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Undergraduate Programme in Physics

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MODULE HANDBOOK

Module Name	Telemetry System
Module level, if applicable	Bachelor
Code, if applicable	FIS425071
Subtitle, if applicable	-
Courses, if applicable	Telemetry System (Sistem Telemetri)
Semester(s) in which the module is taught	5th (fifth)
Person responsible for the module	Chair of Instrumentation Interest Area
Lecturer(s)	Frida Agung Rakhmadi, S.Si., M.Sc and Rochan Rifai, S.Si., M.Sc.
Language	Indonesia
Relation to curriculum	Elective course in the third year (5th 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% All assignments must be submitted before the exam
Recommended prerequisites	No prerequisites stated on
Module objectives/intended learning outcomes	After completing this course, the students: CO 1. Understanding the meaning of a telemetry system, its position in instrumentation, and its application CO 2. Understanding the elements in the telemetry system and their functions CO 3 Understanding the classification of telemetry systems based on their transmission media and modulation techniques CO 4 Understanding the various types of data transmission in telemetry CO 5 Creating a radio frequency based telemetry system CO 6 Understanding the IoT telemetry system and nodeMCU ESP822 microcontroller and practicing it to turn on the LED CO 7 Making Blynk, Telegram, and MQTT IoT telemetry systems and presenting the process and results CO 8 Evaluating telemetry systems, processing data, and discussing results
Content	a. Understanding telemetry. b. Components of telemetry system. c. Basic physics in telemetry. d. Transmission methods of analog data. e. Transmission methods of digital data. f. Radio telemetry system. g. IoT telemetry system.

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<table>
<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. Frank Carden et.al. 2002. Telemetry System Engineering. Artech House
2. Ondrej Krejcar. 2012. Modern Telemetry. InTech
3. Jiefu Chen et.al. 2019. Borehole Electromagnetic Telemetry System. 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		√	√	√	√				