

304-545A Microelectronic Technology

Course contents

September 6, 2006

Instructor: Prof. I. Shih (Office: MC 707, ishiang.shih@mcgill.ca)

TA: Yi Chen, MC707 yi.chen2@mail.mcgill.ca

Time: Monday and Wednesday 9:35am – 11:25am

Location: ENGTR 0060

Course Webpage: <http://www.ece.mcgill.ca/~info545>

Grading Scheme:

- Regular presentations: 30%
- Final presentation: 20%
- Final report: 50%

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Part I: Introduction IC fabrication technology (4 weeks)

Modular Series on Solid State Devices, Volume V – Introduction to Microelectronic Fabrication, 2nd Edition, Richard C. Jaeger

-Chapters 1- 7, chapter 9

Guidelines for presentations:

- [1] Read the chapter **as soon as** possible.
- [2] Prepare slides in powerpoint format. (about 50-60 slides for each chapter)
- [3] Recommended minimum font size is **20**.
- [4] All figures or photographs should be in **jpg format only**. Ensure to align the figures or photographs and have sufficient resolution.
- [5] Cite the references adopted in your slide set other than the text book.
- [6] Send your powerpoint file to ishiang.shih@mcgill.ca **at least 2 days** before your scheduled presentation date.

Modular Series on Solid State Devices, Volume V – Introduction to Microelectronic Fabrication, 2nd Edition, Richard C. Jaeger

Name	Contents	Scheduled presentation date
[1]	Chapter 1	Sept. 13
[2]	Chapter 2	Sept. 18
[3]	Chapter 3	Sept. 20
[4]	Chapter 4	Sept. 25
[5]	Chapter 5	Sept. 27
[6]	Chapter 6	Sept. 29
[7]	Chapter 7	Oct. 2
[8]	Chapter 9	Oct. 4
[9]		

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Part II: ULSI processing technology **(8 weeks)**

ULSI Technology by C. Y. Chang and S. M. Sze, McGraw-Hill

Part III: Tentative list for projects:

- [1] Principles and technology of solid state memories
- [2] Principles and technology of magnetic memories
- [3] Evolution, technology and status of foundry for Si ICs
- [4] Advanced lithography: technology trends, limitations, equipment and manufacturers, future development.
- [5] Principles, technology and evolution of photovoltaic solar cells
- [6] Evolution of interconnects for ULSI Technology
- [7] Key fabrication issues in moving from 0.13 μm to 0.11 μm technology
- [8] Ion implantation technology for 110 nm and 65 nm circuits

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Reference:

Silicon Processing for the VLSI Era, Second Edition
(Volume 1 – Process Technology) Lattice Press
by S. Wolf and R. N. Tauber