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 operate elementary mathematics built-in function, relation operators and logical variables in MATLAB
6. Indicator :
   Student can operate numbers and format command in Matlab, trigonometric functions in Matlab, exponential functions in Matlab, Complex functions in Matlab, Rounding and Remainder functions in Matlab, Discrete Math functions in Matlab, logical variables and relational operators.
7. Essential Concepts : Computer application in basic mathematics function using MATLAB
8. Learning Activity : 5

<table>
<thead>
<tr>
<th>Component</th>
<th>Detail Activity</th>
<th>Time</th>
<th>Method</th>
<th>Media</th>
<th>References</th>
<th>Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening</td>
<td>Lecturer explains the objective of the course and motivates students related to topic</td>
<td>5’</td>
<td>Explanation and Discussion</td>
<td>Computer, LCD</td>
<td>A:23</td>
<td>Thinking logically, critically, creatively, and innovatively</td>
</tr>
<tr>
<td>Main Activities</td>
<td>Students try the command to use some built-in function in elementary mathematics, logical variables and relation operators by following the instruction in handout using computer</td>
<td>80’</td>
<td>Explanation Demonstration, Discussion, practice, group work</td>
<td></td>
<td></td>
<td>Caring about social matters and environment</td>
</tr>
<tr>
<td></td>
<td>Lecturer guides students to get the main meaning of the command, make some notes in handout and conclusions</td>
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<td>Appreciative of works and achievements of others</td>
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<tr>
<td></td>
<td>Lecturer facilitate students to get more information about the material</td>
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<tr>
<td>Closure</td>
<td>Lecturer invites students to share their conclusion</td>
<td>10’</td>
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</tbody>
</table>
Follow up: Students are asked to collect some problems that use the mathematics functions from journal, articles, and Internet

Learning Activity: 6 (practice, 1 sks practice = 100’)

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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 Lecturer 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>
</tr>
<tr>
<td>Main Activities</td>
<td>Students practice and do exercises to solve some of using the built-in function in MATLAB</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 material in handout and open HELP in MATLAB about the material</td>
<td>5’</td>
<td>Explanation</td>
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</tbody>
</table>

9. Assessment

Quiz:
A. Makes a random matrix R 4 x 4
   Do the following operations to R:
   a. abs( R )
   b. ceil ( R )
   c. fix( R )
   d. floor( R )
   e. round ( R )
   f. sign ( R )

   Describe the differences of ceil, fix, floor dan round.

B. Find the lcm and gcd of
   a. 78 and 87
   b. magic(4) and pascal(4)
   c. 12,56, and 68
   d. x=[2 8 10] and y=[3 9 15]

C. Gives the example of the usage of:
   a. rem
   b. mod
   c. primes
   d. factorial
   e. factor
   f. log
   g. log2
   h. log10
   i. pow2

D. Makes A, a 2 x 5 matrix which the elements are:
   First row: start from -2 to 2, the number of element is 5
The 2nd row: start from 5 to -3, and the difference between the element is 2
a. Determine the element of A that is greater than 0
b. Explain the command: i) any(A) ii) all(A) iii) xor(A(1,:), A(2,:))
c. Determine command to find the element of A that is equal to -1 or 1. Save the answer as B.
d. Explain the command:
   i) A=A+(A== -1) *pi ii) i) A=A - (A== 1) *pi iii) A(B) = 100

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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