ECE 486: Control Systems

Lecture 2A: Linear Time Invariant (LTI) Systems

Key Takeaways

A linear time-invariant (LTI) system satisfies:

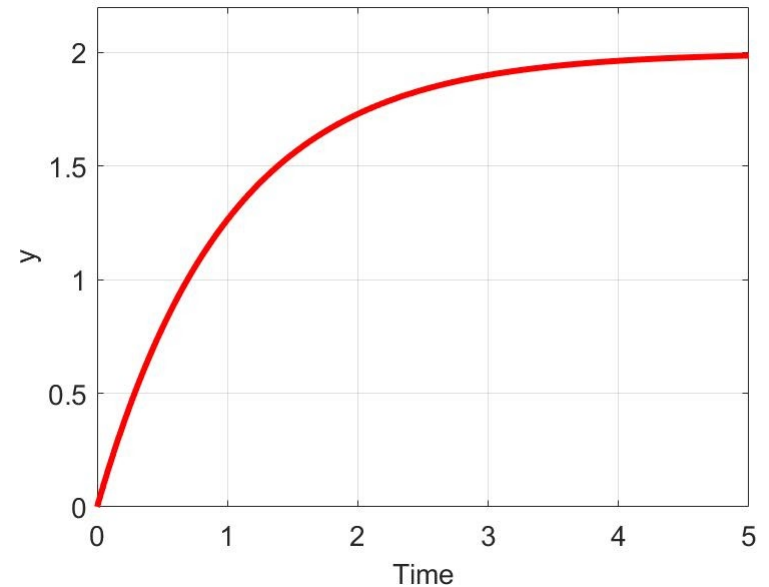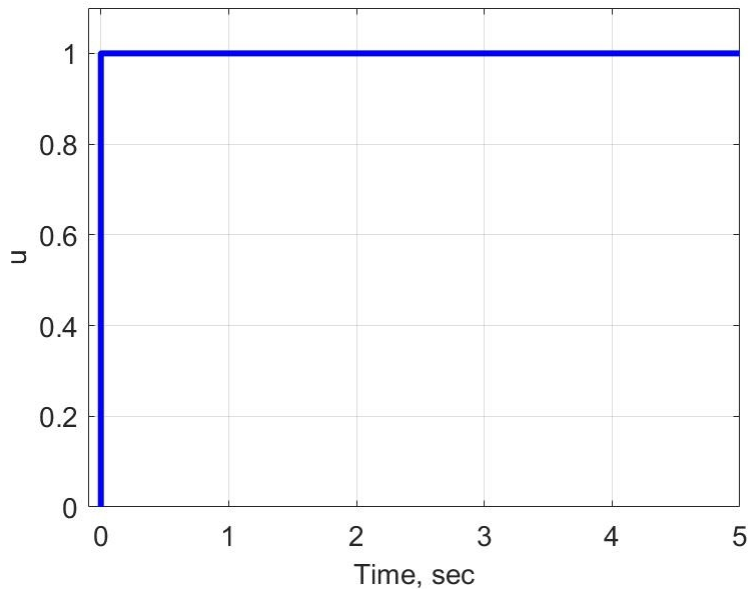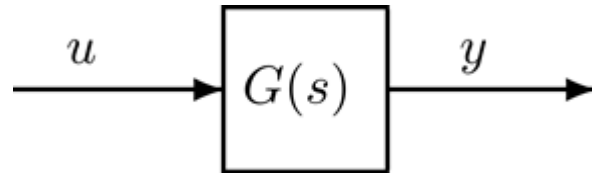1. Principle of superposition
2. Time invariance

These properties form the basis for most of the analysis and design methods covered in this course.

Examples of LTI systems include:

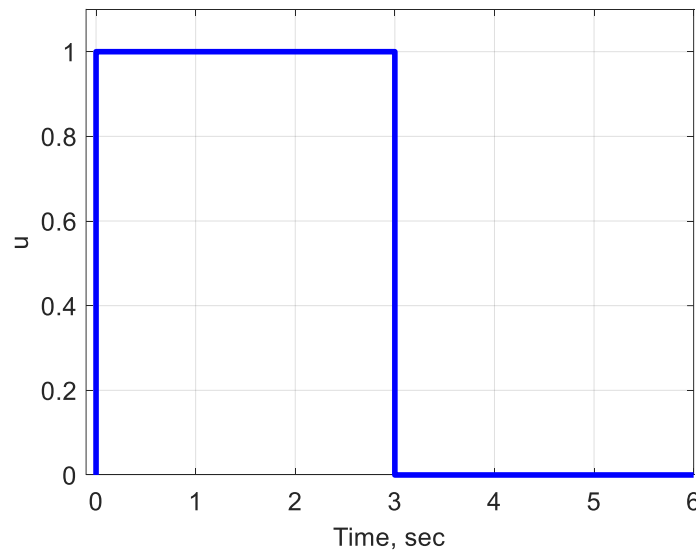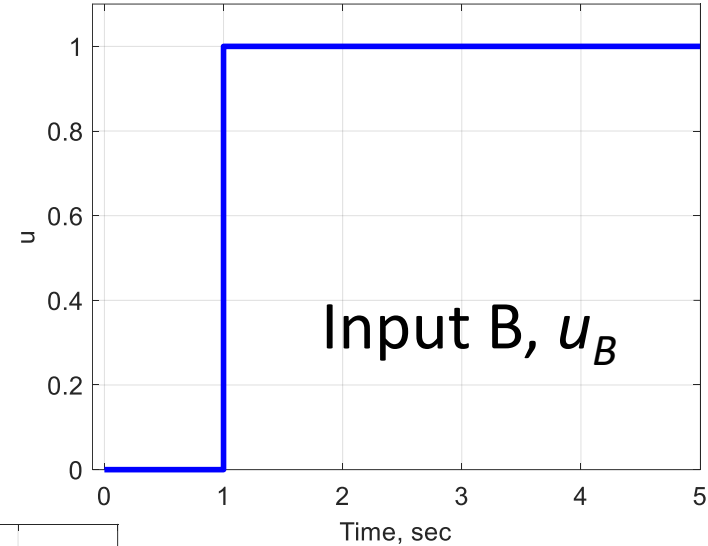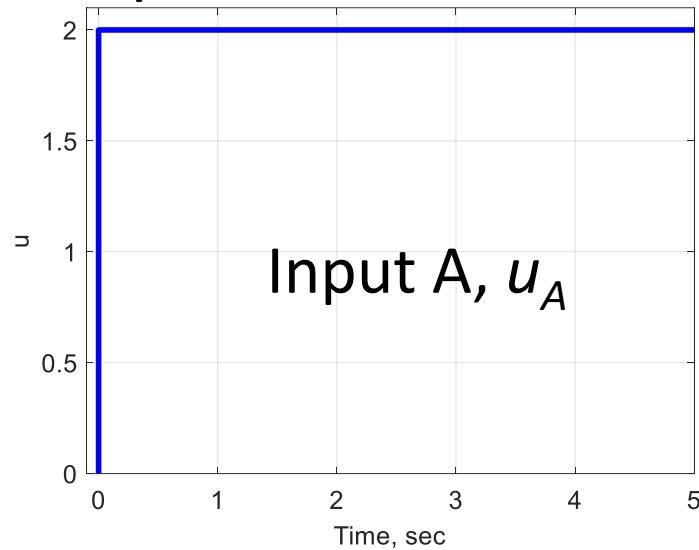- Linear ODEs with constant coefficients
- Time Delays

Problem 1

Let *G(s)* be an LTI system with input *u* and output *y*. One response from zero initial conditions is shown below.
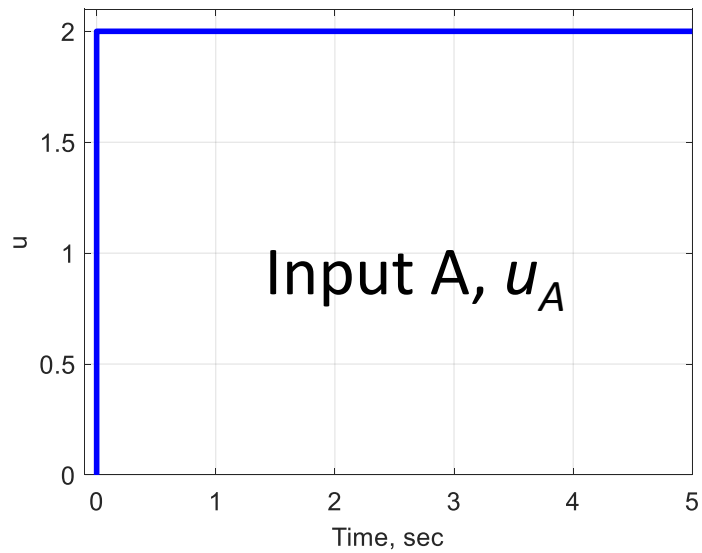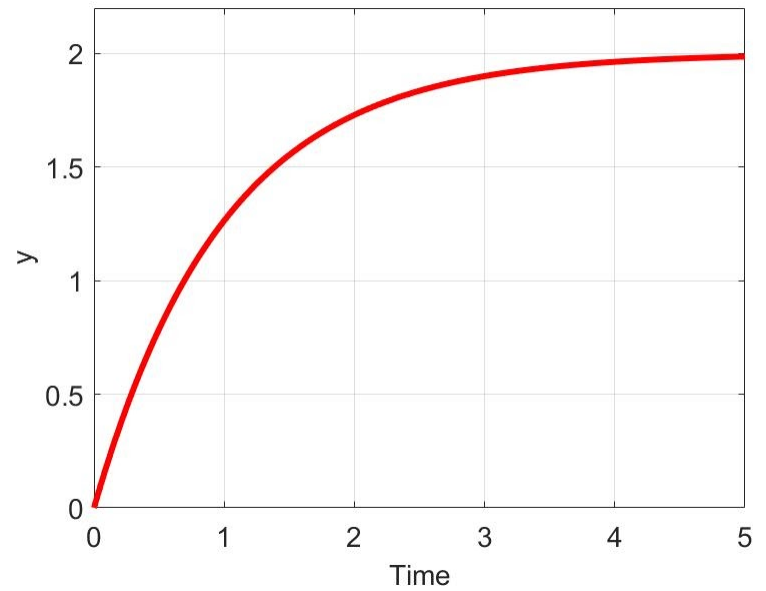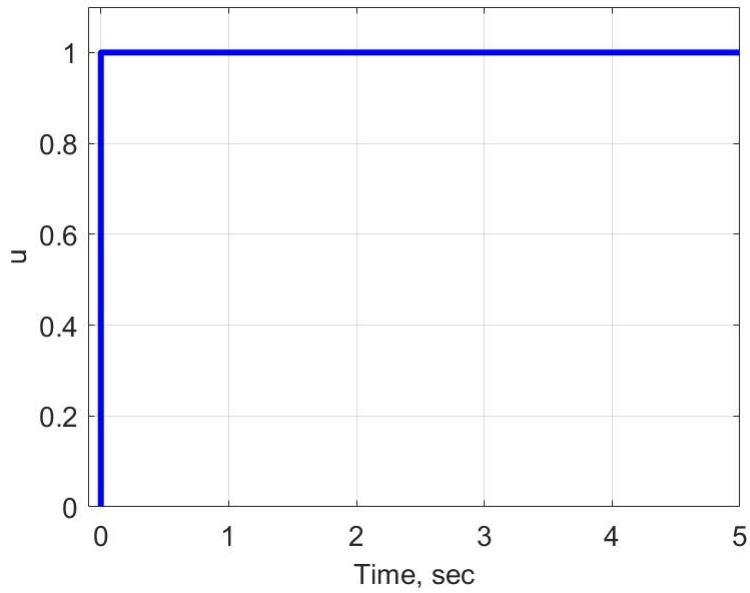
Problem 1

Sketch (very roughly) the output response of G(s) to the inputs below from zero initial conditions.

Input A, u_A

Input B, u_B

Input C, u_C

Solution 1A

Input A, u_A

Solution 1B

Input B, u_B
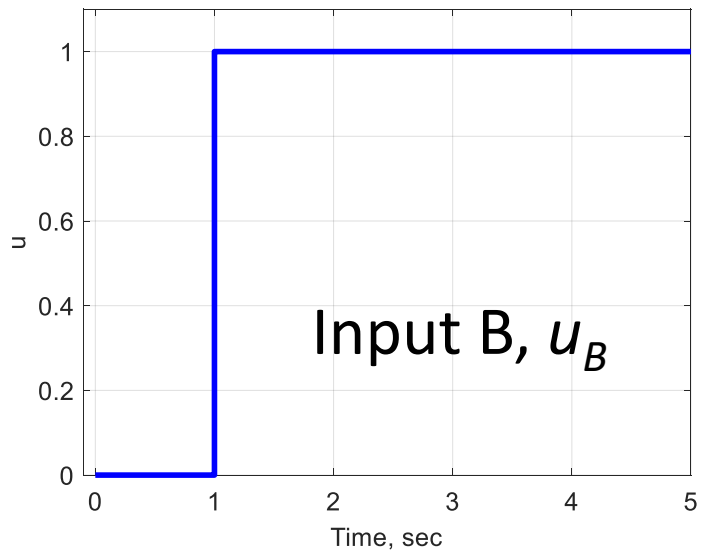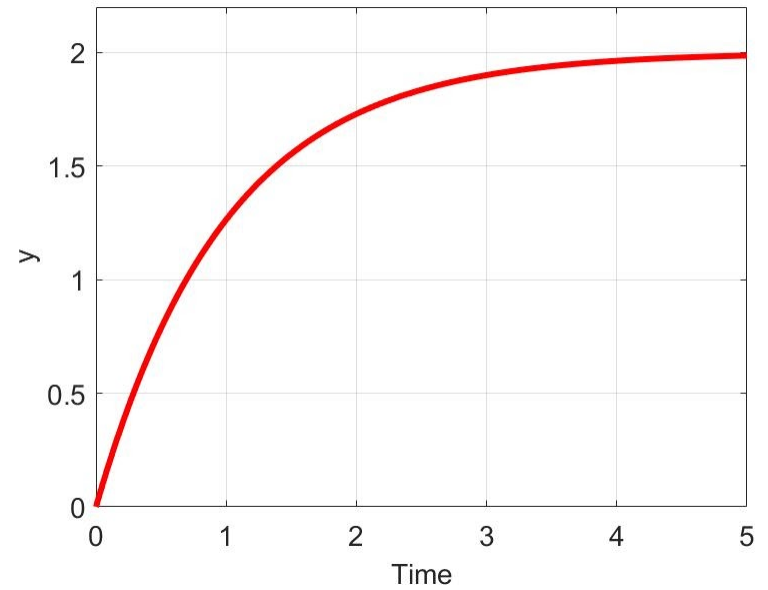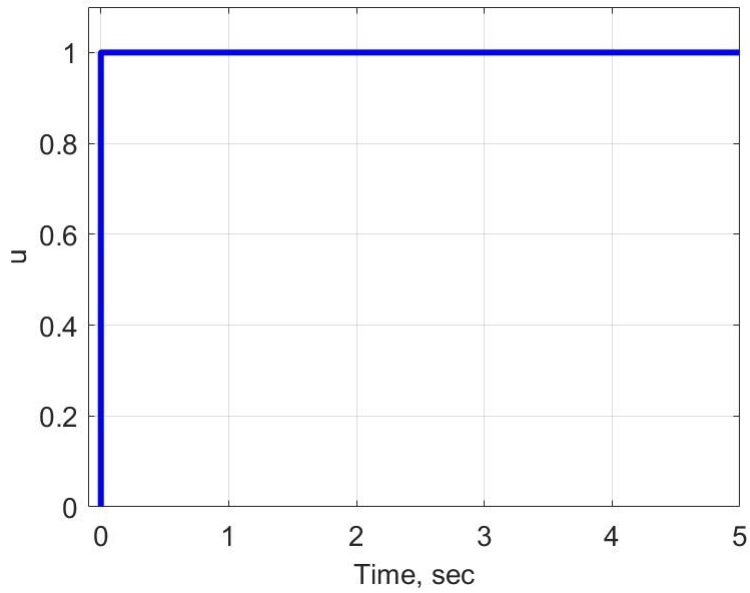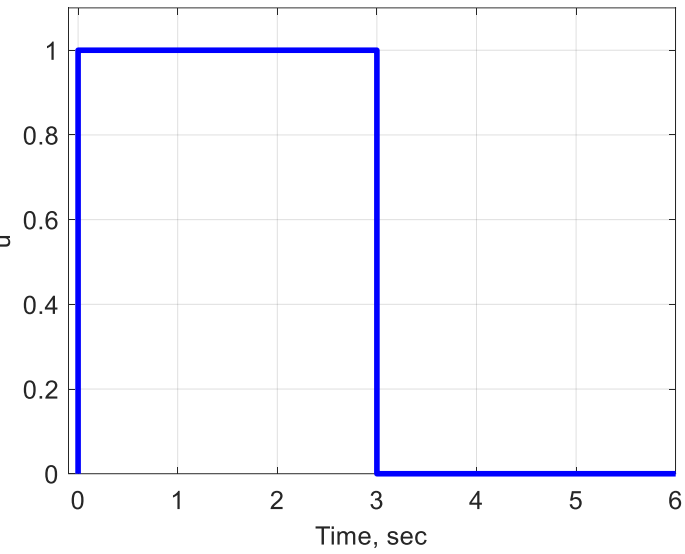
Solution 1C

Input C, u_C

Solution 1-Extra Space