

DOUGLAS B. WILLIAMS
Professor & Associate Chair for Undergraduate Affairs
School of Electrical & Computer Engineering
Georgia Institute of Technology
February 2008

I. EARNED DEGREES

Degree	Year	University	Field
BSEE (<i>summa cum laude</i>)	1984	Rice University	Electrical Engineering
MS	1987	Rice University	Electrical and Computer Engineering
PhD	1989	Rice University	Electrical and Computer Engineering

II. EMPLOYMENT

Title	Organization	Years
Research Assistant	Rice University	1984-1989
Research Associate	Rice University	1989
Assistant Professor	Georgia Institute of Technology	1989-1995
Associate Professor	Georgia Institute of Technology	1995-2006
Associate Chair for Undergraduate Affairs	Georgia Institute of Technology	2003-present
Professor	Georgia Institute of Technology	2006-present

III. TEACHING

A. Individual Student Guidance

Have advised 15 Ph.D graduates.

B. Other Teaching Activities

Curriculum Development:

Spatial Array Processing: First offered as a special topics course in the Spring of 1989. Was permanently listed as EE6419 under the quarter system and is now listed as ECE6279 as a semester course. This course offers an introduction to application areas where signals are sampled over space as well as time. The goal is to develop algorithms unique to spatial processing and transfer knowledge of time-based techniques to spatial processing. More than 300 students have taken this course.

Nonlinear Models for Signal Processing: Offered as a special topics course in the Winter of 1994. This course provided an introduction to nonlinear methods for signal processing focussing on those techniques related to dynamical systems and fractals. Course enrollment was 11 students.

ECE 6250 (Advanced Digital Signal Processing): Developed a new entry-level graduate course in signal processing as part of the conversion to the semester system. Only about 30% of this course had been taught previously; the remainder was new to our curriculum. The course goal is to provide a

variety of signal processing tools and techniques that are used in a wide range of application areas. Offered each Fall since 1999, approximately 250 students (on-campus, video, and online) have been taught this course by D.B. Williams. In the Fall of 2000, it became one of the first three ECE courses offered online to off-campus students. D.B. Williams spent a large portion of 2000 (at least half-time from January to November) developing the online lectures and associated materials for this course.

Introduction to ECE Design: An introduction to basic concepts and activities useful for all areas of Electrical and Computer Engineering. Focus on hands-on, team-based activities designing and building simple robots. Prior to this course, freshmen often chose whether or not to select a major in ECE before they had ever taken an ECE class. Our goal was to offer a course with no prerequisites that would nonetheless give a 'big picture' view of ECE. The course meets twice a week in a 1.5 hour slot with one class being a lecture and the other a lab. The semester finishes with a competition to determine which team's robot best meets the design challenge. We are using the new LEGO Mindstorms NXT kit, which is a significant improvement over the previous Mindstorms RCX kit. The newer kit has an improved software environment, a 32-bit processor, and better motors and sensors. Because we were the first university program in the country to use this kit, we have received significant support from LEGO Education and National Instruments, who developed the programming environment. Two sections of this course with 19 to 24 students per section have been taught in the following semesters: Fall 2006, Spring 2007, Fall 2007, Spring 2008, and Fall 2008.

Continuing Education:

DSP for Practicing Engineers: Joined five other faculty in developing an online, asynchronous course to train practicing engineers in DSP theory and real-time signal processing. Students are able to watch lectures and perform laboratory exercises at home, over the course of 12 weeks, without taking time off from work or needing to travel to attend the course. Sessions of this course were offered in February, July, and October 2000, to a total of over 150 students. Beginning in Spring 2001, D.B. Williams became the sole faculty member responsible for organizing this online short course. He has also worked to extend the course to other DSP microprocessors. This course supports 2 to 4 graduate students who assist with course management and development. This course has been offered 2 to 3 times a year since 2000.

Outreach:

Camp-ICE: With the School of ECE's Prof. G. Riley and the College of Computing's M. Biggers and K. Nagel, developed and taught one-week summer camps designed to introduce high school students to computing and computer engineering. In 2004 and 2005, two camps were offered each year with an average of 35 students per camp.

HOT (Hands-on Tech) Days: With the School of ECE's Prof. G. Riley and Dr. Leyla Conrad, developed and taught a one-week summer camps designed to introduce high school students to electrical and computer engineering. In both 2006 and 2007, two camps were offered with an average of 20 students per camp.

IV. SCHOLARLY ACCOMPLISHMENTS

Have written chapters in 3 books and edited two other books.

Have published over 100 refereed technical papers.

V. SERVICE

A. Professional Contributions

1. Editorial Activities

Co-editor for the *Electronic Newsletter on Digital Signal Processing*, 1990-1996

Associate Editor, *IEEE Transactions on Signal Processing*, 1992-1996

Associate Editor, *EURASIP Journal on Applied Signal Processing*, 2003-2008

Editorial Board, *IEEE Signal Processing Magazine*, 2005-2008

Area Editor, Special Issues, *IEEE Signal Processing Magazine*, 2006-2008

Guest Editor (with R. Baraniuk), *Proceedings of the IEEE, Special Issue on Educational Technology*, June 2008

2. Conference Leadership

Conference session chair, IEEE International Conference on Acoustics, Speech, and Signal Processing, 1992

Conference session chair, IEEE Dual-Use Technologies and Applications Conference, 1995

Registration Chairman, IEEE International Conference on Acoustics, Speech, and Signal Processing, 1996

Conference session co-chair, Asilomar Conference On Signals, Systems, and Computers, 1997

Co-chair, 2002 IEEE DSP Workshop and Signal Processing Education Workshops

Conference session chair, IEEE International Conference on Acoustics, Speech, and Signal Processing, 2004

Conference session chair, IEEE DSP Workshop, 2004

Conference session chair, IEEE International Conference on Acoustics, Speech, and Signal Processing, 2005

3. IEEE Signal Processing Society Positions

Faculty Advisor, Georgia Tech Student Chapter of the IEEE Signal Processing Society, 1994-present

Member, IEEE Signal Processing Society's Signal Processing Theory and Methods Technical Committee, 2002-2007

Member, IEEE Signal Processing Society's Signal Processing Education Technical Committee, 2003-present

Member-at-Large, IEEE Signal Processing Society's Board of Governors, 2004-2006

Member, Lensing Oversight Committee for IEEE Signal Processing Society/Connexions Pilot Project, 2007-present

B. Campus Contributions

1. School of Electrical and Computer Engineering

Standing School Committees:

School of ECE Student-Faculty Committee, 1989-1994

School of ECE TQM Computer Support Committee, 1992

School of ECE Seminar Committee, 1994-1997 (Chair 1996-1997)

School of ECE Computer Resources Committee, 1992-1993, 1997-2001
(Chair 1999-2000)

School of ECE Education and Research Technology Transfer Committee, 2001-2002

School of ECE Faculty Recruitment Committee, 2002-2003

School of ECE Undergraduate Committee, 2003-present

School ECE Reappointment, Tenure, and Promotion Committee (GT-Savannah representative, 2002-2006; Academic Programs representative, 2006-present)

School of ECE Statutory Advisory Committee, 2003-2006

Faculty sponsor, Digital Signal Processing Colloquium, 1991-1997

Advisory/Leadership Roles:

ECE Liaison to the Georgia Tech Regional Engineering Program, 2002-2005

Faculty advisor, Women of ECE, 2004-present

Associate Chair, ECE Undergraduate Affairs, 2003-present

2. Institute Committees and Programs

Institute Graduate Committee, 1993

Participated in Dean's Scholar Day, 1992

Faculty friend in the ASSET program, 1992-1993

Participated in "Connect with Tech," 1994-1996, 2003-2006

Academic Senate (Georgia Tech-Savannah representative), 2003-2006

Institute Undergraduate Curriculum Committee, 2004-2007

Institute Study Abroad Committee, 2004-present (Chair, 2005-2007)

Institute International Plan Committee, 2005-present

Institute Task Force on Engineering Ethics, 2004-2006

Institute Advisory Technology Fee Committee, 2006-2007 (Chair, 2007)

Institute Executive Board, 2006-present (Vice Chair, 2008-09)

3. Research Center Activity

Center for Signal and Image Processing, 1989-present

Georgia Tech Broadband Institute, 1998-2002

Arbutus Center for Distributed Engineering Education, 1999-present

C. Other Contributions

Consulting: 3M, St. Paul, MN, 1992-1994. Design of real-time adaptive filters for estimating assembly line vibrations at low signal-to-noise ratios in a very unusual noise environment.

Director, Rice University Alumni Board, 2001-2004.

Rice University Alumni Admissions Interviewer, 1994-present.

VI. HONORS AND AWARDS

Member of Phi Beta Kappa, Tau Beta Pi, and Eta Kappa Nu honor societies

Fellow, Will Rice College, Rice University, 1984

NCR Outstanding Senior Electrical Engineering Student, 1984

NASA Graduate Student Research Fellowship, 1985-1989

GE Young Faculty Award, 1990

National Science Foundation Research Initiation Award, 1990

IEEE, Senior Member, 2004

Georgia Tech's Women in Engineering "Excellence Faculty Mentoring Award," 2005