

SEMESTER & YEAR	FALL 2026	ELECTIVE TYPE (DEPARTMENTAL / CROSS ELECTIVE) *	Departmental Elective
COURSE CODE	ARCH-6007	ELECTIVE MODE (SEMINAR / STUDIO / WORKSHOP)	Seminar
NO. OF CREDITS	3	PREREQUISITE COURSE(S) (IF ANY)	None
COURSE NAME	Advanced Structural System		

* Departmental Electives are only open to JSAA students and Cross Electives are open to all JGU students.

Faculty Name: Md Hifzur Rahman

Faculty Bio

Prof. Md. Hifzur Rahman is an urban practitioner and researcher. He holds a Bachelor's degree in Civil Engineering from JNTU Hyderabad and a Master's degree in Urban Development and Management from the TERI School of Advanced Studies. He is currently serving as an Assistant Professor at the Jindal School of Art and Architecture, O.P. Jindal Global University, and is pursuing his Ph.D. at the TRIP Centre, IIT Delhi. He has been teaching structural systems–related courses for the past four years.

Prof. Rahman's research focuses on sustainable urban infrastructure, air quality management, climate-resilient cities, and urban transport safety. He has contributed to several research projects on transportation systems and air pollution at IIT Delhi. At present, he is working on the impact of traffic noise on hearing health. His work bridges theoretical urban planning with practical implementation, addressing critical urban challenges in India and beyond.

Course Descriptor

The course Advanced Structural System provides architecture students with a structured understanding of advanced structural concepts, material behaviour, and construction systems as they relate to architectural design. The course is not intended to train students as structural engineers; rather, it aims to develop structural awareness, analytical thinking, and design integration skills essential for architects.

Through qualitative analysis, basic structural calculations, physical model-making, and real-world observation, students explore the behaviour of structural systems under load and the interaction between form, material, and construction technique. Emphasis is placed on understanding structural behaviour, limitations, and possibilities within architectural contexts.

Objectives:

- To explain the fundamental principles governing the behaviour of structural systems and their response to loads. (Understand)
- To apply basic concepts of statics and mechanics of materials to the analysis of elementary structural components used in buildings. (Apply)
- To examine the role of construction materials, earth materials, and structural systems in influencing building performance and stability. (Analyze)
- To integrate structural concepts and material behaviour into architectural design thinking and decision-making. (Apply / Analyze)

Key Learning Outcomes

Upon completion of this course, the students will be able to:	
LO1	Interpret and illustrate load paths and qualitative structural behaviour in common architectural systems. (Understand)
LO2	Analyse beams, columns, slabs, and simple structural frames using fundamental principles of statics and equilibrium. (Analyze)

LO3	Evaluate the behaviour and suitability of structural and earth materials in relation to stability, strength, and construction context. (Evaluate)
LO4	Demonstrate the application of structural concepts through drawings, physical models, and design-based explorations. (Apply)

Assessment & Evaluation System

The assessment combines critical reflection with hands-on techniques. Internal evaluation (70%) will be based on short assignments, seminar presentations, and model-making exercises, in which students critically respond to the readings and translate theoretical insights into design applications. The final evaluation (30%) will consist of a written examination.

References/Citations

1. Salvadori, M., & Heller, R. (1986). Structure in architecture: The building of buildings (3rd ed.). Prentice Hall.
2. Charleson, A. W. (2005). Structure as architecture: A source book for architects and structural engineers. Architectural Press.
3. Engel, H. (2007). Structure systems. Hatje Cantz.
4. Ching, F. D. K., & Onouye, B. S. (2014). Building structures illustrated (2nd ed.). John Wiley & Sons.

Note: Students will be encouraged to use visual analysis, sketches, and physical models alongside these texts to enhance conceptual understanding.