

Electrical Engineering

The Master of Science in Electrical Engineering may be earned with thesis option or non-thesis option. Either option may be used as preparation for further graduate study or employment in industrial research, development or design.

Also a strong Ph.D. program is available for those who wish to pursue a research and/or teaching career in Industry, Government or Academia.

Master's Degree Requirements

Thirty-one (31) credit hours; a thesis is optional. Students must have at least 21 hours of ECE courses that cover at least three specialty areas and have at least three credit hours of advanced-level (700-level) ECE courses. Students electing the Option B non-thesis option must meet core course requirements; have ECE courses that cover at least three specialty areas' and have at least three credit hours of 700-level ECE courses.

The Master's degree is offered online through Engineering OnLine. Applications to these MS on-line programs are through the ECE Department and all students must comply with ECE program requirements.

Doctoral Degree Requirements

Approximately 54 credit hours are required beyond the M.S. degree or 72 credit hours beyond the B.S. degree. For those with an NC State MS degree in our department, no additional courses are required. For those with an NC State MS degree in another department, 6 credit hours are required in our department. For those with a non NC State MS degree, 12 credit hours of coursework are required. For those with only a Bachelors degree 30 credit hours of coursework are required. The remaining credit hours are research.

The department wishes to evaluate a Ph.D. student's research potential as quickly as possible. Consequently, all Ph.D. students are required to pass a qualifying review before the end of their third semester of study. This review is based on the student's academic performance to date and the results of a project with one of their committee members. Results are presented to the committee in both written and oral form. Based on this review, the committee will decide if the student may continue in the Ph.D. program.

Student Financial Support

The department offers financial support to qualified students in the form of teaching assistantships, research assistantships, and fellowships. These sources of support generally include coverage of tuition and fees.

More Information

Electrical Engineering Program Website (<https://www.ece.ncsu.edu/grad/>)

Admissions Requirements

Admission to the M.S. program requires a B.S. in electrical engineering, computer engineering or computer science, and an overall undergraduate GPA of at least 3.0. For non-native English speakers, the minimum acceptable TOEFL score for admission to the M.S. program is 90 (minimum 18 in each area, with minimum of 19 on Speaking). The GRE is required for all programs of study but may be waived upon request for

graduates from US Universities (see below). Admission is further limited by available room in the elected program of study. Meeting the above minimum requirements alone does not guarantee admission.

Applicants to the Master's and PhD programs who do not have a Bachelor's degree in Electrical Engineering or Computer Engineering, but have a closely related degree from an accredited college or university, must have taken the following pre-requisite courses: Courses equivalent to ECE 109, ECE 209, ECE 212, ECE 220, ECE 301, ECE 302 and ECE 303.

All international applicants from non English speaking countries must submit TOEFL scores. The TOEFL must have been taken within two years of the date of anticipated admission. On the TOEFL iBT, students must have a minimum of 18 on each section of the test with a minimum total of 90. Scores on previous versions of the TOEFL are considered with the same qualitative standard. On the IELTS, we require a minimum score of 6.5 in each section. This requirement also applies to US citizens whose principal language of instruction has not been English (for example, most applicants from Puerto Rico and the Virgin Islands).

TOEFL - institution code 5496; department code 66
GRE - institution code 5496; department code 1203

Admission to the Ph.D. program requires a B.S. or M.S. in electrical engineering, computer engineering or computer science with an expectation of an overall GPA of at least 3.25. The minimum acceptable TOEFL score for admission to the Ph.D. program is 90 (minimum 18 in each area, with minimum of 19 on Speaking). The GRE is required for all programs of study but might be waived for NC State graduates or graduates from other US ABET accredited schools with good GPAs. Admission is further limited by available room in the elected program of study, and meeting the minimum requirements as given above does not guarantee admission.

Applicant Information

Electrical Engineering (MS)

- **Delivery Method:** On-Campus, Online, Hybrid
- **Entrance Exam:** None
- **Interview Required:** None

Electrical Engineering (PhD)

- **Delivery Method:** On-Campus
- **Entrance Exam:** None
- **Interview Required:** None

Application Deadlines

- **Fall:** January 9 (US and Intl)
- **Spring:** July 1 (US and Intl)

Degrees

- 5G Technology (Certificate) (<http://catalog.ncsu.edu/graduate/engineering/electrical-engineering/5g-technologies-certificate/>)
- ASIC Design & Verification (Certificate) (<http://catalog.ncsu.edu/graduate/engineering/electrical-engineering/asic-design-and-verification-certificate/>)
- Electrical Engineering (Certificate) (<http://catalog.ncsu.edu/graduate/engineering/electrical-engineering/electrical-engineering-certificate/>)

- Electrical Engineering (Minor) (<http://catalog.ncsu.edu/graduate/engineering/electrical-engineering/electrical-engineering-minor/>)
- Electrical Engineering (MS) (<http://catalog.ncsu.edu/graduate/engineering/electrical-engineering/electrical-engineering-ms/>)
- Electrical Engineering (MS): Internship Concentration (<http://catalog.ncsu.edu/graduate/engineering/electrical-engineering/electrical-engineering-ms-internship-concentration/>)
- Electrical Engineering (PhD) (<http://catalog.ncsu.edu/graduate/engineering/electrical-engineering/electrical-engineering-phd/>)
- Nano-Systems Engineering (Certificate) (<http://catalog.ncsu.edu/graduate/engineering/electrical-engineering/nano-systems-engineering-certificate/>)
- Renewable Electric Energy Systems (Certificate) (<http://catalog.ncsu.edu/graduate/engineering/electrical-engineering/renewable-electric-energy-systems-certificate/>)

Faculty

Full Professors

David E Aspnes

B. Jayant Baliga

Mesut E. Baran

Salah M. A. Bedair

Subhashish Bhattacharya

Donald L. Bitzer

Alper Yusuf Bozkurt

Gregory T Byrd

Rada Yuryevna Chirkova

Mo-Yuen Chow

Huaiyu Dai

William Rhett Davis

Alexandra Duel-Hallen

Michael James Escuti

Do Young Eun

Brian Allan Floyd

Paul D. Franzon

Edward F. Gehringer

John J. Grainger

Edward Grant

Robert Wendell Heath

Brian L Hughes

Iqbal Husain

Ki Wook Kim

Frederick Anthony Kish Jr.

Robert Michael Kolbas

Hamid Krim

Ning Lu

Srdjan Miodrag Lukic

Leda Lunardi

Thomas Kenan Miller III

Veena Misra

Rainer Frank Mueller

John F. Muth

H. Troy Nagle Jr.

Jagdish Narayan

Arne Nilsson

Omer Oralkan

Mehmet Cevdet Ozturk

Harilaos George Perros

Douglas Stephen Reeves

Eric Rotenberg

Georgios Rouskas

Xipeng Shen

Mihail Lorin Sichitiu

Zlatko Sitar

Matthias F. M. Stallmann

Daniel D. Stancil

Michael B. Steer

J. K. Townsend

James Tuck

Daryoosh Vashaee

John Victor Veliadis

Ioannis Viniotis

Mladen Alan Vouk

Wenye Wang

Jonathan Wierer

Fen Wu

Huiyang Zhou

Associate Professors

Jacob James Adams
 Dror Zeev Baron
 Michela Becchi
 Aranya Chakraborty
 Alexander G. Dean
 Ismail Guvenc
 Khaled Abdel Hamid Harfoush
 Michael W. Kudenov
 David S. Lalush
 Edgar Lobaton
 Zeljko Pantic
 Nuria Gonzalez Prelcic
 David Ricketts
 Nitin Sharma
 Cranos M. Williams

Assistant Professors

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 Amay Jairaj Bandodkar
 Michael Daniele
 Demitry Farfurnik
 Caterina M. Gallippi
 Yaoyao Jia
 Shih-Chun Lin
 Yuan Liu
 Spyridon Pavlidis
 Bradley Galloway Reaves
 Muhammad Shahzad
 Wenyan Tang
 Chau-Wai Wong
 Tianfu Wu
 Kaixiong Zhou

Practice/Research/Teaching Professors

Jordan Besnoff
 Gregory Edward Bottomley
 Laura J Bottomley
 James Paul Dieffenderfer
 Robert Joseph Evans
 John Gajda
 Rachana Ashok Gupta
 Seth E. Hollar
 Douglas C. Hopkins
 Andrew J. Rindos III
 Steven D. Jackson
 Robert Dwight Oden Jr.
 Bongmook Lee
 David Lee Lubkeman
 Hatice Orun Ozturk
 Tania Milkova Paskova
 James Lee Reynolds
 Elena Nicolescu Veety
 Leonard Wilson White
 Donna G Yu
 Wensong Yu

Professors Emeritus

George F. Bland
 John R. Hauser
 Wilbur Carroll Peterson
 Winsor E. Alexander PhD
 Tildon H Glisson Jr
 Michael A. Littlejohn
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 Sarah Ann Rajala
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Adjunct Faculty

Mihail Devetsikiotis

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Teaching Associate Professors

Mihail Cutitaru

Frederick J. Livingston