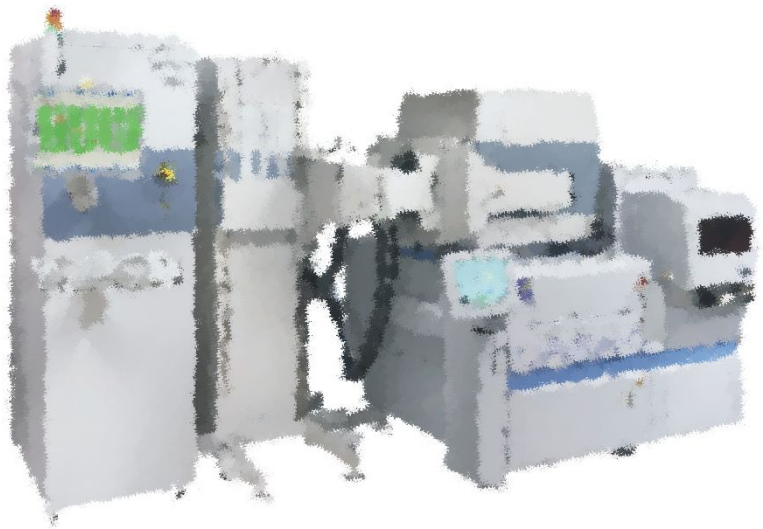
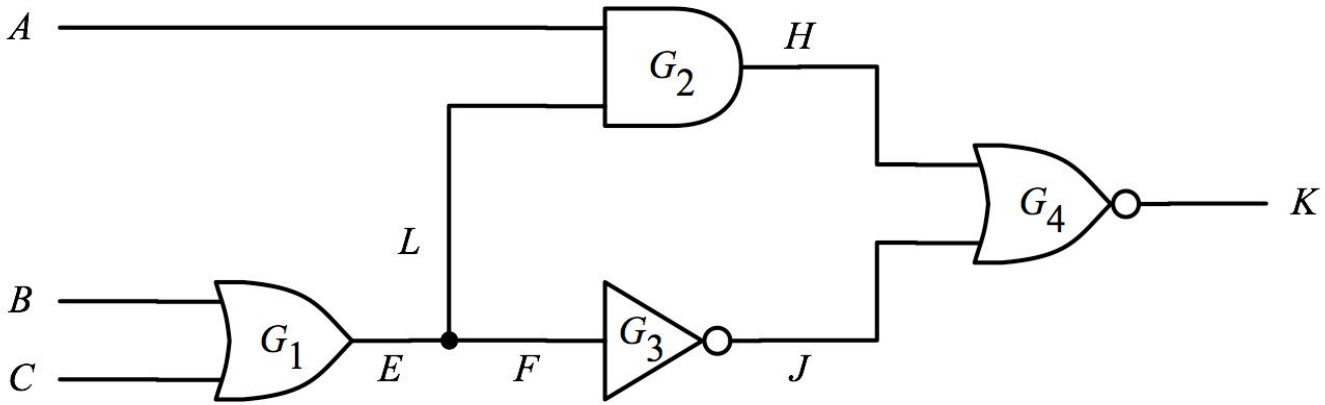
Outline

- Course objective & roadmap
- Notation & references
- Dedication

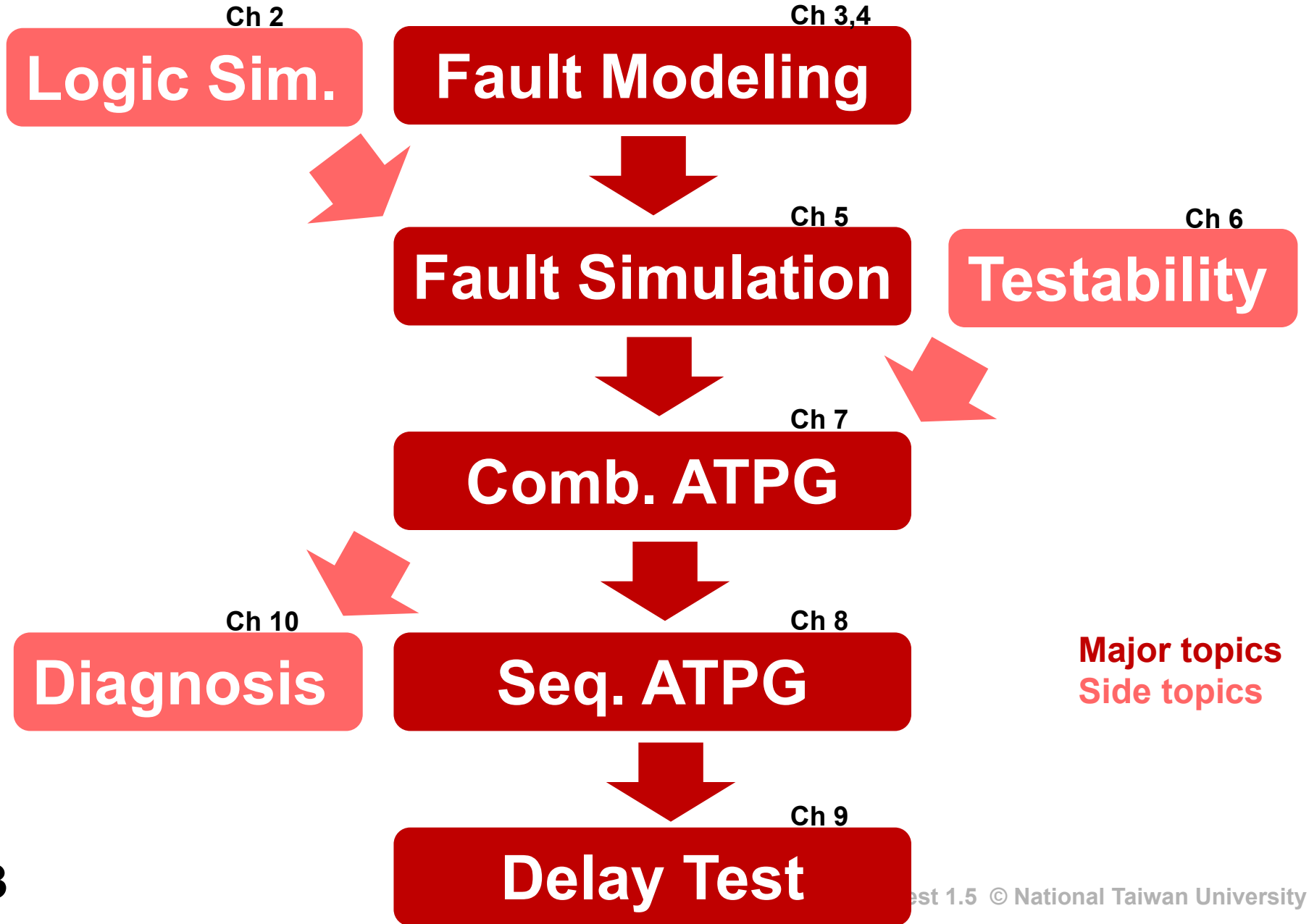


Course Objectives

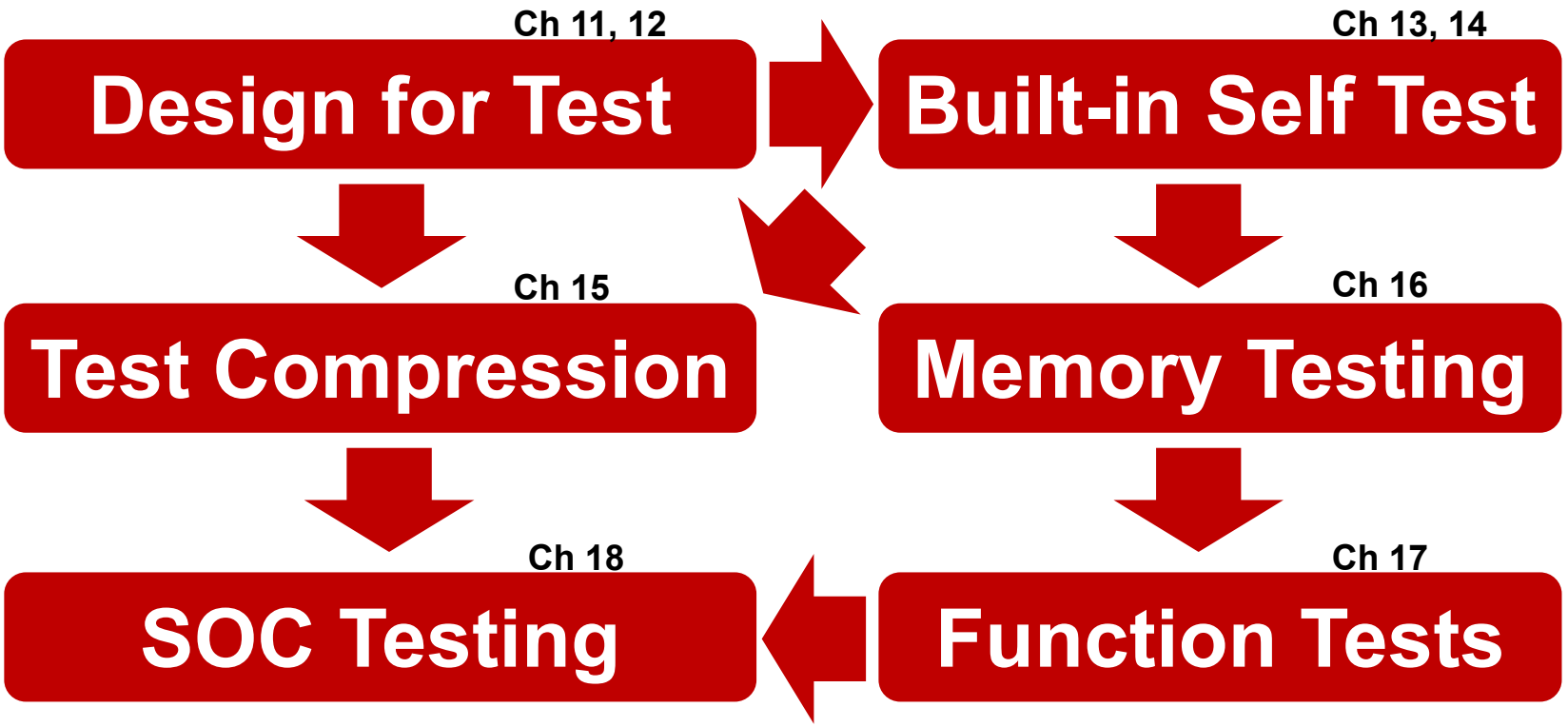
- You will learn
  - What is VLSI testing
  - Why is testing important
  - How do we achieve good testing
  - What are important issues in testing and their solutions
- This course focus on VLSI digital circuits



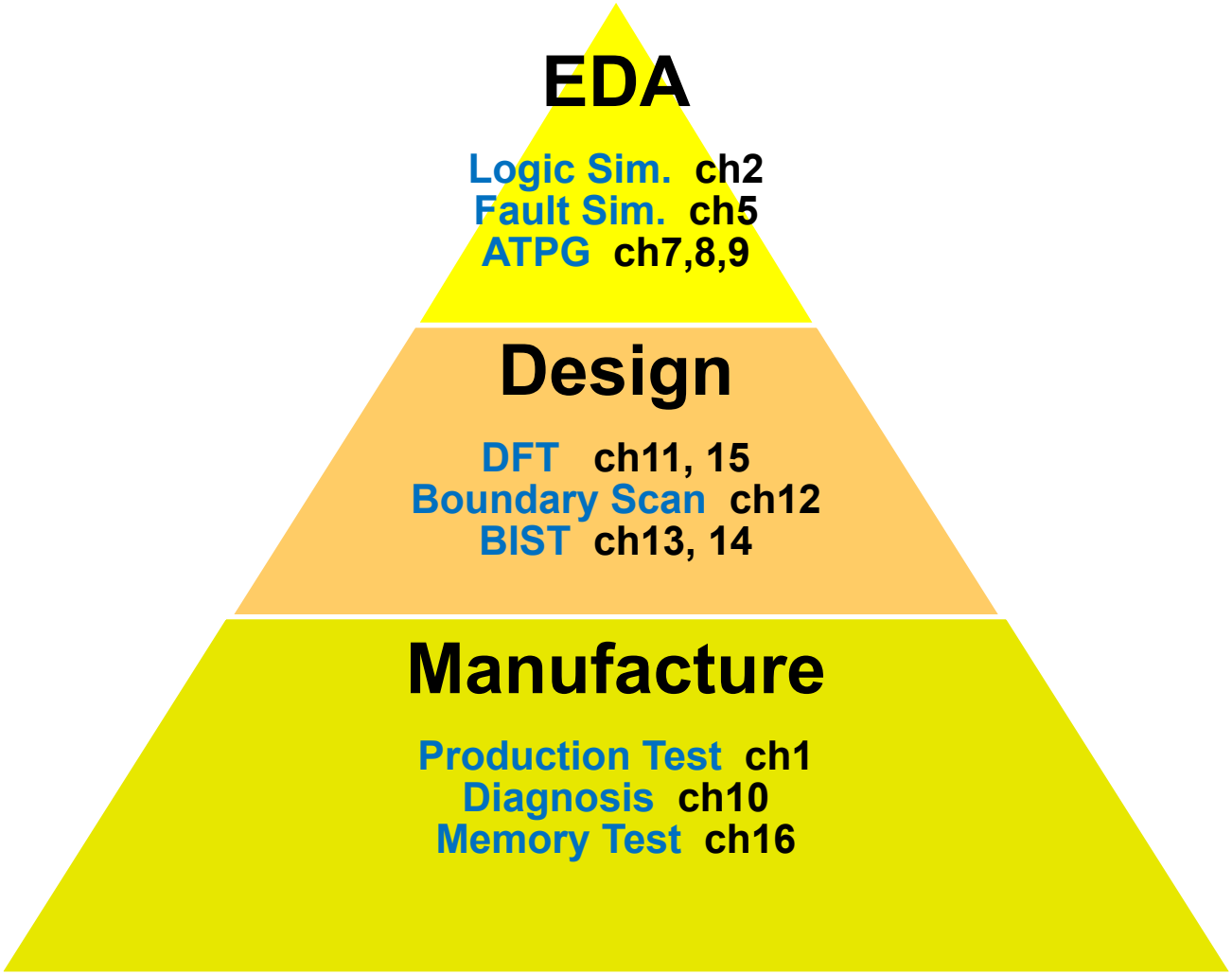
Course Roadmap (EDA Topics)



Course Roadmap (Design Topics)



Test in Semiconductor Pyramid



Lecture Notes

- Important keywords highlighted in red *Italic*
- Important concepts highlighted in blue color
- Paper references [McCluskey 84]
- Book references (WWW) (BA)
- FFT (Food for Thoughts)
  - Encourage thinking and discussion
  - No fixed answer !

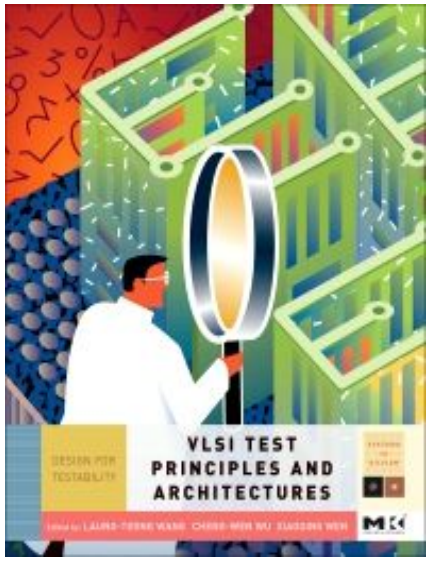
Quiz

Q: What does FFT stands for?
A:

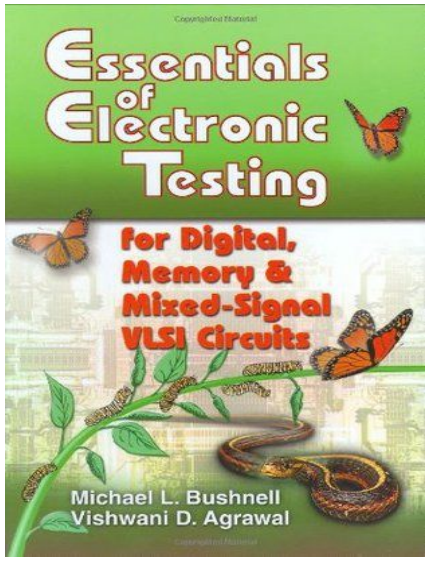
Summary is Highlighted at Bottom

Reference Books

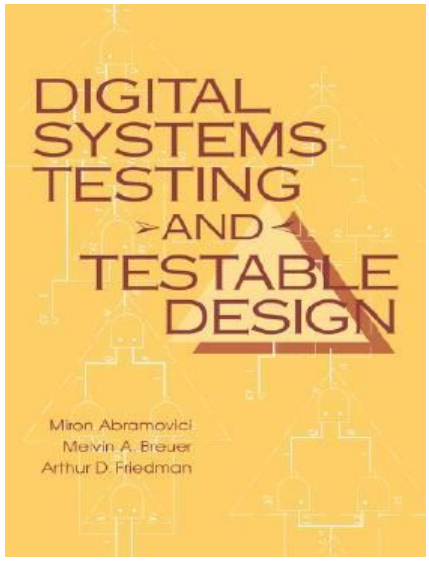
- (WWW) L.T. Wang, C.W. Wu, and X. Wen, "*VLSI Test Principles and Architectures*", Morgan Kaufmann, 2006.
- (BA) M.L. Bushnell and V.D. Agrawal,*"Essentials of electronic testing,"* Kluwer Academic Publishers, 2000.
- (ABF) M. Abramovici, M. A. Breuer and A.D. Friedman, "*Digital systems testing and testable design,*" IEEE Press,1994
- (BMS) P.H. Bardell, W.H. McAnney, J. Savior, "Built-in Test for VLSI: Pseudorandom Techniques," Wiely Interscience, 1987,



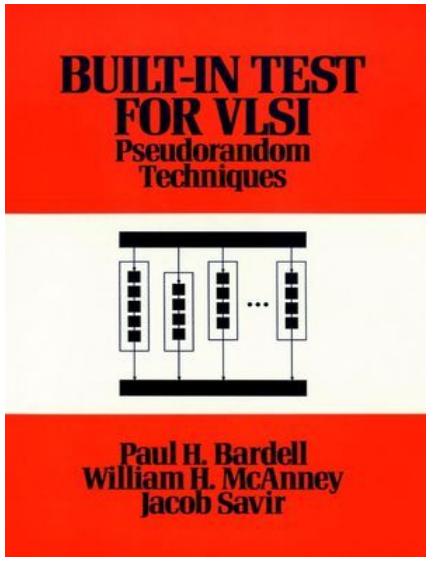
(WWW)



(BA)



(ABF)



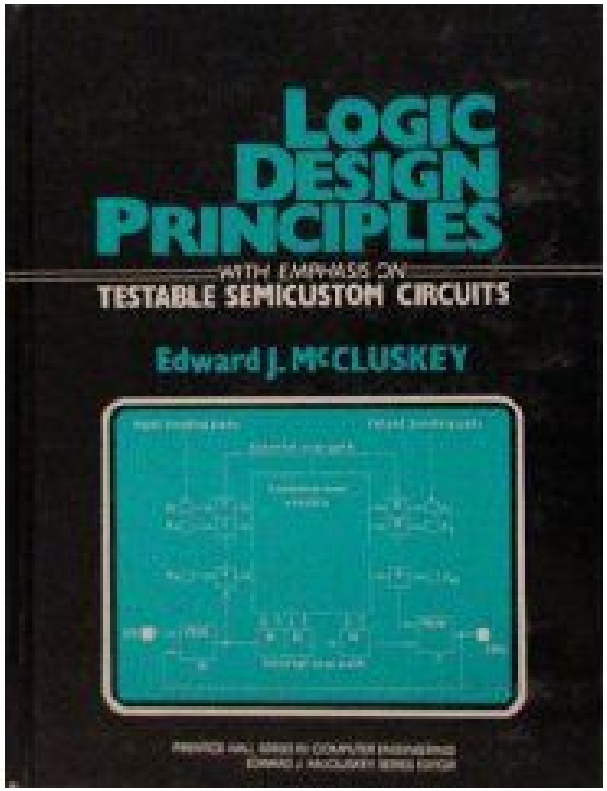
(BMS)

Recommended Reading

Topics	Our Chapters	WWW	BA
Introduction	1	1.1, 1.2	1.4, 2.1, 3.2, 3.3
Logic Simulation	2	3.2, 3.3	5.1 ~ 5.4
Fault Models	3	1.3	4
Fault Collapsing	4	-	4.5
Fault Simulation	5	3.4	5.5, 5.6
Testability Measure	6	2.2	6.1
Comb. ATPG	7	4.1 ~ 4.4	7.5
Seq. ATPG	8	4.5	8.2, 8.3
Delay Test	9	4.10	12
Diagnosis	10	7.2	-
Design for Test (DFT)	11, 12	2.3 ~ 2.5, 10.2	14, 16
BIST	13, 14	5.3 ~ 5.5	15
Test Compression	15	6	-
Memory Testing	16	8.2	9.5 ~ 9.7
SOC Testing	18	10.3	-

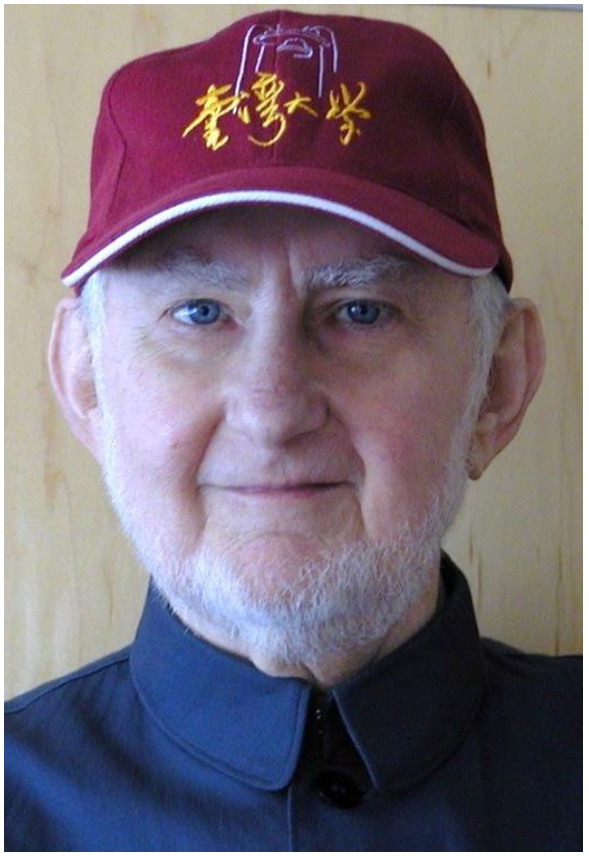
Classic Textbook

- The classic textbook of logic design (and testing)
- Logic Design Principles with emphasis on testable semicustom circuits, Prentice Hall 1986



Edward J. McCluskey (1929-2016)

- 1959-1967: Professor of Princeton University
- 1967~2008: Professor of Stanford University
- Trained 75 PhD
- Important contributions
  1. *Quine-McCluskey Algorithm* (video 15.2)
  2. *Hazards* (video 2.6)
  3. *Pseudo Exhaustive Testing* (video 17.3)
  4. Sequential circuits modes
- First President of IEEE Computer Society
- Founder of Stanford CS program
- IEEE *Life Fellow*
- IEEE *Emanuel R. Piore* Award
- IEEE *John von Neuman* Medal
- Member of *National Academy of Engineering*



Prof. McCluskey wearing NTU hat

http://www-crc.stanford.edu/

Dedication

This course is dedicated to

Prof. Edward McCluskey

Pioneer researcher and educator