

Signals and Systems Learning Objectives

Unified Engineering

Fall 2003

Learning Objectives:

Students graduating from 16.010/020 will be able to:

1. **Solve** simple linear static networks, using both the loop method and node method as solution tools.
2. **Solve** simple linear dynamic networks, using classical and state methods.
3. **Demonstrate** an understanding of state concepts, and use those concepts to **analyze** dynamic systems.

Measurable outcomes (assessment method):

Students graduating from 16.010/020 will be able to:

1. **Solve** simple linear resistive circuits with sources, using the node methods and loop methods. In this context, "solve" implies finding circuit element voltages and currents. (concept tests, problem sets, quizzes)
2. **Apply** the concept of Thevenin and Norton equivalent circuits to **explain** or **predict** the behavior of linear resistive circuits, perhaps with simple nonlinear loads. (concept tests, problem sets, quizzes)
3. **Derive** the differential equations that describe linear RLC networks, using both the loop method and the node method. (concept tests, problem sets, quizzes)
4. **Solve** initial value problems for homogenous RLC networks, using characteristic values and characteristic vectors. (problem sets, quizzes)
5. Demonstrate an understanding of the concept of "state," by **identifying** the state vector for a variety of problems. (concept tests, problem sets, quizzes)
6. Use state methods to **solve** initial values problems. (problem sets, quizzes)
7. **Derive** the transfer function for RLC networks and other dynamic systems, using state methods. (concept tests, problem sets, quizzes)