

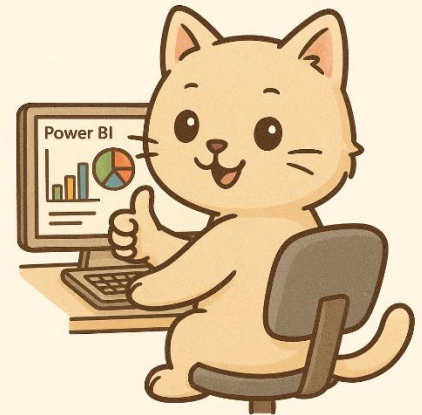
## CS459 - Business Intelligence

### Spring 2025: Final Exam

Instructor: Ms. Abeera Tariq

Duration: 9:30 AM to 1:00 PM

**ALL THE BEST**



**FOR THE EXAM**

#### Exam Structure

	Attempt	Use	Permissions	Format	Submission	Weightage (Marks)	Allowed Time
Part A	Individually	Lab PCs only	Closed book. Internet or other resources are <b>NOT</b> allowed.  Time bound – no extra time to be given.	MCQ and Short Qs	LMS Quiz	10%	45 mins or until 10.30 AM
Part B	In teams of Max 2 students	Laptops are allowed	Students may access the internet and other class resources.	BI Case Study	LMS Assignment Submission + Paper Prototype (on A4 paper - bring your stationary accordingly)	15%	2 hr 30 mins

- Make sure to keep some time at the end for Part B submission as no extra time will be given.

## PART B : BI Case Study

### General Instructions:

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- Bring your own laptops.
- Do not rely on lab PCs as they will not have the required installations. You may also bring your own connectors or extension boards for charging.
- This part is team-based - **only 2 members are allowed**
- There should be no form of communication between different teams.
- Use of phones is not allowed.
- **Use of AI is permitted but your own thinking would be evaluated. If you do a simple copy/paste - it would be graded accordingly.**
- ***In case of Plagiarism, all students involved will receive a 0 in the final exam.***

### Submission Requirements:

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- Submission Via LMS of all deliverables as listed in the case study.
- Name your files as BIFinal\_MemberName1\_MemberName2
- Only **1 member** should submit.
- Make sure to submit within the deadline as no extra time will be allowed.
- If file size exceeds, upload the report on LMS with a drive link which should not be modified after deadline.

### Evaluation Process:

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- BI Case Study – 15%
- After a reasonable amount of time, the instructor will visit the desks during the exam for partial evaluation based on observation and short viva/demo. It is best to ensure your prototype is ready earlier so you may explain your problem-solving approach through it if your dashboard is not ready.
- Team members sitting idle may lose marks here for lack of participation.
- The remaining marks will be given on your final exam submission on LMS.

### Deliverables Checklist:

- Report document in MS Word containing:
  - Data Transformation steps within BI tool
  - One clearly written BI problem statement
  - 3–5 BI queries
  - One full snapshot of your dashboard.
  - Snapshot of your charts individually with one-liner explanation of what it shows.
  - Final insights & recommendations
  - References (List down any links and resources including ChatGPT used to help you with this exam)
- Paper prototype sketch on A4 paper (submitted to the invigilators)
- Completed dashboard – BI Tool File

## CASE STUDY: Inventory Optimization

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Akbar is the Procurement Manager at a growing mid-sized manufacturing company with operations across four major warehouse hubs in Pakistan: Karachi, Lahore, Islamabad, and Faisalabad. The company manages over 100 materials ranging from raw materials to finished goods.

Despite access to inventory reports, Akbar's team struggles to make quick, data-driven procurement decisions. Some materials run out unexpectedly, while others sit idle and tie up working capital. Supplier delays and forecast inaccuracies further complicate planning.

The firm has recently collected historical inventory, consumption, and supply data — and Akbar believes this can be turned into a meaningful decision-support dashboard. The dataset is uploaded with this exam.

He has asked for your help as a **BI consultant** to:

- Explore the data and frame the most pressing business problem
- Convert that problem into actionable BI queries
- Design and deliver a dashboard to support smarter procurement

You will follow the BI Design Thinking process (Empathize → Define → Ideate → Prototype → Test). You may assume the empathy stage is complete and infer the problem from the above business context provided.

## Data Transformation

Before you begin any analysis, you are expected to perform a small but critical data transformation. Create a **Stock\_status** column that explains if the particular product at a particular time is “In Stock”, “Low” or “Out of stock”.

Design a suitable logic and create this within the BI Tool. Mention in your report the creation of this new column.

If deemed necessary, you may create more columns and **justify** them in the report as well. For new columns, also explain the mathematical calculation and importance in your own words.

## 1. Frame the BI Problem (Define)

Use this format to write ONE problem statement:

**[Stakeholder]**, a **[role]** from **[company]**, needs a way to **[need]** because **[pain point/insight]**.  
Fulfilling this need will help the organization **[business outcome]**.

Include 2-3 bullet points summarizing how you interpreted the problem statement and justify why you chose this problem.

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## 2. BI Queries (Ideate)

Based on the dataset and your defined problem, write **3–5 BI queries** that your dashboard must answer. These should guide your dashboard design and visual choices. For each of your queries write in 1-2 lines why it is important to answer this question. You may do this as a table.

BI Query	Justification

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## 3. Paper Prototype (Prototype)

Sketch a paper wireframe of your dashboard on the provided A4 sized blank sheets. Structure this around your BI queries and clearly label the charts. On your prototype, write briefly why a certain chart is necessary. Be ready with this earlier as it will be evaluated during the exam.

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## 4. Dashboard Implementation (Prototype + Test)

Build your dashboard in **Power BI or Tableau** (your choice). Attach in your report:

- One full snapshot of your dashboard
  - Snapshot of your charts individually with one-liner explanation of what it shows.
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## 5. Insights & Recommendations

From your dashboard, provide:

- **3–5 insights** you discovered from the data
  - **2–3 recommendations** for what Akbar should do next
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