

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	Natural Sciences Perspective
Semester(s) in which the module is taught	1 st
Person responsible for the module	<i>Anggiyani Ratnaningtyas, Ph.D</i> <i>Metridewi Primastuti, M.Pd</i>
Language	<i>Bahasa Indonesia</i>
Relation to curriculum	<i>Compulsory /elective/specialisation</i>
Teaching methods	<i>Lecture, discussion, project</i>
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload:</i> <i>100 minutes/week for class learning</i> <i>170 minutes/week for independent learning</i>
Credit points	<i>2 SKS (3.2 ECTS)</i>
Required and recommended prerequisites for joining the module	-

Module objectives/intended learning outcomes	<p><i>On successful completion of the course students should be able to:</i></p> <ol style="list-style-type: none">1. show an attitude of responsibility in doing their work independently2. explain natural phenomena between biological, chemical, physical aspects in an integrated manner according to their scientific fields3. analogize natural events and their principles in macro and micro as a means of educating themselves in accordance with scientific philosophy between epistemological and axiological ontologism4. analyze the work of previous scientists based on the steps of scientific method then apply it in the present actual problems5. understand the role of mathematics and sciences in technology research and sciences																		
Content	<p>This course aims to provide students with an integrated understanding of the sciences of mathematics and natural sciences. It covers theories on how to integrate various scientific disciplines for the development of chemistry, integration of each system, and the role of mathematics and natural sciences in the development of research and technology. The course consists of:</p> <ul style="list-style-type: none">• photosynthesis and the food chain• the philosophy of science• logic• principles of decision-making• the scientific method• scientific attitudes and character building• the relationship between mathematics and science to other natural sciences,• biology• role of mathematics and sciences in Technology Research and Development• science Project																		
Examination forms	<p><i>Project report and presentation, written tests</i></p>																		
Study and examination requirements	<p><i>Minimum attendance at lectures is 75%</i></p> <p><i>Final score (NA) is calculated as follows:</i></p> <table><tr><th>Learning Outcome</th><th>Weight (%)</th><th>Technique of Assesment</th></tr><tr><td>1</td><td>5</td><td>Participation</td></tr><tr><td>1</td><td>5</td><td>Observation</td></tr><tr><td>2</td><td>10</td><td>Mid-term Written Test</td></tr><tr><td>3</td><td>30</td><td>Presentation and Observation</td></tr><tr><td>4</td><td>50</td><td>Project (report and presentation)</td></tr></table>	Learning Outcome	Weight (%)	Technique of Assesment	1	5	Participation	1	5	Observation	2	10	Mid-term Written Test	3	30	Presentation and Observation	4	50	Project (report and presentation)
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4	50	Project (report and presentation)																	

Reading list	<ol style="list-style-type: none"> 1. Peter Soedjo. (2004). Pengantar Sejarah dan Filsafat Ilmu Pengetahuan Alam. Yogyakarta: Gadjah Mada University Press. 2. Neuhauser, C., 2004, Calculus for Biology and Medicine, Second Edition, Upper Saddle River: Pearson Education, Inc. 3. Margenau, H. and Murphy, G.M., 1943, The Mathematics of Physics and Chemistry, New York: D., Van Nostrand Company, Inc. 4. Doggett, G. and Sutcliffe, B.T., 1995, Mathematics for Chemistry, Eddison Wesley Longman Limited. 5. Pusat Penelitian Kelapa Sawit, Budidaya Kelapa Sawit, Editor: Lalang Buana, Donald Siahaan, Sunardi Adiputra. 6. Okasha, Samir. (2002). Philosophy of Science a very short introduction. New York: Oxford University Press 7. Jujun S. Suriasumantri. (2007). Filsafat Ilmu Sebuah Pengantar Popular. Jakarta: Pustaka Sinar Harapan 8. Tarski, Alfred. 1994. Introduction to Logic and to the Methodology of Deductive Sciences. New York : Oxford University Press
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Prepared by	Verified by:	Authorized by:
		Program Study Coordinator