計算理論 Theory of Computation (705 30400)

Spring 2008

Place and Time
Room 205 in Management Building II, Wednesday 14:20 – 17:20.

Course Web Site
`http://www.iis.sinica.edu.tw/~trc/public/courses/Spring2008/`

Instructor
莊庭瑞 (中央研究院 資訊科學研究所 副研究員)
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Office hour: Friday 15:00 – 16:00 at Room 716 in Management Building I; also by appointment.

Teaching Assistant
To be announced.

Schedule

02/20 Preliminaries; A Programming Language. (1; 2.1–2.2)

02/27 Computable Functions; Primitive Recursive Functions. (2.3–2.5; 3.1–3.4)

03/05 Coding Programs by Numbers. (3.5–3.8; 4.1)

03/12 The Halting Problem; Universality. (4.2–4.3)

03/19 Recursively Enumerable Sets. (4.4–4.5)

03/26 Diagonalization and Reducibility. (4.6–4.8)

04/02 A Computable Function That Is Not Primitive Recursive. (4.9)

04/09 Turing Machines. (6.1–6.4)

04/16 *mid-term examination*

04/23 Nondeterministic Turing Machines; Semi-Thue Processes. (6.5–6.5; 7.1–7.2)

04/30 Post's Correspondence Problem. Grammars. (7.2–7.6)

05/07 Regular Languages, Part 1. (9.1–9.4)

05/14 Regular Languages, Part 2. (9.5–9.7)

05/21 Context-Free Languages, Part 1. (10.1–10.4)

05/28 Context-Free Languages, Part 2. (10.5–10.9)

06/04 Context-Sensitive Languages. (11.1–11.3)

06/11 Polynomial-Time Computability. (15.1–15.4)

06/18 *final examination*

Textbook
Martin Davis, Ron Sigal, and Elaine J. Weyuker. *Computability, Complexity, and Languages: Fundamentals of Theoretical Computer Science*, 2nd edition. February 1994, Morgan Kaufmann. ISBN: 0122063821.

Grade
Homework (50%) and examination (50%).