

**The University of Lahore**  
**Lahore Business School**  
**Data Analytics**

Sr. No.	Course Information	
1.	Course Name:	Data Analytics
2.	Course Code:	MGT11538/11
3.	Resource Person:	
4.	Email:	
5.	Credit Hours:	3
6.	Consultation Hours:	Saturday 11am to 09pm
7.	Class Timings	
8.	Semester	Fall-2025
9.	Course Type:	This is the core course for LBS graduate programs.
10.	Pre-requisite (if any):	None
11.	MBA Program Mission	The MBA program prepares future-ready leaders with entrepreneurial skills who think strategically and make ethical decisions.
12.	MBA Program Objectives	<p>The objectives of this course are to:</p> <ol style="list-style-type: none"> <li>1. <b>Build Strong Business Knowledge</b> To help students develop a strong knowledge of the business-related subject area.</li> <li>2. <b>Build Critical and Strategic Thinking</b> Teach students how to think critically, solve problems, and make smart business solutions</li> </ol>

		<p><b>3. Encourage Ethical Decision-Making</b> To demonstrate an understanding of ethical issues and to make fair, honest, and responsible decisions in business.</p> <p><b>4. Develop Entrepreneurial Skills</b> To support students in thinking creatively, spotting opportunities, and providing innovative solutions.</p>																		
13.	MBA Program Learning Outcomes	<p><b>PLO 1:</b> Students will <b>apply</b> business knowledge to analyze organizational issues.</p> <p><b>PLO 2:</b> Students will <b>analyze</b> relevant data using critical thinking for business solutions.</p> <p><b>PLO 3:</b> Students will <b>evaluate</b> strategic options and recommend effective decisions in complex business scenarios.</p> <p><b>PLO 4:</b> Students will <b>identify</b> ethical issues in business contexts.</p> <p><b>PLO 5:</b> Students will <b>propose</b> ethical and socially responsible solutions in professional settings.</p> <p><b>PLO 6:</b> Students will <b>demonstrate</b> creative thinking in identifying business opportunities.</p> <p><b>PLO 7:</b> Students will <b>design</b> business plans or innovative solutions to address market needs.</p>																		
14.	Course Description	This course is designed to provide managers with the tools and techniques necessary to analyse data and make data-driven decisions. Students will learn how to collect, organize, and analyse data using statistical techniques and data visualization tools. They will also learn how to use this data to improve organizational performance and drive business strategy.																		
15.	Course Learning Outcomes	<p>Upon completion of the course, students will be able to:</p> <p><b>CLO1:</b> Proficient in data collection, cleaning, and preparation techniques.</p> <p><b>CLO2:</b> Use data visualization tools to communicate insights effectively.</p> <p><b>CLO3:</b> Apply statistical analysis methods for hypothesis testing and inference.</p> <p><b>CLO4:</b> Application of data analytics to solve real-world business problems and drive strategic decision-making.</p>																		
16.	Assessment Methods and Types	<table border="1"> <tr> <td rowspan="3"><b>Course Work (60%)</b></td> <td>Assignments</td> <td>4</td> <td>15</td> </tr> <tr> <td>Quizzes+Project</td> <td>4+1</td> <td>15+5</td> </tr> <tr> <td>Mid Exam</td> <td>1</td> <td>25</td> </tr> <tr> <td><b>Final (40%)</b></td> <td>Final Exam</td> <td>1</td> <td>40</td> </tr> <tr> <td></td> <td><b>Total</b></td> <td></td> <td><b>100</b></td> </tr> </table>	<b>Course Work (60%)</b>	Assignments	4	15	Quizzes+Project	4+1	15+5	Mid Exam	1	25	<b>Final (40%)</b>	Final Exam	1	40		<b>Total</b>		<b>100</b>
<b>Course Work (60%)</b>	Assignments	4		15																
	Quizzes+Project	4+1		15+5																
	Mid Exam	1	25																	
<b>Final (40%)</b>	Final Exam	1	40																	
	<b>Total</b>		<b>100</b>																	

17.	Mapping of the Course Learning Outcomes to the Program Learning Outcomes				
	Program Learning Outcomes	Course Learning Outcomes			
		1	2	3	4
<b>PLO 1:</b> Students will <b>apply</b> business knowledge to analyze organizational issues.	√	√			
<b>PLO 2:</b> Students will <b>analyze</b> relevant data using critical thinking for business solutions.			√	√	
<b>PLO 3:</b> Students will <b>evaluate</b> strategic options and recommend effective decisions in complex business scenarios.					
<b>PLO 4:</b> Students will <b>identify</b> ethical issues in business contexts.					
<b>PLO 5:</b> Students will <b>propose</b> ethical and socially responsible solutions in professional settings.					
<b>PLO 6:</b> Students will <b>demonstrate</b> creative thinking in identifying business opportunities.					
<b>PLO 7:</b> Students will <b>design</b> business plans or innovative solutions to address market needs.					

Program Learning Outcomes	Course Learning Outcomes (CLOs):	Assessments
The MBA program learning outcomes are:	Upon completion of this course, students will be able to:	
<b>PLO 1:</b> Students will <b>apply</b> business knowledge to analyze organizational issues.	CLO1: Proficient in data collection, cleaning, and preparation techniques.	Quiz, Assignment, Mid Term
	CLO2: Use data visualization tools to communicate insights effectively.	Quiz, Mid Term
<b>PLO 2:</b> Students will <b>analyze</b> relevant data using critical thinking for business solutions.	CLO3: Apply statistical analysis methods for hypothesis testing and inference.	Quiz, Assignment, Final Term
	CLO4: Application of data analytics to solve real-world business problems and drive strategic decision-making..	Quiz, Assignment, Final Term

### Scheme of Lecture Delivery

Week	Topic/Sub-Topic	Course Learning Outcomes	Teaching Pedagogy	Assessments
1,2	<p><b>Data Structures and Algorithms</b></p> <ul style="list-style-type: none"> <li>• Data types</li> <li>• Measurement scales</li> <li>• Data collection</li> <li>• Saving data</li> <li>• Tabulation of data</li> <li>• With Excel and Python</li> </ul>	<b>CLO1</b>	<p>Open Discussion</p> <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Ice-Breaking</li> <li>• PPT Slides (provided by teacher)</li> </ul>	
3	<p><b>Data Visualization</b></p> <p>Data visualization in Excel and Python</p>	<b>CLO1</b>	<p>- Class Activity Black, K. Business statistics: for contemporary decision making: John Wiley &amp; Sons</p>	Assignment 1 collection in Week 3
4-6	<p><b>Probability and Statistics</b></p> <ul style="list-style-type: none"> <li>• Descriptive statistics</li> <li>• Basics of probability</li> <li>• Binomial-probability distribution</li> <li>• Normal-probability distribution</li> <li>• With Excel and Python</li> </ul>	<b>CLO1, CLO2</b>	<p>Black, K. Business statistics: for contemporary decision making: John Wiley &amp; Sons</p>	<p>Quiz 1 in Week 4</p> <p>Assignment 2 in Week 6</p>

Week	Topic/Sub-Topic	Course Learning Outcomes	Teaching Pedagogy	Assessments
7,8	Relational Database Management System <ul style="list-style-type: none"> <li>• Saving and updating data</li> <li>• Importing and exporting data</li> <li>• Power BI Training (Guest Speaker)</li> </ul>	<b>CLO2</b>	Black, K. Business statistics: for contemporary decision making: John Wiley & Sons	Assignment 2 collection in Week 7  Quiz 2 in Week 8
9	<b>Mid Term Exam</b>			Contents from week 1 to 8
10-13	<b>Statistical Analysis</b> <ul style="list-style-type: none"> <li>• Testing of hypothesis</li> <li>• T-test</li> <li>• ANOVA</li> <li>• Chi-square</li> </ul> With Excel and SPSS	<b>CLO3, CLO4:</b>	Black, K. Business statistics: for contemporary decision making: John Wiley & Sons	Assignment 3 in Week 11  Assignment 3 collection in Week 12  Quiz 3 in Week 12
14-15	<b>Forecasting Analytics</b> <ul style="list-style-type: none"> <li>• Regression models</li> <li>• Correlation with Softwares</li> </ul> With Excel and Python, <b>Revision Session</b>	<b>CLO4</b>	Business Statistics by Ken Black Chapter 3	Assignment 4 collection in Week 15  Quiz 4 in Week 15
16	<b>Final Term Examination</b>			Contents from week 10 to 15

<b>Textbook/Supplementary Reading/ Online Resources/ Research Articles and Case Studies</b>
Black, K. (2011). <i>Business statistics: for contemporary decision making</i> : John Wiley & Sons.
Levin, R., Rubin, D., Rastogi, S. and Siddiqui, M. (2013). <i>Statistics for Management</i> : Pearson Education.
The Usage Patterns of Credit/Debit Card across Various Demographics.
<b>Useful Online / Web Resources:</b>
<ul style="list-style-type: none"> <li>• <a href="https://www.pbs.gov.pk/">https://www.pbs.gov.pk/</a> (Pakistan Bureau of Statistics)</li> <li>• <a href="#">20 Best Data Storytelling Examples (Updated for 2023) — Juice Analytics</a></li> <li>• <a href="http://www.digitallibrary.edu.pk">http://www.digitallibrary.edu.pk</a></li> <li>• <a href="https://www.oecd.org">https://www.oecd.org</a></li> <li>• <a href="https://scholar.google.com/">https://scholar.google.com/</a></li> <li>• <a href="https://quillbot.com/">https://quillbot.com/</a></li> </ul>
<b>Ethics</b>
<b>❖ Important Class Norms</b>
<ul style="list-style-type: none"> <li>• Turn off your Mobile Phones. It is unprofessional to be texting or otherwise.</li> <li>• Students must have their own calculator, a ball point, and a separate note book for this course. Students may be marked absent if they do not have any of these items.</li> <li>• Students must be physically and mentally present in the class for the whole time period. Late-comers will be marked absent with no excuse acceptable by the instructor.</li> <li>• Participants should regularly visit the course website on SLATE, and fully benefit from its capabilities.</li> <li>• All assignments, quizzes, case reports, other groups' works and final project will be submitted electronically on their respective cut-off date and time on SLATE. Make sure your SLATE is working and there is no blockage due to non-payment of fee or any other reason.</li> <li>• A minimum of 75% attendance is required for a participant to be eligible to sit in the final examination. Being sick and going to weddings are absences and will not be counted as present. Participants with less than 75% of attendance in a course will not be allowed to take final-term exam.</li> <li>• Any participant found using unfair means or assisting another participant during a class test/quiz, assignments or examination would be liable to disciplinary action.</li> </ul>
<b>❖ Plagiarism Policy</b>
As part of our dedication to maintaining a fair and just academic environment, we have implemented a comprehensive set of measures to detect and address instances of plagiarism and cheating. These

measures include advanced plagiarism detection software, thorough review processes, and open communication channels to encourage reporting of any suspected cases. In the event that any student, is found engaging in plagiarism, cheating, or other unethical behaviours, the university will take appropriate actions as outlined by the HEC plagiarism policy. These actions may include:

- Given a failure grade in the subject
- Fined an amount as deemed appropriate
- Carry out social responsibility activity
- Any other penalty as recommended by Disciplinary Action Committee

## Oral Presentation Rubric

Student's Name:	SAP ID:
Faculty Member's Name:	Course Code:
Topic:	

	<i>1 Below basic</i>	<i>2 Basic</i>	<i>3 Proficient</i>	<i>4 Advance</i>	<u>Marks</u>
Organization	Audience cannot understand presentation because there is no sequence of information.	Audience has difficulty following presentation because student jumps around.	Student presents information in logical sequence which audience can follow.	Student presents information in logical, interesting sequence which audience can follow.	
Subject Knowledge	Student does not have grasp of information; student cannot answer questions about subject.	Student is uncomfortable with information and is able to answer only rudimentary questions.	Student is at ease with expected answers to all questions but fails to elaborate.	Student demonstrates full knowledge (more than required) by answering all class questions with explanations and elaboration.	
Eye Contact	Student reads all of report with no eye contact.	Student occasionally uses eye contact, but still reads most of report.	Student maintains eye contact most of the time but frequently returns to notes.	Student maintains eye contact with audience, seldom returning to notes.	
Verbal techniques	Many pronunciation errors and run-on sentences.	Some pronunciation errors and run-on sentences.	Few pronunciation errors and run-on sentences.	Precise pronunciation and uses complete sentences.	

	Student mumbles and speaks too quietly for audience in the back of class to hear.	Student's voice is low. Audiences have difficulty hearing presentation.	Student's voice is somewhat clear. Most audiences can hear presentation.	Student uses clear voice so that all audiences can hear presentation.	
Delivery (oral/visual)	Delivery techniques are either distracting from understandability of the presentation or fail to be effective; student is clearly uncomfortable or unprepared.	Delivery techniques sometimes detract from audience comprehension; student appears uncomfortable. Verbal cues include unnecessary gestures and purposeless body language.	Delivery techniques make the presentation understandable, interesting, and student appears comfortable; Nonverbal cues are appropriate and useful.	Delivery techniques make the presentation compelling; student appears confident; Non-verbal cues aid significantly.	
	Visuals are poorly prepared. There is a lack of creativity.	Some materials are not supported by visuals. Creativity is average.	Visuals help the flow of the presentation and are easy to read/view. Creativity is apparent.	Visual aids are well prepared, informative, effective, professional and not distracting. Creativity is outstanding.	
				<b>Total Marks</b>	

Scoring Key

	Undergraduate	Postgraduate
Below basic	1-7	-
Basic	8-14	1-9
Proficient	15-21	10-20
Advance	22-28	21-28

### Written Rubric Report

Student's Name:	SAP ID:
Faculty Member's Name:	Course Code:
Topic:	

	<i>1 Below basic</i>	<i>2 Basic</i>	<i>3 Proficient</i>	<i>4 Advance</i>	<u>Marks</u>
Understanding of Topic	Demonstrates little or no understanding of topic.	Demonstrates some understanding of topic; Does not make connections among ideas	Moves beyond surface understanding; Demonstrates facility with topical and disciplinary knowledge	Demonstrates disciplinary understanding and interconnections; makes links that suggest discovery of new information or new ways of relaying information	
Content Development	Uses appropriate and relevant content to develop simple ideas in some parts of the task.	Uses appropriate and relevant content to develop and explore ideas through most of task.	Uses appropriate, relevant and compelling content to explore ideas within the context of the discipline and shape the whole task.	Uses appropriate, relevant, and compelling content to illustrate mastery of the subject, conveying the writer's understanding, and shaping the whole task.	
Support for ideas	Inappropriate or insufficient details to support idea	Includes some, but not adequate support for arguments	Advances argument with sound evidence and references	Expertly advances argument with well-researched evidence and documentation	

Mechanics	Errors are frequent and distracting.	Some errors in style or grammar occur that they become distracting.	Writing is generally errors free.	Writing is free of errors in grammar, punctuation, sentence structure, capitalization and spelling.	
Organization and development	Not organized, discussion makes no sense	Some organization, discussions jump around, start and end are unclear.	Good organization and discussions are logically ordered.	Excellent organization and discussions are logically ordered.	
				<b>Total Marks</b>	

#### Scoring Key

	Undergraduate	Postgraduate
Below basic	1-5	-
Basic	6-10	1-7
Proficient	11-15	8-15
Advance	16-20	16-20