



# SIGMA COLLEGE OF ARCHITECTURE

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## MOUNT ABU

**“A verdant oasis in the hills with a fascinating blend of scenic beauty”**

**Ar.Chinnadurai.S M.Arch**

### **Head Of The Department**

**Mount Abu :** A pleasant retreat set amidst the lush forested hills, Mt Abu is a green oasis in the barren deserts cape that's Rajasthan. The only hill resort of Rajasthan, situated at the highest peak of the Aravali at an altitude of 1220 meters.

This Hill of Wisdom, "Saint's Pinnacle" and a true "Olympus of Rajasthan" stands on an independent hillock which is separately from the main Aravali ranges by a deep gorge. When ascending the mountain, one can hardly fail to be impressed with the grandeur and the scenic beauty, the gigantic blocks of rocks, towering along the crest of the hill, are especially striking, in some cases so weather-worn, that they present most fanciful and weird shapes, while in others appear so slightly balanced as to be in danger of rolling down.



Mt Abu has been home to many sages and saints. The legend goes that a 'yagna' was performed here and four Agnikula or Fireborn Rajput clans the Chauhans, Parmaras, Pratiharas and Solankis were created out of the fire. Till 11th century, Mount Abu was an important Vaishnav and Shiva pilgrimage center, but now it has gained importance as a Jain pilgrim center.

The hill boasts of a rich vegetation and thick forest, it stands out as an oasis in the arid environs. Its pleasant climate picturesque setting invites thousands of tourists for pleasure trips and relaxation.

## COPENHILL POWER PLANT

**Er.E.M. Jenner M.E,  
Assistant Professor**

CopenHill electricity generation plant is located in Copenhagen, Denmark that converts waste into electrical energy. This power plant has the capacity of converting 440,000 tons of waste into pollution-free energy annually. The other name for CopenHill is Amager Bakke. The roof contains ski slopes and also it has the tallest artificial climbing wall in the world. CopenHill is a very good example of sustainability. CopenHill is designed in such a way that it is not only environment friendly but also it is more enjoyable for the citizens. It has a wedge-shaped form, sloped green roof, Aluminium bricks of width 3.3 metres that are joined together to form a gigantic brick. The installation of the latest technologies of power generation delivers pollution-free energy and also it is providing district heating for almost 150000 homes a year. This also acts as a vibrant green pocket by removing harmful air pollutions, absorbing heat, and also minimizes stormwater runoff.



## NEW AGE TECHNOLOGIES FOR CONSTRUCTION INDUSTRY

**Er.E.M. Jerin Shibu M.E,  
Assistant Professor**

The construction industry is changing rapidly, and new materials and technologies are being introduced on a regular basis. Execution of construction projects and their timely delivery has become a prime concern for developers in view of the buyer's agitation on delay in construction. Especially after RERA, which emphasises the need for timely completion of projects, adoption of modern technologies has become the need of the hour.



Rising industrial, residential and commercial growth is driving demand for faster construction and world-class quality. It has become imperative to use newer products and technologies to meet this increasing demand. The construction industry in India is at the cusp of disruptive change with new materials, building technology, software, digitization and artificial intelligence changing the way we conceptualize, build, and use our buildings.

Private developers are continuously exploring new technologies that improve the quality, strength and safety of the buildings. In metro cities, few developers have started using self-climbing formwork, aluminium shuttering, precast concrete techniques and drywall systems. These technologies are not only cost-effective, but offer advantages such as minimal labour required, higher earthquake resistance, more durability, larger carpet area, smooth finish on walls, and lower

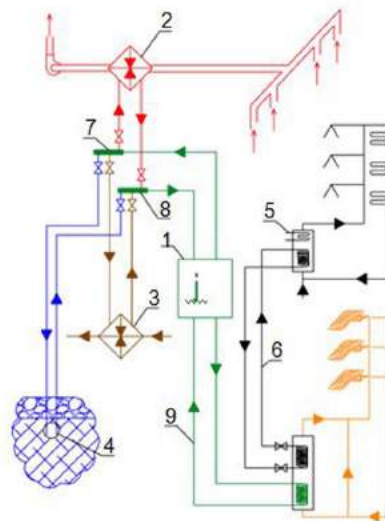
## ZERO ENERGY BUILDINGS

**Er. Relin Geo.R M.E,  
Assistant Professor**

Design solutions ought to offer management associate degree watching of apparatus among an integrated atmosphere with the utilization of recent solutions within the field of knowledge technology, automation, digital audio and video systems and engineering instrumentality. Building systems that has to be integrated into one system management and monitoring:

- heating
- ventilation
- air con
- heat offer
- power offer
- lighting
- hearth protection
- video police work
- telecommunications

As heating sources project ought to offer different. The temperature management of the fluid ought to be in accordance with the temperature schedule, betting on the skin temperature. Circulation pumps of heating systems and warmth offer ar supplied with the frequency management. remote information transmission, the power to remotely modification the settings of the heating plant.



**Fig. Heat supply in Zero Energy Building**

## ‘MUD ARCHITECTURE’

Ar.R.Reya, M.Plan  
Assistant Professor

Mud has been a basic building material over the past centuries, right from the beginning of permanent shelter. Mud is a sustainable and renewable building material that is naturally found in our environment especially on the course of a river or any water source and also found below the ground. Mud is a soft sticky matter composed of soil, silt, gravel, and clay mixture, which is good insulating and cost-effective material. Hence the mud is an easily available building material that can be taken from the site itself. As the mud has traveled a long period over years as a building material, there are so many techniques involved in working with mud for constructing buildings. Mud can be used in liquid and humid forms or as dried and solid forms to make buildings. As mud is of natural origin it provides its healthy environment to space and has high durability, lasting for thousands of years. Few settlements namely Toas Pueblo in New Mexico, Arg-e-Bam in Iran, Chan Chan in Peru, AitBenhaddou in Morocco, Harappa, and Mohenjadaro in India are everlasting built-up structure from the olden days made using mud blocks. With the evolution of modern building material like concert, cement, and steel structures, mud architecture has been forgotten at times especially during the industrial revolution, there how the wide techniques involved in mud construction have also failed to pass through. In recent years many Architect researchers have come forward to re-define mud as a sustainable building material, among which Auroville Earth Institute in Pondicherry has invented and shared many earthen construction techniques and products in the construction industry.



Fig: Mud Architecture.

## NALUKETTU AS A CULTURAL ELEMENT

Ar.Ajila Shiny R S, M.Arch  
Assistant Professor

Culture and architecture are two interlinked concepts that help man to evoke identity as a person and a social being. It's possible to form spaces with differences in spatial organization, street pattern, landscaping features, etc., according to the lifestyles, beliefs, rituals, and customs of the inhabitants which finally becomes the identity of that specific place. Nalukettu is often explained as an expansion of the concept of 'sala' express within the 'Vaastushastra', the Indian science of architecture. The word 'sala' as the vernacular term means a rectangular or square living room with the addition of verandas on one or more sides. Further based on the needs of the family and the economic development make the addition of third structure, the three sides of open-ended square -a 'thrissala'. When the fourth side was also surrounded by the addition of another 'sala', the square structure became 'chatussala' or the 'nalukettu' (four) and 'kettu' (built up sides). The enclosed courtyard or 'ankanam' is usually sunk and thus called 'Kuzhi (pit) Ankanam'. The protruding roofs of the 'salas' formed shady verandas and protect the rooms from direct sunlight, keeping them cool even on the foremost well-liked of days. The inner verandah round the 'ankanam' is open. within the middle of the enclosed southern or western 'salas' is that the 'Ara' or the storeroom, flanked by bedrooms. the ground of the 'Ara' was in a raised position above the other 'salas' to accommodate a 'nilavara' (meaning the treasure) or basement. Entrances to the building were provided at the center of the east, west, north, and south sides relying on the 'Ara'.position. While arranging the rooms inside a Nalukettu, within the northern or eastern Salas the kitchen should be placed. Within the southern and western blocks, Bedrooms are better placed. The 'Madhya Soothras' (centerline) in both directions must pass freely with no obstruction.

As the socio-cultural changes, the traditional concept of nalukettu changes over Kerala. Education gained prominence, and more women began migrating from a life led entirely inside sooty kitchens to the surface world of labor and independence, resulting in the breakup of the joint family system. By then, the nalukettu house got owned only the elders within the family and thus the maintenance level of such large properties gets low. Architects lost the especially skilled labor, their construction technology, with the demand for modern homes in recent times. Today, a few of the primary nalukettus are showcased within the type of heritage homestays or museums. In the Modern constructions, some kind of nalukettu architecture a bit like the sloping roof, a little verandah supported by tall pillars, and a mini courtyard within the center are incorporated by not only the houses but also Ayurveda spas, restaurants, and other establishments that are traditional to Kerala, the nalukettu design is now seeing a huge reprise.



## GREEN SURGE IN CITIES

**Ar.T.Josephine Sabeena B.Arch**  
**Assistant Professor**

GREEN SURGE is an acronym for “Green Infrastructure and Urban Biodiversity for Sustainable Urban Development and the Green Economy”. The topic is identifying, developing and testing ways of connecting green spaces, biodiversity, people and the green economy, in order to meet the major urban challenges related to land use conflicts, climate change adaptation, demographic changes, and human health and well-being.



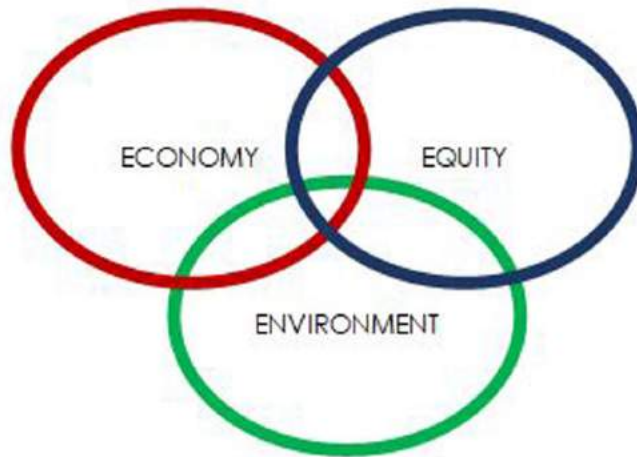
How it possible means by making Different agriculture systems such as agricultural plots within the city. This reduces the distance food has to travel from field to fork. Renewable energy sources, such as wind turbines, solar panels, or bio-gas create from sewage. Various methods to reduce the need for air conditioning (a massive energy demand), such as planting trees and lightening surface colors, natural ventilation systems, an increase in water features, and green spaces equaling at least 20% of the city's surface. These measures counter the "heat island effect" caused by an abundance of tarmac and asphalt, which can make urban areas several degrees warmer than surrounding rural areas as much as six degrees Celsius during the evening. Improved public transport and an increase in pedestrianization to reduce carbon emissions. This requires a radically different approach to city

## E's of SUSTAINABILITY

**AR. Nishya.N, M.Arch**  
**Assistant Professor**

Sustainability is defined as satisfying current needs with the consideration of future. Sustainable development is required in all fields to have a healthy planet for our future generation. Sustainability can be described in three E's

- Environment
- Equity
- Economy



### **ENVIRONMENT**

Any development has to be done without any hindrances to Nature.

### **EQUITY**

Resources distributed equally to all the inhabitants and the social status of all the inhabitants remains same.

### **ECONOMY**

Engaging in actions that are economically sustainable. Economy in sustainability does not mean how much money we earn; in contrast it refers to the Quality of life of all the inhabitants' remains a healthy one.

## MATHS IN EVERYDAY LIFE

**Ms.R.Maria Anushiya M.Sc**  
**Assistant Professor**

Everyone needs Mathematics in their day- to – day life. Even insects use maths in their everyday life for existence. For example, Snails make their shells, Spider designs their webs and bees build hexagonal combs. Maths has become an inseparable piece of our regular day to day existence. Here are some daily tasks for which math are important:

- ☒ Managing money
- ☒ Sports (being a player and team statistics)
- ☒ Shopping ( purchasing and selling, offers)
- ☒ Basic knowledge of math also helps keep tracks of sports scores
- ☒ Building
- ☒ Driving
- ☒ Cooking
- ☒ Banking (EMI, Loan , transactions, etc.)

There are countless examples of mathematical patterns in nature’s fabric. It can be made easier and enjoyable if our curriculum includes mathematical activities and games. Maths puzzles and riddles encourage and attract an alert and open- minded attitude among people and help them develop clarity in their thinking.

Symmetry



Parallel lines



## **SPACE ITSELF IS A LANGUAGE. IT HAS ITS OWN WAY OF COMMUNICATING THINGS**

**Ar. Ajin Bosco M. Arch  
Assistant Professor**

We often do not realize how much the "Space" we are in influences the way we feel and the way we act. We as human beings are sensory creatures. Our lives are influenced in various ways – by the environment, where we stay, where we work, our compatibility with everyone around us, with our family, with our friends, and our own self.

Architecture as space is not about a functional box. Like there is a Dining, Bedroom and a bathroom. "Space has more things to it". It creates a first impression majorly when we walk through space. A place can make you calm or relaxed and another space can make you agitated similarly like being with a certain person we feel good or with others, we feel irritated and uncomfortable. We create memories through all our senses. But most of the time the design decision is dominated by the visual senses.

Using environmental psychology architects and designers can better their designs to encourage certain behaviors or evoke certain emotions and feelings as a response. The concepts like stress, strain, etc. what we study in structures is applicable to our own body and mind. If we are not in a comfortable state in a building our body tenses up it becomes more stressed and as a result prolong exposure to an uncomfortable situation will drastically affect one's mental state of mind. A retirement home or a retirement community for senior citizens should be soothing and comforting it should feel like home. You could see a lot of senior homes integrate garden spaces, bright color palette trying to bring that homely feel to a place that can serve its patients with medical assistants if they needed

Green gardens and landscapes is a component of the architecture that has been incorporated throughout human history. As long as architecture is around we all know that green spaces are really good and positively impacts human mental state; It is also a great natural way to control temperature.

It is the architect's responsibility to choose color pallets and materials that create a feeling of comfort. We need to make sure that the client and the occupants in the future will feel comforted in spaces because otherwise your body is going to stress and it's going to negatively impact your state.

Dark areas make one feel gloomy, cramped enclosed areas like seen in prisons make you feel claustrophobic, large spaces with nothing in them make people uncomfortable. Lighting is a great tool that architects use and play around with and explore. You have more possibilities to do with light. Light affects the body's ability to rest and digest (melatonin). Even the thermal behavior of buildings and ventilation affects our comfort and state of mind. The space we design should be easy to navigate (wayfinding) If not the users may feel anxious, confused, and lose the sense of place in the vastness of space. There are various aspects to the space that is open for further exploration or we'll discuss in another newsletter.



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