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

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| 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.  
                  • 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 | 5'   | Explanation and Discussion       | Computer, LCD    | A:47       | Thinking logically, critically, creatively, and innovatively |
| Main Activities |                                                                                  | 80'  | Explanation                  | Demonstration, Discussion, practice, group work |            | Caring about social matters and environment |
|                 |                                                                                  |      |                               |                  |            | Appreciative of works and achievements of others |
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. Student and lecturer conclude the discussion of the topic.

Follow up: Students are supposed to solve the problem using the other mathematics software (maple or mathematica).

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

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<tbody>
<tr>
<td>Opening</td>
<td>Lecturer greets students and asks some students to tell the main idea of last topic, and delivers a lab sheet</td>
<td>5’</td>
<td>Explanation and Discussion</td>
<td>Computer, worksheet</td>
<td></td>
<td>Thinking logically, critically, creatively, and innovatively</td>
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| Main Activities | • Students practice and do exercises 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                                  | 5’   | Explanation            |              |            |                                                                           |

9. Assessment

Quiz:
Find the minimum and maximum value of the functions below:
\[ a. \quad y_1 = \frac{x|x-1|}{x^2}, y_2 = \frac{x|x-1|}{2+x^2}, y_3 = \frac{x|x-1|}{3-x^2} \]

\[ b. \quad f(x) = x^{(x^x)} - (x^x)^x \text{ in } [0,2] \]

\[ c. \quad y = x^3 - (x+6)^2 - 2 \]

\[ d. \quad f'(x) = \frac{1}{3} x^3 - x^2 - 3x + 4 \]

\[ e. \quad h(x) = (1-2x^2)e^{-x^2} \text{ in } [-2,1] \]

\[ f. \quad f(x) = x^2 + \frac{1}{x^2} \]

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

10. Reference

**Compulsory:**

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

**Additional:**


Yogyakarta, 21 December 2010

Professor,

Sri Andayani, M.Kom
NIP 197204261997022001