Advanced Properties of Material

2 units (selection)

Chikanori Hashimoto · Professor / Structural Engineering, Civil and Environmental Engineering, Intelligent Structures and Mechanics Systems Engineering

Target⟩ Understanding on the relationship between micro-structures and macro-properties of construction materials paticularly concrete using waste or by-products in a concept of sustainable materials cycling society.

Outline⟩ It is necessary undersatanding appropriate material for a construction method to satisfy the required performances in each civil work. For this reason, it is very important to understand the relationship between micro-structures and macro-mechanical propterties of concrete or material using waste or by-products roperties for construction materials. And, it is introduced a concept on construction material in sustainable material cycling society.

Style⟩ Lecture

Keyword⟩ ***construction material, concrete, susatinable cycling society***

Relational Lecture⟩ "**Advanced reinforced concrete engineering**"(0.5)

Requirement⟩ No requirement.

Notice⟩ When several foreign students are studying lecture, Official language is English and Japanese, but main language is English.

Goal⟩ Understanding on the relationship between micro-structures and macro-properties of construction materials particularly eco-concrete.

Schedule⟩

1. Guidance on lecture
2. Portland cement concrete(1)
3. Portland cement concrete(2)
4. Sulphur concrete(1)
5. Sulphur concrete(2)
6. Phosphate cement
7. Magnesium oxychloride and oxysulphate cements
8. Regulated cement
9. High alumina cement
10. Alkali-aggregate reaction
11. Biological attack and unsoundness of cements containing MgO and CaO
12. Frost action(1)
13. Frost action(2)
14. Carbonation shrinkage
15. Sea water attack
16. Comments for Reports on Concrete

Evaluation Criteria⟩ Evaluate by presantation in the lecture and reports for each subject.

Textbook⟩ Ramachandran,V.S.,Feldman,R.F. and Beaudoin,J.J.:Concrete Science, Chap.810,Heyden & Son Ltd,1981.

Reference⟩

- Standard Specificatiin for Concrete JACE.
- Okada,K. and Muguruma,H. Ed.,Concrete Handbook,Asakura Co. Ltd,1981.
- Nevill,A.M.:Properties of concrete,Fourth and Final Ed.,Pearson Education, 2002.

Webpage⟩ http:///www.ce.tokushima-u.ac.jp/ksys/mizuguchi.

Contents⟩ http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216671

Student⟩ Able to be taken by student of other faculty and university

Contact⟩

⇒ Hashimoto (A505, +81-88-656-7321, chika@ce.tokushima-u.ac.jp) Mail
(Office Hour: 金曜日 14:35~ 16:05< 昼間コース >, 金曜日 18:00~ 19:30< 夜間主コース >)

Note⟩ It is necessary getting the unit of lecture and understanding the lecture for 2 hours to preparae of the lecture for 2 hours and review of the lectute for 2 hours.