

UNIVERSITY OF SOUTHERN CALIFORNIA

COMPUTER ENGINEERING

SCREENING EXAMINATION

ELECTIVE COURSE NO: **EE 552**

SWITCHING THEORY AND LOGICAL DESIGN

All students are assumed to have an excellent knowledge of the major pre-requisite for this class, namely EE 101, i.e. a basic course in logic design. Excellent book for this material include:

1. J. F. Wakerly, **Digital Design, Principles and Practice**, Prentice-Hall, New Jersey, 3rd edition, 2001, ISBN 0-13-089896-1.
2. M. Morris Mano and C. R. Kime, **Logic and Computer Design Fundamentals**, 2nd edition updated, Prentice Hall, 2001, ISBN 0-13-031486-23.

Good sources of material that cover the main topics of EE552 include:

1. S. H. Unger, **Asynchronous Sequential Switching Circuits**, Wiley-Interscience, 1969. Chapters 1-6.
2. A. D. Friedman and P. R. Menon, **Theory and Design of Switching Circuits**, Computer Science Press, 1975, ISBN 0-914894-52-8. Chapters 1-4.
3. J. Ellison, **Techniques in Advanced Switching Theory**, 1997, published by the author. This book also has an excellent set of references on subjects covered by the exam.

Some optional sources for further reading include:

1. A. Davis and S. M. Nowick, *An Introduction to Asynchronous Circuit Design*, in **Encyclopedia of Computer Science and Technology**, A. Kent and J. G. Williams, editors, Volume 38, Supplement 23, pp. 231-286, 1998, ISBN 0-8247-2291-4.
2. For information on existing asynchronous machines, see e.g. T. Werner and V. Akella, *Asynchronous Processor Survey*, **IEEE Computer**, November 1997, pp. 67-76.
3. One can go to the Internet and possibly find other materials, such as course lecture notes and/or surveys presented at conferences.

The exam will stress concepts. As a trivial example from EE 101, a freshman class on logic design, we all understand how to find all the prime implicants of a Boolean switching function using a Karnaugh map. But do you know things like: the precise definition of a prime implicant; the difference between essential, redundant, and non-essential irredundant prime implicants; the reason we seek the prime implicants rather than just the implicants of a function; and, if there can be more prime implicants than minterms?

Please be aware that these references are for guidance in BASIC knowledge. Ph.D. candidates are screened on the basis of talent, course knowledge, independent reading and experience.
