



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:	Advanced Colloidal Physics
Module level, if applicable:	Undergraduate
Code:	FSK6255
Sub-heading, if applicable:	-
Classes, if applicable:	-
Semester:	5 <sup>th</sup>
Module coordinator:	Suparno, Ph.D.
Lecturer(s):	Suparno, Ph.D.
Language:	Bahasa Indonesia
Classification within the curriculum:	Elective Course
Teaching format / class hours per week during the semester:	100 minutes lectures ,120 minutes structured activities, and 120 minutes individual study per week
Workload:	Total workload is 90,67 hours per semester which consists of 100 minutes lectures, 120 minutes structured activities, and 120 minutes individual study per week for 16 weeks.
Credit points:	2 SKS (3.25 ECTS)
Prerequisites course(s):	Basic Colloidal Physics (FSK6228)
Course Outcomes	A. mastering the DLVO and non-DLVO interaction forces B. mastering the interactions between particles with solvents and additives C. analyze the process of charge formation on the particle surface and change the charge on the particle surface D. able to characterize the interaction of particle forces with techniques Atomic Force Microscope (AFM), Scanning

	Tunneling Microscope (STM) and Surface Force Apparatus (SFA).															
Content:	This course discusses interactions between particles, processes of formation and change of charge on the particle surface, changes, DLVO and non-DLVO interaction forces, and characterization techniques with Atomic Force Microscope (AFM), Scanning Tunneling Microscope (STM) and Surface Force Apparatus (SFA).															
Study / exam achievements:	<p>The final mark will be weight as follow:</p> <table border="1"> <thead> <tr> <th>No</th> <th>CO</th> <th>Assessment Object</th> <th>Assessment Technique</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CO1, CO2, CO3, and CO4</td> <td>a. Assignment (Individual, Case Study) b. Mid c. Final Exam</td> <td>Written Test</td> <td>50%</td> </tr> <tr> <td colspan="4">Total</td> <td>100%</td> </tr> </tbody> </table>	No	CO	Assessment Object	Assessment Technique	Weight	1	CO1, CO2, CO3, and CO4	a. Assignment (Individual, Case Study) b. Mid c. Final Exam	Written Test	50%	Total				100%
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1	CO1, CO2, CO3, and CO4	a. Assignment (Individual, Case Study) b. Mid c. Final Exam	Written Test	50%												
Total				100%												
Forms of media:	Board, LCD Projector, Laptop/Computer															
Literature:	<p>A. The Colloidal Domain: Where Physics, Chemistry, Biology and Technology Meet, D Fennel Evans and Hakan Wernerstrom, John Wiley &amp; Sons, New York, 1999.</p> <p>B. Dinamika Partikel Koloid, Suparno, UNY press, Yogyakarta, 2012.</p>															

### PLO and CO mapping

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