



# *Modernization and Implantation of UNITEL approach on Engineering Economy Course in IKIU*

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REPRESENTATIVE'S OF IKIU AT UNITEL  
LECTURER OF THE UNITEL'S COURSES : **ENGINEERING  
ECONOMY** AND PUBLIC FINANCE



## Structure of the Training Path based On Following Modules:



**MODULE 1: Orientation to the course and modern concepts of learning**

**MODULE 2: Student-centered learning in practice**

**MODULE 3: Methods and tools of TEL**

**MODULE 4: Cooperation with the industry and working life relevant skills**

**MODULE 5: Assessment and feedback as a part of teaching and learning**

**MODULE 6: Modernization of teaching**

## Module 1: Orientation to the Course

As the economic analysis is essential for all engineering students and engineers, engineering economy course seems to be a vital issues to them and managers. In fact the engineering economy is at the heart of making decisions.

Basic of Engineering Economy  
Written by Professor Leland

The following Important Topics were attended:

1. Basic Concepts of Engineering Economics
2. Factors: How Time and Interest Rates Affect Money
3. Nominal Interest Rate and Effective Interest Rate
4. Present Worth Analysis
5. Annual Worth Analysis
6. Rate of Return Analysis
7. Benefit-Cost Ratio Analysis and Public Projects
8. Break-Even Analysis, Sensitivity Analysis, and Payback Period Analysis

## MODULE 2: Student-centered learning in practice

Problem-based learning

Team-based learning

Project-based learning

Flipped learning

Experience-based learning

E-assessment for students

Insert video lessons

Insert animations

All students engaged in the course; individually by presentation of one or par of on topic, and jointly by a group work on [3 projects](#).

The projects were adopted by Module 4 ( cooperation with industry as well as engagement with society's problem.

**Indeed based on Modele2 engaging and motivating of students with our socity's problems was atended in this course and method.**

Also, based on arising the student's social motivation and reinforcing learning through interaction was aimed in this course.

**Finally based on creating students understanding and acitivites the applicabilty of the course was noticed.**

## 3 projects

1. Heshtgerd-Qazvin Metro Project
2. Qom-Qazvin Railway Project
3. Qazvin Public Transport System Project

Why these Projects?

Lack of suitable public transport system in Iran and Qazvin.

Every week hundred thousands are traveling between Qazvin and Tehran as well as Qazvin Qom and Imam Khomeini International Airport (IKIA)

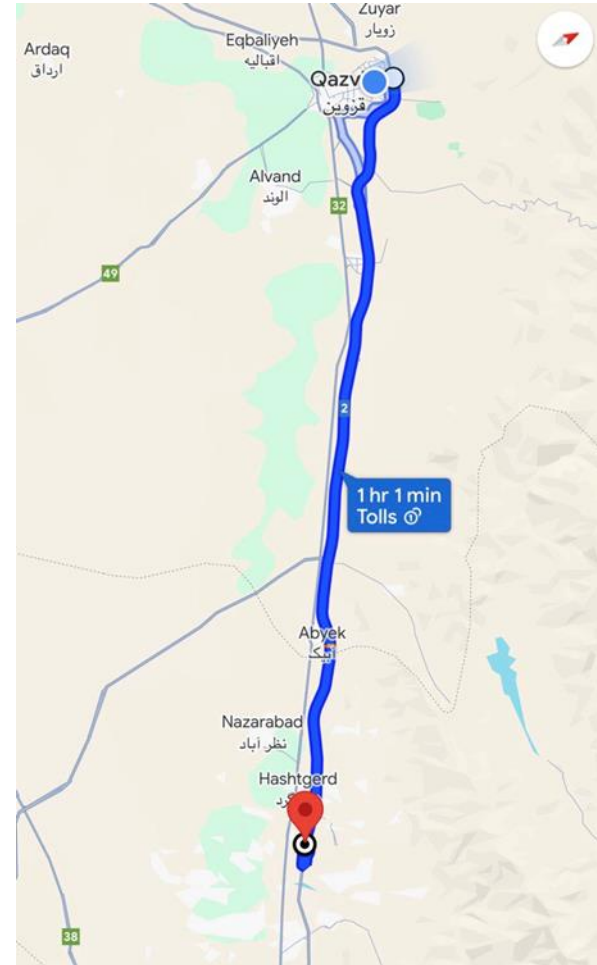
Heavy pollution is our serious problem especially from October to January

Every Day Thousands of Students are traveling in this region, thus our class students are engaged with the problem.

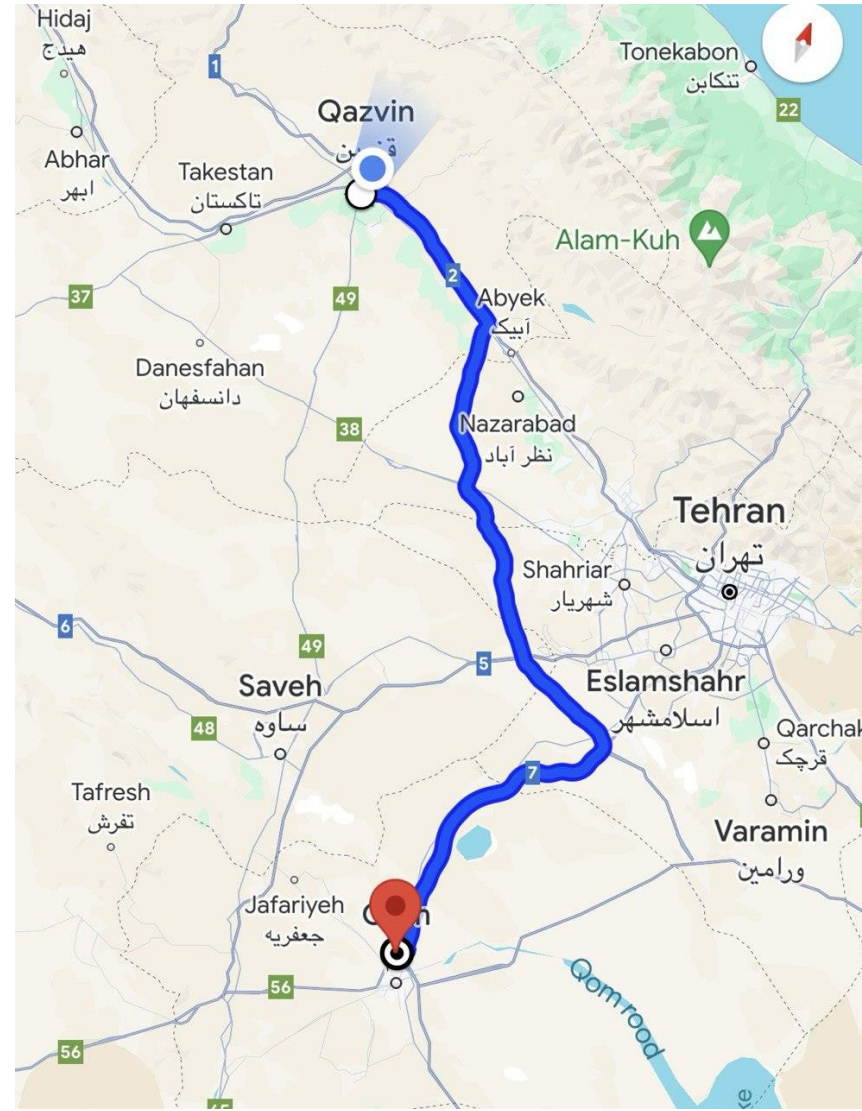
Students can understand social aspects of the course

Students can recognize the role of public transport system in urban development as well as social and economic development

# Heshtgerd- Qazvin Metro Project

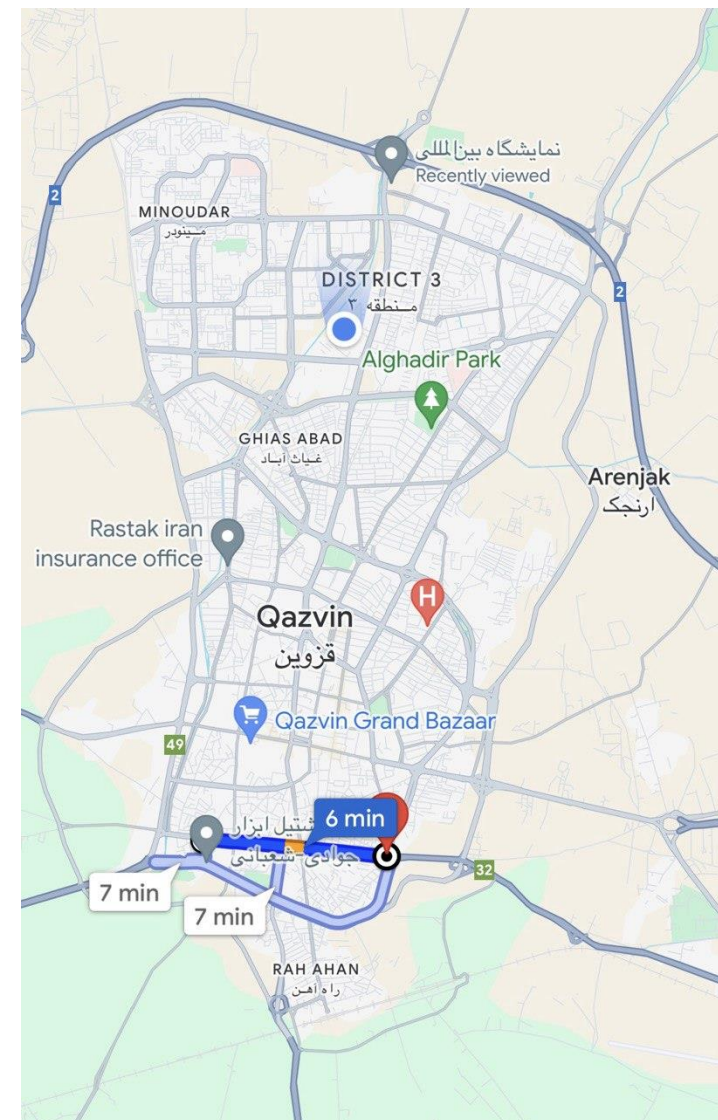
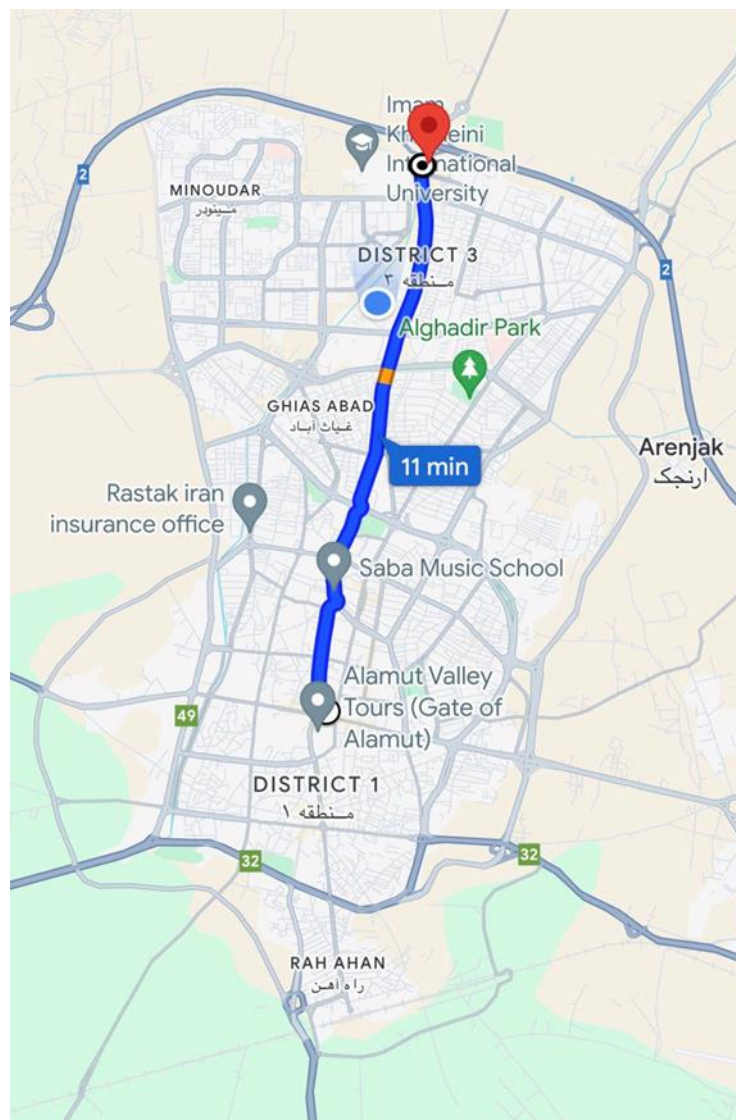


# Qom-Qazvin Railway Project





# Qazvin Public Transport System Project





# MODULE 3: Methods and tools of TEL

Using of Learning Management System (LMS),  
Virtual classrooms, and video projectors.

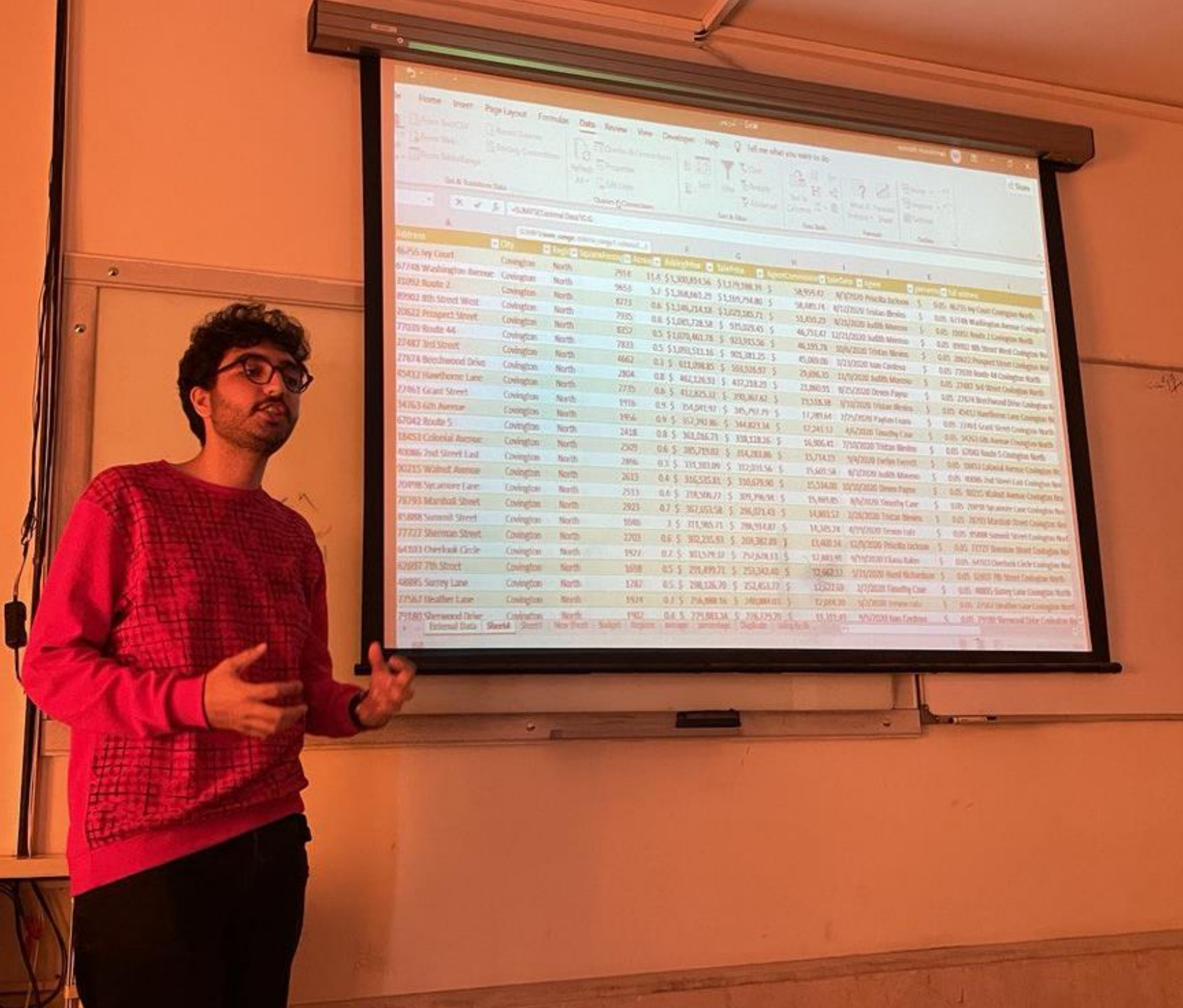
Utilization of recorded videos of certain articles

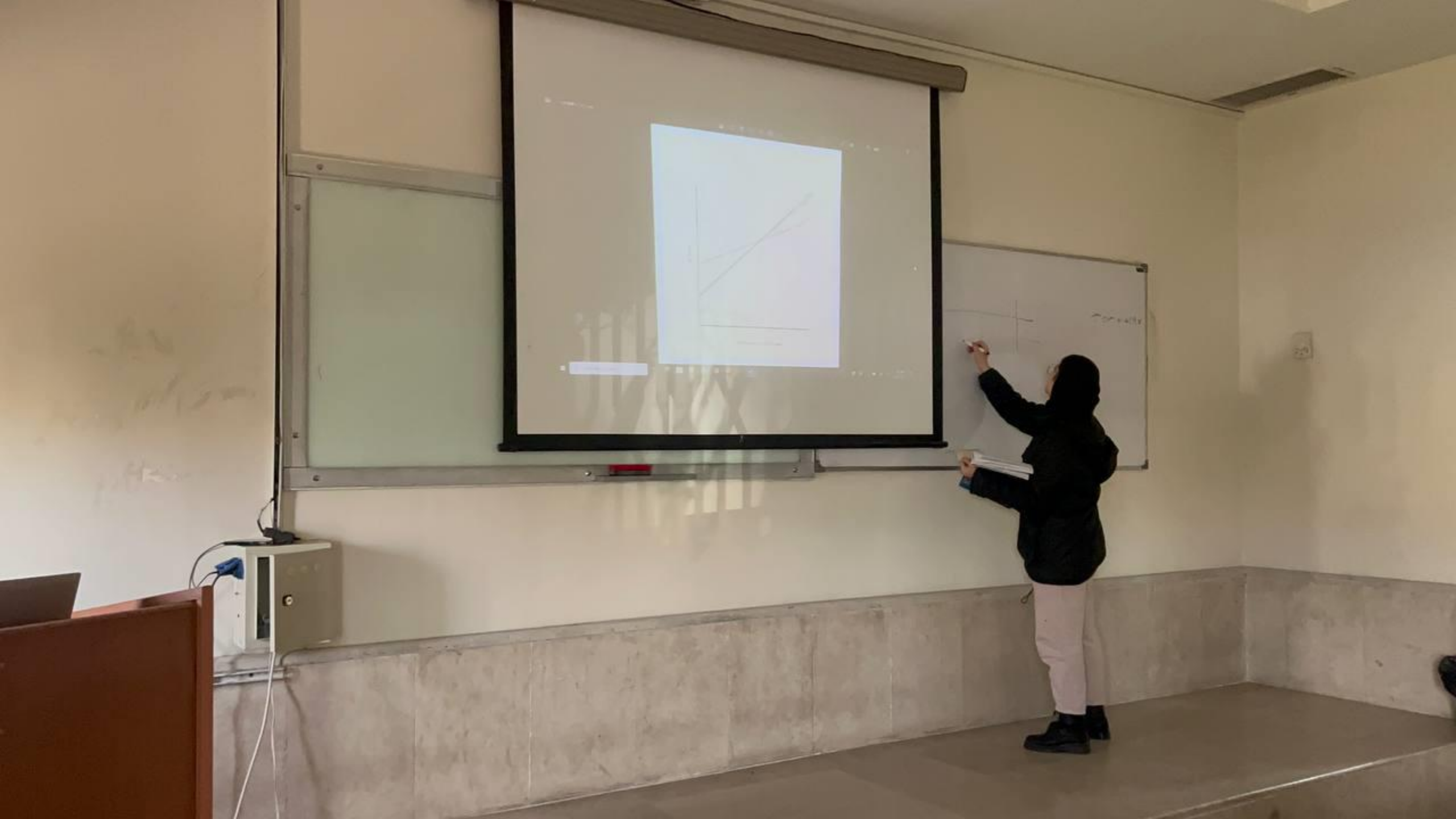
Teaching and application of COMFAR program and Excel  
software

Implementation of online sessions through Skype

Introducing of selected activating methods and online tools

Teaching of Excel by Mr.  
Moslehi  
Expert & Master Student of  
Shahed University







$$CR = -4,1 - (1/0.5) = -20,1$$

$$CR = -20,1$$

هزینه‌های رسانه

$$-5,1$$

هزینه‌های کنترل کیفیت

$$-5,429$$

$$-21,429$$

$$5$$

$$CR = -P(A/P, i, n) + S(A/P, i, n)$$

$$CR = -4,1 - (A/P, 1/0.5) + 17,1 - (A/P, 1/0.5) =$$

$$CR = -18,124$$

$$-5,1$$

مجموع هزینه‌های رسانه

$$-12,1$$

هزینه‌های کنترل کیفیت

$$-25,124$$

$$P = 4,1 - (1/0.5) = -20,1$$

## MODULE 4:

# **Cooperation with the industry and working life relevant skills**

As mentioned three real projects related to the public transportation system were proposed to the students.

Students were formed three groups

These projects have three phases for students to end the projects.

In phase 2 they should engaged with the project by the visiting of different places as we well as inviting experts and responsible mangers or involved authorities to explain the maters of facts about each projects

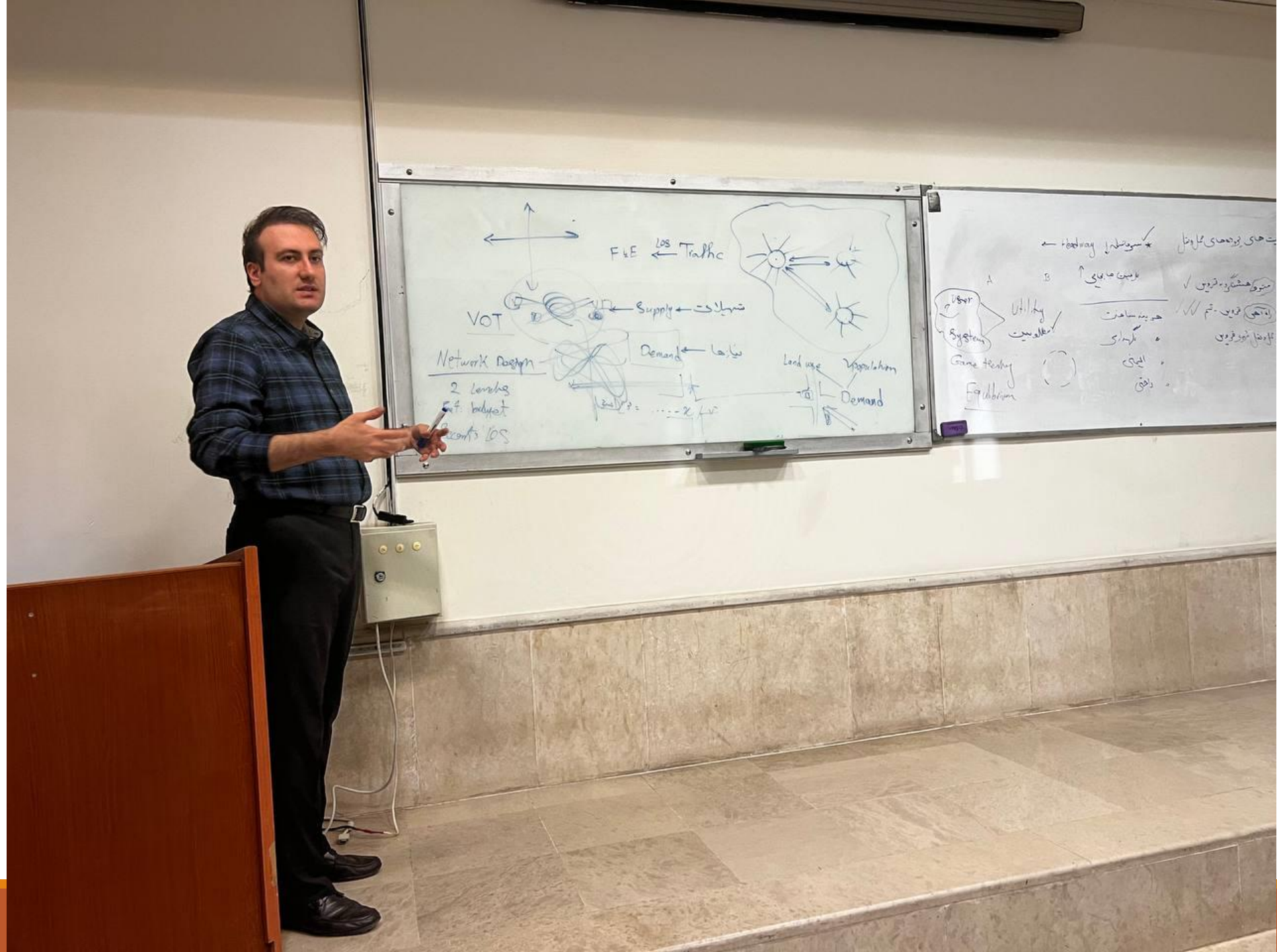


Dr. Zamani, explains  
the history and  
importance of the  
Hashtgerd-Qazvin  
Metro project





Dr. Mirza Hosseini,  
the IKIU's  
Professor and  
UNITEL member,  
kindly accepted to  
give speaking about  
transport systems  
and answered  
students questions  
about Qom –  
Qazvin railway  
project



Dr. Abdolrazeghi,  
Manger of Qazvin's Public  
Transport Section in Qazvin  
Municipality  
Explain the city's main public  
transport projects



## Summing Up

For the first time different method and attitude was adopted to teach the engineering economy

At the first the students were worried in adopting of the new method

By engaging of the students in personation of topics and following of filliped learning the atmosphere of the class dramatically changed and students were satisfied and happy by the new methods and approaches.

We are at the end of teaching process and assessment based on the Model 5 will be done.

It seems good results will be achieved if so, we will focus on Module 6 and hopefully the IKIU adopt the new strategy based on Model 6.





Many thanks for your attentions