

UNIVERSITY OF KERALA



Revised Syllabus for M. Sc. Degree Programme in Physics

(with effect from 2014 admissions)

UNIVERSITY OF KERALA
M. Sc. Degree Programme (effective from 2014 - 15)
Branch II PHYSICS

A: COURSE STRUCTURE & MARK DISTRIBUTION

Semester	Paper Code	Title of Paper	Contact hours per week			UE duration (h)	Maximum mark		
			L	T	P		IA	UE	Total
I	PH 211	Classical Mechanics	6	1	-	3	25	75	100
	PH 212	Mathematical Physics	6	1	-	3	25	75	100
	PH 213	Basic Electronics	6	1	-	3	25	75	100
	PH 251	General Physics Practicals	-	1	3	-	-	-	-
	PH 252	Electronics & Computer Science Practicals	-	1	4	-	-	-	-
			Total for Semester I (S1)	18	5	7	-	75	225
II	PH 221	Modern Optics & Electromagnetic theory	6	1	-	3	25	75	100
	PH 222	Thermodynamics, Statistical Physics & Basic Quantum Mechanics	6	1	-	3	25	75	100
	PH 223	Computer Science & Numerical Techniques	6	1	-	3	25	75	100
	PH 251	General Physics Practicals	-	1	3	6	25	75*	100
	PH 252	Electronics & Computer Science Practicals	-	1	4	6	25	75*	100
			Total for Semester II (S2)	18	5	7	-	125	375
III	PH 231	Advanced Quantum Mechanics	6	1	-	3	25	75	100
	PH 232	Advanced Spectroscopy	6	1	-	3	25	75	100
	PH 233 X	Special Paper I	6	1	-	3	25	75	100
	PH 261	Advanced Physics Practicals	-	1	4	-	-	-	-
	PH 262	Advanced Electronics Practicals	-	1	3	-	-	-	-
			Total for Semester III (S3)	18	5	7	-	75	225
IV	PH 241	Condensed Matter Physics	6	1	-	3	25	75	100
	PH 242	Nuclear & Particle Physics	6	1	-	3	25	75	100
	PH 243 X	Special Paper II	6	1	-	3	25	75	100
	PH 261	Advanced Physics Practicals	-	1	3	6	25	75*	100
	PH 262	Advanced Electronics Practicals	-	-	4	6	25	75*	100
	PH 201	Project	-	-	-	-	25	75	100
	PH 202	Viva Voce	-	-	-	-	-	100	100
		Total for Semester IV (S4)	18	5	7	-	150	550	700
		Grand Total	72	20	28	-	425	1375	1800

* 10 marks for records
L - Lecture
T - Tutorial

X: E (Electronics),M(Materials Science)

IA - Internal Assesment

UE - University Exam

N (Nuclear Physics), S (Space Physics)

T (Theoretical Physics), P -Practical

B: SPECIAL PAPERS FOR THIRD AND FOURTH SEMESTERS

<i>Special paper Category</i>	<i>Code Nos of Special Papers</i>	<i>Name of Special Papers</i>
1. ELECTRONICS	PH 233 E PH 243 E	Advanced Electronics-I Advanced Electronics-II
2. MATERIALS SCIENCE	PH 233 M PH 243 M	Materials Science-I Materials Science-II
3. NUCLEARPHYSICS	PH 233 N PH 243 N	Advanced Nuclear Physics Radiation Physics
4. SPACE PHYSICS	PH 233 S PH 243 S	Space Physics and Plasma Physics Advanced Astrophysics
5. THEORETICAL PHYSICS.	PH 233 T PH 243 T	Theoretical Physics-1 Theoretical Physics-2

C: GENERAL GUIDELINES**C-1 Theory papers**

Books of study and corresponding chapters are given for most of the theory papers in the syllabus to define the scope of the syllabus.

For internal evaluation of theory papers at least one Viva must be conducted for each paper

For assignments and seminars current developments in the areas of the syllabus may be chosen for improving the general awareness of the student

In tutorial sessions of theory papers problem solving in different topics of the syllabus may be discussed.

C-2 Lab Courses

Rough records may be properly maintained for each practical paper and should be produced during the University Practical Examinations along with original record book.

Each student is encouraged to include critical comments on each experiments done in the original records including sources and estimates of errors, limitations in the experiments done and scope for improvements/ additions in the experimental work.

In performing Electronics Practicals: Bread Board Practice is recommended in addition to soldering of electronic circuits.

C-3 Special papers

Depending on the expertise and facilities available in a College (with approval of the University and Government as per rules) one of the five Specialisations (Special paper Category) may be chosen by a student for the third and fourth semesters of the MSc Programme in Physics. At present for all specialisations practical courses are common.

C4-Project work and Project Evaluation

The Project may be started during the second semester of the MSc programme.

25 marks of the project is to be awarded on the basis of internal assessment carried out in the College for each student concerned. A Project rough record may be maintained by each student to help to evaluate the progress of the project. Each student is required to present the completed project along with experimental demonstration if any in the college before the final University examinations in the Fourth Semester of the MSc (Physics) Programme.

For University Examinations for the Project: 50 marks is allotted for Project report evaluation and 25 marks allotted for Project based Viva Voce to be conducted along with General Viva Voce examination by the University.

D Pattern of University Question papers**D-1 Theory Papers**

Each question Paper has three parts: Part A, Part B and Part C

Part A: Eight short answer questions covering the entire syllabus. *One of the question from this section may be used to test the CURRENT AWARENESS (general knowledge) of the student in the areas of the syllabus covered for this paper.* Each question carries 3 marks.

Part B: contains three compulsory questions with internal choice. Questions cover all the three units in the syllabus. Each question carry 15 marks.

Part C: contains six problems covering the entire syllabus. The student need to answer any three. Each question carries five marks.

The question paper pattern for the theory papers is given separately.

P-2 PRACTICALS

Each practical paper carries a total of 75 marks. 10 marks are allotted for practical records.

PH 252: Electronics and Computer Science: Unit A-Electronics practical (4h ,45 marks) Unit B-Computer Science (2h,20 marks)

PH261: Advanced Physics has two parts : Physics Experiment (5h,45 marks) Data Analysis of given scientific data (1 h,20 marks)

PH 262: Advanced Electronics has two parts : (i) Electronics Practicals (4h,45 marks) (ii) Microprocessor Practicals (2h,20 marks)

PH 201 Project: Internal Evaluation for project is 25 marks

For University Examinations: 50 marks for Project Dissertation/report evaluation

and 25 marks for Project based Viva Voce

PH 202 General Viva Voce:

For General Viva Voce covering the entire MSc Syllabus, University Examinations : 100 marks

(University Question Paper pattern given separately)