



COURSE SYLLABUS

Faculty	: Mathematics and Natural Science
Department	: Mathematics Education
Course / Code	: Integral Calculus / MAT 307
Credits	: Theory: 2 SKS Practice: 1 SKS
Semester	: 2 nd
Prerequisite/Code	: Differential Calculus / MAT 306
Lecturer	: Wahyu Setyaningrum, M.Ed.

I. Course Description:

Integral calculus covers the topics of indefinite and definite integrals, the properties of integral, the fundamental theorem of integral, applications of definite integral, the transcendent function, techniques of integration, and improper integrals.

II. Standard Competency:

Students are expected to be able to: (1) determine the indefinite integral of a function; (2) determine the definite integral using the fundamental theorem of integral; (3) determine the definite integral using techniques of integration; (4) solve integration problems; and (5) determine improper integrals.

III. Lesson strategies :

- Expository
- Discussion
- E-learning
- Working individually

IV. Lesson Plan :

Lesson	Basic Competencies	Topic
1-4	Determining the indefinite integral of a function and solve differential equation	The indefinite integral and introduction of differential equation
5-6	Calculating definite integrals using the fundamental theorem of integral	The definite integral The fundamental theorem of integral
7-10	Determining the integral of logarithmic functions, exponential functions, and trigonometric functions.	The integral of transcendent function

11-13	Determining the integral of functions using substitution methods and integration by parts	Techniques of integration
14-15	Determining the integral of functions using trigonometric and partial integration	Techniques of integration
16-17	Integrating rational functions	Techniques of integration
18	1 st Exam	
19-20	Finding the area of flat surfaces	The area of flat surfaces
21-22	Finding the volume of solid of revolution using disk methods and ring methods	The volume of solid of revolution
23-24	Finding the volume of solid of revolution using shell method or cylinder method.	The volume of solid of revolution.
25-26	Finding the length of curves	Length of curves
27-28	Finding the area of the surface of rotated curves	The surface of revolution
29	2 nd Exam	
30-32	Finding moment and center of gravity	Moment and center of gravity

V. References :

<p>[A] Varberg Dale dan Purcell E.J. (2001). Kalkulus Jilid 1 (Edisi VII), Batam: Interaksa [B] Leithold, L. (1986). <i>The Calculus with Analytic Geometry</i>. Harper & Row Publisher. [C] Lang, S. (1986). <i>A First Course in Calculus (fifth edition)</i>. USA: Springer</p>
--

VI. Evaluation :

Number	Components of Evaluation	Percentage (%)
1	Participation	10%
2	Tasks	20%
3	Mid Semester Exam (sisipan 1 & 2)	30%
4	Final Exam	40%
Total		100%

Head of Mathematics Education Department

Yogyakarta,
Lecturer,

Dr. Hartono
NIP . 19620329 198702 1 002

Wahyu Setyaningrum, M.Ed.
NIP 19810319 200312 2001