

# ABS COURSE STUDENT LEARNING OUTCOMES

## ABS 321 - Construction Technologies I

Students will be able to describe the fundamental properties and performance characteristics of common construction materials.

Students will be able to apply principles of material selection and detailing in the design of building enclosure systems and assemblies.

Students will be able to evaluate the influence of building codes, climatic conditions, sustainability, and cost on material choices.

Students will be able to analyze the application and detailing of materials in structural and non-structural building components.

Students will be able to integrate material knowledge into architectural studio projects to enhance design quality and feasibility.

## ABS 323 - Advanced Construction Technologies

Students will be able to analyze and evaluate advanced construction systems (structural, envelope, and material assemblies) in terms of performance, sustainability, and design integration.

Students will be able to work with detailed technical drawings and documentation that clearly communicate construction strategies and architectural intent.

Students will be able to investigate emerging technologies such as digital fabrication, prefabrication, and smart materials within design and construction processes.

Students will be able to synthesize construction knowledge through case studies and hands-on experimentation to understand how construction methods impact environmental performance and innovation in the built environment.

## ABS 331 - Environmental Control Systems I

Students will be able to describe the fundamental principles of passive design strategies that improve thermal comfort and energy efficiency.

Students will be able to analyze the impact of solar gain, shading, natural cooling, and thermal envelope performance on climate-responsive architecture.

Students will be able to apply site analysis, building orientation, and landscape integration to enhance passive environmental control.

Students will be able to evaluate retrofitting and design strategies with respect to sustainability goals, including net-zero energy performance.

Students will be able to critically assess passive design solutions through case studies and research projects.

## ABS 332 - Environmental Control Systems II

Students will be able to explain the role of active environmental systems in architectural design, building upon passive strategies.

Students will be able to analyze the functions and applications of electric lighting, water conservation, mechanical HVAC, solar technologies, smart controls, and acoustics.

Students will be able to evaluate environmental control systems considering performance, system integration, cultural context, and user experience.

Students will be able to integrate sustainable design principles in the application of active environmental systems within architectural projects.

## ABS 341 - Structures for Architects I

Students will be able to identify structural systems across diverse architectural typologies, emphasizing 20th and 21st-century.

Students will be able to compare the principles, materials, and conceptual frameworks of contemporary structural solutions.

Students will be able to analyze the influence of architectural typology, technology, environment, and geography on structural design innovations.

Students will be able to demonstrate proficiency in hands-on modeling techniques to explore structural diversity and its effects on architectural form and function.

Students will be able to evaluate structural system options to effectively integrate them into contextually responsive architectural design projects.

## ABS 440 - Structures for Architects II

Students will be able to research regional building materials, structural efficiency, and the applications of the same in architecture.

Students will be able to identify the fundamental principles of structural design including forces such as equilibrium, tension, compression and buckling, deflection, and bending applicable to the architectural design.

Students will be able to contrast different case studies to distinguish the fundamental structural principles and their applications in architecture.

Students will be able to apply the technical terminology necessary to communicate with engineers and contractors in the fields related to architecture.