

Department of Electrical and Computer Engineering

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The professions of electrical engineering and computer engineering are concerned with the analysis, design, construction and testing of systems based on electrical phenomena. In contemporary society, electrical methods are used to communicate and store information, control equipment and systems, perform mathematical operations, and convert energy from one form to another. Frequently, two or more of these functions are important in the design of systems such as television, radio, telecommunications, computer, robots and intelligent machines, telemetry systems, solid-state electronics, vehicle safety systems, biomedical devices, environmental controls, electric machinery, and electric power generation and transmission facilities.

Computer engineering is a field in which digital techniques are used in system design. Low-cost solid-state microprocessors and memories permit computers to be widely incorporated in many different types of devices from toys to traffic control systems. To work effectively in this rapidly growing field, the computer engineer must understand both hardware and software techniques and must effectively use both in order to design, build and test complex digital systems. Both the electrical engineering and the computer engineering programs, which lead respectively to the degrees, Bachelor of Science in Electrical Engineering and Bachelor of Science in Computer Engineering, are accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>.

Program Educational Objectives

The graduates of the Electrical and Computer Engineering (ECE) programs are expected to attain the following within a few years after graduation:

Productive and successful practice of their ECE background in a diverse range of careers.

Continuous improvement of their knowledge and skills through formal and informal means and flexibility in adapting to the changes in economic and technological environments.

Scholarships and Awards

Superior academic performance is recognized within this department in three ways: election of students to membership in the electrical engineering honor society, Eta Kappa Nu; awarding of merit scholarships; and presentation of awards to outstanding seniors. The department has one endowed merit scholarship for rising sophomores, the Eugene C. and Winifred Sakshaug Scholarship, and twenty-nine endowed scholarships which are usually awarded to juniors and seniors: William E. Clark, Elizabeth P. Cockrell, Eugene C. Denton, Virginia Stewart Easter Memorial, Ferrell Family, William and Tipton Gray, John and Ann Hauser, Llewellyn Hewett, William and Carol Highfill, Jessie Reid Holshouser, Jr, Charles Kenneth Little, L. A. Mahler, Robin & Susan Manning, Amelia N. Mitta, Dewey Carr Ogburn Memorial Scholarship, Frank T.

Pankotay, Maurice W. Partin, Ronald G. Pendred, Pratt Family, William DeRosset Scott III, E. Chester Seewald, Shruthi Sorra, Sidney White Spencer, Oracle, Fredrick J. Tischler, James and Julia Tommerdahl, Herbert B. Walker, Robert S. Wolf, Simon B. Woolard, North Carolina Electric Membership Corporation, and William D. Stevenson, Jr., the latter two of which are for students studying electric power systems. The department also from time to time has scholarships provided by industrial organizations such as Duke Energy, Northrup Grumman, Cisco, Lockheed, Sensus and ABB. Academic merit is generally the primary requirement for these awards, but other characteristics, such as demonstrated leadership, may also be specified. In addition, the endowed William M. Cates Scholarship Program provides multiple scholarships for students having documented financial need and high academic performance. These are awarded each fall to juniors, with provision for continuation in the senior year.

Facilities

Many courses are accompanied by coordinated laboratory work and projects. These assignments typically focus on real-world systems and problems and involve computer simulation and analysis, design, development and testing of hardware and software associated with electrical, electronic, and electromechanical systems, circuits, and devices.

Extensive facilities are provided for experimental study of analog and digital circuits, microprocessors, computers, VLSI devices, photonics, robots and intelligent machines, power systems, and telecommunications.

The Department of Electrical and Computer Engineering maintains 14 teaching labs, all located in Engineering Building II on Centennial Campus. These labs provide students with state-of-the-art equipment designed to teach the students many practical, industry sought skills. Approximately 200 computers and a variety of other equipment—oscilloscopes, multimeters, power supplies, and function generators—are in use by the students on a daily basis.

The William F. Troxler Design Center, a 2,600 square feet senior design laboratory, provides resources for industry-sponsored, semester-long design projects, and the departmental Makerspace – which requires each student to attend safety training prior to access – provides access to machine shop facilities (hand and power tools) and round the clock access to electronic components, soldering tools, test instrumentation, and fabrication equipment (circuit board and 3D printers).

In addition, nearby Engineering Building III houses a 24/7 public lab of over 70 computers running a variety of operating systems and industry standard software. This lab is available to all engineering students and is staffed by trained student operators. A student-owned laptop platform has been developed in the College of Engineering; combined with a comprehensive wireless network and many remote computer services, this program allows education to expand outside of traditional classroom and laboratory facilities.

Nearby, the state-of-the-art James B. Hunt, Jr. Library gives students an innovative environment filled with technology-abled furniture, high-definition video walls, 3D computing and visualization space, videoconferencing and telepresence facilities, and over 100 meeting areas for group work and study.

Inspiring a spirit of discovery, the Hunt Library will help to produce the next generations of technology-savvy citizens, employees, researchers, and scholars.

Faculty

Head

D.D. Stancil, *Alcoa Distinguished Professor*

Associate Head

G.T. Byrd, *Professor*

Director of Graduate Programs

P.D. Franzon, *Distinguished Professor*

Coordinator of Advising

C.W. Townsend, *Senior Lecturer*

Distinguished University Professor

B.J. Baliga

Named Distinguished Professor

S. Bhattacharya

I. Husain

F.A. Kish

T.K. Miller

D.D. Stancil

M.B. Steer

Distinguished Professor

S.M. Bedair

P.D. Franzon

V. Misra

H.T. Nagle

J.K. Townsend

Professors

M.E. Baran

A. Bozkurt

G.T. Byrd

M.Y. Chow

H. Dai

W.R. Davis

A. Duel-Hallen

M.J. Escuti

D.Y. Eun

B.A. Floyd

E. Grant

B.L. Hughes

K.W. Kim

R.M. Kolbas

A.H. Krim

N. Lu

S.M. Lukic

L. Lunardi

J.F. Muth

O. Oralkan

M.C. Ozturk

E. Rotenberg

M.L. Sichitiu

H.J. Trussell

J. Tuck

D. Vashae

J.V. Veliadis

I. Viniotis

W. Wang

H. Zhou

Associate Professor

J. Adams

S.T. Alexander

D. Baron

M. Becchi

A. Chakraborty

A.J. Dean

I. Guvenc
M.W. Kudenov
E. Lobaton
Z. Pantic
D. Ricketts
C.M. Williams

Assistant Professor

A. Aysu
M. Daniele
Y. Jia
S.C. Lin
S. Pavlidis
W. Tang
C.W. Wong
T.M. Wu

Teaching Professor

G.A. Ybarra

Teaching Associate Professor

R.J. Evans
R. Gupta
K.J. Molnar
A.J. Rindos
M. Yadav
D.G. Yu

Teaching Assistant Professor

S.E. Hollar

Professor of the Practice

L. White

Research Professor

D.C. Hopkins
R. Khosla
D. Lubkeman
T.M. Paskova

Research Associate Professor

W. Yu

Research Assistant Professor

P.C. Colter
J.P. Dieffenderfer
B. Lee
W.S. Pitts
F.Y. Yamaner

Senior Lecturer

B. Compton
C. W. Townsend

Lecturers

P.D. Bowman
M.D. Brain
J.B. Carlson
B.D. Heard
A.D. Hoffler

Adjunct Professor

R.F. Bruce
C.I. Chang
M. Devetsikiotis
P.E. Garrou
W.C. Holton
Q.A. Huang
G.J. Iafrate

G. Lazzi
B.P. Lequesne
S.S. Schiffman
Y. Solihin
X. Wang
J.T. Whitted
Q.C. Zhang

Adjunct Associate Professor

E.B. Agamloh
M.W. Chandra
F. Frohlich
A.L. Gray
T.J. Holland
H. Kim
R.A. Roush
I.P. Wellenius
M. Yadav

Adjunct Assistant Professor

B. Calloway
G.J. Hayes
B. Kia
R. Mikail
K. Sundaresan

Adjunct Lecturer

J.A. Brown
C.M. Pignataro

Chancellor Emeritus

L.K. Monteith

Named Professor Emeritus

J.R. Hauser

Professor Emeriti

W.E. Alexander
T.H. Glisson
J.J. Grainger
M.A. Littlejohn
T.L. Mitchell
A.A. Nilsson
J.B. O'Neal
C.M. Osburn Jr.
W.E. Snyder

Associate Professor Emeritus

G.F. Bland
W.T. Easter
W.C. Peterson

Assistant Professor Emeritus

L.R. Herman

Plans

- Computer Engineering (BS) (<http://catalog.ncsu.edu/undergraduate/engineering/electrical-computer/computer-engineering-bs/>)
- Electrical Engineering (BS) (<http://catalog.ncsu.edu/undergraduate/engineering/electrical-computer/electrical-engineering-bs/>)
- Electrical Engineering (BS), Renewable Electric Energy Systems Concentration (<http://catalog.ncsu.edu/undergraduate/engineering/electrical-computer/electrical-engineering-bs-renewable-electric-energy-systems-concentration/>)