**Course Description Form**

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| 1. Course Name: | | | | | | | | |
| Big Data | | | | | | | | |
| 1. Course Code: | | | | | | | | |
|  | | | | | | | | |
| 1. Semester / Year: | | | | | | | | |
| 2023-2024 | | | | | | | | |
| 1. Description Preparation Date: | | | | | | | | |
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| 1. Available Attendance Forms: | | | | | | | | |
|  | | | | | | | | |
| 1. Number of Credit Hours (Total) / Number of Units (Total) | | | | | | | | |
|  | | | | | | | | |
| 1. Course administrator's name (mention all, if more than one name) | | | | | | | | |
| Name: Dr.Adil Abdulwahhab Al-Azzawi  Email: adil\_alazzawi@updiyala.edu.iq | | | | | | | | |
| 1. Course Objectives | | | | | | | | |
| **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.** | | | | |
| 1. Teaching and Learning Strategies | | | | | | | | |
| **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 | | | | | | | | |
| **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 | | | | | | | | |
| 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 | | | | | | | | |
| Required textbooks (curricular books, if any) | | | | | |  | | |
| Main references (sources) | | | | | |  | | |
| Recommended books and references (scientific journals, reports...) | | | | | |  | | |
| Electronic References, Websites | | | | | |  | | |