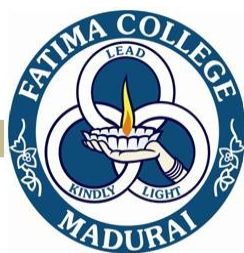


FATIMA COLLEGE (AUTONOMOUS)



**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	: Research Centre of Physics
NAME OF THE PROGRAMME	: B.Sc. PHYSICS
PROGRAMME CODE	: UAPH
ACADEMIC YEAR	: 2021-2022

Minutes of the Board of Studies Meeting.

To be implemented from 2021-2022 Onwards

Venue: PG Physics Lab.

Convened on 12.04.2021 at 2 PM

Members Present

1. Dr. A. Sheela Vimala Rani Head of the Dept.
2. Dr. Basherrudin Mahmud Subject Expert.
Asst. Prof., Ahmed,
School of Physics,
Madurai Kamaraj University
Madurai
3. Dr. K. Marimuthu, Subject Expert.
Asst. Prof.,
Dept. of Physics,
Gandhigram Rural Institute -
Deemed University,
Gandhigram
4. Dr. Eucharista Sylvia, Subject Expert
Head & Associate Prof., Dept. of Physics, (ABSENT).
St. Mary's College,
Thoothukudi
5. Mr. Ramprakash, Industrialist
Industrial Electronics Cop.,
Industrial Estate, Madurai.

6. Dr. R. Vishnu Pooya, Alumna
Asst. Prof.,
Dept. of Physics
The Madura College,
Madurai.

7. Dr. Malathy, Dean of Academic
Asst. Prof., Affairs
Dept. of Zoology,
Fatima College.

8. Mrs. S. Aulmoghni Packiaseli S. Aulmoghni
Associate Professor

9. Dr. Mathari Manisekar Mathari Manisekar
Associate Professor

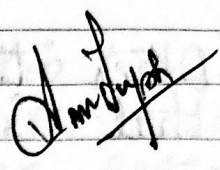
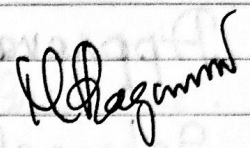
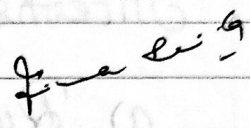
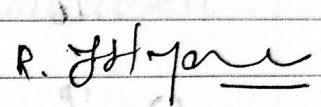
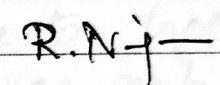
10. Dr. L. Caroline Sugirtham L. Caroline Sugirtham
Associate Professor

11. Dr. G. Dhevasanthakumar Dhevasanthakumar
Associate Professor

12. Mrs. R. Alphonsa Fernando Alphonsa Fernando
Associate Professor

13. Dr. M. V. Keena Chandra Keena Chandra
Assistant Professor

14. Mrs. I. Piyasheela Piyasheela
Assistant Professor

15. Dr. Ancemna Joseph
Assistant Professor 
16. Dr. M. Ragam
Asst. Professor 
17. Dr. G. Jenita Rani
Asst. Professor 
18. Dr. R. Jothi Mani
Asst. Prof. 
19. Dr. R. Niranjana Devi
Asst. Prof. 

Agenda for Board of Studies:

1. Preparation of Action Taken Report
2. Updation and addition of Open Educational Resources in the list of references of Courses.
3. Revision of Syllabus
4. New courses: At least one Interdisciplinary Self learning Extra credit course/semesters for UG / PG / Professional Advanced Learners to be introduced.
5. Introduction of at least one Skill Embedded Certificate / Dip / Adv. Dip. value added course

Other than the value added course that is already being offered.

6. Approval of Ph.D. Course work syllabus

7. Internships & Projects:

a) Rubrics for Internships & Projects to be passed in the Board

b) Type of projects to be decided
i) Field project /

ii) Student Project

1) Group - UG

2) Individual - PG

Minutes of the Board of studies.

1. Presentation of Action taken Report:

Action taken Report for 2020-2021
UG PHYSICS.

S.No.	Common Suggestions offered in the previous board	Action Taken for academic year 2020-21
1)	Title of 19P2CC5 - Advanced Mechanics to be changed as Applied Mechanics.	Changed.

S.No.	Common Suggestions offered in the previous board	Action taken Report for the academic year 2020-21
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2)	Types of diodes must be included in 19P4CC10 - Analog Electronics	Included.
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3)	To include specific new materials in 19P4CC11 - Materials Science	Included.
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4)	To include simulation Experiments of FET in 19P3CC9 & 19P4CC12 (May. Practical - III & IV)	Due to lockdown, it was not possible to include such new Experiments & train the students
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5)	To include uplink, downlink in 19P5CC13 Digital Electronics & Communication	Included.
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6)	To include EX-NOR in 19P6CC19	Included in OBE Syllabus to be implemented from 2020-21 onwards.
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7)	In 19P6CC20, Particle size determination, Ultrasonics, Biomass based Experiments to be included	Particle size determination is included. Ultrasonics not included, because
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it is not in their theory.

Biomass plant required to introduce Biomass Experiments

8) In 19PGCL4 optics- Included.
Book, Reference Books
By Jenkins & White
& Ghatak &
Loganathan to
be included.

9) Suggested to have will be given
windmill construction as project work

For Physics.

1) Title of the foll. Title changes
papers are to be as
Changed.

	old	new
i) 19PG1PB - Mathematical Physics - I		- Advanced Mathematical Physics.
ii) 19PG3P11 - Solid state Physics - I		- Condensed Matter Physics
iii) 19PG4PB - Solid state Physics II		- Advanced Condensed Matter Physics
iv) 19PG4PH - Molecular Spectroscopy.		- not changed.

2) Suggested to buy Digital Polarimeter for practicals

Request given to the management

3) To include dynamic Scattering method in 19PG4PE2A

Not included because the syllabus is already heavy.

4) 19PG4PE2A Suggested to change the title

Title: not changed because, Material Science seems to be more appropriate

5) To include ray astronomy in 19PG4PE2B (Astro Physics)

Not-included. Because the syllabus is already sufficient for 4 hours / week

6) To buy data logger for telescope

will be done in future.

4) Change of Course Title:

S.NO.	Old Course Code	New Course Code	Old Course Title	New Course Title	Need for Change
1)	19PG2 P6	19PG2 P7	Principles in Advanced Mathematical Physics	Advanced Mathematical Physics	Principles not relevant for this paper

2, Updation of Open Educational Resources in the list of references of each course

S.NO.	Course Code	Course Title	Details of updation
1)	19P3CC8	Solid state Physics	Relevant video Modules are appended in the & Communication references
2)	19P4CC11	Materials Science	
3)	19P5CC13	Digital Electronics	
4)	19P5CC14	Optics	
5)	19P6CC17	Thermodynamics & Statistical Mechanics	
6)	19P6CC18	Modern Physics	
7)	19P6ME2	Medical Physics	
8)	19P6ME3	Opto Electronics	

3) Revision of Courses.

S.No.	Course Code	Course Title	No. of Units Revised	Title of Revision	% of Revision	Need	Relevance	Scope
1)	19P3 CC8	Solid State Physics	Unit - III X-ray Diffraction & Reciprocal Lattice		20 %	To update diff. principle relevant to CSSP	National & Global S.D.	Emp & S.D.
2)	19P4 CC11	Materials Science	Unit - III Nanomaterials		20 %	To update recent develop. about nano materials	National & Global S.D.	Emp & S.D.

4) New Courses introduced

S.No.	Course Code	Course Title	Relevance To				Scope for			Need for Introduction
			L	R	N	G	EM	EP	SD	
1)	21PG1 P4	Applied Optics	-	-	Y	Y	Y	-	Y	To update as per NET Syllabus
2)	21PG2 P10	Instrumentation & Micro Controller	-	-	Y	Y	Y	Y	Y	

5) Introduction of Skill Embedded Certificate / Diploma / Adv. Diploma Value added Course other than the value added course that is already being offered

NOT APPLICABLE

6) Approval of Ph.D. Course Work Syllabus.

Syllabus for Research Methodology (21PHDRM03) and Research and Publication Ethics (21PHDREP04) are common for all scholars.

Course Work paper & Core-papers for each scholar are as follows.

PhD Scholar	Course Work Paper	Core Paper
A. Joana Preethi & T. Sharmili R. Meera Naachiyar & S. Hafsin Hameed	21PHDCWP01 FM Nanostructures for Energy Storage App. 21PHDCWP01 Solid State Physics	21PHDCPP02 Nanoscience Applications 21PHDCPP03 Materials Science

7) Rubrics for Internship & Project

S.No.	C1	C2	CIA TOTAL	EXTERNAL
1)	20 Mks	20 Mks	40 Mks	60 Mks.

8) Details of proposed/signed MOUs. NOT APPLICABLE

Minutes of BOS Meeting.

B.Sc. Physics (UAPH)

- 1) The existing Syllabus content was approved & highly appreciated by the board members.
- 2) Newly introduced self learning papers for all UG students are passed.
 - i) "Amazing Universe & Indian Space Missions (21P2SL)" offered by Dept. of Physics
 - ii) Interdepartmental self learning papers
 - "Microprocessor & Programming (21P4SLB2)" offered by Dept. of Physics & Computer Science
 - iii) "Space Science (21P6SLM3)" offered by Dept. of Physics & Maths
Board members suggested the syllabus for

3) above self learning paper has to be simple to motive them to opt.

3) Reference Book for self learning paper "Microprocessor & Programming" by Ramesh Gaonkar shall be appended.

4) Board suggested to introduce 'Physics for competitive Exam' as self learning paper in forthcoming years.

5) Board members approved the revision carried out in II B.Sc Core papers 19P3CC8 - Solid state Physics & 19P4CC11 - Materials Science. Reference Book by S.O. Pillai was suggested for SSP.

6) Board suggested to introduce Skill Embedded certificate course on 'Non Conventional Energy Sources'.

7) Syllabus for allied papers of BCA department on 'Digital Principles & Computer Organization' (19P4AC14)

& IT Department on "Digital Principles & Computer Architecture" (19P3ACI3) are passed.

- 8) Reference Book Malvino & Gates are recommended as Reference books in Digital Electronics & Communication (19P5CC13)

M. Sc. Physics (PAPH)

- 1) Existing Syllabus Content was approved & highly appreciated by the board members.
- 2) Self learning paper offered by Physics department to all other Science department PG Students titled on "Nanotechnology for all" is passed
- 3) New papers 'Applied Optics (21PG1P4)' & 'Instrumentation and Microcontroller (21PG2P10)' are passed
- 4) Title "Principles in advanced Mathematical Physics" changed to Advanced Mathematical Physics as the term 'principles' is a misnomer in Mathematical Physics.

5) Following Reference books were suggested for Quantum Mechanics & Advanced Quantum Mechanics

- i) Principles in Quantum Mechanics - A. Shankar
- ii) Introduction to Quantum Mechanics - Powell & Crank
- iii) Quantum Mechanics: Concepts & Applications - Noureddine Zettili

6) Industrialist suggested to replace currently existing self learning papers for advanced learners titled on "Instrumentation & Experimental Methods" by paper on "Digital Signal Processing"

7) Reference Book Malvino & Gates are recommended as reference books for Applied Electronics Paper

Ph.D.

1) Research Methodology & Research & Publication Ethics papers are passed

2) Course work paper & core paper relevant to research specializations for each scholar are passed

Board Members approved & highly appreciated syllabus content.

- | | |
|---------------------------------|-------------------------|
| 1) Dr. A. Sheela Vima Rani | A. Sheela Vima Rani |
| 2) Dr. Bashiruddin Mahmud | A. Bashir. |
| 3) Dr. K. Marimuthu | K. Marimuthu |
| 4) Dr. Eucharista Sylvia | ABSENT |
| 5) Mr. Ramprakash. | R. Ramprakash |
| 6) Dr. R. Vishnu Priya | R. Vishnu Priya |
| 7) Dr. Malathy | Malathy |
| 8) Mrs. S. Anulomphi Packiaseli | S. Anulomphi Packiaseli |
| 9) Dr. Mathavi Manisekaran | Mathavi Manisekaran |
| 10) Dr. L. Caroline Sugirtham | L. Caroline Sugirtham |
| 11) Dr. G. Dhevashantha Kumari | G. Dhevashantha Kumari |
| 12) Mrs. R. Alphonse Fernando | R. Alphonse Fernando |
| 13) Dr. M. V. Keenachandra | M. V. Keenachandra |
| 14) Mrs. I. Jeyasheela | I. Jeyasheela |
| 15) Dr. Ancemona Joseph | Ancemona Joseph |
| 16) Dr. M. Ragan | M. Ragan |
| 17) Dr. Sr. G. Jenita Rani | G. Jenita Rani |
| 18) Dr. R. Jolkimani | R. Jolkimani |
| 19) Dr. R. Nivaran Devi. | R. Nivaran Devi |

14/04/2024

PART – III -MAJOR, ALLIED & ELECTIVES – 95 CREDITS**MAJOR CORE COURSES INCLUDING PRACTICALS : 60 CREDITS**

S.N O	SEM	COURSE CODE	COURSE TITLE	HR S	CREDI T	CIA Mk s	ES E Mk s	TOT · Mks
1.	I	19P1CC1	Mechanics and Properties of Matter	5	4	40	60	100
2.		19P1CC2	Thermal Physics	4	3	40	60	100
3.		19P1CC3	Major Practicals-I	3	2	40	60	100
4.	II	19P2CC4	Oscillations and Waves	5	4	40	60	100
5.		19P2CC5	Applied Mechanics	4	3	40	60	100
6.		19P2CC6	Major Practicals – II	3	2	40	60	100
7.	III	19P3CC7	Electromagnetism	5	4	40	60	100
8.		19P3CC8	Solid State Physics	4	3	40	60	100
9.		19P3CC9	Major Practicals – III	3	2	40	60	100
10.	IV	19P4CC10	Analog Electronics	5	4	40	60	100
11.		19P4CC11	Materials Science	4	3	40	60	100
12.		19P4CC12	Major Practicals – IV	3	2	40	60	100
13.	V	19P5CC13	Digital Electronics and Communication	6	4	40	60	100
14.		19P5CC14	Optics	6	4	40	60	100
15.		19P5CC15	Major Practicals – V (Electronics)	4	2	40	60	100
16.		19P5CC16	Major Practicals – VI (Non Electronics)	4	2	40	60	100
17.	VI	19P6CC17	Thermodynamics & Statistical Mechanics	5	4	40	60	100

CBCS Curriculum for B.Sc. Physics

S.N O	SEM	COURSE CODE	COURSE TITLE	HR S	CREDI T	CIA Mk s	ES E Mk s	TOT · Mks
18.		19P6CC18	Modern Physics	5	4	40	60	100
19.		19P6CC19	Major Practicals – VII(Electronics)	3	2	40	60	100
20.		19P6CC20	Major Practicals - VIII (Non Elec)	3	2	40	60	100

ALLIEDCOURSES- 20 CREDITS

S.N O	SE M.	COURSECODE	COURSE TITLE	HR S	CREDI T	CI A Mk s	ES E Mk s	TO T. MK s
1.	I	19P1ACC1	Allied Physics – I	3	3	40	60	100
2.		19P1ACB1	Digital Principles and Applications	5	5	40	60	100
3.		19P1ACC2	Allied Physics Practicals-I	2	2	40	60	100
4.	II	19P2ACC3	Allied Physics – II	3	3	40	60	100
5.		19P2ACC4	Allied Physics Practicals-II	2	2	40	60	100
6.	III	19M3ACP1/ 19G3ACP2	Allied Physics – I	3	3	40	60	100
7.		19M3ACP2/ 19G3ACP2	Allied Physics Practicals –I	2	2	40	60	100
8.	IV	19M4ACP3/ 19G4ACP3	Allied Physics –II	3	3	40	60	100
9.		19M4ACP4/ 19G4ACP4	Allied Physics Practicals – II	2	2	40	60	100

ELECTIVES-15 CREDITS

S.No	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
1.	V	19B5MEP 1 (Offered by Computer Science)	Programming With C	5	5	40	60	100
2.		19B5MEP 2 (Offered by Computer Science)	Web Development	5	5	40	60	100
3.	VI	19P6ME1 / 19P6ME2	Microprocessor / Medical Physics	5	5	40	60	100
4.		19P6ME3/ 19P6ME4	Optoelectronics / Energy Physics	5	5	40	60	100

EXTRA CREDIT COURSE

Course Code	Courses	Hr s.	Credi ts	Semester in which the course is offered	CIA Mk s	ES E Mk s	Total Mark s
19UGSLP1	SELF LEARNING COURSE for ADVANCE LEARNERS Nanoscience and Nanotechnology (offered for III UG)	-	2	V	40	60	100
21UGSLP2	AMAZING UNIVERSE AND INDIAN SPACE MISSIONS	-	2	II	40	60	100
21UGIDPB1	FUNDAMENTALS & PROGRAMMING OF MICROPROCESSOR 8085	-	2	IV	40	60	100
21UGIDPM1	SPACE SCIENCE	-	2	VI	40	60	100

SEMESTER – II

For those who joined in 2021 onwards

PROGRAM ME CODE	COURSE CODE	COURSE TITLE	CATEG ORY	HRS/ WEEK	CREDIT S
UAPH	21UGSLP2	AMAZING UNIVERSE AND INDIAN SPACE MISSIONS	Theory	-	2

UNIT I

Introduction-Astronomy and Cosmology-Expanding Universe-The Age of the Universe-Composition of the Universe-The Dark Matter-Light year- Astronomical unit-Astronomical Telescopes-Radioastronomy

UNIT II

Clustered objects in the Universe

Planets- Stars – Nebulae- Galaxies - Black Holes - The Dark Cosmos-Hubble's Top Science Accomplishments

UNIT III

The Indian Space Research Organisation

Vikram Sarabhai Space Centre-ISRO Satellite Centre-Liquid Propulsion Systems Centre-ISRO Telemetry, Tracking and Command Network- Sriharikota-India's Spaceport-Mission Control Centre-Launch Dynamics

UNIT IV

ISRO's Rockets

Satellite Launch Vehicle (SLV3)-Augmented Satellite Launch Vehicle (ASLV)-Polar Satellite Launch Vehicle (PSLV)-Geosynchronous Satellite Launch Vehicle (GSLV)-Launch Vehicle Mark 3 (LVM3)-GSLV-Mk3-Reusable Launch Vehicle (RLV)-India's Cryogenic Engine-Missile Technology Control Regime-Commercial Space Services

UNIT V

Satellites and Stars

India's First Satellite: Aryabhata-Earth Observation: Bhaskara and IRS-Communication Satellites-INSAT 1 Series-INSAT 2 Series-Indian Regional Navigation Satellite System-Navigation Satellite-GAGAN: GPS Aided GEO Augmented Navigation-Journey to the Moon-Science from Chandrayaan-1-Chandrayaan2: Journey to the Lunar Surface-From Sriharikota to Mars-Astrosat-Astronomy from Orbit-Return to Mars-Aditya-L1-Venus Orbiter Mission.

Books for study:

1. Jayant Narlikar-A Journey through the Universe-Revised Edition -Published by National Book Trust
2. Oli Usher & Lars Lindberg Christensen-The Universe through the Eyes of Hubble-Springer
3. Gurbir Singh -The Indian Space Programme-India's incredible journey from the Third World towards the First -Astrotalkuk Publications

Books for Reference:

1. Baidyanath Basu, Tanuka Chattopadhyay, Sudhindra Nath Biswas-An introduction to Astro Physics-Second Edition-PHI Learning Private Limited-New Delhi-2010
2. K.S. Krishnaswamy, Astrophysics a modern perspective, New Age International (p) Ltd, New Delhi, 2002.
- Dr.S. Stephan Rajkumar Inbanathan, Introduction to Astronomy for Beginners, First Edition, Elijah Printing Solutions-Chen

SEMESTER – IV
For those who joined in 2021 onwards

PROGRAM ME CODE	COURSE CODE	COURSE TITLE	CATEG ORY	HRS/ WEEK	CREDIT S
UAPH	21UGIDPB 1	FUNDAMENTALS & PROGRAMMING OF MICROPROCESS OR 8085	Theory	-	2

Unit I: Introduction to Microprocessors

Word Length of a Computer or Microprocessor-Evolution of Microprocessors-
Evolution of Digital Computers-Computer Generation-Single Chip
Microcomputers-Embedded Microprocessor-Hardware, Software and Firmware-
CPU-Buses

Unit II Microprocessor Architecture

Introduction-Intel 8085-ALU-Timing and control unit-Registers-Pin
Configuration-Intel 8085 Instructions-Instruction Cycle-Fetch operation-
Execute operation-Instruction and Data flow

Unit III Instruction set of 8085

Introduction-Instruction and Data formats-Addressing modes-Direct
Addressing-Register Addressing - Register Indirect Addressing – Immediate
Addressing-Implicit Addressing – Status flags- Symbols and Abbreviations-
Intel 8085 instructions- Data transfer group-Arithmetic Group-Logical group-
Branch Group-Stack I/O and Machine Control Group

Unit IV: Assembly language programming

Introduction to programming –Program development using Mnemonics –
converting mnemonic code into Assemble code – Entering the code – Editing
and Executing the Assemble language programs -Programs to do arithmetic
operations – Data transfer operations - Logical operations – Relational
operations - Rotation operations –

Unit V:

Programs using looping statements – operations on 16-bit data –
Programs using timer control – Seven segment Display control
programs

DYNAMISM:

UNIT IV : Simple program
development
UNIT V : Designing
display control

TEXT BOOKS:

1. Fundamentals of MicroProcessors and Microcomputers by B. Ram,
Sixth Revised and Enlarged Edition, Dhanpat Rai Publications Ltd.
2. Microprocessor Architecture, Programming and Applications with
8085 by Ramesh Goankar – Sixth Edition , Penram International
Publishing Private Ltd, India

SEMESTER – VI

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
UAPH	21UGIDPM 1	SPACE SCIENCE	Theory	-	2

UNITI: COSMOLOGY

Big Bang theory-General relativity theory and cosmology-steady state theory.

UNITII: GALAXY

Structure of Milky way galaxy-center of our galaxy-high-energy sources in our galaxy-Planets and Stars

UNITIII: SUN

The sun-basic features of the sun-the photosphere-the chromosphere-the corona –Sun spots

UNITIV:MOON

Moon – Introduction – phases of moon – sidereal and synodic month-lunar day and lunar time-the tides.

UNITV:ECLIPSES

Eclipses-solar and lunar-occurrences-conditions for the occurrences-ecliptic limits – FA maximum and minimum number of eclipses in a year.

UNITVI : DYNAMISM : Star Gazing using astronomical telescope

TEXTBOOK:

1. An introduction to astrophysics by Baidhyanath Basu
2. Astronomy by S. Kumaravelu, and Susheela Kumaravelu, Reprinted, Sri Vishnu Arts, 2004.

REFERENCE BOOK:

1. Introduction in Astronomy by Robert .H. Baker 6th Edition.
2. An introduction to Modern Astrophysics by Bradley W. Carroll and Dale A. Ostlie