**Course Description Form**

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| 1. Course Name:
 |
| Big Data |
| 1. Course Code:
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| 1. Semester / Year:
 |
| 2023-2024 |
| 1. Description Preparation Date:
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|  |
| 1. Available Attendance Forms:
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|  |
| 1. Number of Credit Hours (Total) / Number of Units (Total)
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|  |
| 1. Course administrator's name (mention all, if more than one name)
 |
| Name: Dr.Adil Abdulwahhab Al-AzzawiEmail: adil\_alazzawi@updiyala.edu.iq |
| 1. Course Objectives
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| **Course Objectives** | * **Understand the fundamentals of Big Data, including the 3Vs (Volume, Velocity, Variety) and the challenges they pose.**
* **Explore the ecosystem of Big Data technologies, including distributed file systems, NoSQL databases, and distributed computing frameworks.**
* **Learn data processing techniques for Big Data, such as MapReduce, Spark, and Hadoop.**
* **Gain practical experience in working with Big Data tools and platforms through hands-on exercises and projects.**
* **Study data analysis methods for Big Data, including machine learning algorithms, statistical analysis, and data mining techniques.**
* **Explore real-world applications of Big Data in various domains, such as business intelligence, healthcare, finance, and social media.**
* **Understand the ethical, legal, and privacy implications of Big Data analytics.**
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| 1. Teaching and Learning Strategies
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| **Strategy** | **The Big Data course provides an in-depth understanding of the concepts, technologies, and applications related to handling and analyzing large-scale datasets. The course covers various aspects of Big Data, including storage, processing, analysis, and visualization, as well as the challenges and opportunities associated with managing massive amounts of data.** |
| 1. Course Structure
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| **Week**  | **Hours**  | **Required Learning Outcomes**  | **Unit or subject name**  | **Learning method**  | **Evaluation method**  |
| **1** | **2** | **Understand the fundamentals of Big Data, including the 3Vs (Volume, Velocity, Variety) and the challenges they pose.** | **Introduction to Big Data** | **Lecture Base** |  |
| **2** | **2** | **Explore the ecosystem of Big Data technologies, including distributed file systems, NoSQL databases, and distributed computing frameworks.** | **Big Data Technologies: Hadoop, Spark, and NoSQL databases** | **Lecture Base** |  |
| **3** | **2** | **Learn data processing techniques for Big Data, such as MapReduce, Spark, and Hadoop.** | **Data Storage and Management in Big Data** | **Lecture Base** |  |
| **4** | **2** |  | **Data Processing with MapReduce and Spark** | **Lecture Base** |  |
| **5** | **2** | **Gain practical experience in working with Big Data tools and platforms through hands-on exercises and projects.** | **Lecture Base** |  |
| **6** | **2** |  | **Data Analysis Techniques for Big Data** | **Lecture Base** |  |
| **7** | **2** | **Study data analysis methods for Big Data, including machine learning algorithms, statistical analysis, and data mining techniques.** | **Lecture Base** |  |
| **8** | **2** |  | **Machine Learning for Big Data** | **Lecture Base** |  |
| **9** | **2** | **Explore real-world applications of Big Data in various domains, such as business intelligence, healthcare, finance, and social media.** | **Big Data Visualization and Reporting** | **Lecture Base** |  |
| **10** | **2** |  | **Real-world Applications of Big Data** | **Lecture Base** |  |
| **11** | **2** |  | **Ethical and Legal Issues in Big Data** | **Lecture Base** |  |
| **12** | **2** | **Understand the ethical, legal, and privacy implications of Big Data analytics.** | **Lecture Base** |  |
| **13** | **2** |  | **Big Data Project Management and Best Practices** | **Lecture Base** |  |
| **14** | **2** | **Develop critical thinking and problem-solving skills for effectively managing and analyzing large-scale datasets.** | **Lecture Base** |  |
| **15** | **2** |  | **Final Exam Review** | **Lecture Base** |  |
| 1. Course Evaluation
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| The course will include lectures, hands-on labs, case studies, guest lectures from industry experts, and a final project. Students will have the opportunity to apply their knowledge to real-world scenarios and gain practical experience with Big Data tools and technologies |
| 1. Learning and Teaching Resources
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| Required textbooks (curricular books, if any) |  |
| Main references (sources) |  |
| Recommended books and references (scientific journals, reports...) |  |
| Electronic References, Websites |  |