Computer Science	Computer Engineering	Electrical Engineering	Systems & Control Engineering

Computer Science	Computer Engineering	Electrical Engineering	Systekms & Control Engineering
1. Regulation by Higher Authority			
Regulations by higher authority, not reproduced here, are the Academic Regulations of the School of Graduate Studies, which are applicable to all advanced degree students. For engineering degree candidates, the Specific Requirements for the Ph.D. Degree of the Graduate Program in Engineering are also applicable. (See the current University Bulletin.)	Regulations by higher authority, not reproduced here, are the Academic Regulations of the School of Graduate Studies, which are applicable to all advanced degree students. For engineering degree candidates, the Specific Requirements for the Ph.D. Degree of the Graduate Program in Engineering are also applicable. (See the current University Bulletin.)	Regulations by higher authority, not reproduced here, are the Academic Regulations of the School of Graduate Studies, which are applicable to all advanced degree students. For engineering degree candidates, the Specific Requirements for the Ph.D. Degree of the Graduate Program in Engineering are also applicable. (See the current University Bulletin.)	Regulations by higher authority, not reproduced here, are the Academic Regulations of the School of Graduate Studies, which are applicable to all advanced degree students. For engineering degree candidates, the Specific Requirements for the Ph.D. Degree of the Graduate Program in Engineering are also applicable. (See the current University Bulletin.)
2. PhD Requirements			
Each student must satisfy the following requirements: Proposal Defense Comprehensive Ph.D. Exam Mathematics Competence Breadth and Science Requirement Dissertation and Dissertation defense All programs must contain at least 36 hours of courses past the B.S. of which no more than 9 hours can be 300 level courses. Two of the courses must be in a basic science or Mathematics. A minimum of 12 hours must be in courses outside the student's thesis area. A student must have attained a minimum 3.25 grade point average (GPA) at the time of graduation. The minimum GPA is calculated based on all courses in the student's Planned Program of Study that carry quality points. Students should consult their faculty advisors in order to ensure that the balance of their Ph.D. course work constitutes a coherent program of study.	Each student must satisfy the following requirements: Proposal Defense Comprehensive Ph.D. Exam Mathematics Competence Breadth and Science Requirement Dissertation and Dissertation defense All programs must contain at least 36 hours of courses past the B.S. of which no more than 9 hours can be 300 level courses. Two of the courses must be in a basic science or Mathematics. A minimum of 12 hours must be in courses outside the student's thesis area. A student must have attained a minimum 3.25 grade point average (GPA) at the time of graduation. The minimum GPA is calculated based on all courses in the student's Planned Program of Study that carry quality points. Students should consult their faculty advisors in order to ensure that the balance of their Ph.D. course work constitutes a coherent program of study.	Each student must satisfy the following requirements: Approved Program of Study Breadth and Depth Requirement Ph.D. Qualifying Exam Research Oral Exam Dissertation and Dissertation defense The Doctor of Philosophy degree program requires completion of 18 credit hours of course work (400 level or above) beyond that required for the M.S. degree, achievement of a passing grade on the Ph.D. qualifying examination, and completion of an 18-credit-hour comprehensive research dissertation. The EE program expects Ph.D. students to be in residence for at least one academic year. (see General Bulletin-Residence Requirement.)	In order to successfully complete the Ph.D. Degree Program, a student must satisfy the following requirements: • Select a designated dissertation subject area • Have a faculty academic advisor and a faculty research advisor • Have an approved Program of Study • Fulfill all course Ph.D. Course Requirements • Successfully complete the Ph.D. Qualifying Examination Process • Have a Ph.D. Dissertation Committee • Successfully complete the Ph.D. Proposal Defense • Fulfill the Ph.D. Residency Requirement • Successfully Complete and Defend the Ph.D. Dissertation • Submit the appropriate copies of Ph.D. Dissertation and Complete Administrative Requirements of the Department, The Case School of Engineering or CWRU. The Ph.D. Student must complete the CWRU courses in their approved Program of Study with a cumulative grade point average of 3.25 or greater.

Computer Science	Computer Engineering	Electrical Engineering	Systems & Control Engineering
3. Admission			
Students are recommended to the Dean of Graduate Studies for admission to the graduate program by the Graduate Admissions Committee of the Department. The normal requirements are a Bachelor's degree in Computer Science or in Computer Engineering. Graduate students shall be admitted to the Ph.D. program by the Graduate Studies Committee of the Department. The normal requirements for admission to the Ph.D. program are a Plan A Master's degree or equivalent in computer engineering or science (or equivalent) and fluency in written and spoken English. Outstanding students may be admitted directly to the Ph.D. program after the bachelor's degree. Admission to candidacy for the Ph.D. degree requires completion of the M.S. Degree or its equivalent and achievement of passing grades on the Computer Science Program's written comprehensive examination	Students are recommended to the Dean of Graduate Studies for admission to the graduate program by the Graduate Admissions Committee of the Department. The normal requirements are a Bachelor's degree in Computer Science, or in Computer Engineering. Graduate students shall be admitted to the Ph.D. program by the Graduate Studies Committee of the Department. The normal requirements for admission to the Ph.D. program are a Plan A Master's degree or equivalent in computer engineering or science (or equivalent) and fluency in written and spoken English. Outstanding students may be admitted directly to the Ph.D. program after the bachelor's degree. Admission to candidacy for the Ph.D. degree requires completion of the M.S. Degree or its equivalent and achievement of passing grades on the Computer Engineering Program's written comprehensive examination		In addition to the pre-admission examination requirements, the normal requirements for the Ph.D. program include a completed masters degree in any of the engineering disciplines, Computer Science, Systems Science, Mathematics, Physics, Operations Research, or Economics. Admission to the Ph.D. program is not automatic upon completion of a Master's degree in the department. After the student has completed the requirements for the Master's degree and has indicated a desire to continue in the department for a Ph.D., he or she must be accepted by a vote of the graduate admissions committee in order to be admitted to the Ph.D. program.

Computer Science	Computer Engineering	Electrical Engineering	Systems & Control Engineering
4. Admission to Candidacy			
Formal admission to Ph.D. candidacy occurs after the student has passed the proposal defense and the comprehensive Ph.D. exam, and the plan of study has been submitted to the Dean. The following time limitations will apply: • For students admitted to the Ph.D. program with an M.S. degree or equivalent, the decision to admit to candidacy must occur prior to the beginning of the fifth semester in the Ph.D. program. • For students admitted to the Ph.D. program with only the B.S. degree, the decision to admit to candidacy must occur prior to the beginning of the seventh semester in the Ph.D. program. Students should submit documentation, approved by the advisor, to the Chairman of the Graduate Studies Committee to be admitted to candidacy. Students who have failed to complete the conditions above within the time limit will be separated from the Ph.D. program in the Department. Separation may also occur in the event of failure of the student to maintain a satisfactory GPA. A student who has been separated may not undertake further study for credit toward the doctoral degree within the same Department (or supervising unit) by which they have been rejected. With the approval of the Department and the Dean of Graduate Studies, such student may complete a master's degree, may register as a non-degree student or seek admission to the graduate program of another department	Formal admission to Ph.D. candidacy occurs after the student has passed the proposal defense and the comprehensive Ph.D. exam, and the plan of study has been submitted to the Dean. The following time limitations will apply: • For students admitted to the Ph.D. program with an M.S. degree or equivalent, the decision to admit to candidacy must occur prior to the beginning of the fifth semester in the Ph.D. program. • For students admitted to the Ph.D. program with only the B.S. degree, the decision to admit to candidacy must occur prior to the beginning of the seventh semester in the Ph.D. program. Students should submit documentation, approved by the advisor, to the Chairman of the Graduate Studies Committee to be admitted to candidacy. Students who have failed to complete the conditions above within the time limit will be separated from the Ph.D. program in the Department. Separation may also occur in the event of failure of the student to maintain a satisfactory GPA. A student who has been separated may not undertake further study for credit toward the doctoral degree within the same Department (or supervising unit) by which they have been rejected. With the approval of the Department and the Dean of Graduate Studies, such student may complete a master's degree, may register as a non-degree student or seek admission to the graduate program of another department	Admission to candidacy for the Ph.D. degree requires completion of the M.S. Degree or its equivalent and achievement of passing grades on the EE Program's written comprehensive examination. The comprehensive examination covers material at an advanced undergraduate level. The comprehensive exam should be taken before completing 12 credit hours of Ph.D. course work. A second stage requires a research examination to be taken before completing 12 credit hours of Ph.D. thesis. The Research examination is taken not later than the end of the semester of first Ph.D. dissertation registration, and it is often a thesis proposal which assesses preparation for research at the Ph.D. level. The engineering program expects Ph.D. students to be in residence for at least one academic year. English competency, required of all Ph.D. candidates, is assessed by the written proposal for thesis research and the oral presentation for this exam. Students whose mastery of English is found lacking will be required to satisfy this requirement by further remedial English course work.	Attainment of Ph.D. Candidacy status occurs after the student has successfully passed the Ph.D. Qualifying Exam and the Ph.D. Program of Study has been approved by the department and the Dean.

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5. Registration			
Graduate students at each registration shall enter or update personal and academic information on the Planned Program of Study Form (available in the Department office.) Every Graduate Student should have a Planned Program of Study approved by his or her advisor by the end of their first semester. Ph.D. students should have their Supplementary Information for Ph.D. Program of Study submitted to the Department Office by the end of their first year of study.	Graduate students at each registration shall enter or update personal and academic information on the Planned Program of Study Form (available in the Department office.) Every Graduate Student should have a Planned Program of Study approved by his or her advisor by the end of their first semester. Ph.D. students should have their Supplementary Information for Ph.D. Program of Study submitted to the Department Office by the end of their first year of study.		
6. Financial Aid			
Only a few graduate students are awarded financial aid upon admission to the Department, but many more are offered research assistantships after beginning research with their advisor. Those not granted financial aid on admission may apply for aid at any time after first registration. These applications are awarded based on performance and availability of support. Students receiving financial aid must register for as many courses as necessary to maintain full-time status.	Only a few graduate students are awarded financial aid upon admission to the Department, but many more are offered research assistantships after beginning research with their advisor. Those not granted financial aid on admission may apply for aid at any time after first registration. These applications are awarded based on performance and availability of support. Students receiving financial aid must register for as many courses as necessary to maintain full-time status.		

Computer Science	Computer Engineering	Electrical Engineering	Systems & Control Engineering
7. Faculty Advisors and Programs of Study			
Upon arrival each graduate student is assigned a faculty academic advisor to assist in planning a program. Each student shall in consultation with the academic adviser, file a Program of Study with the EECS department Graduate Studies Committee before the close of his/her second semester of instruction. Immediately after the end of the second semester of study, a Ph.D. Student must obtain a research advisor who may be different from his/her initial advisor. In no event should a student enter the fourth semester of study without having selected an advisor. If the student is pursuing the Ph.D. degree without acquiring the M.S. degree, the program of study should be accompanied by a petition to the Dean of Engineering to waive the requirement of the M.S. degree. All required courses taken at the University beyond the B.S. degree should be shown on the program of study with the grade if completed. If the requirements are to be fulfilled in other than the standard ways described above, a memorandum requesting approval should be attached to the program of study. In any event, the program of study must be submitted within one semester after passing the comprehensive examination	Upon arrival each graduate student is assigned a faculty academic advisor to assist in planning a program. Each student shall in consultation with the academic adviser, file a Program of Study with the EECS department Graduate Studies Committee before the close of his/her second semester of instruction. Immediately after the end of the second semester of study, a Ph.D. Student must obtain a research advisor who may be different from his/her initial advisor. In no event should a student enter the fourth semester of study without having selected an advisor. If the student is pursuing the Ph.D. degree without acquiring the M.S. degree, the program of study should be accompanied by a petition to the Dean of Engineering to waive the requirement of the M.S. degree. All required courses taken at the University beyond the B.S. degree should be shown on the program of study with the grade if completed. If the requirements are to be fulfilled in other than the standard ways described above, a memorandum requesting approval should be attached to the program of study. In any event, the program of study must be submitted within one semester after passing the comprehensive examination		Upon arrival, each graduate student is assigned a temporary faculty academic advisor to assist in the initial planning of his/her Program of Study. This is a temporary assignment made by the EECS Admissions Committee. It is suggested that each student meet with many faculty members in the Department to discuss academic and research objectives and goals. Before the completion of the semester of enrollment in a graduate degree program in the department, the student must then identify a tenure track faculty member who is willing to serve as the student's permanent faculty academic advisor. Before beginning formal enrollment in dissertation research (EECS 701), a faculty member must agree to serve as the student's faculty research advisor. The faculty research advisor will supervise the student's research and assign grades for the students EECS 701 work. To act in this capacity, a Faculty member holding a Research Professor, Secondary or Adjunct Faculty appointment in the Department must be approved by the Associate Chairman for Graduate Studies. When the faculty research advisor is a tenure track faculty in the Department, then this individual will also serve as the faculty academic advisor.

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8. PhD Program of Study			
The relevant section of the rules for the school of engineering follow. "Minimal requirements in addition to the university requirements are: 1. The minimum course requirement beyond the B.S. level is two years of courses taken for credit, at least 18 hours of which must be taken at Case Western Reserve University. The following courses taken for credit will be acceptable for a Ph.D. program of study: a. All 400-, 500-, and 600-level courses, b. Those 300-level courses approved by the student's department up to a maximum of three beyond the B.S. or a maximum of one beyond the M.S., and c. Approved graduate-level courses taken at other institutions 2. A minimum depth in basic science equivalent to six semester hours (for credit) is required. This requirement may be satisfied by courses that have been previously approved by the faculty of the department in which the student is enrolled. 3. The requirement for breadth is normally satisfied by a minimum of 12 semester hours of courses (for credit) outside the student's major area of concentration as defined by the student's department and does not include courses taken to fulfill the basic science requirement. 4. The minimum requirement for research is satisfied by at least eighteen hours of thesis (701) credits.	The relevant section of the rules for the school of engineering follow. "Minimal requirements in addition to the university requirements are: 1. The minimum course requirement beyond the B.S. level is two years of courses taken for credit, at least 18 hours of which must be taken at Case Western Reserve University. The following courses taken for credit will be acceptable for a Ph.D. program of study: a. All 400-, 500-, and 600-level courses, b. Those 300-level courses approved by the student's department up to a maximum of three beyond the B.S. or a maximum of one beyond the M.S., and c. Approved graduate-level courses taken at other institutions 2. A minimum depth in basic science equivalent to six semester hours (for credit) is required. This requirement may be satisfied by courses that have been previously approved by the faculty of the department in which the student is enrolled. 3. The requirement for breadth is normally satisfied by a minimum of 12 semester hours of courses (for credit) outside the student's major area of concentration as defined by the student's department and does not include courses taken to fulfill the basic science requirement. 4. The minimum requirement for	Students in the Ph.D. program must submit a program of study for approval by the adviso department chairman, and the dean of the Ca School of Engineering, by the beginning of t second semester following admission to the program. A minimum grade point average o required to complete the degree. The courses be chosen so that, including those taken for t M.S. degree, the following distribution requirement is satisfied. **DEPTH COURSES** A minimum of 18 credit hours of courses directly related to the student's research specialization. (These are usually, but not necessarily Electrical Engineering Program courses.) **BREADTH COURSES** A minimum of 12 credit hours of approved courses not directly related to the research specialization. These may include courses chosen from any of the engineering departments as well as the Department of Physics. **MATHEMATICS COURSES** A minimum of six credit hours of approved graduate-level mathematics courses.	The Program of Study for a Ph.D. Student must meet the following minimum course requirements beyond the B.S. Degree: 1.Subject Area Requirement: At least six courses within the student's dissertation subject area. The selection of these courses should be done with the guidance from the student's faculty academic advisor. 2. Breadth Requirement: Four additional courses that are not directly within the student's dissertation subject area. At least two of these courses should be from outside the department. These courses satisfy the requirement for breadth in the student's program of study. 3. Mathematics/Basic Science Requirements: A minimum of two courses in mathematics or basic sciences. 4. The total number of courses in the Program of Study should be at least 12 (twelve). 5. With approval of the Academic Faculty Advisor and the Associate Chairman for Graduate Studies, these courses may include ones taken at other institutions. 6. At least six credit-hours of the courses in the Ph.D. Program of Study must be advanced graduate level (500 level) courses offered by the department. 7. Courses that are dual listed as undergraduate and graduate courses (300/400 dual listing) cannot be use in the Ph.D. Program of Study. 8. In addition, the student must complete at least 18 hours of Ph.D.

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5. A cumulative quality-point average of 3.0 or above in all courses taken for credit as a graduate student at Case Western Reserve University (excluding grades in thesis research and grades of R) is required for the award of the doctor's degree. " The Computer Science program no longer has officially designated Research Tracks for Ph.D. study and research, but offers several suggested courses of study in Appendix I for use as a guide to Ph.D. programs that satisfy the Department and School of Engineering regulations. Normally a student is expected to have at least 4 courses (depth) in his/her dissertation subject area. Breadth courses are generally those courses that are outside the dissertation subject area The fundamental courses of the Department may overlap breadth courses. However, the fundamental courses cannot be counted for the depth courses of program of study. The Mathematics courses taken to satisfy the Math requirement may also be counted as Science courses.	research is satisfied by at least eighteen hours of thesis (701) credits. 5. A cumulative quality-point average of 3.0 or above in all courses taken for credit as a graduate student at Case Western Reserve University (excluding grades in thesis research and grades of R) is required for the award of the doctor's degree. " The Computer Engineering program no longer has officially designated Research Tracks for Ph.D. study and research, but offers several suggested courses of study in Appendix I for use as a guide to Ph.D. programs that satisfy the Department and School of Engineering regulations. Normally a student is expected to have at least 4 courses (depth) in his/her dissertation subject area. Breadth courses are generally those courses that are outside the dissertation subject area The fundamental courses of the Department may overlap breadth courses. However, the fundamental courses cannot be counted for the depth courses of program of study. The Mathematics courses taken to satisfy the Math requirement may also be counted as Science courses.		Dissertation research credits (EECS 701). **<u>Dissertation Subject Area</u>** Graduate courses offered by the Program can be divided into three subject area groups. These are: • Control Theory and Automation Engineering • Systems Analysis and Decision Theory • Manufacturing and Industrial Systems Engineering Selection of the dissertation subject area is required along with approval of the Program of Study. This Program of Study must comply with the Ph.D. Course requirements described above, and must be approved. The dissertation subject area determines which courses can be used to meet the breadth requirements of the Ph.D. Curriculum.

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9. Comprehensive PhD Examination			
Each student applying for candidacy must take and pass all parts of a comprehensive written examination covering the material in the three areas listed below. (i) Analysis of Algorithms (ECES 454) (ii) Operating Systems (ECES 423) or Computer Architecture (ECES 420) (iii) Depth Area selected by the student and his/her advisor. The syllabi of the courses in parentheses define the material to be covered by the areas listed above. For each part of the exam there will be a syllabus and a list of references (with section numbers and page numbers) provided which will specify the scope of the exam. If a student fails all parts of the examination, the entire exam must be taken again. If a student fails one or two parts, the faculty may elect to give another exam to the student in just the areas failed The faculty may choose to have the student's committee hold an oral exam for the student in the areas failed Applicants for the Ph.D. in Computing and Information Science may skip the fundamentals courses if they pass the relevant section on the qualifying exam. Students electing this method must still fulfill the overall number of courses requirement as specified in the School of Engineering rules.	Each student applying for candidacy must take and pass all parts of a comprehensive written examination covering the material in the three areas listed below. i) Analysis of Algorithms (ECES 454) (ii) Computer Architecture (ECES 420) (iii) Depth Area selected by the student and his/her advisor. The syllabi of the courses in parentheses define the material to be covered by the areas listed above. For each part of the exam there will be a syllabus and a list of references (with section numbers and page numbers) provided which will specify the scope of the exam. If a student fails all parts of the examination, the entire exam must be taken again. If a student fails one or two parts, the faculty may elect to give another exam to the student in just the areas failed The faculty may choose to have the student's committee hold an oral exam for the student in the areas failed Applicants for the Ph.D. in Computing and Information Science may skip the fundamentals courses if they pass the relevant section on the qualifying exam. Students electing this method must still fulfill the overall number of courses requirement as specified in the School of Engineering rules.	The Ph.D. Qualifying exam must be taken before completing 12 credit hours of Ph. D. coursework. You will have at most two opportunities to pass. Registration for EECS 701 may begin the semester during which the student first takes the qualifying exam (see Graduate School restrictions on 701 registration). The Qualifying Examination is a general examination that places emphasis on a student's ability to reason, formulate and solve problems, and apply basic engineering and analytical skills. A student may not register for EECS 701 until the semester during which he/she first takes the qualifying exam. The following rules pertain to this examination: 1. A student must take the Ph.D. Qualifying Exam before completing 12 credit hours of Ph.D. coursework. 2. A student has at most two attempts to pass the Ph.D. Qualifying Exam (a second attempt can be made upon recommendation by the faculty). 3. A student must have at least one semester of full-time graduate course work, or equivalent, before taking the examination. The Qualifying Examination will be given once each year in the Spring. Continuing M.S. students must take the exam within one year upon completion of the M.S. degree. Incoming Ph.D. students must take the exam during their first year. 4. Students must sign up to take the qualifying exam and choose their elective areas at least three weeks	

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		prior to the date of the exam. 5. Preparation for the Qualifying Exam: Some students enter the graduate program from disciplines other than Electrical Engineering and remedial coursework will be recommended to precede their first attempt at the qualifier. Others who take the exam and do not pass in their first attempt may receive a list of appropriate courses which are recommended as remedial preparation. This will be monitored by the research advisor. 6. The qualifying examination will consist of two parts: **Part I:** Students must select four out of the following seven areas for the written portion of the Qualifier: (a) E & M (b) Circuits (c) Signals/Systems (d) Control (e) Communications (f) Computer Systems (g) Semiconductor Electronic Devices & Fabrication **Part II:** Students must make an oral presentation of their up-to-date research or a research area that that they have an interest in working on during their Ph.D. study. This oral presentation should be at least thirty (30) minutes long and the student should be well prepared to answer questions by faculty in attendance. 7. Textbooks corresponding to each area will be selected (one or two books in each field). Examination problems will be limited to materials contained in the selected books. 8. The examination should be given on two consecutive days with two 4 hour sections.	

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		9. All questions will be of a fundamental nature and at an advanced CWRU undergraduate level. Emphasis will be on understanding the material and applying it to fundamental problem solving. 10. Sample problems from previous exams are available. Request for these may be made in room 715. 11. Neither the examination grades nor the graded problems are made available to the examinees unless petitioned to the EECS Graduate Policy Committee. 12. The exam is closed book. Students may prepare one page (8.5" x 11") of notes for the exam (1 page total). These notes and a calculator are the only materials which may be used during the exam.	
10. Mathematics Competency			
The student must successfully demonstrate a knowledge and breadth of mathematics by passing two graduate level courses in mathematics from CWRU with a grade of B or better. (One of the courses may be taken from another institution, but must be approved by the Graduate Studies Committee of the Department to satisfy the math requirement.) The Mathematics courses used to satisfy this requirement must be approved by the student's Ph.D. Committee.	The student must successfully demonstrate a knowledge and breadth of mathematics by passing two graduate level courses in mathematics from CWRU with a grade of B or better. (One of the courses may be taken from another institution, but must be approved by the Graduate Studies Committee of the Department to satisfy the math requirement.) The Mathematics courses used to satisfy this requirement must be approved by the student's Ph.D. Committee.		

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11. Proposal			
In consultation with his/her advisor, the student must work in a research area and produce a research proposal in that area. The student must submit this proposal to a committee of at least four faculty members who are members of his/her advisory committee. The student's advisor chairs this committee. The proposal document will be reviewed by the committee for acceptability on the basis of originality, content and presentation. The student may be asked to submit a revised proposal for consideration by the committee. The student must pass an oral examination on the proposal before his/her advisory committee. The objectives of this examination are a) to assess the knowledge of the student in this area, b) the student's capacity to conduct original work, c) the student's presentation and communication skills in an open forum. There will be at most two chances to pass the Proposal Examination.	In consultation with his/her advisor, the student must work in a research area and produce a research proposal in that area. The student must submit this proposal to a committee of at least four faculty members who are members of his/her advisory committee. The student's advisor chairs this committee. The proposal document will be reviewed by the committee for acceptability on the basis of originality, content and presentation. The student may be asked to submit a revised proposal for consideration by the committee. The student must pass an oral examination on the proposal before his/her advisory committee. The objectives of this examination are a) to assess the knowledge of the student in this area, b) the student's capacity to conduct original work, c) the student's presentation and communication skills in an open forum. There will be at most two chances to pass the Proposal Examination.	The research oral exam must be taken before completing 12 credit hours of research work (notify all EECS faculty and post announcements). Presentation to the examining committee every six months after the research oral exam.	After passing the Qualifier and being admitted to the Ph.D. Candidacy, the Ph.D. Candidate is required to pass a Thesis Proposal Exam on a timely basis, generally within six months after being admitted to candidacy. This exam shall be administered by the student's guidanc committee and consists of a written thesi proposal and an oral presentation of the proposed dissertation research. The oral presentation will include answering questions on the proposal and questions on related topics as deemed appropriate by the student's Ph.D. Committee. The written thesis proposal must be received by the committee members at least ten days before the date scheduled for the oral exam and presentation. The Thesis Proposal Exam, the Ph.D. Research, the final oral thesis defense and all other requirements in the student's Ph.D. Program of Study must be completed within five years after the student is admitted to the Ph.D. Candidacy. To remain in good academic standing in the Program, a student is required to pass the Ph.D Qualifying Exam within the time constraint stipulated above, and the Thesis Proposal Exam within six months after being admitted to the Ph.D. Candidacy. If applicable, failure to pass the Thesis Proposal Exam within six months after being admitted to the Ph.D. Candidacy will result in discontinuation of any financial aid to the Ph.D. Candidate is receiving or scheduled to receive from any source within the department.

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12. Dissertation			
A Ph.D. student must complete his/her work, write a dissertation and defend it in an open forum in accord with the General University Requirements. Moreover, a student is required to present his/her work in a departmental seminar prior to his/her dissertation defense. A copy of each Ph.D. thesis written for the Department shall be deposited in the program library. Note that this copy is in addition to any required by University regulations.	A Ph.D. student must complete his/her work, write a dissertation and defend it in an open forum in accord with the General University Requirements. Moreover, a student is required to present his/her work in a departmental seminar prior to his/her dissertation defense. A copy of each Ph.D. thesis written for the Department shall be deposited in the program library. Note that this copy is in addition to any required by University regulations.	Final Dissertation Defense is the last examination before obtaining the Ph. D. and it is usually taken after the successful completion of the research subject in consultation with the primary faculty adviser (notify all EECS faculty and post announcements).	**Dissertation Committee** The faculty academic advisor shall be responsible for forming a Ph.D. Dissertation guidance committee, which shall consist of the student's faculty academic advisor, the student's faculty research advisor and additional faculty members, as recommended by the student's academic advisor and approved by the Associate Chairman for Graduate Studies. The minimum number of faculty members on the Ph.D. Dissertation committee is four with at least two members having a primary appointment as a tenure track faculty member in the Program. One member must have a CWRU tenure track or research faculty appointment outside of the Program. The chairperson of the dissertation committee is normally the candidate's faculty academic advisor. The Ph.D. Dissertation committee must meet at least once per year with the student, to review research progress. The results of these meetings will be reported to the Department Graduate Studies Committee. The Ph.D. Dissertation must be defended in an oral exam conducted by the student's dissertation committee and the student must make an announcement to all EECS Faculty prior to the defense.

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13. Residency Requirement			
			The doctoral residency requirement is intended to insure a period of intensive academic interaction with faculty and peers and of sustained independent research. Graduate students are considered to be in residence when they are fully engaged in academic work. As resident students they may teach at the university, take graduate courses, assist in course development, and engage in research or in other scholarly activities at the university. Regardless of the nature of the work the student's regular presence at the university is expected during fulfillment of the residency requirement. Fulfillment of residency by all engineering Ph.D. candidates will be certified by their research advisers and the Associate Chairman for Graduate Studies based on an assessment of active, concentrated involvement for a period of two consecutive semesters during their pursuit of the doctorate. The Ph.D. Dissertation committee must meet with the student at least once per year to review research progress. The results of these meetings will be reported to the Department Graduate Studies Committee.
14. Appeals			
			Any decision by an academic advisor, thesis committee, Graduate Studies Policy Committee or Associate Chairman for Graduate Studies may be appealed, in writing, to the Department Chair who shall present the appeal, with his/her recommendations, to the faculty at its next regular faculty meeting. The faculty's decision shall be final.