



**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 can solve the problem of polynomial using MATLAB
6. Indicator :
  - Student can:
    - Find the root of polynomial
    - Add and subtract polynomial
    - Multiply and divide polynomial
    - Differentiate and integrate polynomial
    - Evaluate polynomial
    - Draw a graph of polynomial
    - Find the Partial Fraction Expansions
    - Solve Polynomial
    - Find a Curve Fitting
7. Essential Concepts : Computer application for handling polynomial using MATLAB
8. Learning Activity : 9

Component	Detail Activity	Time	Method	Media	References	Character
Opening	<ul style="list-style-type: none"> <li>• Lecturer greets the students and asks some students to tell some important points of the topic in the last meeting</li> <li>• Lecturer describes its relation to the next topic.</li> </ul>	5'	Explanation and Discussion	Computer, LCD	A:36	Thinking logically, critically, creatively, and innovatively
Main Activities	<ul style="list-style-type: none"> <li>• By following the instruction in handout and using computer, students try some commands for handling polynomial</li> <li>• In pair, students discuss to get the main meaning of the commands</li> <li>• Lecturer gives opportunity to the students to move to others group to get their discussion results.</li> </ul>	80'	Explanation Demonstration, Discussion, practice, group work			Caring about social matters and environment  Appreciative of works and achievements of others

	<ul style="list-style-type: none"> <li>Lecturer facilitate students to get more information about the topic</li> </ul>					
Closure	Student and lecturer conclude the discussion of the topic	10'				
Follow up	Students are asked to collect some problems of polynomial from journal, articles, and Internet	5'				

Learning Activity : 10 (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	<ul style="list-style-type: none"> <li>Students practice and doing excercises to solve some problem of polynomial</li> <li>Students share their results on finding some problem of polynomial</li> </ul>	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 material in handout and open HELP in MATLAB about the material	5'	Explanation			

## 9. Assessment

### Quiz:

- Find the roots of the polynomial below and draw the graph:
  - $x^2 - 3x + 4 = 0$
  - $x^4 + x^3 + x^2 + x + 1 = 0$
- Determine the new polynomial that the coefficients are got from:
  - polynomial K: the 1<sup>st</sup> and 2<sup>nd</sup> element of the result no. 1a.
  - polynomial L: the 2<sup>nd</sup> and 3<sup>rd</sup> element of the result no. 1b.
- find the result of multiply, add and divide operations of K and L

- d. find the derivative of  $K \times L$
- e. Find partial fraction expansion of the polynomial that formed by polynomial no.1a/1b.

**Assignment:**

Write down 5 polynomials and draw the graph using MATLAB.

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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