Proposal for announcing seat under the Institute Internship Program

1. **Name of faculty member proposing:** Dr. Nand Kumar
2. **Department/Centre:** Department of Architecture and Planning
3. **Topic on which work is proposed:** Benchmarking of Residential Building: Initiative Towards Net Zero City Planning
4. **Preferred period of internship (after May 20th):** Between 20 May 2024 to 5 July 2024
5. **Qualification of student (branch/semester of study):** Bachelor's in engineering (B. Tech) with specialization in EE/ME/Civil/CSE/ECE or Postgraduate (Masters) in renewable energy/ environmental engineering/.

6. **Brief description of work (300-500 words):**

This project conducts a comprehensive assessment of existing energy efficiency norms/guidelines/standards such as energy conservation building codes; national building codes; and green rating systems for both new construction and existing buildings to achieve energy efficiency. The intent of this research is to identifying the current scenario of construction practices and energy consumption in residential buildings. Additionally, predicting the energy demand and provides the benchmarking of residential buildings. In this research, the energy consumption data, weather data, and built structure data will be gathered from the different primary and secondary sources. Furthermore, various computational techniques such as machine learning and building simulation tools will be utilized to analyze the collected raw data. The following objectives need to be covered during the entire course of the period

1. **Data collection:** collect the raw data from the primary survey and secondary literature for a basic understanding of consumption patterns, occupant behaviour, and city energy profile.
2. **Analysis of data:** utilized various machine learning models and statistical operations to build the relationship among the building features.
3. **Benchmarking:** Provide the benchmarking of residential buildings based on consumption and recommendations for net zero city planning.

7. **Expected learning of student (up to 100 words):**

Interns under the "Benchmarking of Residential Building: Initiative Towards Net Zero City Planning" project will learn to gather and analyse data on energy consumption, weather patterns, and building characteristics. They'll apply machine learning and statistical techniques to identify relationships among these factors. Utilizing building simulation tools, they'll assess energy performance and propose strategies for achieving net-zero energy goals. Through interdisciplinary collaboration,

interns will develop communication and teamwork skills while contributing to sustainable urban development. Overall, the internship offers a practical learning experience in energy efficiency, data analysis, and city planning towards building resilient, low-carbon communities.

Nature of work: (Experimental/simulation/mathematical modelling/data collection-analysis etc.): upto 50 words

The nature of work encompasses a blend of data collection, analysis, and mathematical modeling. Interns will gather energy consumption, weather, and building data, analyze it using machine learning and statistical techniques, and utilize building simulation tools to assess energy performance and propose sustainable strategies for urban development.

If the seat is under project sponsored category: No

Signature of faculty member

Department of Architecture and Planning

Name of department/Centre

Note:

a) Proposing faculty member needs to be available at the Institute during the period internship is offered
b) No extra space or funding than the stipend will be provided by the institute for this purpose