



**UNIVERSITAS NEGERI YOGYAKARTA**  
 FACULTY OF MATHEMATICS AND NATURAL SCIENCES  
 DEPARTMENT OF CHEMISTRY  
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**Bachelor of Science in Chemistry**

**MODULE HANDBOOK**

Module name:	Physical Methods for Analysis of Chemical Compounds							
Module level, if applicable:	Undergraduate							
Code:	KMA 6248							
Sub-heading, if applicable:	-							
Classes, if applicable:	-							
Semester:	7 <sup>th</sup>							
Module coordinator:	Prof. Dr. Endang Widajanti LFX							
Lecturer(s):	Prof. Dr. Eli Rohaeati							
Language:	Bahasa Indonesia and English							
Classification within the curriculum:	Elective Subject							
Teaching format / class hours per week during the semester:	100 minutes lectures, 120 structured activities and 120 individual study per week							
Workload:	Total workload is 90,67 hours per semester which consists of 100 minutes lectures, 120 structured activities and 120 individual study per week for 16 weeks							
Credit points:	2 SKS (3 ECTS)							
Prerequisites course(s):	-							
Course Outcomes	After taking this course, the students are expected to be able to: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;">CO1</td> <td>Analyzing the function of various physical methods in analyzing chemical compounds</td> </tr> <tr> <td style="text-align: center;">CO2</td> <td>Evaluating various research results related to physics methods in analyzing chemical compounds</td> </tr> <tr> <td style="text-align: center;">CO3</td> <td>Prepare reports and present the results of the analysis of chemical compounds by applying one of the physical methods</td> </tr> </table>		CO1	Analyzing the function of various physical methods in analyzing chemical compounds	CO2	Evaluating various research results related to physics methods in analyzing chemical compounds	CO3	Prepare reports and present the results of the analysis of chemical compounds by applying one of the physical methods
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CO3	Prepare reports and present the results of the analysis of chemical compounds by applying one of the physical methods							
Content:	Discuss the basic concepts and various physical methods for the analysis of chemical compounds, as well as the development of physical methods in the analysis of chemical compounds based on research that has been done. <ul style="list-style-type: none"> <li>• Development of Basic Concepts of Physical Methods for Analysis of Chemical Compound</li> <li>• Determination of Molecular Mass</li> <li>• Determination of Thermal Properties</li> <li>• Determination of Particle Size</li> <li>• Observation of Surface Morphology with SEM and TEM</li> <li>• Analysis of Crystallinity</li> <li>• Cluster Function Analysis</li> <li>• Reology and Mechanical Properties</li> <li>• Solubility and Solubility Parameters Metode Fisika untuk</li> <li>• Analisis Organoleptis Bahan Tekstil</li> </ul>							

	<ul style="list-style-type: none"> <li>Physical Methods for Nanoparticle Characterization</li> </ul>															
Study / exam achievements:	<p>Attitude assessment is carried out at each meeting by observation and/or self-assessment techniques using the assumption that basically every student has a good attitude. The student is marked very good or not good attitude if they show it significantly compared to other students in general. The result of attitude assessment is not taken into account in the final grades, but as one of the requirements to pass the course. Students will pass from this course if at least have a good attitude. 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,</td> <td>a. Assignments b. Activity c. Final Exam d. Midterm Exam</td> <td>Presentation / written test</td> <td>20% 20% 30% 30%</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,	a. Assignments b. Activity c. Final Exam d. Midterm Exam	Presentation / written test	20% 20% 30% 30%	Total				100%
No	CO	Assessment Object	Assessment Technique	Weight												
1	CO1, CO2, CO3,	a. Assignments b. Activity c. Final Exam d. Midterm Exam	Presentation / written test	20% 20% 30% 30%												
Total				100%												
Forms of media:	Handout, Board, LCD Projector, Laptop/Computer, Module															
References:	<ol style="list-style-type: none"> <li>Brown, M.E., (2001), <i>Introduction of Thermal Analysis : Techniques and Applications</i>, 2nd Edition, Kluwer Academic Publishers, Dordrecht.</li> <li>Anicuta, S.G., Dobre, L., Stroesca, M., Jipa, I., (2010), <i>Fourier Transform Infrared (FTIR) Spectroscopy for Characterization of Antimicrobial Films Containing Chitosan</i>, <i>Analele Universităţii din Oradea Fascicula: Ecotoxicologie, Zootehnie și Tehnologii de Industrie Alimentară</i>, 1234-1240.</li> <li>Brugnerotto, J., Lizardi, J., Goycoolea, F.M., Arguella-Monal, W., Desbrieres, J., dan Rinaudo, M., (2001), An Infrared Investigation in Relation with Chitin and Chitosan Characterization, <i>Polymer</i> Vol. 42, No. 1. pp 3569-3580.</li> <li>Zhong, Q.P, dan Xia, W.S., (2008), Physicochemical Properties of Edible and Preservative Films from Chitosan/Cassava Starch/Gelatin Blend Plasticized with Glycerol, <i>Biotechnol</i>, Vol. 46, No. 3. pp 262–269.</li> <li>F. W. Billmeyer, JR. (1998) <i>Textbook of Polymer Science</i>. Amerika : John Wiley &amp; Sons, Inc.</li> <li>Rohaeti, E. (2015). <i>Sintesis Poliuretan Ramah Lingkungan</i>. UNY Press, Yogyakarta.</li> <li>Rohaeti, E. (2017). Kajian tentang kain poliester antibakteri dan antikotor. <i>Prosiding Seminar Nasional Kimia UNY 2017</i>, 285–296</li> <li>Rohaeti, E. (2018). <i>Kimia Polimer</i>. UNY Press, Yogyakarta.</li> <li>Rohaeti, E. (2019). <i>Kimia Makromolekul: Tekstil Antibakteri</i>. UNY Press, Yogyakarta.</li> <li>Rohaeti, E., Budiasih, K. S., Rakhmawati, A., Nuraini, E., &amp; Kusumastuti, C. (2019). Assessment of extract of musa paradisiaca Linn. in producing nanoparticles to enhance quality of nylon fabric. <i>Rasayan Journal of Chemistry</i>. 12(3), 1352-1359. DOI: <a href="http://dx.doi.org/10.31788/RJC.2019.1235179">http://dx.doi.org/10.31788/RJC.2019.1235179</a></li> </ol>															

	<p>11.Rohaeti, E. Kasmudjiastuti, R S. Murti, &amp; D. Irwanto. (2020). Enhancement of antibacterial activity of suede leather through coating silver nanoparticles synthesized using <i>piper betle</i>. <i>Rasayan Journal of Chemistry</i>. 13(1), 628-635. DOI: <a href="http://dx.doi.org/10.31788/RJC.2020.1315516">http://dx.doi.org/10.31788/RJC.2020.1315516</a></p> <p>12.Rohaeti, E., Mujiyono, &amp; Rochmadi. (2015a). Biokomposit dari serat rami dan sekresi kudu lak termodifikasi dengan lateks terhidrasi dan tidak terhidrasi. <i>Majalah Kulit, Karet, dan Plastik</i>. 31(1), 23-35.</p>
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### PLO and CO mapping

	PLO										
	Attitude	General Skill			Knowledge				Specific Skill		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	
CO1					√						
CO2							√				
CO3									√		