



UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF PHYSICS EDUCATION
PHYSICS STUDY PROGRAM

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Bachelor of Physics

MODULE HANDBOOK

Module name:	Systems and Signals
Module level, if applicable:	Undergraduate Program
Code:	FSK6346
Sub-heading, if applicable:	-
Classes, if applicable:	B-E
Semester:	5
Module coordinator:	Fika Fauzi, S. Si., M. Sc.
Lecturer(s):	Fika Fauzi, S. Si., M. Sc.
Language:	Bahasa Indonesia
Classification within the curriculum:	Elective Course
Teaching format / class hours per week during the semester:	150 minutes lectures and 180 minutes structured activities per week.
Workload:	Total workload is 91 hours per semester which consists of 150 minutes lectures, 180 minutes structured activities, and 180 minutes individual study per week for 16 weeks.
Credit points:	3 SKS (4.86 ECTS)
Prerequisites course(s):	
Course Outcomes	After succesful completion of the course, the student is able to: <ol style="list-style-type: none">1. identify the difference between discrete-time and continuous-time signals, to solve filtering and dynamical problems related to signals and to understand their importance on systems theory and on digital signal processing2. understand and to perform linear operations on signals

	<ol style="list-style-type: none"> 3. do frequency-domain analysis on signals via Fourier and Laplace transformation 4. do a simple signal processing and manipulation 5. construct a system representation that describes the relation between a pair of input-output signals 																																
<p>Content:</p>	<p>In this course, the students will learn basic knowledge on both discrete-time and continuous-time signals, and their applications. A number of mathematical theories for understanding the basic properties of signals and for describing the dynamical behavior of a system will be discussed in detail. The topics that are covered in the class include:</p> <ol style="list-style-type: none"> 1. Continuous-time and discrete-time signals 2. Linear time-invariant (LTI) systems: described by linear differential/difference equations, by state-space equations and by transfer functions 3. Basic signal processing in real-life applications: audio signals, filter, convolution, power-spectral density plot, fast-Fourier transform plot 4. Periodic signals: Fourier series 5. Convolution and Fourier transform 6. Laplace transform 																																
<p>Study / exam achievements:</p>	<p>Course evaluation will be carried out through (1) weekly assignments, (2) midterm exam (written), and (3) final exam (written). Determination of final grade is as follows:</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;">Final score = 35% assignments + 35% midterm exam + 30% final exam</p> </div> <p>The final score then converted into the grade as follows:</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Final score</th> <th colspan="2">Conversion</th> </tr> <tr> <th>Grade</th> <th>Points</th> </tr> </thead> <tbody> <tr> <td>86 – 100</td> <td>A</td> <td>4.00</td> </tr> <tr> <td>81 – 85</td> <td>A-</td> <td>3.67</td> </tr> <tr> <td>76 – 80</td> <td>B+</td> <td>3.33</td> </tr> <tr> <td>71 – 75</td> <td>B</td> <td>3.00</td> </tr> <tr> <td>66 – 70</td> <td>B-</td> <td>2.67</td> </tr> <tr> <td>61 – 65</td> <td>C+</td> <td>3.33</td> </tr> <tr> <td>56 – 60</td> <td>C</td> <td>2.00</td> </tr> <tr> <td>41 – 55</td> <td>D</td> <td>1.00</td> </tr> <tr> <td>0 – 40</td> <td>E</td> <td>0.00</td> </tr> </tbody> </table> <p>For passing this course, students must obtain grade D or higher.</p>	Final score	Conversion		Grade	Points	86 – 100	A	4.00	81 – 85	A-	3.67	76 – 80	B+	3.33	71 – 75	B	3.00	66 – 70	B-	2.67	61 – 65	C+	3.33	56 – 60	C	2.00	41 – 55	D	1.00	0 – 40	E	0.00
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0 – 40	E	0.00																															

Forms of media:	Board and LCD Projector
Literature:	Alan V. Oppenheim, 1996, Signal and Systems, Second edition, Prentice Hall Upper Saddle River, New Jersey

PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
CO1		✓						
CO2		✓						
CO3		✓						
CO4					✓			
CO5					✓			