

J.J. College of Arts and Science (Autonomous)
Sivapuram Post, Pudukkottai – 622 422
(Re-Accredited by NAAC – 4th Cycle)
Affiliated to Bharathidasan University, Tiruchirappalli

PG and Research Department of Physics

Minutes of the Board of Studies Meeting

Meeting No: 07

Date: 29.04.2023

Time: 11.00 a.m.

The Meeting of the Board of Studies in Physics (U.G. and P.G.) for the sixth revision of the curricula to be implemented from 2023-2024, was conducted at 11.00 a.m. on Saturday, 29.04.2023

Members Present

S.No.	Name	Designation	Signature
1.	Dr.M.K. Murali Assistant Professor and Head Department of Physics	Chairman	<i>M.K. Murali</i> 29/4/23
2.	Dr.S. Rajasekar Professor, School of Physics, Bharathidasan University, Tiruchirappalli.	University Nominee	<i>S.Rajasekar</i> 29/04/2023
3.	Dr.A. Balamurugan Assistant Professor of Physics Government Arts and Science College, Avinashi – 641654, Tirupur (Dt.)	Subject Expert	<i>A. Balamurugan</i> 29/4/2023
4.	Dr.M. Karunakaran Associate Professor of Physics PG and Research Department of Physics Alagappa Government College, Karaikudi – 630 003	Subject Expert	<i>M. Karunakaran</i> 29/04/2023
5.	Dr. K. Dhanabalan Assistant Professor	Faculty Member	<i>K. Dhanabalan</i>
6.	Ms. R. Shanthi Assistant Professor	Faculty Member	<i>R. Shanthi</i>
7.	Ms. P. Parameswari Assistant Professor	Faculty Member	<i>P. Parameswari</i> 29/4/23
8.	Mr. S.Dhanachayan Assistant Professor	Faculty Member	<i>S. Dhanachayan</i> 29/4/23
9.	Mr. G.Senthilkumar Assistant Professor	Faculty Member	<i>G. Senthilkumar</i>
10.	Mrs. S. Kavitha Sreetharkumar Kumaran Scientific Co., Tiruchirappalli.	Representative from Industry	<i>S. Kavitha Sreetharkumar</i> 29/4/23

11.	Ms. R. Vinitha, 4 th Street, Kallifulla Nagar, Kallangudy (Po), Alangudi (Tk), Pudukkottai (Dt).	Alumni	ABSENT
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The Chairman, Dr.M.K. Murali chaired the meeting and welcomed all the members to the seventh BoS Meeting. After the brief introduction, the agenda items listed were taken up for discussion and the following resolutions were passed.

It was resolved to

1. As per the instructions from **TANSICHE and the Bharathidasan University**, it is resolved to follow the model curriculum pattern and syllabi of TANSICHE by the Department of Physics; to preserve the equivalence in U.G. and P.G. Degree Programmes to enable student Mobility, to be implemented from the academic year 2023 – 2024 onwards. The curriculum patterns are framed and restructured following the guidelines laid down by the UGC - LOCF and Tamil Nadu State Council for Higher Education (TANSICHE) and the Parent University.
2. It is resolved to evaluate the Syllabus followed during the Academic Year 2022 – 2023 based on the first Semester Results.
3. Minor revision of the syllabi (less than 10% of TANSICHE syllabi) has been made based on the feedback received from the Teachers, Employers, Students and the Alumni on the previous year syllabi, on the three years of B.Sc. Physics and two years of M.Sc. Physics.
4. The syllabi for the various courses of first year B.Sc. Physics and M.Sc. Physics are finalized.
5. The final curriculum structure and syllabi for the first year of the programmes are enclosed.
6. The syllabi for the subsequent years of the programmes to be framed and discussed in the next meeting of BOS to be held during January 2024

R. S. Rajasekar
29/4/23

3. S. Vinitha
29/4/23

4. S. Vinitha
29/4/23

5. S. Vinitha
29/4/23

The revised curriculum structure for the UG and PG programmes.

Distribution of Courses - UG

Part	Course	No. of. Course	Credit	Marks
P – I	Language – Tamil / Hindi / French	04	12	400
P – II	Language – English	04	12	400
P – III	Core Course	15	84	2400
	Discipline Specific Elective (DSE)	03		
	Allied Course	06		
P – IV	Skill Enhancement Course (SEC)	08	31	1600
	Foundation Course (FC)	01		
	Environmental Science	01		
	Value Education	01		
	Internship	01		
	Ability Enhancement Compulsory Course (AECC)	04		
P – V	Extension Activity	-	1	-
Grand Total		48	140	4800

Distribution of Courses - PG

Sl. No	Course	No. of. Course	Credit	Marks
1.	Core Courses	16	60	1600
2.	Elective Course	04	12	400
3.	Skill Enhancement Courses	04	08	400
4.	Soft Skill & Internship	05	10	500
5.	Extension Activity	01	01	100
Grand Total		30	91	3000

7. Allow earning Extra Credits through Courses under SWAYAM-MOOC's
8. Apply Revised Bloom's Taxonomy in spelling out Course Outcomes.
9. Change Nomenclature of Courses as shown below
 - **Discipline Specific Elective (DSE)** Courses instead of Major Based Elective Courses (MBE)
 - **Skill Enhancement Courses (SEC)** instead of Skill Based Elective Courses.
 - **Ability Enhancement Compulsory Courses (AECC)** introduced.
 - Introduction to studies skills
 - Life skills
 - Job oriented Skills
 - Computing skills

10. Implement the following guidelines on Curriculum design given by NAAC

- a. Specific mention has been made of Program outcomes (POs) Program specific outcomes (PSOs), Course Outcomes (COs) Programme Educational Objectives (PEOs) and Course Objectives in the Syllabus.
 - b. Relationship Matrix for CO, PO and PSO for all courses implemented.
 - c. Curriculum addresses local, Regional, National and Global Needs
 - d. Courses focus on Employability, Entrepreneurship and Skill Development
 - e. Courses also focus on Gender, Environment and Sustainability, Human values and Professional Ethics.
11. List the Courses newly introduced in UG & PG and details of Percentage of Revision carried out as an appendix.
 12. Introduce foundation course (FC) as a new course in the first semester
 13. Introduce in the industrial visit as a new course in the fifth semester.
 14. Environmental science and value education course to be followed as per the previous curriculum

15. Resolved to have the following 15 Core Courses for U.G. semester wise

SEMESTER - I

1. Properties of Matter and Sound (It is the Core Course of previous curriculum but the unit contents are changed)
2. Major Practical – I (It is the newly introduced course)

SEMESTER - II

1. Heat, Thermodynamics and Statistical Physics (It is the newly introduced course)
2. Major Practical – II (It is the newly introduced Course)

SEMESTER - III

1. General Mechanics and Classical Mechanics (It is the newly introduced Course)
2. Major Practical-III (It is the newly introduced Course)

SEMESTER - IV

1. Optics and Spectroscopy (It is the Core Course of previous curriculum but the unit contents are changed)
2. Major Practical-IV (It is the newly introduced Course)

SEMESTER - V

1. Atomic Physics and Lasers (It is the newly introduced Course)
2. Relativity and Quantum Mechanics (It is the newly introduced Course)
3. Major Practical-V (It is the newly introduced Course)

SEMESTER - VI

1. Nuclear and Particle Physics (It is the newly introduced Course)
2. Solid state Physics (It is the Core Course of previous curriculum but the unit contents are changed)
3. Major Practical-VI (It is the newly introduced Course)
4. Project Work (It is the newly introduced Course)

16. Resolved to have the following 03 Discipline specific elective Courses for U.G. semester wise

1. Electricity and Magnetism (It is the Core Course of previous curriculum but the unit contents are changed)
2. Nanoscience (It is the Core Course of previous curriculum but the unit contents are changed)
3. Digital Electronics and Microprocessor 8085 (It is the newly introduced Course)

17. Resolved to have the following 6 Allied Courses for U.G.

First Allied courses in first two semester (Offered by the department of Mathematics)

1. Allied Mathematics - I (It is the course of previous curriculum retained as it is)
2. Allied Mathematics - II (It is the course of previous curriculum retained as it is)

Second Allied courses in third and fourth semester (Offered by the department of Chemistry)

1. Allied Chemistry – I (It is the course of previous curriculum retained as it is)
2. Allied Chemistry Practical – II (It is the newly introduced Course)
3. Allied Chemistry – III (It is the course of previous curriculum retained as it is)
4. Allied Chemistry Practical – IV (It is the newly introduced Course)

18. Resolved to offer the following Allied courses for the Department of Mathematics and Chemistry

1. Allied Physics - I (This Allied Course is newly introduced for Mathematics)
2. Allied Physics Practical – II (It is the Allied course of previous curriculum retained as it is)
3. Allied Physics – I (This Allied Course is newly introduced for Chemistry)
4. Allied Physics Practical – II (This Allied Course is newly introduced for Chemistry)
5. Allied Physics – III (This Allied Course is newly introduced for Chemistry)
6. Allied Physics Practical – IV (This Allied Course is newly introduced for Chemistry)

19. Resolve to have following Eight Skill Enhancement Courses for U.G. semester wise
SEMESTER - I

Skill Enhancement Course – I (Non Major Elective)

1. Physics for Everyday Life (It is the newly introduced course)

SEMESTER -II

Skill Enhancement Course – II (Non Major Elective)

1. Home Electrical Installation (It is the newly introduced Course)

Skill Enhancement Course – III (Discipline Specific Elective)

1. Energy Physics (It is the newly introduced Course)

SEMESTER - III

Skill Enhancement Course – IV (Entrepreneurial Based)

1. Applied and Industrial Electronics (It is the newly introduced Course)

Skill Enhancement Course – V (Discipline Specific Elective)

1. Material Science (It is the newly introduced Course)

SEMESTER - IV

Skill Enhancement Course – VI (Discipline Specific Elective)

1. Communication System (It is the newly introduced Course)

Skill Enhancement Course – VII (Discipline Specific Elective)

1. Numerical Methods and C Programming (It is the newly introduced Course)

SEMESTER - VI

Skill Enhancement Course – VIII

1. Professional Competency Skill (It is the newly introduced Course)

20. Resolve to have the following soft skill Courses for U.G. semester wise

SEMESTER - I

1. Introduction to study skills (Syllabus is passed by the BoS in English)

SEMESTER - II

1. Life Skills (Syllabus is passed by the BoS in Management Studies)

SEMESTER - III

1. Job Oriented Skills (The courses is newly introduced)

SEMESTER - IV

1. Computing Skills (Syllabus is passed by the BoS in Computer Applications)

21. Resolve to have the following Courses for U.G. Semester wise

SEMESTER - I

1. Foundation Course - Introductory Physics (It is the newly introduced Course)

SEMESTER - IV

1. Environmental science (Retained as it is)

SEMESTER - V

1. Value Education (Retained as it is)
2. Industrial visit (It is the newly introduced Course)

21. Resolved to have the following 16 Core Courses for P.G. semester wise

SEMESTER I

1. Mathematical Physics (It is the Core Course of previous curriculum but the unit contents are changed)
2. Classical Mechanics and Relativity (It is the newly introduced Course)
3. Linear and Digital ICs and Applications (It is the newly introduced Course)
4. Major Practical-I (It is the newly introduced Course)

SEMESTER II

1. Statistical Mechanics (It is the newly introduced Course)
2. Quantum Mechanics – I (It is the newly introduced Course)
3. Major Practical-II (It is the newly introduced Course)

SEMESTER III

1. Quantum Mechanics –II (It is the newly introduced Course)
2. Condensed Matter Physics (It is the newly introduced Course)
3. Electromagnetic Theory (It is the newly introduced Course)
4. Practical – III (It is the newly introduced Course)

SEMESTER IV

1. Nuclear and Particle Physics (It is the newly introduced Course)
2. Spectroscopy (It is the newly introduced Course)
3. Numerical Methods and Computer Programming (It is the newly introduced Course)
4. Practical – IV (It is the newly introduced Course)
5. Project with Viva-Voce (It is the Core Course of previous curriculum)

23. Resolved to have the following Elective Courses, Skill Enhancement Courses, Professional Competency Courses and Ability Enhancement Compulsory Courses for the semester wise

SEMESTER - I

1. Physics of Nanoscience & Nanotechnology and Thin Films (This Elective Course is newly introduced)
2. Professional Competency Course (This Skill Enhancement Course is newly introduced)
3. Ability Enhancement Compulsory Course (This Soft Skill Course is newly introduced)

SEMESTER - II

1. Bio Physics (This Elective Courses is newly introduced)
2. Solar energy utilization (This Elective Courses is newly introduced)
3. Physics for Competitive Exam – I (This Skill Enhancement Course is newly introduced)
4. Ability Enhancement Compulsory Course - II (This Soft Skill Course is newly introduced)

SEMESTER - III

1. Microprocessor 8086 and Microcontroller 8051 (This Elective Courses is newly introduced)
2. Physics for Competitive Exam – II (This Skill Enhancement Course is newly introduced)
3. Ability Enhancement Compulsory Course - III (This Soft Skill Course is newly introduced)

SEMESTER - IV

1. Physics for Competitive Exam – III (This Skill Enhancement Course is newly introduced)
2. Ability Enhancement Compulsory Course - III (This Soft Skill Course is newly introduced)

J.J. COLLEGE OF ARTS AND SCIENCE (Autonomous)

DEPARTMENT OF PHYSICS

B.Sc. PHYSICS

Proposed Course Structure based on UGC - LOCF and TANSCH

(Choice Based Credit System)

(Applicable for the candidates admitted from academic year 2023-2024 onwards)

Sem	Part	Course code	Course Title	Hrs/ Week	Credit	Exam Hours	Marks		Total Marks
							Int.	Ext.	
I	I	U1R3TL1/ HL1/FL1	Language Course – I	6	3	3	25	75	100
	II	U1R3EL1	English Language course – I	4	3	3	25	75	100
	III	U1R3PHCC1	Properties of Matter and Sound	6	3	3	25	75	100
		U1R3PHCC2P	Major Practical-I	3	3	3	25	75	100
		U1R3MTAC1	Allied- Mathematics-1	5	5	3	25	75	100
	IV	U1R3PHSEC-1	Skill Enhancement Courses - I (NME) – Physics for everyday life (to offered for other discipline)	2	2	3	25	75	100
		U1R3PHFC	Foundation Course - Introductory Physics	2	2	3	25	75	100
		U1R3PHA ECC1	Ability Enhancement Compulsory Course – Soft Skill - 1	2	2	3	25	75	100
	Total				30	23			
	I	U2R3TL2/ HL2/FL2	Language Course – II	6	3	3	25	75	100
	II	U2R3EL2	English Language course – II	4	3	3	25	75	100
		U2R3PHCC3	Heat, Thermodynamics and	6	3	3	25	75	100

II	III		Statistical physics						
		U2R3PHCC4P	Major Practical-II	3	3	3	25	75	100
		U2R3MTAC2	Allied-Mathematics-II	5	6	3	25	75	100
	IV	U2R3PHSEC-2	Skill Enhancement course-SEC-2 (NME) – Home Electrical Installation(to offered other discipline)	2	2	3	25	75	100
		U2R3PHSEC-3	Skill Enhancement course-SEC-3(Discipline/Subject Specific) – Energy Physics	2	2	3	25	75	100
		U2R3PHA ECC2	Ability Enhancement Compulsory Course (AECC)Softskill-2	2	2	3	25	75	100
			Total	30	24				800
III	I	U3R2TL3/ HL3/FL3	Language Course – III	6	3	3	25	75	100
	II	U3R3EL3	English Language course – III	4	3	3	25	75	100
	III	U3R3PHCC5	General Mechanics and Classical Mechanics	4	3	3	25	75	100
		U3R3PHCC6P	Major Practical-III	3	3	3	25	75	100
		U3R3CHAC3	Allied-Chemistry-I	3	3	3	25	75	100
		U3R2CHAC4P	Allied –Chemistry Practical-II	3	2	3	25	75	100
	IV	U3R3PHSEC-4	Skill Enhancement course-SEC-4(Entrepreneurial Based) – Applied and Industrial Electronics.	2	2	3	25	75	100
		U3R3PHSEC-5	Skill Enhancement course-SEC-5(Discipline/Subject Specific) – Materials Science	2	2	3	25	75	100
		U3R3PHA ECC3	Ability Enhancement Compulsory Course (AECC)Softskill-3	2	2	3	25	75	100

	IV	U4R3PHEVS	E.V.S	1	-				
			Total	30	23				900
IV	I	U4R3TL4/ HL4/FL4	Language Course – IV	6	3	3	25	75	100
	II	U4R3EL4	English Language course – IV	4	3	3	25	75	100
	III	U4R3PHCC7	Optics and Spectroscopy	3	3	3	25	75	100
		U4R3PHCC8P	Major Practical-IV	3	3	3	25	75	100
		U4R2CHA5	Allied – Chemistry-III	3	3	3	25	75	100
		U4R2CHAC6P	Allied Chemistry Practical-IV	3	3	3	25	75	100
	IV	U4R3PHSEC-6	Skill Enhancement Course – 6 – Communication System	2	2	3	25	75	100
		U4R3PHSEC-7	Skill Enhancement Course – 7 – Numerical Methods and C programming	2	2	3	25	75	100
		U4R3PHAIECC4	Ability Enhancement Compulsory Course (AECC)Softskill-4	2	2	3	25	75	100
		U4R3PHEVS	EVS	2	2	3	25	75	100
			Total	30	25				1000
V	III	U5R3PHCC9	Atomic Physics and Lasers	5	5	3	25	75	100
		U5R3PHCC10	Relativity and Quantum Mechanics	5	5	3	25	75	100
		U5R3PHCC11P	Major Practical-V	6	3	3	25	75	100
		U5R3PHDSE -1	Project Work /Elective- Electricity and Magnetism	5	4	3	25	75	100
		U5R3PHDSE -2	Discipline Specific Elective –2 Nanoscience	5	3	3	25	75	100
	IV	U5R3PHVE	Value Education	2	2	3	25	75	100

		U5R3PHIE	Internship / Industrial visit / Field visit	2	2	3	25	75	100
			Total	30	24				700
VI	III	U6R3PHCC12	Nuclear and Particle Physics	5	5	3	25	75	100
		U6R3PHCC13	Solid state Physics	5	3	3	25	75	100
		U6R3PHCC14P	Major Practical-VI	5	3	3	25	75	100
		U6R3PHCC15P W	Project Work	8	3	3	25	75	100
		U6R2PHDSE -3	Discipline Specific Elective – 2 – Digital Electronics and Microprocessor 8085	5	4	3	25	75	100
	IV		Extension Activities	-	1	-	-	-	-
		U6R3PHSEC-8	Professional competency Skill	2	2	3	25	75	100
			Total	30	21				600
			Grand Total		140				4800

CC-Core Course / AC – Allied Course /DSE – Discipline Specific Elective / SEC – Skill Enhancement Course

AECC – Ability Enhancement Compulsory Course /P – Practical

Total Credit – 140 / Total Marks – 4800

Extension activities shall be outside the instruction hours.

Discipline Specific Electives Courses

1. Communication System
2. Energy Physics
3. Mathematical Physics

4. Advanced Mathematical Physics
5. Numerical Methods and C Programming
6. Material Science
7. LASERS and Fiber Optics
8. Digital Photography
9. Nano Science
10. Medical Instrumentation

Non– Major Electives Courses

1. Physics for Everyday Life
2. Astrophysics
3. Medical Physics
4. Home Electrical Installation
5. Physics of Music

J.J. COLLEGE OF ARTS AND SCIENCE (Autonomous)
DEPARTMENT OF PHYSICS
M.Sc. PHYSICS
Proposed Course Structure based on UGC - LOCF and TANSCHÉ
(Choice Based Credit System)
(Applicable for the candidates admitted from academic year 2023-2024 onwards)

FIRST SEMESTER

COURSE CODE	NAME OF THE COURSE	INST. HRS.	CREDITS	EXAM HRS.	MAX MARKS	
					CIA	EXT.
P1R3PHCC1	Mathematical Physics	6	4	3	25	75
P1R3PHCC2	Classical Mechanics and Relativity	5	4	3	25	75
P1R3PHCC3	Linear and Digital ICs and Applications	5	4	3	25	75
P1R3PHCC4P	Practical I	6	3	3	25	75
P1R3PHEC 1:5	Physics of Nano Science and Technology	4	3	3	25	75
P1R3PHGCC	Professional Competency Course	2	2	3	25	75
P1R3PHAECC1	Ability Enhancement Compulsory Course	2	2	3	25	75

SECOND SEMESTER

COURSE CODE	NAME OF THE COURSE	INST. HRS.	CREDITS	EXAM HRS.	MAX MARKS	
					CIA	EXT.
P2R3PHCC5	Statistical Mechanics	6	4	3	25	75
P2R3PHCC6	Quantum Mechanics –I	6	4	3	25	75
P2R3PHCC7P	Practical – II	6	3	3	25	75
P2R3PHCC 2:2	Bio Physics	4	3	3	25	75
P2R3PHCC 3:7	Solar Energy Utilization	4	3	3	25	75
P2R3PHSEC1	Physics for competitive exam-I	2	2	3	25	75
P2R3PHAECC2	Ability Enhancement Compulsory Course	2	2	3	25	75
	Internship* / Industrial Activity	-	-	-	-	-

**** Internship will be carried out during the summer vacation of the first year and marks will be included in the Third Semester Marks Statement.**

THIRD SEMESTER

COURSE CODE	NAME OF COURSE	INST. HRS.	CREDIT	EXAM HRS.	MAX MARKS	
					CIA	EXT.
P3R3PHCC8	Quantum Mechanics –II	6	4	3	25	75
P3R3PHCC9	Condensed Matter Physics	5	4	3	25	75
P3R3PHCC10	Electromagnetic Theory	5	4	3	25	75
P3R3PHCC11P	Practical – III Numerical Methods and Computer Programming (FOTRAN/C)	6	3	3	25	75
P3R3PHCC 3:2	Microprocessor 8086 and Microcontroller 8051	4	3	3	25	75
P3R3PHSEC2	Physics for competitive exam-II	2	2	3	25	75
P3R3PHAECC3	Ability Enhancement Compulsory Course	2	2	3	25	75
P3R3PHIV	Internship / Industrial Activity [Credits]	-	2	-	-	-

FOURTH SEMESTER

COURSE CODE	NAME OF COURSE	INST. HRS.	CREDIT S	EXAM HRS.	MAX MARKS	
					CIA	EXT.
P4R3PHCC12	Nuclear and Particle Physics	6	4	3	25	75
P4R3PHCC13	Spectroscopy	5	4	4	25	75
P4R3PHCC14	Numerical Methods and Computer Programming	5	4	4	25	75
P4R3PHCC15P	Practical – IV	6	3	4	25	75
P4R3PHCC16PW	Project with Viva-Voce	4	4	-	25	75
P4R3PHSEC3	Physics for competitive exam– III	2	2	3	25	75
P4R3PHAECC4	Ability Enhancement Compulsory Course	2	2	3	25	75
	Extension Activity	-	1	-	-	-

Consolidation:

Part	Subject	Credits Distribution	Total
A	Core	12x4	48
A	Core Practical	4x3	12
A	Elective	4x3	12
B1	SEC	4x2	08
B2	Soft Skill & Internship	5x2	10
C	Extension Activity	1x1	01
	TOTAL		91

ELECTIVE PAPERS**List 1**

1. Energy Physics
2. Crystal Growth and Thin films
3. Analysis of Crystal Structures
4. Materials Science
5. Physics of Nano Science and Technology
6. Digital Communication
7. Communication Electronics

LIST 2

1. Plasma Physics
2. Bio Physics
3. Non-linear Dynamics
4. Quantum Field Theory
5. General Relativity and Cosmology
6. Advanced Optics
7. Advanced Mathematical Physics

LIST 3
INDUSTRY ORIENTED ELECTIVE (IOE)

1. Advanced Spectroscopy
2. Microprocessor 8086 and Microcontroller 8051
3. Characterization of Materials
4. Medical Physics
5. Solid Waste Management (SWM)
6. Sewage and Waste Water Treatment and Reuse
7. Solar Energy Utilization

(Note: Institutions can also frame such IOE courses more suitable for their locality.)