**BEST SHORT COURSE AT KFUPM**

**ASSESSMENT AND REPAIR OF REINFORCED CONCRETE STRUCTURES: PRINCIPLES AND APPLICATIONS**

**March 3 to 7, 2024**

**COURSE OBJECTIVES**

Premature deterioration and loss of serviceability of reinforced concrete (RC) structures caused by a variety of factors have drawn a demanding focus on maintenance and repair of RC structures in the Arabian Gulf States. It is expected that this area will continue to remain in limelight with the expansion of the construction boom in the region and will create challenging and rewarding job opportunities for engineers and concerned organizations. This intensive course is structured to provide an informative background on inspection, assessment and repair of RC structures with good depth and breadth, enabling the participants to gain knowledge on the principles, methodologies and applications.

The primary objective of this short course is to offer **one-package, well-focused course** delineating the methodologies of *in-situ* inspection and assessment of RC structures and, thereafter, highlight the various applicable repair methods with several case studies.

**COURSE OUTLINE**

This **applied-based course** is structured to present a comprehensive coverage of the principles and applications of the inspection/assessment and repair/retrofitting of RC structures. Various aspects of non-destructive and destructive testing techniques of inspection of *in-situ* concrete and reinforcing steel will be covered while the assessment of structural problems will be elucidated with several case studies and laboratory demonstrations. Various methodologies of repair and retrofitting will be highlighted in the second part of the course. The course will be supplemented by laboratory and field visits to assessment/repair sites under the supervision of experienced field engineers to visualize the applications as covered in the lectures.

Among the topics to be covered are:Causes of deterioration and cracking of concrete; Durability requirements in the new Saudi Building Code; as

well as various non-destructive testing methods for strength and quality of concrete; Corrosion testing and monitoring techniques; Evaluation and assessment guidelines; Repair systems and repair materials; Types of cracks and their repair; Corrosion protection and repair including the cathodic protection and chloride removal; Plate bonding; Case studies on corrosion reinforcement and loading test; Laboratory sessions and panel discussion with the speakers. In addition, the course will include **three important and relevant subjects on assessment and repair due to fire, earthquakes, and expansion joints for bridges.**

**COURSE FORMANT AND INSTRUCTORS**

Each participant will receive on the first lecture a coherent volume of all lecture notes, exclusively prepared for this course. The materials will be presented in a sequential flow (step-by-step) of coordinated lectures and workshops. The language of instruction will be English. The classes will be held from Sunday to Thursday (November 13 to 17, 2022) **daily from 8:00 am to 3:45 pm** in **Building 54 (Exhibition Building)** at KFUPM, with breaks for refreshments, lunch and prayers.

Distinguished instructors and qualified faculty from the various Academic Departments and Research Institute at KFUPM and **selected experts from top organizations** (i.e. Saudi ARAMCO, SABIC, Ministry of Transport, etc.) and other consulting offices in Saudi Arabia, who have long-term experience with local assessment and repair programs, will deliver all the lectures in the course **in addition to at least one international guest speaker** (see the attached program and list of instructors).

**WHO CAN ATTEND**

This comprehensive course was designed to be a **"CONFERENCE"** with at least **20 different lectures**. It offers a timely opportunity for those who wish to become knowledgeable with the recent and applied information in the field of inspection, assessment and repair of concrete structures. The course is highly relevant to those engaged in design, construction, quality control, maintenance and repair of concrete structures. Designers, practicing engineers as well as technicians will find this **"special"** course very beneficial to their careers.

**FEES AND APPLICATION**

Each participant attending the course will receive an **official certificate** from King Fahd University of Petroleum and Minerals on the last day of the course. **A total course fee (including VAT) is SR 7,560 per participant.** The fee covers the course materials, refreshments, daily lunch at the KFUPM faculty cafeteria, a luncheon banquet; and free on-campus parking. The course does not include boarding and lodging.

The course fees should be paid in advance by **a certified cheque** payable to **King Fahd University of Petroleum and Minerals.** Interested persons should complete the **Application Form** (in the course website) and return it to us by fax (Fax: 013-860-2879) and/or e-mail ([**sarfrazj@kfupm.edu.sa**](mailto:sarfrazj@kfupm.edu.sa)). **Payment of fees before registration will ensure registration.** All participants should make their own travel and accommodation arrangements.

**SOCIETAL TECHNICAL MEETINGS**

**An evening technical meeting** (at one of the Hotels in Al-Khobar) will be arranged on **Wednesday, March 6th, 2024 and** be sponsored by the Arab Company for Laboratory and Soil (ACES), Dammam. In this technical meeting, selected **two keynote speakers** will present recent development on testing and assessment of reinforced concrete structures.

Details will be distributed to the participants during the short course period.

**EARLY REGISTRATION**

This course was successfully offered several times during the last 15 years and attracted many participants from the various states in the Arabian Gulf and this course was also awarded the **BEST SHORT COURSE at KFUPM**. Therefore, the timeliness and popular demand of this course and the recent modifications in its content, particularly with regard to **FIRE ATTACK** and **EARTHQUAKE RESISTANCE**, will result in higher enrollment. As the class size will be limited, early registration is highly encouraged to avoid disappointment. To your knowledge, some organizations have already expressed their interest in the course.

**MORE INFORMATION**

For more information, please feel free to contact the **Short Course Coordinator**:

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**Short Course website:**

<http://www.kfupm.edu.sa/departments/ce/Pages/en/courses.aspx>