

**YILDIZ TECHNICAL
UNIVERSITY**



CONSTRUCTION MANAGEMENT

ASSOC. PROF. DR. ZEYNEP IŞIK



LECTURE HOURS AND CLASS

- Monday 15:00– 17:00 Class: 1-092
- Thursday 13:00– 14:50 Class:1-092

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- 2 Midterms (30% each) and a final (40%)
- Not monolog, but dialogue.
- Reference
 - Jackson, Barbara J.. Construction Management JumpStart : The Best First Step Toward a Career in Construction Management (2nd Edition). Hoboken, NJ, USA: Sybex, 2010.

Construction



- Construction is one of the largest sector in the world (second after agriculture).
- The total worth of global construction industry is \$3.9 trillion annually.
- In addition, it creates employment for more than 110 million people worldwide. Also, it affects the other industries, such as the steel industry, the lumber industry, the carpet industry so on.
- The economic impact of the construction is very high.

Construction



- This is also valid for Turkish construction industry.
- The share of construction industry in gross domestic product (GDP) is determined as 5.7% in 2015.
- According to the data related to 2015, The Turkish construction industry employs 1,878,000 workers.
- Also, Turkish construction companies are very active in international market. For instance, the number of Turkish construction companies in the top 250 international contractors is 46 according to the Engineering News Record in 2016.

Number of companies placed in ENR list according to their home countries

Countries	2015*	2014*	2013*	2012*	2011	2010	2009
China	65	65	62	55	52	51	54
Turkey	40	43	42	38	33	31	33
United States of America	38	32	31	33	26	22	20
Italia	15	15	16	17	19	23	22
Japan	14	14	14	15	14	13	13
South Korea	13	12	13	15	12	11	12
Spain	11	11	13	12	12	13	11
France	5	5	5	4	4	5	5
Germany	4	4	5	4	4	4	4
United Kingdom	2	3	2	3	4	4	4
Others	43	46	47	54	45	48	47
Total	250	250	250	250	225	225	225

Information about 2016 ENR list

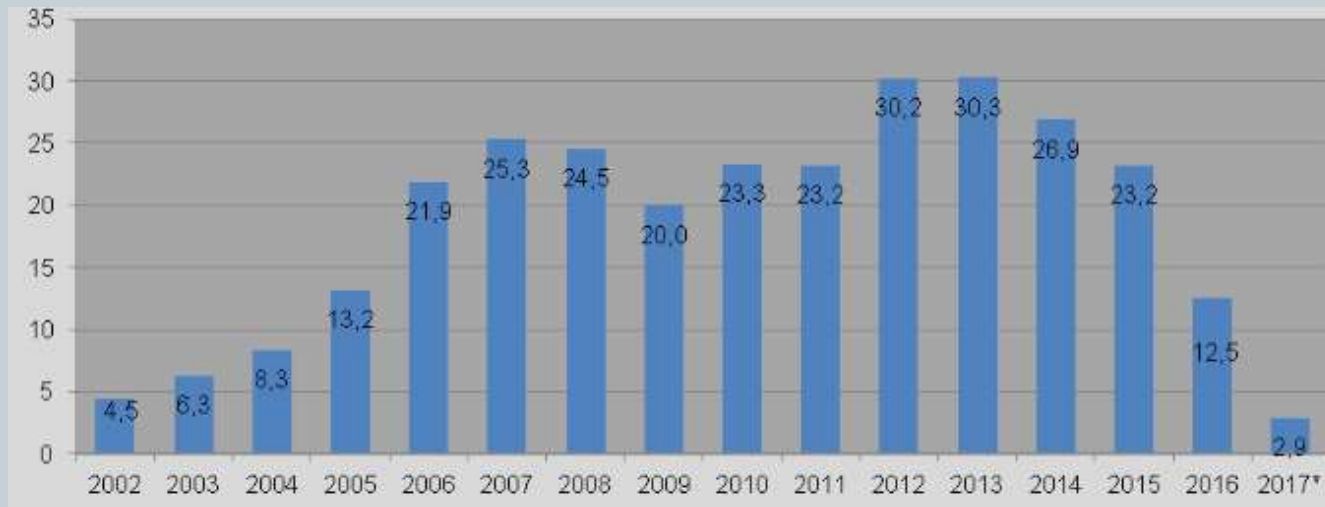


- Turkish firms' share in 2016 increased by 0.9 point compared to last year from 4.6% to 5.5 %.
- However, total revenue of the top 250 international contractor has decreased by 6.4 percent compared to last year, reaching 468 billion USD.
- The share of Turkish companies in total income was 5.5 percent. China's share was 21.1 percent, the share of the American companies was 8.9 percent, and Spain's share was 12.6 percent.

Construction



Turkish International Contracting Services (Billion USD)





2015	Toplam Proje Bedeli (ABD \$)	2016	Toplam Proje Bedeli (ABD \$)
Rusya Federasyonu	6.023.310.495	Katar	2.416.584.536
Kuveyt	4.516.295.606	Suudi Arabistan	867.563.237
Cezayir	3.004.952.126	Özbekistan	862.324.741
Türkmenistan	2.508.057.389	Bahreyn	789.234.166
Suudi Arabistan	1.312.813.732	BAE	634.453.420
Azerbaycan	1.092.646.252	Kuveyt	626.266.592
Kazakistan	808.449.211	Senegal	496.655.292
Gana	576.000.000	Pakistan	465.758.412
Kongo	559.881.359	Ukrayna	457.110.851
Irak	473.341.002	Fas	452.086.225
Diğer (47 Ülke)	2.339.975.786	Diğer (44 Ülke)	4.464.593.724
TOPLAM	23.215.722.958	TOPLAM	12.532.631.196

Construction



Turkish International Contracting Services (Billion USD)

1972-2016 / 3 ay			
	Proje Sayısı	Proje Bedeli (ABD \$)	Pay (%)
Russian Federation	1929	66.893.585.969	19.6%
Turkmenistan	987	47.194.354.576	13.8%
Libya	602	28.875.374.694	8.4%
Iraq	951	24.757.277.501	7.2%
Kazakhstan	480	21.587.456.879	6.3%
Saudi Arabia	310	18.046.205.707	5.3%
Qatar	128	14.188.688.161	4.1%
Algeria	304	13.753.179.309	4.0%
Azerbaijan	363	11.663.882.775	3.4%
United States of Arab Emirates	108	9.825.576.994	2.9%
	8949	341.966.907.693	100.0%

Construction



- The impact of construction is not only related to the economic, but also it affects the social life.
- From homes to highways to dams are products of construction industry.
- These products provide many needs of human beings to survive, such as shelter and drinking water etc.
- In other words, the construction industry plays an important role in our daily life.
- And everyday new demand for infrastructure, buildings and utilities appears.

Construction



- At the beginning, the only primitive huts and houses were required for sheltering.
- Then, the buildings were constructed for assembly.
- Political capitals and great cities were constructed.
- However, the traditional structures are not sufficient enough to provide needs of the modern society.
- Mega and complex structures are demanded by the people.

Construction



Russell ve Yao (1996)

an engineer is hired for his or her **technical skills**





Poor **personal skills**

FIRED!

promoted
for **leadership** and **managemen**
t skills



Skills required for promotion – Your opinion



Management Skills



- Time management
- Solution focused
- Organization
- Leadership
- Responsible
- Teamwork
- Tendency to work in multidisciplinary
- Business Development

Personal skills



- Communication abilities - oral
- Communication abilities - written
- Ethics
- Creativity
- Analytical thinking
- Strategically thinking
- Information technology capability
- Innovative

Construction industry



- Products of construction are large in scale and varied in kind.
- Construction projects require construction firms to set up temporary organizational structures at dispersed geographical locations, most often at a distance from central management.
- Project teams are highly fragmented, with many disciplines coming together for just a single project.
- Low investment in research and development
- Low investment in information technology
- Construction companies have very high turnover compared to their asset base, i.e. very high budget construction projects can be completed with comparatively small amount of plant and machinery.
- Compared to other sectors, profit in relation to turnover is low.
- The use of hired plant is widespread, and tendency is growing.
- Cyclical fluctuations in the volume of work.

Construction industry



- Competitive tendering (The contractors are competing for awarding contract based on different criteria, such as cost, quality and time, and the construction contracts are awarded after several contractors have submitted a tender).
- High competitive market (there are many buyers and sellers in the market)

Construction industry



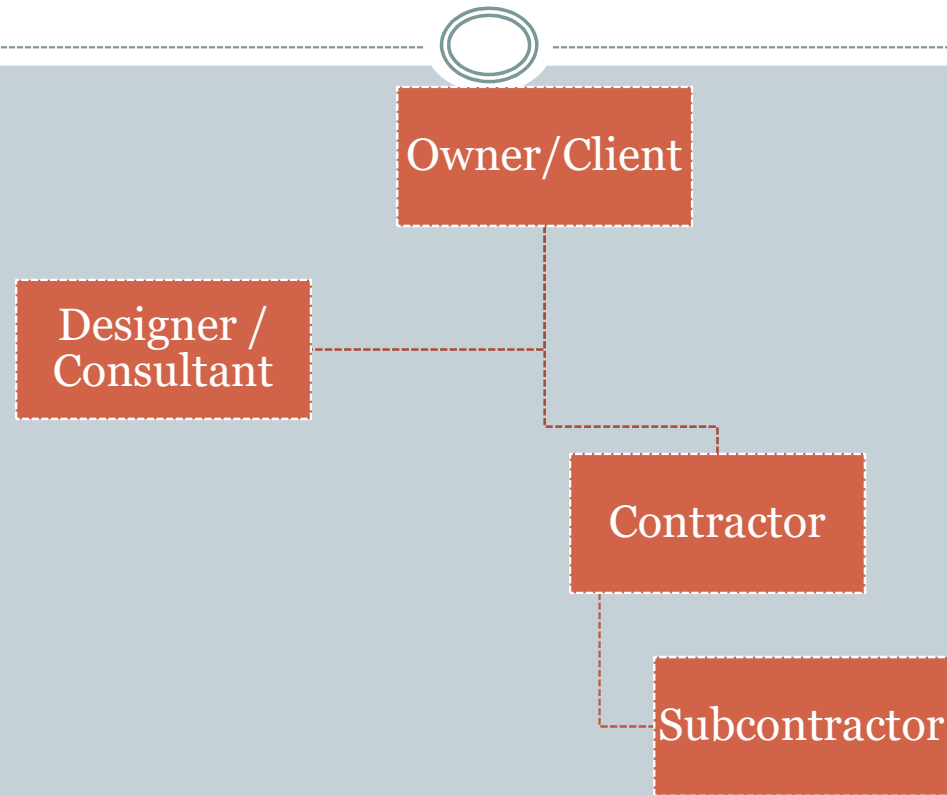
- As a terms of human resources, the characteristics of construction industry
 - Labor intensive work
 - High degree of labor mobility
 - Low investment in skills training
 - Other industrial sectors and commerce can commonly able to benefit from better prospects in attracting skilled workers either by providing superior working conditions or in being able to pay better wages arising from more intense application of mechanization and advanced technology in general.

Construction industry



- The business of construction is typically characterized by
 - Public sector is a much more important client than in most other sectors
 - Contracts are based on relationships where the project participants oppose each other instead of co-operating and sharing joint ventures
 - Tendency to competition on price alone
 - Cash flow dominates behavior (cash is king)

Parties involved in a construction project





Construction Management



- Yapım Yönetimi
- Yapı İşletmesi
- İnşaat Yönetimi



In Turkish

- Construction Management and Engineering
- Built Environment
- etc.

Construction Management



- Construction can be defined as a process of building infrastructure, which may be in the form residential /commercial buildings, roads, bridges, airports, sea ports, dams, canals and factories etc.
- Management is the discipline of planning, organizing and managing the resources to achieve the predetermined specific goals and objectives.
- Construction management is converting a set of written plans and specifications and a raw piece of land into a building by coordinating all of the resources (such as materials, manpower and equipment) in the limits of predetermined **price, schedule and quality**.

Construction Management



- Estimating the project
- Administering the contract
- Managing the job site and construction operations
- Planning and scheduling the project
- Monitoring the project performance
- Managing the project quality
- Managing project safety
- Assessing project risks

The purpose of this course



- **Purpose:** is provide background to understand and execute the broad array of technical and non-technical activities associated with the construction management, thus the knowledge related to the construction process and management of construction companies can be obtained. In addition, the economical, social and environmental effects of construction projects are evaluated to provide management perspective.
- Practical knowledge with theoretical knowledge (case studies).
- Provide Management skills.
- Adoption of the working environment in construction industry.

Course outline



COURSE OUTLINE

WEEK	#	LECTURES
1	1	FIRST MEETING
	2	INTRODUCTION
2	3	PROJECT MANAGEMENT
	4	PROJECT MANAGEMENT
3	5	PROJECT PLANNING
	6	PROJECT PLANNING
4	7	PROJECT PLANNING
	8	PROJECT PLANNING
5	9	RISK MANAGEMENT
	10	RISK MANAGEMENT
6	11	QUALITY MANAGEMENT
	12	VALUE ENGINEERING
7	13	PROJECT DELIVERY SYSTEMS
	14	SITE MANAGEMENT
8	15	QUANTITY SURVEY, ESTIMATION, STANDARDS
	16	RECITATION
9	17-18	1. MIDTERM EXAMINATION
10	19	ENGINEERING ECONOMY
	20	ENGINEERING ECONOMY
11	21	ENGINEERING ECONOMY
	22	BREAKEVEN ANALYSIS
12	23	INVESTMENT MANAGEMENT
	24	RECITATION
13	25-26	2. MIDTERM EXAMINATION
14	27	INVESTMENT MANAGEMENT
	28	HEALTH AND SAFETY MANAGEMENT
15	29	ETHICS
	30	MAKE-UP EXAMINATION



!!!!READING!!!!

- İNŞAAT SEKTÖRÜ İLE İLGİLİ TEMEL KAVRAMLAR