Advanced reinforced concrete engineering

4 units (selection)

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Target〉 The objective of this subject is to understand the recent technology on methods of structual analysis of reinforced concrete structures and the recent technology on maintenance of reinforced concrete structures.

Outline〉 It is important that understanding the new type structures, the design method and the analytical method of concrete structures to realize a durable, safe and low-priced concrete structure. In this lecture, the realizing method of high performance concrete structures and the application of finite element method for concrete structures is explained, including the new type structures, application of new materials for concrete structures, PRC structures, the durability design and the slife cycle design. A lecture items is as follows. 1. Deteriration mechanism RC structures. 2. Evaluation of durability of RC structures. 3. Repair method of RC structures. 4. Programming of bending analysis for RC and PRC structures using the fiber model. 5. Basic concept of durability design. 6. Basic concept of life cycle design. 7. Engineering ethics for civil engineers.

Style〉 Lecture and excercise, Practice

Keyword〉 ***programming of bending analysis, new materials nad new construction methods, field visit, deterioration mechanism, evaluation of durability, repair method, life cycle design***

Requirement〉 It is necessary for students to learn the basic attainments on the concrete technology and reinfroced concrete mechanics.

Notice〉 Each subject is lectured for 180 minutes such as two times as the lecture's time of usaally other subject. So be careful.

Goal〉

1. The purpose is to understand the recent technology on methods of structual analysis of reinforced concrete structures and the recent techinology on materials and construction methods concerned wtih reinfroced concrete structures.
2. The purpose is to understanind the recent techinology on maintenance of concrete structures.

Schedule〉

1. Guidance and Programming of bending analysis for RC and PRC structures using the fiber model (1).
2. Programming of bending analysis for RC and PRC structures using the fiber model (2).
3. Recent technology on application of the new materials for reinfroced concrete structures(1).
4. Recent technology on application of the new materials for reinforced concrete structures(2).
5. Recent technology on the new construction methods for reinforced concrete structures(1).
6. Recent technology on the new construction methods for reinforced concrete structures(2).
7. Field vist.
8. Enginnering ethics in practice the case study approach on construction of concrete stuructures.
9. Deterioration mechanism of reinforced concrete structures (1).
10. Deterioration mechanism of reinforced concrete structures (2).
11. Evaluation of durability of reinforced concrete structures (1).
12. Evaluation of durability of reinforced concrete structures (2).
13. Repair method of reinforced concrete structures (1).
14. Repair method of reinforced concrete structures (2).
15. Life cycle design of reinforced concrete structures.
16. Preliminary

Evaluation Criteria〉 Evaluate by reports for each subject.

Textbook〉

- ◇ Handout of photo copying materials for each subject (Hashimoto).
- ◇ Infrastructure Maintenance Engineering, University of Tokyo Press (Ueda)

Reference〉 Standard Specifications for Concrete Structures, "Maintenance"

Contents〉 http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216775

Contact〉

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