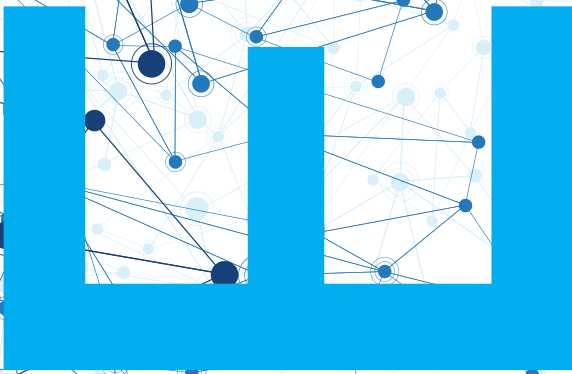


MASTER OF ELECTRICAL AND COMPUTER ENGINEERING

2016-2017 Handbook



RICE
Electrical and
Computer Engineering

This handbook provides general guidelines for ECE M.E.E. students. All degree plans and graduate student matters must conform to the Rice University General Announcements and be approved by the ECE Professional Master's Committee. In addition, it is the student's responsibility to become familiar with the contents of this handbook and to comply with all regulations, policies, procedures and deadlines, including the Rice University Honor Code.

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I. ABOUT THE MASTER OF ELECTRICAL AND COMPUTER ENGINEERING (M.E.E.)

Welcome to the Rice University Department of Electrical and Computer Engineering (ECE)! Your admission to Rice is the latest milestone in an exemplary academic career. At Rice, researchers and faculty members at the forefront of their fields will guide you. You will be taught to think creatively, be a part of a network of knowledge, and redefine your own limits.

The M.E.E. at Rice University is a course-based program; no thesis is required. It is intended to enhance the education of those who have a B.A. or a B.S. in an engineering or science discipline. The Rice M.E.E. program will prepare you to succeed and advance rapidly in today's competitive technical marketplace, and can be completed on a full or part-time basis.

Honor Code

All incoming Rice students agree to abide by the Rice University honor system. The honor system, one of the oldest and proudest traditions at Rice, is administered by the Honor Council, whose student members are elected each year by the student body. Adopted by a student vote in 1916, the honor system has remained essentially the same since that time but for changes in the procedures and membership of the Honor Council.

Students take all written examinations and complete any specifically designated assignments under the honor system. By committing themselves to the honor system, all students accept responsibility for assuring the integrity of the examinations and assignments conducted under it. More information can be found at ga.rice.edu.

II. ADMINISTRATION

Your Department Partners

ECE graduate students are welcome to ask for assistance when it is needed. ECE administrative staff, Engineering Professional Masters Program (EPMP) staff and the Professional Masters Committee are all available to answer questions. A directory can be found in Section VII.

Mail

ECE graduate student mailboxes can be found in Abercrombie Room A239. FedEx and UPS Packages are received in Abercrombie A204.

ESTHER

ESTHER is the web application for students, faculty and staff. Students will use this application to register for classes and retrieve certain data such as grades and account information. Using ESTHER, students can: update contact information; indicate confidentiality preference; register, add and drop courses; access final grades; view holds on accounts, etc. Visit registrar.rice.edu/students/esther_FAQs/ for information about how to use ESTHER.

Student Health Services

Student Health Insurance: Rice University requires all degree-seeking students to have health insurance. Students electing to enroll in the Rice Student Health Plan may opt to be billed annually or semi-annually. Contact the Cashier's Office for payment options (713-348-4946). You must complete an insurance waiver form to waive the Rice Insurance Health Plan.

Health Data Form (HDF): All new graduate students are required to submit a properly completed HDF to Student Health. All students under the age of 22 years, regardless of classification, must provide documentation of vaccination against meningococcal disease. See health.rice.edu for more information.

International Student Health Information: All Rice-sponsored F-1 and J-1 international students must enroll in either 1) Aetna (Rice's Student Health Insurance Plan) or 2) SAS (Rice's Approved Alternate Health Insurance Plan for Internationals). Visit oiss.rice.edu/studenthealth/ for more information.

Technology Support

From creating websites, paper publication citations, to research collaboration, the department has a plethora of technology resources available, as well as policies users must adhere to. See ece.rice.edu/studenttech for more information.

International Student Information

International Student Newsletters can be found at oiss.rice.edu/news/ and more information is in Section VI of this handbook.

Graduate Studies Form Library

The Office of Graduate and Postdoctoral Studies (GPS) keeps a very useful library of commonly needed forms for everything from leaves of absence to candidacy petition to thesis submission. Visit graduate.rice.edu/forms for more information.

Specific forms include:

Enrollment

~Leave of Absence

~Short Term Medical and Parental Leave

~Withdrawal

Degree Conferral

~Registrar's Application for Degree

~Petition for a Non-Thesis Master's

~Graduation Checklists

Commencement

Employment

Students must complete an I-9 form before starting work at Rice.

Students working for more than 20 hours per week are not normally eligible for full-time status, and special permission is needed. See the ECE M.E.E. Program Administrator for details.

International students must obtain the appropriate work authorization from OISS before starting to work. If you work even one day before or after your authorization, you must leave the U.S. or face deportation. See oiss.rice.edu/studentwork/ for additional information.

Graduate Student Association (GSA)

The GSA is comprised of degree-seeking graduate students at Rice University. The GSA mission is to enrich the graduate student experience and to represent, support, and promote graduate student interests and values. Visit gsa.rice.edu to learn more.

ECE GSA

The ECE GSA exists to augment the organizational, educational, professional, and social aspects of the graduate student experience. It serves as a connection to Rice's overall GSA to voice larger concerns and gain supplementary support. Email joseph.young@rice.edu for details.

Women ExCEL

Women Excel is a network of women in the ECE Department at Rice

University that aims to provide community, mentoring, and cultural enrichment for students. They furnish a medium for networking and discussion of women-specific issues. This network also serves to promote career opportunities and cultivate female leadership. In addition, they hope to improve the visibility of women in engineering and to advocate the importance of diversity in ECE. Learn more at excel.rice.edu.

III. GENERAL ANNOUNCEMENTS

Rice University publishes its “General Announcements” (GA) each year. These are the official rules of the university and include the honor code that every student agrees to abide by, as well as forms and research information. They can be found at ga.rice.edu. Two sections of the GA are of particular importance to graduate students in ECE. The first is the section titled “Graduate Degree Programs.” This outlines the basic rules and expectations for all graduate students at Rice University. The second, titled “Programs of Study,” is the department-specific information. This information covers the degree requirements for the M.E.E. and more information is found in Section V of this handbook. The ECE M.E.E. requirements from this section are reproduced below.

Graduate Degree Program

The Master of Electrical Engineering (MEE) degree is a course-based program designed to increase a student’s mastery of advanced subjects; no thesis is required. The MEE prepares a student to succeed and advance rapidly in today’s competitive technical marketplace. A coordinated MBA/MEE degree is offered in conjunction with the Jesse H. Jones Graduate School of Business. Information on admission to graduate programs is available from the ECE Graduate Committee and on the ECE website. Students must achieve at least a B (3.0) average in the courses counted toward a graduate degree.

Degree Requirements for MEE in Electrical Engineering

For general university requirements, see Graduate Degrees. Students pursuing the MEE must complete:

- 1. A minimum of 10 courses (30 credit hours) at the 500-level or higher to satisfy degree requirements.*
- 2. A minimum of 6 courses (18 credit hours) from an area of specialization.*
- 3. A minimum of 2 courses (6 credit hours) from a minor area.*
- 4. All courses applied toward the degree with a grade of ‘C’ or better.*
- 5. No more than 1 course (3 credit hours) from transfer work.*
- 6. ELEC 698 ECE Professional Masters Seminar Series each semester.*

Students are admitted to the MEE program in both fall and spring semesters. MEE students are to consult with an academic advisor on the MEE Committee each semester in order to identify and clearly document their individual curricular requirements or degree plan to be followed. An MEE degree planning form and current requirements may be found on the ECE website External Link.

Areas of Specialization

Students must complete a minimum of 6 courses (18 credit hours) from one area of specialization and a minimum of 2 courses (6 credit hours) from another area of specialization as a minor area. The following courses represent typical courses under the current five areas of specialization that students may study as part of the MEE degree program. Students may take and are encouraged to take, with the approval of an academic advisor, other courses that are not listed below that are consistent with their career objectives. ELEC 590 may not count as major area courses.

Computer Engineering

ELEC 513/COMP 513 Complexity in Modern Systems [3 credit hours]

ELEC 516 Analog Integrated Circuits [3 credit hours]

ELEC 522 Advanced VLSI Design [3 credit hours]

ELEC 524/COMP 524 Mobile and Wireless Networking [3 credit hours]

ELEC 526/COMP 526 High Performance Computer Architecture [3 credit hours]

ELEC 527 VLSI Systems Design [3 credit hours]

ELEC 553 Mobile and Embedded Systems Design and Application [4 credit hours]

ELEC 554/COMP 554 Computer Systems Architecture [4 credit hours]

Data Science

ELEC 502/COMP 502/STAT 502 Neural Machine Learning I [3 credit hours]

or COMP 540 Statistical Machine Learning [4 credit hours]

ELEC 531 Statistical Signal Processing [3 credit hours]

ELEC 533/CAAM 583/STAT 583 Introduction to Random Processes and Applications [3 credit hours]

ELEC 535 Information Theory [3 credit hours]

ELEC 557/COMP 557 Artificial Intelligence

ELEC 558 Digital Signal Processing [3 credit hours]

ELEC 575 Learning from Sensor Data [3 credit hours]

ELEC 631 Advanced Topics in Signal Processing [3 credit hours]

STAT 640 Data Mining and Statistical Learning [3 credit hours]

STAT 648 Graphical Models and Networks [3 credit hours]

Neuroengineering

ELEC 502/COMP 502/STAT 502 Neural Machine Learning I [3 credit hours]

ELEC 533/CAAM 583/STAT 583 Introduction to Random Processes and Applications [3 credit hours]

ELEC 548/BIOE 548 Machine Learning and Signal Processing for Neuroengineering

[3 credit hours]

ELEC 580/BIOE 590 Introduction to Neuroengineering [3 credit hours]

ELEC 585/BIOE 591 Fundamentals of Medical Imaging I [3 credit hours]

ELEC 588 Theoret. Neuroscience: From Cells to Learning Systems [3 credit hours]

ELEC 589 Theoret. Neuroscience: Networks and Learning [3 credit hours]

ELEC 677 A Practical Intro. to Deep Machine Learning [3 credit hours]

ELEC 680/BIOE 680 Nano-Neurotechnology [3 credit hours]

STAT 640 Data Mining and Statistical Learning [3 credit hours]

Photonics, Electronics, and Nano-Devices

ELEC 562 Optoelectronic Devices [3 credit hours]

ELEC 568 Laser Spectroscopy [3 credit hours]

ELEC 569/PHYS 569 Ultrafast Optical Phenomena [3 credit hours]

ELEC 571 Imaging at the Nanoscale [3 credit hours]

ELEC 603 Topics in Nanophotonics [2 credit hours]

ELEC 605/PHYS 605 Electrodynamics & Nanophotonics [3 credit hours]

ELEC 661/CHEM 661/MSNE 661 Nanophotonics and Sustainability [3 credit hours]

Systems

ELEC 531 Statistical Signal Processing [3 credit hours]

ELEC 533/CAAM 583/STAT 583 Introduction to Random Processes and Applications [3 credit hours]

ELEC 535 Information Theory [3 credit hours]

ELEC 542 Vector Spaces and DSP [3 credit hours]

ELEC 547 Computer Vision [3 credit hours]

ELEC 549 Computational Photography [3 credit hours]

ELEC 551 Digital Communication [3 credit hours]

ELEC 558 Digital Signal Processing [3 credit hours]

IV. M.E.E. TIMELINE

Semester 1

Your first semester at Rice will begin with Orientation Week (or O-Week) where you will learn about Rice and ECE. The major events of this week will include presentations by many of the faculty with whom you will become familiar. You will meet your advisor, discuss your career objectives and select your courses for your first semester. In consultation with your advisor, you will determine a degree plan and timeline for completion. This must be submitted to the Professional Master's Program Administrator before the start of the second week of classes in the first semester. Course plans may be revised, re-approved and resubmitted at any time. MEE students are to consult with an academic advisor on the MEE Committee each semester in order to identify and clearly document their individual curricular requirements

or degree plan to be followed. An MEE degree planning form and current requirements may be found on the ECE website External Link. See Section V for more information.

Semesters 2 and 3

In the final semester of M.E.E. studies, an “Application for Degree” is submitted to the registrar, and a “Petition for Certification of Non-Thesis Master’s Degree” form is completed, approved by the Department Chair and M.E.E. Administrator, who will submit it to GPS along with the student’s current transcript. Visit graduate.rice.edu/forms for the petition. The M.E.E. must be completed within 5 years.

V. ACADEMICS

M.E.E. Program Information

The M.E.E. is a terminal, non-thesis degree intended primarily for students who wish to strengthen their academic background through three or four semesters of additional coursework. The M.E.E. program is a bridge to industry, designed to provide advanced learning and training in the applied aspects of ECE technology beyond the typical undergraduate electrical and computer engineering degree program.

Upon matriculation, the M.E.E. student selects a faculty advisor in his/her primary area of interest (See “ECE Areas of Study” in this section). The advisor will counsel the student in developing a degree plan consistent with the student’s career objectives.

Degree Plan

Coursework is based on the student’s degree plan. The M.E.E. degree plan must include:

- At least 30 credit hours comprised of 10 courses of at least 3 hours each: Major area (18 hours); Minor Area (6 hours); Electives (6 hours)
- All of the 10 required courses must be 500 level or higher
- No ELEC 590 may count for major or minor area
- ELEC 698 for each semester

Electives may be fulfilled through research (ELEC 590), other ECE electives, or through courses available through affiliated departments in areas such as Communication Training or Engineering Leadership Management, including:

- ENGI 505 (3) Engineering Project Management and Economics

- ENGI 510 (3) Technical and Managerial Communications
- ENGI 528 (3) Engineering Economics
- ENGI 529 (3) Ethics and Engineering Leadership
- ENGI 610 (3) Management for Science and Engineering
- ENGI 615 (3) Leadership Coaching for Engineers
- NSCI 511 (3) Science Policy and Ethics

Students may be eligible to transfer up to three hours of course credit from another university. Rice undergraduates entering the M.E.E. program may transfer 500-level course credit not applied to their undergraduate degrees, with the approval of the Professional Masters Committee and Office of the Registrar. See the ECE M.E.E. Administrator for details.

The M.E.E. may be pursued on a part-time or full-time basis during the fall and spring semesters. A 3.0 GPA must be maintained in major and minor coursework. Only courses in which a grade of C or above is achieved will be counted towards the M.E.E. degree. Students whose GPA falls below a 2.33 will be placed on academic probation by the university. Students whose GPA falls below a 3.0 will be placed on academic probation by the ECE Department. Students must maintain continuous program enrollment and involvement unless granted an official leave of absence. For more information see the GA: ga.rice.edu.

ELEC 698 Seminar

The ELEC 698 Seminar course broadens M.E.E. students' exposure to activities and opportunities in all fields of electrical engineering, both in industry and research settings. All M.E.E. students are required to take and successfully complete ELEC 698 for each semester in residence. The course requires registered attendance at 3 ECE sponsored or co-sponsored seminars per semester, and to attend the featured departmental events described in the following paragraph. Details of seminars are emailed and posted on the ECE website at ece.rice.edu. Some seminars hosted by the Engineering Professional Master's Program (EPMP) can count for 2 of the 3 seminars. Please check with M.E.E. Administrator for a list of approved seminars. Departmental attendance sheets will be provided at all seminars for the first 10 minutes. Students are responsible for signing-in at the beginning of each seminar, and if there are any difficulties with sign-in, students should contact the M.E.E. Administrator within 24 hours of the seminar to receive credit.

In addition to attendance at 3 seminars, ELEC 698 requires that each student attend and sign-in for the following events: ECE Corporate Affiliates Day, the Brice Distinguished Lecture, and the Chapman Distinguished Lecture, in the years they are held. These featured departmental events provide each M.E.E. student excellent opportunities to expand his/her professional network by interacting with alumni and industrial affiliates of the ECE department. The expectation for Corporate Affiliates Day is that students will sign in for all talks by external speakers. Exceptions must be approved and signed off by the M.E.E. Administrator. Reasonable exceptions include work obligations, travel for job interviews, etc.

Academic Advisors

Each incoming M.E.E. student selects an academic advisor, usually a member of the Professional Master's Committee, to help with course selection and other initial academic concerns. Final course selection does not need to be completed until after the start of classes, but must be completed before the Add deadline.

ECE Areas of Study

The ECE Department has five interdisciplinary areas of study that the M.E.E. student can choose from:

Computer Engineering:

The Computer Engineering group at Rice University has a long track record of innovative research in physical modeling and characterization, VLSI signal processing, computer architecture, computer-aided design, and storage and network systems. Spanning the spectrum of computing from low-power personal devices to large-scale parallel information systems, networked computing solves a myriad of technology challenges. Future computing technologies include the on-chip integration of systems and networks.

Data Science:

Data scientists seek to collect and understand the structure in data, looking for compelling patterns, telling the story that is buried in the data. They get at the questions at the heart of complex problems and devise creative approaches to making progress in a wide variety of application domains. This is an emerging discipline that integrates: tools and techniques involving data acquisition; data analytics and data storage; and computing infrastructure in order to enable

extraction of meaningful information from massive data sources.

Neuroengineering:

The brain is essentially a circuit. Neuroengineering is a discipline that exploits engineering techniques to understand, repair and manipulate human neural systems and networks. At Rice, we develop technologies to understand, repair, replace, enhance, or treat the diseases of the nervous system. We also design, construct and study devices that interface with living neural tissue. Rice is uniquely positioned as a leader in the field thanks to the broad, interdisciplinary research performed in conjunction with the world's largest medical center (Texas Medical Center), steps away from the Rice University campus.

Photonics, Electronics and Nano-devices (PEN):

The focus of this program is the improved understanding of electronic, photonic, and plasmonic materials, optical physics, the interaction of light and matter, along with the application of that knowledge to develop innovative devices and technologies. The specific areas of interest cover a broad range, including: nanophotonics and plasmonics; studies of nanomaterials and magnetically active materials; imaging and image processing, including multispectral imaging and terahertz imaging; ultrafast spectroscopy and dynamics; laser applications in remote and point sensing; single-molecule transistors; and applications of Nanoshells in biomedicine.

Systems:

Rice is a leader in Digital Signal Processing. Signal Processing is the analysis and transformation of signals in order to understand, simplify, or recast their structure. The understanding of how to analyze and restructure signals is applied to a wide range of areas, including: image and video analysis; computational neuroscience; statistical signal processing, pattern recognition, and learning theory; communication systems; and high-performance, scalable wireless internet.

ESTHER

Students must register for courses using ESTHER. ESTHER is the web application for students, faculty and staff. Students will use this application to register for classes and retrieve certain data such as grades and account information. For information about how to use ESTHER see Section II or: registrar.rice.edu/students/esther_FAQs/

Guidelines for Independent Study

ELEC 590 - Graduate Non-Thesis Research Projects is intended for M.E.E. students who wish to undertake specific theoretical or experimental research projects under the direction of a faculty member. The parameters of the research project and grade determination should be discussed with the faculty member prior to enrollment. A brief abstract describing the proposed research should be approved by the faculty advisor and submitted to the faculty advisor and MEE Program Administrator before registering for the course. The form may be found at ece.rice.edu/eceforms/asp. A maximum of 3 credits of ELEC 590 can be applied to the M.E.E. degree as an elective course.

ELEC 591 - Vertically Integrated Projects at Rice University (VIP)

The (VIP) Program at Rice unites graduate and undergraduate education and faculty research in a team-based context. Students interested in VIP projects should meet and consult with the faculty lead of that project. Visit vip.rice.edu for more information.

Grades and Academic Status

Grades—According to university guidelines, students must achieve at least a B- (2.67) grade point average (GPA) both in courses counted toward the graduate degree as well as the cumulative GPA. A 3.0 GPA must be maintained in major and minor coursework. The ECE Department adds the requirement that only courses in which a grade of C or above was earned will count towards the graduate degree. Students whose cumulative GPA falls below a 2.67, or whose semester GPA falls below a 2.33, will be placed on academic probation by the university. **Students whose GPA falls below a 3.0 will be placed on academic probation by the ECE Department.** To compute GPA, the credits attempted in semester hours for each course and the points for the grade earned (from A+ = 4.33 to F = 0.00) are multiplied, then the products (one for each course) are added together, and the sum is divided by the total credits attempted.

Pass/Fail—For the M.E.E. degree, elective courses taken outside the ECE department that do not count toward the student's major or minor coursework may be taken Pass/Fail. Students must file a course as Pass/Fail no later than the end of the 10th week of classes; however, they may later convert a Pass/Fail to a graded course by filing the appropriate paperwork with the Office of the Registrar by the end of the second week of the following semester. Students should be aware

that while a grade of “P” does not affect their GPA, a grade of “F” does.

Satisfactory/Unsatisfactory—In the ECE Department, the faculty may assign a grade of “S” or “U”. ELEC 698, ECE Professional Masters Seminar Series, is such a course. Students should be aware that while a grade of S or U does not affect their GPA, no credit is awarded if a grade of U is received. Courses with a grade of S will count towards total credits earned.

Incomplete (INC)—For an INC received in the fall semester, students must complete the work by the end of the first week of the spring semester or an earlier date as defined by the instructor, and instructors must submit a revised grade by the end of the second week. For an INC received in the spring or summer semester, students must complete the work before the start of the fall semester or an earlier date as defined by the instructor, and instructors must submit a revised grade by the end of the first week. If a grade is not submitted by the appropriate deadline, the INC will be automatically converted to a failing grade.

Audit (AUD)—The grade designation of “AUD” is used for people auditing a course, and specifically when the auditing student has met the audit requirements of the course. A grade designation of “NC” (no credit) is given to students who do not meet the audit requirements. Requests to audit a class or to change from audit to credit or vice versa must be done by the end of the second week of the semester.

Changing Departments

Rice recognizes interests may change after a student enters a graduate program. If a student feels his/her interests and talents could be better served in a different department, a change can be accommodated. In order to transfer from the M.E.E. program to another program at Rice University, you must meet with the M.E.E. Program Administrator for procedures.

VI. IMPORTANT LINKS AND DATES

Links

Academic Calendar:

registrar.rice.edu

Award Opportunities:

engineering.rice.edu/gradopps

Counseling Center:

rcc.rice.edu

Course Catalog:

courses.rice.edu

Forms: registrar.rice.edu/online_forms

graduate.rice.edu/forms

General Announcements:

ga.rice.edu

Good Practices in Graduate Education:

graduate.rice.edu/goodpractices

Graduate and Postdoctoral Studies (GPS) Office:

graduate.rice.edu

Guidelines for Dismissal/Petition:

bit.ly/RUdismiss

Honor System and Code of Student Conduct:

ga.rice.edu

International Student Information:

oiss.rice.edu

International Student Forms:

oiss.rice.edu/forms/

Library:

library.rice.edu

Map of Campus:

rice.edu/maps

Parking:

parking.rice.edu

Recreation Center:

recreation.rice.edu

Registration:

graduate.rice.edu/registration

Research and Scholarly Activities:

ga.rice.edu/GR_students/

Technology Support:

ece.rice.edu/studenttech

Wellness:

wellness.rice.edu

Dates

Refer to the Rice Registrar's Office at registrar.rice.edu for all academic calendar information.

Help Available

When you or a friend is in need of help, there are many resources available to you on the Rice campus:

Professional Masters Committee Chair & Administrator

Dr. Michael Orchard, Professional Masters Committee Chair, and Norma Santamaría, M.E.E. Program Administrator, are available to help students with academic and personal needs. Their contact information can be found in Section VII.

Student Health Services: health.rice.edu

The Rice Student Health Services provides preventive and outpatient clinical care for the students of Rice University. Student Health is located on-campus and is dedicated to meeting the unique needs of undergraduate and graduate students.

Student Wellbeing Office: wellbeing.rice.edu

The Student Wellbeing Office supports student development and success and is also a good first point of contact for students who want to talk to someone about solutions to their wellbeing concerns. The office can provide advice and practical support to help you resolve personal challenges, such as conflicts with friends, difficulty making decisions, struggling with your identity, and academic or other concerns.

Rice Counseling Center: wellbeing.rice.edu/rcc/

The Rice Counseling Center is designed to complement the university's academic mission by assisting students' personal and educational development through a variety of psychological and psychiatric services. The goal of these efforts is to help students develop effective problem-solving and decision-making capabilities in order to make satisfying life choices, and maximize their capacity for continued emotional growth.

Language and Communications: cwovc.rice.edu

The Center for Written, Oral and Visual Communication is located in the Fondren Library. They offer coaching for oral presentation

delivery, videotaping, assistance with preparing professional talks and materials, communication workshops and feedback on presentation materials. They also offer UNIV 601/602, which are courses designed to improve professional communication and writing.

Graduate and Postdoctoral Studies (GPS) office: gps.rice.edu

For questions concerning the graduate program as a whole, contact Sherry Vanderslice, Graduate Student Affairs Project Manager, at sdvl@rice.edu or 713-348-2154.

Title IX Information safe.rice.edu

Rice encourages any student who has experienced an incident of sexual, relationship, or other interpersonal violence, harassment or gender discrimination to seek support. There are many options available both on and off campus for all graduate students, regardless of whether the perpetrator was a fellow student, a staff or faculty member, or someone not affiliated with the university.

Students should be aware when seeking support on campus that most employees are required by Title IX to disclose all incidents of non-consensual interpersonal behaviors to Title IX professionals on campus who can act to support that student and meet their needs.

The therapists at the Rice Counseling Center and the doctors at Student Health Services are “confidential,” meaning that Rice will not be informed about the incident if a student discloses to one of these Rice staff members. Rice prioritizes student privacy and safety, and only shares disclosed information on a need-to-know basis.

If you are in need of assistance or simply would like to talk to someone, please call Rice Wellbeing and Counseling Center, which includes Title IX Support at extension 3311 on the Rice campus or (713) 348-3311. Policies, including Sexual Misconduct Policy and Student Code of Conduct, and more information regarding Title IX can be found at safe.rice.edu

IEEE Student Chapter ieee.rice.edu

The undergraduate chapter of Rice Institute of Electrical and Electronics Engineers (IEEE) offers lunch talks from visitors in industry. All are welcome to attend.

VII. DEPARTMENT DIRECTORY

STAFF DIRECTORY



Norma Santamaría
M.E.E. Program Administrator
Undergraduate Program Administrator
713-348-6722
ns37@rice.edu

Abercrombie B203



Trey Menchaca
Staff Assistant
713-348-4020
am22@rice.edu

Abercrombie A204



Carrie Toffoletto
Executive Administrator
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ctoffo@rice.edu

Abercrombie A204



Jennifer Hunter
Visibility Specialist
713-348-4212
jkh6@rice.edu

Abercrombie A203

Additional information such as a full listing of all staff and their responsibilities can be found at ece.rice.edu/people/staff.aspx.

FACULTY DIRECTORY



Behnaam Aazhang*, J.S. Abercrombie Professor, Electrical and Computer Engineering

aaz@rice.edu ece.rice.edu/aaz.aspx

Research areas: Data Science; Neuroengineering; Systems

Aazhang researches neural circuits in the hopes of mitigating disorders such as epilepsy, Parkinson's disease, depression and obesity. Other areas of study include communication and information theory.



Athanasios C. Antoulas, Professor, Electrical and Computer Engineering

aca@rice.edu ece.rice.edu/antoulas.aspx

Research areas: Computer Engineering; Systems

Dr. Antoulas is interested in large-scale dynamical systems, approximation, computation, and linear algebra.



Aydin Babakhani, Assistant Professor, Electrical and Computer Engineering

ab28@rice.edu ece.rice.edu/babakhani.aspx

Research areas: Computer Engineering, Neuroengineering, Systems

Dr. Babakhani's research focuses on integrated sensors and systems and his work impacts high-speed wireless, radar, medical imaging, security, biosensing, and oil/gas monitoring.



Richard G. Baraniuk, Victor E. Cameron Professor of Engineering

richb@rice.edu ece.rice.edu/baraniuk.aspx

Research areas: Data Science, Neuroengineering, Systems

Dr. Baraniuk is the founder of OpenStax, providing free college textbooks! He is interested in multiscale, computational signal and image processing and open access, collaborative scholarly publication.



Palash Bharadwaj, Assistant Professor

palash.bharadwaj@rice.edu ece.rice.edu/bharadwaj.aspx

Research areas: Photonics, Electronics & Nanodevices

Dr. Bharadwaj is interested in light-matter interaction at the nanoscale, optical antennas, nanoscale energy transduction, plasmonics, spectroscopy and microscopy, and optoelectronics.



Joseph R. Cavallaro*, Professor, Electrical and Computer Engineering & Computer Science

cavallar@rice.edu ece.rice.edu/cavallaro.aspx

Research areas: Computer Engineering, Systems

Dr. Cavallaro's research impacts the development of the next generation of cellular mobile phones. He studies Wireless Communication Systems Architectures, VLSI Systems Design and Prototyping.



*Denotes VIP Faculty

ECE is Lensless Cameras

ECE Researchers have developed a flexible, lensless camera, smaller than a dime. It's called "FlatCam".



John W. Clark, Jr., Professor, Electrical and Computer Engineering & Bioengineering

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ece.rice.edu/clark.aspx

Research areas: Neuroengineering, Systems

Dr. Clark's research impacts the medical field through his work in electrophysiology (neural, cardiac). He's interested in mathematical modeling of biological systems; signal processing methods applied to biological systems; nonlinear system dynamics; electromagnetic field theory.



Gene Frantz, Professor in the Practice, Electrical & Computer Engineering (Signal Processing)

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Research areas: Systems

Gene Frantz is interested in entrepreneurship and intrepneurship. He is an expert in Digital Signal Processing.



Naomi J. Halas, Stanley C. Moore Professor, Electrical & Computer Engineering

Professor of Biomedical Engineering, Chemistry, Physics and Astronomy

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Research areas: Photonics, Electronics & Nanodevices

Dr. Halas' group harvests solar radiation for energy applications and researches nanoparticle use in cancer therapy. She designs and fabricates optically responsive nano structures, nanophotonics, and plasmonics.



Kevin Kelly, Associate Professor, Electrical and Computer Engineering

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Research areas: Photonics, Electronics & Nanodevices

Dr. Kelly is interested in imaging and spectroscopy at the nanoscale, and understanding the role of mathematics in image acquisition and interpretation. Other interests include Scanning Probe Microscopy, Electronic Materials, Compressive Infared and Hyperspectral Imaging.



Caleb Kemere, Assistant Professor, Electrical and Computer Engineering

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Research areas: Neuroengineering

Dr. Kemere is researching memory manipulation for the greater good (treating PTSD) and Deep Brain Stimulation for treatment of diseases like Parkinson's disease. He is interested in building interfaces with memory and cognitive processes; model-based signal processing; low-power embedded systems.



Edward W. Knightly, Chair, Electrical and Computer Engineering, Professor, Electrical and Computer Engineering & Computer Science

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Research areas: Systems

Dr. Knightly is the founder of Technology for All, bringing tech to underserved areas. He is interested in wireless networks, urban-scale testbeds, clean-slate design, diverse spectrum access, multi- antenna systems, hardware platforms, high-performance protocol design, security, and performance evaluation.



Junichiro Kono, Professor, Electrical and Computer Engineering, Physics & Astronomy

kono@rice.edu ece.rice.edu/kono.aspx

Research areas: Photonics, Electronics & Nanodevices

Dr. Kono's research results in increased understanding of quantum states. He's interested in condensed matter physics, optics and photonics, nanoscience and nanotechnology.



Gururaj Naik, Assistant Professor, Electrical & Computer Engineering

guru@rice.edu ece.rice.edu/naik.aspx

Research areas: Photonics, Electronics & Nanodevices

Dr. Naik is interested in Light and heat management for clean energy: thermovoltaics and photovoltaics; Materials for plasmonics and metamaterials; Large-area nanofabrication and integration.



Michael T. Orchard, Professor, Electrical & Computer Engineering

orchard@rice.edu ece.rice.edu/orchard.aspx

Research areas: Data Science, Systems

Dr. Orchard researches image and video modeling and compression.



Ankit Patel, Assistant Professor, Electrical & Computer Engineering

Assistant Professor, Neuroscience, Baylor College of Medicine

abp4@rice.edu ece.rice.edu/patel.aspx

Research areas: Data Science, Neuroengineering, Systems

Dr. Patel is interested in Probabilistic Theories of Deep Learning from first principles; Neurally-inspired learning and computation; Medical Imaging Diagnosis; Reverse-engineering neocortex; and Deep Learning for Particle Physics.



ECE is Engineering the Brain

The Kemere lab designs systems to interact with complex neural circuits to explore how information is processed, stored and retrieved in both healthy brains and those with disorders, focusing on memory and Deep Brain Stimulation.



ECE is Research in Education

The Baraniuk lab researches how the brain perceives depth and 3D vision. They are interested in machine learning and image and neural information processing.



**Xaq Pitkow, Assistant Professor, Electrical and Computer Engineering
Assistant Professor, Neuroscience, Baylor College of Medicine**
xaq.pitkow@rice.edu ece.rice.edu/pitkow.aspx

Research areas: Data Science, Neuroengineering

Dr. Pitkow's research includes teaching monkeys how to play video games, as part of his work on theories of neural computation in animal brains. Topics include: probabilistic inference, control theory, nonlinear dynamics, population codes. Current projects include analyzing behaviors of animals playing video games; designing animal virtual reality environments; stimulating and analyzing computation in neural networks.



Jacob T. Robinson, Assistant Professor, Electrical and Computer Engineering & Bioengineering
jacob.t.robinson@rice.edu ece.rice.edu/robinson.aspx

Research areas: Data Science, Neuroengineering, Photonics, Electronics & Nanodevices

Dr. Robinson uses nanotechnology to interact with the brain and to treat neurological disorders. He uses nanotechnology to measure and manipulate neural activity.



Ashutosh Sabharwal*, Professor, Electrical and Computer Engineering
ashu@rice.edu ece.rice.edu/sabharwal.aspx

Research areas: Data Science, Systems

Dr. Sabharwal is interested in mobile health - using smart devices to diagnose and treat patients in more scenarios, to measure medicine adherence, and to impact health behaviors. He's also interested in wireless networks, information theory, multiple antenna systems, coding and computation.



**Ray Simar*, Professor in the Practice, Electrical and Computer Engineering & Computer Science
(Digital Signal Processing Architecture)**

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Research areas: Systems

Ray Simar's team has built a putter that gives active feedback to golfers. They're now working on a self-driving motorcycle. His research includes digital signal processors, design methodology and programming tools.



**Francois St-Pierre, Assistant Professor, Electrical and Computer Engineering
Assistant Professor, Neuroscience, Baylor College of Medicine**
stpierre@bcm.edu <http://bit.ly/22nZZ9m>

Research areas: Neuroengineering

Dr. St-Pierre is interested in the development and application of genetically encoded tools to monitor and control neural activity. He's also interested in high-speed microscopy, optogenetics, protein engineering, and synthetic biology.



Isabell Thomann, Assistant Professor, Electrical and Computer Engineering
it6@rice.edu ece.rice.edu/thomann.aspx

Research areas: Photonics, Electronics & Nanodevices

Dr. Thomann creates novel materials and nanostructures to solve practical problems in the areas of energy and photocatalysis. She is interested in interdisciplinary problems in energy, photocatalysis, ultrafast spectroscopy and nanophotonics.



**Frank K. Tittel, J.S. Abercrombie Professor, Electrical and Computer Engineering,
Professor, Bioengineering**

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Research areas: Photonics, Electronics & Nanodevices

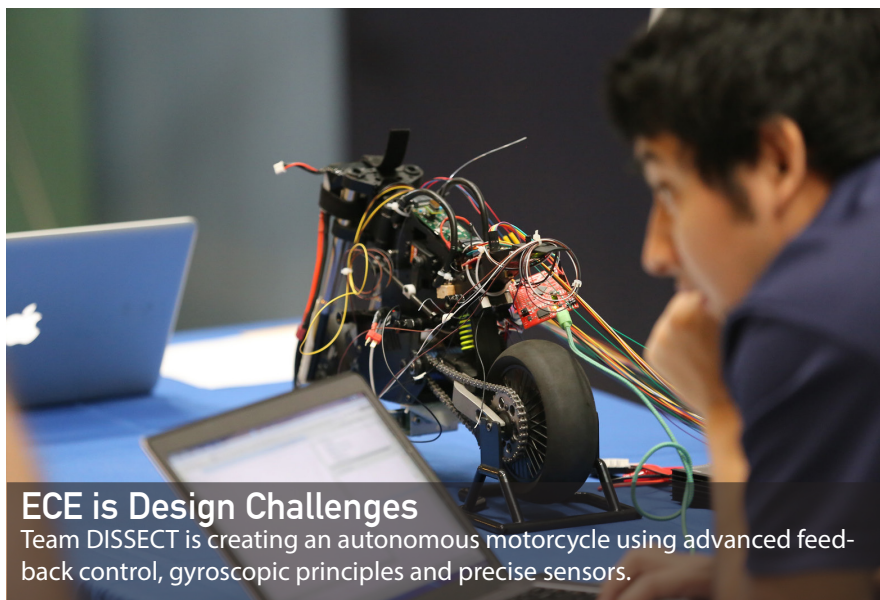
Dr. Tittel's research includes developing sensor technology for the oil & gas industry. He is interested in quantum electronic devices, laser spectroscopy with applications in environmental monitoring, atmospheric chemistry, industrial process analysis and control, medical diagnostics based on breath analysis, the life sciences, defense applications and homeland security.



Peter J. Varman, Professor, Electrical and Computer Engineering & Computer Science
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Research areas: Computer Engineering, Data Science

Dr. Varman researches computer systems, storage and memory systems, virtualization and resource management, and cloud computing.



ECE is Design Challenges

Team DISSECT is creating an autonomous motorcycle using advanced feedback control, gyroscopic principles and precise sensors.

ECE is Mobile Health

The Veeraraghavan Group developed a highly-accurate, touch-free system to monitor patients' vital signs long-distance, just by looking at their faces via video. The technique compensates for skin tone, light, and movement.



Ashok Veeraraghavan, Assistant Professor, Electrical and Computer Engineering

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Research areas: Data Science, Neuroengineering, Systems

In addition to his recent development of a lensless camera, Dr. Veeraraghavan has a strong interest in mobile health and using smart devices to diagnose and treat patients. He is interested in computational imaging, compressive sensing for imaging, signal processing and computer vision.



Gary Woods*, Professor in the Practice, Electrical and Computer Engineering & Computer Science (Computer Technology)

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ece.rice.edu/garywoods.aspx

Research areas: Photonics, Electronics & Nanodevices

Dr. Woods is interested in mobile health, semiconductor failure analysis, and optical probing and debugging of advanced integrated circuits. He has advised groups who've gone on to: develop a vest to help the deaf hear; develop a dynamic radar and digital imaging system; and design a virtual fitting room.



Lin Zhong, Associate Professor, Electrical and Computer Engineering

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Research areas: Computer Engineering, Data Science

Dr. Zhong's team recently developed RIO, which allows an application on one mobile system to utilize I/O from another. He's interested in mobile and embedded systems, human-computer interaction, and nanoelectronics.



ECE is Being A RockStar

Lin Zhong is an actual ECE RockStar - he won the 2014 SIGMOBILE RockStar Award. His group recently developed RIO - a system solution for sharing I/O between multiple mobile devices.

NOTES:



Connect:



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Computer Engineering**