



UNIVERSITAS NEGERI YOGYAKARTA
GRADUATE SCHOOL
MASTER OF EDUCATION IN MATHEMATICS

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Master of Education in Mathematics

MODULE HANDBOOK

Module name:	Philosophy of Science
Module level,if applicable:	Graduate
Code:	PAS8201
Sub-heading,if applicable:	-
Classes,if applicable:	-
Semester:	1 st
Module coordinator:	Prof. Dr. Marsigit, M.A.
Lecturer(s):	Prof. Dr. Marsigit, M.A ; Dr. Ariyadi Wijaya, M.Sc
Language:	Bahasa Indonesia
Classification within the curriculum:	Compulsory Course
Teaching format / class hours per week during the semester:	Lecture: face-to-face learning, blended learning, presentation, and discussion, quiz Structured activities: individual assignment, group assignment
Workload:	Lecture: 100 minutes/week Structured activities: 120 minutes/week Self-Study: 120 minutes/week Total: 5440/semester or 90.67 hours/semester
Creditpoints:	2
Prerequisites course(s):	-
Course Outcomes	After taking this course the students have ability to: CO1. plan and manage resources responsibly CO2. evaluate comprehensively the work by utilizing science and technology to produce development and application steps of philosophy of science (mathematics and mathematics education) CO3. solve problems in science, technology, and or art in the scientific field through the approach and application of philosophy of science (mathematics and mathematics education) CO4. do research and take strategic decisions with accountability and responsibility for all aspects of the development of philosophy of science (mathematics and

	mathematics education)																																	
Content:	This course is intended to provide opportunities and services to students to build understanding and theories about the philosophy of science in mathematics and mathematics education which include: (1) key issues in the development of science (2) characteristics of science (3) objects of science (4) science development methods (5) science development tools (6) history of science development (7) pre-assumptions and basic assumptions of science development (8) resources and boundary of science development (9) science justification (10) principles of science development (11) various ideology of science development (12) ontology of science (13) epistemology of science (14) theology of science (15) philosophy of mathematics, (16) philosophy of mathematics education																																	
Study/exam achievements:	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. The final mark will be weight as follow: <table><tr><th>No</th><th>CO</th><th>Assessment Object</th><th>Assessment Technique</th><th>Weight</th></tr><tr><td rowspan="5">1</td><td>CO1</td><td>a. Presentation</td><td>Observation</td><td>15%</td></tr><tr><td>CO2</td><td></td><td></td><td></td></tr><tr><td>CO3</td><td>b. Individual Assignment</td><td rowspan="3">Written test</td><td>15%</td></tr><tr><td>CO4</td><td>c. Group Assignment</td><td>15%</td></tr><tr><td></td><td>d. Mid Exam</td><td>25%</td></tr><tr><td></td><td></td><td>e. Final Exam</td><td>30%</td></tr><tr><td colspan="4">Total</td><td>100%</td></tr></table>	No	CO	Assessment Object	Assessment Technique	Weight	1	CO1	a. Presentation	Observation	15%	CO2				CO3	b. Individual Assignment	Written test	15%	CO4	c. Group Assignment	15%		d. Mid Exam	25%			e. Final Exam	30%	Total				100%
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	CO2																																	
	CO3	b. Individual Assignment	Written test	15%																														
	CO4	c. Group Assignment		15%																														
		d. Mid Exam		25%																														
		e. Final Exam	30%																															
Total				100%																														
Forms of media:	Board, LCD Projector, Laptop/Computer																																	
Literature:	A. Main References : 1. Bolzano, B., 1810, "Appendix: On the Kantian Theory of the Construction of Concepts through Intuitions" in Ewald, W., 1996, "From Kant to Hilbert: A Source Book in the Foundations of Mathematics, Volume I", Oxford:																																	

	Clarendon Press 2. Ernest, P., 1994, Mathematics, Education and Philosophy: An International Perspective. The Falmer Press: London. 3. Ernest, P., 2002, What Is The Philosophy Of Mathematics Education? 4. Eves, H and Newsom, C.V., 1964, "An Introduction to the Foundation & Fundamental Concepts of Mathematics", New York: Holt, Rinehart and Winston 5. Ewald, W., 1996, "From Kant to Hilbert: A Source Book in the Foundations of Mathematics, Volume I", Oxford: Clarendon Press 6. Hers, R., 1997, What is Mathematics, Really?, London: Jonathan Cape 7. Kant, I., 1781, Critic of Pure Reason, Translated by J.M.D. Meiklejohn 8. Mayer, F., 1951, "A History of Modern Philosophy", New York: American Book Company 9. Perry, R.B., 1912, Present Philosophical Tendencies: A Critical Survey of Naturalism Idealism Pragmatism and Realism Together with a Synopsis of the Philosophy of William James, New York: Longmans Green and Co. B. Additional References 1. Royce's, J., 1892, <i>The Spirit of Modern Philosophy</i>, Lecture 4: Kant "The Rediscovery of the Inner Life: From Spinoza to Kant, Boston: Houghton, Mifflin (1892): 101-134. 2. Searle, J.R., 1992, The Rediscovery of the Mind, the MIT Press, 1992, p. 27 3. Shore, E., 2004, Some Essential Points in Reading The Critique of Pure Reason, 20th The World Congress Philosophy 4. Silverman, A., 2003, Plato's Middle Period Metaphysics and Epistemology, Stanford Encyclopedia of Philosophy, <silverman.3@osu.edu> 5. Smit, H., 2003, "Lisa Shabel: Mathematics in Kant's Critical Philosophy.", <Notre Dame Philosophical Reviews>. 6. Soehakso, RMJT, 1989, "Some Thought on Philosophy and Mathematics", Yogyakarta: Regional Conference South East Asian Mathematical Society 7. Stefanik, R., 1994, "Structuralism, Category Theory and Philosophy of
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	Mathematics", <http://www.mmsysgrp.com/mathstrc.htm> 8. Stefanik, R., 1994, "The Structures of Reality Truth, Invariance and Scientific Objectivity", MSG Press: Washington. Suber, P., 2000, Alignments with the Categories, <http://www.earlham.edu/~phil/> 9. Tait, W.W., 1983, "Beyond the axioms: The question of objectivity in mathematics", <http://home.uchicago.edu/~wwtx/objectivity.pdf> 10. Tuchanska, B., 1999, "Is a Non-Foundationalist Epistemology Possible?", <http://www.Google.com/Tuchanska> 11. Wegner, P., 2004, "Modeling, Formalization, and Intuition." Department of Computer Science. <http://www.google.com/wiki/Main+Page> 12. Weir A., 2004, "A Neo-Formalist Approach to Mathematical Truth", <http://en.wikipedia.org/wiki/GNU_FDL> 13. Wilder, R.L., 1952, Introduction to the Foundation of Mathematics, New York
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PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9
CO1	√								
CO2		√							
CO3								√	
CO4	√								