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 use MATLAB to solve some problems in matrices, its operation and manipulation  
6. Indicator :  
7. Essential Concepts : Computer application for manipulating matrix using MATLAB  
8. Learning Activity : 3

<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:11</td>
<td>Thinking logically, critically, creatively, and innovatively</td>
</tr>
<tr>
<td></td>
<td>• Students trying the commands of matrices, operate and manipulate matrices 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 matrices commands, make some notes in handout and conclusions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Appreciative of works and achievements of others</td>
</tr>
<tr>
<td></td>
<td>• Lecturer facilitate students to get more information about the material</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Main Activities</td>
<td>Students trying the commands of matrices, operate and manipulate matrices by following the instruction in handout using computer</td>
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<tr>
<td></td>
<td>Students are asked to expose their conclusion</td>
<td>10’</td>
<td>Explanation and Discussion</td>
<td>Computer, LCD</td>
<td>A:11</td>
<td></td>
</tr>
<tr>
<td>Follow up</td>
<td>Students are asked to collect some problems in matrices</td>
<td>5’</td>
<td>Explanation and Discussion</td>
<td>Computer, LCD</td>
<td>A:11</td>
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YOGYAKARTA STATE UNIVERSITY  
FACULTY OF MATHEMATICS AND NATURAL SCIENCE  
LESSON PLAN

FRM/FMIPA/063-00  
1 April 2010
Learning Activity: 4 (practice, 1 sks practice = 100’)

<table>
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<tr>
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<th>Method</th>
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</tr>
</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>worksheet / quiz</td>
<td>Thinking logically, critically, creatively, and innovatively</td>
</tr>
<tr>
<td>Main Activities</td>
<td>Students practice and doing exercises to solve some matrices problem using 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>
<td></td>
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</tr>
</tbody>
</table>

9. Assessment

Quiz:

i) Given

\[ A = \begin{bmatrix} 3 & 0 \\ -1 & 2 \\ 1 & 1 \end{bmatrix}, \quad B = \begin{bmatrix} 4 & -1 \\ 0 & 2 \end{bmatrix}, \quad C = \begin{bmatrix} 1 & 4 & 2 \\ 3 & 1 & 5 \end{bmatrix}, \quad D = \begin{bmatrix} 1 & 5 & 2 \\ -1 & 0 & 1 \\ 3 & 2 & 4 \end{bmatrix}, \quad E = \begin{bmatrix} 6 & 1 & 3 \end{bmatrix} \]

Determine the element of

<table>
<thead>
<tr>
<th>variable</th>
<th>Determine the element of variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDE23</td>
<td>6. first column of B*A</td>
</tr>
<tr>
<td>BA1</td>
<td>7. the 2\textsuperscript{nd} and 3\textsuperscript{rd} column of D</td>
</tr>
<tr>
<td>AB1</td>
<td>8. the 1-2 row and 1-2 column of E</td>
</tr>
<tr>
<td>AB2</td>
<td>9. the 2-3 row of D</td>
</tr>
<tr>
<td>AA3</td>
<td>10. the 1-2 row of E</td>
</tr>
<tr>
<td>AB3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>


ii). Using the special matrices command, i.e. magic, zeros, ones, eye, pascal, generates the new matrices below.

1. \[
\begin{pmatrix}
16 & 2 & 3 & 13 & 1 \\
9 & 7 & 6 & 12 & 1 \\
14 & 15 & 1 & 1 \\
0 & 0 & 0 & 0 & 100
\end{pmatrix}
\]

2. \[
\begin{pmatrix}
1 & 0 & 0 & 1 & 1 \\
0 & 1 & 0 & 1 & 1 \\
0 & 0 & 1 & 1 & 1 \\
0 & 0 & 0 & 0 & 0
\end{pmatrix}
\]

3. \[
\begin{pmatrix}
1 & 0 \\
0 & 1 \\
1 & 0 \\
0 & 1
\end{pmatrix}
\]

4. \[
\begin{pmatrix}
0 & 1 & 0 \\
0 & 0 & 1 \\
0 & 0 & 1
\end{pmatrix}
\begin{pmatrix}
1 & 1 & 1
\end{pmatrix}
\begin{pmatrix}
1 & 2 & 3 \\
1 & 3 & 6 \\
1 & 1 & 1
\end{pmatrix}
\begin{pmatrix}
0 & 1 & 0 & 1 & 1 & 1
\end{pmatrix}
\]

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
NIP 19720426 199702 2 001