



# Course Specification

— (Bachelor)

**Course Title:** Big Data Analytics

**Course Code:** CS 471

**Program:** Computer Science

**Department:** Computer Science

**College:** Computer Science/ Information Technology

**Institution:** Dr. Hanan Alshafer

**Version:** Course Specification Version Number

**Last Revision Date:** Pick Revision Date.



## Table of Contents

<b>A. General information about the course:</b> .....	3
<b>B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods</b> .....	4
<b>C. Course Content</b> .....	5
<b>D. Students Assessment Activities</b> .....	5
<b>E. Learning Resources and Facilities</b> .....	6
<b>F. Assessment of Course Quality</b> .....	6
<b>G. Specification Approval</b> .....	7



## A. General information about the course:

### 1. Course Identification

1. Credit hours: 3 (2,2,0)

#### 2. Course type

A.  University  College  Department  Track  Others  
 B.  Required  Elective

3. Level/year at which this course is offered: (Track)

#### 4. Course general Description:

This course is designed for students who have no previous knowledge of data analytics but wish to acquire these skills in a short period of time. These students will learn how to analyze large data sets and identify patterns that will improve any company's and organization decision-making process.

5. Pre-requirements for this course (if any):

STAT 102

6. Pre-requirements for this course (if any):

#### 7. Course Main Objective(s):

1. To understand the basics of big data analytics
2. To understand the data sampling, statistical analysis, visual data exploration
3. To apply predictive analytics techniques for real time problems
4. To perform descriptive and social analytics
5. To use big data tools and techniques

### 2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> <li>• Traditional classroom</li> <li>• E-learning</li> </ul>		



No	Mode of Instruction	Contact Hours	Percentage
4	Distance learning		

### 3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	40
2.	Laboratory/Studio	20
3.	Field	
4.	Tutorial	
5.	Others (specify)	
<b>Total</b>		<b>60</b>

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and understanding</b>			
1.1	CLO1: To understand the basics of big data analytics	<b>K1</b>	Classroom Teaching	Quiz, Mid Exam, Final Exam
1.2	CLO2: To understand the data sampling, statistical analysis, visual data exploration	<b>K1</b>	Classroom Teaching	Quiz, Mid Exam, Final Exam
...				
<b>2.0</b>	<b>Skills</b>			
2.1	CLO3: To apply predictive analytics techniques for real time problems	<b>S2</b>	Classroom Teaching and Lab Exercises	Lab Based Assignments, Mid Exam, Final Exam
2.2	CLO4: To perform descriptive and social analytics	<b>S2</b>	Classroom Teaching and Lab Exercises	Lab Based Assignments, Mid Exam, Final Exam





Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
2.3	CLO5: To use big data tools and techniques	S2	Classroom Teaching and Lab Exercises	Lab Based Assignments
<b>3.0</b>	<b>Values, autonomy, and responsibility</b>			
3.1				
3.2				
...				

### C. Course Content

No	List of Topics	Contact Hours
1.	Big Data and Analytics Example Applications, Analytics Process Model, Analytical Model Requirements	6
2.	Data Collection, Sampling and Preprocessing, Types of Data Sources, Sampling, Types of Data Elements	8
3.	Visual Data Exploration and Exploratory, Statistical Analysis, Missing Values, Outlier Detection and Treatment, Standardizing Data, Categorization	10
4.	Predictive Analytics-Linear Regression, Logistic Regression, Decision Trees	8
5.	Neural Networks, Support Vector Machines	8
6.	Ensemble Methods, Multiclass Classification Techniques, Evaluating Predictive Models	6
7.	Social Network Analytics, Social Network Definitions, Social Network Metrics, Social Network Learning	5
8.	Web Analytics, Social Media Analytics	5
9.	Big Data Tools and Techniques, Understanding Big Data Storage.	4
<b>Total</b>		<b>60</b>

### D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quiz 1	Week 3	5%
2.	Assignment 1	Week 4	5%
3.	Lab Exercise	Week 5	5%





No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
4.	Lab Exercise	Week 6	5%
5.	Midterm Exam	Week 7	20%
6.	Assignment 2	Week 8	5%
7.	Quiz 2	Week 9	5%
8.	Assignment 3	Week 10	5%
9.	Lab Exam	Week 15	5%
10.	Final Exam	Week 16	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

<b>Essential References</b>	Analytics in a Big Data World, Wiley 2014, Bart Baesens
<b>Supportive References</b>	
<b>Electronic Materials</b>	
<b>Other Learning Materials</b>	

### 2. Required Facilities and equipment

Items	Resources
<b>facilities</b> (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom and laboratory
<b>Technology equipment</b> (projector, smart board, software)	Data show and Smart Board
<b>Other equipment</b> (depending on the nature of the specialty)	Python

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Student / Instructor	Indirect / Direct
Effectiveness of Students assessment	Instructor	Direct



Assessment Areas/Issues	Assessor	Assessment Methods
Quality of learning resources	Instructor	Direct
The extent to which CLOs have been achieved		
Other		

**Assessors** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

### G. Specification Approval

<b>COUNCIL /COMMITTEE</b>	
<b>REFERENCE NO.</b>	
<b>DATE</b>	

