EE 508
Integrated Filter Design
Fall 2010
COURSE INFORMATION

Room: Lecture -   1220 Hoover
                    Labs   -   2046 Coover
-
Time: Lecture -   MWF 10:00 – 10:50
                    Laboratory -   Arranged

Lecture Instructor:
            Randy Geiger
            2133 Coover
            Voice: 294-7745
            e-mail: rlgeiger@iastate.edu
            Office Hours: I maintain an open-door policy, will reserve 1:00 to 2:00 MWF
            specifically for students in EE 330 and EE 508. Appointments are welcomed too.

Course Description:
            Filter design concepts. Approximation and synthesis. Transformations. Continuous-time
and discrete time filters. Discrete, active and integrated
synthesis techniques

Course Web Site   http:/class.ee.iastate.edu/ee508/
            Homework assignments, lecture notes, laboratory assignments, and other course support
materials will be posted on this WEB site. Students will be expected to periodically check the
WEB site for information about the course.

Required Test:
            There is no required text for this course. There are a large number of books that cover
portions of the material that will be discussed in this course and some follow. Part of these focus
on the concepts of filter design and some of the best are not new. Those that focus more on
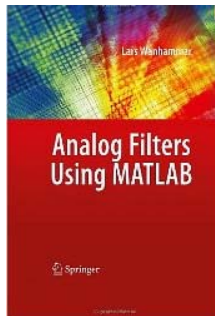integrated applications are mostly rather narrow in scope.

Reference Texts:
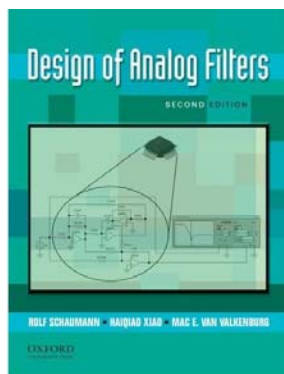
Design of Analog Filters – Second Edition, by Schaumann and Van
Valkenburg, Oxford, 2009.
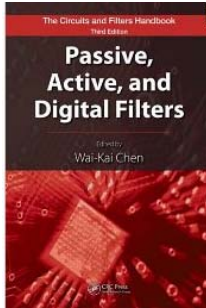
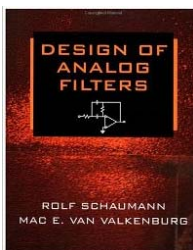**Passive, Active, and Digital Filters,** by Wai-Kai Chen, CRC Press, 2009.

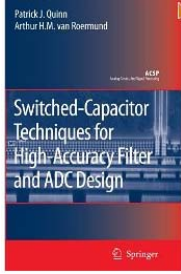**Analog Filters Using MATLAB,** by Wanhammar, Springer, 2009.

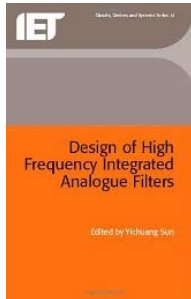**1V CMOS Gm-C Filters,** by Lo and Hung, Springer, 2009.

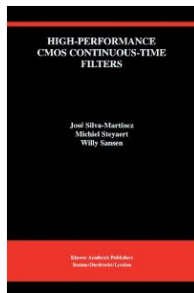**Passivc and Active Filters, Theory and Implementaitons,** by Wai-Kai Chen, Wiley, 1986.

Design of Analog Filters, by Schaumann and Van Valkenburg, Oxford, 2001.

**Switched-Capacitor Techniques for High-Accuracy Filter and ADC Design**, by Quinn and van Roermund, Springer, 1997.

**Design of high frequency integrated analogue filters**, by Sun, IEE, 2002.

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High-Performance CMOS Continuous-Time Filters, by Silva-Martinez, Steyaert, and Sansen, Kluwer, 1993

**Introduction to the Design of Transconductor-Capacitor Filters**, by Kardontchik, Kluwer, 1992.
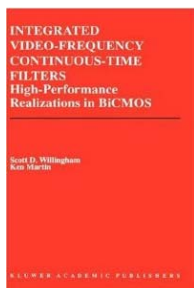
Integrated Video-Frequency Continuous-Time Filters: High-Performance Realizations in BiCMOS, by Willingham and Martin, Kluwer, 1995.
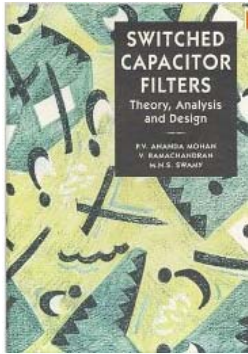
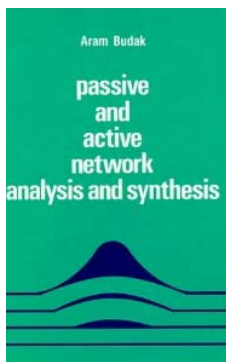**Switched Capacitor Filtrs, Theory, Analysis, and Design,** by Mohan, Ramachandran and Swamy, Prentice Hall, 1995.
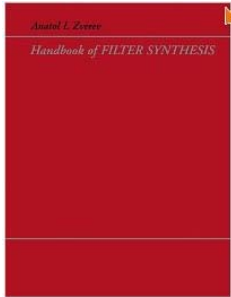
Continuous-Time Active Filter Design, by Deliyannis, Sun, and Fidler, CRC Press, 1998.
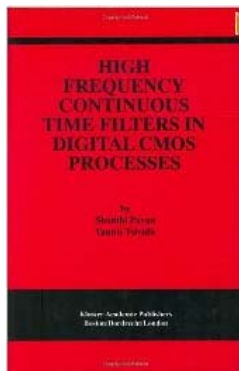
High Frequency Continuous-Time Filters in Digital CMOS Processes, by Tsividis and Springer, 2000.

Passive and Active Network Analysis and Synthesis, by Budak, Waveland Press, 1991.

Handbook of Filter Synthesis by Zverev, Wiley, 1967 and 2005.

Digital Filters, Analysis, Design, and Applications, Second Edition, by Antoniou, McGraw Hill, 1993.

Introduction to the Theory and Design of Acitve Filters, by Huelsman and Allen, McGraw Hill, 1980.

MOS Switched-Capacitor and Continuous-Time Integrated Circuits and Systems, by Unbehauen and Cichocki, Springer, 1989.

Grading: Points will be allocated for several different parts of the course. A letter grade will be assigned based upon the total points accumulated. The points allocated for different parts of the course are as listed below:

2 Exams	100 pts each
Homework	100 pts.total
Lab and Lab Reports	100 pts.total
Design Project	100 pts. total

Laboratory:
        There will be weekly laboratory experiments. Students will be expected to bring parts kits such as those used in EE 230 and EE 330. To the maximum extent possible, students will be expected to work individually in the laboratory.
        The design project will be the design of an integrated filter structure. Expectations will be to carry the design through post layout simulation. The option for fabricating this integrated circuit will be available to students in the class.

Homework:
        Homework assignments are due at the beginning of the class period on the designated due dates. Late homework will be accepted, without penalty, up until 5:00 p.m. on the due date in Room 2133 Coover.

Additional Comments

   I encourage you to take advantage of the e-mail system on campus to communicate about any issues that arise in the course. I typically check my e-mail several times a day. Please try to include "EE 508" in the subject field of any e-mail message that you send so that they stand out from what is often large volumes of routine e-mail messages.