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 draw the 2D graph of mathematics functions using MATLAB  
6. Indicator:  
   - Student can use plotting elementary functions.  
   - Student can use plotting-titles & labels, grids commands  
   - Student can change line styles & colors of graph  
   - Student can draw multi-plots using hold and subplot commands  
   - Student can format text on plots  
   - Student can use the commands for controlling axes  
   - Student can draw graph type stairs and bar  
7. Essential Concepts : Computer application for drawing 2D graph using MATLAB  
8. Learning Activity : 11  

<table>
<thead>
<tr>
<th>Component</th>
<th>Detail Activity</th>
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<th>Method</th>
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</thead>
</table>
| 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 for drawing 2D graph  
                  • In pair, students discuss to get the main meaning of the commands  
                  • After 30 minutes, Lecturer ask students to make a group of 4 (2 pairs) to share their discussion results.  
                  • Lecturer facilitate students if they have some problems or questions about the                                                                 |
|                 |                                                                                | 5'    | Explanation and Discussion | Computer, LCD | A:41       | Thinking logically, critically, creatively, and innovatively                                                                 |
| Main Activities | • By following the instruction in handout and using computer, students try some commands for drawing 2D graph  
                  • In pair, students discuss to get the main meaning of the commands  
                  • After 30 minutes, Lecturer ask students to make a group of 4 (2 pairs) to share their discussion results.  
                  • Lecturer facilitate students if they have some problems or questions about the                                                                 |
|                 |                                                                                | 80'   | Explanation Demonstration, Discussion, practice, group work |             |            | Caring about social matters and environment  
                  |                                                                                                           |       |                                                                                          |           |                        | Appreciative of works and achievements of others |
Students get opportunity to visit the other group and share and compare their result. 
Students present their conclusion.

**Student and lecturer conclude the discussion of the topic**

**Follow up**
Students are asked to collect some problems that use the mathematics functions and draw the graph.

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### Learning Activity: 12
(practice, 1 sks practice = 100’)

<table>
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<tr>
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</thead>
<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>worksheet / quiz</td>
<td>Thinking logically, critically, creatively, and innovatively</td>
</tr>
<tr>
<td>Main Activities</td>
<td>Students practice and do exercises draw the graph of some functions. Students submit their result to the lecturer</td>
<td>80’</td>
<td>Practicum using computer, by self/in a group</td>
<td>Worksheet / quiz</td>
<td></td>
<td>Caring about social matters and environment</td>
</tr>
<tr>
<td>Closure</td>
<td>Lecturer gives feedback to the result of students’ work</td>
<td>10’</td>
<td>Explanation</td>
<td></td>
<td></td>
<td>Appreciative of works and achievements of others</td>
</tr>
<tr>
<td>Follow up</td>
<td>Lecturer gives introduction of the next material Students are asked to read the next topic in the handout and open HELP in MATLAB about the topic</td>
<td>5’</td>
<td>Explanation</td>
<td></td>
<td></td>
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</tbody>
</table>

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### Assessment

**Quiz:**

Draw graphs of the functions

1) \[ y = \frac{\sin x}{x} \]
2) \[ u = \frac{1}{(x-1)^2} + 2 \]
3) \[ v = \frac{x^2+1}{x^2-4} \]
4) \[ w = \frac{(10-x)^{1/3} - 2}{(4-x^2)^{1/2}} \]

for \(0 \leq x \leq 10\).
10. Reference

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

Additional:
C. http://www.matworks.com/access/helpdesk/help/
D. http://www.math.siu.edu/matlab/tutorial2.pdf

Yogyakarta, 21 December 2010
Professor,

Sri Andayani, M.Kom
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