

Brian Thomas Curriculum Vitae

ACADEMIC EXPERIENCE

Baylor University, School of Engineering and Computer Science

Current Title: Senior Lecturer and Assistant Chair of Electrical and Computer Engineering
September 2001 - 2008 (Lecturer), 2008 - to date (Sr. Lecturer), 2012 – to date (Asst. Chair)

Courses Taught:

- Ethics for International Service
- Technologies for Developing Countries
- Introduction to Engineering
- Electric Circuit Theory
- Engineering Design I (Junior Design)

As Assistant Chair:

- Advised and evaluated all transfer students, international students, and students studying abroad (both those whose home institution was Baylor, and those coming to Baylor from other institutions)
- Shepherded undergraduate curriculum in Electrical and Computer Engineering, chaired undergraduate curriculum committee, created new classes with faculty, updated degree audits, updated Undergraduate Catalog for ECE department, evaluated student petitions and requests for prerequisite overrides

Teaching/Mentoring Awards:

- Baylor Fellow, 2013-2014, recognition for teaching
- Richard Couey Award, 2014, given by Phi Kappa Chi fraternity for reflection its core values: commitment to Christ, excellence, humility, integrity, and respect
- Outstanding Faculty Partner Award, Division of Student Life, 2013, for leading international service-learning trips with students from 2005-2013
- Twice awarded Faculty Advisor of the Year (2012-2013 and 2013-2014) among student organizations at Baylor for being the faculty advisor of the organization Engineers with a Mission
- As the faculty advisor, I shared the Student Organization of the Year Award, 2012-2013, with the officers and members of Engineers with a Mission
- Outstanding Professor among Baylor University Lecturers and Non-tenure Track Faculty, 2006-2007 for teaching
- Twice voted Distinguished Professor by Baylor Society of Women Engineers student chapter for dedication to students, academic years 2002/2003 and 2003/2004

INTERNATIONAL EXPERIENCE IN HUMANITARIAN ENGINEERING

Haiti and Dominican Republic

May 2013, 2014, and 2015

Led thirty four engineering students in three teams to design and install a 3000 W solar (PV) electricity system to supply power to a building in support of the work of a non-profit organization in Ferrier, Haiti. Also supplied power to a computer lab at a local elementary school 600 feet from the building. Created a network of five solar powered cell phone charging businesses. Mentored students regarding the technical, spiritual, and personal impacts of the trip on their lives.

Honduras

January and August 2007,

July and August 2008,

May 2009 and 2010,

May and July 2011,

Directed nine separate teams of engineering students in design and installation of small hydroelectric systems, custom microgrids for delivering electricity in rural villages, solar hot water heater systems, water purification systems, and a hydro-mechanical system. Mentored students regarding the technical, spiritual, and personal impacts of the trip on their lives. Partnered with local church and private orphanage.

Uganda

September 2007

Travelled to a remote missionary station and designed a 1000 W solar (PV) array with battery bank and inverter. Installation successfully performed by later team.

Kenya

May 2006

Led seven undergraduate engineering students in the design and deployment of hybrid energy system consisting of a small wind generator and solar panel, a deep cycle battery, circuit breaker/distribution panel, a series of power distribution cables, and a white LED array in the Kibera slum of Nairobi. Mentored students regarding the technical, spiritual, and personal impacts of the trip on their lives. Partnered with local community organization and non-profit.

Kenya

May 2005

Led four undergraduate engineering students in the design and deployment of a 50 W solar photovoltaic system to charge a deep cycle battery and power a lighting system for a school of deaf children. Lighting system consisting of custom designed arrays of white LED's as well as low power fluorescent lights. Mentored students regarding the technical, spiritual, and personal impacts of the trip on their lives.

Iraq

December 2003

As part of a team of Baylor faculty, participated in a workshop for Kurdish engineering professors on current practices being used in the United States.

PUBLICATIONS AND PRESENTATIONS

Peer Reviewed Journal Publications

Brian Thomas, Ryan McGhee, Brent Benner, "Pico-Hydropower Franchising in Rural Honduras", International Journal for Service Learning in Engineering, Vol. 6, No. 1, pp 45-62, Spring 2011, ISSN 1555-9033

Brian Thomas, "A Wind Powered, White LED Lighting System for the Kibera Slum of Nairobi", International Journal for Service Learning in Engineering, Vol. 2, No. 1, pp 16-31, Spring 2007, ISSN 1555-9033

John Miller, Brian Thomas, "Design of a Bicycle-Powered Electric Generator for Use in Developing Countries", Presented at the ASEE GSW Annual Conference, March 2007, South Padre Island, Tx., and in: Proceedings of the 2007 American Society for Engineering Education Gulf Southwest Annual Conference, 2007.

Kelley, B.S., Bradley, W.L., Thomas, J.B., "Student-Aimed Appropriate Technology Engineering Projects in Kenya", Paper presented at the ASEE GSW Annual Conference, March 17, 2006, Baton Rouge, La. and in: Proceedings of the 2006 American Society for Engineering Education Gulf Southwest Annual Conference, 10 pps; 2006.

Benjamin S. Kelley, Cynthia C. Fry, David B. Sturgill, and J. Brian Thomas, "Faith-Based and Secular Experience on Rebuilding Engineering and Computer Science Higher Education in Kurdistan of Iraq," Proceedings of the 5th Christian Engineering Education Conference, pp 35-47, Westminster College, Salt Lake City, Utah, June 23-25, 2004.

Thomas, J. Brian, "Cross-Coupling in Coaxial Cavity Filters - A Tutorial Overview", IEEE Transactions on Microwave Theory and Techniques Special Tutorial Issue, April 2003.

Other Publications

Thomas, J. Brian, "Radio" Encyclopedia entry in Encyclopedia of Science, Technology, and Ethics, discusses the ethical use of the electromagnetic spectrum as a natural resource, Carl Mitcham, editor, Thomson/Gale, Volume 3, p 1569-1574, Detroit Michigan, August 2005.

Private and Public Presentations

William Jordan and Brian Thomas, "Community Engagement in the Developing World," ASEE National Conference, Indianapolis, 2014

Craig Hoffman, Brian Thomas, "Appropriate Technology & Renewable Energy Lessons Learned", 2013 ACDP Conference sponsored by Engineering Ministries International, Houston, November 2013

Brian Thomas, Cindy Fry, "An Engineering Course for Non-Engineering Majors: Technologies for Developing Countries", 2012 Baylor Symposium on Faith and Culture: Technology and Human Flourishing, October 2012

Brian Thomas, "Village Energy LLC, Lessons Learned Building an Energy Business in the 'Majority' World", Presented at the Engaging(in)Justice – Be The Change conference and also the at the Global Business Forum on Global Energy and Sufficiency Sustainability, 2011, both conferences held at Baylor University (see http://business.baylor.edu/Steve_Gardner/GBF2011/Thomas.html)

Brian Thomas, Leah Richter, "Appropriate Technologies for Developing Countries", presented a two-day workshop on technologies for developing countries for To Every Tribe missionary training school, Los Fresnos, Texas, January 2011

Jordan, William; McGhee Ryan, Thomas, Brian; Lemus, Elizabeth; "Creating a Sustainable Energy Business in Rural Honduras", AC 2009-1680, Presented at the 2009 ASEE Annual Conference

Jordan, W., Blalock, G., Bradley, W., Fry, C., Grinols, A., and Thomas, B., *Using Technical Entrepreneurship and Service Learning to Promote an International Perspective in an Undergraduate Engineering Program*, presented at the A.S.E.E. Annual Meeting in Pittsburgh, June 2008. In CD based *Proceedings* (no page numbers).

Thomas, B., Jordan, W., and McGhee, R., "Pico-Hydropower Franchising: A Test Bed in Rural Honduras", presented at the Baylor Symposium on Faith and Culture Symposium, *Bottom-Up Approaches to Global Poverty: Appropriate Technology, Social Entrepreneurship, and the Church*, Waco, Texas, October 2008.

Fry, Cindy; Kelley, Ben; Sturgill, David; Thomas, Brian; "Responsive and Targeted Engineering & Computer Science Education for the Kurdistan Region" Prepared and presented for the Faculties of: Dohuk University, Irbil University, and Suleymaniye University; Dohuk, Iraq, December 2003.

"RF Circuit Fundamentals," Presented to engineers and technicians at Theragenics Corporation, Atlanta, Georgia, August 21-22, 2003.

"RF Filter Design (With an Emphasis on Lumped Element Realizations)," Presented to engineers and technicians at Theragenics Corporation, Atlanta, Georgia, August 22, 2003.

"The Freshman Engineering Experience," Presented to the Baylor University School of Engineering and Computer Science Board of Advocates, Austin, Texas, April 4, 2003

"An Overview of the Operation and Design of Today's Microwave Filters," Presented to engineers and others at the National Radio Astronomy Observatory, Green Bank, West Virginia, July 24-31, 2002

"A Small Radio Telescope Suitable for Teaching or Research," Presented to the joint meeting of the Texas Section of the American Physical Society, the Texas Section of the American Association of Physics Teachers, and Zone 13 of the Society of Physics Students, Nacogdoches, Texas, March 8, 2002

"A Dual Band Duplexer for Combining 900 & 1800 MHz Cellular Traffic," Presented to the Engineering Faculty, Baylor University, August 21, 2001

"Microwave & RF Filters: General Operation and Current Trends," Presented to the IEEE Student Chapter, Baylor University, April 12, 2000

NON-ACADEMIC PROFESSIONAL EXPERIENCE

Electric Power Engineers

Summer 2007 full time, Fall 2007 part time

Waco, Texas

Performed preliminary designs for wind farm power collection circuits including specifying conductors, transformers, and associated switchgear. Considered budgetary issues, wind resource estimates, wind turbine performance parameters, protection schemes, and terrain constraints.

The National Radio Astronomy Observatory

June and July 2002

Green Bank, West Virginia

As a contracted microwave engineer, designed a five-port multiplexer to divide 26-40 GHz into four, approximately equal bands. Performed simulations and optimizations using circuit modeling software, including planar electromagnetic simulation. Temporary appointment during summer.

Remec Wacom

February 1999 – August 2001

Waco, Texas

Design and Project Engineer for RF components and subsystems. Responsible for design and development of prototypes, debugging, documentation, and acceptance testing criteria. Viewed as a leader in engineering by management. Instructed technicians and junior engineering staff in many subjects applicable to RF circuits.

L3 Communications Narda Microwave West

October 1995 – February 1999

Sacramento, California

Design and Project Engineer for many filter based microwave components, both commercial and military. Representative designs and projects included but were not limited to: high peak power (10kW) combine duplexer for cellular base stations, bandpass filter integrated with low noise amplifier, 900 MHz band, and high peak power (1.8 kW) isolator-filter for harsh environment application (missile)

Microwave Networks Incorporated

July 1992 - September 1995

Houston, Texas

As entry level engineer, performed extensive systems level testing, troubleshooting and development on 2 and 8 GHz digital transmitters and receivers. Performed acceptance testing, qualified and evaluated many components: power amplifiers, low noise amplifiers, oscillators, mixers, ferrite devices and filters (cavity and waveguide), waveguide manifolds, top level transmitters and receivers.

EDUCATION

Master of Electrical Engineering

August 1992

University of Houston,

Concentrated study in electromagnetics

Post-baccalaureate work in Electrical Engineering

Spring 1990

Rice University; ten semester hours

Bachelor of Science

December 1989

Stephen F. Austin State University

Major: Physics, Minor: Mathematics

Awards: William H. Bailey Outstanding Physics Graduate 1989, Pi Mu Epsilon mathematics honor society inductee, Dean's List, President's Honor Roll, Freshmen Physics Fellowship 1986