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 use symbolic math toolbox in MATLAB
6. Indicator :
   Student can:
   • define Variable and Symbolic expression
   • use subs command
   • extract numerator and denominator
   • solve algebra operation.
   • find differential of a one variable function
   • solve limit of a function
   • find integral
   • solve the infinite summation
   • use the Collect, expand and factor command
7. Essential Concepts : Computer application for handle symbolic expression using MATLAB
8. Learning Activity : 19

<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>
</table>
| Opening         | • Lecturer greets the students and asks some students to tell some important points of the topic in the last meeting  
                  • Lecturer explains the objective of the topic and gives motivation  
                  • Students execute the commands to solve symbolic function using computer by following the instruction in the handout  
                  • In pair, students discuss to get the main meaning of the commands  
                  • Lecturer observes the students activity and gives some comments or explanations.  
                  • Lecturer activates                                                                 | 5'     | Explanation and Discussion | Computer, LCD             | A:57       | 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                          |
discussion in order students get the important information about the command and make some notes in handout

- Lecturer facilitates students to get further information about the topic

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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, 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>
</tr>
<tr>
<td>Main Activities</td>
<td>Students practice and do exercises to solve some problems using symbolic math toolbox. 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 handout and open HELP in MATLAB about the topic</td>
<td>5’</td>
<td>Explanation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Learning Activity : 20 (practice, 1 sks practice = 100’)

- Lecturer facilitates students to get further information about the topic.
- Students are supposed to solve the problem using the other mathematics software (maple or mathematica).
- Students practice and do exercises to solve some problems using symbolic math toolbox.
- Students submit their result to the lecturer.
- Lecturer gives feedback to the result of students’ work.
- Lecturer gives introduction of the next material.
- Students are asked to read the next topic in handout and open HELP in MATLAB about the topic.
9. Assessment

**Quiz:**

i). Given: \( f(x) = \frac{x^2 - 2}{x + 3} \) \( g(x) = \frac{x^3 - 2x}{x + 5} \) \( h(x) = \frac{2}{x - 1} \)

  determine:
  
  a. \( f+g \)  
  b. \( f.h \)  
  c. \( g/h \)  
  d. \( f+h \)  
  e. \( g.h \)  
  f. numden (f)  
  g. \( g+h \)  
  h. \( f/g \)  
  i. numden (g)  
  j. \( f.g \)  
  k. \( f/h \)  
  l. numden(h)

ii). Given: \( f(x) = \frac{x + 3}{3u - 2} \) \( g(x) = \frac{u^2}{v - 5} \)

  Determine :
  
  a. \( f.g(x) \)  
  b. \( g.f(x) \)  
  c. \( f.g(v) \)  
  d. \( g.f(u) \)

iii). Determine of \( \frac{dy}{dx} \) and \( \frac{d^2y}{dx^2} \) if given

  a. \( y = \{\log(3x + 2)\}^{\sin^{-1}(2x + 5)} \)
  b. \( xy - \log y = 1 \)
  c. \( y = \sin^2(3x + \pi/6) \)

10. Reference

**Compulsory:**

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

**Additional:**


Yogyakarta, 21 December 2010

Professor,

Sri Andayani, M.Com
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