



**Bachelor of Physics**

**MODULE HANDBOOK**

Module name:	Mathematical Physics II	
Module level, if applicable:	Undergraduate	
Code:	FI240	
Sub-heading, if applicable:	-	
Classes, if applicable:	-	
Semester:	3 <sup>rd</sup>	
Module coordinator:	Andi Suhandi	
Lecturer(s):	Andi Suhandi	
Language:	Bahasa Indonesia	
Classification within the curriculum:	Compulsory Course	
Type of Teaching	Contact hours per week during the semester	Class Size
1. Lecture (conceptual, contextual and problem-solving approaches through expository, discussions and practical methods). 2. Structured activities (assignments based on conceptual, contextual and problem-solving approaches) 3. Self-study (reading literature)	3 hour 20 minutes	45
Workload:	The total workload is 181 hours 20 minutes (6.4 ECTS) per semester, consisting of 40 hours/2400 minutes lectures (1.41 ECTS), 56 hours/3360 minutes structured activities (1.98 ECTS) and 56 hours/3360 minutes self-study (1.98 ECTS) per week for 12 weeks, 29 hour 11 minutes for four exams (1.03 ECTS)	
Credit points:	6.4 ECTS	
Pre-requisites course(s):	Mathematical Physics I	

Course learning outcomes:	<p>After taking this course the students have ability to:</p> <p>CLO1. Have conceptual knowledge of vector quantities, notations, and terminology, as well as examples in physics.</p> <p>CLO2. Have procedural knowledge about vector addition, multiplication of vector quantities, differentiation of vector quantities, and integration of vector quantities.</p> <p>CLO3. Have conceptual and procedural knowledge about solving a problem of integration of a function by using various special functions in the integral form.</p> <p>CLO4. Have conceptual and procedural knowledge about solving a problem using Legendre polynomials, Legendre series, various forms and types of Bessel functions, Hankel functions, Laguerre polynomials and Hermite polynomials.</p> <p>CLO5. Have conceptual and procedural knowledge about the use of various partial differential equations, Laplace equation, diffusion equation, and wave equation in the study and analysis of a relevant physical phenomenon.</p> <p>CLO6. Have conceptual and procedural knowledge about the use of various mathematical operations of complex numbers.</p> <p>CLO7. Have conceptual and procedural knowledge about the use of complex variable functions in solving the relevant problem.</p> <p>CLO8. Have conceptual and procedural knowledge of integral transforms, Laplace transforms, Fourier transforms, convolutions, Parseval theorem, inverse Laplace transforms (Bromwich Integral), delta Dirac functions, and Green functions.</p>																																			
Content:	Vector Analysis, Special Functions-1 (Gamma, Beta, Error, Zeta-Riemann Function, Stirling's Formula, and Elliptic Integral), Special Function-2 (Legendre Polynomials, Bessel Function, Laguerre Polynomial, Hermite Polynomial), Partial Differential Equations, Complex number, Function of a Complex Variable, and Integral Transforms.																																			
Study/exam achievements:	<p>The final mark will be weight as follow:</p> <table border="1" data-bbox="676 1532 1481 1944"> <thead> <tr> <th>No</th> <th>CLO</th> <th>Assessment Object</th> <th>Assessment Techniques</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CLO1 – CLO8</td> <td>Subject specific competences: a. Individual assignments b. Exam</td> <td>Written</td> <td>20%</td> </tr> <tr> <td></td> <td></td> <td>- Test 1</td> <td>Written test</td> <td>20%</td> </tr> <tr> <td></td> <td></td> <td>- Test 2</td> <td>Written test</td> <td>20%</td> </tr> <tr> <td></td> <td></td> <td>- Test 3</td> <td>Written test</td> <td>20%</td> </tr> <tr> <td></td> <td></td> <td>- Test 4</td> <td>Written test</td> <td>20%</td> </tr> <tr> <td colspan="4">Total</td> <td>100%</td> </tr> </tbody> </table>	No	CLO	Assessment Object	Assessment Techniques	Weight	1	CLO1 – CLO8	Subject specific competences: a. Individual assignments b. Exam	Written	20%			- Test 1	Written test	20%			- Test 2	Written test	20%			- Test 3	Written test	20%			- Test 4	Written test	20%	Total				100%
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Forms of media:	Board, LCD Projector, Laptop/Computer, LMS																																			

