Module Descriptions

A **module** is a self-contained **learning unit** within a higher education program that includes thematically related courses and is assigned a **fixed number of credits**. It follows specific **learning objectives**, includes an **assessment component**, and contributes to achieving the qualifications of a degree program. In some countries, “modules” are also named “courses”.

Please provide a module description for each module. In addition to the compulsory and elective modules, this also includes credited internships and the final thesis.

Please summarize all module descriptions in one document (Module Handbook) and create a table of contents so that the modules can be found easily.

Module designation	*Molecular Dynamics*
Semester(s) in which the module is taught	1
Person responsible for the module	*1. Prof. Dr. Dra. Eli Rohaeti, M.Si.* *2. Drs. Heru Pratomo Aloysius, M.Si.*
Language	*Indonesian*
Relation to curriculum	*Compulsory ~~/ elective / specialisation~~*
Teaching methods	*Lecture, discussion, experiment/practice, assignment/independent study, quiz/evaluation*
Workload (incl. contact hours, self-study hours)	*(Estimated) Total workload:* *150 minutes/week for class learning*
Credit points	*3 credits/SKS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	*On successful completion of the course students should be able to:* 1. *Determine the reaction rate, rate law, and factors affecting it, consecutive reaction rate* 2. *Determine stages of the reaction rate,* 3. *Explain the meaning of conductance, conductivity, and molar conductivity of solutions* 4. *Calculate Ka, Kw, and Ksp, calculate transport numbers* 5. *Analyze the concept of diffusion* 6. *Determine the average molar mass, with osmometric, viscometric, and sedimentation techniques* 7. *Analyze Donna's balance*

<table>
<tr><td>Content</td><td>

1. *Reaction kinetics*
2. *Conductivity*
3. *Equilibrium and conductivity constants*
4. *Ion movement*
5. *Transport numbers*
6. *Diffusion*
7. *Macromolecular Average Molar Mass*
8. *Interfacial tension and viscosity*
9. *Polarimetry*
10. *Adsorption*
11. *Osmometry*

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<tr><td>Examination forms</td><td>Attendance/activity, Presentations, Quiz, Assignments, Case Study, Midterm Test, Final Exam</td></tr>
<tr><td>Study and examination requirements</td><td>

<table>
<tr><th>No</th><th>Assessment Techniques</th><th>Percentage Weight Assessment</th><th>Information</th></tr>
<tr><td rowspan="6">1.</td><td>Cognitive</td><td>45</td><td>Maximum assessment weight accumulation of 50%</td></tr>
<tr><td>a. Presentation</td><td>5</td><td></td></tr>
<tr><td>b. Quiz</td><td>5</td><td></td></tr>
<tr><td>c. Assignments</td><td>5</td><td></td></tr>
<tr><td>d. Midterm test</td><td>15</td><td></td></tr>
<tr><td>e. Final Test</td><td>15</td><td></td></tr>
<tr><td rowspan="3">2.</td><td>Participatory</td><td>55</td><td>Minimum assessment weight accumulation of 50%</td></tr>
<tr><td>a. Case Studies</td><td>25</td><td></td></tr>
<tr><td>b. Team Based Project</td><td>30</td><td></td></tr>
<tr><td colspan="2">TOTAL</td><td>100</td><td></td></tr>
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<tr><td>Reading list</td><td>

Atkins, P.W. (1997). *Physics Chemistry, Volume 2 (translation).* Jakarta: Erlangga.
Levine, Ira N. (2003). *Physical Chemistry.* Boston: McGraw-Hill.
Laidler, Keith J. (1987). *Chemical Kinetics.* New York: Harper Collins.

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Prepared by	Verified by:	Authorized by:
		Program Study Coordinator