هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

T-104
2022

Course Specification

Course Title:	**Data Science**
Course Code:	**IT11204**
Program:	**Information Technology**
Department:	**Information Technology**
College:	**Computer Science and Information Technology**
Institution:	**Albaha University**
Version:	**1**
Last Revision Date:	**30 March 2023**

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A. General information about the course:

Course Identification					
1. Credit hours:	3				
2. Course type					
a.	University ☐	College ☐	Department☒	Track☐	Others☐
b.	Required ☒	Elective☒			
3. Level/year at which this course is offered: Level 12 / Year 4					
4. Course general Description This course introduces data science with an emphasis on business domains. The course covers fundamental data analysis, data visualization, and machine learning principles and techniques. Students will learn how to analyze data using popular programming languages and tools, such as Python and R. In addition, students will develop knowledge of data management methods, data exploration, data visualization, and the application of machine learning concepts to business problems.					
5. Pre-requirements for this course (if any): N/A					
6. Co- requirements for this course (if any): N/A					
7. Course Main Objective(s) **By the end of this course the student will be able to:** • Demonstrate an understanding of the fundamental data science principles and methodologies utilized in business domains. • Describe the many phases of the data science process, such as data collecting, data cleaning, data exploration, and data modeling. • Determine the various data types and their features within the context of business domains. • Use popular computer languages and tools, such as Python and R, for data analysis. • Employ data visualization techniques to examine and understand business-related data. • Apply basic data science analytic tools to solve business problems. • Consider the potential influence of data science on the enterprise and how to mitigate any negative repercussions.					

1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	44	100%

No	Mode of Instruction	Contact Hours	Percentage
2.	E-learning		
3.	Hybrid • Traditional classroom • E-learning		
4.	Distance learning		

2. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	22
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	22
5.	Others (specify)	
	Total	44

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Demonstrate an understanding of the fundamental data science principles and methodologies utilized in business domains.	K.1	Lectures	Exam
1.2	Describe the many phases of the data science process, such as data collecting, data cleaning, data exploration, and data modeling.	K.2	Lectures Discussion	Exam Assignment
1.3	Determine the various data types and their features within the context of business domains.	K.2	Lecture	
2.0	Skills			
2.1	Use popular computer languages and tools, such as Python and R, for data analysis	S.1	Lectures Tutorial	Project
2.2	Employ data visualization techniques to examine and understand business-related data.	S.2	Lectures Tutorial	Assignment
2.3	Apply basic data science analytic tools to solve business problems.	S.2	Lectures Tutorial	Assignment
3.0	Values, autonomy, and responsibility			
3.1	Consider the potential influence of data science on the enterprise and how to mitigate any negative repercussions.	V.1	Case Study	Project Class Discussion

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to Data Science	2
2.	Data Acquisition and Cleaning	2
3.	Data Exploring and Visualization	2
4.	Data Statistics	2
5.	Data Modeling	2
6.	Data Analytics Techniques	2
7.	Model Evaluation and Selection	2
8.	Advanced Topics in Data Science	2
9.	Data Management Practices	2
10.	Business Applications of Data Science	2
Total		22

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm exam	6	20
2.	Assignment	7	20
3.	Project	10	20
...	Final exam	12-13	40

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	• "Python for Data Analysis" by Wes McKinney • "Data Science for Business" by Foster Provost and Tom Fawcett
Supportive References	• "Python Data Science Handbook" by Jake VanderPlas • "Data Science for Business Professionals" by Foster Provost • "Data Science for Dummies" by Lillian Pierson • "Data Visualization with Python and Matplotlib" by Benjamin Root
Electronic Materials	• https://www.datacamp.com/ • https://www.kaggle.com/ • https://scikit-learn.org/ • https://archive.ics.uci.edu/ml/index.php
Other Learning Materials	• N/A

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms, Labs
Technology equipment (projector, smart board, software)	Projector, Data analytic tools such as Python and R.
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students Peer Reviewer	Indirect/Indirect
Effectiveness of students assessment	Program Leader Faculty	Direct
Quality of learning resources	Peer Reviewer Faculty	Direct
The extent to which CLOs have been achieved	Course coordinator	Direct
Other		

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	30 MARCH 2023