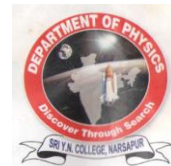# DEPARTMENT OF PHYSICS
SRI Y.N.COLLEGE (AUTONOMOUS)-NARSAPUR
(Affiliated to Adikavi Nannaya University)
Thrice Accredited by NAAC at 'A' Grade
Recognized by UGC as 'College with Potential for Excellence'
For 2020-2021 Admitted Batch [2020-21admitted Batch onwards]

PROGRAMME COURSE OUTCOMES (PO's)

Combination: B.Sc. – MPE (EM) Mathematics, Physics, Electronics

- Possess a sound understanding of the theoretical foundation of various core subjects.

- Acquire analytical and logical thinking skills necessary to pursue higher Education.

- Gain employment at entry level positions based on program curriculum.

- After the completion of UG program the student gets eligibility to join PG programme, MBA, Student will be eligible to write bank PO/Clerk examinations, Civil services and other group services examinations.

Mathematics:
- Develop proficiency in high level mathematical methods, Acquire analytical and logical thinking skills

Physics:
- Master a broad set of knowledge concerning the fundamentals in the basic areas of Physics

Electronics:
- Master a broad set of knowledge concerning the fundamentals in the basic areas of Electronics. Hands-on experience in various practical aspects of problem solving/ programming/ experimental techniques, and data analysis and presentation competence.

Combination: B.Sc. – MPC (TM & EM) Mathematics, Physics, Chemistry

- Posses a sound understanding of the theoretical foundation of various core subjects.

- Acquire analytical and logical thinking skills necessary to pursue higher Education.

- Gain employment at entry level positions based on program curriculum.

- After the completion of UG program the student gets eligibility to join in PG programme, MBA, Student will be eligible to write bank PO/Clerk examinations, Civil services and other group services examinations.

Mathematics:
- Develop proficiency in high level mathematical methods, Acquire analytical and logical thinking skills

Physics:
- Master a broad set of knowledge concerning the fundamental in the basic areas of Physics

Chemistry:
- Understand the fundamental theories, the concepts and applications of chemistry.
- Gains knowledge of important laboratory techniques, methods, and instrumentation.

Combination: B.Sc (MPCs) Mathematics, Physics, Computer Science

- Expertise in the basic sciences provides the students with opportunities to go for Higher Education
- Promotes an in- depth exploration in specific field, current ways of thinking, new discoveries, and methodologies of the discipline. Gain employment at entry level positions based on program curriculum

Mathematics:
- Develop proficiency in high level mathematical methods, Acquire analytical and logical thinking skills

Physics:
- Master a broad set of knowledge concerning the fundamentals in the basic areas of Physics.

Computer Science:
- Hands-on experience in various practical aspects of problem solving/ programming/ experimental techniques, and data analysis and presentation competence. Effectively use the software - MS Excel and R-Programming.
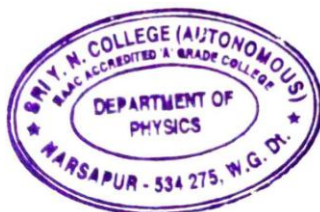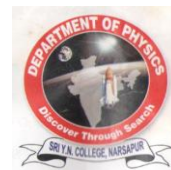
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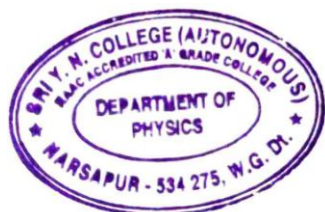**Recognized by UGC as 'College with Potential for Excellence'**
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PROGRAMME SPECIFIC COURSE OUTCOMES (PSO's)

01: Students are expected to acquire acore knowledge in physics, including the major premises of classical mechanics, quantum mechanics, electromagnetic theory, electronics, optics, special theory of relativity and modern physics.

02: Students are also expected to develop written and oral communication skills in communicating physics-related topics.

03: Students should learn how to design and conduct an experiment (or series of experiments) demonstrating their understanding of the scientific method and processes. Not only that they are expected to have an understanding of the analytical methods required to interpret and analyze results and draw conclusions as supported by their data.

04: Students will develop the proficiency in the acquisition of data using a variety of laboratory instruments and in the analysis and interpretation of such data.

05: Students will learn the applications of numerical techniques for modeling physical systems for which analytical methods are inappropriate or of limited utility.

06: Students will realize and develop an understanding of the impact of physics and science on society.

07: Apply conceptual understanding of the physics to general real-world situations.

08: Describe the methodology of science and the relationship between observation and theory.

09: Learn to minimize contributing variables and recognize the limitations of equipment.

10: Discover of physics concepts in other disciplines such as mathematics, computer science, engineering, and chemistry.

11: Develop the following experimental tools: Numerically model simple physical systems using Euler's method, curve fitting, and error analysis.

12: Analyze physical problems and develop correct solutions using natural laws.
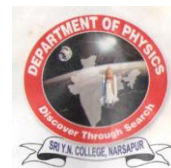
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COURSE OUTCOMES (CO's)

Mechanics & Properties of matter (1102)

CO1: Understand the physical significance of gradient of scalar field, divergence and curl of vector field. Applications of Gauss's & Green's theorems

CO2: Understand the working of multi stage rockets, collisions in 2D & 3D.Concept of Rutherford's scattering experiment and its importance.

CO3: Knowing and applying Euler equations. Analysis of processional velocity of symmetric top.

CO4: Basic understanding of central force with examples. Verification of Kepler's laws, application to Planetary system.

CO5: Understanding the concepts of relativity, frame of reference, Lorentz transformations, length contraction and time dilation.

Waves & Oscillations (2102)

CO1: Analyzing the Simple Harmonic Motion, characteristics. Determination of acceleration due to gravity "g" by Compound pendulum & rigidity modulus by Torsion pendulum.

CO2: Apply the concept of damping to determine logarithmic decrement & quality factor. Differential equation of forced harmonic oscillator and its equation and applied in daily life.

CO3: Analyze the periodic functions like square wave, Saw tooth wave by using Fourier's theorem.

CO4: Basic understanding of Ultrasonics, different production methods and applications.

Thermodynamics & Wave optics (3102)

CO1: Understanding the basic concepts of Thermodynamics and the kinetic theory of gases, transport phenomenon

CO2: Knowing the thermodynamic potentials and deriving the Maxwell's equations, and their application to different thermodynamic systems

CO3: Knowledge of interference and its applications

CO4: By the end of this course the students will be able to understand the concept of aberrations, their importance in camera and other lens systems.

Thermodynamics & Radiation Physics (4102)

CO1: Understand the concept of low temperature Physics and its applications.
CO2: Knowing different laws and formulae in Quantum theory of radiation. And measurement of radiation by using different Pyrometers
CO3: Knowledge of diffraction and basic understanding of Holography.
CO4: Understanding the polarization and different methods of conversion of unpolarized light into polarized light. Basics of Fiber optics.

Electricity, Magnetism & Electronics (5103)

CO1: Understand the Gauss's law and its applications of electrostatics & basics of dielectrics.
CO2: Analyze the electric & magnetic fields and understand the Biot savart's law and apply it to long straight wire & solenoid.
CO3: Review the basic laws of electricity and magnetism, derivation of Maxwell equations and analyze the production of electromagnetic waves
CO4: Understand the basic concepts of electronics, working of p-n junction diodes and analysis of transistor configurations.

Modern Physics (5104)

CO1: Understand the evolution of atomic models spectra of different elements, the effect of electric and magnetic field on the spectra
CO2: Understand the properties of the nucleus and the models associated with it.
CO3: The theories behind the alpha and beta decays. Different detectors used to detect alpha, beta & gamma radiations
CO4: Basic understanding of the crystal structure and also experimental study of it
CO5: Understanding the basic theories of superconductivity.

Renewable energy (6128)

CO1: Basic knowledge of different forms of energy resources and its role in economic development
CO2: Study of the effects of environmental degradation, global warming, nuclear power generation.
CO3: Knowledge on Solar, Wind, Ocean, Hydrogen energy conversions.

CO4: Analysis of conversion of bio mass into fuels, biomass plants types and design.

Solar Thermal and Photovoltaic aspects (6129)

CO1: Study the basics of solar radiations and solar intensity measurements.
CO2: Understanding the classification, design and performance parameters of concentrating collectors.
CO3: Analyze the fabrication of different types of solar cells.

Wind, Hydro & Ocean energies (6130)

CO1: Introductory knowledge of wind generation, meteorology of wind. Types and classification of wind energy convertors.
CO2: Understand the construction and working of wind turbine and its characteristics.
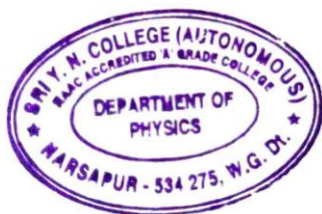**CO3:** Understand the technology process of Ocean, thermal and tidal energy conversion.

Energy Storage devices (6131)

CO1: A thorough understanding of different modes of energy storage.
CO2: Analyze different types of electro chemical energy storage systems.
CO3: Understanding of difference between and fuel cell components, principle and it's working.
CO4: Knowledge of different types of fuel cells and the problems with fuel cells and their Applications

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