4P15	Practicals – V1	4	2	40	60	100
Total		**30**	**26**			
SEMESTER – IV						
19PG4P16	Advanced Condensed Matter Physics	6	5	40	60	100
19PG4P17	Molecular Spectroscopy	6	5	40	60	100
19PG4P18	Advanced Quantum Mechanics	6	5	40	60	100
19PG4PE2A/ 19PG4PE2B	Material Science / Astro Physics	4	4	40	60	100
19PG4P19	Practicals –VII	4	2	40	60	100
19PG4P20	Practicals –VIII	4	2	40	60	100
19PG4P21	Project*& Viva Voce	-	3	50	50	100

COURSE CODE	COURSE TITLE	HRS / WK	CREDIT	CIA Mks	ESE Mks	TOT. MKs
Total		**30**	**26**			
	Total	**120**	**90**			

II M.Sc.

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PAPH	**19PGSLP1**	INSTRUMENTATION AND EXPERIMENTAL METHODS	**Core**	**-**	**2**

COURSE DESCRIPTION

This course enables the students to understand, analyze and implement the fundamental instrumentation and experimental methods of Physics.

COURSE OBJECTIVES

This course introduces the various instrumentation and experimentation methods encompassing data interpretation and analysis, sensors and transducers, vacuum and thin film techniques, ac and dc measurements, signal conditioning and noise

UNIT I:DATA INTERPRETATION AND ANALYSIS

Measurement, result of a measurement, sources of uncertainty and experimental error, Systematic error, random error, Reliability- chi square test, Analysis of repeated measurement, Precision and accuracy, Elementary data fitting.

UNIT II: SENSORS AND TRANSDUCERS

Transducers, Transducer characteristics, selection of a instrumentation transducer, Transducer as an electrical element, modelling external circuit components, circuit calculations, Sensors and Transducers: Temperature, Pressure, Vibration, Magnetic Field, Force and Torque, Optical.

UNIT III: VACUUM AND THIN FILM TECHNIQUES

Units of pressure measurement, characteristics of vacuum, applications of vacuum, Vacuum pumps: Rotary, oil diffusion, turbo molecular pumps, Ion pumps. Vacuum

gauges: Pirani and Penning gauges. Pumping speed of a vacuum pump. Thin film techniques(overview), film thickness monitors, film thickness measurement.

UNIT IV: MEASUREMENTS

Resistance: DC and AC Measurements , Inductance Measurement: The Maxwell Bridge, Parallel Inductance bridge, Anderson bridge. Voltage Measurement: AC and DC, Current Measurement: AC and DC. Resistivity Measurement: 2-probe, 4-probe and Van-der-Paw measurements.

UNIT V: SIGNAL CONDITIONING AND NOISE

Operational amplifiers, Instrumentational amplifiers, precision absolute value circuits, True RMS to DC converters. Phase sensitive detection: Lock in amplifier, Box-car integrator, Spectrum analyzer. Noise in Circuits: Probability Density Functions, The Power Density Spectrum, Sources of noise, Introduction to Digital signal conditioning**REFERENCES**

1. Measurement, Instrumentation and Experimental desigh in Physics and EngineeringMichael Sayer and Abhai Mansingh, Prentice Hall of India 2005
2. Data Reduction and Error Analysis for the Physical Sciences, P.R. Bevington and K.D Robinson, McGraw Hill, 2003
3. Electronic Instrumentation- H.S. Kalsi, TMH Publishing Co. Ltd. 1997
4. Instrumentation Devices and Systems-C.S. Rangan, G.R. Sharma, V.S.V. ani, 2nd Edition, Tata McGraw Hill, New Delhi, 1997
5. Instrumentation Measurement Analysis-B.C. Nakra, K.K. Chaudhary.

Signature of the HOD with Seal

Dr. A. SHEELA VIMALA RANI
HEAD & ASSOCIATE PROFESSOR
DEPARTMENT OF PHYSICS
FATIMA COLLEGE
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