Bursa Technical University

Graduate School
Civil Engineering (MSc) (With Thesis)

INS5055		Planning and Control of Construction Projects			
Semester	**Course Code**	**Course Name**	**L+P**	**Credit**	**ECTS**
1	INS5055	Planning and Control of Construction Projects	3	3	6,5

Language of Instruction:
Turkish
Course Level:
Master's Degree
Work Placement(s):
No
Department / Program:
Civil Engineering (MSc) (With Thesis)
Course Type:
Seçmeli
Goals:
The aim of this course is to provide students with theoretical knowledge and practical skills in planning, scheduling and controlling construction projects. It is aimed that students gain the ability to plan and control a project from beginning to end using basic planning and control tools such as network diagrams, precedence diagrams, resource allocation, resource leveling, earned value analysis. It is also aimed that students can evaluate activity durations with statistical methods in an environment of uncertainty and analyze project performance numerically.
Teaching Methods and Techniques:
This course provides a basic introduction to project planning and scheduling, which are critical for construction professionals. The aim of the course is to provide a grasp of the basic concepts of project planning, monitoring and control processes. Although software applications (e.g. MS Project, Primavera) are not directly covered, the logic of the basic methods used in these applications is discussed theoretically and practically. The main topics covered in the course are: Network modeling and precedence diagrams, Critical Path Method (CPM), Activity duration estimation and duration distributions, Resource allocation and resource leveling techniques, Time-cost integration (collapse method), Relationship between money and network diagrams, Earned Value Analysis (EVA), Arrow diagrams, Linear planning methods, Basic probability and statistics information and planning under uncertainty. With this content, students will gain a systematic perspective on planning a construction project and will gain the ability to evaluate appropriate planning and control methods against resource and time constraints that may be encountered during the project process.
Prerequisites:

Course Coordinator:

Instructors:
Asst. Prof. Dr. Işık Ateş KIRAL
Assistants:

Recommended Sources

Textbook	:	It can be downloaded from the BTU Ecampus website.
Resources	:	Hinze, J. (2008). Construction planning and scheduling (Vol. 3). Upper Saddle River (NJ): Pearson Prentice Hall.
Documents	:	
Assignments	:	
Exams	:	

Course Category

Mathmatics and Basic Sciences	:	**Education**	:
Engineering	: 100	**Science**	:
Engineering Design	:	**Health**	:
Social Sciences	:	**Field**	:

Course Content

Week	Topics	Study Materials	Materials
1	Orientation, Introduction to Planning of Construction Projects		
2	Basic Information About Construction Activities		
3	Developing a Network Model, Determining Activity Durations		
4	Determining Activity Durations, Conventional Scheduling Methods		
5	Conventional Scheduling Methods: Activity on Nodes Critical Path Method		
6	Conventional Scheduling Methods: Activity on Nodes Critical Path Method		
7	Conventional Scheduling Methods: Activity on Arrow Critical Path Method		
8	Resource and Time Relationship Management		
9	Resource and Time Relationship Management		
10	Resource and Time Relationship Management		
11	Cost and Time Optimization		
12	Cost and Time Optimization		
13	Project Control		
14	Project Control		

Course Learning Outcomes

No	Learning Outcomes
C01	Grasp the basics of planning and scheduling.
C02	Grasp the methods of developing network diagrams and time schedules.
C03	Explain statistical and probabilistic concepts in the context of project duration estimation.
C04	Grasp the principles of resource allocation, leveling, and optimization.
C05	Explain project cost planning, earned value analysis, and financial control techniques.
C06	Evaluate the integrated impact of modern tools and approaches in project planning and control.

Program Learning Outcomes

No	Learning Outcome
P01	Adequate knowledge in mathematics, science and related engineering disciplines; ability to use theoretical and practical knowledge in these areas in complex engineering problems.
P02	Ability to identify, interpret, formulate and solve complex engineering problems; ability to select and apply appropriate methods for this purpose.
P03	Ability to design a complex system, process, device or product under realistic constraints and conditions to meet specific requirements; ability to apply modern design methods for this purpose.
P04	Ability to select and use modern techniques and tools required for the analysis and solution of complex problems encountered in engineering applications; ability to use information technologies effectively.
P05	Ability to design and conduct experiments, collect data, analyze and interpret results in order to investigate complex engineering problems or discipline-specific research topics.
P06	Ability to work effectively in disciplinary and multidisciplinary teams; ability to work individually.

P07	Ability to communicate effectively in written and verbal Turkish; knowledge of at least one foreign language; ability to write effective reports and understand written reports; to prepare production and design reports; to make effective presentations; to give and receive clear and understandable instructions.
P08	Awareness of the necessity of lifelong learning; the ability to access information, to follow developments in science and technology, to constantly renew oneself.
P09	Acting in accordance with ethical principles, awareness of professional and ethical responsibility; knowledge of standards used in engineering practices.
P10	Knowledge of project management, risk management and change management in engineering practice; awareness of entrepreneurship and innovation; knowledge about sustainable development.
P11	Knowledge about global and social effects of engineering applications on health, environment and safety with contemporary engineering problems; awareness of the legal consequences of engineering solutions.

Assessment		
In-Term Studies	**Quantity**	**Percentage**
Mid-terms	1	%40
Quizzes	0	%0
Assignment	1	%10
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%50
Total		**% 100**

ECTS Allocated Based on Student Workload			
Activities	**Quantity**	**Duration**	**Total Work Load**
Course Duration	13	3	39
Hours for off-the-c.r.stud	13	9	117
Assignments	1	3	3
Presentation	0	0	0
Mid-terms	1	3	3
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	3	3
Kısa Sınav	0	0	0
Study period for final exams	6	2	12
Study period for mid-term exams	6	3	18
Total Work Load			**195**
ECTS Credit of the Course			**6**

Course Contribution To Program

Contribution: 1: Very Slight 2:Slight 3:Moderate 4:Significant 5:Very Significant

	P04	P06	P10
C01		3	5
C02	3		
C03	4		5