What Are Architectural Technology Systems?

Worksheet

Architectural technology systems are the structural, envelope, and MEP (mechanical, electrical, plumbing) systems - plus digital tools like BIM - that turn a design concept into a functioning, buildable structure.

Questions

1. What does MEP stand for in architectural technology?

A) Modeling, Engineering, Planning
B) Mechanical, Electrical, Plumbing
C) Materials, Envelope, Performance
D) Masonry, Excavation, Piling

2. What is BIM primarily used for?

A) Marketing renderings only
B) Coordinating structural, MEP, and architectural systems in one 3D model
C) Structural calculations exclusively
D) Interior color selection

3. What is the main function of a building envelope?

A) Supporting the structural load only
B) Separating interior conditions from exterior weather
C) Distributing electrical power
D) Routing plumbing

4. Why is clash detection important?

A) It speeds up rendering
B) It finds physical conflicts between systems before construction, avoiding costly rework
C) It replaces the need for a structural engineer
D) It only applies to landscaping

5. A 20-story office tower needs a structural system. What architectural technology decisions are involved?

6. A building envelope must meet energy code in a cold climate. What technology choices matter?

7. An architect is coordinating MEP systems with the ceiling design. What is the typical process?

8. Define: What is architectural technology?

9. Define: What does MEP stand for?

10. Define: What is BIM?

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Answer Key

1. B) Mechanical, Electrical, Plumbing - MEP refers to a building's mechanical, electrical, and plumbing systems.

2. B) Coordinating structural, MEP, and architectural systems in one 3D model - BIM coordinates multiple building systems in a shared digital model to catch conflicts early.

3. B) Separating interior conditions from exterior weather - The envelope (walls, roof, windows) controls heat, air, and moisture between inside and outside.

4. B) It finds physical conflicts between systems before construction, avoiding costly rework - Finding conflicts (e.g., a duct crossing a beam) in the model avoids expensive on-site fixes.

5. Choose a structural system: steel moment frame, concrete core, or hybrid Coordinate floor-to-floor height with mechanical duct and ceiling space Size the structural grid to match the leasing/planning module Model the structure in BIM to detect clashes with MEP risers

6. Select wall assembly with continuous insulation to reduce thermal bridging Choose high-performance, low-U-value glazing for windows Detail an air barrier to control infiltration Verify assembly performance against code using energy modeling software

7. Collect ductwork, piping, sprinkler, and lighting layouts from consultants Overlay all systems in a shared BIM model Run clash detection to find conflicts (e.g., duct crossing a beam) Resolve conflicts by rerouting or adjusting ceiling height before construction

8. The structural, envelope, MEP, and digital systems that make a building function and get built.

9. Mechanical, Electrical, and Plumbing - the building's core service systems.

10. Building Information Modeling - a 3D digital model used to coordinate all building systems and reduce clashes.

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