Differential Calculus

Module Name	Course Module
Module Levels	Degree program
Code, if applicable	3115-204-3
Sub-titles, if applicable	-
Courses, if applicable	Differential Calculus
Semester(s) in which the module is taught	1 (Odd Semester)
Person responsible for the modules	Course Lecturer
Lecturer(s)	Drs. Tri Murdiyanto, M.Sc. Dwi Antari Wijayanti, M.Pd. Leny Dhianti, M.Pd. Dr. Flavia Aurelia Hidajat, M.Pd. Dr. Anny Sovia, S.Sc., M.Pd.
language	Indonesian
Relations to Curriculum	This course is a study program course and is offered in semester 1.
Type of teaching, contact hours	The teaching methods used in this course are: - Studying (that is, investigative group, small group discussions, case studies, and video base learning) - Structured assignments (i.e., essays and case studies) - Project Based Learning The class size for the lecture is 40 students. Contact hours for lectures are 39.99 hours, assignments at 48.00, and independent study at 48.00.
Workloads	For this course, students are required to meet the minimum 135.99 hours in one semester, consisting of: 39.99 hours for lectures, 48.00 hours for structured tasks, 48.00 hours for independent study
Credit Points	4.5 ECTS

<table>
<tr><td>Requirements according to the examination regulations</td><td>Students must attend all lectures and submit all individual and group assignments scheduled before the final exam.</td></tr>
<tr><td>Recommended prerequisites</td><td>Students must attend all lectures and submitted all individual and group assignments scheduled before the final exam.</td></tr>
<tr><td>Program intended learning outcomes</td><td>PLO 5. Able to master the basics of mathematical theoretical concepts including mathematical logic, discrete mathematics, algebra, analysis, and geometry, as well as the theory of probability and statistics.
PLO 6. Able to master the principles of mathematical modeling, linear programming, differential equations, and numerical methods

Course Learning Outcomes(CLO) to be achieved in this course are:
1. Able to formulate theories and concepts about the limit and continuity of a function of one variable and apply them to the field of mathematics and other fields of science.
2. Able to formulate concepts and theories about the derivative of a function of one variable and apply them to the field of mathematics and other fields of science.
3. Able to formulate concepts and theories about the function of two or more variables.
4. Able to formulate concepts and theories about the derivative function of two or more variables and apply them to the field of mathematics and other fields of science

The relationship between PLO and CLO in this course is described as follows.
<table>
<tr><th rowspan="2">CLO</th><th colspan="2">PLO</th></tr>
<tr><th>5</th><th>6</th></tr>
<tr><td>1</td><td></td><td></td></tr>
<tr><td>2</td><td></td><td></td></tr>
<tr><td>3</td><td></td><td></td></tr>
<tr><td>4</td><td></td><td></td></tr>
</table>
</td></tr>
</table>

Content	**Students will learn about:** 9. Concepts and theories about the limit and continuity of a function of one variable, 10. Derivative functions of one variable as well as applications 11. Derivative function of one variable in the field of mathematics and other fields of science, 12. Concepts and theories about limits and continuity of functions of two or more variables 13. Partial derivative of a function of two or more variables Partial derivative application of functions of two or more variables in the field of mathematics and other fields of science.
Forms of Assessment	Assessment of the learning process according to the following components: assignment 30%, mid exam 30%, final exam 40%.
Study and examination requirements and forms of examination	**Study and examination requirements:** • Students must be present 15 minutes before class starts. • Students must turn off all electronic devices. • Students are required to notify the lecturer if they are absent from class due to illness, etc. • Students must turn in all classwork by the deadline. • Students must take an exam to get a final grade. **Form of examination:** Written exam: essay
media employed	LMS and power point presentations.

reading list	**MainReference**
	Purcell, 2007, Calculus, Ninth Edition, Prentice Hall **Supporting references** 1. Strauss, 2002, Calculus, 3rd Edition, Prentice Hall 2. James Stewart, 2001, Calculus 4th Edition, Erlangga 3. Koko Martono, 1999, Calculus 1st edition, Erlangga 4. Frank Ayres, 1998, Differential and Integral Calculus, 2nd Edition, Erlangga Leithold, 1991, Calculus-Analytic Measurement, 5th edition, Erlangga