UIN SUNAN KALIJAGA YOGYAKARTA

FACULTY OF SCIENCE AND TECHNOLOGY

Jl. Marsda Adisucipto Yogyakarta 55281, Telp:+62274519739, Fax:+62274540971,
E-mail: fst@uin-suka.ac.id, website: http://saintek.uin-suka.ac.id/

Undergraduate Programme in Physics

Telp : +62274 519739
Email : fisika@uin-suka.ac.id
Website : https://fisika.uin-suka.ac.id/

MODULE HANDBOOK

Module Name	Measurement and Instrumentation
Module level, if applicable	Bachelor
Code, if applicable	FIS415003
Subtitle, if applicable	-
Courses, if applicable	Measurement and Instrumentation (Pengukuran dan Instumentasi)
Semester(s) in which the module is taught	1st (first)
Person responsible for the module	Chair of Instrumentation Interest Area
Lecturer(s)	Frida Agung Rakhmadi, S.Si., M.Sc
Language	Indonesia
Relation to curriculum	Conpulsary course in the first year (1st semester) Bachelor Degree
Type of teaching, contact hours	150 minutes lectures and 180 minutes structured activities per week.
Workload	Total workload is 136 hours per semester, which consists of 150 minutes lectures per week for 14 weeks, 180 minutes structured activities per week, 180 minutes individual study per week, in total is 16 weeks per semester, including mid exam and final exam
Credit points	3
Requirements according to the examination regulations	Minimum attendance 75%
Recommended prerequisites	No prerequisites stated on
Module objectives/intended learning outcomes	After completing this course, the students: CO 1. Understand the position of measurements in experiments and the position of instrumentation in measurements CO 2. Understand various measuring instruments CO 3. Understand and apply the dynamic and static characteristics of measuring instruments CO 4. Understand the types of errors in measurement CO 5. Understand and apply measurement uncertainty theory CO 6. Understand the various types of power supplies CO 7. Understand the types of sensors as input devices for measuring instruments and signal conditioning CO 8. Understand output devices in measuring instruments.
Content	a. Basics of measuring instruments b. Various measuring instruments c. Static and dynamic characteristics of measuring instruments. d. Errors in Measurements e. Measurement uncertainty f. Regulated power supply and switching power supply

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<table>
<tr><td></td><td>g. Input devices: types of sensors
h. Simple signal processing
i. Output devices</td></tr>
<tr><td>Study and examination requirements and forms of examination</td><td>The final mark will be weighted as follows:
<table>
<tr><th>NO</th><th>Assessment methods (components, activities)</th><th>Weight (percentage)</th></tr>
<tr><td>1</td><td>Final Examination</td><td>35%</td></tr>
<tr><td>2</td><td>Mid-Term Examination</td><td>35%</td></tr>
<tr><td>3</td><td>Class Activities : Quiz, Homework, etc.</td><td>30%</td></tr>
</table>
The final assessment is expressed in the form of a letter value converted from a number value with the following categories:
<table>
<tr><th>NO</th><th>Number Value</th><th>Letter Value</th><th>NO</th><th>Number Value</th><th>Letter Value</th></tr>
<tr><td>1</td><td>≥ 95</td><td>A</td><td>7</td><td>65-69.99</td><td>B/C</td></tr>
<tr><td>2</td><td>90-94.99</td><td>A-</td><td>8</td><td>60-64.99</td><td>C+</td></tr>
<tr><td>3</td><td>85-89.99</td><td>A/B</td><td>9</td><td>55-59.99</td><td>C</td></tr>
<tr><td>4</td><td>80-84.99</td><td>B+</td><td>10</td><td>50-54.99</td><td>C-</td></tr>
<tr><td>5</td><td>75-79.99</td><td>B</td><td>11</td><td>55-34.99</td><td>D</td></tr>
<tr><td>6</td><td>70-74.99</td><td>B-</td><td>12</td><td><35</td><td>E</td></tr>
</table></td></tr>
<tr><td>Media employed</td><td>White-board, Lcd Projector, e-learning (https://daring.uin-suka.ac.id/)</td></tr>
<tr><td>Reading list</td><td>1. Alan S Morris dan Reza Langari. 2016. *Measurement and Instrumentation: Theory and Application, Second Edition*. Academic Press.
2. Paolo Fornasini. 2008. *The Uncertainty in Physical Measurements*. Springer.</td></tr>
</table>

PLO and CO Mapping

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9
CO 1		√							
CO 2		√							
CO 3		√		√					
CO 4		√		√					
CO 5		√		√	√				
CO 6		√							
CO 7		√							
CO 8		√							