MODULE HANDBOOK
Master Program in Computer Science
Department of Computer Science and Electronics
Faculty of Mathematics and Natural Sciences
Universitas Gadjah Mada

Data Science

Module name	**Data Science**	
Module level	Master	
Code	MII-6632	
Courses (if applicable)	**Data Science**	
Semester	Summer (Genap)	
Contact person	Drs. Edi Winarko, M.Sc., Ph.D.	
Lecturer	Drs. Edi Winarko, M.Sc., Ph.D. Dr. Sigit Priyanta	
Language	Bahasa Indonesia	
Relation to curriculum	Master program, Elective, 2nd semester	
Type of teaching, contact hours	Master program: lectures, 14 student (class A) and 10 student (class B), Thursday, 10.00 - 12.30.	
Workload	1. Lectures: 3 x 50 = 150 minutes (2.5 hours) per week. 2. Exercises and Assignments: 3 x 60 = 180 minutes (3 hours) per week. 3. Private study: 3 x 60 = 180 minutes (3 hours) per week.	
Credit points	3 credit points (sks).	
Requirements according to the examination regulations	-	
Recommended prerequisites	MII 6634 Mathematics for Data Science	
Learning outcomes and their corresponding PLOs	After completing this module, a student is expected to: **CO-1** Can explain the concept of data science, data mining, business intelligence and trends **CO-2** Can different types of data and their characteristics **CO-3** Can explain the concept and implementation of data exploration and data preparation **CO-4** Can explain and implement classification methods **CO-5** Can explain and implement association rules and sequential pattern mining **CO-6** Can explain and implement clustering methods **CO-7** Can explain and implement application of data mining in documents (text mining)	PLO2 PLO2 PLO3 PLO3 PLO3 PLO3 PLO4
Content	In this Data Science course, students will learn various techniques or methods for data collection, data preparation, data modeling, deployment data, and visualization to obtain information from data. In addition, students also learn to manage data to make it easier to get information for business purposes. The use of data science tools is introduced both for data	

<table>
<tr><td></td><td>preparation, manipulation, processing and visualization. The visualization of business solutions from the data science approach is explained along with the business intelligence approach.</td></tr>
<tr><td>Study and examination requirements and forms of examination</td><td>Mid-terms examination and Final examination.</td></tr>
<tr><td>Media employed</td><td>LCD, blackboard, websites, and e-learning.</td></tr>
<tr><td>Assessments and Evaluation</td><td>
<table>
<tr><th>CO</th><th>Method</th><th>Percentage</th></tr>
<tr><td rowspan="2">CO-1</td><td>Assignment 1</td><td>5%</td></tr>
<tr><td>Problem 1 mid exam</td><td>10%</td></tr>
<tr><td rowspan="2">CO-2</td><td>Assignment 2</td><td>5%</td></tr>
<tr><td>Problem 2 mid exam</td><td>5%</td></tr>
<tr><td rowspan="3">CO-3</td><td>Assignment 3</td><td>5%</td></tr>
<tr><td>Problem 3 mid exam</td><td>10%</td></tr>
<tr><td>Problem 4 mid exam</td><td>10%</td></tr>
<tr><td rowspan="3">CO-5</td><td>Assignment 4</td><td>5%</td></tr>
<tr><td>Problem 1 final exam</td><td>10%</td></tr>
<tr><td>Problem 2 final exam</td><td>5%</td></tr>
<tr><td rowspan="2">CO-6</td><td>Assignment 5</td><td>5%</td></tr>
<tr><td>Problem 3 final exam</td><td>10%</td></tr>
<tr><td>CO-7</td><td>Project</td><td>15%</td></tr>
</table>
</td></tr>
<tr><td>Reading List</td><td>Schutt, R., & O'Neil, C., Doing data science: Straight talk from the frontline." O'Reilly Media, Inc.", 2013.

Tan, P.N., Steinbach, M., and Kumar, V., Introduction to Data Mining, Addison-Wesley Companion Book Site, 2003.

James, G., Witten, D., Hastie, T., & Tibshirani, R. , An introduction to statistical learning (Vol. 112). New York: Springer, 2013.

Provost, F., & Fawcett, T., Data Science for Business: What you need to know about data mining and data-analytic thinking. " O'Reilly Media, Inc.", 2013.

McKinney, W., Python for data analysis: Data wrangling with Pandas, NumPy, and IPython. " O'Reilly Media, Inc.", 2012.

Han, J., Kamber, M., Pei, J., Data Mining: Concepts and Techniques, 3rd edition, Morgan Kaufmann, 2011</td></tr>
</table>