



**MODULE HANDBOOK DESCRIPTION**

Module designation	Electronic Instrumentation System
Code	FBB3105
Semester(s) in which the module is taught	5 / third year
Person responsible for the module	I Made Budi Suksmadana, S.T., M.T.
Language	Indonesian
Relation to curriculum	Elective for Electronics Engineering
Teaching methods	Lecture, small group discussion, case base method.
Workload (incl. contact hours, self-study hours)	Contact minutes every week, each week of the 16 weeks/semester: <ul style="list-style-type: none"><li>• Lectures: 3 x 50 minutes</li><li>• Exercises and Assignments: 3 x 60 minutes</li><li>• Private study: 3 x 60 minutes.</li></ul> Total study hours = 8 hours 30 minutes/week
Credit points	3 (~ 4.8 ECTS)
Required and recommended prerequisites for joining the module	- Electrical Measurement (FBS2123) - Digital Electronics (FBB3103)

<p>Module objectives/ intended learning outcomes</p>	<ol style="list-style-type: none"> <li>1. Students are able to explain electronic Instrumentation System (terminology, performance characteristics, dynamic characteristics, types of errors, measurement Standards)</li> <li>2. Students are able to explain direct current &amp; Alternating Current meter (DC Voltmeters, Ohmmeter, Multimeter, DC Meter with Amplifier, Alternating Current-Indicating Instruments, Rectifier-Type Instruments, AC Current Measurement and Digital Voltmeter)</li> <li>3. Students are able to explain Waveform Generator (Considerations in Choosing an Oscillator or Signal Generator, Sine Wave Generator, Frequency-Synthesised Signal Generator and Function Generator)</li> <li>4. Students are able to explain Signal Analyzers (Wave Analyser, Harmonic Distortion, Spectrum Analyser, Power Analyzer and Oscillators)</li> <li>5. Students are able to explain Oscilloscopes (Cathode Ray Oscilloscope, Time Base Generators and Lissajous Figures)</li> <li>6. Students are able to explain DC and AC Bridges</li> <li>7. Students are able to explain Transducers (Classification of Transducers, Active and Passive Transducers, Force and Displacement Transducers and Resistance Strain Gauges)</li> </ol>	<p>PLO3 and PLO4</p>
	<ol style="list-style-type: none"> <li>8. Students are able to design a DC circuit simulation and how to measure voltage and current</li> <li>9. Students are able to design an AC circuit simulation and how to measure voltage and current</li> <li>10. Students are able to design an AC circuit simulation and display the shape of the signal</li> </ol>	<p>PLO4 and PLO5</p>

Content	Introduction to Measurements and Instruments, Waveform Generators, Signal Analysers, Oscilloscopes, Special Types of CROs, DC and AC Bridges, Transducers and Other Types of Transducers
Examination forms	<ul style="list-style-type: none"> <li>- Multiple choice examination,</li> <li>- Project presentation.</li> </ul>
Study and examination requirements	<p>The final grade in the module is composed of:</p> <ul style="list-style-type: none"> <li>a. Midterm exam = 25%</li> <li>b. Final exams = 25%</li> <li>c. Project = 50%</li> </ul> <p>Students must have a final grade of 65% or higher to pass</p>
Reading list	<ol style="list-style-type: none"> <li>1. K. Lal kishore, Electronic Measurements and Instrumentation, 2010.</li> <li>2. D. Patranabis, Principles of Electronic Instrumentation, 2008.</li> </ol>

