

EARTHQUAKE-RESISTANT DESIGNS OF REINFORCED CONCRETE STRUCTURES

May 23–27, 2009

COURSE DESCRIPTION

The course outline is designed to *emphasize* the elements of design requirements that should be properly satisfied for a structure to be *truly* earthquake resistant. It has long been accepted that the frequency and spatial distributions of earthquakes are random processes and that reliable long-term methods of earthquake prediction are presently *not* available. Under such circumstances, the importance of *proper seismic designs* to minimize the severity of human calamities and the destruction of structures *cannot* be overemphasized. It is, therefore, highly imperative that engineers and designers of structures have adequate understanding of earthquake effects on structures and be fully cognizant of specifications for earthquake-resistant designs for all types of structures. The contents of this course have been designed to enable each participant to develop the required working skills to *study* and *design* reinforced structures (RC) for simulated earthquake effects.

COURSE OUTLINE

The short course includes the following *main topics*:

1. Analysis of earthquake ground motions.
2. Studies on earthquake predictions and zones.
3. Ground motion and response spectra methods.
4. Principles of earthquake-resistant designs.
5. Analysis of seismic response of structures.
6. Earthquake-resistant architectural designs.
7. Basic analysis and design of RC structures.
8. Specifications for seismic design of RC structure members and joints.
9. Structural designs of different forms of lateral-force-resisting systems (e.g. shear walls; framed structures; and dual systems).
10. Geotechnical and foundation design considerations.
11. Issues on non-linear seismic analysis and design of RC structures.
12. Computer applications for seismic analysis and design of RC structures using GT STRUDL.
13. Seismic-resistance upgrading of existing RC structures.

COURSE FORMAT

The course materials will be presented in four sessions daily. The sessions of the course will include a combination of lectures, group discussions, structural analysis, and design case studies *with* and *without* computer applications.

CLASS SCHEDULE

The sessions of the course will be held from Saturday to Wednesday, 23-27 May, 2009. Daily, the first session will start at 8:00 a.m. and the last session ends at 3:00 p.m. The schedule will include 30-minute breaks for refreshments in the morning and afternoon and a 1½ hour lunch break.

LOCATION

The sessions of the course will be held in building 20 (Auditorium 001). Computer tutorial sessions will be held in the ITC-PC laboratory room 14-256.

FACULTY

The course will be taught by selected faculty members of the departments of Civil Engineering and Earth Sciences at **King Fahd University of Petroleum & Minerals**, Dhahran, and in cooperation with one faculty member of the Georgia Institute of Technology (USA). The faculty members of this short course have *diversified* experiences in teaching, research, automated designs, and codes of practice.

CERTIFICATES

The College of Applied Engineering at KFUPM will award the course certificate to participants who successfully complete 85 percent of all sessions.

COURSE FEE

The course registration fee is SR 6500 per participant for *early* registration. The fee will cover all course materials, including notes, some design software, refreshments, daily lunch and graduation luncheon. Payments should be made by certified checks payable to King Fahd University of Petroleum & Minerals, Dhahran.

APPLICATIONS

Engineering Consultants, Designers, Practicing Engineers [with an Engineering Degree (B.Sc. or its equivalent)] are eligible to complete the attached

application form and return it to:

Deanship of Education Services &
Continuing Education Programs
King Fahd University of Petroleum & Minerals
KFUPM Box 5026
Dhahran 31261, Kingdom of Saudi Arabia
Phone: (03) 860-1234/2981/3998
FAX: (03) 860-4770/2341

For planning purposes, the application forms should be processed as soon as possible, *but not later* than Sunday, 17th May, 2009 in order to qualify for attendance on the short-course and for the approved *normal* registration fees.

GENERAL INFORMATION

Extra information about the course can be obtained *directly* from the coordinator:

Dr. Saeid A. Alghamdi
Department of Civil Engineering
King Fahd University of Petroleum & Minerals
KFUPM Box 1896
Dhahran 31261, Saudi Arabia
Phone: (03) 860-2570 or (050) 480-3357
FAX: (03) 860-2570 or (03) 860-2987
e-mail: saghamdi@kfupm.edu.sa

TRAVEL AND ACCOMMODATION

Prospective participants should make *timely* arrangements for their travel and accommodations as the course fee *does not* include board and lodging. Arrangements have however been made with several local hotels to provide participants in the course with discounted rates. Participants should contact either one of the following hotels as soon as possible:

- ❖ Dhahran Int. Airport Hotel [Phone: 03-894-8555].
- ❖ Holiday Inn – Dhahran [Phone: 03-858-8000].
- ❖ The Meridian-Khobar [Phone: 03-864-6000].

Additional guidance is also obtainable from the Public Relations Office on phone 03-860-3100.

TYPICAL DUCTILE EARTHQUAKE-RESISTANT STRUCTURES


