



MINISTRY OF EDUCATION AND CULTURE
UNIVERSITAS NEGERI SURABAYA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF PHYSICS

Ketintang Campus, Jalan Ketintang, C3 Building, Surabaya 60231
 Website: <https://pendidikan-fisika.fmipa.unesa.ac.id/>, email: s1-pfis@unesa.ac.id

Undergraduate Programme of Physics Education

Module Handbook

Module Name :	<i>Astronomi</i> Astronomy
Module level :	Bachelor degree/Undergraduate Programme
Course Code :	8420302262
Abbreviation, if applicable:	-
Courses included in the module, if applicable:	Not Applicable
Semester/Term	6/Third Year
Module coordinator(s)	Prof. Tjipto Prastowo, Ph.D.
Lecturer(s):	Tjipto Prastowo, Ph.D. Mita Anggaryani, Ph.D.
Language:	<i>Bahasa Indonesia</i>
Classification within the curriculum:	Compulsory / Elective
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, 90 total hours per semester ~ 3.18 ECTS**
Credit Point:	2 sks (3.18 ECTS)
Requirements:	Basic Physics I Basic Physics II
Learning goals/competencies:	<ol style="list-style-type: none"> 1. Realizing independent, creative, and honest characters in carrying out lecture assignments, UTS and Space Physics UAS. 2. Mastering a structured study of the universe as a huge physical system, the process of the birth of the universe to 3. with the end of the universe according to modern science, and the earth as part of the universe. 4. Applying the decision-making process appropriately in the context of solving problems of different views related to science 5. Astronomy based on the results of an objective analysis of information. 6. Understanding efforts to unite modern science and religion in the form of science-religion relations related to Astronomy. 7. Understand the role of Astronomy in the decision-making process related to religious life.
Content	Space Physics studies the universe and all its contents (astronomical objects) in a single causal understanding that



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	<p>everything that exists must have come from nothing. The lecture approach is phenomenology with the focus of discussion emphasized on the physical aspect that relies on relevant physical laws and observations (mechanics, thermodynamics, electromagnetic wave radiation) to describe the universe. Topics discussed in lectures include the history of astronomy, the big bang and the beginning of the universe, systems solar system, stars and constellations, milky way galaxy, measurement of activity and physical processes in the life cycle of stars.</p>										
Attribute Soft skill:	Scientific report, public speaking, and team work										
Study/exam achievements:	<p>Students are considered to complete the course and pass if they obtain at least 40% of maximum final grade. The final grade (NA) is calculated based on the following ratio:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Assessment Components</th> <th style="text-align: left;">Percentage of contribution</th> </tr> </thead> <tbody> <tr> <td>Participation</td> <td style="text-align: center;">20%</td> </tr> <tr> <td>Assignment</td> <td style="text-align: center;">30%</td> </tr> <tr> <td>Mid-semester test</td> <td style="text-align: center;">20%</td> </tr> <tr> <td>Final semester test</td> <td style="text-align: center;">30%</td> </tr> </tbody> </table>	Assessment Components	Percentage of contribution	Participation	20%	Assignment	30%	Mid-semester test	20%	Final semester test	30%
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Learning Methods :	Student-centered approach, lecture and discussion, and presentations (structured activities)										
Form of Media:	<i>Power Point</i> slides, e-book file, and multimedia.										
Literature (primary references):	<ol style="list-style-type: none"> 1. Prastowo, T. 2012. Sains Kebumian. Unpublished work. pp.1-25. 2. Karttunen, H. et al. 2007. Fundamental Astronomy. Berlin, Germany: Springer-Verlag. pp.1-510. 3. Gibson, C..2005. The Astronomy Handbook. Devon, UK: D&S Books Ltd. pp.1-256. 4. Gribbin, J. 1998. A Brief History of Science. Sussex, UK: The Ivy Press Limited. pp.1-224. 5. Anugraha, R. 2012. Mekanika Benda Langit. Jurusan Fisika, FMIPA UGM. E-book. pp.1-200. 										
Notes:	<p>*1 sks in learning process = three periods 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.</p> <p>**1 sks = 1,59 ECTS according to Rector Decree Of Universitas Negeri Surabaya No. 598/Un38/Hk/Ak/2019</p>										