2. Basic Mathematics

Module Name	:	Basic Mathematics
Module Level	:	Bachelor
Code, if applicable	:	23H01110103
Subtitle, if applicable	:	-
Courses, if applicable	:	Geophysic
Semester(s) in which the module is taught	:	I (First Semester)
Module coordinator(s)	:	Jusmawati Massalesse, S.Si.,M.Si.
Lecturer(s)	:	Jusmawati Massalesse, S.Si.,M.Si., Naimah Aris, S.Si.,M.Math.
Language	:	Indonesian Language
Relation to curriculum	:	Compulsory course in the first year for Bachelor Degree in Geophysics
Type of teaching, contact hours	:	Teaching methods used in this course are: -Lecture (i.e., Lecture, Discussion, Colaborative learning, Case study, Project-based Learning); - Structured assignments (i.e., Module task).
Workload	:	40 hours per semester for Learning and Teaching, 48 hours per semester for Self Study, and 48 hours per semester for Structured Works.
Credit points	:	3 SKS (4.8 ECTS)
Requirements according to the examination regulations	:	Class activity (interaction and presentation) (40%), Homework/Quis (20%).
Recommended prerequisites	:	-
Module objectives/intended learning outcomes	:	After completion of this module, students will be able to: CLO 1. Students are able to determine solutions to problems related to the concept of one change calculus. CLO 2 Students are able to apply the concepts of function, derivative and integral, both to more complex calculus problems and problems related to their field. The following is the mapping of the ILO and the CLO of this course:

	ILO 4	ILO 8

<table>
<tr><td></td><td></td><td>
<table>
<tr><td>CLO 1</td><td>✓</td><td></td></tr>
<tr><td>CLO 2</td><td></td><td>✓</td></tr>
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</td></tr>
<tr><td>Content</td><td>:</td><td>1. Real Number System: Algebraic Properties of Real Numbers, Intervals, and Absolute Value
2. Real Functions and Their Graphs
3. Limits and Continuity of Functions
4. Derivatives of Functions
5. Applications of Derivatives
6. Definite Integral as Riemann Sum
7. Indefinite Integral
8. Applications of Integrals</td></tr>
<tr><td>Study and examination requirements</td><td></td><td>Participants are marked based on their performance in theory: Quiz (10%), Case Study (70%), Written Examination (20%).

Students are marked based on their percentage of points obtained and based on the following grade scale:
<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 - <85</td><td>A-</td><td>3.75</td></tr>
<tr><td>75 - < 80</td><td>B+</td><td>3.5</td></tr>
<tr><td>70 - < 75</td><td>B</td><td>3.0</td></tr>
<tr><td>65 - < 70</td><td>B-</td><td>2.75</td></tr>
<tr><td>60 - < 65</td><td>C+</td><td>2.5</td></tr>
<tr><td>50 - < 60</td><td>C</td><td>2.00</td></tr>
<tr><td>40 - < 50</td><td>D</td><td>1.00</td></tr>
<tr><td>< 40</td><td>E</td><td>0.00</td></tr>
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</td></tr>
<tr><td>Exams and assessment formats</td><td></td><td>Class activity (interaction and presentation) (70%), Homework/Quis (10%) and Laboratory Activity (20%)</td></tr>
<tr><td>Reading list</td><td></td><td>Main References</td></tr>
</table>

		1. Thomas, G. B., Weir, M. D., & Hass, J. R. (2013). *Thomas' Calculus: Early Transcendentals* (13th ed.). Pearson. 2. McMullen, C. (2018). *Essential Calculus Skills Practice Workbook with Full Solutions.* Zishka Publishing. 3. Stewart, J. (2015). *Single Variable Calculus: Early Transcendentals.* Thomson Brooks/Cole. 4. Mathematics Teaching Team. (2023). *Basic Mathematics.* **Additional References** • Khan Academy. *Calculus 1.* Retrieved from https://www.khanacademy.org/math/calculus-1 • Mathematics Lecture Series – Prof. Hendra Gunawan, Bandung Institute of Technology (ITB).
Last Revision Date		July 1st , 2025