



School of Planning and Architecture: Vijayawada

(An institution of National Importance under the Ministry of Human Resource Development, Govt. of India)
Survey No.4/4, ITI Road, Vijayawada-520008, Andhra Pradesh, India

Department of Architecture

Course: MSAR123 - Urban Climate & Thermal Comfort

Instructors: Dr. Faiz Ahmed C

Class: I Yr MSA II Sem A.Y. 2024-25

Internal Assessment: 50

End Exam: 50

Total Marks: 100

Credits: 3

Contact Periods/ Week: 03 periods (2L+1T)

Time Table: Monday 9.00 - 11.45 AM

Attendance: Min 75% **Min. Passing Marks:** 50% each in Internal & External Assessment, 50% in Aggregate

Objective: The main objective of this course is to equip the students with the understanding of urban climate scales, energetic basics of outdoor thermal comfort and data and instrumentation for outdoor thermal comfort studies.

LECTURE PLAN

WEEK	TOPIC OF CLASS LECTURE & DISCUSSION	TOPIC OF STUDIO WORK& ASSIGNMENTS / REMARKS
1	Introductory Lecture and Discussion on overall contents	Lecture/Discussion
2	Unit-I : Fundamentals of Urban Climate- Urban Climate and Urban Scale. Scale of Climatic Study: Atmospheric Scales - Urban Climate and Urban Scale. Scale of Climatic Study: Climatological Scales - Urban Climate and Urban Scale.	Lecture/Discussion
3	Unit-I : Fundamentals of Urban Climate- Urban Climate and Urban Scale. Scale of Climatic Study: Atmospheric Scales - Urban Climate and Urban Scale. Scale of Climatic Study: Climatological Scales - Urban Climate and Urban Scale.	Lecture/Discussion
4	Unit-II: Urban Morphology - Urban Canopy Models. Geometry of an Urban Canyon - Urban Canopy Models. Air-flow and Albedo in Urban Canopy Layer - Urban Canopy Models	Lecture/Discussion
5	Assignment I	Test I
6	Unit-II: Urban Morphology - Urban Canopy Models. Geometry of an Urban Canyon - Urban Canopy Models. Air-flow and Albedo in Urban Canopy Layer - Urban Canopy Models	Lecture/Discussion/
7	Unit-III: Energy Efficient Urban Development - Energy Efficient Neighbourhoods and Cities. Energy Balance of Urban Surfaces. Energy Balance of Vegetated Surfaces. Energy Balance of Water Systems.	Lecture/Discussion
8	MID EXAM 03-07/03/25	Mid Semester Examinations
9	Unit-III: Energy Efficient Urban Development - Energy Efficient Neighbourhoods and Cities. Energy Balance of Urban Surfaces. Energy Balance of Vegetated Surfaces. Energy Balance of Water Systems.	Lecture/Discussion
10	Unit-IV: Thermal Comfort Basics - Outdoor Thermal Comfort Basics. Thermal Comfort Indices - Outdoor Thermal Comfort. PET and UTCI - Outdoor Thermal Comfort	Lecture/Discussion
11	Unit-IV: Thermal Comfort Basics - Outdoor Thermal Comfort Basics. Thermal Comfort Indices - Outdoor Thermal Comfort. PET and UTCI - Outdoor Thermal Comfort	Lecture/Discussion
12	Unit-V: Instrumentation, sensors, field measurements, tools and techniques for data collection. Use of computer applications and tools in urban climate studies	Lecture/Discussion
13	Unit-V: Instrumentation, sensors, field measurements, tools and techniques for data collection. Use of computer applications and tools in urban climate studies	Lecture/Discussion
14	Assessment III	Students Presentation
15	Assessment III	Students Presentation
16	Assessment III	Students Presentation
	End of Classwork - 23-04-2025	

S. No.	Stages of Evaluation	Weightage
1	First stage: Assessment –1	15
2	Second stage: Mid-semester Examination	20

3	Third stage: Assessment –3	15
	Total	50

Suggested Readings:

1. Oke, T. R., Mills, G., Christen, A., & Voogt, J. A. (2017). Urban climates. Cambridge University Press.
2. Lau, K. K., Tan, Z., Morakinyo, T. E., & Ren, C. (2021). Outdoor thermal comfort in urban environment: Assessments and Applications in Urban Planning and Design. Springer Nature.
3. Parsons, K. (2019). Human thermal comfort. CRC Press.
4. Stewart, I. D., & Mills, G. (2021). The Urban Heat Island. Elsevier.
5. Paolini, R., & Santamouris, M. (2022). Urban climate change and heat islands: Characterization, Impacts, and Mitigation. Elsevier.

Course Instructors:

sd/-
(Dr. Faiz Ahmed C)

Head of Department :

sd/-
(Dr. Srinivas Daketi)