## Syllabus Part 2

### Course Resources

#### Course Text(s):

1. **Big Data: Principles and best practices of scalable realtime data systems** by Nathan Marz and James Warren. Manning Publications; 1st edition. ISBN-13: 978-1617290343
2. **Hadoop: The Definitive Guide** by Tom White. O’Reilly Media; 4th edition. ISBN-13: 978-1491901632
3. **Learning Spark: Lightning-Fast Data Analytics** by Jules S. Damji, Brooke Wenig, Tathagata Das, and Denny Lee. O’Reilly Media; 2nd edition. ISBN-13: 978-1492050049

#### Required Resources:

* Internet Access for research and accessing various big data platforms.
* Access to GitHub for code repository and project management.
* Ability to create and submit documents in Word, Excel, or PowerPoint formats.

### Course Schedule

|  |  |  |
| --- | --- | --- |
| Week | Topic | Reading Assignment |
| 1 | Introduction to Big Data and Infrastructure | Big Data: Principles: Chapters 1-2  *White Paper* |
| 2 | Hadoop Basics and MapReduce | Hadoop: The Definitive Guide: Chapters 5-6, Learning Spark: Chapters 3-4  *White Paper* |
| 3 | Hive and Data Warehousing | Big Data: Principles: Chapters 4-5  *White Paper* |
| 4 | Spark Fundamentals | Learning Spark: Chapters 6-7  *White Paper* |
| 5 | Advanced Spark Programming | Hadoop: The Definitive Guide: Chapters 8-9  *White Paper* |
| 6 | HBase and NoSQL Databases | Big Data: Principles: Chapter 7  *White Paper* |
| 7 | Kafka and Real-time Data Streaming | Hadoop: The Definitive Guide: Chapter 12  *White Paper* |
| 8 | Solr and Search Analytics | *White Paper* |
| 9 | Nifi and Data Flow Management | *White Paper* |
| 10 | Big Data Architectures | *White Paper* |
| 11-12 | Big Data Project |  |

### Course Activities

#### Discussion/Participation

Students are required to engage actively in online discussions. A minimum of 10 posts are expected weekly on the platform, fostering a vibrant learning community. The posts could be queries, insights, sharing relevant articles or resources, or responding to peers.

#### Exercises

Weekly exercises will focus on hands-on experience with various components of big data technologies. These exercises will involve working on real-world datasets and implementing solutions based on the concepts learned during the lectures.

#### Term Project

### During the final two weeks of the course, students will have the opportunity to showcase the skills and knowledge they've acquired throughout the course. Students can select their preferred big data technologies to implement a real-world big data use case. The project aims to foster creativity and critical thinking, encouraging students to solve complex problems using the appropriate big data solutions.

### Point Breakdown

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Component | Percentage | Point Value Each Week | Number of Times | Total |
| Discussion/Participation | 30% | 60 Points | 10 Posts Per Week | 720 |
| Exercises | 40% | 96 Points | Weekly | 960 |
| Term Project | 30% | 240 Points | 3 Milestones, 240 points each | 720 |
|  |  |  |  | **Total Points 2400** |

### Late Work

Late submissions are generally not accepted. In exceptional circumstances, reach out to the instructor beforehand to discuss potential accommodations.

### Participation

Regular participation in the course is expected, including active involvement in discussions, timely assignment submissions, and engagement in group activities.

#### Expectations for Students

* Dedicate approximately 12-17 hours weekly for course-related activities.
* Maintain a respectful and courteous demeanor in all interactions.
* Stay abreast with the schedule and prepare accordingly for classes.
* Uphold academic integrity in all submissions.

#### Expectations for Faculty

* Facilitate a respectful and inclusive learning environment.
* Adhere to grading criteria and provide constructive feedback within 6 days of submission.
* Respond to student queries within 48 hours.
* Offer guidance and support for project development and execution.