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 find the minimum and maximum value of a function using MATLAB
6. Indicator :
   Student can:
   - Plot explicit, implicit and parametric function using ezplot command
   - Plot a function using fplot command
   - Find the minimum value of a function
   - Find the maximum value of a function
   - Find the zero point of a function
7. Essential Concepts : Computer application for finding maximum and minimum value of a function using MATLAB

8. Learning Activity : 13

Component	Detail Activity	Time	Method	Media	References	Character
Opening	• Lecturer greets the students and asks some students to tell some important points of the topic in the last meeting • Lecturer describes its relation to the next topic.	5’	Explanation and Discussion	Computer, LCD	A:47	Thinking logically, critically, creatively, and innovatively Caring about social matters and environment Appreciative of works and achievements of others
Main Activities	• By following the instruction in handout and using computer, students try some commands to plot a function using ezplot and fplot command • In pair, students discuss to get the main meaning of the commands • Lecturer observes the students activity and gives some comments or explanations. • Students in pairs continue to try the commands to find the	80’	Explanation Demonstration, Discussion, practice, group work			

	minimum, maximum and zero point of a function • After 50 minutes, Lecturer ask students to make a group of 4 (2 pairs) to share their discussion results. • Lecturer facilitate students to get the conclusion of the topic					
Closure	Student and lecturer conclude the discussion of the topic	10’				
Follow up	Students are supposed to solve the problem using the other mathematics software (maple or mathematica)	5’				

Learning Activity : 14 (practice, 1 sks practice = 100’)

Component	Detail Activity	Time	Method	Media	References	Character
Opening	Lecturer greets tudents 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	• Students practice and do excercises to find minimum, maximum and zero point of some functions. • Students submit their result to the lecturer	80’	Practicum using computer, by self/in a group		worksheet / quiz	Caring about social matters and environment Appreciative of works and achievements of others
Closure	Lecturer gives feedback to the result of students’ work	10’	Explanation			
Follow up	Lecturer gives introduction of the next material Students are asked to read the next topic in handout and open HELP in MATLAB about the topic	5’	Explanation			

9. Assessment

Quiz:

Find the minimum and maximum value of the functions below:

a. $y1 = \frac{x|x-1|}{x^2}, y2 = \frac{x|x-1|}{2+x^2}, y3 = \frac{x|x-1|}{3-x^2}$

b. $f(x) = x^{(x^x)} - (x^x)^x$ **in [0,2]**

c. $y = x^3 - (x+6)^2 - 2$

d. $f(x) = \frac{1}{3}x^3 - x^2 - 3x + 4$

e. $h(x) = (1-2x^2)e^{-x^2}$ **in [-2,1]**

f. $f(x) = x^2 + \frac{1}{x^2}$

g. $g(x) = \frac{\sin(x)}{2+\cos(x)}$ *in* $[0 \quad 2\pi]$

10. Reference

Compulsory:

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

Additional:

B. Hanselman, D. & Littlefield, B. 2000. Mastering MATLAB, A Comprehensive Tutorial and Reference. Prentice-Hall International, Inc.

C. http://www.matworks.com/**access/helpdesk/help/**

D. http://www.math.siu.edu/matlab/tutorial2.pdf

Yogyakarta, 21 December 2010
Professor,

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