| BSC - PHYSICS | | | |
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| Semester I/II/III/IV/V/VI | All Subjects / Course | Objective of teaching the subject (Minimum 4 ) | OUTCOMES |
| sem-I | Paper-I Classical Physics | To understand Newton's law and it's applications | Students will have knowledge of Newton's law and its application,laws of thermodynamics and clarity in concepts of lens system and interference. |
| | | To understand concept of friction, elasticity,fluid mechanics | |
| | | To understand concept of lens system and interference | |
| | | To apply the laws of thermodynamics | |
| sem-I | Paper-II Modern Physics | To understand Nuclear properties. | This course will enable students with the knowledge Nuclear properties, interaction between particle and matter,origin of Quantum Mechanics and study Quantum Mechanical concepts,X-rays and its applications. |
| | | To study significance of interaction between particle and matter. different types of nuclear reaction and radiation detectors. | |
| | | To understand origin of Quantum Mechanics and study Quantum Mechanical concepts. | |
| | | To study Production of x-rays and its applications, to demonstrate quantitative problem solving skills in all the topics covered. | |
| sem-I | Practical -1USPHP1 | Student will be able to demonstrate practical skills, | After completion of this course students will be able to use appartus without fear,demonstrate practical skills and corelate physics theory concept through practicals |
| | | use of appartus without fear | |
| | | corelate physics theory concept through practicals | |
| | | understand concept of errors | |
| sem-II | Paper-I Mathematical Physics | To understand Basic mathematical concepts | After successful completion of this course will have clarity in basic macthematical concepts,concept of wave motion and physical situations.They will also develop quantitative problem solving skills. |
| | | to apply the concept in physical situations | |
| | | to understand concept of wave-motion. | |
| | | to demonstrate quantitative problem solving skills | |
| sem-II | Paper-II Electricity and Electronics | To understand basic of A.C circuits, A.c bridges and circuit theorems | This course will add to the students understanding of A.C circuits, A.C bridges and circuit theorems,D.C power supply and digital Electronics, Electrostatics and Magnetostatics |
| | | To understand D.C power supply and digital Electronics | |
| | | To understand concept of Electrostatics, Magnetostatics | |
| | | to demonstrate quantitative problem solving skills | |

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| **sem-II** | **Practical -2 USPHP2** | Student will be able to demonstrate practical skills, | After completion of this course students will be able to use appartus without fear,demonstrate practical skills and corelate physics theory concept through practicals |
| | | Use of appartus without fear | |
| | | To Corelate physics theory concept through practicals | |
| | | understand concept of errors | |
| **sem-III** | **Physics-I Mechanics and Thermodynamics** | To understand concept of Mechanics and properties of Matter | Students will be acquainted with the concepts of Mechanics and properties of matter,thermodynamics and it's applications and low temperatures in physics. |
| | | To understand Basic concept of Thermodynamics and it's applications. | |
| | | To learn about low temperature Physics | |
| | | to demonstrate quantitative problem solving skills | |
| **sem-III** | **PHYSICS-II Vector Calculus and Analog Electronics** | To understand conepts of Mathematical Physics and it's Application | Through completion of this course students will have understood the concepts of Mathematical Physics and its Application, laws of electrodynamics,biasing,operational amplifier and application of Transistor. |
| | | To understand laws of electrodynamics | |
| | | To understand transistor - biasing, operational amplifier and it's applications . | |
| | | to understand basic concept of oscillators and demonstrate quantitative problem solving skills for all topics | |
| **sem-III** | **PHYSICS-III Applied Physics** | Student will be expose to role of physics in inter-disciplinary areas related to material and Acoustics | Students will have knowlege of physics in inter-disciplinary areas related to material and Acoustics |
| | | To understand scope of subject in industry and Research | |
| | | to foster creative thinking | |
| | | to demonstrate quantitative problem solving skills | |
| **sem-III** | **Practical Course 3- USPHP3** | Student will be able to demonstrate practical skills, | After completion of this course students will be able to use appartus without fear,demonstrate practical skills and corelate physics theory concept through practicals |
| | | Use appartus without fear | |
| | | To Corelate physics theory concept through practical applications | |
| | | Understand concept of errors | |

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| sem-IV | **PHYSICS-I Optics and Digital Electronics** | To understand Diffraction and Polarization processes | - |
| | | To understand Application Of Interference, resolving power of optical instrument | |
| | | To understand use of IC555 timer | |
| | | to demonstrate quantitative problem solving skills | |
| sem-IV | **PHYSICS-II Quantum Physics** | To understand Postulate of Quantum Mechanics and it's Significance. | - |
| | | To understand concept of wave function | |
| | | To study TDSE and TIDSE, | |
| | | to demonstrate quantitative problem on potential barrier. | |
| sem-IV | **PHYSICS-III Applied Physics-II** | To introduce the field of gephysics and it's relatioship with other sciences | - |
| | | To build concept of microprocessor, and instruction set | |
| | | To understand radio communication and modulation technique | |
| | | To introduce concept of Digital communication | |
| sem-IV | **Practical Course 4- USPHP4** | Student will be able to demonstrate practical skills, | - |
| | | Use appartus without fear | |
| | | To Corelate physics theory concept through practical applications | |
| | | Understand concept of errors | |
| sem-V | **PHYSICS-I Mathematical Thermal and Statistical Physics** | To Learn mathematical techniques required to understand Physical Phenomenon | - |
| | | To Solve basic problems in Probability,complex function, PDE, | |
| | | To understand important ideas of Statistical Mechanics, and difference between classical and quntum ststistics | |
| | | To demonstrate quantitative problem solving skills | |

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| sem-V | **PHYSICS-II Solid State Physics** | To understand basics of Crystallography | - |
| | | to understand electrical properties of metal and Band theory of solids | |
| | | To understand Fermi distribution function, Density of States, conduction in semiconductor and introduction to Superconductivity. | |
| | | To demonstrate quantitative problem solving skills | |
| sem-V | **PHYSICS-III Atomic and Molecular Physics** | To understand application of Q.M in atomic Physics | - |
| | | to study electron spin, symmetric antisymmetric wave function and Vector atom model | |
| | | To understand effect of magnatic field on atoms and it's Applications. | |
| | | To learn molecular physics and it's applications, to demonstrate quantitative problem solving skills | |
| sem-V | **PHYSICS-IV Electrodynamics** | To understand Laws of Electrodynamics | - |
| | | to understand Maxwell's Electrodynamics and it's relation to Relativity | |
| | | To derive Optical laws from electromagnatic principle. | |
| | | To demonstrate quantitative problem solving skills | |
| sem-V | **PHYSICS-V Analog Circuits, Instruments and Consumer Appliances** | To understand concept of Transducer and sensors along with application | - |
| | | To learn concept of signal conditioning, devices used and their operation. | |
| | | To get insight of modern medical Instruments | |
| | | To demonstrate quantitative problem solving skills | |
| sem-V | **Practical Couse- USPHP05** | Student will be able to demonstrate basic practical skills, for general and Dark room expts | - |
| | | to understand designing of the electrical experiment | |
| | | To Corelate physics theory concept through practical applications | |
| | | Calculation of result with estimated error in the observation | |

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| **sem-V** | **Practical Couse- USPHP06** | Student will be able to demonstrate basic practical skills, for general and Dark room expts | - |
| | | to understand designing of the electrical experiment | |
| | | To Corelate physics theory concept through practical applications | |
| | | Tracing of waveforms | |
| **sem-V** | **Practical Couse- USACEI5P1** | Student will be able to demonstrate basic practical skills. | - |
| | | Use of breadboard for Circuit design and testing. | |
| | | To Corelate instrumentation theory concept through practical applications | |
| | | Calculation of result, Plotting of graphs | |
| **sem-VI** | **PHYSICS-I Classical Mechanics** | To undestand the motion under cental force , Kepler's Laws of planetary motion,concept of accelerated coordinate system | - |
| | | To study important fomalisim of Lagrange's equation and to solve examples using this formalism | |
| | | To understand fluid dynamics and rigid body rotation. To introduce Non-linear mechanics and aspects of chaotic behaviour | |
| | | To demonstrate quantitative problem solving skills | |
| **sem-VI** | **PHYSICS-I Electronics** | To undestand the basics of semiconductor devices and it's application (FET, MOSFET,SCR,UJT) | - |
| | | To understand application of operational Amplifier | |
| | | To understand timing pulse generation and regulated poewer supplies | |
| | | To understand concept digial communication and develop quantitative problem solving skills | |
| **sem-VI** | **PHYSICS-III Nuclear Physics** | To undestand the fundamentals of classical nuclear and particle physics. | - |
| | | To understand interaction of particle with radiation and working of particle accelerators. | |
| | | To give insight on unsolved questions on dark matter and other research oriented topics | |
| | | To demonstrate quantitative problem solving skills | |

| sem-VI | PHYSICS-IV Special Theory of Relativity | To undestand the significance of Michelson Morley expt . | - |
| | | To understand Postulates of special theory of relativity , lorentz transformation, | |
| | | To understand einstein's concept of space and time | |
| | | To solve problems based on length contraction , time dialation, and twin paradox. | |
| sem-VI | PHYSICS-V Digital Electronics, Microprocessor and OOP | To learn to design combinatonal logic circuit | - |
| | | To develop assembly language programming skills,to understand interfacing of I/O peripheral with 8085 kit. | |
| | | To understand architecture of 8051 microcontroller, instruction set, prog. and interfacing. | |
| | | To study features of Object Oriented Programming and prog. language C++ | |
| sem-VI | Practical Couse- USPHP07 | Student will be able to demonstrate basic practical skills, for general and Dark room expts | - |
| | | to understand designing of the electrical experiment | |
| | | To Corelate physics theory concept through practical applications | |
| | | Calculation of result with estimated error in the observation | |
| sem-VI | Practical Couse- USPHP08 | Student will be able to demonstrate basic practical skills, for general and Dark room expts | - |
| | | to understand designing of the electrical experiment | |
| | | To Corelate physics theory concept through practical applications | |
| | | Tracing of waveforms | |
| sem-VI | Practical Couse- USACEI6P1 | Student will be able to demonstrate basic programming skills. | - |
| | | Use of breadboard for circuit building (MUX- De-Mux, Encoder, Decoder) and verifying it's truthtable | |
| | | To understand 8085 and 8051 theory through practicals | |
| | | To study C++ programming, simple I/O programmes , control structures, switch-case. | |