STRUCTURAL ENGINEERING MINOR

GENERAL:
The Minor in Structural Engineering is designed primarily for students in the College of Environmental Design to experience the engineering approach to the solution of design problems, but is available to students from any department who meet the prerequisites to apply.

- Understanding of material behavior (CE60) for structural response and ability to describe such behavior with simple models (CE30)
- Understanding of structures and methods of analysis (CE120, CE121)
- Design of structures made of steel, concrete or timber (CE122N, CE123N, CE124)

These basic fundamental courses are complemented by additional courses in materials and construction (CE140, CE165) and analysis (CE C133).

The Minor offers to students of the College of Environmental Design access to the joint graduate M.S.- M. Arch. Degree of the two departments, one of very few such degrees in the entire United States. With it comes the ability to practice either as architect or as structural engineer with a very thorough knowledge of the other field. Whereas engineering focuses on analytical methods for the solution of problems, the visual, socio-economical approach of architecture courses is an indispensable complement. The same is true the other way.

Employment opportunities exist in major architectural-engineering companies that appreciate the holistic approach to design: Ove Arup, Skidmore, Owings and Merill, Buro Happold, Calatrava, Schlaich-Bergerman, etc. However, graduates of the joint degree are also employed with smaller companies emphasizing either architectural design or engineering.

ADVISOR:
The Faculty Advisor for the Structural Engineering Minor is Professor Filip Filippou. He can be reached by e-mail at filippou@ce.berkeley.edu

REQUIREMENTS:
To be considered for admission to the minor, students should have:

- An overall grade-point average of 3.0
- Completed the lower division prerequisite courses with a grade point average of 3.0. (These courses are: Math 16A and 16B (or Math 1A and 1B), Physics 8A (or Physics 7A), and CE C30/ME C85.
  Note:
  - All pre requisite course work must be taken for a letter grade.
  - CEC30/ME C85 has a pre requisite of Math 53 and 54, one of which may be taken concurrently. While the Department does not require either of these courses for the minor it is highly suggested that students interested in the minor complete them OR speak with the instructor of record to determine if their math background is adequate.
- Upon admission to the minor, completion of a minimum of five (5) courses, of which no more than one can be also counted toward the requirements of the major(s).
- A minimum of a grade-point average of 2.0 in the minor.
- Completion of the minor cannot delay graduation.
- Only one course may be counted for both the major and the minor.

PROCEDURES:

- After completion of the prerequisite courses, students need to complete and submit to the Civil and Environmental Engineering Academic Affairs office (750 Davis Hall) a Minor Program Application form.
- The Department of Civil and Environmental Engineering will approve or deny the application. If the application is approved, the department will provide the student with a copy of the approval form and retain the original.
- Upon completion of the minor requirements, the student must complete and submit to the Civil and Environmental Engineering Department's Office of Academic Affairs the Confirmation of Completion form no later than two weeks after the end of the term the minor was completed in.
- The department will verify the completion of the minor and send the original form to the Office of the Registrar. The department will also send a copy of the Confirmation to the student's College or School and retain a copy for the department file.
- A notation in the memorandum section of the student's transcript will indicate completion of the minor.

PREREQUISITES:

Course	Units	Title
Math 1A and 1B **or** Math 16A and 16B	4 /4	Calculus Analytic Geometry and Calculus
Physics 7A **or** Physics 8A	4	Physics for Scientists and Engineers Introductory Physics
CE C30/ME C85	3	Introduction to Solid Mechanics

REQUIRED COURSES:

Course	Units	Title	Prerequisites
CE 60	3	Structure and Properties of Civil Engineering Materials	
CE 120	3	Structural Engineering	CE C30/ME C85, CE 60 (concurrently)
CE 122N **or** CE 123N	3	Design of Steel Structures **or** Design of Reinforced Concrete Structures	CE 120

TWO additional courses from the following list:

Course	Units	Title	Prerequisites
CE 121*	3	Advanced Structural Analysis	CE 120
CE 122N **or** CE 123N	3	Design of Steel Structures **or** Design of Reinforced Concrete Structures	CE 120
CE 124	3	Structural Design in Timber	CE 120
CE 130N	3	Mechanics of Structures	CE C30/ME C85, CE 60
CE 140	3	Failure Mechanisms in CE Materials	CE 60
CE 165	3	Concrete Materials and Construction	CE 60
CE 166	3	Construction Engineering	CE 167 recommended
CE 175	3	Geotechnical and Geoenvironmental Engineering	CE C30/ME C85, CE 70 & CE 100 recommended
CE 193	3	Engineering Risk Analysis	Upper Division Standing

Note: CE 121 is required for admission into the graduate program in Structural Engineering, Mechanics and Materials Program