

Yeditepe University Civil Engineering Department
CE 492 Engineering Project
Proposal Form

Supervisors Name/s	Asst. Prof. Dr. Eren Vuran
Project Title	Seismic Design of a 7-Story Reinforced Concrete Building
Project Reference No*	
Relevant course/s for the project	CE 381, CE 382, CE 403, CE 488

Project Summary:
The objective of the project is to present theoretical and practical aspects of seismic design with particular emphasis given to the application of Turkish Building Seismic Code (TBSC). The project includes the seismic analysis and design of a real multistory reinforced concrete building according to provisions of TBSC. ETABS integrated software package (Computers & Structures Inc.) is used for the structural analysis and reinforced concrete design of the building.

Project Achievements: <i>(Please explain how the proposed project helps to achieve the performance criteria listed below)</i>	
Identifying specific <u>design objectives</u> based on project requirements:	<ol style="list-style-type: none"> 1) Structural analysis will be performed for two different load combinations; service level gravity loading together with seismic effect and amplified gravity loading. 2) Structural system behavior will be investigated with respect to contribution of moment resisting frames and structural walls to lateral load bearing mechanism of the structure. 3) Reinforced concrete design will be performed according to the internal force demands calculated through the structural analysis procedure.

Gathering and using relevant information	<ol style="list-style-type: none"> 1) Gravity loads will be defined considering the functionality of the building as per the provisions of Turkish Standards 498 (TS-498). 2) Material properties will be defined compatible with the structural system behavior as per the provisions of Turkish Standards 500, 708 (TS-500, TS-708). 3) Seismic effects will be determined as per the provisions of TBSC. 4) Reinforced concrete design of the structural members will be performed as per the provisions of TBSC and TS-500.
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<u>Analyzing alternatives</u> using appropriate engineering knowledge	<ol style="list-style-type: none"> 1) Different structural system alternatives will be investigated. 2) Different reinforcement design techniques will be followed.
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Considering the relevant constraints in the design: (Please explain how the proposed project considers one or more limitations listed below)	
Economy	1) Economical aspect of structural design will be discussed in terms of dimensioning and reinforcing of the structural system members.
Environmental Issues/Sustainability	2) Effects of structural system alternatives on environment will be discussed.
Manufacturability	3) Constructability and site application methodologies of the structural system will be discussed throughout the structural analysis and design procedure.

Definition of outcomes linked to the objectives of projects	<p>“Engineering Project” aims the students to gain the</p> <ol style="list-style-type: none"> 1) ability of usage their knowledge in mathematics, science and engineering, 2) ability to identify and solve complex engineering problems, 3) design experience, 4) ability to use modern tools and employ needed information technologies, 5) ability to conduct experiments if needed, gather data and analyze results, 6) routine of combining their individual creativity with teamwork, 7) oral and written presentation experiences in foreign language, 8) ability to access information and recognition of the need for following developments in science and technology, 9) awareness of professional and ethical responsibility, 10) information about business life practices like project management and risk management, 11) awareness of effects of their engineering practices on health, environment, and safety, 12) awareness of project award mechanisms and tendering procedures, 13) awareness of the interaction of designers and constructors. <p>(Minimum requirements are;</p> <ul style="list-style-type: none"> ○project timeline, ○abstract, ○Türkçe özet, ○the definition of the problem, ○the scientific information and literature review, ○different design alternatives and decision criteria, ○selection of optimum alternative ○economical, sustainability, ethical issues ○engineering drawing and demonstration methods while presenting the solution ○appendix including standards, patents, brochures etc.)
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Approval of the Project	Approved	Not Approved
	<input type="checkbox"/>	<input type="checkbox"/>
State the reason(s) if not approved:		
Department Chair: Assist. Prof. Özgür KÖYLÜOĞLU	Signature	

* Project Ref.Numbers will be given by the Engineering Design Project Committee