NEW YORK UNIVERSITY

TANDON SCHOOL OF ENGINEERING

Department of Electrical and Computer Engineering

GRADUATE STUDENT MANUAL

This manual describes curriculum requirements for the graduate degrees offered by the department. It contains material not included in the School Bulletin, as well as corrections and updated modifications to the material in the Bulletin. The following graduate programs are offered by the department:

Doctor of Philosophy

> Electrical Engineering (PhD/EE)

Master of Science

- Electrical Engineering (MS/EE)
- Computer Engineering (MS/CompE)

Notes:

1. There have been some changes in the curriculum requirement for the PhD/EE, MS/EE and MS/CE programs from the requirement described in the previous graduate manual dated June 2017. These changes are effective for all current and new students. However, students have the option to follow the curriculum described on the NYU Tandon's Catalog and the ECE Graduate Student Manual at the time of their matriculation. Previous curriculum requirements can be found in the Graduate Student Manual published in earlier dates available at:

   https://engineering.nyu.edu/academics/departments/electrical-and-computer-engineering/student-resources

2. Since Fall 2018, all previously EL-prefixed graduate-level courses have been changed to ECE-GY xxxx, while all EE undergraduate courses are labeled ECE-UYxxxx.

Last revised in July 2020.

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I.   DOCTORAL PROGRAM

General

Graduate students who have exhibited a high degree of scholastic proficiency and have given evidence of ability for conducting independent research may consider extending their goals toward the doctorate. The Ph.D. degree is awarded after completing the program of study and research described below, and upon preparation and defense of a dissertation representing an original and significant contribution deemed worthy of publication in a recognized scientific or engineering journal.

Admission to Program

Students entering the doctoral program with a Bachelor's degree must meet the entrance requirements for the Master's program in the appropriate area of concentration. Students entering at the Master's level for the Ph.D. in Electrical Engineering program are normally expected to have a Master's in Electrical Engineering. Generally, admission to these Ph.D. programs is conditional on a student achieving a 3.5 grade point average in prior BS and MS programs. GRE is required for all applicants.

Thesis Advisor and Academic Advisor

Many factors enter into a student's choice of an advisor for his/her research. In addition to the scientific, intellectual and personality factors which influence the pairing of student and professor, financial aspects must also be considered. For most full-time students, the ideal situation is to find an advisor who has a research topic of mutual interest, as well as funds available from research grants and contracts which can support the student as a Research Assistant (RA). A prospective student is encouraged to contact faculty members in his/her research area regarding the possibility of advising before applying to the Ph.D. program. A student who joins the Ph.D. program without securing a thesis advisor will be assigned an academic advisor, who will guide the student in terms of course selection and research activities before the qualifying exam. A Ph.D. student candidate must obtain the commitment of a faculty member in the student's chosen area of major research interest to be the student's thesis advisor before taking the qualifying exam.

Usually, the thesis advisor is a full-time faculty member in the Electrical and Computer Engineering Department and as such is considered chair of the student's Guidance Committee. If a student wishes to have someone outside the ECE department to serve as his/her advisor, the student should submit the CV of the person and a letter of commitment from the person to serve as the advisor to the Ph.D. EE Program Director for approval. The thesis advisor must have a Ph.D. degree in the student's proposed area of research.

Qualifying Examination

A Ph.D. student (referred to as the student below) must pass the Ph.D. qualifying examination before the deadline to continue in the Ph.D. program and register for Ph.D. Dissertation Credits (ECE-GY 999x). The exam is an oral exam with content described below, but the student must have completed certain course and project requirements before taking the oral exam. Results of the exam will be recorded in the student's transcript as RE-GY 9990.

A. Requirements to be satisfied before taking the oral exam

1) The student must have registered at NYU-Tandon for at least one semester and taken at least 3 graduate-level courses and the student's cumulative GPA from formal courses (not including MS thesis, independent projects and readings) should be 3.5 or above.
2) The student must have completed at least 2 core courses (See Section on Course Requirement), with GPA over the core courses being 3.5 or above, and each core course earning a grade of B or above.

3) The student must have completed a research project under the supervision of a project advisor. The advisor can be any faculty member associated with ECE department. Notice that an external researcher may serve in this role, subject to approval by the chair of the ECE Graduate Curriculum and Standards Committee (to be referred to as the Graduate Committee subsequently). Examples of the project include, but are not limited to, an in-depth literature review of a certain topic, demonstrating solid understanding of a certain set of papers, or implementation and validation of some algorithms in past literature, or a study based on ideas initiated by the advisor or the student. Publication is not a requirement, but is encouraged if the student and the advisor find the contributions by the student worthy of publication. The project advisor should ensure that the project topic is appropriate for evaluating the student's potential for Ph.D. research. It is the student's responsibility to identify and secure a project advisor.

4) The student should have secured an ECE faculty member (or an external member approved by the Chair of the Graduate Committee) prior to taking the qualify exam, who will serve as the student's Ph.D. advisor if the student passes the oral exam. The project advisor does not have to be the Ph.D. advisor. The prospective Ph.D. advisor is not obligated to provide financial support for the candidate. The advisor's letter of support must state a commitment of advising should the student pass the exam. It may also contain a narrative summarizing student's progress in the program.

B. Oral exam

1) The oral exam committee should include the prospective Ph.D. advisor, and three other faculty members chosen by the student in consultation with the Ph.D. advisor. The committee should have at least three Tandon ECE tenure or tenure track (T/TT) faculty (including advisor), the fourth one can be a faculty member or an industry/research professor (with Ph.D. in ECE. or a related area) from NYUAD, NYUSH, or any other NYU department. At most one member can attend the exam remotely if the member is at NYUAD or NYUSH. The student is responsible to secure the committee members to attend the oral exam and identify a time at which all committee members can attend. The exam should be scheduled for 1.5 hours to allow sufficient time for questions and answers and final discussion among the committee members. Once the schedule is fixed, the advisor should announce the exam to all ECE faculty and invite them to attend the exam.

2) A student must send in an official application, along with other required material, for taking the oral exam to the Ph.D. EE qualifying exam coordinator, at least two weeks before the target date of the oral exam. The application form can be downloaded from:
http://engineering.nyu.edu/academics/departments/electrical/students/student-resources
The student must be registered for RE-GY 9990 at the time of the application. This zero-credit course is used for recording the exam results and follows the standard add/drop deadlines. A permission code for RE-GY should be requested from Prof. XK Chen with a copy to the student's advisor.

3) The student must submit a written project report to the exam committee at least one week before the exam date. The written report should be self-contained, and follows the standard format of a conference paper. It is recommended that the report size is between 4 – 6 pages in double column, font size 11.

4) During the exam, the student should give a 30-minute project presentation, followed by questions from the committee members, which should cover both the topic areas of the project and the foundational knowledge in the student's chosen research area. Each committee member (excluding the advisor) is expected to engage in about 15 minutes of questions and answers with the student, with a total of 45 minutes for questions and answers. The student may ask each committee member about from which area will the faculty member ask fundamental questions, although the faculty member is not obliged to provide a detailed answer.

5) The committee will provide a written evaluation of the student's potential for Ph.D. research to the department. The committee members can seek input from the prospective Ph.D. advisor when making such evaluation, but the advisor is excluded from participating in voting and writing the evaluation report. The evaluation criteria can be found from the evaluation form posted here:
http://engineering.nyu.edu/academics/departments/electrical/student-resources

6) The ECE department will make the final decision of pass or fail based on the exam committee's recommendation. If the student and advisor intent is to take the dissertation credits ECE-GY 999X during the same term as the RE-GY 9990 qualifying exam, the exam committee's recommendation must reach the PhD qualifying exam coordinator at least a week in advance of the add/drop deadline for that term.
7) Result (Pass or fail) of the qualifying exam (RE9990) will be recorded in the student's transcript.
8) The student should prepare the report and the presentation independently, without the help from his/her advisor.
9) If a student wants to present a work described in a published, accepted or submitted paper of which the student is not the sole author, the student should submit a short report (2 pages) that is an extensive summary of the work, or a literature survey of the area, and his/her future work, written by the student only, to be submitted along with the paper.
10) The student can present a work that has been presented at a conference, but the presentation should be modified as necessary to fit the qualifying exam oral presentation time limit and provide sufficient background material. The modification should be done by the student independently, without the help of the advisor.

C. Time Limit and Timelines of the First and Repeat Oral Exams

1) Qualifying Exam Limit: It is important to note that students must pass the qualifying exam within 2 years of starting the PhD program or they can be dismissed from the PhD program. The 2 years is "academic years," i.e., fall/spring, fall/spring. In other words, the summer after the 2nd year is not included.
2) First Exam: For students (both full-time and part-time) who started the Ph.D. program with prior MS degree in electrical engineering or a related area, the first oral exam should be taken no later than one year after starting in the Ph.D. program. For students (both full-time and part-time) who started the Ph.D. program without a prior MS degree, the first oral exam can be taken either in the first year or the second year but the max of 2 years to pass the qualify still applies. If a student does not meet the requirement for taking the exam by this deadline, the student might be disqualified from the program.
3) Repeat Oral Exam and Disqualification: Students who failed the first oral exam but otherwise successfully meet the requirement for taking the oral exam can repeat the exam at most once, which should be completed within one year after the first exam. Students who fail to pass the repeat exam will be disqualified from the program.
4) Scheduling of First Exam and Repeat Exam: The first or repeat oral exam should be scheduled before a semester starts so that the student will be informed of the exam result on time for his or her course planning. *A student who needs to repeat the qualify exam cannot repeat the exam in the same semester and must wait at least three months from the time when the first exam was taken*.
5) More on the Repeat Exam: When a student is found to be deficient only in one part of the exam (e.g. written report, presentation of the project, answering fundamental questions), the student may be asked to repeat just that part of the exam. The repeat of a portion of the exam is treated the same as the repeat of the qualifying exam and is subject to the same deadline.

Course Requirements

1) **Core Courses**: A student, in consultation with and upon approval by the Ph.D. advisor, should choose at least 4 ECE-GY courses (12 credits) among courses with numbers ECE-GY6xxx, ECE-GY7xxx, ECE-GY8xxx, or ROB-GY6003, ROB-GY6213, ROB-GY6323, ROB-GY6333, ROB-GY6423 as their core courses. Transferred courses cannot be used to satisfy the core course requirement. To graduate, each course must have a grade of B or above and the average grade of the four courses must be 3.5 or above. The student must have completed at least 2 such courses with the average grade of taken courses being 3.5 or above, before taking the oral qualifying exam. The remaining core courses must be completed before graduation. The list of core courses a student (with a prior MS degree) will register for must be approved by his or her Ph.D. advisor.

2) **ECE-GY courses:** A student must choose at least 24 credits of ECE-GY courses, including the core courses. This requirement can be satisfied by the 30 credits transferred from a prior MS degree in electrical engineering or computer engineering.

3) **ROB-GY courses**: The robotics courses ROB-GY6003, ROB-GY6213, ROB-GY6323, ROB-GY6333, ROB-GY6423 are considered as ECE-GY courses.

4) **Non-ECE Courses:** A student must choose at least 2 non-ECE graduate-level courses (6 credits or more) that are in either Science or Engineering discipline. These courses should be chosen from areas that are distinct and yet consonant with the student's research area. Please note the courses in management cannot be counted towards this requirement. Courses taken at other schools of NYU will be counted towards this requirement provided that the PhD advisor approves them. Transferred courses taken at other accredited graduate programs are subject to approval by the Ph.D. EE program director.

5) **Other courses:** The degree requires a total of 75 credits with at least 21 Ph.D. dissertation credits taken at Tandon. A student must take a minimum of 42 credits in formal courses (as distinct from "independent study" credits such as reading, project or thesis), with a minimum of 24 course credits in ECE-GY courses. The student has freedom in choosing courses, provided that he or she satisfies the requirements specified in 1), 2) and 3). The student should consult with his/her Ph.D. advisor or academic advisor in devising a course plan as early as possible so that the course work covers sufficient depth for the student's chosen area of research and related field, as well as sufficient breadth. Note that credits from CS5000-level courses cannot be counted towards Ph.D. EE degree.

6) **GPA requirement:** As with all the graduate programs at NYU-Tandon, a student must maintain a GPA of 3.0 or above among all courses taken at NYU. A student with GPA below 3.0 has up to two semesters on probation. If at the end of the second semester on probation, the GPA is still below 3.0, the student will be disqualified from the program. The Ph.D. EE program further requires that a student must have a GPA of 3.5 or above among all formal courses (not including dissertation or other independent studies) taken at NYU to graduate, in addition to the GPA requirement for the core courses as specified in Item 1).

7) **Internships:** International students must register for an internship course to do an internship. Up to 6 credits of approved internships for Ph.D. (CP-GY 9941, CP-GY 9951, CP-GY 9961, CP-GY 9971, 1.5 credits each) can be applied towards the 75 credits Ph.D. degree requirement, and in particular, the ECE-GY course requirement as specified in Item 2) above. These credits can be part of the 45 credits beyond the 30 credits of a prior MS degree, which may include up to 3 credits of approved internships for MS (CP-GY 9911, CP-GY 9921). For an internship to be approved for credits, the internship must provide training relevant to the student's research area. All internship must be approved and supervised by the student's Ph.D. advisor. The internship supervisor should submit a midterm and a final term evaluation report to the Ph.D. advisor. The student must submit a project report to the advisor upon completion of the internship for the evaluation and grading of the internship course.

Transfer Credits

For Ph.D. students with a prior MS degree, they are allowed to transfer up to 36 credits, of which *30 credits must be from their prior MS degree in ECE or a closely related field*. For Ph.D. students admitted without a prior MS degree, they can transfer at most 6 credits. For the blanket transfer of 30 credits from a prior MS degree in ECE or a closely related field toward the PhD degree in EE, the student must provide a copy of his or her prior MS degree and the official academic transcripts. For individual course transfer, the student must provide an official transcript in a sealed envelope as well as catalog descriptions of the courses to be transferred, for evaluation and approval by the department graduate advisor. The official transcript and/or diploma submitted during the student's admission process can be used in place of new submission. Graduate courses taken at other schools of NYU or taken as an undergraduate student at NYU Tandon School of Engineering are exempt from this policy, but are subject to the general polity of the Tandon School of Engineering regarding such courses. This policy is effective for students entering in Spring 2018 and later.

Guidance Committee

On passing the qualifying examination, the student should consult with his or her thesis advisor to identify additional members and form a guidance committee. The committee should be composed of at least three members with the thesis advisor usually acting as Chairperson. If the dissertation advisor is not a tenured or tenure track (T/TT) Tandon faculty member of the Department, then a T/TT Tandon faculty member of the Department in the student's research area must be invited to serve as the Committee Chair. The committee should include at least two ECE T/TT faculty (including the advisor, and the NYUAD and NYUSH T/TT faculty), and may include at most two external members from outside the Department who are in the student's area of major research interest. The student must submit the names of the members of the Guidance Committee to the Office of Graduate Studies with a copy to the ECE Graduate Office *within 6 months of passing the qualifying exam*. The Guidance Committee conducts the area examination and thesis defense, and approves the final thesis. The Guidance Committee appointment form can be obtained from the Office of Graduate Studies.

Area Examination

In the area exam, the student reviews the prior research in the student's chosen dissertation topic and presents preliminary research results and additional research plan. The area exam is conducted by the Guidance Committee, but may be open to other interested faculty and students. The Guidance Committee attends and evaluates the student's performance and determines whether the student demonstrates the depth of knowledge and understanding necessary to carry out research in the chosen area. Results of the exam will be recorded in the student's transcript as ECE-GY 9980.

The student must submit a written report that summarizes prior research and the future plan at least one week before the scheduled exam time. The report should follow the Ph.D. dissertation template and be at least 25 pages long. The student must take and pass the area exam within 2 years after passing the Ph.D. qualifying exam. Students who fail to pass the exam by the deadline might be disqualified from the program.

The area exam evaluation form provides further details on the evaluation criterion for passing, and can be downloaded from: http://engineering.nyu.edu/academics/departments/electrical/student-resources

Registration for Ph.D. Dissertation Credits

After passing the qualifying exams, and with the agreement of the Thesis Advisor, the Ph.D. candidate may begin registration for dissertation credits ECE-GY 999x. (The student's failure to abide by this rule may result in loss of credit for the dissertation registration.) A student must register at least 3 credits for ECE-GY999x each semester. A minimum of 21 credits is required for the Ph.D. degree. The student must register for thesis continuously, every Fall and Spring semester, unless a Leave of Absence has been granted by the Office of Graduate Studies.

Submission of the Thesis and Thesis Defense

Upon completion of the doctoral dissertation, the candidate undergoes an oral thesis defense. The defense is conducted by the Guidance Committee, but is open to all members of the ECE faculty and other invited people. *The student must submit a complete draft of the dissertation to the Guidance Committee members at least one week before the scheduled defense.* The student should consult the Office of Graduate Studies regarding how to submit, reproduce and bind the final manuscript.

Seminar Attendance Requirement

Ph.D. students are required to register for a 0-credit Research Seminar course (ECE-GY 9900) for at least 4 semesters. Satisfactory grade is given only if the student attends more than 2/3 of the seminars offered in a semester. Part-time students who have difficulty attending the seminar because of work conflict may be exempted from this requirement upon approval of the Ph.D. EE program director. The student should submit the approval note when applying for graduation.

Publication Requirement

To be granted the Ph.D. degree, a Ph.D. candidate must either have a peer-reviewed journal paper (accepted or published), or have at least one paper under review by a peer-reviewed journal on the thesis research subject. For the journal paper(s), a letter of acceptance by a journal, or a letter of submission to a peer-reviewed journal along with acknowledgment of its receipt by the journal, will constitute the required evidence. If there is no accepted/published journal paper, the student should have at least one accepted conference paper that appeared in the proceedings of a peer-reviewed conference.

Requirements for Students Entered Before Fall 2014

Students who entered before Fall 2014 can either follow the requirements described above, or the requirement effective at the time of matriculation. The requirements posted in the NYU-Tandon catalog as of Sept. 2013 differ from the new requirements in the following aspects. For a complete description, please consult the ECE Graduate Student Manual published in Spring 2013.

> **Course and Thesis Requirements:** A minimum of 75 credits of academic work beyond the bachelor's degree, including a minimum of 21 credits of NYU-Tandon dissertation research, is required. A minimum of 42 credits in formal courses (as distinct from independent study credits such as reading, project or thesis) are required. A student entering with a MS from a reputable graduate program may transfer 30 credits. PhD students are required to take a minimum of 9 credits of courses in a minor area outside of electrical engineering. The minor must be taken in an area that is both distinct from and yet consonant with the student's major study area. Students work with thesis advisers to develop their major study program. The major program should constitute a coherent, in-depth study of the most advanced knowledge in the student's area of concentration.
> **Publication Requirement:** To be granted the PhD degree, a PhD candidate must have at least one accepted or submitted journal paper on the thesis-research subject.
> **Transfer credits**: For Ph.D. students entered before Spring 2015, the following policy as stated in the NYU-Tandon catalog as of Sept. 2013 are applicable: Doctoral candidates may transfer a maximum of 48 credits, including a 30-credit blanket transfer from a prior MS degree in Electrical Engineering or a closely related field, and additional courses in Science and Engineering not included in the prior MS that are individually transferred. For the blanket 30-credit transfer, the prior MS need not be a 30-credit MS, so long as an MS degree (or equivalent) was granted, and a copy of the degree and detailed transcripts are presented. Additional courses individually transferred cannot include project, thesis, dissertation, guided studies or readings, or special topics credits. Applications for transfer credits must be submitted for consideration before the end of the first semester of matriculation. The student's major academic department evaluates graduate transfer credits, but no courses with grades less than B will be considered.

PhD Time Limits

The PhD time clock begins at the time of enrollment in the PhD program. Full-time PhD students who have completed an MS degree or who transfer 24 or more graduate credits towards their PhD degree must complete their PhD degree requirements within six years from the beginning of their PhD studies. Full-time PhD students who transfer in or have completed fewer than 24 credits when they begin their PhD studies have a maximum of seven years to complete their PhD. Part-time PhD students must complete their PhD degree requirements within nine years from the beginning of their PhD studies. Approved leave of absence will stop the time clock.

II.   MASTER DEGREE REQUIREMENTS

At least 30 credits are required for each MS degree. A grade point average (GPA) of 3.0 is required in all graduate courses taken at NYU-Tandon except those used for the undergraduate degree.

1.   MASTER OF SCIENCE ELECTRICAL ENGINEERING (MS/EE)

Entrance Requirements

Admission to the Master of Science in Electrical Engineering Program requires a Bachelor's in Electrical and/or Computer Engineering from an accredited institution, with a GPA of 3.0/4.0 or higher. The Graduate Record Exam (GRE) is required for all applicants. Students who do not have a prior BS degree in Electrical and/or Computer Engineering but have strong background in their chosen focus areas of study and sufficient mathematics preparation may be considered for admission.

Course Requirements

To obtain the MS degree in Electrical Engineering, students must complete a total of 30 credits, with restrictions described below.

Core Courses: The core courses cover fundamental material and should be taken as early as possible. An advanced course subsequent to a core course may be taken in lieu of the core course, upon approval by the MSEE program advisor. All students must choose two out of the following core courses:

ECE-GY 6113	Digital Signal Processing I
ECE-GY 6253	Linear Systems
ECE-GY 6303	Probability and Stochastic Processes
ECE-GY 6713	Electromagnetic Theory and Applications
ECE-GY 6403	Fundamentals of Analog Integrated circuit design

Concentration areas: Students are recommended to select courses to focus on one or two concentration areas, to obtain sufficient depth in the chosen areas. To provide flexibility for course selection based on the student's interests, a student does not need to officially declare a concentration, and no specific number of credits is required for each chosen centration. For an up-to-date list of concentration areas and courses for each area, please visit

http://archive.engineering.nyu.edu/academics/departments/electrical

Thesis, project, and reading: Students are encouraged to participate in research by registering for a master's thesis (ECE-GY997x, 6 credits, can be taken over two semesters), an advanced project (ECE-GY9953 or ECE-GY9963, 3 credits each, ECE-GY9941, 1.5 credits) or a reading course (ECE-GY9933, 3 credits). Students must secure a faculty member's commitment for advising such individual studies. Oral defense of the master's thesis with at least three professors (at least 2 ECE professors) in attendance is required. For the project and reading courses, a project report and an oral presentation is required. The total credits for thesis, projects, readings, and internships (see below) should not exceed 9 credits within the 30 credits required for the MS degree.

Internships: International students must register for an internship course (CP-GY 9911, CP-GY 9921, 1.5 credit each) to do an internship. Up to 3 credits of approved internships can be applied towards the 30 credits MS degree requirement. International students cannot do internship after they have completed the degree requirement. For an internship to be approved for credits, the internship job must provide industry and/or research experience relevant to the Electrical Engineering degree program. All internships must be approved and supervised by an ECE faculty member. Students must secure a faculty member's commitment for advising

an internship. The internship supervisor should submit a midterm and a final term evaluation report to the advisor. The student must submit a project report to the faculty advisor upon completion of the internship for the evaluation and grading of the internship course. The total credits for independent studies including MS thesis, projects, reading, and internship cannot exceed 9 credits within the 30 credits towards the MS degree. *Note that CP-GY 99x1 and CP-GY 99x2 can be counted towards the ECE-GY course requirement. However, if a student has already taken more than 7.5 credits of independent studies, he/she will not be approved for another CP course.*

ROB-GY courses: The robotics courses ROB-GY6003, ROB-GY6213, ROB-GY6323, ROB-GY6333, ROB-GY6423 are considered as ECE-GY courses.

Out-of-department courses and 5000-level ECE-GY courses: At least 24 credits should be ECE-prefixed courses. The other 6 credits can be from any science, engineering or management departments. A 3-credit course taken at other science or engineering departments of NYU that is closely related to electrical engineering may be used to substitute an ECE-GY course upon approval by the MSEE program advisor. The total number of credits for 5000-level ECE courses and non-ECE courses cannot exceed 12 credits. (Note that CS-GY 6133 Computer Architecture I taken before Fall 17 will be counted as ECE-GY credits for this purpose.) Credits from 5000-level courses from other departments cannot be counted towards MS/EE degree, except with approval by the Program Director.

Note about CS-GY 6843 Computer Networking: We expect most students have covered this material in an undergraduate course. Therefore, students can only take this course for credits towards MSEE degree in exceptional cases and only if approved by Professor Yong Liu.

Transfer Credits: No transfer credits are accepted towards the MS degree.

GPA requirements: An overall GPA of 3.0 or above in all graduate courses taken at NYU is required. In addition, an average of 3.0 is required among the two core courses.

2.   MASTER OF SCIENCE COMPUTER ENGINEERING (MS/CompE)

Entrance Requirements

Admission to the MS program requires a bachelor's degree in computer engineering, electrical engineering or computer science from an accredited institution. Students without such prior degrees must complete appropriate undergraduate courses to remove any deficiencies in preparation. Topics in which deficiencies must be removed include logic circuits design, state analysis and synthesis techniques, computer architecture, data structures and algorithms and C or C++ programming. The Graduate Record Exam (GRE) is required for all applicants.

Course Requirements

To obtain the MS degree in Computer Engineering, students must complete a total of 30 credits, with restrictions described below.

Core Courses (6 credits):
The core courses cover fundamental material and should be taken as early as possible. An advanced course subsequent to a core course may be taken in lieu of the core course, upon by the program advisor. All students must choose two out of the following core courses:
- ECE-GY 6913 Computing Systems Architecture
- ECE-GY 6463 Advanced Hardware Design
- ECE-GY 6473 Introduction to VLSI System Design
- ECE-GY 6483 Real Time Embedded Systems
- ECE-GY 5373 Internet Architecture & Protocols Lab

(Note that ECE-GY 6913 is a newly developed course that replaces CS-GY 6133 Computer Architecture I as a core course. ECE students interested in computer architecture should take this course instead of CS-GY 6133. CS-GY 6133 will be approved as a core course for MS-CE only if it was taken prior to Fall 17.)

Electives (24 credits):
At least 24 out of 30 credits should be ECE-GY prefixed courses including the core courses. Up to two non-ECE courses (equivalent to six credits) can be taken from other science, engineering, or management departments at NYU. The total number of credits for 5000-level ECE courses and non-ECE courses cannot exceed 12 credits. *Note that CP99x1 and CP99x2 can be counted towards the ECEGY course requirement.* Furthermore, credits from 5000-level courses from other departments cannot be counted towards MS/CE degree, except with approval by Program Director.

ROB-GY courses: The robotics courses ROB-GY6003, ROB-GY6213, ROB-GY6323, ROB-GY6333, ROB-GY6423 are considered as ECE-GY courses.

Project requirement (3 credits):
One 3-credit advanced project in ECE/CSE (ECE-GY9953 or CS-GY9963) is required. Certain courses with significant project component may be used to partially satisfy the project requirement, subject to approval by the program director.

Note about CS-GY 6843 Computer Networking: We expect most students have covered this material in an undergraduate course. Therefore students can only take this course in exceptional cases and only if approved by Professor Yong Liu.

Thesis, project, and reading: See the section titled "Thesis, project, and reading" for MS/EE.

Internships: See the section about internship for MS/EE.

Transfer Credits: No transfer credits are accepted towards the MS degree.

GPA requirements: An overall GPA of 3.0 or above in all graduate courses taken at NYU is required. In addition, an average of 3.0 is required among the two core courses.

III.   FINANCIAL AID AND SCHOLARSHIPS

Support Available for Ph.D. Students

Ernst Weber Fellowship and School of Engineering Fellowship

Offered to new applicants for Ph.D. in Electrical Engineering programs with exceptional qualifications. The fellowship will cover stipend and full tuition and fee, with guaranteed funding for 4 years provided the student maintains high academic standards. Students receiving the fellowship are expected to engage in the departmental teaching and educational activities in some semesters.

Scholarship from Center for Cybersecurity

The Center for Cybersecurity fosters the next generation of scholars by proudly hosting the ASPIRE scholarship, the NYU Cyber Scholars Program, and the Latham & Watkins Award in Technology and Law, along with scholarships and fellowships for PhD applicants in Cybersecurity. For more information, please visit: http://cyber.nyu.edu/student-scholarships/

NYUAD Global Ph.D. Student Fellowship:

The fellowship covers tuition, fees, health insurance, competitive salary, and allowances for 4 years. Fellowship recipients are advised by an NYUAD standing faculty member, and conduct their doctoral research at NYUAD. Fellowship candidates are required to hold a relevant master's degree in order to be considered for the fellowship. For more information, please visit the NYUAD Global Ph.D. Student Fellowship page here:
 http://nyuad.nyu.edu/en/academics/graduate-programs/engineering.html

School of Engineering Fellowship for Teaching:

Students receiving this award are expected to perform teaching duties in addition to research work supervised by a faculty advisor. The applicant must be a full-time PhD candidate. The compensation includes a stipend in addition to Tuition Remission for up to 9 credits per semester. This award is given to current PhD students with excellent academic credentials.

RESEARCH ASSISTANTSHIP

Students receiving this award are expected to perform research work supervised by a faculty advisor. The applicant must be a full-time PhD candidate. The compensation for the research assistants includes a stipend in addition to Tuition Remission for up to 9 credits per semester. This award is given to new and current PhD students with excellent academic credentials.

TEACHERS AIDE

The ECE department hires qualified graduate students as Teachers Aide for course related duties such as homework grading, assisting graduate and undergraduate lab sessions, and office hours. These positions are open only for current students who have excellent academic records and demonstrated good teaching skills. Openings for these positions vary from semester to semester. Interested students should contact the faculty in charge of the relevant courses directly.

Support Available for MS Students

Samuel Morse MS Fellowship

Named after the co-inventor of the Morse code, who was an NYU Professor, this fellowship offers two year support for outstanding MS applicants. The support will cover full tuition and fee and stipend for 9 months in each year.

Merit Scholarship

The Merit scholarships are offered to qualifying applicants to Master's degree, in the form of tuition discount. For more information, please visit
http://engineering.nyu.edu/graduate-school/current-students/tuition-financial-aid

GRADUATE STUDENT EMPLOYMENT AND TRAINING (GSET)

GSET program engages full time graduate students in good standing to work in the academic or administrative field in the department. For more information, please consult:

http://engineering.nyu.edu/life/orientation/graduate/faq#GSET

IV. AWARDS FOR ECE GRADUATE STUDENTS

The ECE Department offers the following annual awards for ECE Graduate Students at the end of Spring semester. The winners will be selected from students nominated by ECE faculty members. Specific information about nomination and evaluation will be announced around early April in each year.

The Alexander Hessel Award for the Best Ph.D. Dissertation in Electrical Engineering

Given in memory of the late Professor Alexander Hessel, of the Department of Electrical and Computer Engineering, to a graduate student for the most outstanding doctoral dissertation in electrical engineering. The award carries a cash prize of $1500. The award is given annually at the end of the Spring semester. All Ph.D. students who completed a doctoral dissertation (or a complete draft) between April of the previous year and March of the current year are eligible.

The Dante Youla Award for Graduate Research Excellence in Electrical Engineering

Given in honor of ECE Professor Dante Youla, this award will be given to the graduate student who has made the most significant research contribution among all ECE graduate students (Ph.D. and MS) in the past year (between April of the previous year and March of the current year). The award carries a cash prize of $500.

The Theodor Tamir Award for the Best MS Thesis in Electrical and Computer Engineering

Established and funded by ECE Professor Emeritus Theodor Tamir, this award will be given to a MS student for the most outstanding MS Thesis in electrical or computer engineering. The award carries a cash prize of $500. The award is given annually at the end of the Spring semester. All MS students who completed a MS Thesis (or a complete draft) between April of the previous year and March of the current year are eligible.

The Myron M. Rosenthal Award for Best MS Academic Achievement in Electrical and Computer Engineering

The Myron M. Rosenthal Award for Best MS Academic Achievement in Electrical and Computer Engineering will be chosen among all ECE MS students, based on the course work as well as MS thesis or project. This award carries a cash prize of $750. All MS students who graduated or expect to graduate between June of the previous year and May of the current year and completed a MS thesis or project (with a complete draft of the thesis or report by March of the current year) are eligible.

The Athanasios Papoulis Award for Graduate Teaching Excellence in Electrical and Computer Engineering

Given in memory of late ECE Professor Athanasious Papoulis, this award will be given to the ECE graduate student who has demonstrated excellence in assisting undergraduate classes in the past year (Spring and Fall semesters of the previous year). The award carries a cash prize of $500. The selection will be based on the student evaluation of teaching assistants at the end of each semester and the instructor feedback.

David Goodman Research Award

Given in honor of ECE Professor David Goodman, this award will be given to ECE students with excellent research performance. This award is open to all ECE undergraduate and graduate students who have received a paper award as the lead author from a peer-reviewed journal or conference, or a prestigious recognition of their research work, in the past year (between April of the past year and March of the current year). Each winner will receive a cash prize of $500.

V. ECE GRADUATE COURSE LISTING

Catalog listing of all ECE Graduate Courses can be found at:

http://bulletin.engineering.nyu.edu/

Some important Guidelines and Policies, including applying for graduation and taking classes at NYU, are provided at:
http://engineering.nyu.edu/students/gc-forms

Course Number and Title	Prerequisites	Course Director	Brooklyn Offering Schedule
ECE-GY5213 Introduction to Systems Engineering	Graduate Status	Prof. Quanyan Zhu	online
ECE-GY5223 Sensor Based Robotics	Graduate status or ECE-UY3054 (Signals and Systems) or equivalent.	Prof. Farshad Khorrami	S
ECE-GY5253 Applied Matrix Theory	Graduate status	Prof. Zhong-Ping Jiang	F
ECE-GY5373 Internet Architecture & Protocols Lab	ECE-UY3613	Prof. Yong Liu	F,S
ECE-GY5463 Introduction to RF/Microwave Integrated Circuits	ECE-UY3604 (Electromagnetic Waves)	Prof. Spencer Kuo	S
ECE-GY5533 / PH5533 Physics of Nanoelectronics	PH2033 or instructor's permission	Prof. Edward Wolf (PH)	F
ECE-GY5613 Introduction to Electric Power Systems	ECE-UY2013 (Fundamentals of Electric Circuits I)	Prof. Francisco De Leon	F
ECE-GY5623 Finite Elements For Electrical Engineering		Prof. Francisco De Leon	as needed
ECE-GY5663 / PH5663 Physics of Alternative Energy	PH2033	Prof. Edward Wolf (PH)	S
ECE-GY5733 RF and Microwave Systems Engineering	ECE- UY3604 (Electromagnetic Waves)	Prof. Spencer Kuo	F
ECE-GY5753 Introduction to Plasma Engineering	ECE- UY3604 (Electromagnetic Waves)	Prof. Spencer Kuo	as needed
ECE-GY6013 Digital Communications	ECE-UY3404 (Fundamentals of Communication Theory) and ECE-GY6303 (Probability and Stochastic Processes)	Prof. Elza Erkip	F
ECE-GY6023 Wireless Communications	ECE-GY6013 (Digital Communications)	Prof. I-Tai Lu	S
ECE-GY6063 Information Theory	Graduate status and ECE-GY6303 (Probability and Stochastic Processes)	Prof. Elza Erkip	as needed
ECE-GY6113 Digital Signal Processing I	ECE-UY3054 (Signals and Systems)	Prof. Ivan Selesnick	F,S
ECE-GY6123 Image and Video Processing	ECE-GY 6113 (Digital Signal Processing I) and ECE-GY6303 (Probability and	Prof. Yao Wang	S

	Stochastic Processes) preferred but not required		
ECE-GY6143 / CS-GY6923 Machine Learning	Graduate status with undergraduate level probability theory	Prof. Sundeep Rangan	F, S
ECE-GY6183 Digital Signal Processing Laboratory	Graduate status, undergraduate with GPA>=3.0 and ECE-UY3054 (Signals and Systems).	Prof. Ivan Selesnick	F
ECE-GY6213 System Modeling, analysis & Design	ECE-GY5213 (Introduction to Systems Engineering)	Prof. Farshad Khorrami	Not offered currently
ECE-GY6233 System Optimization Methods	Graduate status and ECE-GY5253 (Applied Matrix Theory) or ECE-GY6253 (Linear Systems)	Prof. Zhong-Ping Jiang	S
ECE-GY6243 System Theory and Feedback Control	Graduate status and ECE-UY3064 (Feedback Control)	Prof. Zhong-Ping Jiang	F
ECE-GY6253 Linear Systems	Graduate status and ECE-UY3054 (Signals and Systems)	Prof. Farshad Khorrami	F,S
ECE-GY6263 Game Theory	Graduate status	Prof. Quanyan Zhu	F
ECE-GY6303 Probability and Stochastic Processes	Graduate status and MA-UY3014 (Applied Probability)	Prof. Unnikrishna Pillai	F,S
ECE-GY6333 Detection and Estimation Theory	ECE-GY6303 (Probability and Stochastic Processes)	Prof. Unnikrishna Pillai	as needed
ECE-GY6363 Data Center and Cloud Computing	ECE-GY5373 (Internet Architecture & Protocols Lab)	Prof. Jonathan Chao	F
ECE-GY6383 High-Speed Networks	Graduate status and ECE- GY5373 (Internet Architecture & Protocols Lab)	Prof. Jonathan Chao	S
ECE-GY6403 Analog integrated circuits	Graduate status, or undergraduate with GPA>=3.0 and ECE-UY3124 (Fundamentals of Electronics II).	Prof. Davood Shahrjerdi	S
ECE-GY6443 VLSI System and Architecture Design	ECE-GY6473 (Introduction to VLSI System Design) or instructor's permission	Prof. Ramesh Karri	S
ECE-GY6453 Advances in Reconfigurable Systems	ECE-GY6463 (Advanced Hardware Design)	Prof. Ramesh Karri	Not offered currently
ECE-GY6463 Advanced Hardware Design	CS-UY 1124, 2214 (Computer Architecture and Organization) and ECE-UY2004 (Fundamentals of Electric Circuits)	Prof. Ramesh Karri	F
ECE-GY6473 Introduction to VLSI System Design	CS-UY 2204 (Digital Logic and State Machine Design) and ECE-UY3114 (Fundamentals of Electronics I)	Prof. Siddharth Garg	F
ECE-GY6483 Real Time Embedded Systems	Knowledge of C, Pascal or other programming language and a basic understanding of computer architecture	Prof. Ramesh Karri	S
ECE-GY6493 Digital VLSI System Testing	CS-UY 2204 (Digital Logic and State Machine Design) or equivalent	Prof. Ramesh Karri	as needed

Course	Prerequisites	Instructor	Term
ECE-GY6513 Solid State Electronic Devices	Graduate status, or undergraduate with GPA>=3.0 and MA-UY 2034 (Linear Algebra and Differential Equations) and PH-UY 2023 (Electricity, Magnetism and Fluids)	Prof. Davood Shahrjerdi	F
ECE-GY6523 Nanoelectronic Devices	ECE-GY 6513 (Solid State Electronic Devices) or has taken a undergraduate course in solid state device. Undergraduate students must have 3.0 cumulative GPA or higher.	Prof. Shaloo Rakheja	S
ECE-GY6583 Fiber Optic Communications	Graduate Status or ECE-UY3604 (Electromagnetic Waves)	Prof. Spencer Kuo	S
ECE-GY6603 Power Electronics	Graduate status, ECE-UY3054 (Signals and Systems) and ECE-UY3124 (Fundamentals of Electronics II)	Prof. Zivan Zabar	F, every two years
ECE-GY6613 Electrical Transmission & Distribution Systems	Graduate status	Prof. Francisco De Leon	as needed
ECE-GY6623 Smart Grids: Control, Economics, Planning and Regulation	Graduate status and ECE-GY5613 (Introduction to Electric Power Systems)	Prof. Yury Dvorkin	F
ECE-GY6633 Transients, Surges and Faults in Power Systems	Graduate status and ECE-GY5613 (Introduction to Electric Power Systems) or equivalent	Prof. Francisco De Leon	F, every two years
ECE-GY6653 Power System Operation and Control	Graduate status and ECE 6623 (Smart Grids: Control, Economics, Planning and Regulation)	Prof. Yury Dvorkin	S
ECE-GY6663 Distributed Generation Systems	Graduate status, ECE-UY3064 (Feedback Control) and ECE-GY5613 (Introduction to Electric Power Systems), ECE-UY3824 (Electric Energy Conversion Systems) and ECE-GY5613 or equivalent; co-requisite: ECE-GY6603 (Power Electronics)	Prof. Zivan Zabar	S
ECE-GY 6673 Resonant Power Converters	ECE-UY 3824 (Electric Energy Conversion Systems) or equivalent	Prof. Dariusz Czarkowski	
ECE-GY6683 Electric Drives	Graduate status and ECE-UY3824 (Electric Energy Conversion Systems) or equivalent	Prof. Zivan Zabar	S
ECE-GY6693 Electronic Power Supplies (formerly ECE-GY5673)	ECE-UY3824 (Electric Energy Conversion Systems) or equivalent	Prof. Dariusz Czarkowski	F
ECE-GY6713 Electromagnetic Theory and Applications	Graduate status and ECE-UY3604 (Electromagnetic Waves)	Prof. Nirod Das	F
ECE-GY6723 Electromagnetic Radiation and Antennas	Graduate status and ECE-GY6713 (Electromagnetic Theory and Applications) or ECE-UY3604 (Electromagnetic Waves) with grade B or better	Prof. Nirod Das	S

Course	Prerequisites	Instructor	Semester
ECE-GY6813 / BE6203 Medical Imaging	ECE-GY6113 (Digital Signal Processing I). ECE-GY6123 (Image and Video Processing) desired	Prof. Yao Wang	F
ECE-GY 6913 Computing Systems Architecture	Graduate status (ECE students should take this course instead of CS-GY 6133 Computer Architecture I)	Prof. Siddharth Garg	F
ECE-GY7133 Digital Signal Processing II	ECE-GY6113 (Digital Signal Processing I)	Prof. Ivan Selesnick	S
ECE-GY7143 Advanced Machine Leaning	CS-GY 6923 Machine Learning with minimum grade B+ or ECE-GY 6143 Introduction to Machine Learning with minimum grade B+ and ECE-GY6303 (Probability and Stochastic Processes)	Prof. Anna Choromanska	S
ECE-GY7253 State Space Design for Linear Control Systems	Graduate status and ECE-GY6253 (Linear Systems)	Prof. Farshad Khorrami	S
ECE-GY7353 Network Modeling and Analysis	ECE-UY 3163 or ECE-GY 5373 (Internet Architecture and Protocols) and ECE-GY6303 (Probability and Stochastic Processes)	Prof. Shivendra Panwar	Every 3 semesters
ECE-GY7363 Network Design and Algorithms	ECE-UY 3163 or ECE-GY 5373 (Internet Architecture and Protocols) and knowledge of data structures (CS-GY6033)	Prof. Yong Liu	Every 3 semesters
ECE-GY7373 High Performance Switches and Routers	ECE-UY 3163 or ECE-GY 5373 (Internet Architecture and Protocols)	Prof. Jonathan Chao	Every 3 semesters
ECE-GY8223 Applied Nonlinear Control	Graduate status, ECE-UY3064 (Feedback Control) and ECE-GY6253 (Linear Systems) or equivalent	Prof. Zhong-Ping Jiang	F, every two years
ECE-GY8233 Optimal Control Theory	Graduate status, ECE-GY6233 (System Optimization Methods) and ECE-GY6253 (Linear Systems)	Prof. Quanyan Zhu	as needed
ECE-GY8253 Large Scale Systems and Decentralized Control	Graduate status and ECE-GY7253 (State Space Design for Linear Control Systems) or instructor's permission	Prof. Farshad Khorrami	as needed
ROB-GY 6003 Foundations of Robotics	Graduate status	Prof. Giuseppe Loianno	F
ROB-GY 6213 Robot Localization and Navigation	Linear Systems ECE-GY 6253 for ECE students or or instructor approval and ME-GY6923 or ME-GY6703 or instructor approval for M AE students.	Prof. Giuseppe Loianno	S
ROB-GY 6323 Reinforcement learning and optimal control for robotics	Linear systems (ECE-GY 6252 or ME-GY 6703) or Foundations of robotics (ROB-GY 6003)	Prof. Ludovic Righetti	S
ROB-GY 6333 Networked robotics systems, cooperative control and swarming	Linear systems (ECE-GY 6252 or ME-GY 6703) or Foundations of robotics (ROB-GY 6003)	Prof. Ludovic Righetti	F

ROB-GY 6423 Interactive Medical Robotics	ECE-GY 6253 or ME-GY 6703 or ECE-GY 5223 or ME-GY 6923 or Equivalent or instructor permission	Prof. S. Farokh Atashzar	S
ECE-GY9313-9393 Selected Topics in Telecommunications and Networking	Specified when offered		
ECE-GY9343 Selected topics in Data structure and algorithms		Prof. Yong Liu	F, S
ECE-GY9413-9493 Selected Topics in Computer Electronic Devices and Systems	Specified when offered		
ECE-GY9453	Hardware Security		S
ECE-GY9513-9593 Selected Topics in Electro-Optics, Quantum Electronics and Material Science	Specified when offered		
ECE-GY9613-9693 Selected Topics in Power Engineering	Specified when offered		
ECE-GY9713-9793 Selected Topics in Electrodynamics, Wave Phenomena and Plasmas	Specified when offered		
ECE-GY9900 Seminar in Electrical and Computer Engineering			
CP-GY 9911, 9921, 9941, 9951, 9961, 9971 Internship for MS and PhD	Students must secure advisor and approval, 1.5 credits each		
ECE-GY9933 Readings in Electrical Engineering	Students must secure advisor and approval		
ECE-GY9941 Advanced Projects III	Students must secure advisor and approval, 1.5 credits		
ECE-GY9953 Advanced Projects I	Students must secure advisor and approval		
ECE-GY9963 Advanced Projects II	Students must secure advisor and approval		
ECE-GY997x MS Thesis in Electrical & Computer Engineering	Students must secure advisor and approval		
ECE-GY999x PhD Dissertation in Electrical Engineering Dept.	Passing Qualifying Examination Must register continuously after the first semester registered, must register at least 3 credits/semester		

VI. FACULTY ROSTER BY AREAS OF SPECIALIZATION IN ELECTRICAL AND COMPUTER ENGINEERING (ECE)

Communications and Networking	
Jonathan Chao Professor	High-Speed Networking, Router Designs, Network Security
Elza Erkip Professor	Wireless Communications, Communication and Information Theory
Michael Knox Industry Professor	Wireless Communications, RF/Antennas/Analog, Instrumentation and Test
Thanasis Korakis Research Assistant Professor	Communication Networks
Yong Liu Professor	Communication Networks
Pei Liu Research Assistant Professor	Communication Networks
I-Tai Lu Professor	Wave Propagation, Underwater Acoustics, Wireless Communications
Shivendra S. Panwar CATT Director, Professor	Telecommunication Network Design and Modeling
S. Unnikrishna Pillai Professor	Signal Processing, Spectrum Estimation, System Identification
Sundeep Rangan Professor	Wireless communications, Information Theory, Signal Processing
Theodore (Ted) S. Rappaport NYU WIRELESS Director, Professor	Radio Wave Propagation, Wireless Comm. System Design, Broadband Wireless Comm. Circuits, Radiology
Thomas Marzetta Distinguished Industry Professor	Massive MIMO (Multiple-Input Multiple-Output)
Peter Voltz Associate Professor Associate Dean for Undergraduate and Graduate Academics	Communications, Signal Processing

Computer Engineering and VLSI	

Hoda Alkhzaimi
Research Assistant Professor at
Abu Dhabi

Cryptography & Cryptanalysis, Hardware Cryptography
and Security

Jonathan Chao
Professor

High-Speed Networking, Router Designs,
Network Security

Siddharth Garg
Assistant Professor

Computer Architecture, Electronic Design Automation,
Hardware Security

Danny Y. Huang
Assistant Professor

Security, privacy, and usability; Internet-of-things;
Cybercrime and malware, Crypto-currency

Ramesh Karri
Professor

CAD, Trustworthy Hardware, Reliability, VLSI Testing

Michaeil Maniatakos
Research Assistant Professor,
Assistant Professor at Abu Dhabi

Computer Architecture, Hardware Security

Brandon Reagen
Assistant Professor

Computer Architecture, Hardware Acceleration, Machine
Learning, VSLI

Davood Shahrjerdi
Assistant Professor, Ph.D

Solid-state nanoelectronics, flexible electronics, integrated
bioelectronics

Ozgur Sinanoglu
Professor at Abu Dhabi

VLSI Test, Reliability & Trust, VLSI CAD

Yang Xu
Research Assistant Professor

Network Security, High-Speed Router Design,
Network-on-Chip, Network Processors

Electromagnetics and Analog/RF/Biomedical Circuits

Nirod K. Das
Associate Professor

MMIC, Antennas, Microwave Photonics

Sohmyung Ha
Assistant Professor at Abu Dhabi

Biomedical Integrated Circuits, Implantable Sensors and
Prosthetics, Wearable Biomedical Sensors

Michael Knox
Industry Professor

Wireless Communications, RF/Antennas/Analog,
Instrumentation and Test

Francisco de Leon
Professor

Analysis of Power Systems,
Electromagnetic Design & Modeling

I-Tai Lu
Professor

Wave Propagation, Underwater
Acoustics, Wireless Communications

Theodore (Ted) S. Rappaport

Radio Wave Propagation, Wireless Comm. System Design,

NYU WIRELESS Director, Professor	Broadband Wireless Comm. Circuits, Radiology
Davood Shahrjerdi Assistant Professor	Solid-state nanoelectronics, flexible electronics, integrated bioelectronics
Rafael Song Assistant Professor at Abu Dhabi	Biosensors and Biochips

Energy Systems and Power Electronics

Dariusz Czarkowski Professor	Power Electronics, Power Quality, Electric Power Systems
Zhong-Ping Jiang Professor	Basic Stability Problems, Distributed and Nonlinear Control, Learning-Based Control, Robust Adaptive Dynamic Programming, Connected and Autonomous Vehicles, Systems Neuroscience
Farshad Khorrami Professor	Control Systems and Robotics
Yury Dvorkin Assistant Professor	Power Systems, Smart Grids, Operations research, Clean energy policy
Francisco de Leon Professor	Analysis of Power Systems, Electromagnetic Design & Modeling
Zivan Zabar Professor	Electric Power Systems and Devices, Electromagnetic Propulsion
Quanyan Zhu Associate Professor	Game and Control Theory, Reinforcement Learning and Control, Cyber-Physical Systems, Smart Grids, Security and Resilience, Communications and Networks, Economics and Policy

Signal Processing, Control and Robotics

S. Farokh Atashzar Assistant Professor	Medical Robotics, Man-Machine Interfacing, Human-Robot Interaction, Nonlinear Control, Bio-Signal Processing, Machine Learning
Matthew S. Campisi, Industry Assistant Professor	Signal Processing and Communication, Biomedical Signal Processing
Anna Chromanska Assistant Professor	Machine learning, deep learning, big data/models

Mohamad Eid Assistant Professor at Abu Dhabi	Human Robot Interaction and Haptics
Yi Fang Research Assistant Professor, Assistant Professor at Abu Dhabi	Computer vision, Artificial intelligence, Machine learning
Nikolaos Freris Assistant Professor at Abu Dhabi	Cyberphysical systems, distributed algorithms, optimization, control, multi-agent systems, data mining/machine learning
Chinmay Hegde Assistant Professor	Machine Learning, Algorithms, Big Data, Signal and Image Processing
Zhong-Ping Jiang Professor	Basic Stability Problems, Distributed and Nonlinear Control, Learning-Based Control, Robust Adaptive Dynamic Programming, Connected and Autonomous Vehicles, Systems Neuroscience
Farshad Khorrami Professor	Control Systems and Robotics
Giuseppe Loianno Assistant Professor	Robotics, Micro-Aerial Vehicles, Vision, Sensor Fusion
S. Unnikrishna Pillai Professor	Signal Processing, Spectrum Estimation, System Identification
Sundeep Rangan Professor	Wireless communications, Information Theory, Signal Processing
Ludovic Righetti Associate Professor	Robots with arms and legs, Motion planning and control, Optimal control/Optimization, Machine learning, Applied dynamical systems
Ivan W. Selesnick Department Head & Professor	Signal Processing, Biomedical Signal Processing
Peter Voltz Associate Professor, Associate Dean for Undergraduate and Graduate Academics	Communications, Signal Processing
Yao Wang Professor	Image and Video Processing, Computer vision, Medical Imaging
Quanyan Zhu Associate Professor	Game and Control Theory, Reinforcement Learning and Control, Cyber-Physical Systems, Smart Grids, Security and Resilience, Communications and Networks, Economics and Policy

VII. ADVISORS AND PROGRAM DIRECTORS

Graduate Program Coordinator & Advisor:

Prof. Xiaokang Chen	xkchen@nyu.edu	Jay 370, 822	646-997-3056

Academic Advisors in Different Areas

MS Electrical Engineering

Prof. Dariusz Czarkowski (Power Engineering)	dc1677@nyu.edu	LC200H	646-997-3256
Prof. Nirod Das (Electrophysics)	nkd217@nyu.edu	LC266C	646-997-3192
Prof. Zhong-Ping Jiang (Systems, Control and Robotics)	zjiang@nyu.edu	Jay 370, 1001	646-997-3646
Prof. Yong Liu (Communication Networking)	yongliu@nyu.edu	Jay 370, 954	646-997-3959
Prof. I-Tai Lu (Wireless Communications)	Itl211@nyu.edu	Jay 370, 956	646-997-3041
Prof. Davood Shahrjerdi (Nano Devices)	davood@nyu.edu	Jay 370, 905	646.997.4140
Prof. Yao Wang (Signal and Image Processing)	yw523@nyu.edu	Jay 370, 957	646-997-3469

MS Computer Engineering:

Prof. Ramesh Karri (Program Director)	rkarri@nyu.edu	Jay 370, 1007	646-997-3596
Prof. Siddharth Garg	sg175@nyu.edu	Jay 370, 1006	646-997-4011

Ph.D. Electrical Engineering

Prof. Zhong-Ping Jiang (Program Director)	zjiang@nyu.edu	Jay 370, 1001	646-997-3646

For general inquiry and course advising regarding all graduate programs in ECE, please contact Dr. X. K. Chen first.
For specific academic questions pertaining to a particular program or area, please consult faculty advisors listed above.