








**KEGIATAN PEMBELAJARAN**  
**SEMESTER GANJIL TAHUN AKADEMIK 2020 / 2021**

| <b>Dosen</b>       |                  | <b>: 1. A Rachman Soleman. Ir. MT.</b><br><b>: 2. Ariman, ST.MT.</b>  | <b>Hari : SELASA</b><br><b>J a m : 08.00 - 09.40</b><br><b>Ruang : A 6</b> |   |
|--------------------|------------------|---|--|---|
| <b>Mata Kuliah</b> |                  | <b>: Instrumentasi Elektronika</b>  |  |   |
| <b>Kelas</b>       |                  | <b>: A</b>  |  |   |
| <b>NO</b>          | <b>Tanggal</b>   | <b>Materi Pembelajaran</b>  | <b>Jml Mhs</b>   | <b>Tanda Tangan Dosen</b>   |
| <b>1</b>           | <b>15-Sep-20</b> | <b>1. Introduction to Electronic Instruments and Measurements.</b><br>1.1 Introduction 1.2 Instrument Software. 1.2.1 Instrument embedded software.<br>1.2.2 System software.<br>1.3 Instruments . 1.3.1 Performance attributes of measurements. 1.3.2 Ideal instruments. 1.3.3 Types of instruments. 1.3.4 Electronic instruments. 1.4 The Signal Flow of Electronic Instruments.<br>1.4.1 Device under Test (DUT) connections.  |  |    |
| <b>2</b>           | <b>22-Sep-20</b> | 1.4.2 Sensor or actuator. 1.4.3 Analog signal processing and reference<br>1.4.4 Analog-to-digital conversion. 1.4.5 Digital information processing and calibration . 1.4.6 Information interface 1.5 The Instrument Block Diagram. 1.5.1 Mechanical case and package. 1.5.2 Power supply. 1.6 Measurement Systems One. 1.6.1 Distributing the "instrument". 1.6.2 Multiple instruments in a measurement system.   |  |    |
| <b>3</b>           | <b>29-Sep-20</b> | <b>2. Calibration, Traceability, and Standards.</b> 2.1 Metrology and Metrologists.<br>2.2 Definitions for Fundamental Calibration Terms. 2.2.2 Calibration.. 2.2.2 Measurement and test equipment (M&TE). 2.2.3 Measurement standards. 2.2.4 Reference standard .<br>2.2.5 Transfer or working standards . 2.2.6 Artifact standards.<br>2.2.7 Intrinsic standards. 2.2.8 Consensus and industry accepted standards 2.2.9 Standard reference materials (SRMs) . 2.3 Traceability 2.4 Calibration Types  |  |  |
| <b>4</b>           | <b>6-Oct-20</b>  | <b>3. Basic Electronic Standard.</b> 3.1 International System of Measurement Units.<br>3.1.1 Development of the electrical systems of units. 3.1.2 The international system of derived units. 3.1.3 Internationalization of electrical units and standards. 3.1.4 National Institute of Standards and Technology (NIST). 3.1.5 An echelon of standards. 3.2 Traceability of Standards. 3.2.1 Standard capabilities and traceability. 3.2.2 Traceability echelons. 3.3 Standards Maintained by NIST.<br><b>4. Data-Acquisition Systems.</b> 4.1 Introduction to Data-Acquisition Systems.<br>4.1.1 Development of data acquisition. 4.2 Information Rate and Data Rate |  |  |
| <b>5</b>           | <b>13-Oct-20</b> | <b>5. Transducers.</b> 5.1 Introduction. 5.2 Transduction Mechanisms and Measurands .<br>5.2.1 Transduction mechanisms . 5.2.2 Measurands . 5.3 Classification of Transducers . 5.4 Selection of Transducers . 5.5 Capacitive Transducers . 5.6 Inductive Transducers . 5.7 Electromagnetic Transduce . 5.8 Resistive Transduce .<br>5.8.1 Potentiometric transducers . 5.8.2 Resistance strain gages. 5.8.3 Physical strain gage transducers . 5.8.4 Thermoresistive detectors . 5.8.5 Thermistors . 5.8.6 Hot-wire anemometer . 5.9 Hall-Effect Transducers 5.10 Chemfet Transducers .  |  |  |
| <b>6</b>           | <b>20-Oct-20</b> | <b>6. Analog-to-Digital Converters.</b> 6.1 Introduction . 6.2 What Is An Analog-to-Digital Converter? . 6.2.1 Resolution . 6.2.2 Sample rate . 6.2.3 Errors. 6.2.4 Building blocks of analog-to-digital converters . 6.3 Types of Analog-to-Digital Converters. 6.3.1 Integrating ADCs . 6.3.2 Parallel ADCs . 6.3.3 Multistep ADCs . 6.4 Integrating Analog-to-Digital Converters. 6.4.1 The dual slope architecture. 6.4.2 The multislope architecture .   |  |  |
| <b>7</b>           | <b>27-Oct-20</b> | <b>7. Signal Sources.</b> 7.1 Introduction. 7.2 Kinds of Signal Waveforms . 7.2.1 Sine waves, the basic periodic signal waveform . 7.2.2 Complex periodic signal waveforms . 7.3 How Periodic Signals Are Generated . 7.3.1 Oscillators . 7.3.2 Synthesizers . 7.4 Signal Quality Problems .<br><b>8. Microwave Signal Sources.</b> 8.1 Introduction . 8.2 Solid-State Sources of Microwave Signals .<br>8.2.1 Transistor oscillators. 8.2.2 Electrically tuned oscillators . 8.2.3 YIG-tuned oscilla.  |  |  |
| <b>8</b>           | <b>3-Nov-20</b>  | <b>UJIAN TENGAH SEMESTER</b>  |  | <b>UTS</b>  |

Source: Electronic Instrument Handbook

CLYDE F. COOMBS, IR

1.2.

**KEGIATAN PEMBELAJARAN  
SEMESTER GANJIL TAHUN AKADEMIK 2020 / 2021**

|                    |                                    |              |                        |
|--------------------|------------------------------------|--------------|------------------------|
| <b>Dosen</b>       | <b>: Ir. Rachman Soleman. MT.</b>  | <b>Hari</b>  | <b>: SELASA</b>        |
|                    | <b>: 2. Ariman, ST.MT.</b>         |              |                        |
| <b>Mata Kuliah</b> | <b>: Instrumentasi Elektronika</b> | <b>J a m</b> | <b>: 08.00 - 09.40</b> |
| <b>Kelas</b>       | <b>: A</b>                         | <b>Ruang</b> | <b>: A 6</b>           |

| NO | Tanggal   | Materi Pembelajaran  | Jml Mhs | Tanda Tangan Dosen |
|----|-----------|--|---------|--------------------|
| 9  | 10-Nov-20 | 9. Digital Signal Processing. 9.1 Introduction . 9.2 Signal Characterization. 9.2.1 Continuous and discrete time signals. 9.2.2 Analog and digital signals. 9.2.3 Physical and abstract . 9.3 Signal Representations. 9.4 Signal Processing. 9.4.1 Reversible and irreversible . 9.4.2 Linear and nonlinear . 9.5.1 Advantages . 9.5.2 Disadvantages . 9.6 Digitizing Process . 9.6.1 Sampling and quantizing . 9.6.2 Distortion . 9.6.3 Quantization noise . 9.6.2 Noise-shaping networks . 9.7 Linear Filters .        |         |                    |
| 10 | 17-Nov-20 | 10. Embedded Computers in Electronic Instruments. 10.1 Introduction . 10.2 Embedded Computers . 10.2.1 Embedded computer model. 10.2.2 Embedded computer uses. 10.2.3 Benefits of embedded computers in instruments . 10.3 Embedded Computer System Hardware 10.3.1 Microprocessors as the heart of the embedded computer . 10.3.2 How microprocessors work . 10.3.3 Program and data store . 10.3.4 Machine instructions .  |         |                    |
| 11 | 24-Nov-20 | 11. Power Supplies. 11.1 Function and Types of Power Supplies and Electronic Loads . 11.2 The Direct-Current Power Supply. 11.2.1 Direct-current voltage sources . 11.2.2 Constant-voltage/constant-current or current-limiting sources . 11.3 The Electronic Load. 11.3.1 Modes of operation . 11.3.2 Electronic load ratings . 11.4 The Alternating-Current Power Source. 11.4.1 Key features and modes of operation . 11.5 General Architecture of the Power-Conversion Instrument. 11.5.1 Alternating-current input. |         |                    |
| 12 | 1-Dec-20  | 12. Instrument Hardware User Interfaces. 12.1 Introduction . 12.2 Hardware-User Interface Components . 12.2.1 Configuration of instruments. 12.2.2 Hardware-user interface components: output devices . 12.2.3 Hardware-user interface components: input devices. 12.2.4 Design of the hardware-user interface components.   |         |                    |
| 13 | 8-Dec-20  | 13. Voltage, Current, and Resistance Measuring Instruments. 13.1 Introduction . 13.1.1 Categories of meters . 13.2 General Instrument Block Diagram . 13.2.1 Signal conditioning: ranging and amplification . 13.2.2 Analog-to-digital conversion. 13.3 DC Voltage Measurement Techniques . 13.4 AC Voltage Measurement Techniques . 13.4.1 Signal conditioning for ac measurements . 13.4.2 AC signal characteristics . 13.4.3 Rms value .  |         |                    |
| 14 | 15-Dec-20 | 14. Oscilloscopes. 14.1 Introduction . 14.1.1 Basic functions. 14.1.2 Applications . 14.2 General Oscilloscope Concepts . 14.2.1 Analog and digital oscilloscope basics . 14.2.2 Control panel. 14.2.3 Display . 14.2.4 Modular construction .   |         |                    |
| 15 | 22-Dec-20 | 15. Power Measurements. 15.1 Introduction . 15.2 Basic Power Definitions. 15.3 Transmission-Type Power Measurements . 15.4 Absorption-Type Power Measurements. 15.5 Thermistor Sensors and Meters . 15.6 Thermocouple Power Meters .   |         |                    |
| 16 | 19-Jan-21 | <b>UJIAN AHIR SEMESTER</b>   |         | <b>U A S</b>       |

Ket : Kuliah dimulai dari 01 September 2020 s/d 27 Februari 2021

Jakarta ..... 2020

Kaprodi Teknik Elektro S1. FTI. ISTN.



*Harlan*  
Ir. HARLAN EFENDI. MT

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DAFTAR NILAI

SEMESTER GANJIL REGULER TAHUN 2020/2021

Program Studi : Teknik Elektro S1  
 Matakuliah : Instrumentasi Elektronika  
 Kelas / Peserta : A  
 Perkuliahan : Kampus ISTN Bumi Srengseng Indah  
 Dosen : H. Rachman Soleman, Ir. MT.

Hal. 1/1

| No | NIM      | NAMA                      | ABSEN | TUGAS | UTS | UAS | MODEL | PRESENTASI | NA   | HURUF |
|----|----------|---------------------------|-------|-------|-----|-----|-------|------------|------|-------|
|    |          |                           | 0%    | 40%   | 30% | 30% | 0%    | 0%         |      |       |
| 1  | 15220001 | Dwi Armanto               | 100   | 95    | 80  | 85  | 0     | 0          | 87.5 | A     |
| 2  | 16220004 | Irfaan Naufal             | 100   | 95    | 80  | 85  | 0     | 0          | 87.5 | A     |
| 3  | 16220038 | Alwi Hamzah               | 100   | 95    | 80  | 85  | 0     | 0          | 87.5 | A     |
| 4  | 19220001 | Muhammad Isra Maulana     | 100   | 0     | 80  | 0   | 0     | 0          | 0    |       |
| 5  | 19220004 | Abdullah Khoirurafil Umam | 100   | 0     | 80  | 0   | 0     | 0          | 0    |       |

| Rekapitulasi Nilai |   |    |   |    |   |    |   |
|--------------------|---|----|---|----|---|----|---|
| A                  | 3 | B+ | 0 | C+ | 0 | D+ | 0 |
| A-                 | 0 | B  | 0 | C  | 0 | D  | 0 |
|                    |   | B- | 0 | C- | 0 | E  | 0 |

Jakarta, 8 February 2021

Dosen Pengajar



H. Rachman Soleman, Ir. MT.