Chad Davis, PhD, PE

Lecturer, Recruitment Coordinator, and Post Doctorate Research Associate
School of Electrical and Computer Engineering
University of Oklahoma
110 W. Boyd Street, Devon Energy Hall Room 150
Norman, OK 73019-1102

Phone: 405-325-8962
Email: weeb@ou.edu

EDUCATION:

University of Oklahoma

BSME	12/1994 - Mechanical Engineering, Biomedical Option
MSEE	12/2000 - Electrical Engineering
Ph. D.	05/2007 - Engineering

Tulsa University

1997 – 1999 – Completed coursework needed to transition from BSME to MSEE.

AWARDS, TRAINING, and CERTIFICATIONS

- 2015 – Passed the LabVIEW Certified LabVIEW Developer (CLD) Exam. At the time of becoming certified there were only 3 other people that held the CLD certification in the state of Oklahoma.
- 2015 – Won the John E. Fagan award at OU that recognizes excellence in experiential teaching and extraordinary support for students outside the classroom.
- 2015 – Nominated for the Brandon H. Griffith award (not eligible to win the award because I won it the previous 2 years). I was the only person to be nominated for both the Brandon H. Griffith and John E. Fagan awards in 2015.
- 2014 – Won the Brandon H. Griffith award at OU that recognizes excellence in teaching and extraordinary support for students.
- 2014 – Runner Up for the School of Electrical and Computer Engineering Favorite Professor Award.

- 2014 – School of Electrical and Computer Engineering Maximum Impedance Award.
- 2014 – BP/DEVA Summer Camp Best Activity Award (Formerly Called Favorite Professor Award).
- 2013 – Won the Brandon H. Griffith award at OU
- 2013 – Runner Up for the School of Electrical and Computer Engineering Favorite Professor Award.
- 2012 – Nominated for the Brandon H. Griffith award.
- 2012 – BP/DEVA Summer Camp Favorite Professor award.
- 2011 – Provost's Outstanding Academic Advising Award
- 2011 – Certified LabVIEW Associate Developer (CLAD) (re-certified in 2013)
- 2000 – Private Pilot License
- 1999 – Dual Specialty Professional Engineering License (Oklahoma # 19546)
    - Primary: Electrical Engineering, Secondary: Mechanical Engineering
- 1999 – Studied at Johns Hopkins - Center for Nondestructive Evaluation

INDUSTRY EXPERIENCE:

2012 and 2013 – Summer

Radar Innovation Lab, Norman, Oklahoma.

Contract Engineer – Compressive Sensing Project

- Developed systems to simulate compressive sensing of radar signals.

2010 - Summer

Boeing, Midwest City, Oklahoma.

Contract Engineer – Automated test group

- Developed and implemented LabVIEW based test systems.

2000-2004

Lucent Technologies / Celestica Corporation, Oklahoma City, Oklahoma.

Member of Technical Staff (Test Engineering)

- Lead engineer for Access System Test.
- Developed and implemented functional test programs for DSL printed circuit board assemblies.

- Developed a process control conveyor system using LabVIEW based software for in-line printed circuit board assembly testing.
- Designed a system to control 192 DSL modems using LabVIEW based software and serial expansion hardware.
- Lead engineer for Access System Test and DSL Functional Test transfer to Monterrey, Mexico and repair operations to Dallas, Texas.

1996-1999

McElroy Manufacturing, Inc., Tulsa, Oklahoma.

Project Engineer (R & D Engineering Department)

- Responsible for the design, development, training, and installation of a computerized tensile test product for ASTM testing of Polyethylene (PE) pipe and fusion joints (McSnapper™).
  http://www.mcelroy.com/fusion/catalog/mcsnap.pdf
- Lead engineer for the research and development of a product that nondestructively tests PE pipe fusion joints using ultrasonic discontinuity detection techniques.
- Developed a computerized process control system for manufacturing cells.
- Designed Polyethylene pipe fusion equipment using 3D modeling software.

1995-1996

Uponor Corporation, Tulsa, Oklahoma.

Engineering & Maintenance Supervisor

- Designed and implemented automated equipment into production, and initiated process improvement projects at Uponor's Polyethylene pipe extrusion division.
- Developed software programs for characterizing large-diameter coils, monitoring production performance, and preventive maintenance.
- Worked on the development of an ultrasonic PE pipe wall monitoring and flaw detection system.

ENGINEERING CONSULTING AND DESIGN EXPERIENCE:

- Trane, Inc.
- Badger Meter, Inc.
- Technology Development Group, Inc.
- Whirlpool Corporation
- Baker Petrolite
- Stinger Wellhead

- Baker Hughes Centrilift
- Ototronix, LLC

RESEARCH EXPERIENCE:

1999 – Present

University of Oklahoma, Norman, Oklahoma.

- Mentored under Dr. John Fagan since 1999. Dr. Fagan was the 2006 David Ross Boyd Professorship recipient and led one of the most prominent research groups at the University of Oklahoma until he retired in 2013.
- Designed statistical models for airspace requirements of GPS and WAAS systems.
- Developed real-time operational software using LabVIEW for designing, controlling, and monitoring multiple product pipeline systems.
- Member of the University of Oklahoma Electrical and Computer Engineering research group that won the 2007 state of Oklahoma Innovator of the Year – On the Brink Award for its Ground Based Augmentation System research.
- Current research includes the design and development of a new GPS Ground Based Augmentation System utilizing feedback control and design of instrumentation and data acquisition systems for the aviation industry.
- Designed a LabVIEW based Local Area Augmentation System that has been used by multiple graduate students to complete their dissertations.

INSTRUCTIONAL EXPERIENCE:

1999 – Present

University of Oklahoma, Norman, Oklahoma.

- 2007 – Developed content and curriculum for a newly created Electronics Lab course, ECE 3873.
- 2009 – Redesigned the content and curriculum for three 5-week, 1-hour credit courses for non-EE majors. ENGR 2431 – Circuits, ENGR 2531 – Circuits II, ENGR 3431 – Electromechanical Systems.
- 2012 to present – Coordinator for ENGR 2002 (Professional Development). I led the effort in the redesign and implementation of this course.
- Instructor for the following courses at OU:
  - *Circuits and Sensors*, AME 2623 (Sp09, Sp11, Sp12,Sp14)
  - *Control Systems* AME 4383 (Fa12)
  - Digital *Signals and Filtering*, ECE 2713 (Fa07, Fa08, Fa09, Fa10, Fa11)
  - Circuits II, ECE 3723 (Fa11)
  - *Energy Conversion* ECE 3113 (Fa10)
  - *Microprocessor System Design*, ECE 3223 (Sp10)

- *Introduction to Electronics*, ECE 3813 (Sp06, Fa06, Sp07)
- *Electronics Lab*, ECE 3873 (Every semester since Fall 07)
- *Control Systems* ECE 4413 (Fa13,Fa14,Fa15)
- *Electronic II*, ECE 4813 (Sp08, Sp11, Sp12, Sp13,Sp14)
- *Professional Development* ENGR 2002 (Every semester since Fall 12)
- *Circuits*, ENGR 2431 (Every semester since Fall 09)
- *Circuits II*, ENGR 2531 (Every semester since Fall 09)
- *Electromechanical Systems*, ENGR 3431 (Every semester since Fall 09)
- *Professional Practice,* ENGR 4003 (Every summer since 2012)

- Contributing lecturer for *Electrical Circuits* ENGR 2613, *Numerical Methods* ENGR 3713, *Control Systems* AME 4383, *Introduction to Electronics* ECE 3813, *Circuits II*, ECE 3723, and *Measurement and Automation Lab* ECE 4973.

SERVICE EXPERIENCE:

2008 – Present

University of Oklahoma, Norman, Oklahoma.

- Currently serving as the recruitment coordinator for ECE. Since fall 2008, I have promoted ECE at numerous middle school and high school events. I also have led numerous outreach workshops and events such as: BP, DEVA, Geared for Success, Passport, HS Girl's Day, and Engineering Days. I also give personal tours to 30 to 50 students per year and frequently appear as a guest lecturer at several different schools. Between fall 2008 (when I became the recruiting instructor) to fall 2015 the ECE undergraduate enrollment numbers have more than doubled.
- Currently serving as one of the primary ECE academic advisors. Since fall 2008, I have advised hundreds of ECE students per year regarding academic issues. I won the Provost Academic Advising Award in 2011 for my work in this role.
- Currently serving as the faculty sponsor for the following student groups at OU:
  - ✓ Robotics Club
  - ✓ Sooner Competitive Robotics (SCR)
- Member of the OU-ECE control systems faculty interest group.
- Currently serving on the ECE Undergraduate Committee.
- Currently serving on the ECE Scholarship Committee.
- Currently serving on the ECE Awards Committee (Given out at the IEEE banquet).
- Served as a mentor for Capitol Hill High School First Robotics, Team 2461 from 2008 to 2011. Finished as a finalist at both the OKC and Dallas Regional competitions in 2009. Currently, providing mentor support for Moore-Norman Pre-Engineering First Robotics, Team 1742.
- Currently serving on the advisory board for Moore-Norman Pre-Engineering program and as one of their primary senior design judges.
- Led the project portion of the MEP Summer Bridge program in 2009.

- Led session for the SWE High School Girl's Day event every year since 2009.
- Served as a mentor for Oklahoma School of Science and Math, JETS, TEAM+S Competition in 2009.
- Lead the student tour section of the HKN annual conference that was hosted at OU in 2010.
- Moderator for sessions at both the 2013 and 2014 ASEE Annual Conferences.
- FE Review speaker at OU for Electrical topics every year since 2010.
- Served as a McNair Scholar mentor in 2008/09-Mario Velazquez, 2011/12-Austin Lee
- Supported Honors Research for Shelby Vanhooser – 2013
- Masters committee member – Shawna Ong (2012)
- Masters committee member – Charles Panicker (2014)
- One of 4 finalists for the best paper published award in the IEEE Transactions on Education in 2012 for paper: "Reversing the Trend of Engineering Enrollment Declines With Innovative Outreach, Recruiting, and Retention Programs"
- Shell Fall Festival Dunk Tank Casualty every year since 2012.

AFFILIATIONS and PROFESSIONAL SERVICE:

- Society of Plastics Engineers (While working in Industry)
- American Society of Nondestructive Testing (While working in Industry)
- Institute of Navigation
- Frontiers in Education
  - Serve as a reviewer for FIE Conference papers.
- Institute of Electrical and Electronic Engineers
  - Serve as a reviewer for IEEE Journal Articles.
- American Society for Engineering Education
  - Serve as a reviewer for ASEE Conference Papers.
- Oklahoma Society of Professional Engineers
- National Society of Professional Engineers
- Serve as a book reviewer for McGraw Hill Higher Education.

PUBLICATIONS:

1. Chad Davis, "*Control System for the Upgrade of a Single Product Pipeline to a Multiple Product Pipeline*", Master's Thesis, University of Oklahoma, 2000.

2. Chad Davis, John Fagan, "*Multi-Product Pipe Transport Conversion of Abandoned Single-Product Pipeline*", Society of Petroleum Engineers 2005 Annual Technical Conference and Exhibition, Dallas, TX, 2005.

3. Chad Davis, "*Conceptualization and Implementation of a New and Novel Ground Based Augmentation System Utilizing Feedback Control*", Dissertation, University of Oklahoma, 2007.

4. Chad Davis, John Dyer, Andy Archinal, Hengqing Wen, John Fagan, "*Conceptualization and Implementation of a Closed-Loop Ground Based Augmentation System*", Proceedings of Institute of Navigation Fall 2007 GNSS Conference, Fort Worth TX, 2007.

5. Chad Davis, Andy Archinal, John Dyer, Hengqing Wen, John Fagan, "*Initial Design and Performance Results of the University of Oklahoma LAAS Far-Field Monitor*", Proceedings of Institute of Navigation Fall 2007 GNSS Conference, Fort Worth TX, 2007.

6. C. Davis, M. Yeary, J. Sluss, and P. McCann, "*Work in Progress: Utilizing research projects and innovative demonstrations in student recruitment*" ASEE Frontiers in Education Conference, San Antonio, TX., accepted, paper 1359, October 2009.

7. Davis, C., "*Work in progress - FIRST robotics competition from the perspective of a first time mentor*", Frontiers in Education Conference, 2009. FIE '09. 39th IEEE , vol., no., pp.1,2, 18-21 Oct. 2009
doi: 10.1109/FIE.2009.5350846
URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=5350846&isnumber=5350396

8. C. Davis, M. Yeary, and J. Sluss, "*Results and best practices of a two year study on recruiting programs to boost ECE undergraduate enrollment*", ASEE Annual Conference and Exposition, paper AC 2011-1539, pp. 1-17. June 2011.

9. C. Davis, M. Yeary, and J. Sluss, "*Reversing the trend of engineering enrollment declines with innovative outreach, recruiting, and retention programs*", IEEE Transactions on Education, vol 55, issue 2, pp. 157-163, May 2012.
doi: 10.1109/TE.2011.2157921
URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=5872032&isnumber=6193254

10. C. Davis and B. Schultz, "*Second Life Hybrid Vehicle Batteries Used in Solar Backup*", *Green Technologies Conference, 2012 IEEE* , vol., no., pp.12,15, 19-20 April 2012
doi: 10.1109/GREEN.2012.6200967
URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6200967&isnumber=6200926

11. C. Davis, D. Vreeland, C. Griffin, and M. Yeary, "*Creating a Culture of Student-Driven ECE Recruiting and Retention*." ASEE Annual Conference and Exposition, paper AC 2013-7885, paper AC 2012-5156, June 2012.

12. Davis, C., Pendergraft, R., Henderson, J., Dyer, J., Yeary, M., & Fagan, J. (2013, May). "*Architecture and performance of an instrumented RF system that utilizes the GNSS satellite network*", *Instrumentation and Measurement Technology Conference (I2MTC), 2013 IEEE International* (pp. 1104-1108). IEEE.

13. C. Davis and J. Sluss, "*Lessons Learned from an ECE Recruiting and Retention Program that Increased Undergraduate Enrollment Over 60% in Four Years*.", ASEE Annual Conference and Exposition, paper AC 2013-7881, Atlanta, GA., June 2013.

14. C. Davis and P. Pulat, "*Redesigning the Circuits for Non-majors Course with the Addition of a Robotics Project*", ASEE Annual Conference and Exposition, paper AC 2013-7885, Atlanta, GA., June 2013.

15. C. Davis, J. Sluss, T. Landers, and P. Pulat, "*Innovative Practices for Engineering Professional Development Courses*", ASEE Frontiers in Education Conference, Oklahoma City, OK., October 2013.

16. T. Blair and C. Davis, "*Innovative Engineering Outreach: A Special Application of the Xbox 360 Kinect Sensor*", ASEE Frontiers in Education Conference, Oklahoma City, OK., October 2013.

17. C. Davis and A. Mai, "*Synchronized Robots: A PID Control Project with the LEGO Mindstorm NXT*", ASEE Annual Conference and Exposition, Indianapolis, IN., June 2014.

18. J. Dyer, D. Sandmann, C. Davis, "*Measurement and Automation: Experiential Learning Opportunity*", ASEE Annual Conference and Exposition, Indianapolis, IN., June 2014.

19. B. Pirtle, C. Davis and J. Ruyle, "*Innovative Engineering Outreach: Capacitive Touch Sensor Workshop*", ASEE Annual Conference and Exposition, Indianapolis, IN., June 2014.

20. C. Davis, R. Bolen, and J. Sluss, "*Developing an Engineering and Entrepreneurship Collaborative Project*", ASEE Frontiers in Education Conference, Madrid, Spain, October 2014.

21. S. Hallman and C. Davis, "*Mentorship Techniques for First-Year Freshman and Transfer Engineering Students*", ASEE Annual Conference and Exposition, Seattle, Was, June 2015.

22. C. Davis and R. Pendergraft, "*Leveraging the ASEE Annual Conference Robot Competition to Increase ECE Recruiting and Retention*", ASEE Annual Conference and Exposition, Seattle, Was, June 2015.

PRESENTATIONS:

1. Chad Davis, John Fagan, "*Multi-Product Pipe Transport Conversion of Abandoned Single-Product Pipeline*", Society of Petroleum Engineers 2005 Annual Technical Conference and Exhibition, Dallas, TX, 2005.

2. Chad Davis, John Dyer, Andy Archinal, Hengqing Wen, John Fagan, "*Conceptualization and Implementation of a Closed-Loop Ground Based Augmentation System*", Proceedings of Institute of Navigation Fall 2007 GNSS Conference, Fort Worth TX, 2007.

3. Chad Davis, Andy Archinal, John Dyer, Hengqing Wen, John Fagan, "*Initial Design and Performance Results of the University of Oklahoma LAAS Far-Field Monitor*", Proceedings of Institute of Navigation Fall 2007 GNSS Conference, Fort Worth TX, 2007.

4. Keynote Speaker for the OU IEEE banquet in 2009.

5. Speaker for HKN (OU-ECE honor society) Tech Talk in 2009.

6. C. Davis, M. Yeary, J. Sluss, and P. McCann, "*Work in Progress: Utilizing research projects and innovative demonstrations in student recruitment*" ASEE Frontiers in Education Conference, San Antonio, TX., accepted, paper 1359, October 2009.

7. Davis, C., "*Work in progress - FIRST robotics competition from the perspective of a first time mentor*", Frontiers in Education Conference, 2009. FIE '09. 39th IEEE , vol., no., pp.1,2, 18-21 Oct. 2009
doi: 10.1109/FIE.2009.5350846
URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=5350846&isnumber=5350396

8. Speaker for HKN (OU-ECE honor society) Tech Talk in 2010.

9. C. Davis, M. Yeary, and J. Sluss, "*Results and best practices of a two year study on recruiting programs to boost ECE undergraduate enrollment*", ASEE Annual Conference and Exposition, paper AC 2011-1539, pp. 1-17. June 2011.

10. Speaker for a Sooner Competitive Robotics Tech Talk in 2013

11. C. Davis and J. Sluss, "*Lessons Learned from an ECE Recruiting and Retention Program that Increased Undergraduate Enrollment Over 60% in Four Years*.", ASEE Annual Conference and Exposition, paper AC 2013-7881, Atlanta, GA., June 2013.

12. C. Davis and P. Pulat, "*Redesigning the Circuits for Non-majors Course with the Addition of a Robotics Project*", ASEE Annual Conference and Exposition, paper AC 2013-7885, Atlanta, GA., June 2013.

13. Engineering Ethics Keynote Speaker at the OSPE Annual Conference, Norman, OK, June 2013.

14. C. Davis, J. Sluss, T. Landers, and P. Pulat, "*Innovative Practices for Engineering Professional Development Courses*", ASEE Frontiers in Education Conference, Oklahoma City, OK., October 2013.

15. Speaker for a Sooner Competitive Robotics Tech Talk in 2014

16. C. Davis and A. Mai, "*Synchronized Robots: A PID Control Project with the LEGO Mindstorm NXT*", ASEE Annual Conference and Exposition, Indianapolis, IN., June 2014.

17. B. Pirtle, C. Davis and J. Ruyle, "*Innovative Engineering Outreach: Capacitive Touch Sensor Workshop*", ASEE Annual Conference and Exposition, Indianapolis, IN., June 2014.

18. C. Davis, R. Bolen, and J. Sluss, "*Developing an Engineering and Entrepreneurship Collaborative Project*", ASEE Frontiers in Education Conference, Indianapolis, IN., June 2014.

19. C. Davis and R. Pendergraft, "*Leveraging the ASEE Annual Conference Robot Competition to Increase ECE Recruiting and Retention*", ASEE Annual Conference and Exposition, Seattle, Was, June 2015.

FUNDED RESEARCH:

- Co-Principal Investigator, " *Development of a Portable WAAS Data Acquisition Tool for Fixed and Rotary Wing Data*", Funded by FAA, Contract DTFAAC-08-A-80001, $250,000, 2009.

- Co-Principal Investigator, "*Support of MWR Testing"*, Grant 105-220300, $25,443, 2011.

- Co-Principal Investigator, "*Driverless Vehicles on Roads - Exploring Future Transportation Systems*", Funded by the Office of Research Administration | NP-OUORA, $14,613.00, 2015.