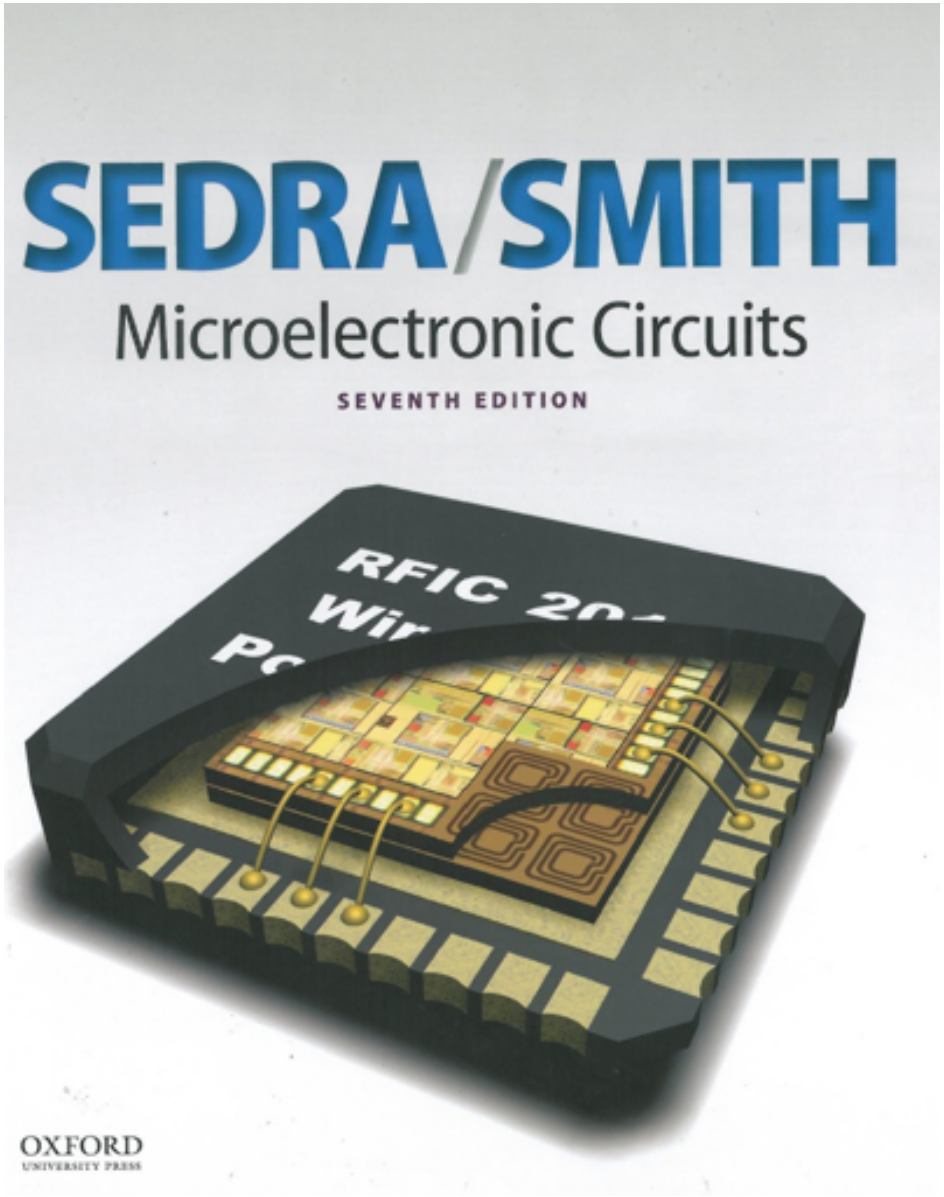
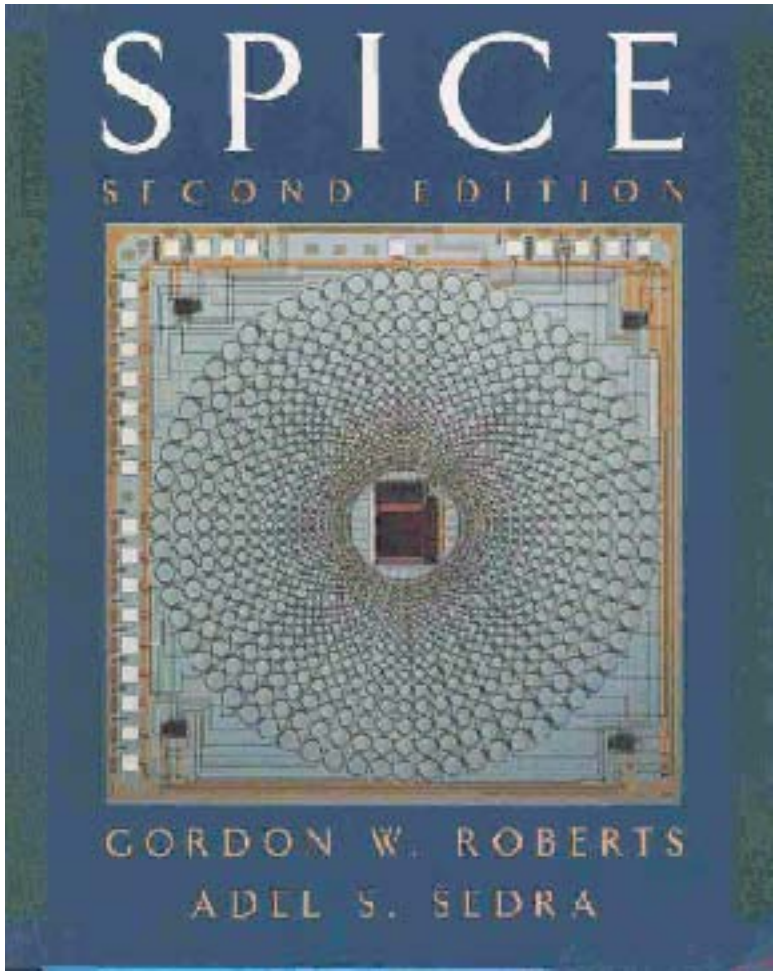
Microelectronics I - ENSC 225 - Summer 2021



Ed. 7, ISBN 978-0-19-933913-6

- **Textbooks**



Ed. 2, ISBN 0-19-510842-6

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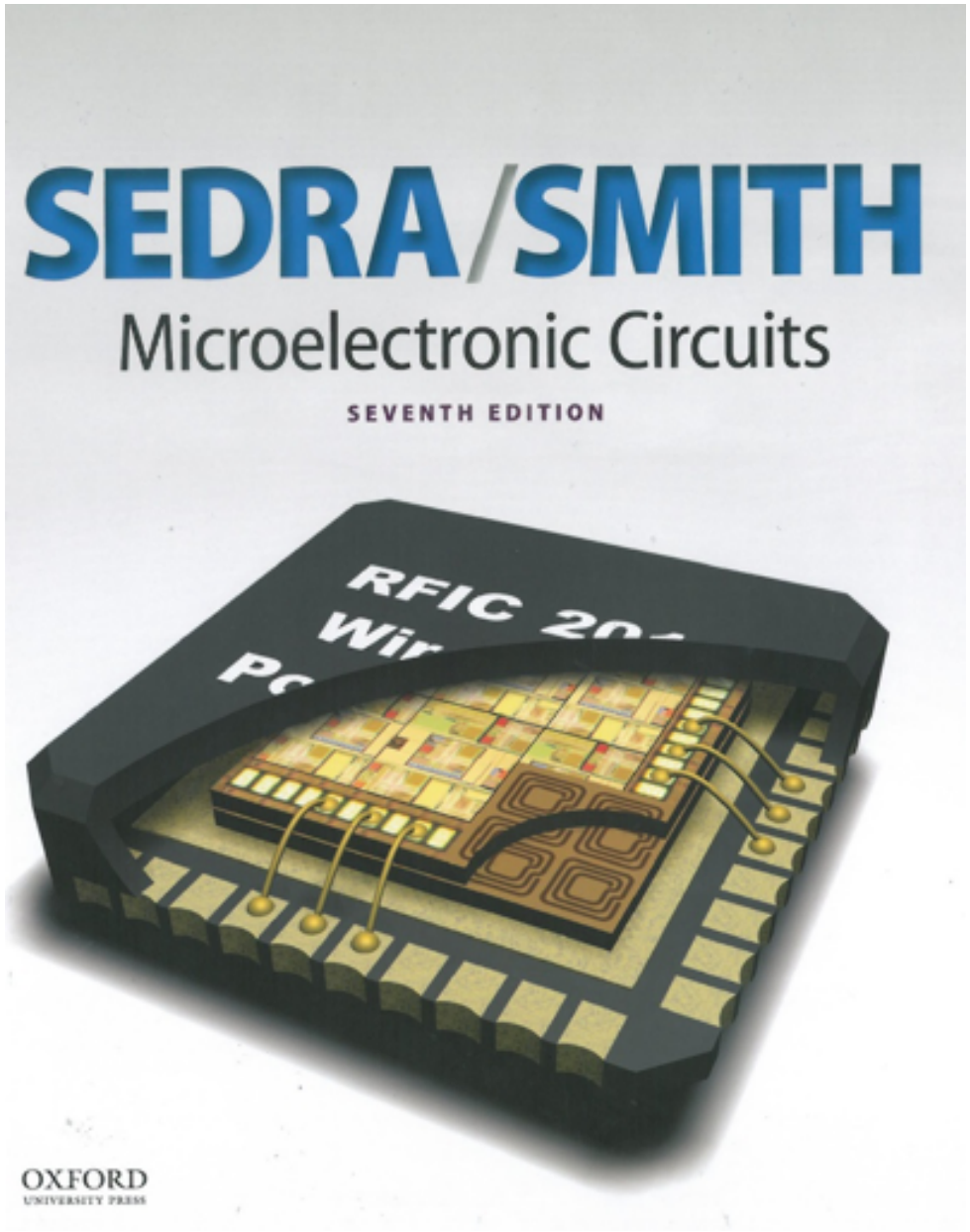

° Instructor

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° Teaching Assistants

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° Course web page

www.sfu.ca/~syrzycki/225

user id: ENSC225 (do not use your SFU ID)
password protected
password will be e-mailed to you

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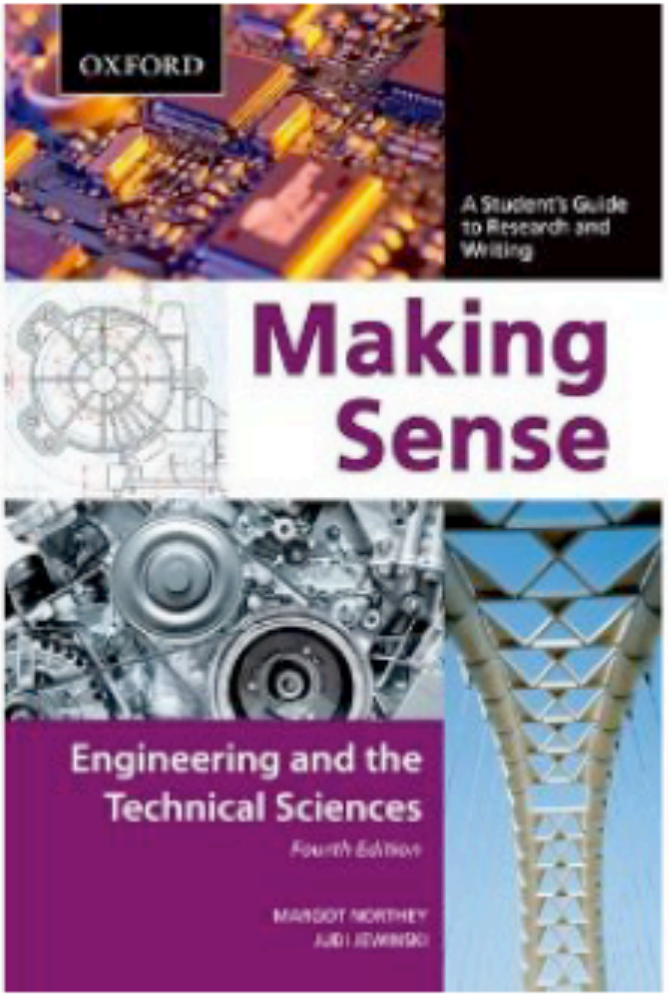

- Supplementary textbook

  Oxford University Press, 4th Edition

  ISBN: 978-0-19-544584-8

- A note to the student

"This book has been developed for students of the engineering and technical sciences. Its purpose is to provide a framework for first conducting research and then writing clearly and comprehensively....

...This book will show you how to refine your research and writing skills so that you can present your ideas professionally both on paper and in person."

Course grading policy

- Homework assignments (4) - not graded
- Laboratory (4 Labs) - 48% (12% each Lab)
  - Op amps and op amp circuits
  - Diodes and diode circuits
  - BJT and BJT circuits
  - MOS and MOS circuits
- Quizzes (3 Quizzes) - 52% (17%+17%+18%)

Tentative schedule of ENSC 225

Wk	Date		L	H	Q	Lecture Topic	7th Ed.
1	May 12	W				Amplifiers: types, characteristics, models, frequency response	1.4 - 1.6
2	May 17	M				Ideal op-amp. Inverting and non-inverting configurations	2.1 - 2.3
2	May 19	W	L1	H1		Difference amplifiers, integrators and differentiators	2.4 - 2.5
3	May 26	W				Op-amp: DC imperfections, Effects of finite open-loop gain and bandwidth, Large signal operation	2.6 - 2.8
4	May 31	M				p-n junction: structure and I-V characteristics	3.3 - 3.5
4	June 2	W		H1d		p-n junction: reverse breakdown and capacitive effects	3.5 - 3.6
5	June 7	M	L1d			Ideal diode. I-V diode operation and characteristics. Diode models: DC, large signal, small-signal, SPICE model	4.1 - 4.3
5	June 9	W	L2	H2		Diode circuits: rectifiers, limiting and clamping circuits, voltage regulators. Special diode types	4.4 - 4.7
6	June 14	M			Q1	BJT structure. BJT mode of operations. I-V characteristics	6.1 - 6.2
6	June 16	W				BJT's I-V characteristics. BJT circuits at DC, bias analysis	6.2 - 6.3
7	June 21	M		H2d		BJT amplifier, small signal BJT operation and models	7.1 - 7.2 (BJT)
7	June 23	W	L2d			BJT small signal parameters	7.2 (BJT)
8	June 28	M	L3	H3		Single stage BJT amplifiers	7.3 - 7.4 (BJT)
8	June 30	W				Single stage BJT amplifiers	7.4 - 7.5 (BJT)
9	July 5	M		H3d		MOS transistor structure, operation, and I-V characteristics	5.1 - 5.2
9	July 7	W			Q2	MOS circuits at DC	5.3
10	July 12	M	L3d	H4		MOS amplifier, small signal MOS operation and models	7.1 - 7.2 (MOS)
10	July 14	W	L4			MOS small signal parameters	7.2 (MOS)
11	July 19	M				MOS amplifier configurations	7.3 - 7.4 (MOS)
11	July 21	W				Discrete MOS amplifiers – biasing and operation	7.4 - 7.5 (MOS)
12	July 26	M		H4d		High-frequency BJT and MOS models. Frequency response	10.1 - 10.2
12	July 28	W	L4d			High-frequency response – analysis and tools	10.4
13	Aug.2	M			Q3	High-frequency response of the CS and CE amplifiers	10.3
13	Aug.4	W				High-frequency response of the wideband amplifiers	10.5, 10.6
14	Aug.9	M				Course summary	