

Department of Studies in Physics

From the beginning our teaching program was well appreciated. In fact according to one of the surveys, our curriculum was among the top ten M.Sc. Physics curricula in the country. The overview of the syllabi is given below:

Two year M.Sc course

1. Overview of the papers offered

Titles of the papers and the corresponding number of teaching hours per week

Title of the paper Teaching hours/week (L : Lecture; T : Tutorial)

Semester-1

1.1 Mathematical methods of physics-1 3L + 1T

1.2. Thermodynamics, Classical and Quantum statistical Mechanics 3L + 1T 1.3.

Classical mechanics 3L + 1T

1.4. Classical electrodynamics, Optics and Electronics 3L + 1T

Laboratory

Core lab-1 for Batches A1 and A2 $1 \times 4 = 4$

Core lab-2 for Batches A3 and A4 $1 \times 4 = 4$

Computer lab for the Batches A1-A4 $1 \times 4 = 4$

Semester-2

2.1. Mathematical methods of physics-2 3L + 1T

2.2. Continuum mechanics and relativity 3L + 1T

2.3. Atomic Physics, Molecular physics and Modern Optics 3L + 1T 2.4.

Quantum mechanics-1 3L + 1T

Laboratory

Core lab-2 for Batches A1 and A2 $1 \times 4 = 4$

Core lab-1 for Batches A3 and A4 $1 \times 4 = 4$

Computer lab for the Batches A1-A4 $1 \times 4 = 4$

Semester-3

3.1. Nuclear physics and particle physics 3L + 1T

3.2. Condensed matter physics 3L + 1T

3.3. Choice based credit based elective (As decided by the university) 3L + 1T

3.4. Special subject-1

A. Nuclear Physics, B. Solid State Physics, C. Theoretical Physics 3L + 1T

Laboratory

Core lab-3 for Batches B1 and B2 $1 \times 4 = 4$

Core lab-4 for Batches B3 and B4 $1 \times 4 = 4$

Special subject lab-Nuclear physics-A for Batches N1-N4 $1 \times 4 = 4$

Special subject lab-Solid state physics-A for Batches S1-S4 $1 \times 4 = 4$

Special subject lab-Theoretical physics-A for Batches T1-T4 $1 \times 4 = 4$

Semester-4

4.1. Elective paper/Project (A, B, C, D, E, F, G, H, I) 3L + 1T 4.2.

Special subject-2

A. Nuclear Physics, B. Solid State Physics, C. Theoretical Physics 3L + 1T

4.3. Special subject-3

A. Nuclear Physics, B. Solid State Physics, C. Theoretical Physics 3L + 1T 4.4.

Quantum Mechanics-2 3L + 1T

Laboratory

Core lab-4 for Batches B1 and B2 $1 \times 4 = 4$

Core lab-3 for Batches B3 and B4 $1 \times 4 = 4$

Special subject lab-Nuclear physics-B for Batches N1-N4 $1 \times 4 = 4$

Special subject lab-Solid state physics-B for Batches S1-S4 $1 \times 4 = 4$

Special Lab-Theoretical physics-B for Batches T1-T4 $1 \times 4 = 4$

Seminar 2

Note 1: Normally, students belonging to a semester are divided into 4 batches for the practicals. However, if in a particular semester the student strength is below normal, some of these batches may not be formed.

Note 2: A student who chooses the elective paper 4.1G: Riemannian geometry and the general theory of relativity cannot choose Theoretical physics as his special subject.

Note 3: Not all the elective papers and special subjects may be offered for every batch; which and how many of these courses are offered for a batch shall be decided by the departmental council depending upon the availability of teachers for these courses.

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7. Scheme of examination, valuation and paper-setting 1.

Paper setting

All the practical examinations shall be set, conducted and valued by internal + external examiners. However, all the theory examinations shall be "coded" and the existing "internal + external" system of „double“ paper setting and valuation of the answer-scripts shall be followed.

2. **Structure of the question paper** Each theory question paper is divided into 4 parts A, B, C and D. Parts A, B and C shall have two questions carrying 20 marks each with internal choice. Each question may have subdivisions of marks totalling to 20. A student shall answer one question each from the parts A, B and C. Part D shall carry 6 numerical problems of 5 marks each. Out of these, two problems must be set from each unit of the corresponding syllabus. The candidate should answer 4 questions out of these.

3. Duration of the examination and maximum marks:

Each student shall take an examination in each of the theory and practical papers prescribed for the semester at the end of the corresponding semester. The duration of the examination and maximum marks allotted for the various papers shall be as follows:

(a) Theory examination 80

(Duration: 3 hours)

(b) Practical examination: Two practical Papers per semester i.

Practical examination proper (Duration: 4 hours) 40

ii. Practical record 10

iii. Total marks per paper 50

iv. Total marks for practicals per semester 100 (c)

Internal assessment in Semesters 1, 2 and 3:

i. Class-room tests $4 \times 15 = 60$

ii. Class-room assignments $4 \times 5 = 20$

Teaching Schedule

Each paper will comprise of **48 hours** of teaching and **16 hours of tutorials.**

Adjunct Faculty Teaching the Course

The following adjunct faculty drawn from various National Laboratories/Centers will teach the 5 yr Integrated M.Sc. students in most the semesters either a full paper or part of a paper.

1. Prof. G Rajasekaran,
Institute of Mathematical Sciences, CIT campus, Taramani, CHENNAI
2. Prof. H S Mani,
Institute of Mathematical Sciences, CIT campus, Taramani, CHENNAI
3. Prof. M V N Murthy,
Institute of Mathematical Sciences, CIT campus, Taramani, CHENNAI
4. Prof. S V Subramanyam
Indian Institute of Science, Bangalore
5. Prof. H L Bhat
Indian Institute of Science, Bangalore
6. Prof. Hari Daas
Indian Institute of Science, Bangalore
7. Prof. R Srinivasan
Raman Research Institute, Bangalore

