# MODULE HANDBOOK
# INTRODUCTION TO DYNAMICAL SYSTEM

# BACHELOR DEGREE PROGRAM
## DEPARTMENT OF MATHEMATICS
## FACULTY OF SCIENCE AND DATA ANALYTICS

## INSTITUT TEKNOLOGI SEPULUH NOPEMBER

## MODULE HANDBOOK
## INTRODUCTION TO COMPUTATIONAL FLUID DYNAMICS

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| Module name | **Introduction to Dynamical System** |
| Module level | Undergraduate |
| Code | KM184817 |
| Course (if applicable) | Introduction to Dynamical System |
| Semester | Spring (Genap) |
| Person responsible for the module | Dr. Hariyanto, M.Si |
| Lecturer | Dr. Hariyanto, M.Si |
| Language | Indonesia and English |
| Relation to curriculum | Undergraduate degree program, **elective**, 8th semester. |
| Type of teaching, contact hours | Lectures, <60 students |
| Workload | 1. Lectures : 2 x 50 = 100 minutes per week.<br>2. Exercises and Assignments : 2 x 60 = 120 minutes (2 hours) per week.<br>3. Private learning : 2 x 60 = 120 minutes (2 hours) per week. |
| Credit points | 2 credit points (sks) |
| Requirements according to the examination regulations | A student must have attended at least 80% of the lectures to sit in the exams. |
| Mandatory prerequisites | - |
| Learning outcomes and their corresponding PLOs | Course Learning Outcome (CLO) after completing this module,<br>CLO 1: Students are able to study new topics about algebra, both theoretically and in application<br>CLO 2: Students are able to understand and deliver material from related papers / papers in the form of presentations | |
| Content | This course will discuss continuous dynamic systems and discrete dynamic systems |
| Study and examination requirements and forms of examination | • In-class exercises<br>• Assignment 1, 2, 3<br>• Mid-term examination<br>• Final examination |
| Media employed | LCD, whiteboard, websites (myITS Classroom), zoom. |

| Reading lists | Main : |
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| | 1. Anderson, J. D. Jr.,"*Computational Fluid Dynamics (The Basics with Applications), International Edition"*, New York, USA: Mc Graw-Hill, 1995 |
| | 2. Hoffmann, K. A. and Chiang, S. T.*,"Computational Fluid Dynamics For Engineers"*, Wichita, USA: Engineering Education System, 1995 |
| | 3. Chung, T.J., "*Computational Fluid Dynamics"*, Cambridge: Cambridge UniversityPress, 2002 |
| | Supporting : |
| | 1. Welty, J.R., et al., *Fundamentals of Momentum, Heat and Mass Transfer, 3rd Edition*, New York, USA: John Wiley & Sons, Inc., 1995 |
| | 2. Versteeg, H.K. and Malalasekera, W., *An Introduction to Computational Fluid Dynamics – The Finite Volume Method, Second Edition*, England: Prentice Hall - Pearson Education Ltd., 2007. |
| | 3. Tu, J.Y., Yeoh, G.H. and Liu, G.Q., *Computational Fluid Dynamics- A Practical Approach*, Oxford, UK: Butterworth-Heinemann Publications, 2008 |
| | 4. Yeoh, G.H. and Yuen, K.K., *Computational Fluid Dynamics in Fire Engineering*, Oxford, UK: Butterworth-Heinemann Publications, 2009 |