# K.S.N. Govt. Degree College for Women:: Ananthapuramu
# Bachelor of Science
# Course Outcomes of Physics

**Course Code: S1 - 291**

**Course Name: Mechanics & Properties of Matter**

| Upon completion of this course, the student will be able to: | |
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| CO 1 | To learn about Scalar vector fields, Curl, Divergence, gradient concepts, Line, surface and volume integrals. They would also learn about Stokes, gauss, Green's theorems and their applications. |
| CO 2 | To understand the concepts of rotational kinematics of rigid body, Moment of inertia tensor, Euler equations, Precision of top, equinoxes and Gyroscope. Students would also learn about types of beams, load analysis in various configurations and mechanics of cantelever. |
| CO 3 | To gain understanding on conservative forces, relation between conservative force and potential, equation of motion under central forces, Keppler's laws and Coriolis force. |
| CO 4 | They would woul d be familiarize about Galelian-Lorentz frames of references, Lorentz transformations, Michelson-Morley experiment, Postulates of special theory of relativity, length contraction, time delation, addition of masses, Einstein's mass energy relation and 4 vector notation. |

**Course Code: S2- 292**

**Course Name: Waves & Oscillations**

| Upon completion of this course, the student will be able to: | |
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| CO 1 | To learn about physical properties of Simple Harmonic Motion (SHM), Torsional pendulum, Compound pendulum and their applications, Lissajous figures. |
| CO 2 | To be able to solve the diffreential equations for forced harmonic oscillator and damped harmonic oscillator and and compare the results with simple harmonic oscillator. They would also learn about Fourier series analysis of various wave forms. |
| CO 3 | To solve the wave equation for vibrating strings and study various parameters like modes, overtones, energy transport, transverse impedance etc. |
| CO 4 | They would also learn about basics of ultrasonics, production and detection of ultrasonics, measurement of frequency and velocity of ultrasonics and the applications of ultrasonics in todays world. |

**Course Code: S3-291**

**Course Name: OPTICS**

| Upon completion of this course, the student will be able to: | |
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| CO 1 | They would learn about various monochromatic and chromatic aberrations and their minimising techniques. |
| CO 2 | To understand the principle of superposition, coherence, Interference by division of wavefront and amplitude, Fresnel's bi-prism, Lloyd's mirror, thin film interference, wedge shaped film interference, Newton's rings, Michelson's interferometer and their applications to sodium D lines and thickness of thin film. |
| CO 3 | To understand the phenomenon of diffraction derive expression for Diffraction due to single slit , double slit and working of diffraction grating. They would also learn about resolving power of grating. They understand the concept of Fresnel's half period zones. |
| CO 4 | To learn about methods of polarization, Brewster's law, Malus law, Nicol prism, Quarter wave plate, half wave plate, babinet's compensator and optical activity analysis by Laurent's half shade polarimeter. They would also learn about principles of LASER, Einstein coefficients, He-Ne laser, Ruby laser, applications of laser, Principles of optical fiber communication, classification , applicat ion. Principles of holography, limitations of Gabor's hologram and applications of holography. |

**Course Code: S4- 291**

**Course Name:** Thermodynamics & Radiation Physics

| Upon completion of this course, the student will be able to: | |
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| CO 1 | To learn about Deduction of Maxwell's distribution law of molecular speeds, Tooth wheel experiment, transport phenomena, mean free path, viscosity of gases, thermal conductivity and diffusion of gases. |
| CO 2 | To learn about Isothermal and adiabatic process – reversible and irreversible processes, Carnot's engine and its efficiency Kelvin's scale, entropy, disorder, T-S diagram and other applications of entropy. |
| CO 3 | To understand thermodynamic potentials, Maxwell equations, Clausius-Clayperon's equation, $C_p/C_v$, $C_p$-$C_v$ for perfect gas, J-K effect, J-K coefficient for perfect and Vander wall gases. |
| CO 4 | They learn about Joul Kelvin effect Joul Thomson cooling, liquefaction of helium, Adiabatic demagnetization, principle of refrigeration, air conditioning, effects of CFC on Ozone layerand applications of low temperature physics. |
| CO 5 | To learn about Black Body- Ferry's black body, distribution of energy in the spectrum of black body, Wein's law, Rayleigh-jeans law, Planks theory of radiation, various types of pyrometers-experimental determination, determination of solar constant and Temperature of Sun. |

**Course Code: S5- 291**

**Course Name: Electricity, Magnetism & Electronics**

| Upon completion of this course, the student will be able to: | |
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| CO 1 | To understand the concepts of electric field and electric potential due to point charge, solid sphere, cylinder. These concepts will enhance the student towards the problems come across in the real life. |
| CO 2 | To learn about the concept of capacitance, types of capacitors electrical energy storage in a capacitor and the applications of capacitors |
| CO 3 | To learn about the concepts of Hall effect, using this we can find the charge particles in the given material. Also to learn about the particle accelarators like cyclotron, synchrotron and cyclo synchrotron. |
| CO 4 | To be able to learn about Biot savart's law, Faraday's law and it's applications. |
| CO5 | To understand the basics of the electrics, Digital electronics ,binary conversion of the number system and their applications in daily life |

**Course Code: S5- 292**

**Course Name: MODERN PHYSICS**

| Upon completion of this course, the student will be able to: | |
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| CO 1 | To be understand the concepts of various atomic models and their drawbacks. Stern & Gerlach experiment Vector atom model. Zeeman effect, Raman effect experimental verification applications. |
| CO 2 | To learn about the concept of Matter waves and its properties, Heisenberg's uncertainty principle and experimental verification. |
| CO 3 | To understand the Basic postulates of quantum mechanics, physical interpretation of wave function and Eigen functions and Eigen values. |
| CO 4 | To know basic properties of nucleus, binding energy. To understand the Radioactive decay, Geiger - Nuttal law, positron emission, electron capture and neutrino hypothesis. |
| CO5 | To understand the crystal structure of solids , unit cell, Millar indices, and types of lattices. To learn about Superconductivity its properties and its applications in the present world |

**Course Code: S6- 291E**

**Course Name: RENEWABLE ENERGY**

| Upon completion of this course, the student will be able to: | |
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| CO 1 | To understand Role of energy in socio economic development and social transformations. To know about Environmental degradation due to energy production and utilization, air and water pollution, depletion of ozone layer and global warming |
| CO 2 | To understand the impact of exponential raise in energy usage on global economy. To learn about Energy resources available in India, Urban and Rural energy consumption and need for use of new renewable energy sources. |
| CO 3 | To understand solar energy, solar water heating system, solar cell, solar cooker, solar types and Applications of solar PV systems. They also learn about principle of wind energy conversion and advantages and disadvantages of wind mills and Applications of wind energy. |
| CO 4 | To learn about the principle of ocean thermal energy conversion and wave energy technologies. They also understand the Hydrogen productions methods, Electrolysis of water and problem of hydrogen transport and distribution and uses of Hydrogen use as a fuel. |
| CO5 | To understand the conversion of Biomass into fuels, properties of Biomass, Biogas plants and characteristics of biogas. |