MATA KULIAH	**Nama Mata Kuliah**	: Pengantar Teknik Instrumentasi
	Kode MK	: VI0101
	Kredit	: 2 SKS
	Semester	: I

DESKRIPSI MATA KULIAH

Mata kuliah Pengantar Teknik Instrumentasi ini termasuk mata kuliah dasar di PS S. Tr. TRI – ITS. Mata kuliah ini memberikan gambaran ke mahasiswa baru tentang instrument itu apa, fungsinya apa dan apa perannya di indutsri, sehingga mahasiswa mempunyai pemahaman tentang instrument di industry. Untuk menunjang pemahaman tersebut, pada mata kuliah ini disampaikan keilmuan apa yang diperlukan untuk dapat menguasai prinsip kerja instrument dan merekayasa teknologi yang ada agar instrument dapat diaplikasikan untuk fungsi pengukuran, pengendalian dan pengamanan (safeguard) sehingga membentuk kompetensi lulusan sesuai dengan kebutuhan di industry. Pada kuliah ini juga disampaikan tentang perlunya pemahaman karakteristik plant yang akan diukur, dikendalikan dan diamankan, agar instrument dapat berfungsi dengan tepat dan akurat sesuai dengan kondisi operasi plant. Melalui mata kuliah ini diharapkan mahasiswa mempunyai motivasi untuk belajar tentang instrument yang keilmuannya sangat erat dengan issue revolusi industry 4.0.

CAPAIAN PEMBELAJARAN LULUSAN YANG DIBEBANKAN MATA KULIAH

- 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 pembelajaran lain yang luarannya setara dengan tugas akhir melalui pemikiran logis, kritis, inovatif, bermutu dan terukur dengan mempertimbangkan kesehatan, keselamatan, keamanan, dan lingkungan. (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)

CAPAIAN PEMBELAJARAN MATA KULIAH

- Mahasiswa mampu memahami keilmuan yang diperlukan pada teknik instrumentasi
- Mahasiswa mampu memahami instrument, peran dan fungsinya di industri
- Mahasiswa mengetahui fisik dan fungsi instrument pada simulator process control
- Mahasiswa mengetahui profesi dan jenis pekerjaan teknik instrumentasi
- Mahasiswa memahami peluang dan tantangan teknik instrument pada era revolusi industry 4.0.

POKOK BAHASAN

- Visi Misi ITS, Visi Misi Fakultas Vokasi, Visi Misi Departemen Teknik Instrumentasi

- Peran dan perspektif Teknik Instrumentasi
- Kurikulum Departemen Teknik Instrumentasi
- Kompetensi Lulusan Departemen Teknik Instrumentasi
- Keilmuan Teknik Instrumentasi dalam menghadapi issue revolusi industry 4.0
- Fisik dan fungsi instrument
- Profesi dan jenis pekerjaan Instrument Engineer
- Penerapan keilmuan Instrument Engineer kasus 1
- Penerapan keilmuan Instrument Engineer kasus 2
- Penerapan keilmuan Instrument Engineer kasus 3
- Penerapan keilmuan Instrument Engineer kasus 4
- Penerapan keilmuan Instrument Engineer kasus 5

PRASYARAT

PUSTAKA

- Buku saku ITS
- Kurikulum Departemen Teknik Instrumentasi

COURSE	**Course Name**	: Introduction Instrumentation Engineering
	Course Code	: VI0101
	Credit	: 2 SKS
	Semester	: I

DESCRIPTION OF COURSE

This Introduction Instrumentation Engineering course includes basic courses in PS S. Tr. TRI – ITS. This course provides an overview to new students about what the instrument is, what its function is and what is its role in the industry, so that students have an understanding of the instrument in the industry. To support this understanding, this course conveys what knowledge is needed to be able to master the working principles of instruments and engineer existing technology so that instruments can be applied to measurement, control and safeguard functions so as to form graduate competencies according to industry needs. In this lecture it is also conveyed about the need to understand the characteristics of the plant to be measured, controlled and secured, so that the instrument can function properly and accurately according to the plant's operating conditions. Through this course it is hoped that students will have the motivation to learn about instruments whose knowledge is very close to the issue of the industrial revolution 4.0.

LEARNING OUTCOMES

- Able to review cases of the application of science and technology in the field of expertise according to work competency standards, and able to make appropriate decisions from the results of their own work or group work in the form of final project reports or other forms of learning activities whose output is equivalent to the final task through logical, critical thinking , innovative, quality and measurable by considering health, safety, security and the environment. (CPL 2)
- Able to communicate, write reports and make presentations effectively (CPL 4)
- Able to apply knowledge of mathematics, natural sciences, the basics of measurement instrumentation, control and security for procedures,

processes, systems and technical methodologies applied in an industrial process (CPL 5)
COURSE LEARNING OUTCOME
▪ Students are able to understand the knowledge required in instrumentation techniques ▪ Students are able to understand the instrument, its role and function in the industry ▪ Students know the physics and function of the instrument in the process control simulator ▪ Students know the profession and types of instrumentation engineering work ▪ Students understand the opportunities and challenges of instrument engineering in the era of the industrial revolution 4.0.
MAIN SUBJECT
▪ Vision and Mission of ITS, Vision and Mission of the Vocational Faculty, Vision and Mission of the Instrumentation Engineering Department ▪ Instrumentation Engineering roles and perspectives ▪ Instrumentation Engineering Department curriculum ▪ Competencies of Graduates of the Instrumentation Engineering Department ▪ Instrumentation Engineering Science in dealing with the issue of the industrial revolution 4.0 ▪ Physical and instrument function ▪ Profession and type of work Instrument Engineer ▪ Application of scientific Instrument Engineer case 1 ▪ Application of scientific Instrument Engineer case 2 ▪ Application of scientific Instrument Engineer case 3 ▪ Application of scientific Instrument Engineer case 4 ▪ Application of scientific Instrument Engineer case 5
PREREQUISITES
REFERENCE - ITS pocket book - Instrumentation Engineering Department curriculum

COURSE	**Course Name**	:
	Course Code	:
	Credit	:
	Semester	:

DESCRIPTION OF COURSE
LEARNING OUTCOMES
▪
COURSE LEARNING OUTCOME
▪
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▪
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REFERENCE - ITS pocket book - Instrumentation Engineering Department curriculum