

Calculus II

Module Name :	Calculus II	
Module Level :	Undergraduate	
Code :	32250703	
Sub-heading, if applicable :		
Classes, if applicable :		
Semester :	2 nd	
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 : CLO80. Understand basic knowledge of mathematics. CLO81. Find exact solution of mathematical problems. CLO82. Understand the transformation of coordinates. CLO83. Analyze the solution for certain boundary conditions.	
Content :	1. Infinite Series (2 weeks) <ul style="list-style-type: none"> • Introduction to series • Convergence test • Taylor and Maclaurine series 2. Parametric Equation (2 weeks) <ul style="list-style-type: none"> • Formal definition of parametric equation • Conics and polar coordinates • Curves on the plane 3. Transformation of Coordinates (3 weeks) <ul style="list-style-type: none"> • Cylindrical and spherical coordinates • Vectors in three-dimensional coordinates • Jacobian method 4. Motion in Space (3 weeks) <ul style="list-style-type: none"> • Dot and Cross product • Derivative and integral vector • Curvilinear motion 	

	<p>5. Partial Derivative (3 weeks)</p> <ul style="list-style-type: none"> • Functions of two or more variables • Definition of partial derivative • Application of partial derivative <p>6. Multiple Integral (2 weeks)</p> <ul style="list-style-type: none"> • Double and triple integral • Change variable in multiple integral • Triple integral in curvilinear coordinates <p>7. Introduction to Differential Equation (2 weeks)</p> <ul style="list-style-type: none"> • Linear differential equation • Method of separation of variables • Application of first-order differential equation 																				
Study/exam achievements:	<p>Examination are conducted as unit test, as follows</p> <table border="1" data-bbox="553 642 1383 978"> <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 																				