# PROGRAMME PROJECT REPORT (PPR)

## M.Sc. PHYSICS

### (A) Programmer's Mission and Objectives-

**Missions-**

- The programme aims to provide systematic knowledge of the subject to the graduates of physical science with specification in modern and job oriented areas of physics.
- To provide high quality education at doorstep through flexible and open learning mode without barriers and in conformity with national priority and societal needs.

**Objectives-**

- To inculcate scientific temperament in order to understand the laws and concept physics.
- To maintain an environment in a research active department in which staff are committed to teach physics as a coherent and chastening subject.
- To provide a high quality education which prepares students for further study and research in physics and for a wide range of career opportunities in industry and commerce.
- To develop the ability of the students to conduct, observe, analyze and report an experiment and to deal with physical models and formulas.

### (B) Relevance of the program with HEI's Mission and Goals-

IODE programme works as a bridge in between learner and institution. A lots of employee via; namely government organization/private organization/corporate sector/public sector etc. take admission for enhancing knowledge operation in science (physics) in promotion, in increment, in quality and complete within a time frame. Obviously it is a panacea for those who joined service in early days for bread and salt but this program links their desire and requirement.

### (C) Nature of prospective target group of learners-

The learner's in this mode of education are basically the employees of public/private sectors, over aged learners, housewives and learner's who couldn't comfort with the regular education system to enhance their educational qualification. All these kind of learner's can take advantage of M.Sc. Physics in this mode of education.

**Appropriateness of programme to be conducted in Open and Distance Learning mode to acquire specific skills and competence-**

- Able to enter new fields through independent study.
- Have a good understanding of the most important physical theories/practical including a deep knowledge of the foundation of physics.

- Able to perform calculations including use of numerical methods and computing, to solve problem.
- Understanding of the nature and methods of physics research and how it can be applied in other fields e.g. engineering.
- Able to carry out professional activities in the area of applied technologies and industry.

## (D) Instructional Design-

### Curriculum Design, Detailed Syllabi & Duration of Program-

M.Sc. Physics program offered in Institute of Open & Distance Education for the period of 24 months (2 years) & its eligibility graduate with mathematics, physics and chemistry/ electronics/geology/statistics discipline. It offers specialization to be opted by student in 2rd year of programs. Specialization (elective paper) as given in scheme.

### Credit Points-

All courses offered by us carry a certain value in terms of credit-points. A credit point is a way of expressing the learning hours required to study a certain unit, in a book or a course. Generally, one credit point is considered equivalent to about 30 learning hours. These learning hours could mean the time you spend in face to face counseling, self study, practical, assignment, project, participating in discussions on the topic, listening to audios, viewing especially prepared videos, etc. Programme structure for M.Sc. Physics are clearly mention below-

**MASTER OF SCIENCE M.Sc.-PHYSICS**

| Course Code | Subjects | Credit | Total Marks | Theory | | Practical Marks | | Assignments /Viva | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Max | Min | Max | Min | Max | Min |
| **First Semester** | | | | | | | | | |
| 1MSCP1 | Mathematical Physics | 3 | 100 | 70 | 25 | - | - | 30 | 11 |
| 1MSCP2 | Classical Mechanics | 3 | 100 | 70 | 25 | - | - | 30 | 11 |
| 1MSCP3 | Quantum Mechanics-I | 3 | 100 | 70 | 25 | - | - | 30 | 11 |
| 1MSCP4 | Electronic Devices | 3 | 100 | 70 | 25 | - | - | 30 | 11 |
| 1MSCP5 | Lab-Electronics | 2 | 100 | - | - | 70 | 25 | 30 | 11 |
| 1MSCP6 | Lab-Fiber optics | 2 | 100 | - | - | 70 | 25 | 30 | 11 |
| **Total** | | **16** | **600** | **280** | **112** | **140** | **56** | **180** | **72** |
| **Second Semester** | | | | | | | | | |
| 2MSCP1 | Quantum Mechanics-II | 3 | 100 | 70 | 25 | - | - | 30 | 11 |
| 2MSCP2 | Statistical Mechanics | 3 | 100 | 70 | 25 | - | - | 30 | 11 |
| 2MSCP3 | Solid State Physics | 3 | 100 | 70 | 25 | - | - | 30 | 11 |
| 2MSCP4 | Atomic & Molecular | 3 | 100 | 70 | 25 | - | - | 30 | 11 |
| 2MSCP5 | Lab-SSP &AE | 2 | 100 | - | - | 70 | 25 | 30 | 11 |
| 2MSCP6 | Lab-Laser & Spectroscopy | 2 | 100 | - | - | 70 | 25 | 30 | 11 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Total** | | **16** | **600** | **280** | **112** | **140** | **56** | **180** | **72** |
| **Third Semester** | | | | | | | | | |
| 3MSCP1 | Condensed Matter Physics | 3 | 100 | 70 | 25 | - | - | 30 | 11 |
| 3MSCP2 | Nuclear & Particle Physics | 3 | 100 | 70 | 25 | - | - | 30 | 11 |
| 3MSCP3 | Electrodynamics | 3 | 100 | 70 | 25 | - | - | 30 | 11 |
| 3MSCP4 | Digital Electronics & Microprocessor | 3 | 100 | 70 | 25 | - | - | 30 | 11 |
| 3MSCP5 | Lab-DE & Communication | 2 | 100 | - | - | 70 | 25 | 30 | 11 |
| 3MSCP6 | Lab-Nuclear Physics & Microprocessor | 2 | 100 | - | - | 70 | 25 | 30 | 11 |
| **Total** | | **16** | **600** | **280** | **112** | **140** | **56** | **180** | **72** |
| **Fourth Semester** | | | | | | | | | |
| 4MSCP1 | Computational Methods & Programming | 3 | 100 | 70 | 25 | - | - | 30 | 11 |
| 4MSCP2 | Material Science | 3 | 100 | 70 | 25 | - | - | 30 | 11 |
| 4MSCP3 | Plasma Physics | 3 | 100 | 70 | 25 | - | - | 30 | 11 |
| 4MSCP4 | **Elective Paper-** Atmospheric Science/Physics of Nano Materials/Environmental Physics/Communication Electronics/Computer Architecture, Networking & assembly Level Programming | 3 | 100 | 70 | 25 | - | - | 30 | 11 |
| 4MSCP5 | Project Work | 4 | 200 | - | - | 140 | 50 | 60 | 22 |
| **Total** | | **16** | **600** | **280** | **112** | **140** | **56** | **180** | **72** |

**Evaluation Scheme-**

1. 36% in each theory, practical, project, dissertation & internal assessment but the total aggregate for passing is 40%.
2. Total project marks are 200 in which 140 marks for project report and 60 marks will be for project viva.

**Duration-**

This programme has duration of two years although student may complete the programme gradually within a maximum period of five years.

**Medium-**

English/Hindi shall be the medium of instruction and the examination may be written in Hindi or English.

**Requirement of faculty and support staff-**

For M.Sc. Physics programme we have two faculty members (full time-dedicated for ODL courses) has the level of Associate and Assistant Professor. Supporting staffs will be deputed at the learner support centre as per need of the course curriculum.

**Instructional delivery Mechanism & Usage of media for distance learning-**

The methodology of instruction in the distance learning mode in the University is different from that of the conventional regular programs. The system adopted for this is more learner-oriented and the learner is an active participant in the pedagogical (teaching & learning) process. Most of the instructions are imparted through distance education methodology and face-to-face mode as per requirement.

The programme delivery methodology used in the distance learning mode follows a multimedia approach for instruction, which comprises-

- **Self-Instructional Written Material-** The printed study material (written in self instructional style) for both theory and practical components of the programs is supplied to the learners in batches for every course.
- **Audio-Visual Material Aids-** The learning package contains audio and video CDs which have been produced/adopted by the University for better clarification and enhancement for understanding of the course material given to the learners. A video programme is normally of 25-30 minutes duration. The video cassettes are screened at the leaner support centre during specific sessions which are duly notified for the benefit of the learners.
- **Counseling Session-** Normally counseling sessions are held as per schedule drawn by the IODE DR. CV RAMAN UNIVERSITY. These are mostly held outside the regular working hours of the learner support centre.
- **Teleconferences-** Live teleconferencing sessions are conducted via internet/ satellite through interactive Video Conferencing facility (available at some places) from the University studios, the schedule of which is made available at the learner support centre.
- **Industrial Training/ Practical's/ Project Work-** Some programmes have industrial training/practical/ project component also. Practical's are held at designated institutions for which schedule is provided by the learner support centre. Attendance at practical is compulsory. For Project Work, comprehensive project guide, in the form of booklet, is provided to the student along with the study material.
- The printed study materials will be dispatched periodically to the enrolled students for each paper of study. These materials will be as guide for the students for effective learning. The assignment for internal assessment shall also be dispatched along with the study material. Online modules are also available for some courses. These are in

progress and as and when available, these will be available on the website of the students for registered candidates.

- The counseling sessions will be of 30 days duration for a course in a year. The actual schedule and place of contact program shall be announced and communicated to students in time.

**Nature of Contact Classes-**

During the contact sessions, the counselors are supposed to guide/discuss with the learners, based on the course material. The learners can solve their difficulties by discussing with their colleagues as well as with the counselor during contact sessions. A part from this contact sessions, learners will have to attend practical as well as various training schedule conducted by the respective learner support centre.

**Learner Support Services-**

Dr. C.V. Raman University Institute of Open And Distance Education has a fully fledged Learner Support Division (LSD) to provide guidance and help to its students. Necessary information is passed on to the registered student through modern means of communication as SMS, website and e-mail. For the convenience of learner, computer, photocopy machine, internet, WIFI facilities have also been provided. The learner support division has a web centre and SMS No. 56161 where learner can message their problems and seek answer. Bulk SMS are sent to learners regarding their registration detail, dispatch of study, material time table for contact class, submission of examination forms, examination schedule etc. from time to time. Important information and necessary material are also sent through e-mail and through regular post. University website www.cvru.ac.in also provides information about the various programmes being offered by the institute of open and distance education, the syllabus, assignment, programme guide.

**Counseling & Study Structure-**

The counseling & study structure for M.Sc. Physics programme is as below-

**COUNSELING AND STUDY STRUCTURE**

| Course Code | Subjects | Credit | Total Hours of study | Counseling and study structure (Hours) | | | |
|---|---|---|---|---|---|---|---|
| | | | | Face to face counseling | Self Study | Practical /Project | Assign ments |
| **First Semester** | | | | | | | |
| 1MSCP1 | Mathematical Physics | 3 | 90 | 12 | 51 | - | 27 |
| 1MSCP2 | Classical Mechanics | 3 | 90 | 12 | 51 | - | 27 |
| 1MSCP3 | Quantum Mechanics-I | 3 | 90 | 12 | 51 | - | 27 |
| 1MSCP4 | Electronic Devices | 3 | 90 | 12 | 51 | - | 27 |
| 1MSCP5 | Lab–Electronics | 2 | 60 | 8 | | 52 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1MSCP6 | Lab - Fiber optics | 2 | 60 | 8 | | 52 | |
| **Total** | | **16** | | | | | |
| **Second Semester** | | | | | | | |
| 2MSCP1 | Quantum Mechanics-II | 3 | 90 | 12 | 51 | - | 27 |
| 2MSCP2 | Statistical Mechanics | 3 | 90 | 12 | 51 | - | 27 |
| 2MSCP3 | Solid State Physics | 3 | 90 | 12 | 51 | - | 27 |
| 2MSCP4 | Atomic & Molecular | 3 | 90 | 12 | 51 | - | 27 |
| 2MSCP5 | Lab-SSP &AE | 2 | 60 | 8 | - | 52 | - |
| 2MSCP6 | Lab-Laser & Spectroscopy | 2 | 60 | 8 | - | 52 | - |
| **Total** | | **16** | | | | | |
| **Third Semester** | | | | | | | |
| 3MSCP1 | Condensed Matter Physics | 3 | 90 | 12 | 51 | - | 27 |
| 3MSCP2 | Nuclear & Particle Physics | 3 | 90 | 12 | 51 | - | 27 |
| 3MSCP3 | Electrodynamics | 3 | 90 | 12 | 51 | - | 27 |
| 3MSCP4 | Digital Electronics & | 3 | 90 | 12 | 51 | - | 27 |
| 3MSCP5 | Lab-DE & Communication | 2 | 60 | 8 | - | 52 | - |
| 3MSCP6 | Lab– Nuclear Physics & | 2 | 60 | 8 | - | 52 | - |
| **Total** | | **16** | | | | | |
| **Fourth Semester** | | | | | | | |
| 4MSCP1 | Computational Methods & Programming | 3 | 90 | 12 | 51 | - | 27 |
| 4MSCP2 | Material Science | 3 | 90 | 12 | 51 | - | 27 |
| 4MSCP3 | Plasma Physics | 3 | 90 | 12 | 51 | - | 27 |
| 4MSCP4 | **Elective Paper-** Atmospheric Science/Physics of Nano Materials/Environmental Physics/Communication Electronics/Computer Architecture, Networking & assembly Level Programming | 3 | 90 | 12 | 51 | - | 27 |
| 4MSCP5 | Project Work | 4 | 120 | 16 | | 104 | |
| **Total** | | **16** | | | | | |

**(F) Procedure for admissions Curriculum transaction and evaluation-**

**Admission Policy for M.Sc. Physics with minimum eligibility & fee structure-**

Admission to M.Sc. Physics programme shall be through merit and/or, entrance test as per rules of the university. A candidate after passing graduation with B.Sc. with mathematics, physics and chemistry/electronics/geology/statics stream of any recognized university and college. All the procedure of admission for the programme will be done through online mode. Application will be invited by the university with it stipulated time period where students have to apply for the same with all their testimonials and required fees.

**Fees-**

| SI. | Programme | Duration | Fee charged for complete programme |
|---|---|---|---|
| 1. | M.Sc. Physics | 2 Years | 32800 |

**Financial Assistance-**

E-scholarship is provided to SC/ST students as per norms of the Govt. of Chhattisgarh authorized schemes.

**Evaluation system-**

The system of evaluation in Open & Distance Learning System is also different from that of conventional system. CVRU has a multi- tier system of evaluation given as follows-

1. Self –assessment exercises within each unit of study.
2. Continuous evaluation mainly through assignment which is tutor marked, practical assignments & seminar/workshops/ extended contact programmes.
3. Term end examinations.
4. Project works.

The evaluation of learners depends upon various instructional activities undertaken by them. A learner has to write assignment responses compulsorily before taking term-end examination from time to time to complete an academic programme. A learner has to submit TMA responses to the learner support centre established by IODE Dr.C.V. Raman University. A learner should keep duplicate copies of assignment responses of TMA that may be required to be produced at Student Evaluation Division on demand. Term-end examination will be conducted at various examination centre approved by institute of open and distance education Dr.C.V. Raman university spread all over the Chhattisgarh. The weightage for Term End Examination will be 70% and weightage for Internal Assessment will be 30% for this programme.

**Evaluation Procedure-**

(A) Internal Assessment (Continuous Assessment i.e. Home Assignment)- 30% weightage.

(B) Term End Examination - 70 % weightage.

| | |
|---|---|
| Term End Examination | 70 |
| Internal Assessment | 30 |
| Total Marks | 100 |

The University conducts Term-end Examination in semester system & held in the month of Nov/Dec and May/June every year. Students will be permitted to appear in term-end examination subject to the conditions that-

1) Registration for the courses, in which they appeared is valid.
2) Minimum Time to pursue these courses is elapsed.
3) Submission of required number of assignment in respective courses by the due date.

**(C) Project Work -**

Project work carrying 200 marks has to be done under the guidance of a Project supervisor. Learners have to prepare project report under the guidance of project guide allotted by the university. Viva-voce will be conducted in the presence of an external examiner.

**(G) Requirement of the laboratory support and library resource-**

Taught the learners in laboratory develop their competency, confidence and practical skill. Our University have well equipped laboratory. The learners are engaged in the laboratory as per the time schedule. Resources in the form of reference books and journal will be made available to the learner in the reference library (IODE) and university central library which they can access for gaining knowledge.

**(H) Cost estimates of the programme and the provision-**

This programme was already designed and developed in the year 2009-10. In this process of development considering today's scenario, the current cost estimate which includes developmental cost, delivery cost & maintenance cost for this programme comes to amount of Rs.872100 & provision is made of 900000.

**(I) Quality assurance mechanism and expected programme outcomes-**

The Centre for Internal Quality Assurance & Board of Studies of the University is accountable for regular monitoring of programme by continuous updating of the curriculum and syllabus. According to feedback provided by stakeholders including learners on continuous basis, a suitable action plan for M.Sc. Physics programme will be developed and duly incorporated into the teaching and delivery system. The Feedback from all stakeholders in terms of its relevance and appropriateness in catering to the need of the society, economy and environment are also considered in these key aspects. "At the end of the programme expected to outcomes"-

- To acquired a general knowledge, principles and mechanisms of physics.
- To acquired a basic knowledge of subject.
- To acquired techniques relevant of subjects taught.
- To provide the practical expose and knowledge acquiring skill.
- To crate and develop the presentation skill in seminar/conferences.
- To develop skill of e-library software and internet resources independently.

(D.R.P Dubey)