Undergraduate Programme in Science Program **Module Handbook**

Module Name:	History and Philosophy of Science Education *Sejarah dan Filsafat Pendidikan IPA*
Module Level:	Bachelor Degree/Undergraduate Program
Course Code:	8420103067
Abbreviation, if applicable:	SFPI
Sub-heading, if applicable:	
Courses included in the module, if applicable:	Not applicable
Semester/term	III/second year (sophomore)
Module coordinator(s):	Ahmad Qosyim, S.Si., M.Pd.
Lecturer(s):	Prof. Dr. Erman, M.Pd. Ahmad Qosyim, S.Si., M.Pd. Guntur Tri Mulyono, S.Si., M.Si.
Language:	*Bahasa Indonesia* (Indonesian Language)
Classification within the curriculum:	Compulsory Course / ~~Elective Studies~~
Teaching format/class hours per week during the semester:	2 contact hours of lectures (Indonesia credit semester or *sks**)
Workload:	2 x 50 minutes lectures, 2 x 60 minutes structured activity, 2 x 60 minutes individual activity, 14 weeks per semester, 119 total hours per semester ~ 3.18 ECTS**
Credit point:	2 *sks* (3.18 ECTS)
Requirements:	-
Learning goals/competencies:	**Course Learning Outcomes (CLO):** After taking this course, university students have ability to; 1. Using ICT to explore the science philosophers' ideas in Greek, Dark age, renaissance, and modern philosopher and their application in science educational research 2. Apply scientific demarcation area to differentiate science, pseudo-science and religion 3. Explain history and principles of scientific method, falsification, including their application in science education 4. Explain the difference of realism and antirealism ideas in science educational context **Sub-CLOs:** 1. Describe the development of the philosophy of science that underlies the development of science: Definition and characteristics of science philosophy, Distinguishing knowledge, sciences and science, Distinguishing the

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<tr><td></td><td>domains of metaphysics, philosophy and scientific method, Distinguishing science, pseudoscience and religion and to describe the application scientific demarcation area to differentiate science, pseudo-science and religion;
2. Distinguishing views / thoughts / focus of studies on science philosophy schools from ancient Greece to modern times, through search the literature from various sources / ICT for science philosophers' ideas in Greek, Dark age, renaissance, and modern philosopher;
3. Explain the basic principles of science justification up to the discovery of the scientific method in overcoming debates / problems and making decisions about science.
4. Distinguishing views of realism and anti-realism, as well as the principle of underdetermination in the development of science; and
5. Students can critically analyze the implementation and role of several philosophical views in science education to support their professional duties as a science teacher.</td></tr>
<tr><td>Content:</td><td>Assessing philosophy in the context of science and learning through critical analysis of the thought process and discovery of science products by natural science philosophers / scientists, including their justification from various learning sources / media that have developed from time to time and their application in the context of science education, based on the viewpoint of educational philosophy through critical analysis of education and science learning problems / issues / policies so as to produce logical solutions and make decisions appropriately and responsibly.</td></tr>
<tr><td>Attribute Soft skill:</td><td>Discipline, collaboration, responsibility, and argumentation in the natural classroom setting</td></tr>
<tr><td>Study/exam achievements:</td><td>Students are considered to be competent and pass if at least get 40% of the maximum final grade. The final grade (NA) is calculated based on the following weight:

<table>
<tr><th>Assessment Components</th><th>Percentage Contribution</th></tr>
<tr><td>Participation</td><td>20%</td></tr>
<tr><td>Assignment</td><td>30%</td></tr>
<tr><td>Mid-semester test</td><td>20%</td></tr>
<tr><td>Final semester test</td><td>30%</td></tr>
<tr><td>Total</td><td>100%</td></tr>
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</td></tr>
<tr><td>Learning Methods</td><td>Constructivism, student-centred approach, project-based learning, lecturing, discussion, and presentation (structured activities), and flip learning</td></tr>
<tr><td>Form of Media:</td><td>LCD, PowerPoint slides, and worksheets</td></tr>
<tr><td>Literature (main references):</td><td>1. Thomas J. Hickey, 2011, Introduction to phisophy of science. NewYork: Springer
2. Craigh Dilworth, 2006, The methaphysics of science:</td></tr>
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	Boston studies in the philosophy of science, Netherland: Springer. 3. Cornel M. Hamm, 2005, Philosophycal Issues in Education: An introduction, London: Routledge. 4. James Ladyman, 2002, Understanding philosophy of science, London and New York: Roudledge 5. Anna Poedjiadi, 2001, Filsafat Ilmu Kependidikan, Bandung 6. Wilburg Applebaum, 2005, The scientific revolution and the foundation of modern science, London: Greenwood Press 7. Referensi lain yang relevan
Notes:	*__1 *sks* in learning process = three contact hours that consist of: (a) scheduled instruction in a classroom or laboratory (50 minutes); (b) structured activity (60 minutes); and (c) individual activity (60 minutes)__ according to the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 44 Year 2015 jo. the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 50 Year 2018.
	**__1 sks = 1,59 ECTS__