MINISTRY OF EDUCATION AND CULTURE
UNIVERSITAS NEGERI SURABAYA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
**DEPARTMENT OF NATURAL SCIENCES**
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| Module Name: | *Pengetahuan Bumi dan Antariksa*<br>(Earth and Planetary Science) |
| Module Level: | Bachelor degree/Undergraduate Programme |
| Course Code: | 8420103123 |
| Abbreviation, if applicable: | PBA |
| Courses included in the module, if applicable: | Not applicable |
| Semester/term | Elective |
| Module coordinator(s): | Dr. Wahono Widodo, M.Si. |
| Lecturer(s): | Dr. Wahono Widodo, M.Si.<br>An Nuril Maulida Fauziah, S.Pd., M.Pd.<br>Muhamad Arif Mahdiannur, S.Pd., M.Pd. |
| Language: | *Bahasa Indonesia* (Indonesian Language) |
| Classification within the curriculum: | Elective |
| Teaching format/class hours per week during the semester: | 3 contact hours of lectures (Indonesia credit semester or *sks**) |
| Workload: | 3 x 50 minutes lectures, 3 x 60 minutes structured activity, 3 x 60 minutes individual activity, 14 weeks per semester, 119 total hours per semester ~ 4.77 ECTS** |
| Credit point: | 3 *sks* (4.77 ECTS) |
| Requirements: | General Physics (8420103045)<br>General Chemistry (8420103074)<br>General Biology (8420103023)<br>Biodiversity (8420103065)<br>Introductory of Biochemistry (8420103163)<br>Wave and Optics (8420103049)<br>Atom and Radioactivity (8420103171) |
| Learning goals/competencies: | **Course Learning Outcomes (CLOs):**<br>After taking this course, students will be able to:<br>1. Apply principles/laws/theories to various the Earth physical phenomena;<br>2. Apply principles/laws/theories to various physical phenomena in the solar system and universe;<br>3. Applying substantive concepts (principles/laws/ theories) in the field of the Earth and space science in making science learning media; and<br>4. Design and conduct the Moon observation experiments based-on substantive and procedural concepts. |
| Content: | Lithosphere, Volcanoes, Earthquakes, Hydrosphere and Its Pollution, the Atmosphere and the Factors that Influence It, the Solar system, the Earth, the Revolutions and Rotation of the Earth and Moon and their Effects on Humans and Culture, Star Evolution, and Cosmology. |

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<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:<br><br><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></table></td></tr>
<tr><td>Learning Methods</td><td>Constructivist, 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, worksheets, telescope, and e-learning Vinesa (https://vinesa.unesa.ac.id/course/view.php?id=423)</td></tr>
<tr><td>Literature (primary references):</td><td>1. Trefil, J. and Hazen, R.M., 2016. The Sciences: An Integrated Approach. Wiley Global Education.<br>2. Lunine, J.I., 2013. Earth: evolution of a habitable world. Cambridge University Press.<br>3. Hewitt, P.G., Lyons, S.A., Suchocki, J.A. and Yeh, J., 2013. Conceptual Integrated Science: Pearson New International Edition. Pearson Higher Ed.<br>4. Roy, A.E. and Clarke, D., 2003. Astronomy: Principles and Practice, (PBK). CRC Press.<br>5. Ringwood, A.E., 2012. Origin of the Earth and Moon. Springer Science & Business Media.<br>6. Druyan, A., MacFarlane, S., Cannold, M., Braga, B. and Clark, J., 2014. The cosmos: A spacetime odyssey [Video Series]. Beverly Hills, CA: Twentieth Century Fox.<br>7. Selin, H. ed., 2012. Astronomy across cultures: the history of non-Western astronomy (Vol. 1). Springer Science & Business Media.<br>8. Tim Pengembang Bahan Ajar IPBA. n.d. Buku Ajar IPBA. Unesa University Press.</td></tr>
<tr><td>Notes:</td><td>*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.<br>**1 sks = 1,59 ECTS</td></tr>
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