

Control system *Ctrl*

Lecture 04 — Modeling in Electrical systems

- Kirchhoff Current Law KCL
- Kirchhoff Voltage Law KVL
- Elements
 - Resistance
 - Capacitor
 - Inductor
- RC circuit
 - Obtain the transfer function
 - Show 1st-order system
 - Step input
 - Plot response curve →
comment on delay time –
Settling time – Steady state
output – Time constant
 - Time constant here is RC
 - What is the effect of
increasing / decreasing
RC?
 - General form of 1st order
transfer function
 - Response of 1st order
system to step input is like
→ mercury in glass device
 - You should wait about 4-5
times time constant to get
the final output
 - Dynamic period "Transient
period"
 - Steady state output
 - Sketch the block diagram
 - Use MATLAB
 - Page 89
 - USE SIMULINK
 - Page 90
- RLC – 2nd – order system
 - Example page 91
- Report: page 95