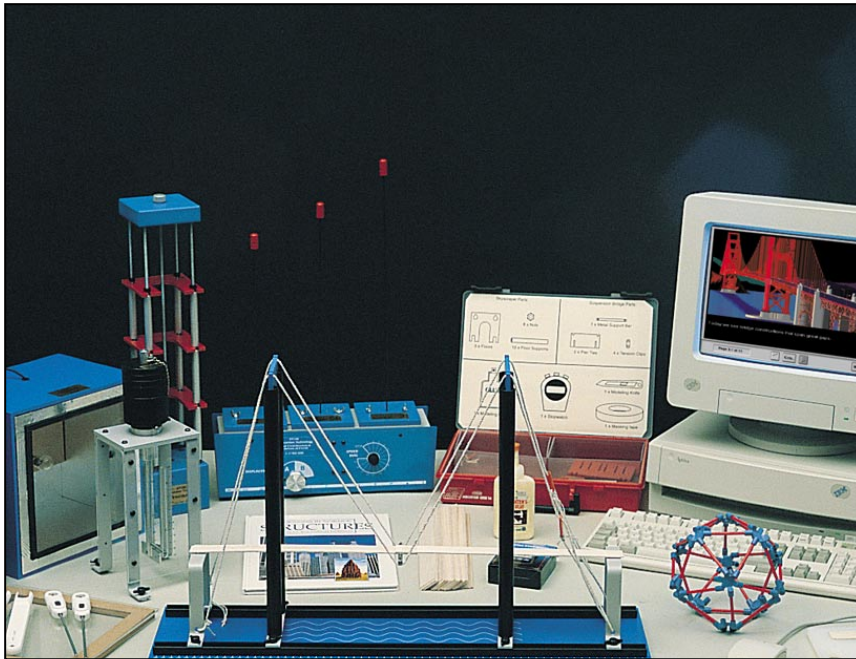


# Construction Technology (40-assignment)



This is an integrated instructional module designed specifically to operate within the LJ ScanTEK Modular Technology Program environment. It includes a 10-assignment exploratory curriculum and a further 30-assignment in-depth curriculum. The exploratory curriculum and the in-depth curriculum are each split into two parts. Each part includes a pre-test and post test. The module includes hardware, software and curriculum materials sufficient to provide a complete learning experience.

The curriculum incorporates continuous assessment through questions. When used in conjunction with a ClassAct networked management system, this provides instant feedback of student performance. The assessments begin with a comprehensive pre-test. This quiz includes questions for each subsequent assignment, together with questions that will specifically test math and reading ability.

Every assignment starts with a series of questions designed to track inventory. These ensure that any missing items are located before they are needed.

Each assignment is divided into a series of tasks. Hands-on tasks form the core of the student work. Where appropriate, these are accompanied by research tasks based upon illustrated Fact files and on-screen applications. Assessment questions are incorporated into each task.

**Typical 10-assignment topic areas include:**

- Materials
- Strength of simple 3D structures
- Torsion, tension, shearing and compression forces
- Strengths of different types of beams
- Thermal insulation
- Earthquake simulation to test skyscraper models
- Construction and testing model bridges
- Skyscraper design and testing

**Typical 10-assignment activities include:**

- Explore the meaning of technology, particularly in relation to construction.
- Investigate simple structures.
- Construct different pillars to investigate how shape affects strength.
- Learn about different structural units.
- Learn about forces which affect structures.
- Research properties of different materials.
- Evaluate the strength of different types of beam.
- Test beam strength with a materials tester.
- Use a Thermal Chamber to investigate insulation properties of single and double glazing.
- Use an Earthquake Simulator to test different types of structures.
- Build model skyscrapers and test them on the Earthquake Simulator.
- Construct a model beam bridge.
- Apply a load to the beam bridge to measure its strength.
- Learn about different types of bridge structure.
- Build a model suspension bridge.
- Apply a load to the model suspension bridge and observe the results.
- Compare strength of the beam bridge with the strength of the suspension bridge.
- Design a bridge, then build and test a simulation of the design.

**Typical 30-assignment topic areas include:**

- Strengthening load-bearing columns
- Construction products
- Job investigation
- Resources for construction
- Tensile strength
- Material classes
- Properties of wood, steel and concrete construction materials
- Beam technology
- Architectural drawings and scales
- Architectural CAD
- Construction site preparation
- Surveying and contour maps
- Construction foundations
- Advanced construction techniques
- Dynamic forces
- Water and waste systems
- Electrical systems
- Computers in construction
- Heat transfer and insulation
- Bridges
- Tunnelling technology

**Typical 30-assignment activities include:**

- Identify the importance of shapes in structures. Compare the strength of columns. Analyze the development of construction technology.
- Define construction technology. Recognize the roles of various personnel within the construction industry.
- Determine material properties from tensile test data. Recognize that force causes structures to deform.
- Interpret a graph of strength versus carbon content of steel. Identify material properties and how they affect use.
- Recognize how the properties of wood affect its use in construction. Distinguish between various wood products used in construction.
- Investigate the properties of concrete and examine it as a construction material.
- Determine how concrete can be reinforced.
- Recognize the important factors of beam design. Design a beam according to specific criteria.
- Use an architect's scale to investigate construction drawings. Explore the wide range of drawings required to build a structure.
- Demonstrate an understanding of scale. Use CAD software to draw an outline plan of a building.
- Recognize the stages involved in site preparation. Identify uses for construction machinery.
- Interpret a contour map to produce a cross-section of a construction site. Calculate construction preparation costs.
- Test the load bearing capacity of foundation samples. Investigate the basic principles of foundations. Recognize how soil conditions impact on foundation qualities.

# Construction Technology (40-assignment)

**Typical 30-assignment activities include (continued):**

- Compare wall and frame construction. Identify types of residential construction methods. Recognize the benefits of geodesic dome construction.
- Recognize simple construction techniques. Evaluate the suitability of modular construction. Identify advanced construction techniques.
- Use layers to draw a residential layout plan in CAD.
- Recognize the importance of landscaping as a final stage of a construction project.
- Investigate the technology of roof trusses.
- Investigate the effect of dynamic forces on structures. Identify how buildings can be designed to resist dynamic forces.
- Investigate materials and techniques used in residential plumbing.
- Explore residential electrical systems. Recognize electrical hazards and the importance of safety in a residential electrical system. Determine the correct wire gauge for circuits in a residential electrical system.
- Recognize the key applications of computers in construction technology.
- Plot a graph to chart the progress of a construction project using bar charts. Investigate construction project management.
- Identify insulation as a desired property of construction materials.
- Evaluate the energy and economic characteristics of residential double-glazing. Determine the basic components of a climate control system.
- Recognize important features of truss bridges.
- Evaluate a structural test carried out on a truss bridge. Investigate modern bridge technology.
- Determine the factors important in tunnel construction. Evaluate how new technology and materials are used in tunnel construction.
- Designing a Technology Lab 1
- Recognize the importance of following a specification when designing new structures.
- Designing a Technology Lab 2
- Design and layout a structure to fulfil the demands of a client.

Each assignment is designed around a list of performance objectives. These lists include academic, technical and occupational objectives. The assignments are written in such a way as to enable a student to attain the performance objectives, with the assessment questions linked to these in order to provide a measure of true competency.

The performance objectives are used by the ClassAct management system to generate a comprehensive portfolio of student competency reports. Default reports supplied with this module include:

- Entry report
- Technical/Occupational Exit report
- Basic Skills report based upon the federal SCAN's report.

**The items supplied with this instructional module include:**

- 10-assignment On-Screen Student Assignment Guide CD
- 10-assignment Student Assignment Guide
- 10-assignment Student Workbook
- 10-assignment Instructor's Guide
- 30-assignment Student Assignment Guide
- 30-assignment Student Workbook
- 30-assignment Instructor's Guide
- Computer Aided Instruction Software
- Video: 'Introducing Eurotunnel'
- Book: 'Exploring Construction'
- Book: 'The Official Channel Tunnel Fact File'
- Software: 'Floorplan'
- Material Tester
- Earthquake Simulator
- Skyscraper Simulators
- Bridge Construction Base
- Balsa panels
- Fact files: Strength and Structures, Bridges, Forces
- Construction Card Pack
- Residential / Road Plans

**Additional items required:**

- Computer
- Access to video player

**Module Facts**

For Technology Program, order as:  
ST120/40 Construction Technology

	No.	Average time
Assignments	40	45 minutes
Extension Activities	5	45 minutes
<b>Total</b>		<b>33 ¾ hours</b>



**LJ Technical Systems**  
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