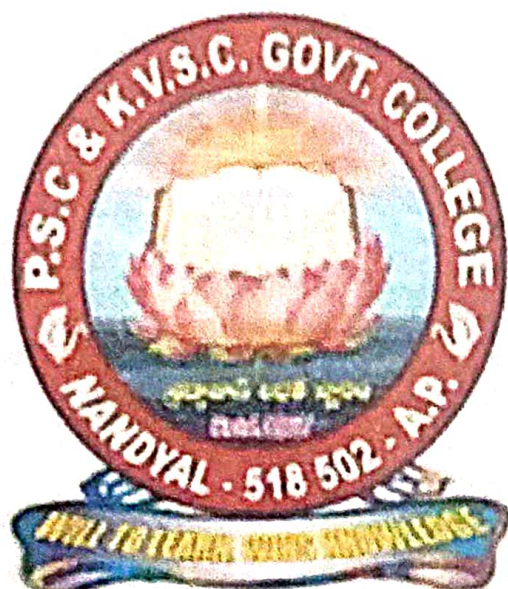


**P.S.C & K.V.S.C GOVERNMENT COLLEGE**

**NANDYAL**

**DEPARTMENT OF PHYSICS**



**PO-CO MAPPING**

## MAPPING OF COs WITH PSOs & POs

Course Code: P1: Mechanics, Waves and Oscillations

| Upon completion of this course, the student will be able to |                                                                                                                                                                         | PSOs    | POs     |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|
| CO 1                                                        | To understand Newton's laws of Motion, motion of a rocket, Rutherford scattering, Euler equations, Analysis of precessional velocity of symmetric top                   | 1,3     | 1,2,7,8 |
| CO 2                                                        | Basic understanding of central force with examples. Derivation of Kepler's laws                                                                                         | 1,2,3   | 1,2,4   |
| CO 3                                                        | To understand the concepts of inertial and non-inertial frames. Lorentz transformations, length contraction & time dilation                                             | 1,2,3   | 3,4,7   |
| CO 4                                                        | To understand simple and damped harmonic oscillator, Forced harmonic oscillator, Relaxation time and Quality factor. Coupled oscillator and wave equation of motion.    | 1,2,3,5 | 1,4,7   |
| CO 5                                                        | To understand the transverse vibrations in a string. Laws of vibrations in a string. To understand different methods of production of ultrasonic's & their applications | 1,2,3,5 | 4,5,6,7 |

## MAPPING OF COs WITH PSOs & POs

Course Code: P2: Wave Optics

| Upon completion of this course, the student will be able to: |                                                                                                                                                                                                         | PSOs  | POs     |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------|
| CO 1                                                         | To understand aberration & methods of minimizing aberration. Concepts of Coma, Astigmatism, To understand different types of fibers & principle of fiber communication                                  | 1,2,3 | 1,2,7   |
| CO 2                                                         | To understand principle of superposition. Basic understanding of conditions of interference of light, Interference in thin films, Lloyd's single mirror, Newton's rings, Michelson interferometer       | 1,3,5 | 1,2,4   |
| CO 3                                                         | To understand types of diffraction and differences between them, Fraunhofer diffraction at a single slit, Diffraction grating, Resolving power of grating.                                              | 1,3,5 | 3,4,7   |
| CO 4                                                         | Understanding polarization and different methods of producing polarized light. Nicol prism & Double refraction, Quarter and half wave plate, Laurent's half shade polarimeter, Basic principle of LCDs. | 1,2,3 | 1,3,7   |
| CO 5                                                         | To understand different types of fibers & principle of fiber communication Basic principle of LASER, Applications of lasers. Basic principle of holography and its applications                         | 1,4,5 | 1,4,6,7 |

## MAPPING OF COs WITH PSOs & POs

**Course Code: P1: Mechanics, Waves and Oscillations**

| Upon completion of this course, the student will be able to |                                                                                                                                                                         | PSOs    | POs     |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|
| CO 1                                                        | To understand Newton's laws of Motion, motion of a rocket, Rutherford scattering, Euler equations, Analysis of precessional velocity of symmetric top                   | 1,3     | 1,2,7,8 |
| CO 2                                                        | Basic understanding of central force with examples. Derivation of Kepler's laws                                                                                         | 1,2,3   | 1,2,4   |
| CO 3                                                        | To understand the concepts of inertial and non-inertial frames. Lorentz transformations, length contraction & time dilation                                             | 1,2,3   | 3,4,7   |
| CO 4                                                        | To understand simple and damped harmonic oscillator, Forced harmonic oscillator, Relaxation time and Quality factor. Coupled oscillator and wave equation of motion.    | 1,2,3,5 | 1,4,7   |
| CO 5                                                        | To understand the transverse vibrations in a string. Laws of vibrations in a string. To understand different methods of production of ultrasonic's & their applications | 1,2,3,5 | 4,5,6,7 |

## MAPPING OF COs WITH PSOs & POs

**Course Code: P2: Wave Optics**

| Upon completion of this course, the student will be able to: |                                                                                                                                                                                                         | PSOs  | POs      |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------|
| CO 1                                                         | To understand aberration & methods of minimizing aberration. Concepts of Coma, Astigmatism ,To understand different types of fibers & principle of fiber communication                                  | 1,2,3 | 1,2,7    |
| CO 2                                                         | To understand principle of superposition. Basic understanding of conditions of interference of light, Interference in thin films, Lloyd's single mirror, Newton's rings, Michelson interferometer       | 1,3,5 | 1,2,4    |
| CO 3                                                         | To understand types of diffraction and differences between them, Fraunhofer diffraction at a single slit, Diffraction grating, Resolving power of grating.                                              | 1,3,5 | 3,4,7    |
| CO 4                                                         | Understanding polarization and different methods of producing polarized light. Nicol prism & Double refraction ,Quarter and half wave plate, Laurent's half shade polarimeter, Basic principle of LCDs. | 1,2,3 | 1,3 ,7   |
| CO 5                                                         | To understand different types of fibers & principle of fiber communication Basic principle of LASER, Applications of lasers. Basic principle of holography and its applications                         | 1,4,5 | 1,4, 6,7 |

## MAPPING OF COs WITH PSOs & POs

Course Code: P3: Heat & Thermodynamics

| Upon completion of this course, the student will be able to: |                                                                                                                                                        | PSOs  | POs     |
|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------|
| CO 1                                                         | To understand concept of Thermodynamics and the kinetic theory of gases.                                                                               | 1,2,3 | 1,2,7   |
| CO 2                                                         | To understand Carnot's engine & its efficiency.<br>II law of Thermodynamics. Concepts of Entropy & use of T-S diagrams                                 | 1,3,5 | 1,2,4   |
| CO 3                                                         | To understand the derivation of Maxwell's thermodynamic relations.<br>Importance of specific heat of gases. Joule Kelvin effect                        | 1,3,5 | 3,4,7   |
| CO 4                                                         | To understand the concept of low temperature physics. Various experiments related to low temperature physics. To understand Adiabatic demagnetization, | 1,2,3 | 1,3,7   |
| CO 5                                                         | To get the idea of various laws of quantum theory of radiation.<br>Measurement of temperature of sun using pyrometers                                  | 1,4,5 | 1,4,6,7 |

## MAPPING OF COs WITH PSOs & POs

Course Code: P4: Electricity, Magnetism & Electronics

| Upon completion of this course, the student will be able to: |                                                                                                                                                                                                                     | PSOs  | POs     |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------|
| CO 1                                                         | To understand Gauss' law in electrostatics and its application.<br>Uses of dielectrics. Importance of electric polarization.                                                                                        | 1,2,3 | 1,2,7   |
| CO 2                                                         | Application of Biot-Savart's Law & to understand Hall effect. Basic concept of Faraday's & Lenz's laws. Understanding of self & mutual inductance. Working of Transformer                                           | 1,3,5 | 1,2,4   |
| CO 3                                                         | To understand the effect of AC current through pure resistance, capacitance & inductance & in combination. Importance of Q factor.<br>To understand the fundamental Maxwell's equations & Poynting theorem.         | 1,3,5 | 3,4,7   |
| CO 4                                                         | understanding of PN junction & Zener diode & LED characteristics<br>To understand CB, CE, CC configurations of a transistor.<br>Determination of h parameters.                                                      | 1,2,3 | 1,3,7   |
| CO 5                                                         | To understand digital electronics concepts. Conversion of binary to decimal, hexa & octal systems & vice versa. Importance of De Morgan's theorem in digital electronics. Half & full adder circuits, construction. | 1,4,5 | 1,4,6,7 |

## MAPPING OF COs WITH PSOs & POs

**Course Code: P3: Heat & Thermodynamics**

| Upon completion of this course, the student will be able to: |                                                                                                                                                        | PSOs  | POs      |
|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------|
| CO 1                                                         | To understand concept of Thermodynamics and the kinetic theory of gases.                                                                               | 1,2,3 | 1,2,7    |
| CO 2                                                         | To understand Carnot's engine & its efficiency.<br>II law of Thermodynamics. Concepts of Entropy & use of T-S diagrams                                 | 1,3,5 | 1,2,4    |
| CO 3                                                         | To understand the derivation of Maxwell's thermodynamic relations.<br>Importance of specific heat of gases. Joule Kelvin effect                        | 1,3,5 | 3,4,7    |
| CO 4                                                         | To understand the concept of low temperature physics. Various experiments related to low temperature physics. To understand Adiabatic demagnetization, | 1,2,3 | 1,3 ,7   |
| CO 5                                                         | To get the idea of various laws of quantum theory of radiation.<br>Measurement of temperature of sun using pyrometers                                  | 1,4,5 | 1,4, 6,7 |

## MAPPING OF COs WITH PSOs & POs

**Course Code: P4: Electricity, Magnetism & Electronics**

| Upon completion of this course, the student will be able to: |                                                                                                                                                                                                                     | PSOs  | POs      |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------|
| CO 1                                                         | To understand Gauss' law in electrostatics and its application.<br>Uses of dielectrics. Importance of electric polarization.                                                                                        | 1,2,3 | 1,2,7    |
| CO 2                                                         | Application of Biot-Savart's Law & to understand Hall effect. Basic concept of Faraday's & Lenz's laws. Understanding of self & mutual inductance. Working of Transformer                                           | 1,3,5 | 1,2,4    |
| CO 3                                                         | To understand the effect of AC current through pure resistance, capacitance & inductance & in combination. Importance of Q factor.<br>To understand the fundamental Maxwell's equations & Poynting theorem.         | 1,3,5 | 3,4,7    |
| CO 4                                                         | understanding of PN junction & Zener diode & LED characteristics<br>To understand CB, CE, CC configurations of a transistor.<br>Determination of h parameters.                                                      | 1,2,3 | 1,3 ,7   |
| CO 5                                                         | To understand digital electronics concepts. Conversion of binary to decimal, hexa & octal systems & vice versa. Importance of De Morgan's theorem in digital electronics. Half & full adder circuits, construction. | 1,4,5 | 1,4, 6,7 |

## MAPPING OF COs WITH PSOs & POs

**Course Code: P5: Modern Physics**

| Upon completion of this course, the student will be able to: |                                                                                                                                                                                             | PSOs  | POs     |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------|
| CO 1                                                         | To understand quantum numbers associated with vector atom model<br>To know coupling schemes. Importance of Raman effect & its experimental setup. Applications of Raman effect              | 1,2,3 | 1,2,7   |
| CO 2                                                         | To understand matter waves, De-Broglie's theory of matter waves.<br>Heisenberg's uncertainty principle & experimental verification.                                                         | 1,3,5 | 1,2,4   |
| CO 3                                                         | To understand the postulates of quantum mechanics,<br>Applications of Schrodinger wave equation in various cases.                                                                           | 1,3,5 | 3,4,7   |
| CO 4                                                         | To know Basic properties of nucleus. Understanding of liquid drop model & shell model. To get the idea of Alpha Beta decay & various theories. Neutrino hypothesis.                         | 1,2,3 | 1,3,7   |
| CO 5                                                         | To understand the basics of Nano materials & its classification<br>Applications of nano materials. To understand concept of superconductivity, types of superconductors & its applications. | 1,4,5 | 1,4,6,7 |

## MAPPING OF COs WITH PSOs & POs

**Course Code: 6B: Low Temperature Physics & Refrigeration**

| Upon completion of this course, the student will be able to: |                                                                                                                                  | PSOs  | POs     |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------|---------|
| CO 1                                                         | Identify various methods and techniques used to produce low temperatures in the Laboratory.                                      | 1,2,3 | 1,2,7   |
| CO 2                                                         | Acquire a critical knowledge on refrigeration and air conditioning                                                               | 1,3,5 | 1,2,4   |
| CO 3                                                         | Demonstrate skills of Refrigerators through hands on experience and learns about refrigeration components and their accessories. | 1,3,5 | 3,4,7   |
| CO 4                                                         | Understand the classification, properties of refrigerants and their effects on environment                                       | 1,2,3 | 1,3,7   |
| CO 5                                                         | Comprehend the applications of Low Temperature Physics and refrigeration.                                                        | 1,4,5 | 1,4,6,7 |

## MAPPING OF COs WITH PSOs & POs

**Course Code: 7B: Solar Energy and Applications**

| Upon completion of this course, the student will be able to: |                                                                                        | PSOs  | POs     |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------|-------|---------|
| CO 1                                                         | Understand Sun structure, forms of energy coming from the Sun and its measurement.     | 1,2,3 | 1,2,7   |
| CO 2                                                         | Acquire a critical knowledge on the working of thermal and photovoltaic collectors.    | 1,3,5 | 1,2,4   |
| CO 3                                                         | Demonstrate skills related to callus culture through hands on experience               | 1,3,5 | 3,4,7   |
| CO 4                                                         | Understand testing procedures and fault analysis of thermal collectors and PV modules. | 1,2,3 | 1,3,7   |
| CO 5                                                         | Comprehend applications of thermal collectors and PV modules.                          | 1,4,5 | 1,4,6,7 |

## MAPPING OF COs WITH PSOs & POs

**Course Code: 6C: Application of Electricity & Electronics**

| Upon completion of this course, the student will be able to: |                                                                                                                               | PSOs  | POs     |
|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------|---------|
| CO 1                                                         | Identify various components present in Electricity & Electronics Laboratory                                                   | 1,2,3 | 1,2,7   |
| CO 2                                                         | Acquire a critical knowledge of each component and its utility (like resistors, capacitors, inductors, power sources etc.).   | 1,3,5 | 1,2,4   |
| CO 3                                                         | Demonstrate skills of constructing simple electronic circuits consisting of basic circuit elements                            | 1,3,5 | 3,4,7   |
| CO 4                                                         | Understand the need & Functionality of various DC & AC Power source                                                           | 1,2,3 | 1,3,7   |
| CO 5                                                         | Comprehend the design, applications and practices of various electrical & Electronic devices and also their trouble shooting. | 1,4,5 | 1,4,6,7 |

## MAPPING OF COs WITH PSOs & POs

Course Code: 7C: Application of Electricity & Electronics

| Upon completion of this course, the student will be able to: |                                                                                                                                                                                  | PSOs  | POs     |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------|
| CO 1                                                         | Identify various facilities required to set up a basic Instrumentation Laboratory                                                                                                | 1,2,3 | 1,2,7   |
| CO 2                                                         | Acquire a critical knowledge of various Electrical Instruments used in the Laboratory.                                                                                           | 1,3,5 | 1,2,4   |
| CO 3                                                         | Demonstrate skills of using instruments like CRO, Function Generator, Multimeter etc. through hands on experience.                                                               | 1,3,5 | 3,4,7   |
| CO 4                                                         | Understand the Principle and operation of different display devices used in the display systems and different transducers                                                        | 1,2,3 | 1,3,7   |
| CO 5                                                         | Comprehend the applications of various biomedical instruments in daily life like B.P. meter, ECG, Pulse oxymeter etc. and know the handling procedures with safety and security. | 1,4,5 | 1,4,6,7 |



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