

ABOUT THE COLLEGE

The story of Pattamundai College traces its roots to the turbulent 1960s, a period marked by ambition amid adversity. Its foundation stone was ceremoniously laid on June 1, 1967, though the institution truly sprang to life on July 5, 1970. Nestled in the fertile heart of Kendrapara district—often called the region's breadbasket—this locality has long grappled with profound social and economic backwardness. Recurring natural calamities, from devastating cyclones and relentless floods to prolonged droughts, continue to test its resilience even today. In this challenging landscape, higher education—the undeniable engine of socio-economic progress—was conspicuously absent, leaving ambitious young minds without a local pathway to knowledge and opportunity. The nearest college, located in Kendrapara some 20 kilometers away, proved logistically daunting and woefully inadequate to serve the swelling demand from this expansive rural belt. It was against this backdrop that a visionary coalition emerged: a dynamic band of education advocates, beginning with local college students studying in Cuttack and extending to grassroots activists, social luminaries, and community enthusiasts. United by a shared dream, they championed the establishment of a college to uplift the entire region.

What began as a modest Arts college, enrolling just 128 pioneering students, has blossomed into a beacon of academic excellence. Today, it proudly encompasses Science and Commerce streams, boasting 1,475 students across 15 undergraduate programs. Over its illustrious

50-year journey, the college has thrived on a sprawling, picturesque 14.6-acre campus—a living monument to the foresight, sacrifices, and unwavering commitment of its founders. Its alumni, now scattered across the globe in positions of influence and leadership, stand as the institution's most enduring ambassadors, while it continues to catalyze transformative development in its satellite communities. Permanently affiliated with the prestigious Utkal University, Pattamundai College has earned coveted recognition under Sections 2(f) and 12(B) of the UGC Act, affirming its rigorous academic standards and astute administrative prowess.

The college's physical evolution mirrors its academic ascent. Strategic additions over the decades—including state-of-the-art buildings, well-equipped hostels, a comprehensive library, cutting-edge laboratories, and expansive playgrounds—have not only elevated its infrastructure but also broadened horizons for both curricular depth and extracurricular vibrancy. Embracing the digital age well ahead of its contemporaries, the institution has seamlessly integrated Information and Communication Technology (ICT) facilities, automated library systems, campus-wide Wi-Fi, virtual classrooms, and sustainable green initiatives. These forward-thinking measures ensure it remains attuned to the evolving expectations of students, faculty, and the broader community, positioning Pattamundai College as a dynamic force for tomorrow's leaders.

Vision of the College

- ❖ To make higher education qualitative and value based for the socio-economic transformation of the nation.
- ❖ To instill a sense of discipline and morality among the student's community for the making the students socially responsible citizens.

Mission of the College

- ❖ To grow into an institution of excellence and exemplary at the university level.
- ❖ To provide literary, scientific, professional and technical education to the aspiring rural youth at a minimum cost.
- ❖ To be recognized as an institution with proven capacity to provide quality education in Science, Commerce & Humanities.
- ❖ To create symbiotic relationship with the society to meet the changing needs.
- ❖ To introduce self-financing courses in multidisciplinary area.
- ❖ To adopt continues measures to improve the quality of the program.
- ❖ To provide need-based career-oriented courses to cater the needs of the society
- ❖ To involve the Alumni for all round development of the college

Genesis of the Department: A Legacy of Scientific Inquiry

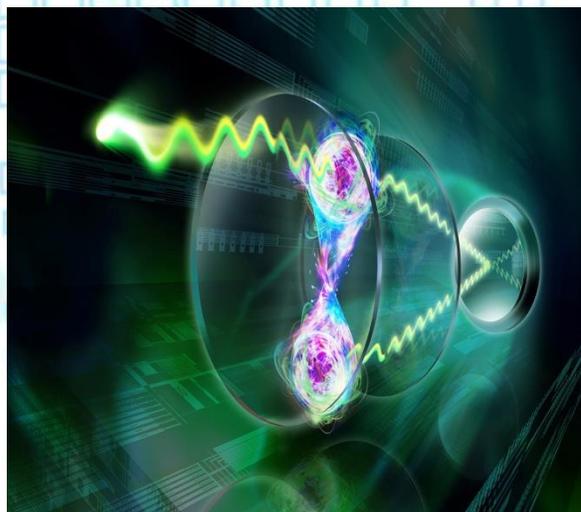
Pattamundai College stands as a beacon of higher education in Odisha, renowned for its comprehensive programs in Arts, Science, and Commerce at the undergraduate level. Founded in the 1970-71 academic session, the institution has triumphantly completed 53 years, cultivating a legacy of academic rigor and producing scholars who excel across diverse disciplines, from research and industry to public service. The introduction of the Science stream at the university level in 1989-90, formalized by Government Order No. 54802/EYS dated December 13, 1990,

marked a pivotal expansion. That very year, the Department of Physics initiated its degree program, igniting a passion for discovery among students in this rural heartland. From day one, the department has embodied a profoundly student-centric philosophy—cooperative, inclusive, and dedicated to nurturing intellectual curiosity. It consistently draws some of the region's brightest minds to its Honours program, fostering a culture where theoretical mastery meets practical innovation. Upholding an impeccable academic record, the department achieves a consistent 95% pass rate in Utkal

University examinations, reflecting meticulous teaching and student diligence. Beyond the classroom, it orchestrates a dynamic array of initiatives designed to broaden horizons: annual student-led seminars on cutting-edge topics like quantum mechanics and astrophysics; extramural lectures by visiting experts; prestigious state-level symposia that connect local talent with broader scientific discourse; the structured Mentor-Mentee Program for personalized guidance; and immersive field visits to eminent institutions such as IITs and national labs. Students frequently dominate college and inter-collegiate competitions, securing top honors in physics olympiads, quiz contests, and project exhibitions. The department's alumni network is a source of pride, with graduates ascending to influential roles in academia, research organizations like ISRO and BARC, tech industries, and civil services. Their inspiring journeys—from rural Odisha to global stages—are meticulously documented on the college website at www.pattamundaicollege.ac.in/alumni-registration, serving as motivation for current students.

The faculty's pursuit of excellence is relentless, with members actively engaging in national and international seminars, hands-on workshops, refresher courses, Faculty Development Program (FDPs), and specialized short-term courses at premier institutions like IITs, NITs, and UGC-sponsored centers. This ongoing professional enrichment ensures that teaching remains current, infused with the latest advancements in fields like nanotechnology, renewable energy, and computational physics. Complementing this expertise is state-of-the-art infrastructure tailored for immersive learning: high-

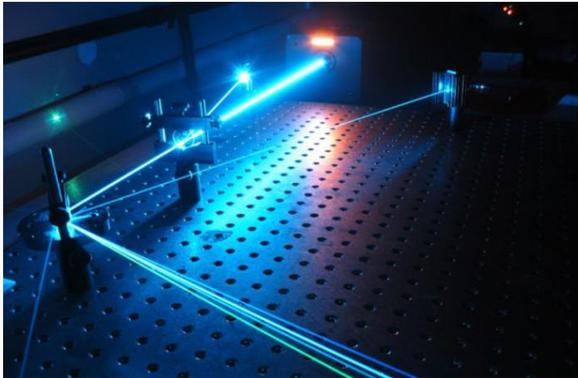
resolution LCD projectors for interactive sessions; precision-equipped Mechanics Lab for classical experiments; Optics Lab with laser interferometers and spectrometers; Electronics Lab for circuit design and digital systems; a fully networked Computer Lab for simulations and data analysis; and a fleet of laptops for mobile, collaborative work. These facilities not only meet but exceed modern pedagogical standards, equipping students for seamless transitions into higher studies, research, or industry. Dr. Ramesh Kumar Sahoo, a seasoned physicist with



extensive research credentials, currently heads the department. He is joined by accomplished faculty members Mr. Baikuntha Charan Roul, Mr. Amit Kumar Sahoo, and Mr. Satyabrata Biswal, whose combined expertise spans theoretical physics, experimental techniques, and applied sciences. Providing invaluable technical support are lab attendants Mr. Pandu Jena and Mr. Chandramani Jena, whose meticulous oversight ensures the smooth operation of all facilities. Together, this cohesive team propels the department toward new heights of innovation and impact.

Seminar Theme:

The State-Level Seminar on *Recent Developments in Applied Physics and Its Societal Importance* is designed to illuminate the profound ways in which applied physics continues to shape the modern world. Physics, once regarded as a purely academic discipline, has now become the backbone of technological innovation, driving progress in diverse fields such as renewable energy, medical diagnostics, space exploration, communication systems, artificial intelligence, and environmental



sustainability. Each new development in applied physics not only enriches scientific understanding but also translates into practical solutions that directly impact human life—whether through cleaner energy sources, advanced healthcare technologies, efficient disaster management strategies, or smarter industrial processes.

This seminar emphasizes the dual responsibility of researchers and institutions: to push the boundaries of scientific discovery while ensuring that these advancements are harnessed for the greater good of society. By fostering interdisciplinary collaboration among physicists, engineers, IT professionals, and social scientists, the program seeks to highlight how applied physics can address

pressing global challenges such as climate change, resource management, and equitable access to technology. It also aims to inspire young scholars and students to view physics not as an abstract pursuit, but as a transformative force capable of driving inclusive growth and sustainable development.

Ultimately, the theme underscores the vision that applied physics is not confined to laboratories or research papers—it is a living, evolving discipline that continuously interacts with society, shaping the future and empowering humanity to build a more resilient, innovative, and equitable world.

Program Objectives:

- **Highlight Recent Advances:** Showcase cutting-edge developments in applied physics and their integration with emerging technologies.
- **Bridge Academia and Society:** Emphasize how scientific innovations directly contribute to societal progress, sustainability, and quality of life.
- **Encourage Interdisciplinary Collaboration:** Foster dialogue between physicists, IT experts, engineers, and social scientists to address real-world challenges.
- **Inspire Young Researchers:** Motivate students and early-career scholars to pursue impactful research in applied physics.
- **Promote Institutional Excellence:** Strengthen academic networks across institutions through knowledge-sharing and collaborative initiatives.

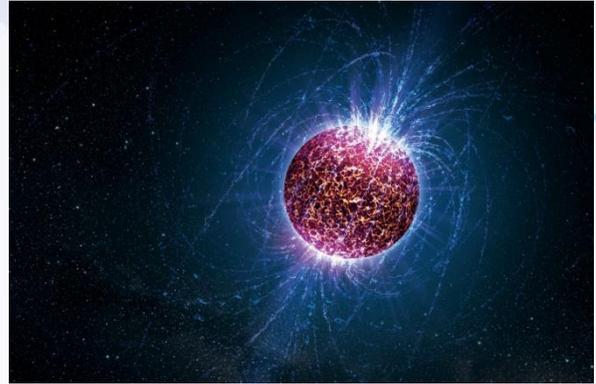
Science for Societal Applications

Science for Societal Application focuses on the purposeful integration of scientific research with societal needs to generate practical, ethical, and sustainable solutions to complex real-world challenges. This approach moves beyond knowledge production alone, emphasizing the translation of scientific evidence into actionable strategies that inform policy, technology development, and community-based interventions. By drawing on interdisciplinary perspectives from the natural sciences, engineering, social sciences, and humanities, Science for Societal Application fosters collaborative problem-solving and inclusive innovation. Central to this framework is stakeholder engagement, ensuring that scientific outcomes are responsive to local contexts, cultural values, and equity considerations. The approach prioritizes evidence-based decision-making, responsible research practices, and long-term societal impact in areas such as public health, environmental sustainability, climate resilience, food and energy security, and technological governance. Through the alignment of scientific inquiry with societal priorities, Science for Societal Application strengthens the role of science as a catalyst for sustainable development and social well-being, reinforcing its responsibility to serve the public good.

Astrophysical Encounters and the Synthesis of Nuclear building blocks

Astrophysical encounters provide the extreme conditions necessary for the synthesis of nuclear building blocks. Environments such as stellar interiors, supernovae, and neutron-star mergers act as natural laboratories where high densities,

temperatures, and neutron fluxes drive complex nuclear reactions. These processes govern the formation of elements from light nuclei to the heaviest species through explosive nucleosynthesis pathways. This talk highlights the interplay between nuclear



structure, reaction dynamics, and astrophysical observables, emphasizing how microscopic nuclear properties influence macroscopic phenomena such as elemental abundances and multi-messenger signals. Understanding these encounters is essential for unraveling the origin and evolution of matter in the universe. Astrophysical encounters—cataclysmic events like neutron star mergers, core-collapse supernovae, and stellar collisions—serve as cosmic forges for the universe's heaviest nuclear building blocks, transforming primordial hydrogen into the full spectrum of elements essential for stars, planets, and life. This seminar presentation delves into the pivotal nuclear astrophysics processes driving this synthesis: the slow neutron capture (s-process) in asymptotic giant branch stars, yielding strontium and barium; the rapid neutron capture (r-process) in extreme-density mergers, rapidly assembling gold, platinum, and uranium via neutron bombardment followed by beta decay; and the proton-rich p-process in supernova shocks, producing rare stable isotopes through photodisintegration and captures.

INVITED SPAEKERS:

Prof. Karuna Kar Nanda assumed the post of **Director, Institute of Physics, Bhubaneswar** from 16.06.2021. He obtained his Ph.D. from Institute of Physics, Bhubaneswar only. He held Guest Scientist position at the **Gerhard-Mercator University, Duisburg, Germany** and Post-Doctoral position at **The Dublin City University, Dublin, Ireland**. He has been a faculty member of Materials Research Centre, **Indian Institute of Science (IISc), Bangalore** since 2005. He became the Chairman of Materials Research Centre, IISc, Bangalore in 2018. He has mentored around 27 Ph.D. students, several Post-doctoral Fellows and published around 300 journal papers in the reputed International Journals and having an h-index 48 and Citations of more than 9500.



Dr. Mrutunjaya Bhuyan, Assistant Professor-E, Institute of Physics, Bhubaneswar, Ramanujan Faculty (Scientist – D) at IOP, Bhubaneswar, Former Senior Lecturer (Assistant Professor Gr-I) Center for Theoretical and Computational Physics, Faculty of Science, University of Malaya QS World Rank: 65, Kuala Lumpur, Malaysia. FAPESP Postdoctoral Researcher **Instituto Tecnológico de Aeronáutica, Sao Jose dos Campos, Brazil**. ITP-CAS Postdoctoral Researcher Institute of Theoretical Physics, **Chinese Academy of Science, Beijing, China PR**. Postdoctoral Researcher Institute of Physics, Department of Atomic Energy, Bhubaneswar, India.



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Research Papers/Papers are invited in the form of original works from the researchers, teachers, research scholars, social workers and students. Two hard copies and one soft copy (CD) of full paper are to be submitted. Medium of research paper can be in English only in MS-word (Times Roman font size 12.5 having 1.5 spacings). Authors are requested to follow strictly the specification given below without which it would be very difficult for the selection of papers for publication. Submission of Abstracts and the research paper should be submitted with the following information and in this order

- **Title of Abstract**
- **Name & Designation of Authors(s)**
- **Institutional affiliation**
- **E-mail address**
- **Mob- Number**
- **Body of Abstract**
- **Key Words alphabetically.**

The abstract should not exceed three hundred words (300 Words) and a full paper not more than three thousand words (3000 words).

Authors are requested to kindly send the abstracts and full papers through E-mail Id- physics.pattamundaicollege@gmail.com

CHIEF PATRON

Prof Umakanta Patra, Principal

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- 2. Mr. Subhasis Mishra, IQAC coordinator**
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Physics (Convenor)

2. Mr. Biswa Ranjan Puhan, HoD,
Physics, Kendrapara Auto. College

3. Mr. Baikunth Charan Roul, Reader in
Physics (Coordinator)

4. Mr. Amit Kumar Sahoo, Lecturer in
Physics (Coordinator)

5. Mr. Ranjan Kumar Gahan, Lecturer in
Chemistry

6. Dr. Manas Kumar Nayak, IQAC,
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10. Miss. Namita Behera, Lecturer in
Education

11. Mr. Gokuli Charan Dash,
Demonstrator in Chemistry

12. Mr. Satyabrata Biswal,
Demonstrator in Physics

13. Mr. Abhimanyu Mohanty,
Demonstrator in Botany

There will be a provision for Tea/Snacks and Lunch. No TA/DA will be provided.



Pattamundai College, Pattamundai, Dist- Kendrapara, Odisha, 754215

<https://maps.app.goo.gl/QsdaMSpz4qtsezP17>



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INVITATION

Dear Sir/Madam,

We are glad to inform you that the Department of Physics, Pattamundai College, Pattamundai in association with Department of Physics, Kendrapara Autonomous College, Kendrapara is going to organize a State Level Seminar on 'Recent Development in Applied Physics and its Societal Importance' on 5th February 2026 at 10.00 am in the College Auditorium Hall.

So, we would like to invite you cordially to participate/ present a paper on this occasion.

Convenor

**Dr. Ramesh Kumar Sahoo
HoD of Physics, Pattamundai
College, Pattamundai**

Co-ordinator

**Mr. Baikuntha Charan Roul
Reader in Physics**

With Warm Regards,

Chief Patron

**Prof. Umakanta Patra
Principal**

Co-ordinator

**Mr. Amit Kumar Sahoo
Lecturer in Physics**