DETAILS OF UGC PROJECTS IN THE DEPT OF ARCHITECTURE

<table>
<tr><td>Title</td><td colspan="2">Design of Energy Efficient Residential buildings by incorporating the concepts of traditional buildings in Modern buildings</td></tr>
<tr><td>PI information</td><td colspan="2">Dr. R. SHANTHI PRIYA
Architecture
Department of Architecture
Thiagarajar College of Engineering, Madurai-15</td></tr>
<tr><td>Project Duration and cost</td><td colspan="2">3 years Amount Sanctioned - 10,87,000.00</td></tr>
<tr><td rowspan="5">Equipment purchased and usage</td><td>Indoor Minimeterological Station</td><td rowspan="5">Research purposes for UG, Ph.D Programmes

Establishment of Lab

Teaching Learning- New Courses introduced</td></tr>
<tr><td>Outdoor Minimeterological Station</td></tr>
<tr><td>FLIR i5 Camera</td></tr>
<tr><td>Data Logger</td></tr>
<tr><td>Laptop, Desktop & Printer</td></tr>
<tr><td>Publications</td><td colspan="2">Solar passive techniques in the vernacular buildings of coastal regions in Nagapattinam, Tamilnadu-India – a qualitative and quantitative analysis”, Energy and Buildings,
International Journal Vol. 49, pp. 50-61, 2012, Impact Factor- 2.386

Experimental study on the thermal performance of a traditional house with one sided wind catcher during summer and winter”, Energy Efficiency International Journal, Springer Publications Vol.5, No. 4, pp. 483-496, 2012, Impact Factor- 1.085

Comparing the thermal performance of traditional and modern building in the coastal region of nagappattinam, Tamilnadu- Indian Journal of Traditional Knowledge, National Vol.1 1, No. (3), pp. 542-547, 2012

Evaluation of traditional architecture in the coastal region of nagapattinam using 1Mahoney tables, Journal of Applied Sciences and Research, International Journal, Vol. 8, No.1, pp 582-588, 2012.</td></tr>
<tr><td>Ph.D/ME produced</td><td colspan="2">2 to 3 Faculties have used these instruments for doing their Research.</td></tr>
</table>

Project Title	Thermal Performance Evaluation of Roofing Systems and Materials in Residential Development of Madurai Region
Principal Investigator	Prof. A.Madhumathi
Co Investigator	Prof.S.Subhashini
Project amount	Rs. 14,30,00
Sanctioned year	August 2015
Year of Completion	July 2018
Infrastructure Developed	Indoor weather monitoring equipments - To measure indoor thermal performance of built environment Albedometer - instrument that measures global and reflected solar radiation and the solar albedo Computer and Lap top
Journal Publications:	"Thermal Performance Evaluation of Green Roofs in Warm Humid Climates: A Case of Residential Buildings in Madurai, India," International journal of Key Engineering Materials- Materials for Sustainable Built Environment, 2016/Volume 692,pp.82-93 ISSN:1662-9795 "Effects of Changing Urban Environment of Madurai-Challenges and Opportunities for Future Environmental Sustainability", National journal of Climate Change and Environmental Sustainability, ISSN : 2320-6411, 2015/Vol.3, Issue 2, pp. 114-124 "An overview of passive downdraft evaporative cooling as an alternative to mechanical cooling systems in moderate and composite climatic zones of India." International journal of Ecology, Environment And Conservation, ISSN: 0971-765X, VOL. 22 (December Suppl.) : 2016, pp. S359-S369

The occurrence of hot discomfort during the daytime is a serious problem for the citizens living in tropical regions. This drives the citizens to look intently on thermal comfort conditions. In tropical regions, the most prominent component that affects thermal comfort is the roof architecture as roofs are exposed to direct solar radiation and the angle of incidence is close to the normal during the hotter parts of the day. This research aims to find the suitable roof constructions for warm climate. This research is designed to study the roof constructions in terms of thermal comfort of the users. The aim of this study is to investigate the effect of commonly-used roofing systems and materials on Thermal Comfort of indoor of Residential Buildings. The results then will be used to recommend an appropriate roofing system and materials for optimum thermal performance under hot humid climate. This research is mainly

concentrated in developing architectural design strategies for the class of people who cannot afford for the sophisticated air conditioning systems to achieve comfort.

The first stage of the study involves an observation survey of the roofing systems and materials of residential developments in Madurai regions to establish commonly-used roofing systems and materials. An experimental investigation of continuous measurements of Air Temperature, Relative Humidity and Air Velocity in summer is done at outdoor and indoor environments of residential buildings with various roof types. Sample houses under three different categories such as traditional, conventional and alternative roof typologies were selected for the thermal performance analysis. The air temperature difference between the exterior (roof surface) and the interior spaces was considered as a significant indicator of the performance of the roof. The percentage of annual comfort hours of all the experimental houses were calculated This will be followed by simulations by using software to evaluate thermal performance and heat transfer of selected roofing systems and materials. This study also demonstrates the importance of choosing appropriate roofing systems and materials for better thermal comfort through the understanding on the effect of roofing systems on indoor thermal comfort. The recommended roofing systems and configurations will become useful guidelines for developers, architects, and house owners to improve thermal comfort of residential buildings in India.