

# Design of Structures Training 1 | Multimedia Courseware

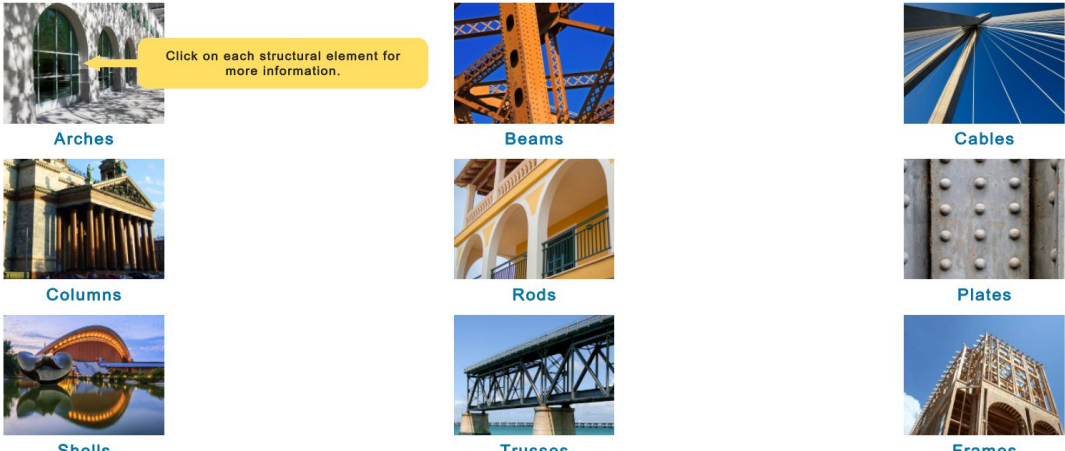
Introduction to Civil Engineering - WX11600-DC01UEN-E1

Objective 6: Describe the Function of Nine Types of Structural Elements

Basic Structural Elements

There are nine basic structural elements:

Click on each structural element for more information.



Arches

Columns

Shells

Beams

Rods

Trusses

Cables

Plates

Frames

AMATROL

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## Structural Engineering eLearning: M11600

Structural Engineering eLearning provides an introduction and overview of engineering. It covers concepts such as civil engineering careers, types of structures, structural elements, structural stability; statics and data acquisition including force vectors, free-body diagrams, and data acquisition; moments and bending stress including moment of inertia; bridge and design construction including materials and design factors; and truss bridge design and analysis including properties of material and design, truss bridge analysis: method of joints and method of sections, and bridge research and design. This course provides an overview of a broad range of basic concepts in structural engineering.

### Teach Hands-On Skills

#### What is Civil Engineering?

Civil engineering may be the broadest of all of the engineering fields. Civil engineers are responsible for designing the facilities for living, transportation, and industry. This includes buildings, bridges, and other large structures. Civil engineers are also involved in city planning, and the layout and construction of highways.

Civil engineering functions can be divided into three different categories:

- **Pre-Construction** - Pre-construction functions are performed before construction takes place. These include feasibility studies, site investigations, and the design work of the facility.
- **Construction Management** - The civil engineer or engineering firm acting as the construction manager supervises the construction of the facility. The construction managers supervise the contractors doing the work, approve engineering changes, and verify the completion of each phase of the construction. During construction, the construction manager may be required to deal with clients, consulting engineers, and contractors on the job. This could include some mediation between parties.
- **Post-Construction Management** - Once construction is complete, the civil engineer or engineering firm oversees all of the maintenance of the facility for a time specified in the contract documents. They also study how the facility holds up under normal use. This is because the architect, engineer, and contractor are legally responsible for any deficiencies in the design or construction, typically for a period of several years

after acceptance by the owner. After this period of time, the owners of the structure take over the maintenance.

## **Structural Engineering eLearning Features Engaging Multimedia**

Amatrol's extensive, thorough [multimedia](#) covers structural engineering basics such as types of structures, structural elements, and structural stability. Interactive screens paired with instructive graphics teach structural engineering topics from bending stress to bridge design and construction. With the optional hardware, learners can then apply this theoretical knowledge to immediate hands-on skills. For example, learners study how to analyze a truss bridge and then build and tests scale models of a Warren and Pratt & Howe truss bridges. This combination of theory and practice ingrains concepts in a learner's mind and makes more advanced topics easier to comprehend. (References [94-DOS1](#))

## **Additional Info**

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- **Additional Requirements**

- Computer: [See requirements](#)

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