

## CS 341: Foundations of CS II

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Marvin K. Nakayama  
 Computer Science Department  
 New Jersey Institute of Technology  
 Newark, NJ 07102

### Preface

These lecture notes are what I use to teach the course CS 341 (Foundations of Computer Science II) at NJIT. The course textbook is currently *Introduction to the Theory of Computation, 3rd Edition* (Course Technology, 2012) by Michael Sipser, and the development of the material in these notes corresponds to the layout there. These notes are meant to be a supplement (not a replacement) for the textbook in the course.

In writing these notes, I sometimes based them on different sources, including

- Wim Van Dam's notes for CS172 at UC Berkeley
- John Reif's notes for CPS140 at Duke
- Salil Vadhan's notes for CS 121 at Harvard
- Costas Busch's notes for CSCI 2400 at RPI.

For eLearning students, the following is a rough guideline for how the recorded modules correspond to the pages in this set of lecture notes:

Module	Slides	Module	Slides
chap0	Syllabus overview	chap0a	0-1 to 0-6
chap0b	0-7 to 0-18	chap0c	0-19 to 0-22
chap0d	0-23 to 0-32	chap0e	0-33 to 0-37
chap0f	0-38 to 0-44	chap0g	0-45 to 0-54
chap0h	0-55 to 0-63	chap1a	1-1 to 1-11
chap1b	1-12 to 1-20	chap1c	1-21 to 1-35
chap1d	1-36 to 1-45	chap1e	1-46 to 1-55
chap1f	1-56 to 1-58	chap1g	1-59 to 1-67
chap1h	1-68 to 1-75	chap1i	1-76 to 1-82
chap1j	1-82 to 1-89	chap1k	1-90 to 1-95
chap1l	1-96 to 1-103	chap1m	1-104 to 1-108
chap1n	1-109 to 1-114	chap2a	2-1 to 2-7
chap2b	2-8 to 2-13	chap2c	2-14 to 2-19

Module	Slides	Module	Slides
chap2d	2-20 to 2-31	chap2e	2-32 to 2-39
chap2f	2-40 to 2-55	chap2g	2-56 to 2-79
chap2h	2-80 to 2-89	chap2i	2-90 to 2-95
chap2j	2-96 to 2-100	chap2k	2-101 to 2-105
chap3a	3-1 to 3-9	chap3b	3-10 to 3-18
chap3c	3-19 to 3-28	chap3d	3-29 to 3-33
chap3e	3-34 to 3-41	chap3f	3-42 to 3-52
chap3g	3-53 to 3-56	chap3h	3-57 to 3-64
chap3i	3-65 to 3-74	chap4a	4-1 to 4-7
chap4b	4-8 to 4-14	chap4c	4-15 to 4-23
chap4d	4-24 to 4-26	chap4e	4-27 to 4-34
chap4f	4-35 to 4-41	chap4g	4-42 to 4-48
chap4h	4-49 to 4-56	chap5a	5-1 to 5-8
chap5b	5-9 to 5-16	chap5c	5-17 to 5-23
chap5d	5-24 to 5-30	chap5e	5-31 to 5-34

Module	Slides	Module	Slides
chap5f	5-35 to 5-38	chap7a	7-1 to 7-7
chap7b	7-8 to 7-16	chap7c	7-17 to 7-27
chap7d	7-27 to 7-30	chap7e	7-31 to 7-37
chap7f	7-38 to 7-44	chap7g	7-45 to 7-48
chap7h	7-49 to 7-54	chap7i	7-55 to 7-65
chap7j	7-66 to 7-68	chap7k	7-69 to 7-74
chap7l	7-75 to 7-80	chap7m	7-81 to 7-88
chap7n	7-89 to 7-95	chap7o	7-96 to 7-101
chap7p	7-102 to 7-112	chap7q	7-113 to 7-122
chap7r	7-123 to 7-128		

The slides that you see in the recorded modules may differ slightly from the slides on my webpage because I continually update the course material.

Finally, as anyone who has written a large document knows, it is virtually impossible to eliminate all of the errors. I have proofread these notes many times, but I am sure there are still mistakes in it.

Marvin Nakayama