Department of Electrical and Computer Engineering

T.E. (Ed) Schlesinger, Head
James Hoe, Associate Head

http://www.ece.cmu.edu/

The field of electrical and computer engineering encompasses a remarkably diverse and fertile set of technological areas, including analog and digital electronics, computer architecture, computer-aided design and manufacturing of VLSI/ULSI circuits, intelligent robotic systems, computer-based control systems, telecommunications and computer networking, wireless communication systems, signal and information processing and multimedia systems, solid state physics and devices, microelectromechanical systems (MEMS), electromagnetic and electromechanical systems, data storage systems, embedded systems, distributed computing, mobile computing, real-time software, digital signal processing, and optical data processing. The extraordinary advances in the field during the last fifty years have impacted nearly every aspect of human activity. These advances have resulted not only in advanced computer systems but also in consumer products such as "smart" cars, programmable dishwashers and other home appliances, cell phones and mobile computing systems, video games, home security systems, advanced medical systems for imaging, diagnosis, testing and monitoring. Systems and products such as these serve to enhance our quality of life and have also served as the basis for significant economic activity. In short, the field of electrical and computer engineering has become central to society as we know it.

The Department of Electrical and Computer Engineering at Carnegie Mellon is actively engaged in education and research at the forefront of these new technologies. Because of the diverse and broad nature of the field and the significant growth in knowledge in each of its sub areas, it is no longer possible for any single individual to know all aspects of electrical and computer engineering. Nevertheless, it is important that all electrical and computer engineers have a solid knowledge of the fundamentals with sufficient depth and breadth. Society is placing increasing demands on our graduates to try their skills in new contexts. It is also placing increasing value on engineers who can cross traditional boundaries between disciplines, and who can intelligently evaluate the broader consequences of their actions. Our curriculum is designed to produce world-class engineers who can meet these challenges.

Educational Outcomes and Objectives

The B.S. in Electrical and Computer Engineering is a broad and highly flexible degree program structured to provide students with the smallest set of constraints consistent with a rich and comprehensive view of the profession. It is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org . Students are encouraged and stimulated to explore multiple areas of theory and application. The Faculty of Electrical and Computer Engineering have adopted the following outcomes from ABET and have established the following objectives for the B.S. in Electrical and Computer Engineering curriculum:

Educational Outcomes

1. An ability to apply knowledge of mathematics, science and engineering.
2. An ability to design and conduct experiments, as well as to analyze and interpret data.
3. An ability to design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.
4. An ability to function in multi-disciplinary teams.
5. An ability to identify, formulate and solve engineering problems.
6. An understanding of professional and ethical responsibilities.
7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context.
9. A recognition of the need for, and an ability to engage in life-long learning.
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

ECE Education Objectives

The ECE program objectives are shown below. They represent our vision for what our students will be doing in their engineering careers five years after they have graduated. The principal behaviors we seek to foster in our students are expertise, innovation and leadership.

Our graduates will be:

Experts
- They will solve problems by applying ECE fundamentals
- Their solutions will reflect depth of understanding in their sophistication.
- Their solutions will reflect breadth of understanding by drawing on multiple disciplines.

Innovators
- They will demonstrate creativity in their engineering practice.
- They will consider holistic systems-oriented approaches in their designs.
- They will think strategically in their planning and execution.

Leaders
- They will take initiative, and demonstrate resourcefulness.
- They will collaborate in multidisciplinary teams.
- They will be leaders in their organizations, their profession and in society.

Innovators

Leaders

Experts

Three dimensions of objectives for our graduates.

Curriculum Overview

Minimum number of units required for degree: 379 units.

In addition to the Carnegie Institute of Technology general education and freshman year requirements (143 units), the B.S. in Electrical and Computer Engineering requires 15-122 Principles of Imperative Computation (10 units), Physics II (12 units), two math or science electives (18 units), a Probability and Statistics course (9 units), 109 units of Electrical and Computer Engineering coursework, and 2 math co-requisites (21 units). The remaining units needed to reach the 379 required to graduate are Free Electives (57 units).

The Electrical and Computer Engineering coursework is divided into the categories of Core, Area Courses, Coverage, and Capstone Design. The Core consists of five courses (10-100 (http://coursecatalog.web.cmu.edu/carnegieinstituteoftechnology/)
departmentofelectricalandcomputerengineering) Introduction to Electrical and Computer Engineering, 18-220 (http://
coursecatalog.web.cmu.edu/carnegieinstituteoftechnology/departmentofelectricalandcomputerengineering)
Electronic Devices and Analog Circuits, 18-240 (http://
coursecatalog.web.cmu.edu/carnegieinstituteoftechnology/departmentofelectricalandcomputerengineering)
Structure and Design of Digital Systems, 18-213 (http://
coursecatalog.web.cmu.edu/carnegieinstituteoftechnology/departmentofelectricalandcomputerengineering)
Introduction to Computer Systems, and 18-290 (http://
coursecatalog.web.cmu.edu/carnegieinstituteoftechnology/departmentofelectricalandcomputerengineering) Signals and
Systems). There are also two math co-requisites (18-202 and 21-127) and Physics II that are required co-requisites for the core. These
courses provide the fundamental knowledge-base upon which all
other electrical and computer engineering courses are built. 18-100
(http://coursecatalog.web.cmu.edu/carnegieinstituteoftechnology/departmentofelectricalandcomputerengineering) is generally taken during the
freshman year, while the remaining courses in the Core are started in
the sophomore year. The core courses are ideally completed by the end
of the junior year (The department strongly recommends that students
not take more than two core courses in the same semester). Although the
core courses (and their co-requisites) may be taken in any order, students
generally first take the course in their primary area of interest. This gives
added flexibility to later course selection in related areas.

Students are also required to complete a seminar course during the fall
semester of the sophomore year. This course, 18-200 Emerging Trends in
Electrical and Computer Engineering, introduces students to the many areas
within ECE and helps them decide which areas are of primary interest to
them.

To satisfy the ECE Area Courses Requirement, at least two Area courses
must be completed from one of the following five primary areas in ECE (24
units):

- **Device Sciences and Nanofabrication**:Solid State Physics, Electromagnetic Fields and Waves, Magnetics, Optics, etc.;
- **Signals and Systems**: Digital Signal Processing, Communication Systems, Control Systems, etc.;
- **Circuits**: Analog and Digital Circuits, Integrated Circuit Design, etc.;
- **Computer Hardware**: Logic Design, Computer Architecture, Networks, etc., and
- **Computer Software**: Programming, Data Structures, Compilers, Operating Systems, etc.

One additional course from a second area must be taken (12 units)

For Coverage any additional ECE course(s) can be taken or an approved
Computer Science course (see the ECE website for the list of approved
Computer Science courses) totaling at least 12 units.

Finally, all students are required to take a Capstone Design Course. In the
Capstone Design Courses, numbered 18-5XX, students participate in
a semester-long design project with teams of other students. Students
learn project management skills, make oral presentations, write reports, and
discuss the broader social and ethical dimensions of ECE. Current
Capstone Design courses are listed on the ECE Department website (http://
www.ece.cmu.edu/undergraduate/guide/details-capstone.html).

**B.S. Curriculum**

**Minimum number of units required for degree: 379**

For detailed information and regulations of the curriculum along with the
degree requirements and the most recent version of the ECE curriculum
primer and course descriptions, please refer to the ECE Home Page: http://
www.ece.cmu.edu/

**University Requirement**

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>99-101 Computing @ Carnegie Mellon</td>
<td>3</td>
</tr>
<tr>
<td>or 99-102 Computing @ Carnegie Mellon</td>
<td></td>
</tr>
</tbody>
</table>

**CIT Requirements** (see CIT section of the
catalog for specifics (https://coursecatalog-
new.web.cmu.edu/carnegieinstituteoftechnology/
#programingeneraleducationforcitstudents)):

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two semesters of calculus</td>
<td>20</td>
</tr>
<tr>
<td>33-106 Physics I for Engineering Students</td>
<td>12</td>
</tr>
<tr>
<td>One other introductory engineering course (generally taken during the freshman year)</td>
<td>12</td>
</tr>
</tbody>
</table>

$^{1}$33-106/107 is the recommended sequence for engineering students, although 33-111/112 or 33-131/132 would also meet the CIT Physics requirement.

**Specific ECE requirements:**

- One Introduction to Electrical and Computer Engineering course (generally taken during the freshman year)
- 18-100 Introduction to Electrical and Computer Engineering
- One ECE Seminar, taken during the fall of the sophomore year
- 18-200 Emerging Trends in Electrical and Computer Engineering

**Four ECE core courses, three with math co-requisites**

- 18-220 Electronic Devices and Analog Circuits
- 33-107 Physics II for Engineering Students
- 18-290 Signals and Systems
- 18-202 Mathematical Foundations of Electrical Engineering

**One ECE Seminar, taken during the fall of the sophomore year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-220 Electronic Devices and Analog Circuits</td>
<td>12</td>
</tr>
<tr>
<td>33-107 Physics II for Engineering Students</td>
<td>12</td>
</tr>
<tr>
<td>18-290 Signals and Systems</td>
<td>12</td>
</tr>
<tr>
<td>18-202 Mathematical Foundations of Electrical Engineering</td>
<td>12</td>
</tr>
</tbody>
</table>

**One Coverage Course (any additional ECE course or Approved CS course as listed on the ECE web site)**

- One Capstone Design Course (any 18-5xx course) 12

**Other ECE Requirements:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-112 Fundamentals of Programming and Computer Science</td>
<td>12</td>
</tr>
<tr>
<td>15-122 Principles of Imperative Computation</td>
<td>10</td>
</tr>
<tr>
<td>Two Math/Science electives</td>
<td>18</td>
</tr>
<tr>
<td>36-217 Probability Theory and Random Processes</td>
<td>9</td>
</tr>
<tr>
<td>or 36-225 Introduction to Probability Theory</td>
<td></td>
</tr>
<tr>
<td>Free Electives</td>
<td>57</td>
</tr>
</tbody>
</table>

The math/science requirement can be satisfied with any course from The
Mellon College of Science or The Department of Statistics except for: 100-
level courses in Mathematics or Statistics, and courses designed for non-
science or engineering majors, such as (but not limited to) 09-103, 09-104,
21-257, 33-124, 36-201, 36-202, 36-207 or 36-208. Although shown in the
Fall of the Junior and Senior years, these courses may be taken at any time.
Mathematics courses of particular interest to students in ECE are:

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-228 Discrete Mathematics</td>
<td>9</td>
</tr>
<tr>
<td>21-241 Matrices and Linear Transformations</td>
<td>10</td>
</tr>
<tr>
<td>21-259 Calculus in Three Dimensions</td>
<td>9</td>
</tr>
<tr>
<td>21-260 Differential Equations</td>
<td>9</td>
</tr>
</tbody>
</table>

**Free Electives** [57 units]

A Free Elective is defined as any graded course offered by any academic
unit of the university (including research institutes such as the Robotics
Institute (http://www.ri.cmu.edu) and the Software Engineering Institute
(http://www.sei.cmu.edu)). A total of at least 60 units of Free Electives must
be taken.

Up to 9 units of ROTC and Physical Education courses or other courses taken
as Pass/Fail may also be used toward Free Electives.

Transfer of courses from other high-quality universities may be
accepted through submission of the Transfer Credit Request form on the
CIT web page (http://www.cit.cmu.edu/current_students/services/
transfer_credit.html).
The large number of units without categorical constraints provides the student, in consultation with their Faculty Advisor or Mentor, with the flexibility to design a rich educational program.

### Sample Curriculum

The following table shows a possible roadmap through our broad and flexible curriculum:

#### Freshman Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-100 Introduction to Electrical and Computer Engineering</td>
<td>18-200 Emerging Trends in Electrical and Computer Engineering</td>
</tr>
<tr>
<td>Calculus</td>
<td>21-127 Concepts of Mathematics or 18-202 Mathematical Foundations of Electrical Engineering</td>
</tr>
<tr>
<td>33-106 Physics I for Engineering Students</td>
<td>18-2xx ECE Core Course 1</td>
</tr>
</tbody>
</table>

#### Sophomore Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-2xx ECE Core Course 2</td>
<td></td>
</tr>
<tr>
<td>18-xxx ECE Coverage Course</td>
<td>18-5xx ECE Capstone Course</td>
</tr>
<tr>
<td>18-xxx ECE Course 4</td>
<td>36-217 Probability Theory and Random Processes</td>
</tr>
<tr>
<td>Area Course 1</td>
<td>General Education Course</td>
</tr>
<tr>
<td>Math / Science Elective 1</td>
<td>General Education Course</td>
</tr>
</tbody>
</table>

#### Junior Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-2xx ECE Core Course 3</td>
<td>18-xxx ECE Coverage Course</td>
</tr>
<tr>
<td>18-3xx/4xx ECE Area Course 2</td>
<td>18-xxx/4xx ECE Area Course</td>
</tr>
<tr>
<td>Math / Science Elective 2</td>
<td>Free Elective</td>
</tr>
<tr>
<td>Free Elective</td>
<td>Free Elective</td>
</tr>
</tbody>
</table>

#### Senior Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-112 Fundamentals of Programming and Computer Science</td>
<td>15-122 Principles of Imperative Computation</td>
</tr>
<tr>
<td>76-101 Interpretation and Argument</td>
<td>General Education Course</td>
</tr>
<tr>
<td>99-101 Computing @ Carnegie Mellon or 99-102 Computing @ Carnegie Mellon</td>
<td>33-107 Physics II for Engineering Students</td>
</tr>
</tbody>
</table>

#### Notes on the Curriculum

Policy on ECE Coverage Courses with Fewer than 12 Units

The basic curriculum requirements for Breadth, Depth, Coverage and Capstone Design are stated in terms of courses rather than units. The nominal total of 60 units for these categories is determined by assuming that each course is 12 units. In the event that courses with fewer than 12 units are used to satisfy some or all of these requirements, additional courses from the ECE coverage lists must be taken until the total units in ECE courses beyond the core meets or exceeds 60 units. Any ECE coverage course is acceptable, and any excess units may be counted as free elective credit.

QPA Requirement and Overload Policy

An overload is defined as any schedule with more than 54 units in one semester. A student will only be permitted to overload by 12 units if he or she achieved a QPA of at least 3.5 out of 4.0 in the previous semester he or she is registering for, or if his or her overall QPA is at least a 3.5.

Pass/Fail policy

Up to 9 units of ROTC and Physical Education courses or other courses taken as Pass/Fail may be used toward Free Electives. ECE core courses may not be taken as pass/fail. ECE project-based courses (including capstone design courses) may not be taken as pass/fail. No ECE requirements may be fulfilled using a pass/fail course (except for 99-10x and 18-200).

Other Graduation Requirements

To be eligible to graduate, undergraduate students must complete all course requirements for their program with a cumulative Quality Point Average of at least 2.0 for all courses taken. For undergraduate students who enrolled at Carnegie Mellon as freshmen and whose freshman grades cause the cumulative QPA to fall below 2.0, this requirement is modified to be a cumulative QPA of at least 2.0 for all courses taken after the freshman year. Note, however, the cumulative QPA that appears on the student’s final transcript will be calculated based on all grades in all courses taken, including freshman year. Students are encouraged to confirm all graduation requirements with their academic advisor.

CIT has the following requirement for graduation. “Students must complete the requirements for their specified degrees with a cumulative quality point average of 2.00 or higher for all courses taken after the freshman year (this is the CIT QPA on the Academic Audit).

In addition, a student is expected to achieve a cumulative quality point average of 2.00 in a series of departmental courses.” In ECE, this means that the student must complete 18-100 Introduction to Electrical and Computer Engineering, ECE Core, Area Courses, Coverage, and Capstone Design courses with a minimum QPA of 2.0 to graduate. When more than one possibility exists for meeting a specific requirement (e.g., Area Course), the courses used for calculating the ECE QPA will be chosen so as to maximize the QPA. Similarly, when an ECE course is retaken, the better grade will be used in the computation of the minimum QPA for the ECE QPA requirement.

### Other Opportunities in ECE

**ECE Cooperative Education Program**

The ECE Co-Op is a unique 8-month contiguous extended internship experience in which ECE students with a minimum QPA of 3.0 may opt to participate in. Students typically engage in this option in the spring semester of their junior year, from January through August. A May through December option is also available. Students who engage in this program typically graduate in 4.5 academic years (but still eight semesters). Eligible students interested in participating should contact their advisor in the ECE Undergraduate and Graduate Programs Office. Students are required to submit a formal application consisting of a transcript, a resume, and a one-page statement of purpose including an academic plan. Students then work with the Career Center to find a Co-Op position. Once a Co-Op position is found, a Co-Op job description is required from the employer, to be approved by the ECE Undergraduate Office.

While on the Co-Op assignment, the students are participating in a recognized CIT educational program, retaining their full-time student status, akin to our students who study abroad in established exchange programs (such as NCTU or EPFL) for one or two semesters.

Upon returning to Carnegie Mellon, the students are required to submit for approval the following two documents to the ECE Undergraduate Office: a three to five page technical report of the Co-Op work, and a one page assessment and evaluation of the Co-Op experience. Students may obtain more detailed information through the department, the Career Center in the University Center, or online at http://www.ece.cmu.edu/undergrad/.

**Integrated M.S./B.S. Degrees Program**

The Integrated Master’s/Bachelor’s program (otherwise known as the IMB program) is an exciting opportunity for students who excel academically through our Professional MS degree program without needing to apply separately. This means no application fee, and no need to take the GRE (Graduate Record Exam). In order to be awarded the MS degree in the IMB program, the student must also earn their BS degree, either simultaneously with the MS degree or in a semester prior to the awarding of the MS degree. If a course is eligible for the MS degree but must be used to complete the BS degree, the BS degree takes priority over the MS degree.

If a student is at least a 2nd semester junior, has completed at least 270 units and has at least an overall 3.00 QPA, he or she is guaranteed admission into the Professional MS degree in ECE through the IMB program. To be officially admitted, the student must complete the IMB Program form.

If a student does not meet the exact overall 3.00 QPA requirement, he or she is eligible to petition for his or her admission into the IMB program during his or her senior year. Students may obtain the petition forms through a meeting with their assigned academic advisor.

**Professional MS Degree Requirements:**

Please see the ECE web site for the requirements for the Professional MS degree (http://www.ece.cmu.edu/graduate/masters). For students in the ECE IMB program, all requirements for the professional MS degree are in
addition to the requirements for the BS in ECE. No requirements for the MS degree may be used in any way toward the BS degree, including minors, additional majors or dual degrees.

Residency requirements and financial impacts:
Once a student in the IMB program has completed all of the requirements for the BS degree, he or she may become a graduate (Masters) student. To do this, the student’s undergraduate degree is certified, and that student officially graduates with the BS degree. Once a student’s undergraduate degree has been certified, no more courses may then be applied toward the BS degree. This includes courses toward minors and additional majors, although students pursuing an undergraduate dual degree with another department may still continue to apply additional coursework toward that second degree.

If a student takes more than 8 semesters to complete both the BS and MS degrees, then he or she must be a graduate student for at least one semester before graduating.

To determine the most appropriate time for an undergraduate student to become a graduate student, he or she should consult with Enrollment Services to understand how becoming a graduate student will affect financial aid, and with his or her academic advisor to determine a course schedule. When a student is a graduate student through the IMB program, the department is able to provide some financial assistance through Teaching Assistantships. Please see the ECE web site for further information regarding this financial assistance.

Faculty

JIM BAIN, Professor of Electrical and Computer Engineering and Materials Science Engineering; Associate Director, Data Storage Systems Center – Ph.D., Stanford University; Carnegie Mellon, 1993–.

RAY BAREISS, Director of Educational Programs – Carnegie Mellon Silicon Valley; Professor of the Practice-ECE, Carnegie Mellon Silicon Valley - Ph.D., University of Texas, Austin; Carnegie Mellon, 2008–.

LUJO BAUER, Assistant Research Professor of CyLab and Electrical and Computer Engineering – Ph.D., University of Michigan; Carnegie Mellon, 1995–.

VIJAYAKUMAR BHAGAVATULA, Professor of Electrical and Computer Engineering, Associate Dean of Faculty and Graduate Affairs, Carnegie Institute of Technology – Ph.D., Carnegie Mellon University; Carnegie Mellon, 1982–.

RALPH HOLLIS, Research Professor Robotics and Electrical and Computer Engineering; Co-Director CALCM, ITRI Lab@ CMU - Ph.D., Massachusetts Institute of Technology; Carnegie Mellon, 2000–.

JAMES HOE, Professor of Electrical and Computer Engineering and Computer Science; Director PDL – Ph.D., University of Michigan; Carnegie Mellon, 1997–.

GARTH GIBSON, Professor of Computer Science and Electrical and Computer Engineering – Ph.D., University of California at Berkeley; Carnegie Mellon, 1991–.

CHRISTOS FALOUTSOS, Professor of Computer Science and Electrical and Computer Engineering – Ph.D., University of Toronto; Carnegie Mellon, 1998–.

BABAK FALSAFI, Adjunct Professor of Electrical and Computer Engineering and Robotics; Director of ICES; Director of MEMS Laboratory – Ph.D., University of California at Berkeley; Carnegie Mellon, 1994–.

RANDY FEENSTRA, Professor of Physics and Electrical and Computer Engineering – Ph.D., California Institute of Technology; Carnegie Mellon, 1995–.

RAJEEV GANDHI, Systems Engineer, Electrical and Computer Engineering – Ph.D., University of California at Santa Barbara; Carnegie Mellon, 2003–.

GREGORY R. GANGER, Jatras Professor of Electrical and Computer Engineering and Computer Science; Director PDL – Ph.D., University of Michigan; Carnegie Mellon, 1997–.

ANUPMAN DATTA, Research Professor of CyLab and Electrical and Computer Engineering – Ph.D., Stanford University; Carnegie Mellon, 2007–.

PETER GILGUNN, Assistant Research Professor – Ph.D., Carnegie Mellon University; Carnegie Mellon, 2012–.

MADELEINE GLICK, Adjunct Professor of Electrical and Computer Engineering; Principal Researcher, Intel Research Pittsburgh – Ph.D., Columbia University; Carnegie Mellon, 2008–.

FRED HIGGS, Assistant Professor of Electrical and Computer Engineering and Mechanical Engineering – Ph.D., Rensselaer Polytechnic Institute; Carnegie Mellon, 2003–.

ALEX HILLS, Assistant Professor of Electrical and Computer Engineering and Mechanical Engineering – Ph.D., Rensselaer Polytechnic Institute; Carnegie Mellon, 2003–.

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RAFAL FALCONE, Adjunct Professor of Electrical and Computer Engineering and Robotics; Director of ICES; Director of MEMS Laboratory – Ph.D., University of California at Berkeley; Carnegie Mellon, 1994–.

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SETH C. GOLSTEIN, Associate Professor of Computer Science and Electrical and Computer Engineering – Ph.D., University of California at Berkeley; Carnegie Mellon, 1997–.

DAVID W. GREVE, Professor of Electrical and Computer Engineering – Ph.D., Lehigh University; Carnegie Mellon, 1982–.

MARK GRISS, Professor of Electrical and Computer Engineering, Director of the Disaster Management Initiative — Carnegie Mellon Silicon Valley – Ph.D., University of Illinois; Carnegie Mellon, 2008–.

PULKIT GROVER, Assistant Professor – Ph.D., University of California at Berkeley; Carnegie Mellon, 2013–.

MOR HARCHOL-BALTER, Associate Professor of Computer Science and Electrical and Computer Engineering – Ph.D., University of California at Berkeley; Carnegie Mellon, 1999–.

ANUPMAN DATTA, Research Professor of CyLab and Electrical and Computer Engineering – Ph.D., Stanford University; Carnegie Mellon, 2007–.

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FRANZ FRANCHETTI, Associate Research Professor, Electrical and Computer Engineering – Ph.D., Vienna University of Technology; Carnegie Mellon, 2001–.

KAIGHAM J. GABRIEL, Adjunct Professor of Electrical and Computer Engineering and Robotics – Sc.D., Massachusetts Institute of Technology; Carnegie Mellon, 1997–.

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ALEX HILLS, Assistant Professor of Electrical and Computer Engineering and Mechanical Engineering – Ph.D., Rensselaer Polytechnic Institute; Carnegie Mellon, 2003–.
MARIJA ILIC, Professor of Electrical and Computer Engineering and Engineering and Public Policy – Ph.D., Washington University; Carnegie Mellon, 2002–.

MOHAMMAD ISLAM, Assistant Professor of Chemical Engineering, Electrical and Computer Engineering and Materials Science Engineering – Ph.D., Lehigh University; Carnegie Mellon, 2008–.

COLLIN JACKSON, Assistant Research Professor of Electrical and Computer Engineering, CyLab and Information Networking Institute, Carnegie Mellon Silicon Valley – Ph.D., Stanford University; Carnegie Mellon, 2009–.

ANGEL G. JORDAN, Emeritus Keithley University Professor of Electrical and Computer Engineering and Robotics Institute – Ph.D., Carnegie Mellon University; Carnegie Mellon, 1959–.

TAKEO KANADE, U.A. and Helen Whitaker Professor of Computer Science and Robotics; Professor of Electrical and Computer Engineering – Ph.D., Kyoto University; Carnegie Mellon, 1980–.

SOMMUYA KAR, Assistant Research Professor of Electrical and Computer Engineering – Ph.D., Carnegie Mellon University; Carnegie Mellon, 2011–.

PRADEEP KHOSLA, Philip and Marsha Dow Professor of Electrical and Computer Engineering and Robotics; Dean, Carnegie Institute of Technology; Co-Director, Carnegie Mellon CyLab – Ph.D., Carnegie Mellon University; Carnegie Mellon, 1986–.

HYONG S. KIM, Drew D. Perkins (E’86) Professor of Electrical and Computer Engineering; Director, CyLab Korea – Ph.D., University of Toronto; Carnegie Mellon, 1990–.

PHILIP J. KOOPMAN, Associate Professor of Electrical and Computer Engineering and Computer Science – Ph.D., Carnegie Mellon University; Carnegie Mellon, 1989–.

JELENA KOVACEVIC, Professor of Biomedical Engineering and Electrical and Computer Engineering; Co-Director, Center for Bioimaging Informatics – Ph.D., Columbia University; Carnegie Mellon, 2003–.

BRUCE H. KROGH, Professor of Electrical and Computer Engineering – Ph.D., University of Illinois at Urbana-Champaign, Carnegie Mellon, 1983–.

MARK H. KRYDER, University Professor of Electrical and Computer Engineering; Chief Technical Officer and Vice President of Research, Seagate (Retired) – Ph.D., California Institute of Technology; Carnegie Mellon, 1978–.

DAVID N. LAMBETH, Emeritus Professor of Electrical Engineering and Materials Science and Engineering – Ph.D., Massachusetts Institute of Technology; Carnegie Mellon, 1989–.

DAVE LAUGHLIN, ALCDA Professor of Materials Science Engineering; Professor of Electrical and Computer Engineering – Ph.D., Massachusetts Institute of Technology; Carnegie Mellon, 1974–.

XIN LI, Assistant Professor, Electrical and Computer Engineering – Ph.D., Carnegie Mellon University; Carnegie Mellon, 2009–.

JASON LOHN, Associate Research Professor of Electrical and Computer Engineering; Senior Research Scientist, Carnegie Mellon Silicon Valley – Ph.D., University of Maryland; Carnegie Mellon, 2001–.

YI LOU, Assistant Professor of Electrical and Computer Engineering – Ph.D., Columbia University; Carnegie Mellon, 2005–.

KEN MAI, Assistant Professor of Electrical and Computer Engineering – Ph.D., Stanford University; Carnegie Mellon, 2005–.

WOJIECH Maly, U.A. and Helen Whitaker Professor of Electrical and Computer Engineering – Ph.D., Polish Academy of Sciences, Warsaw; Carnegie Mellon, 1986–.

DIANA MARCULESCU, Professor of Electrical and Computer Engineering – Ph.D., University of Southern California; Carnegie Mellon, 2000–.

RADU MARCULESCU, Professor of Electrical and Computer Engineering – Ph.D., University of Southern California; Carnegie Mellon, 2000–.

ROY MAXION, Principle Systems Scientist Computer Science and Electrical and Computer Engineering – Ph.D., University of Colorado; Carnegie Mellon, 1984–.

TIMOTHY MCCOY, Adjunct Professor of Electrical and Computer Engineering; Director, Research and Development Converteam North America – Ph.D., Massachusetts Institute of Technology; Carnegie Mellon, 2008–.

WILLIAM MESSNER, Professor of Mechanical Engineering and Electrical and Computer Engineering – Ph.D., University of California at Berkeley; Carnegie Mellon, 1993–.

M. GRANGER MORGAN, Professor of Electrical and Computer Engineering; Lord University Professor and Head, Department of Engineering and Public Policy; Professor, H.J. Heinz III School of Public Policy and Management – Ph.D., University of California, San Diego; Carnegie Mellon, 1974–.

JAMES MORRIS, Professor of Computer Science and Electrical and Computer Engineering; Dean, Carnegie Mellon Silicon Valley – Ph.D., Massachusetts Institute of Technology; Carnegie Mellon, 1982–.

JOSE M. F. MOURA, University Professor of Electrical and Computer Engineering; Professor of Biomedical Engineering – D.Sc., Massachusetts Institute of Technology; Carnegie Mellon, 1986–.

TODD MOWRY, Associate Professor of Computer Science and Electrical and Computer Engineering; Co-Director CALCM – Ph.D., Stanford University; Carnegie Mellon, 1997–.

TAMAL MUKHERJEE, Professor of Electrical and Computer Engineering – Ph.D., Carnegie Mellon University; Carnegie Mellon, 1996–.

ONUR MUTLU, Assistant Professor of Electrical and Computer Engineering and Computer Science – Ph.D., University of Texas at Austin; Carnegie Mellon, 2009–.

WILLIAM NACE, Assistant Teaching Professor of Electrical and Computer Engineering – Ph.D., Carnegie Mellon University; Carnegie Mellon, 2008–.

PRIYA NARASIMHAN, Associate Professor of Electrical and Computer Engineering – Ph.D., University of California at Santa Barbara; Carnegie Mellon, 2001–.

ROHIT NEGI, Professor of Electrical and Computer Engineering – Ph.D., Stanford University; Carnegie Mellon, 2000–.

CHARLES P. NEUMAN, Professor of Electrical and Computer Engineering – Ph.D., Harvard University; Carnegie Mellon, 1969–.

DAVID O’HALLARON, Professor of Computer Science and Electrical and Computer Engineering; Director Intel Research, Pittsburgh – Ph.D., University of Virginia; Carnegie Mellon, 1989–.

JAYANTDHI PARAMESH, Assistant Professor of Electrical and Computer Engineering – Ph.D., University of Washington; Carnegie Mellon, 2007–.

JON M. PEHA, Professor of Engineering and Public Policy and Electrical and Computer Engineering – Ph.D., Stanford University; Carnegie Mellon, 1991–.

ADRIAN PERRIG, Professor of Electrical and Computer Engineering, Engineering and Public Policy and Computer Science; Technical Director, CyLab – Ph.D., Carnegie Mellon; Carnegie Mellon, 2002–.

GIANLUCA PIAZZA, Associate Professor – Ph.D., University of California at Berkeley; Carnegie Mellon, 2012–.

LAWRENCE T. PILLEGGI, Tanoto Professor of Electrical and Computer Engineering – Ph.D., Carnegie Mellon University; Carnegie Mellon, 1996–.

MARKUS PÜSCHEL, Adjunct Professor – Ph.D., University of Karlsruhe; Carnegie Mellon, 1996–.

RAGUNATHAN RAJKUMAR, Carnegie Professor of Computer Science; – Ph.D., Stanford University; Carnegie Mellon, 2001–.

DAVID RICKETTS, Assistant Professor of Electrical and Computer Engineering and Multimedia Systems Laboratory, Ph.D., Carnegie Mellon University; Carnegie Mellon, 1992–.

MIKE REITER, Adjunct Professor of Electrical and Computer Engineering and Computer Science – Ph.D., Cornell University; Carnegie Mellon, 2001–.

GUSTAVO ROHDE, Assistant Professor of Biomedical Engineering and Electrical and Computer Engineering – Ph.D., University of Maryland; Carnegie Mellon, 2006–.

RAGUNATHAN RAJKUMAR, Carnegie Professor of Computer Science; – Ph.D., Stanford University; Carnegie Mellon, 2001–.

RAGUNATHAN RAJKUMAR, Carnegie Professor of Computer Science; – Ph.D., Stanford University; Carnegie Mellon, 2001–.

JOSÉ M. F. MOURA, University Professor of Electrical and Computer Engineering; Dean, Carnegie Mellon Silicon Valley – Ph.D., Massachusetts Institute of Technology; Carnegie Mellon, 1982–.

WILLIAM NACE, Assistant Teaching Professor of Electrical and Computer Engineering – Ph.D., Carnegie Mellon University; Carnegie Mellon, 2008–.

PRIYA NARASIMHAN, Associate Professor of Electrical and Computer Engineering – Ph.D., University of California at Santa Barbara; Carnegie Mellon, 2001–.

ROHIT NEGI, Professor of Electrical and Computer Engineering – Ph.D., Stanford University; Carnegie Mellon, 2000–.

CHARLES P. NEUMAN, Professor of Electrical and Computer Engineering – Ph.D., Harvard University; Carnegie Mellon, 1969–.

DAVID O’HALLARON, Professor of Computer Science and Electrical and Computer Engineering; Director Intel Research, Pittsburgh – Ph.D., University of Virginia; Carnegie Mellon, 1989–.

JAYANTDHI PARAMESH, Assistant Professor of Electrical and Computer Engineering – Ph.D., University of Washington; Carnegie Mellon, 2007–.

JON M. PEHA, Professor of Engineering and Public Policy and Electrical and Computer Engineering – Ph.D., Stanford University; Carnegie Mellon, 1991–.

ADRIAN PERRIG, Professor of Electrical and Computer Engineering, Engineering and Public Policy and Computer Science; Technical Director, CyLab – Ph.D., Carnegie Mellon; Carnegie Mellon, 2002–.

GIANLUCA PIAZZA, Associate Professor – Ph.D., University of California at Berkeley; Carnegie Mellon, 2012–.

LAWRENCE T. PILLEGGI, Tanoto Professor of Electrical and Computer Engineering – Ph.D., Carnegie Mellon University; Carnegie Mellon, 1996–.

MARKUS PÜSCHEL, Adjunct Professor – Ph.D., University of Karlsruhe; Carnegie Mellon, 1996–.

RAGUNATHAN RAJKUMAR, Professor of Electrical and Computer Engineering and computer Science; Co – Director - GM-CM CRL; Director , Real-Time and Multimedia Systems Laboratory, Ph.D., Carnegie Mellon University; Carnegie Mellon, 1992–.

MIKE REITER, Adjunct Professor of Electrical and Computer Engineering and Computer Science – Ph.D., Cornell University; Carnegie Mellon, 2001–.

DAVID RICKETTS, Assistant Professor of Electrical and Computer Engineering – Ph.D., Harvard University; Carnegie Mellon, 2006–.

GUSTAVO ROHDE, Assistant Professor of Biomedical Engineering and Electrical and Computer Engineering – Ph.D., University of Maryland; Carnegie Mellon, 2006–.

RAGUNATHAN RAJKUMAR, Carnegie Professor of Computer Science; – Ph.D., Stanford University; Carnegie Mellon, 2001–.

JOSÉ M. F. MOURA, University Professor of Electrical and Computer Engineering; Dean, Carnegie Mellon Silicon Valley – Ph.D., Massachusetts Institute of Technology; Carnegie Mellon, 1982–.

WILLIAM NACE, Assistant Teaching Professor of Electrical and Computer Engineering – Ph.D., Carnegie Mellon University; Carnegie Mellon, 2008–.

RAGUNATHAN RAJKUMAR, Carnegie Professor of Computer Science; – Ph.D., Stanford University; Carnegie Mellon, 2001–.

JOSÉ M. F. MOURA, University Professor of Electrical and Computer Engineering; Dean, Carnegie Mellon Silicon Valley – Ph.D., Massachusetts Institute of Technology; Carnegie Mellon, 1982–.

WILLIAM NACE, Assistant Teaching Professor of Electrical and Computer Engineering – Ph.D., Carnegie Mellon University; Carnegie Mellon, 2008–.
TUVAH E. SCHLESINGER, David Edward Schramm Professor of Electrical and Computer Engineering; Head, Department of Electrical and Computer Engineering – Ph.D., California Institute of Technology; Carnegie Mellon, 1985–.

SRINIVASAN SESHAN, Associate Professor of Computer Science and Electrical and Computer Engineering – Ph.D., University of California at Berkeley; Carnegie Mellon, 2000–.

DANIEL P. SIEWIROKE, Buhl University Professor of Electrical and Computer Engineering and Computer Science; Director, Human Computer Interaction Institute – Ph.D., Stanford University; Carnegie Mellon, 1972–.

BRUNO SINOPOLI, Associate Professor of Electrical and Computer Engineering, Robotics Institute and Mechanical Engineering – Ph.D., University of California, Berkeley; Carnegie Mellon, 2007–.

MARVIN A. SIRBU, Professor of Engineering and Public Policy, Electrical and Computer Engineering and Tepper School of Business – D.Sc., Massachusetts Institute of Technology; Carnegie Mellon, 1985–.

METIN SITTI, Associate Professor of Mechanical Engineering, Electrical and Computer Engineering and Robotics Institute – Ph.D., University of Toledo; Carnegie Mellon, 2002–.

ASIM SMAILAGIC, Research Professor of ICES and Electrical and Computer Engineering; Director, LINCS – Ph.D., University of Sarajevo and University of Edinburgh; Carnegie Mellon, 1992–.

DAWN SONG, Adjunct Professor of Electrical and Computer Engineering and Computer Science – Ph.D., University of California at Berkeley; Carnegie Mellon, 2002–.

DANIEL D. STANCIL, Adjunct Professor of Electrical and Computer Engineering – Ph.D., Massachusetts Institute of Technology; Carnegie Mellon, 1986–.

PETER STEENKISTE, Professor of Electrical and Computer Engineering and Computer Science – Ph.D., Stanford University; Carnegie Mellon, 1987–.

RICHARD M. STERN, Jr., Professor of Electrical and Computer Engineering, Language Technologies Institute, Computer Science, and Biomedical Engineering; Lecturer, Music – Ph.D., Massachusetts Institute of Technology; Carnegie Mellon, 1977–.

ANDRZEJ J. STROJWAS, Keithley Professor of Electrical and Computer Engineering – Ph.D., Carnegie Mellon University; Carnegie Mellon, 1983–.

THOMAS SULLIVAN, Associate Teaching Professor, Electrical and Computer Engineering; Lecturer, Music – Ph.D., Carnegie Mellon University; Carnegie Mellon, 1996–.

PATRICK TAGE, Assistant Research Professor of Electrical and Computer Engineering, CyLab and Information Networking Institute, Carnegie Mellon Silicon Valley – Ph.D., University of Washington; Carnegie Mellon, 2009–.

SAROSH N. TALUKDAR, Emeritus Professor of Electrical and Computer Engineering – Ph.D., Purdue University; Carnegie Mellon, 1974–.

DONALD E. THOMAS, Jr., Professor of Electrical and Computer Engineering – Ph.D., Carnegie Mellon University; Carnegie Mellon, 1977–.

OZAN TONGUZ, Professor of Electrical and Computer Engineering – Ph.D., Rutgers University; Carnegie Mellon, 2000–.

ELIAS TOWE, Professor of Electrical and Computer Engineering; Albert and Ethel Grobstein Memorial Professor of Materials Science and Engineering; Director, CNXT – Ph.D., Massachusetts Institute of Technology; Carnegie Mellon, 2001–.

PAULO VERISSIMO, Adjunct Professor of Electrical and Computer Engineering and Professor of University of Lisboa, Portugal – Ph.D., IST of the Technical University of Lisboa; Carnegie Mellon, 2008–.

ANTHONY WASSERMAN, Professor of Software Engineering Practice, Carnegie Mellon Silicon Valley, Electrical and Computer Engineering – Ph.D., University of Wisconsin; Carnegie Mellon, 2008–.

JEFF WELDON, Assistant Professor of Electrical and Computer Engineering – Ph.D., University of California, Berkeley; Carnegie Mellon, 2011–.

ROBERT WHITE, Emeritus, University Professor Emeritus of Electrical and Computer Engineering and Engineering and Public Policy – Ph.D., Stanford University; Carnegie Mellon, 1993–.

JEANNETTE WING, President’s Professor of Computer Science; Professor of Electrical and Computer Engineering – Ph.D., Massachusetts Institute of Technology; Carnegie Mellon, 1985–.

ERIK YDSTIE, Professor of Chemical Engineering and Electrical and Computer Engineering – Ph.D., Imperial College, London; Carnegie Mellon, 1992–.

BYRON YU, Assistant Professor – Ph.D., Stanford University; Carnegie Mellon, 2009–.

HUI ZHANG, Professor of Computer Science and Electrical and Computer Engineering – Ph.D., University of California at Berkeley; Carnegie Mellon, 1995–.

PEI ZHANG, Assistant Research Professor, Carnegie Mellon Silicon Valley – Ph.D., Princeton University; Carnegie Mellon, 2008–.

JIAN-GANG ZHU, ABB Professor of Electrical and Computer Engineering; Director, DSSC.; Professor of Materials Science and Engineering and Physics – Ph.D., University of California, San Diego; Carnegie Mellon, 1997–.

**Courtesy Appointment**

BOB IANNUCCI, Associate Dean and Director of Silicon Valley Campus, Distinguished Service Professor – Ph.D, Massachusetts Institute of Technology.