



# Bachelor Program in Geophysics

Faculty of Mathematics and Natural Sciences

HASANUDDIN UNIVERSITY

## 23. Research Methodology

|                                                       |   |                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Module Name                                           | : | Research Methodology                                                                                                                                                                                                                                                                                                                   |
| Module Level                                          | : | Bachelor                                                                                                                                                                                                                                                                                                                               |
| Code, if applicable                                   | : | 23H06130102                                                                                                                                                                                                                                                                                                                            |
| Subtitle, if applicable                               | : | -                                                                                                                                                                                                                                                                                                                                      |
| Courses, if applicable                                | : | Geophysics Study Program                                                                                                                                                                                                                                                                                                               |
| Semester(s) in which the module is taught             | : | V (Fifth Semester)                                                                                                                                                                                                                                                                                                                     |
| Module coordinator(s)                                 | : | Dr. Eng. Amiruddin, S.Si., M.Si                                                                                                                                                                                                                                                                                                        |
| Lecturer(s)                                           | : | Dr. Eng. Amiruddin, S.Si., M.Si<br>Drs. Erfan, M.S                                                                                                                                                                                                                                                                                     |
| Language                                              | : | Bahasa (Indonesian language)                                                                                                                                                                                                                                                                                                           |
| Relation to curriculum                                | : | Elective courses in the third year of the Bachelor of Geophysics program                                                                                                                                                                                                                                                               |
| Type of teaching, contact hours                       | : | This course is delivered through Lectures (i.e., 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          | : | After completion of this module, students will be able to:<br><br>CLO 1. Able to prepare proposals and research reports equivalent to an undergraduate thesis.<br><br>CLO 2. Able to prepare manuscripts for international scientific journals to publish research findings.                                                           |



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|                                    |       | <p>The following is the mapping of the ILO and the CLO of this course:</p> <table><tr><td></td><td>ILO 6</td><td>ILO 7</td><td>ILO 8</td><td>ILO 10</td><td>ILO 13</td><td>ILO 14</td></tr><tr><td>CLO 1</td><td>✓</td><td>✓</td><td></td><td></td><td></td><td></td></tr><tr><td>CLO2</td><td></td><td></td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr></table>                                                                                                                                                                                                                                                                                                                              |                           | ILO 6  | ILO 7            | ILO 8    | ILO 10 | ILO 13 | ILO 14   | CLO 1 | ✓    | ✓         |    |     |           |   | CLO2 |           |    | ✓    | ✓         | ✓  | ✓   |
|------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------|------------------|----------|--------|--------|----------|-------|------|-----------|----|-----|-----------|---|------|-----------|----|------|-----------|----|-----|
|                                    | ILO 6 | ILO 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ILO 8                     | ILO 10 | ILO 13           | ILO 14   |        |        |          |       |      |           |    |     |           |   |      |           |    |      |           |    |     |
| CLO 1                              | ✓     | ✓                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                           |        |                  |          |        |        |          |       |      |           |    |     |           |   |      |           |    |      |           |    |     |
| CLO2                               |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ✓                         | ✓      | ✓                | ✓        |        |        |          |       |      |           |    |     |           |   |      |           |    |      |           |    |     |
| Content                            | :     | <ol style="list-style-type: none"><li>1. Concept and operational definition (What you want to express and how to measure it)</li><li>2. Problem formulation and hypothesis (What relationship you want to identify, and future predicted outcomes)</li><li>3. Conceptual framework (Concepts used and their interrelationships, along with their measurements)</li><li>4. Creating definitions</li><li>5. Types of definitions</li><li>6. Proposition/hypothesis (A temporary statement regarding the formulated research problem)</li><li>7. Theory construction (A theory consists of several hypotheses that have been tested for validity)</li><li>8. Writing a research proposal</li></ol> |                           |        |                  |          |        |        |          |       |      |           |    |     |           |   |      |           |    |      |           |    |     |
| Study and examination requirements |       | <p>Participants are marked based on their performance in theory:Case Study (75%), Written Examination (25%). Students are marked based on their percentage of points obtained and based on the following grade scale:</p> <table><tr><th>Percentage of Achievement</th><th>Grade</th><th>Conversion 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></table>                                           | Percentage of Achievement | Grade  | Conversion 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 |
| Percentage of Achievement          | Grade | Conversion 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                           |        |                  |          |        |        |          |       |      |           |    |     |           |   |      |           |    |      |           |    |     |



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|                              |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 50 - < 60 | C | 2.00 |  |
|                              |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 40 - < 50 | D | 1.00 |  |
|                              |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | < 40      | E | 0.00 |  |
| Exams and assessment formats |  | Assessment in this course consists of case study, and written examination. The case study is conducted individually and requires students to apply theoretical concepts to analyze and make a research proposal, presented in the form of a written report. The written examination ( <i>closed-book</i> , written) evaluates students' understanding of fundamental concepts covered by CLO 1 and CLO 2.                                                                                |           |   |      |  |
| Reading list                 |  | <b>Main References:</b><br><br>1. Kothari, CR, 2004, Metodologi Penelitian: Metode dan Teknik, Edisi Revisi Kedua, Penerbit Internasional New Age<br><br>2. Siyoto S. & Sodik A., 2015, Dasar Metodologi Penelitian, Literasi Media Publishing, Yogyakarta<br><br><b>Additional References:</b><br><br>1. Hadani , Auliya N., Andriani H., Fardani , R., Ustiawaty J., Utami E., Sukmana D., & Istiqomah R., 2020, Buku Metode Penelitian Kualitatif & Kuantitatif , CV. Pustaka Ilmu. " |           |   |      |  |
| Last revision date           |  | July 1 <sup>st</sup> , 2025                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |   |      |  |