

Calculus I

Module Name :	Calculus I	
Module Level :	Undergraduate	
Code :	32250683	
Sub-heading, if applicable :		
Classes, if applicable :		
Semester :	1 st	
Module coordinator :	Dr. Teguh Budi Prayitno, M.Si	
Lecturer(s) :	Dr. Teguh Budi Prayitno, M.Si Prof. Mangasi Alion Marpaung, M.Si	
Language :	Indonesian	
Classification within the curriculum :	Compulsory course	
Type of Teaching	Contact hours per week during the semester	Class Size
Lecture (Expository, discussion, exercise)	150 minutes	40
Workload	Total workload of this course 135.99 hours (4.5 ECTS) per semester which consist of 51 hours (1.7 ECTS) classroom activity, 42 hours (1.4 ECTS) structured task, and 42 hours (1.4 ECTS) per semester.	
Credit points :	4.5 ECTS	
Prerequisite course(s) :	-	
Course Outcomes :	After taking this course the student have ability to : CLO63. Understand basic knowledge of mathematics. CLO64. Find exact solution of mathematical problems. CLO65. Analyze the solution for certain boundary conditions.	
Content :	1. Functions, Limit, and Continuity (2 weeks) <ul style="list-style-type: none"> • Introduction to functions • Graphics of functions • Limit and continuity 2. Derivative of function (2 weeks) <ul style="list-style-type: none"> • Formal definition of derivative of function • Implicit derivative • Application of derivative 3. Integral of Function (3 weeks) <ul style="list-style-type: none"> • Formal definition of integral of function • Finite and infinite integral • Riemann method of integral 4. Application of Integral (3 weeks) <ul style="list-style-type: none"> • Definition of length, area, and volume • Definition of work and force 	

	<ul style="list-style-type: none"> • Definition of moment and centre of mass <p>5. Transcendental Function (3 weeks)</p> <ul style="list-style-type: none"> • Natural logarithm and its derivative • Natural exponential and its derivative • Integral of transcendental functions <p>6. Integral Techniques (2 weeks)</p> <ul style="list-style-type: none"> • Integration by parts • Rationalizing substitutions • Integration of rational functions 																				
Study/exam achievements:	<p>Examination are conducted as unit test, as following</p> <table border="1"> <thead> <tr> <th>No</th> <th>Assesment Object</th> <th>Assesment Technique</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Case-based Assignment</td> <td>Exploring and discussing some problem in mathematics</td> <td>50%</td> </tr> <tr> <td>2</td> <td>Midterm Test</td> <td>Written test</td> <td>20%</td> </tr> <tr> <td>3</td> <td>Final Test</td> <td>Written test</td> <td>20%</td> </tr> <tr> <td>4</td> <td>Attendance</td> <td>Presence list</td> <td>10%</td> </tr> </tbody> </table>	No	Assesment Object	Assesment Technique	Weight	1	Case-based Assignment	Exploring and discussing some problem in mathematics	50%	2	Midterm Test	Written test	20%	3	Final Test	Written test	20%	4	Attendance	Presence list	10%
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Media :	Power point presentation, textbook, learning management system (LMS)																				
Literatures :	<ol style="list-style-type: none"> 1. H. Anton, I. Bivens, and S. Davis (2013) Calculus 10th edition, John Wiley & Sons. 2. G. B. Thomas, M. D. Weir, J. Hass (2010) Calculus 12th Edition, Addison Wesley 3. E. J. Purcell and D. Varberg (2006) Calculus 9th Edition, Pearson 																				