UNIVERSITAS PENDIDIKAN INDONESIA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES EDUCATION
DEPARTMENT OF PHYSICS EDUCATION
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Module name:	Nanomaterial	
Module level, if applicable:	Undergraduate	
Code:	FI586	
Sub-heading, if applicable:	-	
Classes, if applicable:	-	
Semester:	7th	
Module coordinator:	Endi Suhendi	
Lecturer(s):	Endi Suhendi	
Language:	Bahasa Indonesia	
Classification within the curriculum:	Elective course	
Type of Teaching	Contact hours per week during the semester	Class Size
1. Lecture (conceptual, contextual and problem-solving approaches, discussions and presentation). 2. Structured activities (assignments based on conceptual, contextual and problem-solving approaches) 3. Self-study (reading literature)	1 hour 40 minutes	25
Workload:	The total workload is 91 hours/5440 minutes (3.2 ECTS) per semester, consisting of 25 hour 20 minutes/1400 minutes lectures (0.82 ECTS), 28 hours/1680 minutes structured activities (0.98 ECTS) and 28 hours/1680 minutes self-study (0.98 ECTS) per week for 14 weeks, 11 hour 54 minutes/714 minutes for two exams and exam preparations (0.42 ECTS).	
Credit points:	3.2 ECTS	
Pre-requisites course(s):	Basic Physics 1, Basic Physics 2	

<table>
<tr><td>Course learning outcomes:</td><td>After taking this course the students have ability to:
CLO1. Explain the need for nanometer-sized materials.
CLO2. Analyze the effect of size on material properties.
CLO3. Explain the synthesis and characterization of nanometer-sized materials.
CLO4. Explain the concept, synthesis, characterization, and application of quantum dot material.
CLO5. Explain the concept, synthesis, characterization, and application of nano wire.
CLO6. Explain nanocomposite materials.
CLO7. Analyze the properties, synthesis, characterization, and application of the latest nanomaterials (carbon nanotubes and graphene).</td></tr>
<tr><td>Content:</td><td>Knowledge of the need for nanometer-sized materials; Effect of size on material properties; properties, synthesis and application of quantum dot materials, nanowires, nanocomposites, and the latest nanomaterials (carbon nanotubes and graphene).</td></tr>
<tr><td>Study/exam achievements:</td><td>The final mark will be weight as follow:
<table>
<tr><th>No</th><th>CLO</th><th>Assessment Object</th><th>Assessment Techniques</th><th>Weight</th></tr>
<tr><td>1</td><td>1 - 6</td><td>Subject specific competences:
- Assignment
- Class activity
- Midterm exam</td><td>Written
Performance
Written test</td><td>10%
10%
30%</td></tr>
<tr><td>2</td><td>7</td><td>Subject specific competences:
- Presentation
- Final exam</td><td>Performance
Written test</td><td>20%
30%</td></tr>
<tr><td colspan="4">Total</td><td>100%</td></tr>
</table></td></tr>
<tr><td>Forms of media:</td><td>Board, LCD Projector, Laptop/Computer</td></tr>
<tr><td>Literature:</td><td>1. Pokropivny, V., Lohmus, R., Hussainova, I., Pokropivny, A., & Vlassov, S. (2007). Introduction to Nanomaterials and Nanotechnology, Tartu University Press.
2. Abdullah, M. (2009). Pengantar Nanosains, Penerbit ITB.
3. Vollath, D. (2013). Nanomaterials: An Introduction to Synthesis, Properties and Applications, 2nd Edition, Wiley-VCH.</td></tr>
</table>

PLO and CLO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12
CLO1	√											
CLO2	√											
CLO3	√											

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12
CLO4	√											
CLO5	√											
CLO6	√											
CLO7	√											