



# Bachelor Program in Geophysics

Faculty of Mathematics and Natural Sciences  
HASANUDDIN UNIVERSITY

## 2. Environmental Geophysics

|                                                       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |  |  |       |       |        |
|-------------------------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--|--|-------|-------|--------|
| Module Name                                           | :     | Environmental Geophysics                                                                                                                                                                                                                                                                                                                                                                                                                                |        |  |  |       |       |        |
| Module Level                                          | :     | Bachelor                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |  |  |       |       |        |
| Code, if applicable                                   | :     | 23H06121502                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |  |  |       |       |        |
| Subtitle, if applicable                               | :     | -                                                                                                                                                                                                                                                                                                                                                                                                                                                       |        |  |  |       |       |        |
| Courses, if applicable                                | :     | Environmental Geophysics                                                                                                                                                                                                                                                                                                                                                                                                                                |        |  |  |       |       |        |
| Semester(s) in which the module is taught             | :     | III (Third Semester)                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |  |  |       |       |        |
| Module coordinator(s)                                 | :     | Dr. Sakka, M.Si.                                                                                                                                                                                                                                                                                                                                                                                                                                        |        |  |  |       |       |        |
| Lecturer(s)                                           | :     | Dr. Sakka, M.Si. and Makhrani, S.Si., M.Si.                                                                                                                                                                                                                                                                                                                                                                                                             |        |  |  |       |       |        |
| Language                                              | :     | Bahasa (Indonesian language)                                                                                                                                                                                                                                                                                                                                                                                                                            |        |  |  |       |       |        |
| Relation to curriculum                                | :     | Elective course in the second year for Bachelor Degree in Geophysics                                                                                                                                                                                                                                                                                                                                                                                    |        |  |  |       |       |        |
| Type of teaching, contact hours                       | :     | This course is delivered through Lectures (i.e., Project/Case-based learning), complemented by structured assignments (paper review, project/case evaluation) and independent study. Contact hours consist of 100 minutes lectures per week, plus 120 minutes per week for each of the following: structured assignments and independent study                                                                                                          |        |  |  |       |       |        |
| Workload                                              | :     | Total workload is 90 hours per semester, consisting of 28 hours for lectures, and 31 hours each for structured assignments and independent study                                                                                                                                                                                                                                                                                                        |        |  |  |       |       |        |
| Credit points                                         | :     | 2 SKS (3.2 ECTS)                                                                                                                                                                                                                                                                                                                                                                                                                                        |        |  |  |       |       |        |
| Requirements according to the examination regulations | :     | Students are eligible to attend the examination if their absences are less than 20% of the lectures                                                                                                                                                                                                                                                                                                                                                     |        |  |  |       |       |        |
| Recommended prerequisites                             | :     | -                                                                                                                                                                                                                                                                                                                                                                                                                                                       |        |  |  |       |       |        |
| Module objectives/intended learning outcomes          | :     | <p>After completion of this module, students will be able to:</p> <p>CLO 1. Students analyze the relationship between human interaction and environmental quality;</p> <p>CLO 2. Students analyze the interaction of human life with abiotic, biotic and cultural environmental components;</p> <p>The following is the mapping of the ILO and the CLO of this course:</p> <table><tr><td></td><td>ILO 7</td><td>ILO 8</td><td>ILO 13</td></tr></table> |        |  |  | ILO 7 | ILO 8 | ILO 13 |
|                                                       | ILO 7 | ILO 8                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ILO 13 |  |  |       |       |        |



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|                                    |       | <table><tr><td>CLO 1</td><td>✓</td><td></td><td></td></tr><tr><td>CLO 2</td><td></td><td>✓</td><td>✓</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | CLO 1 | ✓ |                           |       | CLO 2           |          | ✓ | ✓    |          |    |      |           |    |     |           |   |     |           |    |      |           |    |     |           |   |      |           |   |      |      |   |      |
|------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---|---------------------------|-------|-----------------|----------|---|------|----------|----|------|-----------|----|-----|-----------|---|-----|-----------|----|------|-----------|----|-----|-----------|---|------|-----------|---|------|------|---|------|
| CLO 1                              | ✓     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |       |   |                           |       |                 |          |   |      |          |    |      |           |    |     |           |   |     |           |    |      |           |    |     |           |   |      |           |   |      |      |   |      |
| CLO 2                              |       | ✓                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ✓     |   |                           |       |                 |          |   |      |          |    |      |           |    |     |           |   |     |           |    |      |           |    |     |           |   |      |           |   |      |      |   |      |
| Content                            | :     | <div>1. Environmental Ethics</div> <div>2. Ecology</div> <div>3. Ecological Functions of Protected Forests and Conservation Areas</div> <div>4. Urban Ecosystems</div> <div>5. Characteristics of Coastal Environments</div> <div>6. Environmental Geology</div> <div>7. Environmental Management and Impact</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |       |   |                           |       |                 |          |   |      |          |    |      |           |    |     |           |   |     |           |    |      |           |    |     |           |   |      |           |   |      |      |   |      |
| Study and examination requirements |       | <div>Participants are marked based on their performance in theory: Project/Case Study (100%).</div> <div>Students are marked based on their percentage of points obtained and based on the following grade scale:</div> <table><tr><th>Percentage of Achievement</th><th>Grade</th><th>Conversio Value</th></tr><tr><td>85 – 100</td><td>A</td><td>4.00</td></tr><tr><td>80 - &lt;85</td><td>A-</td><td>3.75</td></tr><tr><td>75 - &lt; 80</td><td>B+</td><td>3.5</td></tr><tr><td>70 - &lt; 75</td><td>B</td><td>3.0</td></tr><tr><td>65 - &lt; 70</td><td>B-</td><td>2.75</td></tr><tr><td>60 - &lt; 65</td><td>C+</td><td>2.5</td></tr><tr><td>50 - &lt; 60</td><td>C</td><td>2.00</td></tr><tr><td>40 - &lt; 50</td><td>D</td><td>1.00</td></tr><tr><td>&lt; 40</td><td>E</td><td>0.00</td></tr></table> |       |   | Percentage of Achievement | Grade | Conversio Value | 85 – 100 | A | 4.00 | 80 - <85 | A- | 3.75 | 75 - < 80 | B+ | 3.5 | 70 - < 75 | B | 3.0 | 65 - < 70 | B- | 2.75 | 60 - < 65 | C+ | 2.5 | 50 - < 60 | C | 2.00 | 40 - < 50 | D | 1.00 | < 40 | E | 0.00 |
| Percentage of Achievement          | Grade | Conversio Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |       |   |                           |       |                 |          |   |      |          |    |      |           |    |     |           |   |     |           |    |      |           |    |     |           |   |      |           |   |      |      |   |      |
| 85 – 100                           | A     | 4.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |       |   |                           |       |                 |          |   |      |          |    |      |           |    |     |           |   |     |           |    |      |           |    |     |           |   |      |           |   |      |      |   |      |
| 80 - <85                           | A-    | 3.75                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |       |   |                           |       |                 |          |   |      |          |    |      |           |    |     |           |   |     |           |    |      |           |    |     |           |   |      |           |   |      |      |   |      |
| 75 - < 80                          | B+    | 3.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |   |                           |       |                 |          |   |      |          |    |      |           |    |     |           |   |     |           |    |      |           |    |     |           |   |      |           |   |      |      |   |      |
| 70 - < 75                          | B     | 3.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |   |                           |       |                 |          |   |      |          |    |      |           |    |     |           |   |     |           |    |      |           |    |     |           |   |      |           |   |      |      |   |      |
| 65 - < 70                          | B-    | 2.75                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |       |   |                           |       |                 |          |   |      |          |    |      |           |    |     |           |   |     |           |    |      |           |    |     |           |   |      |           |   |      |      |   |      |
| 60 - < 65                          | C+    | 2.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |   |                           |       |                 |          |   |      |          |    |      |           |    |     |           |   |     |           |    |      |           |    |     |           |   |      |           |   |      |      |   |      |
| 50 - < 60                          | C     | 2.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |       |   |                           |       |                 |          |   |      |          |    |      |           |    |     |           |   |     |           |    |      |           |    |     |           |   |      |           |   |      |      |   |      |
| 40 - < 50                          | D     | 1.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |       |   |                           |       |                 |          |   |      |          |    |      |           |    |     |           |   |     |           |    |      |           |    |     |           |   |      |           |   |      |      |   |      |
| < 40                               | E     | 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |       |   |                           |       |                 |          |   |      |          |    |      |           |    |     |           |   |     |           |    |      |           |    |     |           |   |      |           |   |      |      |   |      |
| Exams and assessment formats       |       | Assessment in this course is conducted entirely through project/case studies. The project or case study is conducted in a group and requires students to apply theoretical concepts to analyze and solve a problem. This work is developed over several weeks under instructor guidance, culminating in a written report and an oral presentation of results.                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |   |                           |       |                 |          |   |      |          |    |      |           |    |     |           |   |     |           |    |      |           |    |     |           |   |      |           |   |      |      |   |      |



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| Reading list       | <p>1. Main References:</p> <ol style="list-style-type: none"><li>1. A. Tresna Sastrawijaya, (2000), Pencemaran Lingkungan, Rineka Cipta.</li><li>Djajadiningrat S. T., (1997), Pengantar Ekonomi Lingkungan, Jakarta, LP3ES.</li><li>P.L. Coutrier, (1990), Environmental Management System with ISO 14000, Seminar ISO 14000, Surabaya.</li></ol> <p>Additional References:</p> <ol style="list-style-type: none"><li>Wisnu Arya Wardhana, (2001) Dampak Pencemaran Lingkungan, Edisi 3, Andi,.</li><li>Anderson H. Stanley, Ronald E.B. &amp; Waltow, (1993), Environmental Science, New York: Mc.Millan Publishing Company</li><li>Miller G.Y., (2000), Living in the Environment, Principles, connection &amp; Solution, 9th edition, California: Wadsworth Publishing Company.</li><li>Soemarwoto,O., (1985), Ekologi Lingkungan Hidup dan Pembangunan, Jakarta: Penerbit Djambatan.</li></ol> |
| Last revision date | July 1 <sup>st</sup> , 2025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |