ARCHITECTURAL ACOUSTICS

PROF. SHANKHA PRATIM BHATTACHARYA
Department of Architecture and Regional Planning
IIT Kharagpur

PROF. SUMANA GUPTA
Department of Architecture and Regional Planning
IIT Kharagpur

TYPE OF COURSE : ReRun | Core | UG
INTENDED AUDIENCE : Anyone can learn from this course.
PRE-REQUISITES : Basic knowledge of Mathematics, Physics and Architecture.
INDUSTRIES APPLICABLE TO : Architectural Design Firms, Acoustical consultancy companies. The design and consultancy firms can use these lecture modules as a part of the induction programme for their newly recruited graduates.

COURSE OUTLINE:
The lectures will be oriented towards the students of architecture and will highlight on the evolution of acoustical science and its application in design and planning until today. The fundamentals of acoustics are an essential component while designing specific spaces small and big like recording studios, class rooms, lecture halls, auditoriums. The Architectural Acoustics course is broadly classified into three sub sections and comprises of 8 modules: After introduction to the course the lectures will be on sound physics. Lectures will include various characteristics of sound, its origin, propagation and auditory sensation and the measurement techniques.

ABOUT INSTRUCTOR:
Prof. Shankha Pratim Bhattacharya is presently an Assistant Professor in Department of Architecture and Regional Planning, Indian Institute of Technology Kharagpur. He is an Architectural Engineer by profession and having more than fifteen years of teaching experience. He did his Ph.D on Modeling on Building Structure under Seismic Excitation in 2011. He has worked as Principal Developer for ‘Structural System’ course under National Mission on Education through Information and Communication Technology (NMEICT) of MHRD, Govt. of India. His area of academic and research interest includes earthquake resistant building, building physics and structural systems. Recently, he had delivered an NPTEL course on Architectural Acoustics.

Dr. Sumana Gupta is currently working as Assistant Professor in the Department of Architecture and Regional Planning at IIT Kharagpur since 2013. She completed her Master’s degree and Doctoral Degree from the same Institute in 2008 and 2012 with a special interest in transportation planning and service quality evaluation of transport related facilities. Prior to this she worked for fourteen years as a professional architect and as a Lecturer in a Government Polytechnic College in India. She completed her Bachelor degree in Architecture in 1992 from Calcutta University. During her professional exposure as an architect she was involved in Science city auditorium design and presently offers the Building Acoustics course to the fourth year architecture students for the last four years.

COURSE PLAN:
- **Week 01**: Introduction to Architectural Acoustics and Building Physics
- **Week 02**: Room Acoustics and Reverberation
- **Week 03**: Sound Absorption
- **Week 04**: Acoustical Criteria of Space Design
- **Week 05**: Design Principles of Auditorium
- **Week 06**: Electro-Acoustics & Open-Air Auditorium
- **Week 07**: Air & Structure Borne Sound Propagation
- **Week 08**: Environmental Acoustics

EXAM DATE : 23 Oct 2021
COURSE DURATION : 8 weeks (23 Aug’21 - 15 Oct’21)

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