

Project Topics and Team Assignments

This document describes the team projects, their objectives, key performance indicators (KPIs), and the expected deliverables for ECON485 – Fall 2025.

General Notes

1. Each team project is aligned with the weekly course structure described in the syllabus.
2. Teams are expected to follow the three-stage project cycle (Initial Planning → Design & Prototype → Final Presentation).
3. Weekly course content supports each stage of your project:
 - Weeks 3–4: Topics on AI-assisted schema design and initial database structure will help you in Stage 1.
 - Weeks 5–9: Topics on SQL queries, normalization, and application integration correspond to Stage 2.
 - Weeks 10–14: Topics on reporting, views, and NoSQL discussions will support your Stage 3 presentations.
4. Projects will be evaluated continuously, based on progress shown during these stages and the defined KPIs.
5. Each team must include a short paragraph (around 150 words) in their final submission, describing which AI tools they used, how they verified or corrected AI-generated content, and what limitations or errors they encountered. This aligns with the “fail-forward AI learning” approach emphasized in the course.

Expected Deliverables (aligned with the syllabus):

1. Stage 1: A one-page project definition with identified entities, roles, and an initial AI-assisted schema draft.
2. Stage 2: Normalized database schema, 5 working SQL queries, and progress log.
3. Stage 3: A final demo, slides explaining the economic relevance, and GitHub repository submission.

Submission and Communication Notes

- All work must be submitted through GitHub repositories.
- Each repository must include:
 - /design → ER diagrams and SQL schema files
 - /data → sample datasets used for testing
 - /queries → SQL scripts demonstrating functionality
 - /docs → AI interaction logs, meeting notes, and reports
- Teams must invite the instructor to their communication channel (Slack, WhatsApp, etc.) as mentioned in the initial announcement. Feedback will be shared both in class and via Slack.

Integration with Course Evaluation

- Project work corresponds to the “Project (30%)” component of your course grade.
- Weekly progress, AI tool usage reflection, and presentation quality will contribute to this grade according to the KPIs outlined in this document.

Project 1 – Local Business Analytics Database (Assigned to Team 1)

Project Summary	Building a small relational database for a chain of coffee shops or local retailers to track daily sales, costs, and inventory.			
Learning Objectives	Identify business entities (branches, items, transactions), normalize the schema, and run SQL queries for simple KPIs (e.g. revenue per branch, top-selling products).			
AI Component	Use ChatGPT or SQLAI to generate queries and check schema normalization.			
ECON Context	Understanding micro-level data aggregation and local market behavior.			
Project Key Performance Indicators for each Phase				
Stage / Week	Focus	KPI Category	Project Specific KPIs (Example)	Evaluation Weight
Stage 1 – Initial Planning (Weeks 3 – 4)	Topic comprehension, team coordination, tool readiness	Project Framing	Business Process Mapping: Coffee shop operations (sales, cost, inventory) are clearly described and converted into initial entity–relationship ideas. Tool Readiness & Collaboration: Team has created GitHub repo and shared workspace; AI tool(s) tested at least once for schema drafting.	20%
Stage 2 – Design & Prototype (Weeks 5 – 9)	Data model quality, early SQL use	Technical Progress	Schema Completeness: Database schema covers at least branches, items, transactions, and staff entities; verified up to 3NF. Query Accuracy: At least five working SQL queries showing daily/branch-level	35%

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			sales and inventory performance, tested with sample data.	
Stage 3 – Final Presentation (Weeks 10 – 14)	Functionality, reflection, and economics insight	Outcome Quality	<p>Functional Integration: The prototype can calculate and visualize key business KPIs (e.g., revenue per branch, best-selling item).</p> <p>Economic Interpretation: Students explain how aggregated micro data can inform pricing or inventory policy decisions.</p>	45%

Project 2 – Student Housing and Rent Market Database (Assigned to Team 2)

Project Summary	Designing a database for tracking rental prices, locations, and demand for student housing around a university.			
Learning Objectives	Data model includes properties, landlords, tenants, and contracts. SQL queries must include finding average rent per neighborhood, vacancy rate, etc.			
AI Component	Use dbdiagram.io for schema and SQLAI to query average rent by distance to campus.			
ECON Context	Urban microeconomics and housing market analysis.			
Project Key Performance Indicators for each Phase				
Stage / Week	Focus	KPI Category	Project Specific KPIs (Example)	Evaluation Weight
Stage 1 – Initial Planning (Weeks 3 – 4)	Topic comprehension, team coordination, tool readiness	Project Framing	Market Definition: Teams identify relevant variables affecting rent (location, distance to campus, property type). Data Source Simulation: Demonstrates awareness of realistic data input sources (survey, listings, or synthetic data generation).	20%
Stage 2 – Design & Prototype (Weeks 5 – 9)	Data model quality, early SQL use	Technical Progress	Entity Structure: Schema includes properties, landlords, tenants, contracts, and payments, with proper relationships. SQL Analysis: Queries produce at least average rent by neighborhood and vacancy rate	35%

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			correctly.	
Stage 3 – Final Presentation (Weeks 10 – 14)	Functionality, reflection, and economics insight	Outcome Quality	Analytical Reporting: Generates and interprets rent distribution and location-based pricing patterns. Policy Reflection: Discusses how such a database could assist urban planners or student housing authorities.	45%

Project 3 – Tourism Revenue and Visitor Trends (Assigned to Team 3)

Project Summary	Database for a tourism board tracking visitor numbers, hotel stays, and spending by region.			
Learning Objectives	Involves multiple entities (regions, hotels, tourists, expenditures). Generate reports like “average spending per visitor per region” or “peak month by hotel.”			
AI Component	Use AI tools to visualize data or suggest indexing improvements.			
ECON Context	Seasonal patterns and economic impact analysis.			
Project Key Performance Indicators for each Phase				
Stage / Week	Focus	KPI Category	Project Specific KPIs (Example)	Evaluation Weight
Stage 1 – Initial Planning (Weeks 3 – 4)	Topic comprehension, team coordination, tool readiness	Project Framing	Scope Definition: Identifies relevant tourism data entities (regions, hotels, visitors, expenditures). Data Planning: Prepares mock data sources and defines units of measure (e.g., per-night spending, stay length).	20%
Stage 2 – Design & Prototype (Weeks 5 – 9)	Data model quality, early SQL use	Technical Progress	Schema Integrity: Functional relationships between regions, hotels, and visitors established; schema passes normalization checks. SQL Queries: Delivers queries such as average spending per visitor and peak month per hotel with verifiable results.	35%
Stage 3 – Final	Functionality,	Outcome Quality	Visualization &	45%

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Presentation (Weeks 10 – 14)	reflection, and economics insight		Insight: Uses AI-assisted visualization or dashboards to illustrate seasonal trends and spending patterns. Economic Insight: Connects findings to local economic impact — e.g. employment or tourism-driven revenue implications.	