

MATA KULIAH	Nama Mata Kuliah : Teknik Pengukuran
	Kode MK : VI231310
	Kredit : 3 SKS
	Semester : II

DESKRIPSI MATA KULIAH
Matakuliah Teknik Pengukuran ini termasuk dalam rumpun mata kuliah uji dan kalibrasi di PS S. Tr. TRI – ITS. Matakuliah ini membahas tentang prinsip pengukuran, karakteristik statik, karakteristik dinamik dan jenis-jenis pengukuran.
CAPAIAN PEMBELAJARAN LULUSAN YANG DIBEBANKAN MATA KULIAH
<ul style="list-style-type: none"> ▪ Mampu mengkaji kasus penerapan ilmu pengetahuan dan teknologi di bidang keahlian sesuai standar kompetensi kerja, serta mampu mengambil keputusan secara tepat dari hasil kerja sendiri maupun kerja kelompok dalam bentuk laporan tugas akhir atau bentuk kegiatan (CPL-2) ▪ Mampu berkomunikasi, menulis laporan serta membuat presentasi secara efektif (CPL-4) ▪ Mampu menerapkan pengetahuan matematika, ilmu alam, dasar-dasar instrumentasi pengukuran, pengendalian dan pengamanan untuk prosedur, proses, sistem maupun metodologi teknik yang diterapkan dalam suatu proses industri (CPL-5) ▪ Mampu mengidentifikasi, merumuskan, meneliti literatur dan menganalisis masalah teknik di bidang teknologi Instrumentasi untuk mencapai kesimpulan yang dapat dibuktikan dengan menggunakan alat analisis sesuai standar disiplin ilmu teknik instrumentasi (CPL-6) ▪ Mampu melakukan investigasi terhadap permasalahan instrumentasi industri, mencari, memilih data yang relevan dari literatur, merancang dan melakukan eksperimen untuk memberikan kesimpulan yang valid (CPL-8)
CAPAIAN PEMBELAJARAN MATA KULIAH

- Mahasiswa memiliki keterampilan dalam menggunakan alat ukur, baik besaran fisis maupun besaran listrik.
- Mahasiswa mampu mengidentifikasi karakteristik statik alat ukur.
- Mahasiswa dapat menerapkan teknik-teknik pengukuran dengan baik dan benar melalui berbagai studi kasus.
- Mahasiswa mampu menggunakan berbagai jenis alat ukur besaran fisis maupun besaran listrik.

POKOK BAHASAN

- Prinsip Pengukuran
- Karakteristik Statik dan Dinamik Instrumen
- Teknik Pengukuran Besaran Listrik
- Teknik Pengukuran Level
- Teknik Pengukuran Temperature
- Teknik Pengukuran Tekanan
- Teknik Pengukuran Flow
- Teknik Pengukuran Cahaya dan Getaran
- Teknik Pengukuran Gaya, Torsi dan Regangan
- Teknik Pengukuran zat gas, cairan dan kimia
- Teknik Pengukuran berbasis Optik
- Teknik Pengukuran Cerdas utk multivariable system

PRASYARAT

- Fisika Terapan

PUSTAKA

Buku:

1. Alan S Morris, 2001, Measurement and Instrumentation Principles
2. I. Gertsbakh, 2002, Measurement Theory for Engineers

COURSE	Course Name : Measurement Technique
	Course Code : VI190204
	Credit : 3 sks
	Semester : IV

DESCRIPTION OF COURSE

This course is included in the test and calibration course family at PS S. Tr. TRI - ITS. This course discusses the principles of measurement, static characteristics, dynamic characteristics and types of measurement.

LEARNING OUTCOMES

- Able to examine cases of the application of science and technology in their field of expertise in accordance with work competency standards, and able to make decisions appropriately from the results of their own work and group work in the form of a final project report or activity form (CPL-2)
- Able to communicate, write reports and make presentations effectively (CPL-4)
- Able to apply knowledge of mathematics, natural science, the basics of measurement instrumentation, control and safety for procedures, processes, systems and engineering methodologies applied to an industrial process (ELO-5)
- Able to identify, formulate, review literature and analyze technical problems in the field of Instrumentation technology to reach conclusions that can be proven by using analytical tools in accordance with the standards of the instrumentation engineering discipline (ELO-6)
- Able to investigate industrial instrumentation problems, search, select relevant data from the literature, design and conduct experiments to provide valid conclusions (CPL-8)

COURSE LEARNING OUTCOME

- Students have skills in using measuring instruments, both physical quantities and electrical quantities.
- Students are able to identify the static characteristics of measuring instruments.
- Students are able to apply measurement techniques properly and correctly through various case studies.
- Students are able to use various types of measuring instruments for physical quantities and electrical quantities.

MAIN SUBJECT

- Principles of Measurement
- Static and Dynamic Characteristics of Instruments
- Electrical Measurement Techniques
- Level Measurement Techniques
- Temperature Measurement Techniques
- Pressure Measurement Techniques
- Flow Measurement Techniques
- Light and Vibration Measurement Techniques
- Force, Torque and Strain Measurement Techniques
- Gas, liquid and chemical measurement techniques
- Optical-based Measurement Techniques
- Intelligent Measurement Techniques for multivariable systems

PREREQUISITES

- Applied Physics

REFERENCE

Book:

1. Alan S Morris, 2001, Measurement and Instrumentation Principles
2. I. Gertsbakh, 2002, Measurement Theory for Engineers