MERCURY

Reasons for Deterioration of The Reinforced Concrete Structures and Methods of Strengthening

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Introduction

Renovation and strengthening of buildings to fulfill new requirements could be achieved using new and advanced repair materials and techniques. This might be needed in case of architectural changes, increasing buildings heights, changing the function which differs from the original design concepts, and for the repair of defective works. This course will include an extensive explanation of the steps needed to achieve integrated technical reports with special attention to visual inspections, discussions, field and laboratory tests, and structural safety analysis. Scientific and technical information and applications of the modern and advanced strengthening materials and techniques will be discussed among which are: concrete admixtures, polymer concrete family, fiber-reinforced polymers, ferrocement, self-compacting concrete, Ultra high strength concrete, etc. Standard specifications and codes of practice concerned will be discussed. CDs, transparencies, and video films will be extensively used

Targeted Groups

- Civil and architectural engineers.
- Executive maintenance managers.
- Highly qualified technicians.
- Estate-agents
- Contractors specialized in innovation works.

Course Content:

Unit 1: Introduction

- New requirements for buildings case studies.
- Natural and unexpected hazards.
- Discussions.

Unit 2: Integrated Technical Reports

- Contents of integrated technical reports.
- Complete illustrative guide for ideal technical reports.
- Case study for the application of building inspection.
- Discussions.

Unit 3: Durability of Buildings

- Non-destructive field tests.
- Factors affecting the durability of buildings corrosion and protection.
- Maintenance systems.
- Discussions.

Unit 4: Repair and Strengthening

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- Advanced repair and strengthening materials:
- Cementitious materials and admixtures.
- Polymer concrete family.
- Fiber-reinforced polymers FRP.
- Ferrocement.
- Self-compacting concrete.
- Ultra high strength concrete.
- Specifications and codes of practice
- Discussions.

Unit 5: Techniques

- Strengthening techniques:
- Foundations.
- Columns.
- Slabs and cantilever slabs.
- Beams.
- Walls.
- Close remarks and discussions.