



# Satuan Acara Pengajaran

ENMT800003 - Metode Penelitian & Komputasi

Pengajar

*Nofrijon Bin Imam Sofyan Ph.D*

*Prof. Dr. Ir. Johny Wahyuadi Mudaryoto DEA.*

## Minggu 1

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<b>Materi</b>	General introduction - Class information - Course content and grading - General introduction to experimental research and methodology + Experimental research + Definitions and importance of definitions + Aspect of quantifications + The purpose and principles
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<b>Media</b>	LCD Projector
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<b>Referensi</b>	<ol style="list-style-type: none"><li>1. C. R. Kothari: Research Methodology, Methods &amp; Techniques, New Age International (P) Ltd., Publishers, New Delhi, 2004.</li><li>2. G. Marczyk, D. DeMatteo, and D. Festinger: Essentials of Research Design and Methodology, John Wiley &amp; Sons, Inc., Hoboken, New Jersey, 2005.</li><li>3. J. M. Ruane: Essentials of research methods: a guide to social science research, Blackwell Publishing, Malden, 2005.</li><li>4. L. Blaxter, C. Hughes, and M. Tight: How to Research, 3rd ed., Open University Press, Berkshire, UK, 2006.</li><li>5. Y. K. Singh: Fundamental of Research Methodology and Statistics, New Age International (P) Ltd., Publishers, New Delhi, 2006.</li><li>6. S.C. Chapra: Applied Numerical Methods With MATLAB for Engineers and Scientists, McGraw-Hill, Co., Boston, 2005.</li><li>7. W.Y. Yang, W. Cao, T.S. Chung, J. Morris: Applied numerical methods using MATLAB, John Wiley &amp; Sons, Inc., Hoboken, New Jersey, 2005.</li><li>8. J.P. Marques de S&amp;aacute;acutec: Applied Statistics Using SPSS, STATISTICA, MATLAB and R, Springer-Verlag Berlin Heidelberg 2007.</li></ol>
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## Aktivitas

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### Minggu 8

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**Materi** Midterm

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**Media**

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**Referensi**

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### Minggu 9

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**Materi** Introduction to computation  
- Modeling, computers, and error analysis  
- Mathematical modeling, numerical methods, and problem solving  
- Software tools

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**Referensi** 1. S.C. Chapra: Applied Numerical Methods With MATLAB for Engineers and Scientists, McGraw-Hill, Co., Boston, 2005.  
2. W.Y. Yang, W. Cao, T.S. Chung, J. Morris: Applied numerical methods using MATLAB, John Wiley & Sons, Inc., Hoboken, New Jersey, 2005.  
3. J.P. Marques de S&aacute;: Applied Statistics Using SPSS, STATISTICA, MATLAB and R, Springer-Verlag Berlin Heidelberg 2007.

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**Aktivitas**

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### Minggu 10

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**Materi** MATLAB Fundamentals  
- Logical expression  
- Vectorization  
- If, while, and loop  
- Function and m-file  
- Introduction to Programming

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MATLAB Software

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- Referensi**
1. S.C. Chapra: Applied Numerical Methods With MATLAB for Engineers and Scientists, McGraw-Hill, Co., Boston, 2005.
  2. W.Y. Yang, W. Cao, T.S. Chung, J. Morris: Applied numerical methods using MATLAB, John Wiley & Sons, Inc., Hoboken, New Jersey, 2005.
  3. J.P. Marques de S&aacute;acutecute: Applied Statistics Using SPSS, STATISTICA, MATLAB and R, Springer-Verlag Berlin Heidelberg 2007.
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**Aktivitas**

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Minggu 11

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- Materi**
- System of Linear Equations
  - Solution for a System of Linear Equations
  - Solving a System of Linear Equations
  - Inverse Matrix
  - Decomposition (Factorization)
  - Iterative Methods to Solve Equations
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- Referensi**
1. S.C. Chapra: Applied Numerical Methods With MATLAB for Engineers and Scientists, McGraw-Hill, Co., Boston, 2005.
  2. W.Y. Yang, W. Cao, T.S. Chung, J. Morris: Applied numerical methods using MATLAB, John Wiley & Sons, Inc., Hoboken, New Jersey, 2005.
  3. J.P. Marques de S&aacute;acutecute: Applied Statistics Using SPSS, STATISTICA, MATLAB and R, Springer-Verlag Berlin Heidelberg 2007.
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Minggu 12

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- Materi**
- Interpolation and Curve Fitting
  - Interpolation by Lagrange Polynomial
  - Interpolation by Newton Polynomial
  - Interpolation by Cubic Spline
  - Curve Fitting
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1. S.C. Chapra: Applied Numerical Methods With MATLAB for Engineers and Scientists, McGraw-Hill, Co., Boston, 2005.
  2. W.Y. Yang, W. Cao, T.S. Chung, J. Morris: Applied numerical methods using MATLAB, John Wiley & Sons, Inc., Hoboken, New Jersey, 2005.
  3. J.P. Marques de S&aacute;acutecute: Applied Statistics Using SPSS, STATISTICA, MATLAB and R, Springer-Verlag Berlin Heidelberg 2007.
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## Aktivitas

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### Minggu 13

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**Materi** Ordinary Differential Equations  
- Euler's Method  
- Improvement of Euler's Method  
- Runge-Kutta Methods  
- Systems of Equations

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3. J.P. Marques de S&aacute;: Applied Statistics Using SPSS, STATISTICA, MATLAB and R, Springer-Verlag Berlin Heidelberg 2007.

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### Minggu 14

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**Materi** Statistics and data processing analysis  
- Presenting and summarizing the data  
- Parametric tests of hypotheses  
- Statistical classification  
- Data regression

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2. W.Y. Yang, W. Cao, T.S. Chung, J. Morris: Applied numerical methods using MATLAB, John Wiley & Sons, Inc., Hoboken, New Jersey, 2005.  
3. J.P. Marques de S&aacute;: Applied Statistics Using SPSS, STATISTICA, MATLAB and R, Springer-Verlag Berlin Heidelberg 2007.

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### Minggu 15

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**Materi** Case study and project

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**Referensi**

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**Aktivitas**

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Minggu 16

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**Materi**      Final examination

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