

Philosophy of Science and Research Methodology



**MASTER PROGRAM OF ENVIRONMENTAL SCIENCE
SCHOOL OF POSTGRADUATE STUDIES
DIPONEGORO UNIVERSITY**





SEMESTER LEARNING PLAN

Study program: Master of Environmental Science

Faculty: Graduate School

Courses:	Philosophy of Science and Research Methodology	Code: CIL-2-2-600	Credit: 3	Sem: 1			
Supporting lecturer:	Prof. Drs. Sudharto Prawata Hadi, MES, Ph.D. Prof. Dr. rer. nat. Heru Susanto, ST, MM, MT Prof. Dr. Hadiyanto, ST, MSc, IPU						
Learning Outcomes Courses:	• Have the ability to explore, integrate and construct various sources of knowledge in the reality of life into the scope of science • Have the ability to select and build linkages between; the uniqueness of various local knowledge for scientific development according to the rules of science • Able to describe the relationship between knowledge, philosophy and philosophy of science from ontology, epistemology, and axiology.						
Short Description of Courses:	The Philosophy of Science and Research Methodology course discusses; the position of knowledge, habits, beliefs of a person or group of people in science, science as a source of knowledge, scientific methods, scientific results, scientific attitudes, sources of truth and limitations of science, as well as the role of science and technology in the development of human civilization. This course trains students to think logically, critically, comprehensively, and contemplatively so that they can understand the interrelationships of various sources of knowledge in the past with the present and the future in the development of science and technology which relies on the integration of axiological anatraontology in building artifacts as scientific products.						
1	2	3	4	5	6	7	
Week	Final Ability of each learning stage	Study Materials/ Subjects	Learning methods	Time	Student Learning Experience	Rating	
						Criteria & Indicators	Weight (%)
1.	Able to understand the position of knowledge of the scope of science and the sources of knowledge sources as a whole in group activities	Introduction, concepts and philosophy of science, community group activities and scientific discovery inference	Lectures and discussions	150min	Understanding the activities and beliefs of community groups as part of the source of knowledge	Students are able to understand the position of knowledge, study of knowledge and scientific perspectives and philosophy of science through	2.5

						lecture and discussion activities	
2.	Able to describe the relationship between the uniqueness of people's lives, the uniqueness of local knowledge in geographical geological uniqueness units to the development of philosophy and philosophy of science in terms of ontology, epistemology, and axiology.	Source of Knowledge Truth Understanding Philosophy Understanding Science Understanding Philosophy of Science Benefits of Philosophy of Science	Lectures and discussions	150 minutes	Analyzing and inferring the uniqueness of geographical geological environment units and local knowledge of the community in a scientific perspective perspektif	Analyze and select community activities and knowledge that can be appointed as a source of knowledge	2.5
3.	Able to describe the relationship between knowledge, science, philosophy and philosophy of science in terms of ontology, epistemology, and axiology	The development of science / biology The development of philosophy The figures of philosophy and their thoughts Branches of philosophy The uniqueness and essence of various philosophical theories	Lectures and discussions	150 minutes	Identifying the development of science/biology and the development of philosophy in a certain period of time or era	Analyze and select community activities and knowledge that can be appointed as a source of knowledge	5
4.	Analyzing the basic thoughts of empiricism, idealism, existentialism and pragmatism in the history of the development of science	Knowledge of Science Scientific Truth Limitations of knowledge	Lectures and discussions	150 minutes	Identifying the development of science/biology among the specifications of the schools of thought of empiricism, idealism, existentialism and	Results of analysis and selecting schools of thought empiricism, idealism, existentialism and pragmatism of the development of science	15

					pragmatism throughout the history of the development of science according to the era		
5.	Understanding and Mastering the scientific method, truth and sources of truth in natural science, ethics and scientific attitude	Scientific Method Induction Deduction Logic Reasoning	Lectures, discussions and presentations	150 minutes	Understand the uniqueness of the scientific method and the sources of truth in natural science, ethics and scientific attitudes	Ability to analyze and select between thoughts of empiricism, idealism, existentialism and pragmatism of the development of science	15
6.	Mastering the scientific method, truth and sources of truth in natural science, ethics and scientific attitude	Syllogism Legal law deductive Nomologican (DN) Inductive Statistical (IS)	Lectures, discussions and presentations	150 minutes	Understanding the truth and the sources of truth in natural science, ethics and scientific attitude	Ability to understand and integrate the ability to draw deductive inductive conclusions and vice versa	15
7.	Describe and interpret the functions of language, mathematics, statistics and information technology as a means of scientific thinking	Language Mathematics Statistics Opportunity theory Information and communication technology	Lectures, discussions and presentations	150 minutes	Understanding and placing the functions of language, mathematics, statistics and information technology as a means of scientific thinking	Ability to understand and integrate language skills, mathematics to communication theory of opportunities in various cases in the reality of life	15
8.	Get to know the branches of natural science and its philosophical foundations	Branch of Science	Lectures, discussions and presentations	150 minutes	Knowing and understanding and the position of branches of science	Ability to integrate science into the realities of life	15
9.	Mastering the essence of	Post-positivistic	Lectures, discussions	150 minutes	Know and	Qualitative and	15

	scientific research, positivistic and postivistic, quantitative and qualitative, as well as scientific work	philosophy of exploratory research Philosophy of qualitative and qualitative research	and presentations		understand the essence of post-postpositivistic scientific research and the specifics of exploratory research and quantitative and qualitative research	quantitative problem-solving ability integration model	
8.Reference List:		1. Lecturer Team of Philosophy of Science Faculty of Philosophy UGM. 2002. Philosophy of Science as the basis for the development of science. Yogyakarta: Liberty Publishers. 2. Nöeng Muhajir. 2011. Philosophy of Science: ontology, epistemology, axiology. Yogyakarta: Rake Sarasin. 3. Jujun Suria sumantri. 1995. Science in Perspective: A collection of essays on the nature of science. Indonesian Torch Foundation. 4. Bronowski, Jacob. 1973. The Accent of Man. Boston: Little Brown, Company 5. Kant, Immanuel. 2004. Critique of Practical Reason. Mineola, NY.: Dover Publications, Inc. 6. Whitehead, N. Alfred. 2001. Ratio Function. Translate. Yogyakarta: Publisher Kanisius. 7. Zainal Abidin. 2003. Human Philosophy: understanding humans through philosophy. Bandung: PT. Youth Rosdakarya. 8. Kattsoff, Louis O. 1992. Introduction to Philosophy. Translated by Soejono. Yogyakarta: Tiara Wacana 9. Hadi, Sudharto P. 2019. Metodologi Penelitian Lingkungan Bidang Sosial. Semarang: UNDIP Press 10.Moleong, Lexy. 1996. Metodologi Penelitian Kualitatif. Bab I s/d VII. 11.Kumar, Krisna(ed). 1993. Rapid Appraisal Methods. 12.Yin, Robert K. Case Study Research: Design and Methods. 13 A.Creswell, John.W. 1994. Research Design: Qualitative and Quantitative Approach.					