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MODULE HANDBOOK

Module name	**Big Data Architecture and Infrastructures**
Module level	Undergraduate
Code	MII-2607
Courses (if applicable)	NA
Semester	Fall (Odd)
Contact person	Dr. Mardhani Riasetiawan, MT
Lecturer	Dr. Mardhani Riasetiawan, MT
Language	Bahasa Indonesia & English
Relation to curriculum	1. Undergraduate degree program, compulsory, 6th semester. 2. International undergraduate program, compulsory, 6th semester.
Type of teaching, contact hours	1. Undergraduate degree program: lectures, < 60 students, 2. International undergraduate program: lectures, < 30 students.
Workload	1. Lectures: 3 x 50 = 150 minutes per week. 2. Exercises and Assignments: 2 x 50 = 100 minutes per week. 3. Private study: 1 x 50 = 50 minutes per week.
Credit points	3 credit points (sks).
Requirements according to the Examination regulations	A student must have attended at least 75% of the lectures to sit in the exams.
Recommended prerequisites	Databases
Learning outcomes (course outcomes) and their corresponding PLOs	After completing this module, a student is expected to: CO1. Able to explain and identify the concepts and characteristics of big data architecture CO2. Able to explain and identify the components of big data: ingestion, data gathering, data storage, data processing, data analysis and visualizations CO3. Able to explain big data processing which is supported by computational resources CO4. Able to collect data, process data and generate analysis in big data environment CO5. Able to present and present the results of large data processing based

<table>
<tr><td></td><td>on specific case studies using big data architecture

<table>
<tr><th colspan="2">PLO</th><th>CO 1</th><th>CO 2</th><th>CO 3</th><th>CO 4</th><th>CO 5</th></tr>
<tr><td rowspan="5">Program Learning Outcome (PLO)</td><td>PLO1</td><td>√</td><td></td><td></td><td></td><td></td></tr>
<tr><td>PLO2</td><td></td><td>√</td><td></td><td></td><td></td></tr>
<tr><td>PLO3</td><td></td><td></td><td>√</td><td></td><td></td></tr>
<tr><td>PLO4</td><td></td><td></td><td></td><td>√</td><td></td></tr>
<tr><td>PLO5</td><td></td><td></td><td></td><td></td><td>√</td></tr>
</table></td></tr>
<tr><td>Contents</td><td>1. Concept and understanding, big data as technology, method and art
2. Architecture and Components of Big Data Facilities
3. Management of computing resources for processing big data
4. Big Data environmental supporting technology
5. Big Data processing management</td></tr>
<tr><td>Study and examination requirements and forms of examination</td><td>The evaluation is done in 2 forms, namely:
1. Trial, either midterm or semester test,
2. Two tasks, including individual,
3. Two group assignments to be completed within a certain timeframe, and

Assessment is done using benchmark assessment, with the aim of measuring the level of student understanding related to the target and class rank.</td></tr>
<tr><td>Media employed</td><td>e-learning Platform (ELOK), LCD, blackboard, and websites.</td></tr>
<tr><td>Assessments and Evaluation</td><td>
<table>
<tr><th>Type</th><th>Percentage</th><th>CO1</th><th>CO2</th><th>CO3</th><th>CO4</th><th>CO5</th></tr>
<tr><td>Task 1</td><td>10</td><td>√</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Group Task 1</td><td>15</td><td></td><td>√</td><td></td><td></td><td></td></tr>
<tr><td>Midsem Test</td><td>25</td><td></td><td>√</td><td>√</td><td></td><td></td></tr>
<tr><td>Task 2</td><td>10</td><td></td><td></td><td>√</td><td></td><td></td></tr>
<tr><td>Group Task 2</td><td>15</td><td></td><td></td><td></td><td>√</td><td></td></tr>
<tr><td>FinalSem test</td><td>25</td><td></td><td></td><td></td><td>√</td><td>√</td></tr>
<tr><td>Total</td><td>100</td><td></td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>Reading List</td><td>
HandBook of Big Data Technologies, 1st edition, 2017. Albert Y Zomaya, Sherif Sakr, Springer.
Leskovec, J., Rajaraman, A., Ullman, J.D., 2014, Mining Massive Datasets, Cambridge University Press.
Karau, H., Konwinski, A., Wendell, P., & Zaharia, M., Learning Spark: Lightning-fast data analysis, O Reilly Media, California.
Narkhede, N., Shapira, G., & Palino, T., Kafka: The definitive
</td></tr>
</table>

	guide, O Reilly Media, California. • Lam, C., Hadoop in action, Manning Publications Co, Stamford