



**YOGYAKARTA STATE UNIVERSITY
FACULTY OF MATHEMATICS AND NATURAL SCIENCE**

LESSON PLAN

**FRM/FMIPA/063-00
1 April 2010**

1. Faculty /Study Program : Mathematics and Science/Mathematics Education
2. Course & Code : Computer Application, MAA311
3. Credit : Theory : 2 sks Practice: 1 sks
4. Semester/Time : IV Time: 100 minutes
5. Basic competence : Students are able to use symbolic math toolbox in MATLAB
6. Indicator :
Student can:
 - define Variable and Symbolic expression
 - use subs command
 - extract numerator and denominator
 - solve algebra operation.
 - find differential of a one variable function
 - solve limit of a function
 - find integral
 - solve the infinite summation
 - use the Collect, expand and factor command
7. Essential Concepts : Computer application for handle symbolic expression using MATLAB
8. Learning Activity : 19

Component	Detail Activity	Time	Method	Media	References	Character
Opening	<ul style="list-style-type: none"> • Lecturer greets the students and asks some students to tell some important points of the topic in the last meeting • Lecturer explains the objective of the topic and gives motivation 	5'	Explanation and Discussion	Computer, LCD	A:57	Thinking logically, critically, creatively, and innovatively
Main Activities	<ul style="list-style-type: none"> • Students execute the commands to solve symbolic function using computer by following the instruction in the handout • In pair, students discuss to get the main meaning of the commands • Lecturer observes the students activity and gives some comments or explanations. • Lecturer activates 	80'	Explanation Demonstration, Discussion, practice, group work			Caring about social matters and environment Appreciative of works and achievements of others

	<p>discussion in order students get the important information about the command and make some notes in handout</p> <ul style="list-style-type: none"> • Lecturer facilitates students to get further information about the topic 					
Closure	Lecturer asks students to share their conclusion about the topic	10'				
Follow up	Students are supposed to solve the problem using the other mathematics software (maple or mathematica)	5'				

Learning Activity : 20 (practice, 1 sks practice = 100')

Component	Detail Activity	Time	Method	Media	References	Character
Opening	Lecturer greets students and asks some students to tell the main idea of last topic, and delivers a lab sheet	5'	Explanation and Discussion	Computer, worksheet		Thinking logically, critically, creatively, and innovatively
Main Activities	<ul style="list-style-type: none"> • Students practice and do exercises to solve some problems using symbolic math toolbox. • Students submit their result to the lecturer 	80'	Practicum using computer, by self/in a group		worksheet / quiz	Caring about social matters and environment
Closure	Lecturer gives feedback to the result of students' work	10'	Explanation			Appreciative of works and achievements of others
Follow up	<p>Lecturer gives introduction of the next material</p> <p>Students are asked to read the next topic in handout and open HELP in MATLAB about the topic</p>	5'	Explanation			

9. Assessment

Quiz:

i). Given: $f(x) = \frac{x^2 - 2}{x + 3}$ $g(x) = \frac{x^3 - 2x}{x + 5}$ $h(x) = \frac{2}{x - 1}$

determine:

- | | | |
|--------|---------------|---------------|
| a. f+g | e. g.h | i. numden (g) |
| b. f.h | f. numden (f) | j. f.g |
| c. g/h | g. g+h | k. f/h |
| d. f+h | h. f/g | l. numden(h) |

ii). Given: $f(x) = \frac{x + 3}{3u - 2}$ *and* $g(x) = \frac{u^2}{v - 5}$

Determine :

- | | | | |
|----------|----------|-----------|-----------|
| a.fog(x) | b.gof(x) | c. fog(v) | d. gof(u) |
|----------|----------|-----------|-----------|

iii). Determine of dy/dx and d^2y/dx^2 if given

- $y = \{\log(3x + 2)\}^{\sin^{-1}(2x+5)}$
- $xy - \log y = 1$
- $y = \sin^2(3x + \pi/6)$

10. Reference

Compulsory:

A. Sri Andayani, Handout of Computer Application, FMIPA UNY 2009

Additional:

- Hanselman, D. & Littlefield, B. 2000. Mastering MATLAB, A Comprehensive Tutorial and Reference. Prentice-Hall International, Inc.
- <http://www.matworks.com/access/helpdesk/help/>
- <http://www.math.siu.edu/matlab/tutorial2.pdf>

Yogyakarta, 21 December 2010
Professor,

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