

Structural Engineering Multimedia | Training in CD-ROM Format


Bridges: Design and Construction - WB784-BA03XEN-E2

Objective 7: Describe the Forces in Truss Bridges

Truss Forces

The forces on a truss work in the same manner. The top chord, the main horizontal load carrying members, of the truss is under the most compression and the bottom chord is under the most tension.

The diagonal members are either in tension or compression depending on the configuration.



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eLearning Course: MB784

Structural Engineering 1 (MB784) introduces civil engineering, introduces forces and bridges, and bridge design and construction. To introduce civil engineering topics on civil engineering careers, types of structures, structural elements and stability are covered. Topics on force vectors, free-body diagrams, and bridge materials and construction will come together to introduce forces and bridges. Also covered are topics on bridge design, truss bridges, and bridge design and research.

Teach Civil Engineering

What are the Seven Civil Engineering Disciplines?

Civil engineering has seven disciplines in which civil engineers can pursue a career. As a civil engineer you could work in any of these seven general areas:

- **Construction Management** - Civil engineers in construction management are responsible for the direction and management of the construction project and for the finished structure. It is important that the person in this role understand economic principles, fundamentals of design, material properties, and management techniques.
- **Geotechnical Engineering** - Geotechnical engineers design footings, foundations, piles, dams, solid waste landfills, and wetland dewatering systems. They are involved with soil mechanics, testing soil, and determining methods of modifying soil properties. They also work on engineering pavement materials that last longer by studying the behavior of construction materials under environmental and load conditions.
- **Public Works Engineering** - The public works engineer performs research into the management, planning, administration, safety, and cost engineering of public works infrastructures. They are responsible for the design, construction, and maintenance of the city infrastructure, which includes water, sewer, streets, ditches, sidewalks, and traffic control.

- **Engineering Research** - Research in the civil engineering field is very diverse. Research is being conducted on the environmental impact of urban expansion, water and land pollution, new and stronger construction materials, better construction methods, and construction on frozen ground and ice.
- **Structural Engineering** - The structural engineer designs structures, such as buildings and dams, that will resist forces caused by the natural environment and by man. Some of these forces are wind and earthquakes, and cargo and automobile traffic.
- **Transportation Engineering** - Transportation engineers design highway systems, pavement materials, airport runways, and rapid transit projects. They are also involved in the computer control of traffic signals.
- **Water Resources Engineering** - Water resource engineers design, construct, and maintain drainage systems, retention ponds, navigational waterways, flood control levees, dams, and lakes. They deal with the application of fluid mechanics principles to water flow problems.

While students learn elements of all seven areas of civil engineering, they can specialize in one or more areas by taking more courses and pursuing a particular career within the selected field of civil engineering.

Interactive eLearning

Highly-Interactive Multimedia Format Appeals to All Learning Styles

Amatrol's extensive, thorough multimedia covers structural engineering. Interactive screens paired with instructive graphics teach an array of structural engineering topics from forces and bridges to design and construction. With the optional hardware, learners can then apply this theoretical knowledge to immediate hands-on skills. For example, learners study structural stability and then design a truss for stability for practice. This combination of theory and practice ingrains concepts in a learner's mind and makes more advanced topics easier to comprehend.

Additional Info

Requires:

- Computer ([see Computer Requirements](#))

Options:

- Structural Engineering 1 Learning System (96-SE1)

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