

N. Narayana Rao's book initiates Illinois ECE Series and continues "Illinois Way"

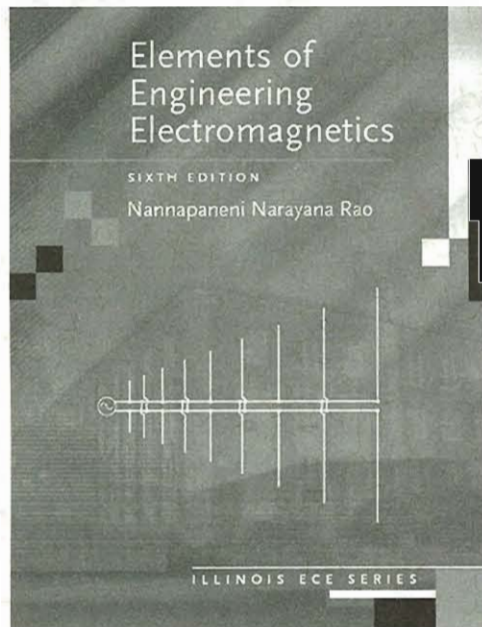
By JAMIE HUTCHINSON

The sixth edition of "Elements of Engineering Electromagnetics" by ECE Associate Department Head and Edward C. Jordan Professor of Electrical and Computer Engineering N. Narayana Rao is the first book in the Illinois ECE Series from Prentice Hall. This Illinois ECE Series continues a tradition in undergraduate education that has been practiced for more than a century by faculty in ECE. That tradition, which has come to be called "the Illinois Way," balances adherence to the tried-and-true with readiness to change decisively in order to shape a better future.

The Illinois Way encompasses more than textbooks. Early curricula in the department (then called Electrical Engineering) included courses in military drills, drafting, and surveying; later, Illinois would be the first program in the nation offering a freshman introduction to concepts in circuits, electromagnetics, electronics, control, and digital systems. Computer-based education in the department dates back to 1960 with PLATO (Programmed Logic for Automated Teaching Operations), a time-shared network that gave rise to one of the world's first online communities.

The department's great pride is its world-class undergraduate laboratories. A

century ago, facilities consisted of batteries, electrical machinery, and illumination equipment; now the department houses unsurpassed educational laboratories for integrated circuit fabrication, digital signal processing, control systems, computer architecture, and more.



Popular and innovative textbooks have long been a part of the Illinois Way. Former department head and longtime engineering dean at Illinois, William L. Everitt, edited over 100 titles for a series of engineering textbooks published by Prentice-Hall in the middle of the last century. Everitt also wrote textbooks. His "Communication Engineering," first published in 1932 and revised into the 1950s with Illinois colleague G. E. Anner, deserves credit for helping push the electrical

engineering profession from its pre-World War II emphasis on power systems to its postwar emphasis on information technology and electronics. Edward C. Jordan, head of the department from 1954 to 1979, wrote "Electromagnetic Waves and Radiating Systems," long a standard textbook in the field, first published by Prentice-Hall in 1950 and revised in 1968. And M. E. Van Valkenburg, another long-standing faculty member who also served as head and dean, wrote several influential textbooks, including "Network Analysis," one of the most internationally popular engineering texts of all time, first published by Prentice-Hall in 1955, and revised in 1964 and 1974.

It is appropriate that the Illinois ECE Series begin with this sixth edition of Rao's book. Rao was hired onto the Illinois faculty in 1965 by Jordan. Prentice-Hall published the first edition of "Elements" in 1977, and by the time of its fifth edition, dedicated in 2000 to none other than Ed Jordan, the text had established an international reputation for its grounding in time-honored practices even as it evolved progressively from one edition to the next. That is the essence of the Illinois Way.

A teacher and his texts pass the torch of knowledge

Of all the textbooks written by ECE faculty over the years, Professor N. Narayana Rao's "Elements of Engineering Electromagnetics" may be the most successful. But the textbook is just one aspect of Rao's teaching, which has been recognized with more than a dozen major honors and awards in the course of his 40-year career.

ECE alumnus Tony Zuccarino (BSEE '83) took ECE 450 (Lines, Fields, and Waves) with Rao and recalls lectures and handwritten notes that clearly conveyed the concepts under study and that would be incorporated into later editions of the textbook. "We didn't memorize things, we learned them," said Zuccarino.

Zuccarino attributes his career success to the good teachers he had in ECE. Professor Ed Davidson (now emeritus at the University of Michigan) taught a course on microarchitecture that allowed Zuccarino to begin designing computers for radar systems on his first day as an engineer with Hughes Aircraft. "What has stayed with me from Rao's class," added Zuccarino, "is how to best convey knowledge to another party." Now an entrepreneur with several startups under his belt and a keen eye peeled for the next, Zuccarino values that ability to communicate. He also credits ECE lecturer Ricardo Uribe as one of the outstanding influences during his undergraduate days.

Zuccarino is giving back to his alma mater by helping U of I raise its profile on the west coast, where he lives. He visited UIUC in September to discuss opportunities for commercializing ECE technologies (see photo).

Said Rao of his approach to teaching and writing: "I try to put myself in the student's position, and then I explain it to myself."



PHOTO BY JAMIE HUTCHINSON
N. Narayana Rao, the Edward C. Jordan Professor of Electrical and Computer Engineering, presents the new edition of his "Elements of Engineering Electromagnetics" to his old student Tony Zuccarino. Former ECE head and engineering dean William L. Everitt—who came to Illinois in 1944, bringing Jordan along with him—is pictured behind them on Rao's office wall.

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emitting transistor] and make the device faster."

According to Cheng, the major strengths of the center are its students, faculty leadership, the creative and collaborative environment, and outstanding facilities. The normal life span of a DARPA-sponsored university photonic research center is four years. This Center, though it is being directed out of the U of I, also includes researchers from Columbia, Georgia Institute of Technology, and Harvard University as part of the research efforts. The total grant provided by DARPA to the HUNT Center will be more than \$6.2 million dollars.

Entrepreneur

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speakers that have taken part in this series have included serial entrepreneurs, corporate executives, venture capitalists, intellectual property attorneys, and corporate attorneys. The speakers involved run the gamut of involvement in the business of technology, giving students a unique and valuable experience.

Laura Hollis, Program Director for Network Coordination and Marketing, said, "It's hard to put a price on that kind of opportunity." Brennan concurred, saying, "I've been able to hear about all different divisions in the business world and engineering. All the information seems really relevant."

Further information on the Technology Entrepreneur Center, its courses, and its certificate programs can be found at www.ge.uiuc.edu/tec.

Parents of ECE freshmen and transfer students

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