



STATE UNIVERSITY OF-YOGYAKARTA
FACULTY OF-MATHEMATICS AND NATURAL SCIENCE
SILLABY

FRM/FMIPA/065-00
5 September 2008

Faculty	: Mathematics and Natural Science
Study Program	: International Programme for Science Education
Course/Code	: Calculus of Integral/MAA 307
Credit	: Teory = 3 (three) SKS
Semester	: 3 (three)
Prerequisite/Code	: -
Professor	: Nikenasih Binatari, M.Si

I. Course Description

This course study about definite and indefinite integral, fundamental theorem of integral, the application of definite integral, transendent function, integration technique, indefinite form and improper integral.

II. Standard of Competence

Upon completing this course, students should understand the general theory of integral calculus and the basic techniques for solving calculus of integrals. At this end of this course, students should understand which theory and method of calculus of integral may be applied to solve numerous problems, be able to solve it and interpret the solution in the origin problems.

III. Activity Plan

Meeting	Basic Competence	Essential Concept	Learning Strategies	Referencee	Character
1 st week	Students know the motivation to study integral calculus and its connection with differential calculus	Sillaby, motivation and differentiation rules	Discussion, Exercise	[A], [C]	Curiosity
2 nd week		Sigma Notation $\sum n, \sum n^2, \sum n^3$	Lecturing, Discussion, Exercise	[A], [B]	Understand
3 rd week	Students understand the idea to determine the approximation of several problems	Area under a curve	Lecturing, Exercise	[A], [B],[C]	Understand,
4 th week		Volume of a solid of revolution	Lecturing, Discussion, Exercise,	[A], [B],[C]	Understand
5 th week		Arc Length	Lecturing, Discussion, Exercise,	[B], [A]	Understand
6 th week		Surface area of a solid of revolution	Lecturing, Discussion, Exercise,	[B]	Understand
7 th week		Work and Momen of Inersia	Lecturing, Discussion, Exercise,	[B]	Understand
8 th week	Students understand the basic theory of integral calculus	Definition of Antiderivative, its rules, its linearity properties.	Lecturing, Discussion, Exercise,	[A], [B]	Understand, Reasonable
9 th week		Riemann Sum, Definition of definite integral, Computing definite integral	Lecturing, Discussion, Exercise,	[A], [B]	Understand, reasonable
10 th week		Fundamental Theorem of Calculus, Properties of Definite Integral	Lecturing, Discussion, Exercise,	[A], [B]	Understand, reasonable
11 st week	Students able to solve the problems before using the theory of integral	The application of integral on counting the area under a curve, volume of a solid of revolution, etc	Lecturing, Discussion, Exercise,	[A], [B]	Understand, Applicative

12 nd week	Midterm Exam and				
13 rd week	Students understand several method to solve integration problems.	Substitution method, rasionalize substitution method	Lecturing, Discussion, Exercise,	[A], [B]	Understand, Creative
14 th week		Partial Method	Lecturing, Discussion, Exercise,	[A], [B]	Understand, Creative
15 th week		Integral of rasional function	Lecturing, Discussion, Exercise,	[A], [B]	Understand, Creative
16 th week		Integral of indefinite function, Improper Integral	Lecturing, Discussion, Exercise,	[A], [B]	Understand, Creative

IV. Reference

Compulsory :

[A] Passow, Eli, Ph.D. *Schaum's Outline of Theory and Problems of Understanding Calculus Concepts*. 1996. McGraw-Hill Companies. USA.

[B] Varberg, Dale. Purcell, Edwin J. *Calculus*. 2001.

Additional :

[C] Ryan, Mark. *Calculus for dummies*. 2003. Wiley Publishing Inc.

V. Evaluation

Component	Worth
Present	
Quiz	
Tugas	

First Midterm Exam	
Final Exam	
Total	100%

Head of Science Education Study Programme

Yogyakarta, 9th of February 2012
Lecturer

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