

PANDUAN BELAJAR
MK. SISTEM
PENGENDALIAN
OTOMATIS
(4 SKS DAN 3 SKS)

KULIAH DARING
INDONESIA

www.pditt.belajar.kemdikbud

MK Daring Sistem Pengendalian Otomatis, dapat diikuti oleh mahasiswa Program Studi:

- Teknik Fisika
- Teknik Elektro
- Teknik Kimia
- Teknik Industri
- Teknik Mesin
- Dan prodi sejenis yang lain

4 sks		3 sks	
1	PENGANTAR SISTEM PENGENDALIAN OTOMATIS <ul style="list-style-type: none"> - Sejarah sistem pengendalian otomatis - Sistem pengendalian loop terbuka - Sistem pengendalian loop tertutup - Eror detektor - Pengendali - Aktuator - Sensor dan Transducer 	PENGANTAR SISTEM PENGENDALIAN OTOMATIS <ul style="list-style-type: none"> - Sejarah sistem pengendalian otomatis - Sistem pengendalian loop terbuka - Sistem pengendalian loop tertutup - Eror detektor - Pengendali - Aktuator - Sensor dan Transducer 	
2	PEMODELAN SISTEM DINAMIK <ul style="list-style-type: none"> - Persamaan Keadaan - Model Dinamik Sistem Mekanik - Model Dinamik Sistem Elektrik - Model Dinamik sistem Elektromekanik - Model Dinamik Sistem Termal - Model Dinamik sistem Fluida dan Pneumatik - Blok diagram - Reduksi Blok Diagram - Grafik Aliran Sinyal 	PEMODELAN SISTEM DINAMIK <ul style="list-style-type: none"> - Persamaan differensial koefisien konstan - Persamaan keadaan - Fungsi transfer - Blok Diagram - Reduksi Blok Diagram - Grafik aliran sinyal 	
3	RESPON SISTEM DINAMIK <ul style="list-style-type: none"> - Karakteristik Sistem dan Sinyal uji - Karakteristik system orde pertama - Karakteristik system orde kedua - Karakteristik system orde tinggi - Analisa Kestabilan Routh 	RESPON SISTEM DINAMIK <ul style="list-style-type: none"> - Karakteristik Sistem dan Sinyal uji - Karakteristik system orde pertama - Karakteristik system orde kedua - Karakteristik system orde tinggi - Analisa Kestabilan Routh 	
4	LETAK KEDUDUKAN AKAR <ul style="list-style-type: none"> - Konsep letak kedudukan akar - Prosedur plot letak kedudukan akar - Analisa kestabilan system berdasar Plot letak kedudukan akar 	LETAK KEDUDUKAN AKAR <ul style="list-style-type: none"> - Konsep letak kedudukan akar - Prosedur plot letak kedudukan akar 	
5	RESPON FREKUENSI <ul style="list-style-type: none"> - Diagram Bode - Diagram Nyquist - Hubungan Bode plot dan Nyquist - Kriteria kestabilan Nyquist 	RESPON FREKUENSI <ul style="list-style-type: none"> - Diagram Bode 	
6	PENGENDALI PID <ul style="list-style-type: none"> - Pengendali Proporsional - Pengendali Integral - Pengendali Proporsional Derivatif 	PENGENDALI PID <ul style="list-style-type: none"> - Pengendali Proporsional - Pengendali Integral - Pengendali Proporsional Derivatif 	

	<ul style="list-style-type: none"> - Pengendali Proporsional Integral - Pengendali Proporsional Integral Derivatif 	<ul style="list-style-type: none"> - Pengendali Proporsional Integral - Pengendali Proporsional Integral Derivatif
7	PERANCANGAN PENGENDALI PID <ul style="list-style-type: none"> - Perancangan Pengendali P - Perancangan Pengendali PI - Perancangan Pengendali PD - Perancangan Pengendali PD Modifikasi - Perancangan Pengendali PID - Perancangan Pengendali PID Modifikasi - Perancangan Pengendali PID Zieger Nichols Tipe 1 - Perancangan Pengendali PID Zieger Nichols Tipe 1 	PERANCANGAN PENGENDALI PID <ul style="list-style-type: none"> - Perancangan Pengendali P - Perancangan Pengendali PI - Perancangan Pengendali PD - Perancangan Pengendali PD Modifikasi - Perancangan Pengendali PID - Perancangan Pengendali PID Modifikasi - Perancangan Pengendali PID Zieger Nichols Tipe 1 - Perancangan Pengendali PID Zieger Nichols Tipe 1
8	KARAKTERISTIK SISTEM DALAM PERSAMAAN RUANG KEADAAN <ul style="list-style-type: none"> - Model system dalam persamaan keadaan - Bentuk kanonik persamaan ruang keadaan - Penyelesaian persamaan ruang keadaan - Matriks transisi keadaan 	KARAKTERISTIK SISTEM DALAM PERSAMAAN RUANG KEADAAN <ul style="list-style-type: none"> - Model system dalam persamaan keadaan - Penyelesaian persamaan ruang keadaan

Perangkat Software bantu untuk pembelajaran SPO:

1. Matlab
2. Lab. View

Cara download Download *Player Sim View* – simulator Sistem Pengendalian Otomatis

1. Ketik : <http://techttech.no/simview/index.htm>



2. Klik **What is needed to run the simulators?**



[What is SimView?] [What is needed to run the simulators?] [Tips for using SimVIEW] [What about KYBSIM?]

- **DYNAMIC SYSTEMS** 
 - **TRANSFER FUNCTION MODELS**
 - Gain
 - Integrator
 - Time constant
 - Second order system
 - Time delay
 - Transfer function (with two poles and one zero)
 - **PHYSICAL SYSTEMS**
 - Liquid tank with valve and pump outlets
 - Blending tank
 - Heated tank
 - Mass-spring-damper
 - RC-circuit
 - DC-motor
 - **STABILITY**
 - Stability and poles
- **CONTROL** 
 - **APPLICATIONS (INCL. BASIC PID TUNING)**

Pilih mode pokok bahasan yang diinginkan, ditunjukkan pada tampilan di atas

3. Klik “[Here](#)”, dari tampilan layar di bawah ini



What is needed to run the SimView simulators?

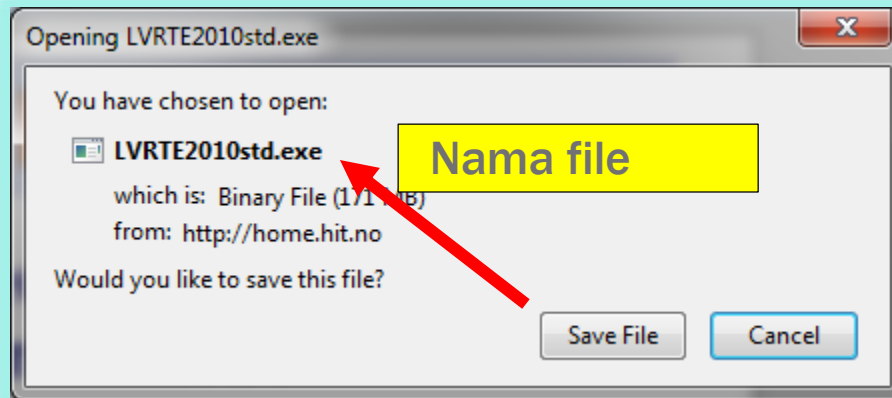
The SimView simulators are developed in LabVIEW. You can run these simulators only if you have the **Run-time Engine for LabVIEW 10** installed. You can download and install this LabVIEW Run-time Engine from [here](#). File name: LVRTE2010std.exe. Size: 175 MB. (There are various versions of the Run-time Engine. The given version is selected as it complies with version 10 of the LabVIEW development system used to generate the simulators.)

Note: During the installation of LabVIEW Runtime Engine you are prompted to select in a list of five tools which tools to install. It is sufficient to select only LabVIEW Runtime Engine which is the first (upper) tool in the list. So, you should deselect all the other tools in the list. (If you install other tools than LabVIEW Runtime Engine, you may be asked to install hardware drivers etc. which you do not need and which may actually cause problems for running the simulators.)

[\[SimView\]](#) [\[TechTeach\]](#)

Updated 31. October 2012 by [Finn Haugen](#). E-mail: finn@techteach.no.

4. Klik : “Save File”,



5. Setelah proses download selesai kemudian diinstall, dengan cara klik dua kali pada file tersebut
6. Klik **“run”**.
7. Selesai
Dan Siap dijalankan simulator yang diinginkan