

## ECSE 307

Weekly assignments (20%)

Indrv.

Due every Friday

Lowest 2 assign. dropped.

Late penalty 10% per day

Labs. (20%) M W

Due on Friday

Lowest 2 labs dropped.

While classes are online  $\rightarrow$  Individual labs

When in-person classes resume  $\rightarrow$  Group Labs,

Mid-term. (20%)

March 17 (during class time)

If classes are online

1 hr.

Closed book

$\Rightarrow$  online exam.

Crib sheet.

Posted on March 15

Available for 3 days (72 hrs)

1.5 hrs to do the exam.

Final exam (40%)

Closed book

Comprehensive

# LTI Systems

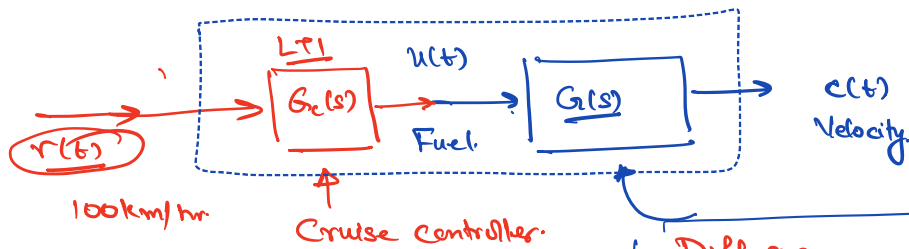


Impulse response  $g(t)$

$$c(t) = r(t) * g(t)$$

$$C(j\omega) = R(j\omega) G(j\omega)$$

$$C(s) = R(s) G(s)$$



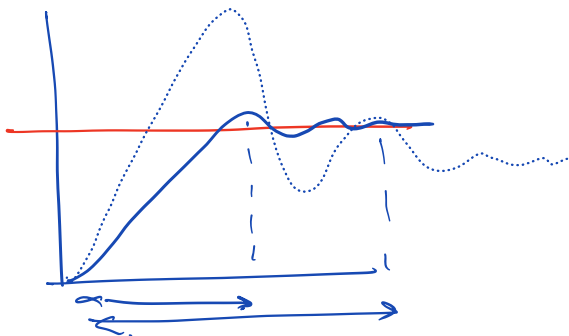
Diff eqn

fuel  $\rightarrow$  rotation of the engine

$$\frac{d^2x}{dt^2} + \frac{4dx}{dt} = 4y(t)$$

Diff eqn

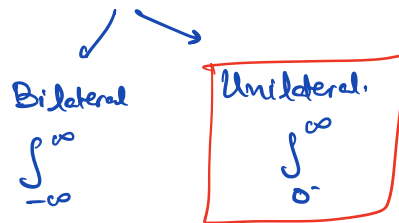
$$\frac{d^2y}{dt^2} + \frac{3dy}{dt} = z(t)$$



Time domain  
State space design

$\rightarrow$  Laplace  
Freq domain

# Laplace / Fourier / Trans



— Laplace Transf

Linearity

Partial frac

Region of conv (ROC)

Complex numbers

$$Z = a + jb$$

$$|Z| \quad \angle Z$$

$$\frac{Z_1}{Z_2} \quad \left| \frac{Z_1}{Z_2} \right| \quad \angle \frac{Z_1}{Z_2}$$

Text book:

Control Sys. Eng.

6<sup>th</sup> - 8<sup>th</sup>

by Nise

7<sup>th</sup> edn

$$G(s) = \frac{s+1}{(s+10)(s+100)}$$

