**Course Description Form**

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| 1. Course Name: | | | | | | | | |
| Data mining | | | | | | | | |
| 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) **2** | | | | | | | | |
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| 1. Course administrator's name (mention all, if more than one name) | | | | | | | | |
| Asst.Prof.Dr. Muntadher khamees  Email: alkarawis@uodiyala.edu.iq | | | | | | | | |
| 1. Course Objectives | | | | | | | | |
| **Course Objectives** | | | | This course introduces basic concepts, tasks, methods, and techniques in Data Mining. The emphasis is on various Data Mining problems and their solutions. Students will develop an understanding of the Data Mining and issues, learn various techniques for Data Mining, and apply the techniques in solving Data Mining problems using tools and systems. Students will also be exposed to a sample of Data Mining applications. | | | | |
| 1. Teaching and Learning Strategies | | | | | | | | |
| **Strategy** | | data is stored, analyzed, and disseminated via data mining , a interdisciplinary field consisting of both data mining and computer science. An application of data minig is to determine the function of genes and proteins, to establish evolutionary relationships, and to calculate the high dimensional shape of proteins by using computer programs. | | | | | | |
| 1. Course Structure | | | | | | | | |
| **Week** | **Hours** | | **Required Learning Outcomes** | | | **Unit or subject name** | **Learning method** | **Evaluation method** | |
| **1** | **3** | | Introduction | | | Chap.1 Ref. 1 | **Lecture Base** |  |
| **2** | **3** | | Data | | | Chap.2 Ref. 1, Chap.2, Ref 5. | **Lecture Base** |  |
| **3** | **3** | | Data Preprocessing I | | | Ch.7, Ref. 5, Chap.2 Ref. 1, Chap.2 Ref. 6 | **Lecture Base** |  |
| **4** | **3** | | Data Preprocessing II  Data Visualization | | | Ch.7, Ref. 5, Chap.2 Ref. 1, Chap.2 Ref. 6 | **Lecture Base** |  |
| **5** | **3** | | **Lecture Base** |  |
| **6** | **3** | | Classification I: Basic Concepts, Decision Trees, and Model Evaluation | | | Chap.3 Ref.1  Chap.4 Ref.1 | **Lecture Base** |  |
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| **7** | **3** | | Classification II : Alternative Techniques | | | Chap.4,5 Ref.1 | **Lecture Base** |  |
| **8** | **3** | | Clustering: Basic concepts | | | Chap.8 Ref.1 | **Lecture Base** |  |
| **9** | **3** | | Clustering Algorithms I: Sequential algorithms, Hierarchical algorithms | | | Chap.8,9 Ref.1 | **Lecture Base** |  |
| **10** | **3** | | Regression Analysis | | |  | **Lecture Base** |  |
| **11** | **3** | | Mining Frequent Patterns, Associations, and Correlations I | | | Chap.6 Ref.1 | **Lecture Base** |  |
| **12** | **3** | | Mining Frequent Patterns, Associations, and Correlations II | | | Chap.6 Ref.1 | **Lecture Base** |  |
| **13** | **3** | | Advance Topics | | |  | **Lecture Base** |  |
| **14** | **3** | | Review | | |  | **Lecture Base** |  |
| **15** | **2** | | First Exam | | | Exam 2 | **Lecture Base** |  |
| 1. Course Evaluation | | | | | | | | |  | |  |  |
| The course serves as an introduction to data mining and applications . The aim is that students should understand how data mining can be applied and evaluated and provide tools for practical approaches to mining algorithm | | | | | | | | |  | |  |  |
| 1. Learning and Teaching Resources | | | | | | | | |  | |  |  |
| Required textbooks (curricular books, if any) | | | | | . Jiawei Han and Micheline Kamber, “Data Mining Concepts and Techniques” Third Edition, Elsevier, 2012. | | | |  | |  |
| Main references (sources) | | | | | 1. **.** Pang-Ning Tan, Michael Steinbach, Vipin Kumar, “Introduction to data mining,” 2006. 2. Jiawei Han, Micheline Kamber, “Data Mining: Concepts and Techniques,” Second Edition, Elsevier Inc., 2006. 3. Anil K. Jain, Richard C. Dubes, “Algorithms for Clustering Data,” Prentice-Hall Inc., 1988. 4. David Hand, Heikki Mannila, Padhraic Smyth, “Principles of Data Mining,”The MIT Press, 2001. 5. Ian H. Witten, Eibe Frank, “Data Mining, Practical Machine Learning Tools and Techniques,” Morgan Kaufmann Publishers, 2005. 6. Daniel T. Larose, “Discovery Knowledge in Data, An Introduction to Data Mining,” A John Wiley & Sons, Inc., Publication, 2005. 7. Further Readings are also preferable. | | | |  | |  |
| Electronic References, Websites | | | | | 1.https://www.coursera.org/lecture/code-free-data-science/introduction-to-data-mining-hbb2V  2. https://onlinecourses.swayam2.ac.in/cec19\_cs01/preview material | | | |  | |  |
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