

Construction & Building Engineering Courses (CB)

Construction Engineering Courses Group

CB 525 – Special Topics in Construction Engineering

COURSE INFORMATION

Course Title: Special Topics in Construction Engineering

Code: CB 525

Hours: Lecture – 2 Hrs. Tutorial – 2 Hrs. Credit –3.

Prerequisite: CB 523

GRADING

Class Performance/Attendance: 10%

Midterm # 1/Assignments – (7th Week): 30%

Midterm # 2/Assignments – (12th Week): 20%

Final Exam: 40%

COURSE DESCRIPTION

Construction of multistory buildings; Shoring and re-shoring operations. Assessment of formwork removal times. Advanced formwork systems. Slip form technique. Lift slab system. Tilt-up construction. Up-down construction technique. Precast concrete technology. Bridge construction systems; Cast-in-place system, cantilever carriage method, and flying shuttering. Tunnel construction. Compressed air. Blasting rock. Health and safety precautions.

TEXT BOOK

Construction Planning, Equipment, and Methods by Peurifoy, R.L., Ledbetter, W.B., and Schexnayder, G.J. Publisher: McGraw Hill Co., New York, 1996.

REFERENCE BOOKS

Modern Construction & Ground Engineering Equipment and Methods by Harris, F. Publisher: Longman Group Co., U.K., 1994.

Construction Methods and Management by Nunnally, S.W. Publisher: Prentice Hall, New Jersey, 1993.

Construction Planning, Equipment, and Methods by Peurifoy, R.L., Ledbetter, W.B., and Schexnayder, G.J., Publisher: McGraw Hill Co., New York, 1996.

Formwork for Concrete Structures by Peurifoy, R.L., and Oberlender, G.D. Publisher: McGraw Hill Co., New York, 1996.

Construction Methods and Planning by Illingworth, J.R., Publisher: E & FN SPON, London, 1993.

COURSE AIM

The course aims at introducing the student to the knowledge of construction engineering in the area of building construction, bridge construction, and tunnel construction.

SPECIFIC OUTCOMES OF INSTRUCTION

- The student should know the construction systems used in the building construction such as; shoring and re-shoring operations, lift slab, slip forming techniques, tilt-up construction, up-down construction technique, and precast concrete technology.
- The student should be aware with advanced formwork systems.
- The student should be aware with different bridge construction systems.
- The student should be aware with systems used in tunnel construction and provide knowledge for compressed air and blasting rock.
- The student should be aware with health and safety.

COURSE OUTLINE

Week Number 1-2: Shoring and re-shoring operations:

- Analysis of construction loads in multistory buildings.
- Effect of construction live load.
- Assessment of formwork removal times.

Week Number 3-5: Design and construction of advanced formwork systems:

- Non-traditional horizontal & vertical formwork systems.
- Special formwork systems.

Week Number 6-7: Advanced systems in building construction:

- Lift-slab technology, slipform technology, Tilt-up construction, Up-down construction.

Week Number 8: Precast concrete technology:

- Formwork for Precast concrete, Precast operation, Precast equipment.

Week Number 9-11: Bridge construction systems:

- Cast in place concrete bridges, Cantilever carriage method, Flying shuttering system.

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Week Number 12-13: Tunnel construction:

- Tunnel systems, Equipment in tunnel construction.

Week Number 14: Blasting rock:

- Blasting, Commercial explosives, Initiating and delay devices, Blast design, Presplitting rock, Seismic effect.

Week Number 15: Health and Safety

- Incident investigation, record and reporting
- Monitoring review & audit.

Week Number 16: Final Exam.

COURSE COORDINATOR AND DEMAND

Course Coordinator: Dr. Mohamed Emam.

Course Demand: *Elective*