



UNIVERSITAS NEGERI YOGYAKARTA

FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF SCIENCE EDUCATION

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Bachelor of Education in Science

MODULE HANDBOOK

Module name:	Mathematics & Science Studies
Module level,ifapplicable:	Undergraduate
Code:	AMF 6201
Sub-heading,ifapplicable:	-
Classes,ifapplicable:	-
Semester:	
Module coordinator:	Drs. Eko Widodo, M.Pd.
Lecturer(s):	Drs. Eko Widodo, M.Pd., Ekosari Roektingroem, MP
Language:	Bahasa Indonesia
Classification within the curriculum:	Compulsory Course
Teaching format / class hoursperweekduring the semester:	100 minutes lectures and 120 minutes structured activities 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.
Creditpoints:	2 SKS (3 ETCS)
Prerequisites course(s):	-
Targeted learning outcomes:	<p>After careful study of this chapter you should be able to do the following:</p> <p>CO1. Students are able to understand and place insight into natural science in an integrated manner in the issue of the reality of everyday life in a scientific way</p> <p>CO2. Students are able to explain the correct rules of reasoning in science.</p> <p>CO3. Students are able to master the steps in the scientific method</p> <p>CO4. Students are able to explain the relationship between mathematics and the fields of biology, physics, chemistry and others in an integrated manner.</p>

Content:	<p>The Mathematics & Science Studies course is a compulsory subject for students majoring in Science Education. This lecture is a study of mathematics and the fields of biology, physics, chemistry and others in an integrated manner. This course is a prerequisite for the study program expertise group in the S-1 program of the Science Education Study Program. After taking this lecture students are expected to be able to master the basic knowledge of natural science in an integrated manner in the issue of the reality of everyday life in a scientific way. In this lecture, students discuss about the correlation between science and philosophy, standard deviations and error calculations to express accuracy and accuracy in calculations; facts, concepts, principles, laws, theories about molecules and ions; role of chemistry as a center for other natural sciences; Physics as one of the basic natural sciences that are widely used as the basis for other sciences such as Chemistry, Biology, Mathematics etc; nature of biological sciences, integration of biological sciences, and mathematics, physics, biology, chemistry on the basis of various scientific and technological developments, and research results link between scientific disciplines in research and application of technology. Lectures are conducted using conceptual and contextual approaches with demonstration methods, inquiry, project base learning, discussion, question and answer, and direct instruction.</p>																						
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 given a value of very good or not good attitude if they show it significantly compared to other students in general. The result of attitude assessment is not a component of 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.</p> <p>The final mark will be weight as follow:</p> <table border="1" data-bbox="618 1486 1393 1793"> <thead> <tr> <th>No</th> <th>CO</th> <th>Assessment Object</th> <th>Assessment Technique</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td rowspan="5">1</td> <td rowspan="5">CO1, CO2, CO3, CO4</td> <td>a. Individual Assignment</td> <td rowspan="5">Presentation / written test</td> <td>15%</td> </tr> <tr> <td>b. Group Assignment</td> <td>15%</td> </tr> <tr> <td>c. Quiz</td> <td>25%</td> </tr> <tr> <td>d. Mid</td> <td>30%</td> </tr> <tr> <td>e. Final Exam</td> <td></td> </tr> <tr> <td colspan="3">Total</td> <td>100%</td> </tr> </tbody> </table>	No	CO	Assessment Object	Assessment Technique	Weight	1	CO1, CO2, CO3, CO4	a. Individual Assignment	Presentation / written test	15%	b. Group Assignment	15%	c. Quiz	25%	d. Mid	30%	e. Final Exam		Total			100%
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Total			100%																				
Forms of media:	Board, LCD Projector, Laptop/Computer																						
Literature:	1. Doggett, G. and Sutcliffe, B.T., 1995, <i>Mathematics for</i>																						

	<p><i>Chemistry</i>, Eddison Wesley Longman Limited.</p> <ol style="list-style-type: none"> 2. Jujun S. Suriasumantri. (2007). <i>Filsafat Ilmu Sebuah Pengantar Popular</i>. Jakarta: Pustaka Sinar Harapan. 3. Margenau, H. and Murphy, G.M., 1943, <i>The Mathematics of Physics and Chemistry</i>, New York: D., Van Nostrand Company, Inc. 4. Neuhauser, C., 2004, <i>Calculus for Biology and Medicine</i>, Second Edition, Upper Saddle River: Pearson Education, Inc. 5. Okasha, Samir. (2002). <i>Philosophy of Science a Very Short Introduction</i>. New York: Oxford University Press. 6. Peter Soedjo. (2004). <i>Pengantar Sejarah dan Filsafat Ilmu Pengetahuan Alam</i>. Yogyakarta: Gadjah Mada University Press. 7. Pusat Penelitian Kelapa Sawit, <i>Budidaya Kelapa Sawit</i>, Editor: Lalang Buana, Donald Siahaan, Sunardi Adiputra. 8. Sukirman, 2006. <i>Logika dan Himpunan</i>. Yogyakarta: Hanggar Kreator. 9. Tarski, Alfred. 1994. <i>Introduction to Logic and to the Methodology of Deductive Sciences</i>. New York : Oxford University Press.
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PLO and CO mapping

	PLO											
	Attitude			Knowledge				SpesificSkill				
	PLO1	PLO2	PLO3	PLO1	PLO2	PLO3	PLO4	PLO1	PLO2	PLO3	PLO4	PLO5
CO1				✓	✓							
CO2						✓						
CO3						✓						
CO4				✓			✓					