MARATHA VIDYA PRASARAK SAMAJ'S
KARMAVEER ADV. BABURAO GANPATRAO THAKARE
COLLEGE OF ENGINEERING
Permanently Affiliated to Savitribai Phule Pune University Vide Letter No: CA/1542
& Approved by AICTE New Delhi Vide Letter No: 740-89-32 (E) ET/98
AISHE Code - C-41622
www.kbtcoe.org

Department of Civil Engineering

Innovative Teaching Method – Case study on Green Building

Name of Faculty – Mrs. M. C. Aher **Class – SE**
Academic Year– 2020-21 **Semester I**

Name of Subject: – Building Technology and Architectural Planning

Objectives of Methodology:

1. To create awareness among the students about the green and sustainable buildings.
2. To know various materials, techniques and certification bodies in the green building.

Details of Activity/Method:

1. Students are asked to select topic related to green and sustainable building by doing literature survey.
2. Student are asked to study the selected research paper-based o green building.
3. Students prepared the summery (objectives, methodology, conclusions) of the paper.

4. Students are asked to prepare presentation based on their observations.
5. Assessment is done based on their presentation.

Assessment Tools & Rubrics: -

Criteria/ Skills and Marks	**10**	**7**	**5**	**3**	**Max**
Involvement	Excellent	Good	Satisfactory	Poor	**10**
Understanding	Excellent understanding of research paper in terms of problem, need of study, objectives, methodology	Good understanding of research paper in terms of problem, need of study, objectives, methodology	Satisfactory understanding of research paper in terms of problem, need of study, objectives, methodology	Poor understanding of research paper in terms of problem, need of study, objectives, methodology	**10**
Organization/Presentation of work	Excellent	Good	Satisfactory	Poor	**5**

Course Outcomes (Related to methodology)

Course outcome		BT level
CO1	Identify types of buildings and basic requirements of building construction and masonry	2
CO2	Make use of Architectural principles and Building bye laws for building construction	3

Programme Outcomes (Related to methodology)

PO6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
PO12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

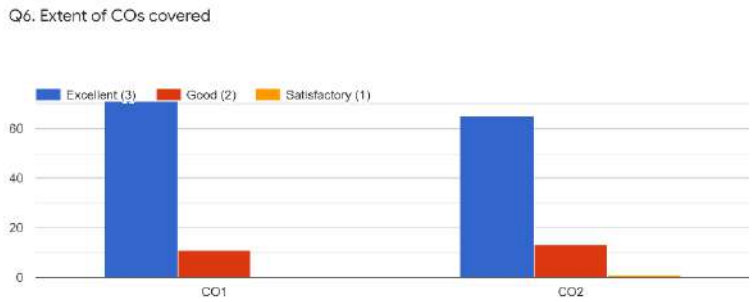
Programme specific Outcome (Related to Methodology)

PSO2	Graduates will demonstrate knowledge of engineering techniques for effective project management and professional development to face emerging challenges.
PSO3	Graduates will apply their technical and professional skills to be nationally competitive for employment/self-employment and for the benefit of society.

Feedback/Impact Analysis (Based on Students Feedback):

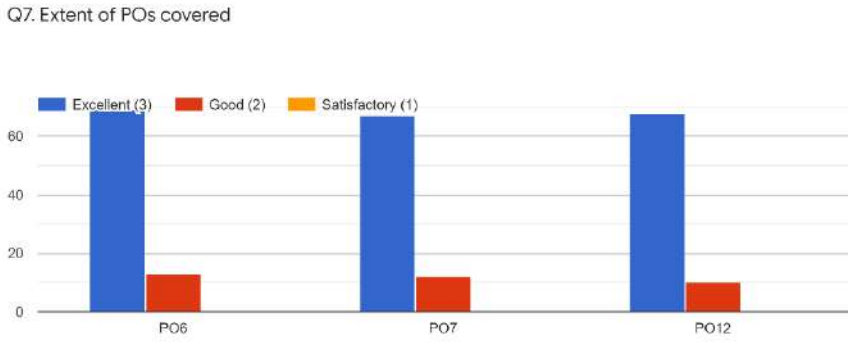
Course Outcome:

	Course Outcome	**CO1**	**CO2**
A	No. of Groups/Students Achieving CO	45	45
B	Total Rating	110	105
C	Average Rating (B/A)	2.75	2.62



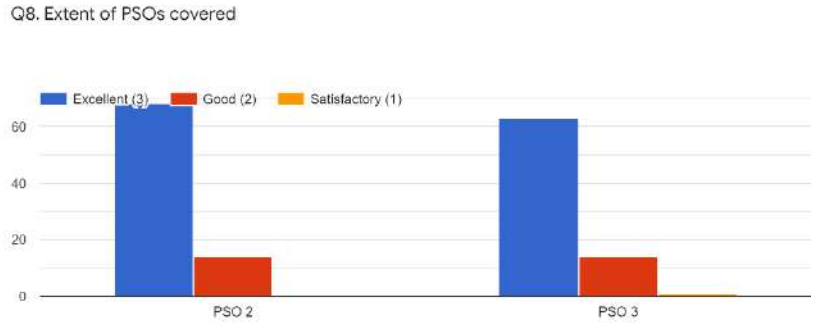
Program Outcome:

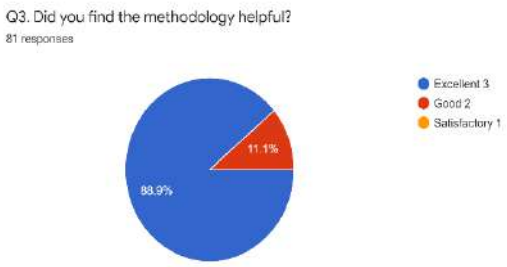
	Program Outcome	PO6	PO7	PO12
A	No. of Groups/Students Achieving PO	45	45	45
B	Total Rating	110	108	109
C	Average Rating (B/A)	2.75	2.70	2.72

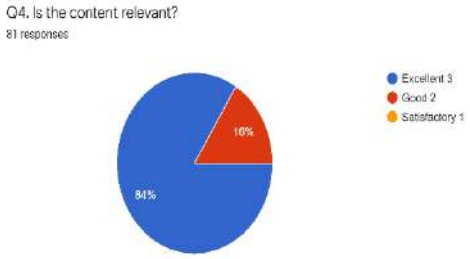


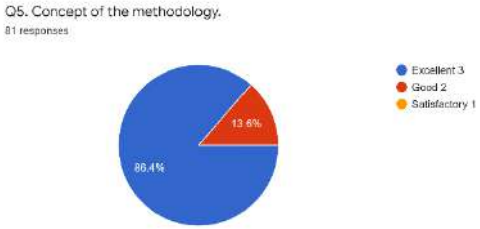
Program Specific Outcome:

	Program Specific Outcome	PSO2	POS3
A	No. of Groups/Students Achieving PO	45	45
B	Total Rating	111	106
C	Average Rating (B/A)	2.75	2.65









Evidences: Activity Photographs/Videos/Sample PPT's

NAME : MADHURI BAJI RAO AVHAD

CLASS : SE(CIVIL)

ROLL NO : 06

TITLE : GREEN BUILDING

ABSTRACT :

. Raipur is the capital of the newly formed state of Chhattisgarh, the environment of Raipur city is very warm. Owing to the increasing population needs, the construction activity is at its boom, resulting in an increase in concrete structures and consequently decrease in green areas. The climate of the city is quiet warm during the months of summer with temperature reaching up to 48oC so proper care should be taken to avoid getting any kind of heat related ailment. Also the phenomenon of global warming or climate change has led to many environmental issues including higher atmospheric temperatures, intensive precipitation, and increased greenhouse gaseous emission resulting in increased indoor discomfort condition. Researchers worldwide collectively agreed that one way of reducing the impact of global warming is by implementing "Green Roof Technology" which integrates vegetation, growing medium and water proofing membrane on top of the roof surface. However, none of them have ever studied as to how much the green roof could contribute to lessen the environmental problems

1 INTRODUCTION :

When one mentions about Green building, the reference is specifically made to a structure and the processes involved that are, being environment friendly and resource-efficient throughout the building's life-cycle beginning from site to its design, construction, operation, maintenance, renovation and demolition everything. This actually requires a team work of, the architects, the engineers, and the client at all project stages. Simultaneously with the new technologies constantly being developed, the current practice to compliment this is to create greener structures, the common objective being the design of green buildings to reduce the overall impact of the built envi-ronment on human health and the natural environment by: Efficiently using energy, water, and other resources Protecting occupant health and improving employee productivity Reducing waste, pollution and environmental degra-dation

Aim of this study is to know the importance and significance of the various factors, involved in construction of the eco-friendly housing, the requirements of which can be listed as below:-

1. To upgrade the construction of sustainable house.

2. To introduce roof gardening.

temperature were the walls of the building as it is the wall which is in the direct contact with the surrounding environment and faces the variation of temperature due to climate change. By construct-ing an eco-friendly or insulated cavity wall using rat trap bond wall technique with the cavity in walls filled by wooden powder which provided thermal insulation helped to reduce the room temperature and provide cooling effect as well. Thus reduction in room temperature was achieved to a great extent

.

Insulation Material:

The insulating materials are said to have the follow-ing properties Long filament fiber recycled textile product Tests indicate long filament fibers are not respirable into the lungs Not a potential cancer risk as is traditional rotary spun fiberglass Excellent sound reduction qualities

3 CONSTRUCTING ECO-FRIENDLY BUILDING WITH GREEN BUILDING ASPECTS

The matter below enfolds the entire considerations made in the project which was experimented, to make an eco-friendly building using green building approach

3.1 Foundation :

safety of the structure being the priority consideration, it is

recommended to adopt a foundation depth of 0.6 m for normal

soil like gravely soil, red soils etc., and use the un-coursed

rubble masonry with the bond stones and good packing. Similarly

3.3 RAT- TRAP BOND WALLING :

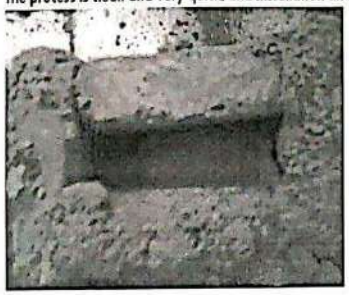
This technique had been developed by the architect Laurie Baker and has been tested and proven during the past 40 years in India. The rat-trap bond is laid by placing the bricks on their sides have a cavity of (80-100) mm, with alternate course of stretchers and headers. The headers and stretchers are staggered in subsequent layers to give more strength to the walls the main advantage of this bond is the economy in use of bricks, giving a wall of one brick thickness with fewer bricks than a solid bond.

3.3.2 Rat- Trap Bond Walling with Insulated Cavity Wall :

Houses built before the 1930's had solid walls, but for those walls having cavities, filling the gap with new insulation techniques will always help in not only saving money on fuel bills, but also the temperature of our home will be under con-trol irrespective of the external climatic changes. Mostly fiber-glass, cellulose insulation, and polyurethane or polystyrene foam are the materials used to fill wall cavity gaps but here in this project, blow-in and foam fill insulation technique was used nuzzled between the two levels of wall which also helped in keeping the moisture at bay. A hole is located or drilled between the walls and the insulation is pumped or blown in through mechanical means.

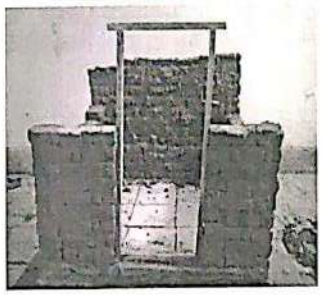
Stamp & Authorized Signatory

The process is clean and very quick, and installation also was very easy



3.4 Doors and Windows:

It is suggested to use wooden doors and windows in place of concrete or steel section frames as was done for this project thus achieving good thermal insulation, cause wooden doors and windows have less effect of temperature variations or sun light as compared to the concrete and steel doors and windows and the location of these doors and windows were mostly in northern or southern direction so as not to face the sunlight directly, in the mean time providing sufficient venti-lation and air circulation for giving cooling effect.



4 OBSERVATIONS AND ANALYSIS :

In the project discussed above a house which was constructed with conventional methods and another experimental house having green roof and eco-friendly technologies constructed the temperature observations were taken on both the houses and following

Link for Review and Critics:

https://docs.google.com/forms/d/e/1FAIpQLSfqpDnSLMQd1OolIHz1FVugu7fIZUw0-0uhF1HvWVCI1hXZPA/viewform?usp=sf_link

Email: aher.madhura@kbtcoe.org