

Module Handbook

Module Name:	Computational Physics
Module Level:	Bachelor
Abbreviation, if applicable:	FI3201
Sub-heading, if applicable:	
Courses included in the module, if applicable:	
Semester/term:	third year
Module coordinator(s):	
Lecturer(s):	
Language:	Bahasa Indonesia
Classification within the curriculum:	General Studies / Major Subject / Elective Studies
Teaching format / class hours per week during the semester:	3 hours lectures
Workload:	3 hours lectures, 4 hours individual study, 2 hours laboratory work per week, 16 weeks per semester, and total 144 hours a semester
Credit Points:	3
Requirements:	-
Learning goals:	<p>Knowledge</p> <ul style="list-style-type: none"> - Demonstrate knowledge to understand physical problems. <p>Skill</p> <ul style="list-style-type: none"> - Demonstrate ability to analyze a physical system using simplification techniques. - Demonstrate ability to develop a computer code as interfacing between algorithm and machine. - Demonstrate ability to transform a continuous system into a discrete form. <p>Competence</p> <ul style="list-style-type: none"> - Demonstrate competence to formulate a physical model of a complex system
Content:	Introduction, roots of equations, matrices and systems of linear equations, optimization and curve fitting and interpolation, integration and differentiation, Ordinary Differential Equations, Partial Differential Equations, and Soft Computing which contains material on Neural Networks Systems and Kernel Machine. Interpolation, Ordinary Differential Equation, and Soft Computing are implemented in Physical System Modeling.
Study/exam achievements:	Students are considered to be competent and pass if at least get 50% of maximum mark of the exams, homework, laboratory work.
Forms of Media:	Slides and LCD projectors, blackboards, lab.
Literature:	<ol style="list-style-type: none"> 1. Krister Ahlersten, An Introduction to Matlab Publisher: BookBoon 2012 ISBN-13: 9788740302837 2. W. H. Press, W.T. Vettering, et.al (2002) Numerical Recipes in C, The Art of Scientific Computing, Cambridge Press 3. Franz J. Vesely: Computational Physics - An Introduction Second Edition, Kluwer Academic / Plenum Publishers, New York-London 2001. ISBN 0-306-46631-7
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