MASTER OF SCIENCE
Physics

Programme Project Report (PPR)

Course Co-ordinator(s)
Prof. R.P. Vijaya Lakshmi
Dept. of Physics
S.V.U. College of Science
Tirupati

CENTRE FOR DISTANCE AND ONLINE EDUCATION (CDOE)
SRI VENKATESWARA UNIVERSITY
Accredited by **"NAAC"** with A^{+} Grade
Tirupati, Andhra Pradesh – 517 502
www.svucdoe.ac.in

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Sri Venkateswara University
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PROGRAMME PROJECT REPORT (PPR)
MASTER OF SCIENCE - Physics

Vision

To inculcate certain specific enabling skill sets to prepare the students to take up challenges in any one or more functional domains viz. (i) Academics; (ii) Basic and Applied Research; (iii)Research & Development; (iv) Engineering & Technology and (v) Industry.

Mission

To bring out professionals having knowledge of basic laws of nature together with strong fundamentals in the core area of physics viz. Classical Mechanics, Quantum Mechanics, Condensed Matter Physics, Electromagnetism, Computational Physics, Statistical Physics, Spectroscopy, Photonics, Thin film Technology and Solar Energy Physics, Electronics, Atomic and Nuclear Physics and advanced level topics such as High Energy Physics, Nanotechnology, Nonlinear Optics, etc.

PROGRAM SPECIFIC OBJECTIVES: At the end of the program, the student will beable to:

PSO1	Apply principles of basic scientific concepts in understanding, analysis, and prediction of physical systems.
PSO2	Develop human resource with specialization in theoretical and experimental Techniques required for career in academic, research and industry.
PSO3	Engage in life long learning and adapt to changing professional and societal needs.

PROGRAM OUTCOMES: Att he end of the program, the student will be able to:

PO1	Apply the scientific knowledge to solve the complex physics problems.
PO2	Identify,formulate,andanalyzeadvancedscientificproblemsreachingsubstantiated Conclusionsusingfirstprinciplesofmathematics,physical,andnaturalsciences.
PO3	Design solutions for advanced scientific problems and design system components or processes that meet the specified needs with appropriate attention to health and safetyrisks,applicablestandards,andeconomic,environmental,culturalandsocietal consideration.

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PO4	Useresearch- based knowledge and methods including design of experiments, analysis and interpretation of data, and synthesis of the information top rovide valid conclusions.
PO5	Create,select,andapplyappropriatetechniques,resources,andmodernscientific Tools to complex physics problems with an understanding of the limitations.
PO6	Applyreasoninginformedbythecontextualknowledgetoassesssocietal,health,safety,legalandculturalissues,andtheconsequentresponsibilitiesrelevanttothe Professional scientific practice.
PO7	Understandtheimpactofthescientificsolutionsinsocietalandenvironmental contexts, and demonstrate the knowledge of and need for sustainable development.
PO8	Apply ethical principle sand commit to the norms of scientific practice.
PO9	Functioneffectivelyasanindividual,andasamemberorleaderindiverseteams, And in multidisciplinary settings.
PO10	Communicate effectively on scientific activities with the Scientific/Engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective representations, and give And receive clear instructions.
PO11	Demonstrateknowledgeandunderstandingofthescientificprinciplesandapply These to one's own work, as a member andleaderinateam,tomanageprojectsandinmultidisciplinaryenvironments.
PO12	Recognizetheneedfor,andhavethepreparationandabilitytoengageinindependent And life-long learning in the broadest context of scientific and technological change.

PROGRAMSPECIFICOUTCOMES: At the end of the program, the student will be able to:

PSO1	Understandthebasicandadvanceconceptsofdifferentbranchesofphysics.
PSO2	Performanddesignexperimentsintheareasofelectronics,atomic,nuclear, Condensed matter, and computational physics.
PSO3	Apply the concepts of physics in specialized areas of condensed, nuclear, renewable energies, particle physics, etc.in industry, academia, research and day to day life.

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Relevance of the program with HEI'S Mission and Goals: The ODL programs are designed to equip students with the knowledge, skills, and competencies they need to be successful in their chosen areas. By providing opportunities for professional advancement, the courses assist the SVU in achieving its goal of producing graduates with a diverse set of abilities who are prepared for the demands of the workforce.

Nature of Target Group Learners: The target group of learners for this programme is Teachers with low qualifications and others who are not able to join the informal education system due to several reasons. Besides these fresh graduates are not able to join in regular mode due to various reasons.

Appropriateness of the Programme with Quality Assurance for Acquiring Specific Skills: The programme is designed by eminent experts in the subjects on par with formal education. The PPR is designed appropriately for the development of the professional and occupational standards of the teaching community and to develop skills and competencies among various field experts. The programme is prepared for changing needs of society with high quality and structure.

1. Preamble:

M.Sc- Physics(P.G Degree) Programme is of two academic years with each academic year being divided into two consecutive (one odd + one even) semesters.

Choice-Based Credit System (CBCS) is a flexible system of learning and provides choice for students to select from the prescribed elective courses. A course defines learning objectives and learning outcomes and comprises of lectures/tutorials/laboratory work/field work/project work/viva/seminars/ assignments/ presentations/ self-study etc. or a combination of some of these.

Under the CBCS, the requirement for awarding a degree is prescribed in terms of number of credits to be completed by the students.

The CBCS permits students to:

- Choose electives from a wide range of courses offered by the Departments of the College/University.
- Opt for additional courses of interest
- adopt an inter-disciplinary approach in learning
- make the best use of expertise of the available faculty .
- Skill Oriented Course and Multidisciplinary Course/Project are introduced as per Action Plan of National Education Policy-NEP-2020

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2. Minimum Qualification:

Minimum qualification for seeking admission into a specialization of P.G Degree Programme is U.G Degree, with at least 40% marks for general and pass marks for SC/ST in aggregate, awarded by Sri Venkateswara University (SVU) in the appropriate Branch of learning or any other equivalent examination recognized by other Higher Education Institution and Universities.

3. Programme Duration:

3.1 Minimum duration of the full-time P.G Programme is two consecutive academic years i.e., four semesters and maximum period is four academic years.

3.2 Semester:

Generally, each semester shall consist of 90 actual instruction days including the sessional test days. However, instructional days may be reduced up to 72, when necessary, with increased instructional hours per course per week.

4. Credits:

Credit defines the quantum of contents/syllabus prescribed for a course and determines the number of instruction hours per week. The norms for assigning credits to a course for a duration of one semester shall be as follows:

- One credit for every one hour of lecture/tutorial per week
- One credit for every two hours of practical work/seminar per week
- 4 credits in a semester for project work.

5. Classification of Courses:

The courses of each specialization of study are classified into Core Courses and Elective Courses and Foundation courses. It is mandatory for a student to complete successfully all the Core and Elective courses pertaining to his/her of specialization of study.

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Semester-I

Sl.no	Components of Study	Title of the Course		Credit Hrs / Week	No. of Credit	IA Marks	Sem End Exam Marks	Total
1.	Core	1	Mandatory	6	4	20	80	100
2.		2		6	4	20	80	100
3.		3		6	4	20	80	100
4.		4		6	4	20	80	100
5.	Compulsory Foundation	5a	Opt- 1	6	4	20	80	100
		5b						
		5c						
6.	Elective Foundation	6a	Opt- 1	6	4	20	80	100
		6b						
Total				**36**	**24**	**120**	**480**	**600**
7.	**Audit Course**			0	0	100	--	--

***All CORE Papers are Mandatory**

- **Compulsory Foundation - Choose one paper**
- **Elective Foundation - Choose one paper.**
- **Audit Course – 100 Marks (Internal) – Zero Credits under Self Study**
- **Interested students may register for MOOC with the approval of the concerned DDC but it will be considered for the award of the grade as open elective only giving extra credits.**

Semester-II

Sl.no	Components of Study	Title of the Course		Credit Hrs / Week	No. of Credit	IA Marks	Sem End Exam Marks	Total
1.	Core	1	Mandatory	6	4	20	80	100
2.		2		6	4	20	80	100
3.		3		6	4	20	80	100
4.		4		6	4	20	80	100
5.	Compulsory Foundation	5a	Opt-1	6	4	20	80	100
		5b						
		5c						
6.	Elective Foundation	6a	Opt-1	6	4	20	80	100
		6b						
Total				**36**	**24**	**120**	**480**	**600**
7.	**Audit Course**			0	0	100	--	--

***All CORE Papers are Mandatory**

- **Compulsory Foundation – Choose one paper**
- **Elective Foundation – Choose one paper.**
- **Audit Course – 100 Marks (Internal) – Zero Credits under self Study**
- **Interested students may register for MOOC with the approval of the concerned DDC but it will be considered for the award of the grade as open elective only giving extra credits.**

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Semester-III

Sl.no	Components of Study	Title of the Course		Credit Hrs / Week	No. of Credit	IA Marks	Sem End Exam Marks	Total
1.	Core	1	Mandatory	6	4	20	80	100
2.		2		6	4	20	80	100
4.	Generic Elective	4a	Opt-2	6	4	20	80	100
		4b						
		4c		6	4	20	80	100
		4d						
5.	Skill Oriented Course	5	Mandatory	6	4	20	80	100
6.	Open Elective	6a	Opt- 1	6	4	20	80	100
		6b						
	Total			**36**	**24**	**120**	**480**	**600**

*** All CORE Papers are Mandatory**

- **Generic Elective - Choose two**
- **Skill Oriented Course is Mandatory**
- **Open Electives are for the Students of other Departments. Minimum One Paper should be opted. Extra credits may be earned by opting for more number of open electives depending on the interest of the student through self study.**
- **Interested students may register for MOOC with the approval of the concerned DDC.**

Semester-IV

Sl.no	Components of Study	Title of the Course		Credit Hrs / Week	No. of Credit	IA Marks	Sem End Exam Marks	Total
1.	Core	1	Mandatory	6	4	20	80	100
2.		2		6	4	20	80	100
3.	Generic Elective	3a	Opt-2	6	4	20	80	100
		3b						
		3c		6	4	20	80	100
		3d						
4.	Multidisciplinary Course / Project Work	4	Mandatory	6	4	20	80	100
5.	Open Elective	5a	Opt- 1	6	4	20	80	100
		5b						
	Total			**36**	**24**	**120**	**480**	**600**

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*** All CORE Papers are Mandatory**

- **Generic Elective - Choose two**
- **Multidisciplinary Course / Project work is Mandatory.**
- **Open Electives are for the Students of other Departments. Minimum One Paper should be opted. Extra credits may be earned by opting for more number of open electives depending on the interest of the student through self study.**
- **Interested students may register for MOOC with the approval of the concerned DDC.**

5.1 Core Course

There may be a core course in every semester. This is the course which is to be compulsorily studied by a student as a core requirement to complete the requirement of a programme in a said discipline of study.

5.2 Elective Course

Elective course is a course which can be chosen from a pool of papers. It may be :

- Supportive to the discipline of study
- Provide a expanded scope
- Enable an exposure to some other discipline/domain
- Nurture student's proficiency/skill.

5.2.1. An elective may be "Generic Elective" focusing on those courses which add generic proficiency to the students. These electives shall be "Discipline centric". Three or Four papers may be offered, of which Two may be chosen.

5.2.2 Skill Oriented Course and Multidisciplinary Course / Project are introduced as per Action Plan of National Education Policy – NEP -2020.

5.2.3 An elective may be "Open Elective" and shall be offered for other Disciplines only. Atleast one paper must be chosen for study as mandatory. More than one paper may be studied through self study.

5.3 Foundation Course:

The Foundation Courses may be of two kinds: Compulsory Foundation and Elective foundation, "Compulsory Foundation" courses are the courses based upon the content that leads to Knowledge enhancement. They are mandatory for all discipline. Elective Foundation courses are value-based and are aimed at man-making education.

5.4 Audit Courses: (100 Marks (Internal) – Zero Credits)

The main aim of the Audit Courses is to the aware of the contemporary societal issues. This course is under Self Study.

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5.5 MOOCS and e-Learning:

Discipline centric elective course through MOOCS (Massive Open Online Course) platform. Students of I, II and/or III semesters can register for the courses/offered by authorized Institutions/Agencies through online with the approval of the DDC concerned. The certificate issued by the Institutions/Agencies after successful completion of the course will be considered for the award of the Grade to that course in open electives category only.

Further, 30-40% of the syllabus of any one course in I, II and III semesters may be taught through e-Learning.

6 Course Registration:

Every student has to register for the set of Courses offered by the Department in that Semester including those of Open Elective course of the other Departments and MOOCS courses with the total number of their Credits being limited by considering the permissible weekly contact hours.

7 Credits Required for Award of Degree:

A student shall become eligible for the award of P.G degree, if he/she earns a minimum of 96 credits by passing all the core and electives along with practicals, seminars, comprehensive viva-voce prescribed for the programme.

7.1 It is mandatory for a student to complete successfully all the core courses pertaining to his/her specialization of study.

7.2 A student may choose Generic Electives from the list of elective courses offered from his/her specialization of study.

7.3 Further, a student may select from a list of Elective courses from other Departments as Open Electives to "suit the required" number of credits, such that the total credits is atleast 96.

7.4 There should be a register maintained by the Head of the Department indicating for each student, the course (s) registered by the student within the department, so that "Generic Electives" opted by the student are indicated.

7.5 In the case of Open Elective, the Head of the Department should prepare a statement /register indicating the courses chosen/opted by the students of the department in other departments.

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7.6 The Head of the Department should send the list of registered papers (opted by the students) to the principal with a copy to the controller of examinations immediately with in a week of commencement of each semester.

7.7 A copy of the courses registered by the students in each semester approved by the Principal shall be sent to the Academic Branch as well as Examination Branch.

7.8 The list of students registered for Mooc's shall be furnished giving details of the programme with a copy to the Principle and Controller of Examinations.

7.9 A model of Registers to be maintained by the Head of the Department is given in the Annexure. It is mandatory on the part of the Head of the Department to maintain Register for each UG/PG Course separately.

8. Scheme of Instruction :

The Board of Studies (BOS) of each specialization shall formulate the scheme of instruction and detailed syllabi. For every course learning objectives and learning outcomes should be defined. While formulating the scheme of instruction, the BOS shall facilitate to offer the minimum number of credits for the entire Programme. The syllabi of theory courses shall be organized into four / five units of equal weight. The question paper for the Semester end University Examination in theory course shall consist of four / five units, two questions from each unit of syllabus carrying a total of 60 marks. There shall be short answer questions for a total of 20 marks.

8.1 Part A contains of 20 marks with two short question from each unit out of which the student has to answer five questions with each question carrying 4 marks with a total of 20marks.

Examination in theory shall consist of five units in each paper, two questions from each unit of syllabus out of which a student shall answer one question carrying 12 marks for each question with a total of 60 marks.

In case of any course / programme having practicals out of the total 80 marks, the theory shall consist of 50 marks and practicals 30 marks. Out of the total theory marks of 50, section A carries 10 marks and Section B 40 marks. Section A contains 8 short questions out of which 5 should be answered, each question carrying 2 marks.

In Section B, out of 10 questions 5 are to be answered with internal choice each question carrying 8 marks.

10. Evaluation

10.1 Evaluation shall be done on a continuous basis i.e. through Continuous Internal Evaluation (CIE) in the Semester and Semester End Examination (SEE). For each theory course, there shall be two internal tests of two

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hours duration carrying 20 marks each and one Semester end Examination of 3 hours duration carrying 80 marks. Internal marks for a maximum of 20 shall be awarded based on the average performance of the two internal tests.

10.2 The first internal test shall be held immediately after the completion of 50% of the instruction days covering 50% of the syllabus. The second internal test shall be held immediately after the completion of 90 instruction days covering the remaining 50% of the syllabus.

10.3 It is mandatory for a student to attend both the internal tests in each theory course. The weighted average of the marks secured in two tests is awarded as sessional marks. However, 0.8 shall be assigned as weight for the best performance of the two tests whereas for the other test it shall be 0.2. If a student is absent for any of the internal test for whatsoever reason, the marks for that test shall be zero.

10.4 The students shall verify the valuation of answer scripts of sessional tests and sign on the same after verification.

10.5 The valuation and verification of answer scripts of Sessional Tests shall be completed within a week after the conduct of the internal tests. The answer scripts shall be maintained in the dept until the semester end results are announced.

10.6 The valuation of Semester end Examination answer scripts shall be arranged by the Controller of Examinations as per the University procedures in vogue.

10.7 Evaluation of Practicals:

For each practical course, the sessional marks for a maximum of 100 shall be awarded by the teacher based on continuous assessment of practical work. The Semester end University practical Examinations carrying 100 marks shall be conducted by i) Internal examiners and ii) external examiner permitted by the BoS of the Department a panel submitted to the Controller of Examinations.

11. Project Work :

11.1 The work shall be carried out in the concerned department of the student or in any recognized Educational Institutions of Higher learning / Universities / Industry / Organization as approved by the DDC. The student shall submit the outcome of the project work in the form of a report.

11.2 The project work shall be evaluated at the end of the IV semester with 70 marks for the report and 30 marks for the Viva Voce with a maximum of a 100 marks.

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12. Grading and Grade Points:

Grade Point: It is a numerical weight allotted to each letter grade on a 10-point scale

Letter Grade: It is an index of the performance of students in a said course. Grades are denoted by letters O, A+, A, B+, B, C, P and F.

Semester Grade Point Average (SGPA): It is a measure of performance of work done in a semester. It is the ratio of total credit points secured by a student in the courses registered in a semester and a total course credits taken during that semester. It shall be given up to two decimal places.

$$SGPA\ (S_i) = \Sigma(C_i \times G_i) / \Sigma C_i$$

Where C_i is the number of credits of the i^{th} course and G_i is the grade point scored by the student in the i^{th} course.

The CGPA is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a programme, i.e.,

Cumulative Grade Point Average (CGPA): It is a measure of overall cumulative performance of a student over all semesters. The CGPA is the ratio of total credit points secured by a student in the courses in all semesters and the sum of the total credits of all courses in all the semesters. It is given up to two decimal places.

$$CGPA = \Sigma(C_i \times S_i) / \Sigma\ C_i$$

Where Si is the SGPA of the i_{th} semester and C_i is the total number of credits in that semester.

The SGPA and CGPA shall be rounded off to two decimal points and reported in the transcripts.

Letter Grades and Grade Points:

A 10-point grading system with the following letter grades is to be followed.

Marks	Grade Point	Letter Grade
75-100	7.5-10	O (Outstanding)
65-74	6.5-7.4	A+ (First)
60-64	6.0-6.4	A (First)
55-59	5.5-5.9	B+ (Second)
50-54	5.0-5.4	B (Second)
40-49	4.0-4.9	C (Third)
00-39	0.0-3.9	F (Fail)

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A student obtaining Grade F shall be considered failed and will be required to reappear in the examination

12.1 In each Semester, every student who satisfies the attendance requirements should register for examination, failing which he/she shall not be promoted to the next semester. Any such student who has not registered for examination in a semester shall repeat that semester in the next academic year after obtaining the proceedings of the Principal.

12.2 To pass a course in PG Programme, a student has to secure the minimum grade of (P) in the PG Semester end Examination. A student obtaining Grade F shall be considered failed and will be required to reappear in the examination as supplementary candidate.

12.3 A student is eligible to improve the marks in a paper in which he has already passed, in with 4 years from the year of admission as and when it is conducted for the subsequent batches. This provision shall not be provided once the candidate is awarded Degree.

12.4 A student who has failed in a course can reappear for the Semester end Examination as and when it is held in the normal course. The Sessional Marks obtained by the student will be carried over for declaring the result.

12.5 Whenever the syllabus is revised for a course, the semester Examination shall be held in old syllabus three times. Thereafter, the students who failed in that course shall take the semester end Examination in the revised syllabus.

13. Award of Degree

A student who has earned a minimum of 96 credits by passing in all the core courses and the minimum number of electives prescribed shall be declared to have passed the course work and shall become eligible for the award of degree.

13.1 A student who has earned extra credits shall be issued a separate certificate to that effect mentioning the subject and grade.

14. Attendance Requirements

Attendance not compulsory **M.Sc - Physics** however interested students can join offline classes for a limited period and online classes and interact with the teachers or in synchronous real time webinar can access course content and complete assignment own pace in asynchronous methods.

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14.1 Attendance not compulsory **M.Sc - Physics** however interested students can join offline classes for a limited period and online classes and interact with the teachers or in synchronous real time webinar can access course content and complete assignment own pace in asynchronous methods.

14.2 A student shall repeat the semester if he/she fails to satisfy the attendance requirements given below:

14.2.1 A student shall attend at least 60 percent of the maximum hours of instruction taken by the teacher for each course.

14.2.2 A student shall attend at least 75 percent of the maximum hours of instruction taken for all the courses put together in that semester.

14.3 The Director CDOE shall condone the shortage of attendance of a student provided; the student satisfies the clause 14.2 and obtain at least 60% of overall attendance in a semester on medical grounds only.

15. **Conditions of Promotion**

A student shall be eligible for promotion to the next semester provided, if he/she satisfies the attendance requirements in the immediately preceding semester as specified in clause 15.The Principle of the concerned college will furnish the promotion list to the HOD at the beginning of II, III & IV Semesters.

16. Transitory Regulations:

16.1 A student who has been repeated in the previous regulations for not satisfying the attendance requirements shall be permitted to join in these regulations provided the clauses 14.1 and 14.4 hold good.

16.2 Semester end University Examinations under the regulations that immediately precede these regulations shall be conducted two times after the conduct of last regular examination under those regulations.

16.3 The students who satisfy the attendance requirements under the regulations that immediately precede these regulations, but do not pass the courses shall appear for the Semester end University Examinations in equivalent courses under these regulations as specified by the BOS concerned.

17. Grievance Redressal Committee

The Vice -Chancellor and Registrar of the University shall constitute a Grievance Redressal Committee by nominating three Professors from among the faculty / programme co-ordinators of the CDOE with the Director of the CDOE as Convener for a period of two years. The Convener of the committee, but among the three, shall receive the complaints from the students regarding the valuation of sessional tests and redress the same before the

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Committee for its consideration. The committee shall submit its recommendations to the Director for consideration.

18. Amendment to the Regulations

Sri Venkateswara University reserves the right to amend these regulations at any time in future without any notice. Further, the interpretation any of the clauses of these regulations entirely rest with the University.

19. Library Resources

The institution has a sizable collection of Physics books in the Main library on its premises and also in the CDOE Building own library. The students make use of both the libraries.

20. Cost Estimates for the Development of the Programme

The Programme fee for 1 year is Rs. 15,000/- and in 2 years 13,500/-. The university will pay the remuneration to course writers and counsellors as per university norms. Processing, Print Materials(SLM) and Examination fees as prescribed by the University. It will be revised periodically to attract the counsellors. This institution is providing high-quality programs at minimum cost.

21. Appropriateness of the Programme with Quality Assurance for Acquiring Specific Skills: The program is designed by eminent subject experts on par with formal education. The PPR is designed appropriately for the development of the professional and occupational standards of the teaching community and to develop skills and competencies among various field experts. The program is prepared for the changing needs of society with high quality and structure.

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Semester -I

S.No	Components of Study	Title of the Course	Title of the Paper	Credit Hrs/ Week	No. of Credits	IA Marks	Sem End Marks	Total
1.	**Mandatory Core**	PHY 101	Classical and Statistical Mechanics	6	4	20	80	100
2.		PHY102	Atomic Physics, Optics And Electromagnetic Theory	6	4	20	80	100
3.	**Compulsory Foundation**	PHY103	Condensed Matter Physics, Electronic Devices and Circuits	6	4	20	80	100
4.	**Elective Foundation**	PHY104	Mathematical Physics	6	4	20	80	100
5.	**Practical -I**	PHY 105	Paper 1 (General Lab)	6	4	--	100	100
6.	**Practical-II**	PHY 106	Paper 2 & 3 (Electronics Lab)	6	4	--	100	100
	Total			36	24	80	520	600
7.	Audit Course			0	0	100	0	0

*All core papers are Mandatory.

- Compulsory Foundation choose onepaper.
- Elective Foundation – Choose onepaper.
- Audit course-100 Marks (Internals) Zero Credits underself-study.
- Interested students may register for MOOC with the approval of the concerned DDC but it will be considered for the award of the grade as open elective only giving extracredits.

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SEMESTER-II

S.No	Components of Study	Title of the Course	Title of the Paper	Credit Hrs/ Week	No. of Credits	IA Marks	Sem End Marks	Total
1.	**Mandatory Core**	PHY201	Quantum Mechanics	6	4	20	80	100
2.		PHY202	Nuclear Physics and Molecular Spectrocopy	6	4	20	80	100
3.	**Compulsory Foundation**	PHY 203	Numerical Techniques & Computer Programming	6	4	20	80	100
4.	**Elective Foundation**	PHY 204	Digital Electronics, Microprocessors and Communication Electronics	6	4	20	80	100
5.	**Practical -I**	PHY205	Paper 1& 3 (General Lab)	6	4	--	100	100
6.	**Practical-II**	PHY206	Paper 3 & 4 (Electronics Lab)	6	4	--	100	100
	Total			36	24	80	520	600
7.	Audit Course			0	0	100	0	0

*All core papers are Mandatory

- Compulsory Foundation choose onepaper.
- Elective Foundation – Choose onepaper.
- Audit course-100 Marks (Internals) Zero Credits underself-study.
- Interested students may register for MOOC with the approval of the concerned DDC but it will be considered for the award of the grade as open elective only giving extracredits.

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Centre for Distance and Online Education (CDOE)
Sri Venkateswara University
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SEMESTER-III

S.No	Components of Study	Title of the Course	Title of the Paper	Credit Hrs/ Week	No. of Credits	IA Marks	Sem End Marks	Total
1.	**Mandatory Core**	PHY301	1.Introductory Quantum Mechanics	6	4	20	80	100
2.		PHY302	2.Physics of Semiconductor Devices	6	4	20	80	100
3.	**Generic Elective**	PHY 303(a)	1.Applied Spectroscopy	6	4	20	80	100
		PHY 303(b)	2. Introduction to VLSI design					
		PHY 303(c)	3. Embedded Systems					
4.	**Practicals**	PHY 304	Special Lab	6	4	--	--	100
5.	**Skill Oriented Course**	PHY305	3. Advances in Physics	6	4	10	90 (40+50)	100
6.	**Open Elective**	PHY 306(a)	1. Basic Spectroscopic Techniques	6	4	20	80	100
		PHY 306(b)	1.Nanomaterials and Devices					
	Total			36	24	90	510	600

*All core papers are Mandatory

- Generic Elective – Choose two
- Core papers and Generic Electives opted paper held Practical-I
- Skill Oriented Course is Mandatory. Relevant society along with practical(10marks internal 40 final theory & 50 forpractical's).
- Open Electives are for the students of other Departments. Minimum one paper shouldbe opted. Extra credits may be earned by opting for more number of open electives depending on the interest of the student throughself-study.
- Interested students may register for MOOC with the approval of the concerned DDC.

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SEMESTER-IV

S.No	Components of study	Title of the Course	Title of the Paper	Credit Hrs/ Week	No. of Credits	IA Marks	Sem End Marks	Total
1.	**Mandatory Core**	PHY401	1.Advanced Quantum Mechanics	6	4	20	80	100
2.		PHY402	2. Physics of Advanced Materials	6	4	20	80	100
3.	**Generic Elective**	PHY 403(a)	1.Photonics	6	4	20	80	100
		PHY403(b)	2.Solar Energy-Thermal and Photovoltaic Properties					
		PHY403(c)	3.Vacuum and Thin Film Technology					
4.	**Practicals**	PHY404	Elective Lab	6	4	--	--	100
5.	**Multi Disciplinary Course/ Project Work**	PHY405	Advanced Characterizaton Techniques	6	4	--	--	100
6.	**Open Elective**	PHY 406(a)	1.Wireless Communications	6	4	20	80	100
		PHY406(b)	2. Vacuum Technology & Applications					
	Total			36	24	90	320	600

*All core papers are Mandatory

- Generic Elective – Choose one
- Core papers and Generic Electives opted paper held Practical-II.
- Project Work- Collaboration with various firms/companies/societies.
- Multi-Disciplinary Course is Mandatory. Circle formation with other subjects/Dept.of Arts/Commerce.
- Open Electives are for the students of other Departments. Minimum one paper should be opted. Extra credits may be earned by opting for more number of open electives depending on the interest of the student through self-study.
- Interested students may register for MOOC with the approval of the concerned DDC.

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