**New Alipore College**
**Block L, New Alipore, Kolkata 53**
NAAC Accredited Grade A (2023)

Include | Ignite | Innovate

# Ideas on Display

## Handbook of Exhibitions

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A **New Alipore College** initiative
where **education leads to innovation**

*Udbhas 2025 presents diverse departmental exhibitions reflecting the academic spirit of New Alipore College. Rooted in the motto Include, Ignite, Innovate, it promotes inclusion of ideas, sparks curiosity, and encourages innovative thinking. The exhibition celebrates learning beyond the classroom.*

**17–18 December**

*Creativity is thinking up new things. Innovation is doing new things.*

## CONTENTS

ANTHROPOLOGY

## Where Lost Worlds Whisper and Forbidden Circles Bleed Their Truths

**Echoes of the Black Circle: Crimson Murmurs in the Silence:** This theme investigates the shadowed world of ritual practices associated with witchcraft, occult belief systems, and mythic interpretations of satanic sacrifice. Drawing on verified criminal reports and documented cases, it traces how ritual-motivated violence appears across distant nations before narrowing its focus to more local contexts, revealing striking patterns that transcend geography. Alongside these incidents, the theme explores the symbolic meanings, cultural fears, and powerful myths that communities attach to such rites. By examining both the documented realities and the imagined narratives surrounding human sacrifice, this work seeks to illuminate how belief, fear, and folklore intertwine to shape some of the most disturbing ritual practices in human history.

**Civilizations in the Shadows: Restoring the Voices of the Unremembered:** This theme reawakens the stories of civilizations that quietly shaped humanity's cultural and social evolution yet slipped into the shadows of historical memory.

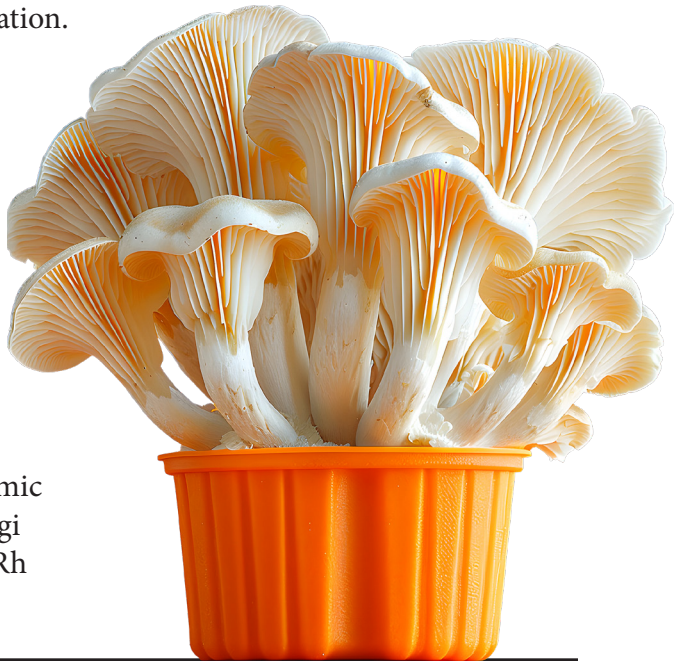
**"Innovation should be inclusive, if it doesn't uplift the most vulnerable, it's not worth pursuing."**

While the world readily recalls Rome, Mesopotamia, China, and the Indus Valley, countless other societies—equally complex and influential—have been overlooked in mainstream scholarship. By tracing their contributions and examining why they remain absent from dominant archaeological and historical narratives, this study argues for a broader, more inclusive vision of human heritage. Its central purpose is to restore these forgotten cultures to the global spotlight and reaffirm their rightful place in the unfolding timeline of civilization.

BOTANY

## Fungi: Economic Value and Ecological Networks

**Economic importance of Fungi:** In this project we have discussed about economic importance and uses of Fungi in Human welfare. In 1969 Rh Whittaker presented 5 Kingdom classification and kingdom Fungi is one of them.They are mostly multicellular (except Yeast).Fungi are broadly classified into Micro Fungi and Macro Fungi .Micro Fungi: They are microscopic in nature they don't form large fruiting bodies (ex like Yeast, Penicillium notatum, Neurospora etc. Macro Fungi: They are larger in size and they produces large fruiting bodies and commonly known as mushroom (ex like Agaricus, pleurotus etc). In Micro Fungi we have discussed about: Use of yeast in Bakery industry, Brewery industry and in Pharmaceutical industry. Discovery of 1st antibiotic from Penicillium notatum by Alexander Fleming in 1928. Which was considered one of the biggest revolution of 20th century. Discovery of gibberellin from Gibberella fujikuroi by E kurosawa and it's role in plants. Uses of Trichoderma. In Macrofungi we have discussed that they are good source of vitamins, minerals,



plant based protein and we also discussed about their medicinal properties of mushroom (ex like Ganoderma known for its immune support, anti inflammatory and anti cancerous property , Turkeytail rich in polysacchrides used to boost immunity, cardyceps militaris known for its antifatigue and anti aging property etc)
We also talked that cultivating mushroom is job intensive. It requires significant amount of labours.

**Mycorrhizal network the hidden internet of plants:** The mycorrhizal network is a natural underground system formed through the symbiotic association between plant roots and fungi. This network, often referred to as the "Wood Wide Web," facilitates the exchange of nutrients, water, and chemical signals among plants.
In this model, we visualize how fungal hyphae connect multiple plants, enhancing nutrient uptake—especially phosphorus and nitrogen—while also improving soil structure and health.
Through this interconnected system, plants support each other during environmental stress, such as drought, disease, and nutrient deficiency. The purpose of this model is to highlight the ecological significance of mycorrhizae in maintaining forest stability, increasing biodiversity, promoting sustainable agriculture, and reducing dependence on chemical fertilizers. By showcasing the unseen communication and cooperation beneath the soil, this model emphasizes the vital role of healthy soil ecosystems in combating climate change and sustaining plant life.

CHEMISTRY

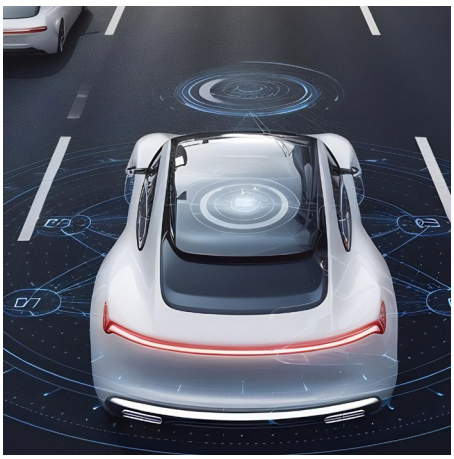
## Eco-Friendly Synthesis of Gold Nanoparticles from Citrus Waste and Their Applications

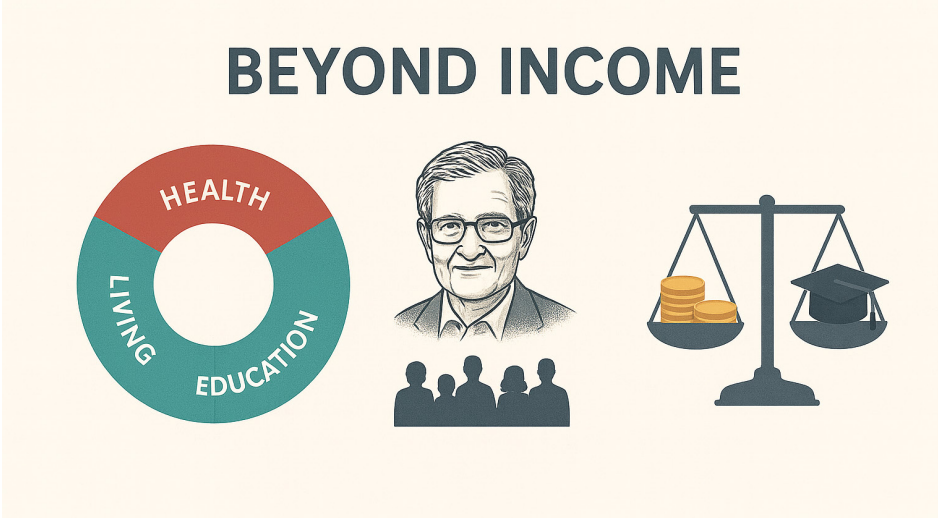
This work demonstrates a sustainable and eco-friendly approach for the synthesis of gold nanoparticles (AuNPs) using citrus peel and citrus fruit extracts as natural reducing and stabilizing agents. Citrus waste, rich in bioactive compounds such as flavonoids, citric acid, and ascorbic acid, enables the conversion of $Au^{3}$ ions into stable metallic gold nanoparticles without the use of toxic chemicals, high energy input, or synthetic surfactants. The visible color change during synthesis reflects surface plasmon resonance, confirming nanoparticle formation through a simple, low-cost, and environmentally benign process. The biosynthesized gold nanoparticles exhibit significant functional applications. They act as efficient catalysts for the degradation of toxic organic pollutants in aqueous systems and display strong antibacterial activity against both Gram-positive and Gram-negative bacteria. This study highlights the dual advantage of green nanotechnology—transforming agricultural waste into valuable nanomaterials while offering practical solutions for environmental remediation and antimicrobial applications.

COMPUTER SCIENCE

## Intelligent Multi-Scenario Self-Driving Car Prototype

This project presents a miniature self-driving car system capable of autonomous navigation, obstacle detection, and multi-car coordination. The prototype handles three real-life road scenarios:
**Scenario 1:** The car chooses between two paths based on obstacle detection and selects the safest route.
**Scenario 2:** Two cars moving toward the same destination; the system detects narrow roads that doesn't matches the Car's width and enables communication so the same type of car doesn't choose that path to move safely.
**Scenario 3:** At a junction point, the system prevents collisions by stopping one car automatically when another is crossing. Overall, the model demonstrates smart sensing, decision-making, and accident prevention.






ECONOMICS

## Beyond Graphs and Games: Exploring Poverty and Decision-Making in Economics

The Department of Economics would like to invite you at our exhibition to take a second look past the graphs and equations and find the human side of our discipline. We offer a two-part experience that provokes your thinking — your definition of poverty then your response to risk.
**Poverty : the Big Picture:** More Than Just Income Measures
Does earning less than a dollar a day make you "poor"? Our poster presentation dives deep into the Multidimensional Poverty Index (MPI) and other non-income measures of Poverty. We transcend basic income-based assessments of poverty and explore the more complex reality of deprivation by examining factors such as health, education, and living standards. Together, let's find out how modern economics gauges well-being through the capabilities of people, not by the cash they possess.

**The Game Zone - Behavioural Economics in Action:**
Are you a rational decision maker? Let's put your instinct to the test. Join us for some simple games to demonstrate complex economic theories. Don't worry, one needs only wits and maybe a sweet tooth for these games.

- **The Insurance Trap:** Getting to the bottom of risk premiums. Are you willing to pay a bit now to save a ton later?
- **Lemon Market:** Is the seller trustworthy? Live demonstration of Asymmetric Information
- **Moral Hazard Challenge:** Watch your behavioural shifts when someone else pays the bill.

Join us to see the world differently and see if you can beat the odds. Stay for the ideas, come for the candy!

ENVIRONMENTAL STUDIES

## Sustainable Systems: Wastewater, Ecosystems, and Composting

**Sewage Treatment Plant (STP):** The sewage treatment plant model demonstrates how wastewater is purified before release. It includes primary treatment with sedimentation tanks to remove solids, secondary treatment using aeration and biological processes to degrade organic matter, and tertiary treatment with filtration or disinfection for final polishing. The model highlights flow channels, clarifiers, and sludge handling units, showing the systematic removal of pollutants to protect public health and the environment through sustainable water management. The graphical presentation of the working principle of STP is given below.

**Ecosystem of Nature:** An ecosystem model illustrates the dynamic interactions between living organisms and their environment. It shows producers like plants capturing energy, consumers such as animals feeding on them, and decomposers recycling nutrients. The model highlights energy flow through food chains and webs, nutrient cycling, and balance between biotic and abiotic components. It emphasizes interdependence, biodiversity, and sustainability, demonstrating how ecosystems maintain equilibrium and support life through continuous exchange of matter and energy.

**Demonstration of Compost Making:** A compost demo shows layering kitchen scraps and dry leaves, sprinkling water, and turning regularly. Microorganisms decompose waste into dark, earthy compost, reducing garbage and providing free, natural fertilizer for plants.


MATHEMATICS

## Geometry and Probability in Real Life

**Sunlight and Skylines: A Geometric approach to maximize Urban Quality of Life**: High-rise buildings are becoming a norm around us because of the growing population. These Cuboidal shapes have to go through a lot of calculations to provide a better life to it's residents, like the angle at which the blocks of the building need to be for every resident to have proper exposure to the environment for a healthier life.

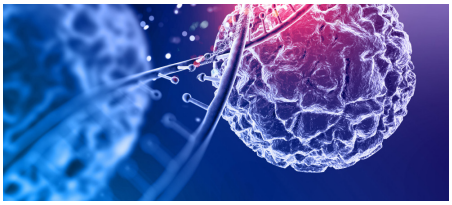
**The numerious possibilities in Chess:** We know that the Chess is played on a square chessboard with 64 squares arranged in an eight-by-eight grid. Each player has to control sixteen pieces: one king, one queen, two rooks, two knights, two bishop and eight pawns. In the model we will try to determine the probability of every move.

PHYSICS

## Physics of Smart Neighbourhoods: Radar Motion Detection in Urban Safety

**Smart Neighbourhood**: A smart neighborhood physics project applies physics principles to urban challenges like energy management, mobility, and structural safety, often using Internet of Things devices and information technology. These projects aim to improve efficiency, sustainability, and quality of life.

**Motion Detector Using Radar:** A radar motion detector works by emitting microwaves and analyzing the reflected signals to detect movement. It uses the Doppler effect, where the frequency of the reflected waves changes due to motion, allowing the sensor to identify and track moving objects, and often determine their velocity



ZOOLOGY

## Biological Foundations of Life

**Study of Blood Circulation in Heart:** The human heart is a intricate, vital organ responsible for pumping blood throughout the body. This study presents a detailed examination of the heart's anatomy, highlighting its structure, function, and importance in the circulatory system. The heart's chambers, valves, and blood vessels work together to maintain blood flow, supplying oxygen and nutrients to tissues and organs.
Blood flow: Deoxygenated blood →Right atrium →Right ventricle →Lungs →Left atrium → Left ventricle → Body.

**Life's Blueprint – Exploring the Cell:** Cells are the structural, functional and biological units of all living beings. A cell can replicate itself independently. Hence, they are known as building blocks of life.The cell structure comprises individual components with specific functions essential to carry life's processes. The cell structure includes- cell membrane, cytoplasm, nucleus, cell organelles like Mitochondria, Ribosomes, Endoplasmic Reticulum, Golgi Bodies, Lysosomes, Cytoskeleton and Vacuoles. Cells are crucial for living organisms as they provide structure, facilitate life processes like metabolism, energy production and contain genetic material (DNA) needed for growth, development and reproduction.

**Microplastics - The Invisible Threat:** Microplastic are tiny plastic particles (5mm), classified as primary (manufactured) and secondary. Sources include plastic waste, synthetic clothes, cosmetics, and industrial process. Exposure pathways are ingestion, inhalation, and skin contact. They are made of polymers like polyethylene and polypropylene. Effects include environmental pollution, harm to animals, and health risks to humans. Prevention involves reducing plastic use, recycling, and public awareness.
This presentation is about understanding the harmful impact of microplastics on the environment and human health and to find ways to reduce their presence.

**DNA Double Helix Structure and Chromatin Folding:** DNA forms a right-handed double helix of two antiparallel strands held together by complementary base pairing and hydrogen bonds, with base stacking adding stability. Major and minor grooves enable protein recognition. Chromatin folding begins as DNA wraps around histone octamers to form nucleosomes, which coil into fibers, loop onto protein scaffolds, and further condense into highly compact metaphase chromosomes during cell division.

BENGALI

## Indian Classical Language: Bangla

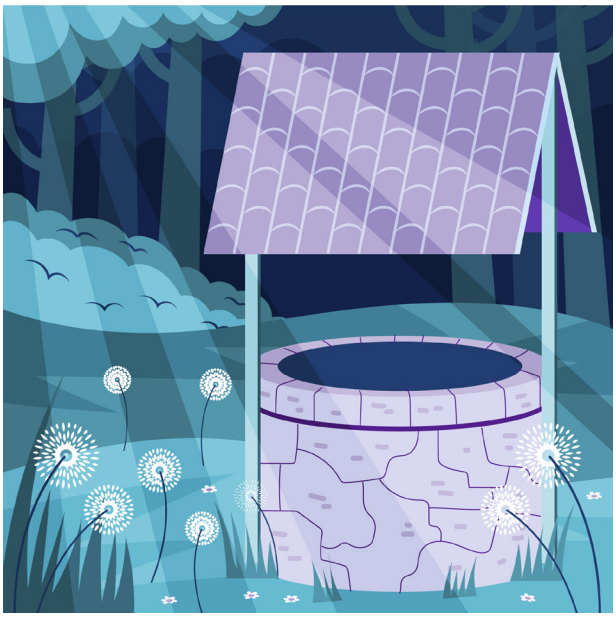
বাংলা ভাষা
মোদের গরব, মোদের আশা

The recognition of Bangla as a Classical Language marks a significant milestone in the intellectual and cultural history of India, reaffirming the language's profound antiquity, continuous literary tradition and civilizational depth. Rooted in the ancient Indo-Aryan linguistic continuum, Bangla evolved through stages such as Magadhi Prakrit, Apabhramsha and early medieval vernacular forms, gradually emerging as a rich and self-sustaining literary language. Its classical character is evident in its uninterrupted textual legacy, ranging from early Buddhist and Nath literature to the Mangalkavya tradition, Vaishnava padavali, medieval lyric poetry and the modern renaissance inaugurated by figures such as Bankimchandra Chattopadhyay, Michael Madhusudan Dutt and Rabindranath Tagore. Bangla's classicality lies not merely in its antiquity but in its ability to absorb diverse philosophical, religious and aesthetic influences—Buddhist, Jain, Hindu, Sufi, and colonial—while retaining a distinct linguistic and cultural identity. The language has served as a powerful medium for social reform, spiritual expression and political consciousness, playing a pivotal role in the Bengal Renaissance, the anti-colonial movement and the articulation of modern democratic aspirations. Its grammar, prosody, narrative forms and expressive flexibility demonstrate a mature linguistic system capable of sustained creativity across centuries. Exhibited at Udbhas, the annual college festival of the Department of Banga Bhasha O Sahitya, New Alipore College, this theme seeks to highlight Bangla's rightful place among India's classical languages, not as a matter of symbolic prestige, but as recognition of a living classical tradition that continues to shape thought, creativity and cultural dialogue in contemporary times.

ENGLISH

## Polular Literature

Some Texts capture the popular imagination and transcend time and space. Alice in Wonderland, TinTin,Harry Potter and even a classic like Pride and Prejudice have become cultural touchstones, inspiring new generations of readers and creators.
The impact of these texts on popular culture is immense. Harry Potter has spawned a global franchise with theme parks, merchandise and a devoted fan base.TinTin's adventures have been adapted into films,TV shows and even a stage play. Pride and Prejudice comfortably travels from the sedate portals of academia to the glitter of the screen and stage and Alice in Wonderland's surreal world has influenced art, fashion and music.
These texts appeal to readers of all ages due to their exploration of universal themes. Readers can relate to Harry Potter's figjt against darkness and prejudice, TinTin's quest for justice, Elizabeth Bennet's road to self discovery, and Alice's navigation of the fantasy world as fundamental human experiences.
The students of the Department of English have tried to capture the ways in which these texts have left their indelible impact on society and have become cultural phenomenon.



GEOGRAPHY

## Water Resources and Conservation

**Model 1:** Percentage of Different Sources of Water
This model explains the distribution of water on Earth. About 97% of Earth's water is found in oceans and seas, which is salty and not suitable for drinking. Only 3% is freshwater. Out of this freshwater, nearly 69% is stored in glaciers and ice caps, about 30% is groundwater, and only 1% is available in rivers, lakes, and ponds. The model clearly shows how limited usable freshwater is for daily needs. It helps people understand the importance of saving water and protecting freshwater sources from pollution.
**Model 2:** Rainwater Harvesting System and Its Benefits
This model shows a complete rainwater harvesting system. Rainwater falls on the roof, which acts as the catchment area. Gutters and downpipes carry the water to a filter that removes dust, leaves, and other impurities. The filtered water is then stored in a tank, either above or below the ground. Some systems also include a recharge pit to help water seep into the soil and increase groundwater levels.
The model highlights that rainwater harvesting is eco-friendly, low-cost, and effective. It helps reduce water scarcity, supports groundwater recharge, prevents soil erosion, and can be used for gardening, cleaning, washing, and even drinking after proper purification. It promotes a sustainable and water-secure future.

HISTORY

## Second Urbanization

Second Urbanization of India'
The second urbanization was a period from 6th century BC to 2nd century BC. Initially, it covered the entire fertile plains of the Ganga Basin, though later it spread to other parts of India. This period was marked by the rise of large states like the Mahajanapadas. It witnessed the rise and growth of many cities also. This phase of historical formation was characterized by the use of iron technology. Introduction of iron tools in agriculture led to expansion of arable land and surplus production. Cities like Patuliputra, Rajagriha and Benaras became important administrative, commercial and cultural centers. The growth of urban spaces led to the development of complex social order, political authority and economic structure.

INDIAN KNOWLEDGE SYSTEMS

## Indian Knowledge Systems: Learning, Cosmos, and Life

The Centre of Indian Knowledge Systems presents an exhibition that offers a comprehensive glimpse into the philosophical, educational, and scientific traditions of ancient India. Through thoughtfully designed models, the exhibition highlights how Indian knowledge systems integrated observation, inquiry, and ethical living into a coherent worldview that remains relevant even today.
One of the central exhibits por-

trays Aryabhatta teaching Khagol Vidya (astronomy), showcasing India's advanced understanding of celestial movements, planetary calculations, and mathematical reasoning. This model emphasizes the pedagogical tradition of direct teacher–student interaction and demonstrates how scientific knowledge was transmitted through observation, dialogue, and logical explanation rather than rote learning.

The Ancient Indian Gurukul model illustrates the traditional residential education system, where students lived with their teacher and received holistic training. Education in the Gurukul extended beyond academic learning to include discipline, moral values, self-reliance, and social responsibility. The model reflects an education system deeply rooted in character building and experiential learning.

Another important display explains the concept of Panchabhutas—the five elements: Prithvi (earth), Ap (water), Tejas (fire), Vayu (air), and Akasha (space). This model highlights the ancient Indian understanding of nature as an interconnected system, where balance among elements sustains life. It demonstrates how this concept influenced Indian thought in health, environment, and philosophy.

The exhibition also presents the Four Ashramas—Brahmacharya, Grihastha, Vanaprastha, and Sannyasa, representing the structured stages of human life. This model explains how Indian philosophy viewed life as a progression of learning, responsibility, gradual

JOURNALISM & MASS COMMUNICATION

## Indian Neo-Realist Movies: Bengali Cinema

**A Brief History Which Helped in Developing Communication and Upholding Mass Cultural Identity:** This documentary traces the remarkable journey of Bengali cinema, unfolding through the filmmakers who reshaped not only a regional industry but the artistic vocabulary of Indian filmmaking itself. It begins with the transformative "Holy Trinity"—Satyajit Ray, Mrinal Sen, and Ritwik Ghatak—whose works introduced humanism, political resistance, and the raw wounds of Partition into the cinematic landscape, establishing the foundations of India's parallel cinema. The narrative then moves into the lyrical intimacy of Rituparno Ghosh, the compassionate realism of Tapan Sinha, and the ethnographic depth of Goutam Ghosh, each expanding the emotional and social

textures of Bengali storytelling. Finally, it highlights the urban melancholy and musical honesty of Anjan Dutta alongside Kaushik Ganguly's profoundly empathetic portrayals of marginalized lives. Together, these filmmakers form a continuum—a relay of vision, courage, and innovation. Their legacy inspires contemporary creators who, with modest tools but fearless imagination, continue searching for new stories, new voices, and new truths.

**POLITICAL SCIENCE**

## Structure and Functioning of the West Bengal Legislative Assembly

This year, the Department of Political Science exhibits the West Bengal Legislative Assembly, also known as the Bidhan Sabha. It is the unicameral law-making body of the state of West Bengal. It was established in 1862 and functions under the Constitution of India. The Assembly consists of 294 members (MLAs). The people elect members for a five-year term. It makes laws on state subjects such as education, health, and agriculture. The Speaker presides over the proceedings and maintains order. The Chief Minister and Council of Ministers are responsible to the Assembly. Making a model of the legislature has been a fantastic journey for our Sem 1 students to learn about the government's structure and functions. By getting to visualise and interact with the legislative structure & process, topics from their syllabus have become more tangible and memorable for them.

**COMMERCE**

## Sustainable Enterprise and Modern Investment

**Candle Manufacturing as an Emerging Entrepreneur:** The exhibition aims to conceptualise a small-scale candle manufacturing unit that promotes creativity, sustainability, and entrepreneurship. It focuses on producing eco-friendly decorative and aromatic candles using renewable materials such as soy wax, beeswax, and natural essential oils. The project also examines product design, cost structure, market potential, and profitability. The proposed venture highlights self-employment opportunities, sustainable business practices, and the practical application of commerce concepts such as marketing, financial planning, and production management. Overall, it demonstrates how academic knowledge can be transformed into a practical, socially responsible, and economically viable business model.

**Digital Gold as a Better Alternative to Physuical Gold:** The exhibition also explores digital gold as an alternative to physical gold. Digital gold allows investors to buy, sell, and hold gold electronically, backed by equivalent physical gold stored securely in insured vaults. It enables fractional ownership, real-time pricing, transparency, and high liquidity through digital platforms. Unlike physical gold, it eliminates storage, security, purity concerns, and making charges, while offering easy conversion into cash or physical gold. With growing digitisation and preference for paperless assets, digital gold has emerged as a safer, more convenient, and investor-friendly option that retains gold's role as a hedge against inflation.

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