# TABLE OF CONTENTS

## GENERAL INFORMATION

- The University .................................................................................. 3
- College of Engineering ...................................................................... 3
- Administrative Offices ...................................................................... 3
- Engineering Office of Graduate Studies ........................................... 4
- VCU Card .......................................................................................... 4

## ENGINEERING GRADUATE PROGRAMS

- Engineering Graduate Program Administrators ............................... 5

## GENERAL GRADUATE DEGREE PROGRAM INFORMATION

- The Advisor and Advisory Committee ............................................. 6
- Plan of Study ...................................................................................... 7
- Graduate Degree Requirements ......................................................... 7
- Master’s Program ............................................................................... 8
- Admission to Master’s Candidacy ....................................................... 8
- Doctoral Program ............................................................................. 9
- Admissions to Doctoral Candidacy ..................................................... 10
- Dissertation Research and Defense .................................................. 10
- Termination and Appeals Process ...................................................... 11
- Grade Appeal Process ..................................................................... 13

## PROCEDURES FOR GRADUATING WITH THE M.S. OR Ph.D. DEGREE

- GRADUATE DEGREE PROGRAMS .................................................. 15

### Biomedical Engineering ................................................................. 17
### Chemical and Life Science Engineering ......................................... 22
### Computer Science ......................................................................... 25
### Electrical and Computer Engineering ............................................ 32
### Mechanical and Nuclear Engineering .............................................. 36

## TIMETABLE/GUIDELINES FOR GRADUATE STUDENTS

- COMMONWEALTH GRADUATE ENGINEERING PROGRAM (CGEP) .... 47

## GRADUATE STUDENT RESPONSIBILITIES

- VCU Honor System .......................................................................... 48
- VCU Statement on Safety ................................................................. 49
- Statement on Americans with Disabilities Act ................................. 49
- Title IX ............................................................................................. 49
- Facilities Access ............................................................................... 49
- Contact Information ......................................................................... 50
- Important Dates .............................................................................. 50
**AROUND CAMPUS AND OTHER INFORMATION**

- Recreation Centers ................................................................. 51
- Bookstores .................................................................................. 51
- Libraries ...................................................................................... 51
- Computing Services ...................................................................... 51
- Shuttle Service ............................................................................. 51
- Parking and Transportation .......................................................... 52
- Student Health Services ............................................................... 53
- Graduate Student Association ....................................................... 53

**FORMS** ....................................................................................... 54

**GRADUATION CHECK** ................................................................. 55
GENERAL INFORMATION

The University
Virginia Commonwealth University (VCU) has a long and rich history. In 1968 the Medical College of Virginia (MCV) and Richmond Professional Institute (RPI) merged to become Virginia Commonwealth University. The MCV Campus houses five schools: the Schools of Allied Health Professions, Dentistry, Medicine, Nursing and Pharmacy. It is also the site of VCU Health. The Monroe Park Campus houses one college: The College of Humanities and Sciences; two centers: VCU Life Sciences and VCU daVinci Center; and seven schools: the Schools of the Arts, Business, Education, Engineering, the Graduate School, Social Work and the L. Douglas Wilder School of Government and Public Affairs. A more detailed history may be obtained from the University’s Web site: www.vcu.edu.

The College of Engineering
The College of Engineering (Engineering) is one of the newest at VCU beginning operation in July 1995 with undergraduate degree programs in Chemical Engineering (now Chemical and Life Science), Electrical Engineering (now Electrical and Computer Engineering) and Mechanical Engineering (now Mechanical and Nuclear Engineering). The existing Biomedical Engineering graduate programs (M.S. and Ph.D.) moved from the School of Medicine to the new College of Engineering. The first undergraduate engineering students entered in fall 1996 with a graduate date of spring 2000. In fall 1998, Biomedical Engineering began offering an undergraduate degree. The School began offering the M.S. and Ph.D. in Engineering degrees in fall 2000. The Compute Science program, which offers both undergraduate and graduate degrees, moved from the Department of Mathematical Sciences in the College of Humanities and Sciences to the College of Engineering in the fall 2001. In the fall of 2009, the M.S. in Mechanical and Nuclear Engineering program began matriculating students. In the fall of 2010, the M.S. in Computer Information Systems and Security program began matriculating students. Most recently, the new Ph.D. program in Mechanical and Nuclear Engineering was approved in 2014 – the first of its kind in the U.S.

Administrative Offices
The administrative offices for the College of Engineering as well as the Departments of Electrical and Computer Engineering and Chemical and Life Science Engineering are located in the College of Engineering West Hall on the southwest corner of Belvidere and Main Streets (601 W. Main Street). The administrative offices for the Departments of Biomedical Engineering, Computer Science, and Mechanical and Nuclear Engineering are located in the College of Engineering East Hall on the southeast corner of Belvidere and Main Streets (401 W. Main Street).
Engineering’s Office of Graduate Studies
Information on specific graduate programs of study, including the Commonwealth Graduate
Engineering Program (CGEP), is available in Engineering’s Office of Graduate Studies. Also available
is information and advising for transferring graduate credits, thesis and dissertation formats, leave of
absence, funding opportunities and approved graduate courses.

VCU Card
The VCU Card is the student ID card and provides access to many services across the University such as
borrowing books from the libraries, after-hours access to authorized buildings and rooms, access to
recreational buildings, and the access to ride VCU buses at no charge. Students can put money on the
card allowing it to be used as a debit card at numerous establishments both on- and off-campus. More
information about how to obtain your ID card and where you can use it can be found on the VCU Card’s
Engineering Graduate Program Administrators

Biomedical Engineering (EGRB courses)
Dr. Henry Donahue  Department Chair  (804) 828-7956  hjdonahue@vcu.edu
Dr. Christopher Lemmon  Program Director  (804) 827-0446  clemmon@vcu.edu

Chemical and Life Science Engineering (CLSE courses)
Dr. Frank Gupton  Department Chair  (804) 828-7789  bfgupton@vcu.edu
Dr. Vamsi Yadavalli  Program Director  (804) 828-0587  vyadavalli@vcu.edu

Computer Science (CMSC courses)
Dr. Krzysztof Cios  Department Chair  (804) 828-9671  kcios@vcu.edu
Dr. Tomasz Arodz  Program Director  (804) 827-3989  tarodz@vcu.edu

Electrical and Computer Engineering (EGRE courses)
Dr. Erdem Topsakal  Department Chair  (804) 828-1313  etopsakal@vcu.edu
Dr. Ümit Özgür  Program Director  (804) 828-2581  uozgur@vcu.edu

Mechanical and Nuclear Engineering (EGRM, EGRN and EGMN courses)
Dr. Gary Tepper  Department Chair  (804) 828-9117  gctepper@vcu.edu
Dr. Karla Mossi  Program Director  (804) 827-5275  kmmossi@vcu.edu

Office of Graduate Studies
Dr. Gregory Triplett  Associate Dean  (804) 828-5387  getriplett@vcu.edu
Ms. Lori A. Floyd-Miller  Coordinator  (804) 828-1087  lafloyd@vcu.edu
Ms. Carol Green  Coordinator  (804) 828-0266  cgreen23@vcu.edu
GENERAL GRADUATE DEGREE PROGRAM INFORMATION

The Advisor and Advisory Committee

Initial Advisor
Entering students are expected to report to their respective Graduate Program Director upon matriculation to the VCU College of Engineering. For students pursuing thesis M.S. and Ph.D. degrees, the Graduate Program Director will serve as the student’s academic advisor until he/she has selected a research advisor. For students pursuing a non-thesis M.S. degree, the Graduate Program Director will serve as the advisor during the course of their degree. (See forms section.) The student’s initial advisor (i.e. Graduate Program Director) will work with the student to schedule courses and select a Research Advisor (hereafter referred to as advisor).

Research Advisor
During the first semester of graduate study, students pursuing thesis M.S. and Ph.D. degrees are expected to choose an advisor. The successful completion of the requirements for both the thesis M.S. and Ph.D. degrees in Engineering includes an original research project, the progress of which is guided by the faculty advisor and monitored by an Advisory Committee. The advisor holds the primary responsibility for providing guidance and counsel essential to the scholarly development of the student. Students should begin immediately to review Engineering faculty research interests and areas of scholarship (available on the Engineering Web site and program/concentration brochures). This review will assist each student in the advisor selection process. Remember to work with the departmental Graduate Program Director and the Engineering Office of Graduate Studies during this process.

Advisory Committee
After selection of an advisor, the graduate student immediately begins to develop a program of study and reviews possible research topics with his/her advisor. Once a research topic is chosen, an Advisory Committee can be formed. The advisor, in consultation with the student, appoints an Advisory Committee. For students pursuing a thesis M.S. degree, the Advisory Committee must be formed no later than the end of the first year of graduate school. For students pursuing a Ph.D. degree, the Advisory Committee must be formed no later than the end of the second year of graduate school. An Advisory Committee serves as both an examining and consultative body. The advisor usually serves as chair of the committee. The advisor and the Advisory Committee’s function is to assist the scholarly development of the student. Committee members hold a special responsibility as a source of counsel for the student.

Full-time Engineering graduate faculty may serve on, and chair, graduate Advisory Committees. Affiliate engineering graduate faculty and VCU faculty may serve on an Advisory Committee but cannot serve as chair. Approval from the Engineering Associate Dean for Graduate Studies and the Dean of the VCU Graduate School are required for an affiliate graduate faculty member to serve as co-chair of a graduate Advisory Committee. The committee will conduct an annual review of student progress with written minutes of committee recommendations prepared by the student and signed by all Advisory Committee members. This should be submitted to the department graduate program director.
There must be at least three members (including the chair) on a graduate Advisory Committee for a thesis M.S. degree student. Two members must be from the program/concentration and one member must be from outside the program/concentration. There must be at least five members (including the chair) on a graduate Advisory Committee for a Ph.D. degree student. Three members must be from the program/concentration and two from outside the program/concentration. Once the Advisory Committee is formed, the student must complete the appropriate form with required signatures and submit it to the Engineering Office of Graduate Studies. The Master’s Advisory Committee requires form M2 and the Doctoral Advisory Committee requires form D2. The student must submit the appropriate Advisory Committee form no less than six months before the final defense for the master’s degree and six months before the second portion of the comprehensive exam (proposal defense) for the doctoral degree.

Plan of Study
Upon selection of an advisor, the student should begin (in consultation with the advisor) to develop a plan of study. The student’s plan of study constitutes a tentative list of courses that are taken as part of the graduate degree program. A plan of study is dynamic and can be revised as the need arises. The student’s advisor and Advisory Committee must approve the plan of study (form M1 or D1). DegreeWorks is another way you can track your plan of study and this can be turned in with electives showing on the form. DegreeWorks can be found through a student’s e-Services account.

Graduate Degree Requirements
All full-time graduate students are expected to register for 9-15 hours of graduate credits per semester (fall and spring), exclusive of audited courses. This requirement includes directed research credits.

At least half of the credits required in the student’s program must be those designated as exclusively for graduate students; that is, those at the 600-level or above.

Graduate students are required to remain in good academic standing through the course of their degree program. Unsatisfactory student performance includes:

- The assignment of a grade of “U,” “D,” or “F” in any course.
- Failure to maintain a cumulative GPA of 3.0 or greater.
- Failure to pass the qualifying or oral comprehensive examination.
- Lack of progress on and/or unsuccessful defense of thesis/dissertation.

Students must continue to make satisfactory progress toward their degrees. Unsatisfactory grades and unprofessional conduct are areas that may warrant review for possible termination form their programs. Unsatisfactory performance also constitutes grounds for the termination of financial assistance to the student.

Generally, a student may have no more than six semester hours or 20 percent of total semester hours attempted (whichever is greater) at “C” or below level (“D,” “F,” and “U”) at graduation. Please check with your program to confirm their requirements.

Generally, the student’s Advisory Committee is the examining body for the administration of the comprehensive examinations and the final examination. Graduate students may not take the comprehensive examination for the Ph.D. degree if their overall GPA is less than 3.0 or if the GPA for courses within the program is
below 3.0. Students may not take the final oral examination for the M.S. or Ph.D. degree if their overall GPA is below 3.0. Please check with your program to confirm their requirements.

In addition to these requirements, and those set forth by the University, students must meet the requirements for specific degrees set forth in the College of Engineering program listings.

**Master’s Program**

*Research and Thesis*

Each student conducts a research study under the guidance of his/her advisor. They should receive training in responsible conduct of research. The study is reported in a thesis prepared according to standards set down by the VCU Graduate School in the University Graduate Council’s *Thesis and Dissertation Manual*. Visit [www.graduate.vcu.edu](http://www.graduate.vcu.edu) for more information.

When the advisor and the student determine that sufficient research has been completed to prepare a thesis, a meeting of the student’s Advisory Committee will be scheduled to review the completed work. The Advisory Committee will then recommend that the student is ready to defend the research or must complete additional research. This meeting will occur at least six weeks prior to the anticipated defense date, and the result will be reported to the Engineering Graduate Office in writing by the Advisory Committee chair.

When the thesis has been completed and the advisor considers it acceptable and all the M.S. degree requirements have been satisfied, the advisor notifies the Engineering Office of Graduate Studies in writing and, in consultation with the candidate, sets the examination date. This date must be set and the Office of Graduate Studies notified at least 14 days prior to the proposed presentation date using an online link on the College of Engineering’s Web site to announce the M.S. Thesis/Ph.D. Dissertation Final Defense.

The thesis is examined by the student’s Advisory Committee for content. On tentative approval of the thesis, the student appears for a final oral examination by the Advisory Committee. The final examination will be limited to the subject of the candidate’s thesis and related matters. A unanimous favorable vote of the candidate’s committee shall be required for passing the final oral examination. The final examination shall be open to the public and its time and place, together with the candidate’s name, department, and title of thesis, shall be announced at least seven days in advance. Upon successful defense of the thesis, the student may arrange at personal expense for his/her thesis to be bound for their personal library.

**Admission to Master’s Candidacy**

Before admission to candidacy for the Masters (thesis option) program, students must have: (1) completed required course work, (2) fulfilled all additional departmental requirements, and (3) submitted forms M1, M2, and Admission to Master’s or Doctoral Degree Candidacy (completed and signed) to the Engineering Graduate Studies Office. A student may seek admission to candidacy for the M.S. degree without first completing the research and thesis portion of the M.S. degree. The Advisory Committee will conduct an annual review of student progress with written minutes of committee recommendations prepared by the student and signed by all Advisory Committee members. These minutes should be submitted to the department graduate program director.
Per the VCU Graduate Bulletin: “The degree candidacy form must be submitted before the student formally begins the final thesis/dissertation/research project but no later than the semester preceding the semester in which the student graduates. Failure to submit the degree candidacy form in a timely manner may delay graduation.”

**Doctoral Program**

*Qualifying and Comprehensive Examinations*

In order to advance to doctoral candidacy, the student must pass both qualifying and oral comprehensive examinations (proposal defense or Ph.D. candidacy examination). Graduate students may not take either exam if their overall GPA is less than 3.0. In the event of failure, the student may retake the qualifying and comprehensive examinations one time only. The re-examination requires the approval of the student’s Advisory Committee. For additional details, see the Graduate Program Director or the Associate Dean of Graduate Studies.

*Qualifying Examination*

The qualifying examination(s) focuses on the subject matter deemed critical as a foundation in the program and must be completed by the end of the first 18 months of graduate study end of second year in special circumstances. (ECE has 16 months for M.S. to Ph.D. and 24 months for B.S. to Ph.D.) The qualifying examination is largely based on material covered in required course work and its application to theoretical and practical problems. This examination consists of questions from at least three topic areas.

Contact your department’s graduate program director for your specific departmental requirements. The department’s graduate program director is responsible for overseeing the administration of the qualifying examination. The questions are prepared and graded by Engineering faculty and, when appropriate, faculty from other VCU schools or college. The results must be reported to the Engineering Office of Graduate Studies on form D2.

*Oral Comprehensive Examination – Proposal Defense*

After successful completion of the qualifying examinations, the student will submit one copy of an original Dissertation Research Proposal based upon their proposed research project to each member of the student’s Advisory Committee. The student’s Advisory Committee will decide within ten business days if the proposal is suitable for defense and notify the committee chair. If the proposal is deemed suitable for defense, a defense date will be scheduled. If the proposal is not suitable, the student will be given one month to correct the deficiencies and resubmit the proposal. The committee will once again review the proposal for suitability and, if approved, a defense date will be scheduled. The Oral Comprehensive Exam should be completed by the end of the third year with written minutes of committee recommendations and signatures from each Advisory Committee members. This should be submitted to the department Graduate Program Director. The results must be reported to the Engineering Office of Graduate Studies on the VCU Admission to Doctoral Candidacy form.
Admission to Doctoral Candidacy

Before admission to candidacy for the doctorate, students must have: (1) completed required course work, (2) successfully completed the qualifying and oral comprehensive examinations, (3) fulfilled all additional departmental requirements, and (4) submitted forms D1, D2, and Admission to Master’s or Doctoral Degree Candidacy (completed and signed) to the Engineering Office of Graduate Studies. The Advisory Committee will conduct an annual review of student progress, with written minutes of committee recommendations prepared by student and signed by all Advisory Committee members. This should be submitted to the department Graduate Program Director.

Per the VCU Graduate Bulletin: “The degree candidacy form must be submitted before the student formally begins the final thesis/dissertation/research project but no later than the semester preceding the semester in which the student graduates. Failure to submit the degree candidacy form in a timely manner may delay graduation.”

Dissertation Research and Defense

The doctoral student must conduct a substantial original investigation under the supervision of the permanent advisor and prepare a dissertation reporting the results of this research and analyzing its significance in relation to existing scientific knowledge. Student should receive training in responsible conduct of research. There should be a student advisory committee meeting no later than three months prior to dissertation defense to certify student readiness to complete the dissertation. When the dissertation has been completed, copies in accepted form and style must be submitted to the members of the Advisory Committee. The examiners for the dissertation are the student’s Advisory Committee members. These examiners decide whether or not the candidate’s dissertation for defense is acceptable. The dissertation should be prepared according to standards set down by the VCU Graduate School in the University Graduate Council’s [Thesis and Dissertation Manual](http://www.graduate.vcu.edu). Visit [www.graduate.vcu.edu](http://www.graduate.vcu.edu) for more information.

If the Advisory Committee accepts the dissertation for defense, the candidate appears before them for a final oral examination. This date must be set and the Engineering Office of Graduate Studies notified at least 14 business days prior to the proposed presentation date using the online link of the College of Engineering’s Web site to announce M.S. Thesis/Ph.D. Dissertation Final Defense.

The final oral examination shall be open to the public and limited to the subject of the candidate’s dissertation and related matters. The final oral examination/defense will conclude with written minutes outlining remaining items prior to conferment of the Ph.D. degree. A favorable vote of the candidate’s Advisory Committee which can include no more than one negative vote shall be required for passing the final oral examination. All committee members must vote. The results must be reported to the Engineering Office of Graduate Studies on the VCU Electronic Thesis and Dissertation (ETD) Approval Form. Evidence of at least one published paper and one additional paper submitted to a peer-reviewed journal or juried conference proceeding is essential prior to conferment of degree. Upon successful defense of the dissertation, the student must submit the dissertation electronically through VCU Scholars Compass, ProQuest and complete the Survey of Earned Doctorates. The ETD Approval Form will need to be completed and submitted to the Engineering Office of Graduate Studies for signatures before being submitted to the Graduate School’s Dean’s Office. For more information about the submission process visit: [http://graduate.vcu.edu/student/thesis.html](http://graduate.vcu.edu/student/thesis.html).
TERMINATION AND APPEALS PROCESS

Graduate students in VCU’s College of Engineering have a right to appeal termination. The student assumes the burden of proof in this appeal.

The University’s appeal process can be found in the bulletin:
http://bulletin.vcu.edu/graduate/study/general-academic-regulations-graduate-students/appeal-process-students-dismissed-vcu-graduate-program/

Initiating an Appeal
When a student has been terminated from a program and believes the termination is unjustified, not in accordance with stated rules and regulations, or there are extenuating circumstances, the student shall discuss the termination first with the Graduate Program Director. The Graduate Program Director will explain how the decision to terminate was determined. If the student continues to believe that the termination was unwarranted, a written appeal may be submitted to the chair of the department. Students appealing termination assume the burden of proof. The appeal shall state and support, with all available evidence, the reasons why the student believes the termination should be reversed. The written appeal must be submitted within ten business days after the termination letter from the Dean of the VCU Graduate School is received. Appeals submitted after the deadline will be heard only in exceptional cases as determined by the College of Engineering’s Associate Dean of Graduate Studies. Students may remain enrolled throughout the appeal procedures.

Mediation
The chair of the department shall review the appeal and decide if the decision to terminate should be upheld within ten business days of receipt of the written appeal. If the decision to terminate is upheld, the student may appeal to the Dean of the College of Engineering. If the student appeals to the Dean of the College of Engineering, the student shall submit to the dean in writing the written appeal and all supporting documentation and the chair shall submit all documentation supporting the decision to terminate within 14 business days of the chair’s decision and notification to the student.

The Appeal Review Committee
The Dean of the College of Engineering or his/her designee shall form an Appeal Review Committee (a standing school committee whose members shall serve a term of one year) and designate the chair. The committee shall consist of five faculty members, one from each department. Any committee member may request to excuse himself from the committee due to a conflict of interest. The appellant may challenge the committee’s membership for cause within five business days of being informed of the membership. The dean shall determine if there is sufficient cause to remove the challenged committee member. A minimum of three committee members must review any appeal.

The committee has the option of either reversing or upholding the decision to terminate. The committee shall meet initially to examine the written appeal and the department chair’s recommendation. It can require the department and the College of Engineering’s Office of Graduate Studies to turn over to the committee any academic records, correspondence or course records that it deems relevant. After examining the materials, the committee may, by a majority vote, decline to hear an appeal that it judges...
to be patently without merit. Otherwise, the committee will authorize its chair to arrange a date for a hearing. The chair of the committee shall meet with all relevant parties prior to the hearing to explain the rules and procedures of the hearing.

The Appeal Review Hearing
Termination appeal hearings will be closed (only relevant parties determined and agreed upon by the committee may attend). The student may have with them an advisor of their choice (who may not be an attorney), with whom they may consult but who will not participate in the questioning of witnesses and presentation of evidence. The committee shall ask any member of the VCU community whose testimony it deems relevant to be available at an agreed upon time to give testimony. Either party may present additional witnesses as long as they remain within their allotted time and their testimony is directly relevant. Witnesses other than the appealing student shall be excluded from the hearing except when testifying.

A hearing shall begin with the student outlining the reason for the appeal and presenting all supporting evidence. The Graduate Program Director will provide justification as to why the student was terminated. Each party will have a maximum of one hour to present a position. After examining rules and regulations and considering extenuating circumstances, the committee shall determine in executive session whether the termination was justified. No termination may be reversed except by a majority vote. When the committee has reached a decision, the committee chair shall submit to the Dean in writing the decision and the reasons for it. The dean shall communicate in writing the decision of the committee and the reasons for it to the appealing student, the Associate Dean of Graduate Studies, the department chair, and the Graduate Program Director. If the termination has been reversed, the dean shall also notify the Dean of the Graduate School. The evidence, proceedings, and the final decision of the committee shall remain confidential. All documents shall be held in a confidential file by the dean for one year. All documentation not returned shall be destroyed by the Dean one year later.

Appeal to the Graduate School
If all program/department and/or school appeal processes fail to resolve the termination issue, the student has the option to appeal to the graduate dean. He/she must provide the Dean of the Graduate School with written notification of appeal and reasons within 14 business days of the conclusion of the school’s appeal procedures.
GRADE APPEAL PROCESS

Graduate students in VCU’s College of Engineering have a right to appeal course grades based on specific requirements outlined in the bulletin. The student assumes the burden of proof in this appeal.

The University’s grade appeal process can be found in the bulletin: http://bulletin.vcu.edu/undergraduate/undergraduate-study/academic-regulations-general-degree-requirements/grade-review-procedure/

**Initiating an Appeal**

When a student has evidence that a final grade from a course has not been assigned properly and not in accordance with stated rules and regulations, or there are extenuating circumstances, the student shall provide a written grade appeal to the department chair. Students appealing a grade assume the burden of proof. The appeal shall state and support, with all available evidence, the reasons why the student believes the grade should be change. The written appeal must be submitted within 14 calendar days after the beginning of the next semester.

**Mediation**

The chair of the department shall attempt to mediate an amicable solution within two weeks of receipt of the written appeal. If the complaint is not resolved, the chair shall forward the student’s appeal to the Dean of the College of Engineering or his/her designee. The chair also shall submit to the dean in writing the recommendation made to the two parties regarding the appropriateness of the grade. If the grade being appealed was assigned by the chair of the department, the dean shall assume the mediation responsibility. If the grade being appealed was assigned by the dean, the mediation responsibility will fall to the appropriate vice president.

**The Grade Review Committee**

The dean shall form a grade review committee and designate the chair. The committee has the option of either raising the grade or leaving the grade unchanged. The committee shall consist of one nonvoting faculty chair, two faculty members and two students selected by the dean from disciplines whose methods and techniques of teaching and testing are as similar as possible to those of the discipline of the course in question. If the course is multidisciplinary and the instructor(s) whose grade is being appealed does not belong administratively in the school in which the course was taught, the committee shall have at least one of the faculty members from the instructor’s school.

Either party may challenge the committee’s membership for cause within 5 business days of being informed of the membership. The dean shall determine if there is sufficient cause to remove the challenged committee member.

The committee shall meet initially to examine the written appeal and the department chair’s recommendation. It can require the faculty member(s) to turn over to the committee grade records for that class or section and any tests, papers and examinations by students of that class that they may possess. The committee may require the student bringing the appeal to turn over all tests, papers or other evaluations that have been returned and all existing evidence that an improper grade was awarded. The committee shall disregard any claim that a test or paper that has been returned to a student was unjustly graded unless that test or paper is produced for the committee’s inspection.
After examining the materials, the committee may, by a majority vote, decline to hear an appeal that it judges to be patently without merit. Otherwise, the committee will authorize its chair to arrange a date for a hearing. The chair of the committee shall meet with each party prior to the hearing to explain the rules and procedures of the hearing.

**The Appeal Review Hearing**

Grade appeal hearings will be open, closed or partially open (i.e., a few close associates of each party may attend) by agreement of the appealing student and the faculty member(s) and the chair of the committee of the appealing student.

Both parties may have with them an adviser of their choice (who may not be an attorney), with whom they may consult but who will not participate in the questioning of witnesses and presentation of evidence unless the opposing party and chair agree to it. The committee shall ask any member of the VCU community whose testimony it deems relevant to be available at an agreed-upon time to give testimony.

Either party may present additional witnesses as long as they remain within their allotted time and their testimony is directly relevant to the course at issue. Witnesses other than the appealing student and the faculty member(s) shall be excluded from the hearing except when testifying. A hearing shall begin with the student outlining the reasons for the appeal and all evidence when testifying. A hearing shall begin with the student outlining the reasons for the appeal and all evidence that exists of an improper grade. The faculty member(s) shall then explain the criteria used for the original grade assigned. Each party will have a time period not to exceed two hours in which to present a position.

The committee shall determine in executive session whether the grade was justified according to the course in which the grade was given. If the evidence is that the grade was determined according to the stated objectives, criteria and grading procedures of the course, the committee shall uphold the grade. The committee should also take into account that purposes, methods, requirements and grading criteria differ from course to course and that difference is a legitimate characteristic of a university and its faculty. Further, the grade in some courses may be partly or solely determined by a faculty member’s professional judgment, which in itself cannot be overturned without evidence that the judgment was arbitrarily or capriciously rendered. The committee shall consider (a) whether the faculty member(s) articulated the criteria to be used (some criteria may be implicit within the discipline), (b) whether those criteria were actually used to determine the final grade and (c) whether the results of the evaluation were communicated to the student.

No grade may be changed except by a vote of at least three out of four voting members. When the committee has reached a decision, the committee chair shall submit to the dean in writing the decision and the reasons for it. The dean shall communicate in writing the decision of the committee to the appealing student, faculty member(s) and the department chair. If the grade has been changed, the dean also shall notify the University’s Registrar.

The evidence, proceedings and the final decision of the committee shall remain confidential. All documents shall be held in a confidential file by the dean for one year. The party from whom a document was obtained may request that it be returned at the end of the year. All documentation not returned shall be destroyed by the dean one year later.
PROCEDURES FOR GRADUATING WITH
THE M.S. OR Ph.D. DEGREE

In addition to all academic requirements for graduation, candidates for certificates, the M.S. and Ph.D. degrees in the College of Engineering must complete the following steps:

The VCU Office of Records and Registration will alert you by e-mail when the graduation checkout and application process beings each semester. If you intend to graduate that semester, please read that message carefully and follow all procedures.

In order to complete the application process and have your information printed accurately in the Commencement Program, you will need to complete this process by the date provided by Records and Registration. YOU CANNOT APPLY LATE TO GRADUATE.

To initiate the process, you must complete each of the following steps:

1. Go to e-Services: [http://www.eservices.vcu.edu/](http://www.eservices.vcu.edu/)
2. Select the Students Button
3. Enter your e-ID and e-ID Password
4. Select the Student tab and choose Student Records
5. Select Apply to Graduate and follow the instructions to start the checkout procedure
6. After completing the graduation checkout through e-Services, select the following link to obtain the graduation package: [http://rar.vcu.edu/graduation_instructions.html](http://rar.vcu.edu/graduation_instructions.html)

By completing these steps, you will have a) notified the Office of Records and Registration of your intent to graduate and b) gathered pertinent information for your graduation application package. You will be required to complete the graduation package and provide it to the appropriate dean’s office.

Please note that initiating the e-Services Apply to Graduate checkout procedure for a program will prohibit future registration in that program. If you initiate the e-Services Apply to Graduate checkout procedure by mistake (i.e. by clicking on the Submit Request button) or too early in your academic career, please contact the Office of Records and Registration (804-828-1349) immediately so that the action can be rescinded and the registration restriction removed.

If you have any questions or concerns, please contact the Office of Records and Registration at (804) 828-1349.
The following section lists all the programs offered by the College of Engineering. The bulletin is the official record for the University and the links for each program are provided.

http://bulletin.vcu.edu/graduate/
BIOMEDICAL ENGINEERING

Biomedical Engineering, Master of Science
http://bulletin.vcu.edu/graduate/school-engineering/biomedical-engineering/biomedical-engineering-ms/#degreerequirementstext

Degree requirements
In addition to the VCU Graduate School graduation requirements, this program is nominally a two-year program leading to the M.S. in Biomedical Engineering. Prior evidence of completion of physiology may result in a waiver of the requirements for this course as determined by the graduate program director and/or the department chair. These credit hours should be replaced by other graduate-level didactic course work reflective of the field of study. Each Master of Science student must successfully complete a thesis describing his or her individualized research project. At the completion of the research, the student must present the research to the advisory committee and undergo an examination of the research results, thesis documentation and underlying educational foundation necessary to have successfully completed the research. Upon successful completion of the examination and thesis, the student may apply for graduation from Virginia Commonwealth University with the Master of Science in Biomedical Engineering.

Biomedical Engineering, Doctor of Philosophy

(Note: the following requirements are for all students matriculating Fall 2018 or later. For earlier years, please consult the previous versions of the Handbook and/or the BME Graduate Program Director).

Degree requirements
In addition to the VCU Graduate School graduation requirements, the Ph.D. will require a minimum of 72 credit hours beyond the B.S. or a minimum of 60 credit hours beyond the M.S. Students may enter the Ph.D. program with either a B.S. or an M.S.

Comprehensive examinations
In order to advance to doctoral candidacy, the student must pass both written and oral comprehensive examinations. The written examination focuses on the subject matter deemed critical as a foundation in the program. The examination is largely based on material covered in required course work and its application to theoretical and practical problems. The oral examination, which follows successful completion of the written examination(s), is administered by a committee of three biomedical engineering faculty members and assesses the ability of the student to integrate information and display an appropriate mastery of problem-solving capabilities. For further details, see the graduate program director or the program chair.

Research adviser and graduate dissertation committee
Students will be expected to select a research adviser and dissertation committee within the first year of enrollment in the Ph.D. program. The dissertation committee will consist of five faculty members, including the primary research adviser, two faculty members from the biomedical engineering graduate program and two faculty members from outside of the biomedical engineering graduate program. This committee reviews and votes to approve or disapprove the student’s dissertation research proposal and the final Ph.D. dissertation and oral defense. This committee also makes the final recommendation to award the Ph.D. degree.
Proposal presentation exam

Within one year of passing the qualifying examination the student will submit one copy of an original dissertation research proposal based upon their proposed research project to each member of his or her dissertation committee. The proposal consists of the research topic and proposed research plan. The proposal should include a thorough literature review of the topic and contain information sufficient to judge the feasibility, scope and potential impact of the research. The dissertation committee will then administer an exam based on the material submitted in the dissertation research proposal. The format of the exam is an oral presentation by the candidate with questions by the dissertation committee members. A favorable decision by the dissertation committee with no more than one negative vote (all members are required to vote) shall be required to pass the exam. If a student fails the exam, one re-examination may be given with the consent of the dissertation committee. Failure to pass the second exam will result in dismissal from the program.

Publication requirement

A Ph.D. student appearing for the final defense in the Department of Biomedical Engineering must provide evidence of a minimum of two manuscripts accepted for publication in peer-reviewed archival journals recognized by the ISI Web of Science at the time of defense. These publications should be based on the student’s dissertation research and must also be acceptable to the student’s dissertation committee. The student is expected to have served as the first author in one or more of the papers. Specific publication requirements are available on the department’s website as well as in the College of Engineering graduate handbook.

Dissertation defense

No earlier than six months after passing the oral candidacy examination, the student will defend the dissertation in an open forum administered by the dissertation committee. At least two weeks prior to the defense, the candidate will submit a written copy of the dissertation to each committee member and schedule a date for the defense. The defense will be advertised and faculty and student colleagues will be invited to attend. During the defense, the student will present a detailed summary of their research project, which should be the original problem presented and approved during the proposal presentation exam. If a solution of the original problem proves elusive for reasons beyond the student’s control, the student may be allowed to redirect the research with permission from the dissertation committee and find an alternate pathway to the solution of a redefined problem. The format of the dissertation defense will be a presentation by the student followed by questions from the dissertation committee and other attendees. After the first round of questions are completed, the non-committee members in attendance will be asked to leave and the dissertation committee members will hold a second round of questions in closed session. After the second round of questions is completed the student will be asked to leave and the committee members will deliberate privately. The problem presented and solved must be of sufficient importance and interest to warrant publication in a peer-reviewed journal in the student’s area of specialization. A favorable decision by the dissertation committee with no more than one negative vote (all members are required to vote) shall be required to pass the dissertation defense. If a student fails the dissertation defense, one re-examination may be given. Failure to pass the second dissertation defense will result in dismissal from the program.

Students entering with a B.S. degree who are terminated from the Ph.D. program because of a failure to pass the QE, proposal presentation exam or dissertation defense (but not for other reasons such as academic dishonesty) will have the option to continue toward the M.S. in Biomedical Engineering.

Time limit

It is anticipated that students entering with a B.S. will complete the program in four years from the time the student passes the qualifying examination. Students must be continuously enrolled in the program (minimum of one credit hour per semester). All requirements for the Ph.D. must be completed within eight years of passing the qualifying examination.
It is anticipated that students entering with an M.S. will complete the program in three years from the time the student passes the qualifying examination. Students must be continuously enrolled in the program (minimum of one credit hour per semester). All requirements for the Ph.D. must be completed within six years of passing the qualifying examination.

Any student may request a one-year extension of the maximum time for extenuating circumstances such as a medical situation. The graduate program committee will review and approve or deny all such requests. The maximum time cannot be extended longer than one year. Students who do not satisfy the degree requirements within the maximum time will be dismissed from the program.

Because of the maximum time limits imposed on students in the Ph.D. program, the program does not accept part-time students.

Curriculum requirements

B.S. to Ph.D. in Biomedical Engineering

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Required biomedical engineering courses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EGRB 601</td>
<td>Numerical Methods and Modeling in Biomedical Engi</td>
<td>4</td>
</tr>
<tr>
<td>EGRB 602</td>
<td>Biomedical Engineering Systems Physiology</td>
<td>4</td>
</tr>
<tr>
<td><strong>Restricted electives</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Choose three courses from</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>EGRB 507</td>
<td>Biomedical Electronics and Instrumentation</td>
<td></td>
</tr>
<tr>
<td>EGRB 511</td>
<td>Fundamentals of Biomechanics</td>
<td></td>
</tr>
<tr>
<td>EGRB 513</td>
<td>Cellular Signal Processing</td>
<td></td>
</tr>
<tr>
<td>EGRB 521</td>
<td>Human Factors Engineering</td>
<td></td>
</tr>
<tr>
<td>EGRB 603</td>
<td>Biomedical Signal Processing</td>
<td></td>
</tr>
<tr>
<td>EGRB 613</td>
<td>Biomaterials</td>
<td></td>
</tr>
<tr>
<td><strong>Required courses in other departments</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRAD 614</td>
<td>Introduction to Grant Writing</td>
<td>1</td>
</tr>
<tr>
<td>OVPR 603</td>
<td>Responsible Conduct of Research</td>
<td>1</td>
</tr>
<tr>
<td>Statistics (BIOS or STAT at 500 level or above)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Minimum elective courses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course</td>
<td>Title</td>
<td>Hours</td>
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</tr>
<tr>
<td></td>
<td>e.g. EGRB, EGRM, ENGR, PHYS, MATH, BIOL, PHIS, BIOC at 500 level or above</td>
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</table>

### Research

<table>
<thead>
<tr>
<th>Course</th>
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<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGRB 690</td>
<td>Biomedical Engineering Research Seminar</td>
<td>4</td>
</tr>
<tr>
<td>EGRB 697</td>
<td>Directed Research in Biomedical Engineering (required at a level to be determined by each student’s graduate advisory committee)</td>
<td>34</td>
</tr>
</tbody>
</table>

**Total Hours** 72

For students entering with a B.S., the minimum total of graduate credit hours required for this degree is 72.

### M.S. to Ph.D. in Biomedical Engineering

<table>
<thead>
<tr>
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<th>Hours</th>
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<td>Biomedical Engineering Systems Physiology</td>
<td>4</td>
</tr>
</tbody>
</table>

**Restricted electives**

Choose two courses from: 6

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th></th>
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<tbody>
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<td></td>
</tr>
<tr>
<td>EGRB 613</td>
<td>Biomaterials</td>
<td></td>
</tr>
</tbody>
</table>

**Required courses in other departments**

<table>
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<tr>
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<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRAD 614</td>
<td>Introduction to Grant Writing</td>
<td>1</td>
</tr>
<tr>
<td>OVPR 603</td>
<td>Responsible Conduct of Research</td>
<td>1</td>
</tr>
</tbody>
</table>

Statistics (BIOS or STAT at 500 level or above) 3
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum elective courses</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>e.g. EGRB, EGRM, ENGR, PHYS, MATH, BIOL, PHIS, BIOC at 500 level or above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Research</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EGRB 690 Biomedical Engineering Research Seminar</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>EGRB 697 Directed Research in Biomedical Engineering (required at a level to be determined by each student’s graduate advisory committee)</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Total Hours</td>
<td>60</td>
</tr>
</tbody>
</table>

For students entering with an M.S., the minimum total of graduate credit hours required for this degree is 60.

**Biomedical Engineering, Doctor of Philosophy/Medicine, Doctor of (M.D.) combined program**

http://bulletin.vcu.edu/graduate/school-engineering/biomedical-engineering/medicine-md-biomedical-engineering-phd-combined/

The M.D./Ph.D. program seeks to train physician-scientists for careers that bridge basic and clinical science. Physician-scientists will translate laboratory discoveries into better patient outcomes. The program begins two months prior to the first year of medical school. These students arrive on campus for orientation and complete two laboratory rotations before the start of medical school classes. They complete the pre-clinical phase of medical school and, after taking the first part of the U.S. National Medical Licensing Examination, enter a Ph.D.-granting department or program as a graduate student. Graduate-level course work, examinations and research will be guided by the dissertation adviser and the dissertation committee, with oversight by members of the M.D./Ph.D. steering committee. The main undertaking at this phase is laboratory research that leads to the Ph.D. dissertation. After completion of doctoral degree requirements, students move to the clinical year of medical school. Students may begin the clinical year of medical school immediately after completion of doctoral degree requirements, regardless of the time in the calendar year, and, 14 to 16 months later, may complete their medical school requirements. These students are exempt from the major part of the fourth year of medical school.

For additional information, contact the Biomedical Engineering Graduate Program Director.
Degree requirements
In addition to the [VCU Graduate School graduation requirements](http://bulletin.vcu.edu/graduate/school-engineering/engineering-ms-concentration-chemical-life-science/#degreerequirementstext), students must meet the following requirements.

**Thesis option**

Students seeking the M.S. degree are required to take a minimum of 30 credit hours of approved graduate courses (including research). Each student must complete 12 credit hours in concentration course work, 12 credit hours in concentration electives course work and six credit hours in thesis research. The student’s adviser must review and approve all course work and thesis research credit hours. The total of all credit hours must be at least 30. No elective courses may be used for both M.S. and Ph.D. degrees. At least half of the credit hours required in the student’s program must be those designated as exclusively for graduate students, that is, those at the 600 level or above.

Each student must conduct an original investigation under the supervision of the permanent adviser and prepare a thesis reporting the results of this research and analyzing its significance in relation to existing scientific knowledge. This study is reported in a thesis prepared in acceptable form and style. Upon approval of the thesis by the adviser, the student submits a copy to each member of the advisory committee. The student’s advisory committee members examine the thesis and decide upon its acceptability. Each committee member reports to the student’s adviser when the thesis is acceptable for defense. The thesis is approved for defense only if accepted unanimously. Upon approval of the thesis, the student appears for a final oral examination administered by the student’s advisory committee. This examination of an M.S. candidate includes the subject matter of course work as well as the thesis.

**Non-thesis option**

Students seeking the non-thesis M.S. degree are required to take a minimum of 30 credit hours of approved graduate courses. Each student must complete 15 credit hours in concentration course work and 15 credit hours in option electives course work.

Each non-thesis student must have a plan of study by the end of the first semester or prior to completing nine credit hours. This plan of study (and all revisions) must be approved by the student’s adviser and the assistant dean for graduate affairs of the College of Engineering. The student’s adviser must review/approve all course work in advance of enrollment. At least half the credit hours required in the student’s program must be designated as 600 level or above.
Curriculum requirements

There are three components of each M.S. in Engineering option:

1. **Concentration (option-specific) component**: This component allows the student to pursue a series of courses that focus on a specific field of engineering and serve as the student’s primary engineering discipline.

2. **Option electives component**: This component allows the student to take courses in either engineering or science with approval of the student’s adviser (e.g. CLSE, ENGR, CHEM courses at 500 level or higher)

3. **Directed research component**: This component emphasizes research directed toward completion of degree requirements under the direction of an adviser and advisory committee.

The option can be tailored to meet the individual student’s academic goals and research interests. Students seeking to take course work and conduct their research in the chemical and life science engineering concentration should contact the graduate program coordinator or department chair of chemical and life science engineering for detailed information about that concentration.

_Engineering, Doctor of Philosophy with a concentration in chemical and life science engineering_

[http://bulletin.vcu.edu/graduate/school-engineering/engineering-phd-concentration-chemical-life-science/#degreerequirementstext](http://bulletin.vcu.edu/graduate/school-engineering/engineering-phd-concentration-chemical-life-science/#degreerequirementstext)

**Degree requirements**

In addition to the VCU Graduate School graduation requirements, students must meet the following requirements.

A minimum of 60 credit hours beyond the bachelor’s degree, including research credit hours, is required for the Ph.D. in Engineering. Students holding the master’s degree must complete a minimum of six credit hours in concentration course work and 18 credit hours in dissertation research. The student’s adviser must approve all course work. Ph.D. students must take a minimum of 30 credit hours (including research) beyond the master’s degree. No elective courses may be used for both M.S. and Ph.D. degrees. At least half of the credit hours required in the student’s program must be those designated as exclusively for graduate students, that is, at the 600 level or above.

A minimum of three years of study, including research, is necessary to complete all requirements for the Ph.D. A period of residence of at least three consecutive semesters is required. Residency is defined as registration for at least nine credits per semester. A time limit of eight calendar years, beginning at the time of first registration, is placed on work to be credited toward the Ph.D.

**Ph.D. qualifying examinations**

In order to advance to doctoral candidacy, the student must pass the written qualifying examination. The written examination focuses on the subject matter deemed critical as a foundation in the program. The examination is largely based on material covered in required course work and its application to theoretical and practical problems. The written examination also assesses the ability of the student to integrate information and display an appropriate mastery of problem-solving capabilities and technical
writing. Graduate students may not take the comprehensive exam if their overall GPA is less than 3.0. Students must also have a minimum GPA of 3.0 for courses within the program in order to take the comprehensive exam. For further details, see the graduate program director or the program chair.

**Admission to candidacy**

Before admission to doctoral candidacy, students must have:

1. Completed required course work
2. Successfully completed the comprehensive examinations
3. Fulfilled all additional departmental requirements

A student may seek admission to candidacy for the Doctor of Philosophy degree without first completing the research and thesis portion of the Master of Science degree.

**Dissertation research**

The student must conduct a substantial original investigation under the supervision of the permanent adviser and prepare a dissertation reporting the results of this research and analyzing its significance in relation to existing scientific knowledge.

When the dissertation has been completed, copies in accepted form and style are submitted to the members of the advisory committee. The committee members decide upon the acceptability of the candidate’s dissertation. A favorable unanimous vote is required to approve the dissertation and all examiners are required to vote.

If the advisory committee accepts the dissertation for defense, the candidate appears before them for a final oral examination. This examination is open to the public. The final oral examination will be limited to the subject of the candidate’s dissertation and related matters. A favorable vote of the candidate’s advisory committee and no more than one negative vote shall be required for passing the final oral examination. All committee members must vote. There shall be an announcement of the candidate’s name, department and title of dissertation, together with the day, place and hour of the final oral examination at least 10 working days in advance.
**COMPUTER SCIENCE**

*Accelerated Bachelor of Science in Computer Science to Master of Science in Computer Science*

http://bulletin.vcu.edu/graduate/school-engineering/computer-science/computer-science-ms-accelerated-bs-computer-science/#degreerequirementstext

**Degree requirements**

In addition to the VCU Graduate School graduation requirements, students must complete a minimum of 30 credit hours at the graduate level to graduate with the M.S. degree. Students must also complete the requirements for the B.S. degree in Computer Science.

Students accepted into this selective program accomplish both the B.S. and M.S. degrees within five years by taking additional graduate courses within the first four years of the program. Up to six credit hours will count as open electives in the B.S. program and as didactic course work in the M.S. program.

A student may choose either a thesis or non-thesis M.S. degree program. The thesis option is suggested for students who have a strong research interest or those who wish to pursue a Ph.D.

**Curriculum requirements**

Students accepted into the B.S.-M.S. program are allowed to transfer up to 12 graduate-level credits into the M.S. program, including up to six credit hours that were counted as open electives toward requirements for the B.S. degree.

After meeting all requirements for the B.S. degree, students in the program are eligible to take 600-level courses.

Apart from the exceptions above, all regulations outlined in the B.S. in Computer Science and M.S. in Computer Science bulletins apply toward the respective degrees.

**Typical program of study**

Before graduating with the B.S. degree, students in the program are expected to:

- Take six graduate-level didactic credits that will count as open electives toward their B.S. degree (that is, toward the requirements on total number of credits, upper-level credits and toward graduation GPA, but not as the required three CMSC technical electives) and as didactic credits toward their M.S. degree.
- Take an additional six graduate-level didactic credit hours that will count toward their M.S. degree but not toward the B.S. degree. In particular, these cannot be used to satisfy the total and upper-level credit requirements in the B.S. degree nor in calculating the B.S. graduation GPA.

Students cannot count more than six credit hours of non-CMSC courses toward the M.S. degree. Any non-CMSC graduate credits require approval of the graduate committee.
The typical full program of study in the accelerated B.S.-M.S. program is as follows:

**Years 1-3**
- Regular undergraduate program course work

**Year 3**
- Application to the accelerated B.S.-M.S. program

**Year 4**
- Remaining regular undergraduate program course work
- Six credit hours of CMSC 500-level courses, counted toward B.S. and M.S.
- Six credit hours of CMSC 500-level courses, counted toward M.S. only
- Application to the M.S. program

**Year 5**
- Regular graduate program course work: 18 credits of CMCS 500-level and 600-level courses, counted toward M.S. only

Students must complete at least 50 percent of their graduate-level didactic credits at the 600-level for the M.S. degree; additional restrictions apply based on thesis and non-thesis study options as specified in the M.S. in Computer Science bulletin.

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**Computer and Information Systems Security, Master of Science**

[http://bulletin.vcu.edu/graduate/school-engineering/computer-science/computer-information-systems-security-ms/#degreerequirements](http://bulletin.vcu.edu/graduate/school-engineering/computer-science/computer-information-systems-security-ms/#degreerequirements)

**Degree requirements**

In addition to general VCU Graduate School graduation requirements, the M.S. in Computer and Information Systems Security requires 30 graduate credit hours, including a core curricular component and an elective component. The elective component consists of three courses chosen by the student and selected from CISS course offerings or, with the approval of the program co-directors, from courses offered by the departments of Computer Science, Information Systems, Criminal Justice and Forensic Science.

**Curriculum requirements**

Students with an accredited bachelor’s degree or post-baccalaureate certificate in fields such as computer science or information systems should be adequately prepared for the graduate curriculum. Students from other academic backgrounds may need to complete undergraduate prerequisite courses. Prerequisites are determined by the faculty adviser at the time of admission.
Degree requirements
In addition to the VCU Graduate School graduation requirements, students must complete a minimum of 30 credit hours at the graduate level. Students may not present courses receiving grades less than C for fulfilling degree requirements and can only present up to six credit hours of course work receiving a grade of C. Students may choose either a thesis or non-thesis degree program option. The thesis option is suggested for students who have a strong research interest or those who wish to pursue a Ph.D.

At most, six non-CMSC credits may be applied toward the degree. Approval of the graduate committee is required before taking the credits.

Up to 30 percent of a student’s required non-research graduate-level credits can be transferred into the M.S. program from another college or university. No more than 30 percent of student’s required non-research credits in graduate-level courses taken at VCU before admission to the M.S. program may be counted toward the M.S. degree (see bulletin for the accelerated B.S-M.S. in Computer Science program for exception to this rule). The number of credits that may be transferred by students pursuing an M.S. in Computer Science through the Commonwealth Graduate Engineering Program is limited by CGEP policy to 50 percent of the required credits.

All transfer credits must be approved by the graduate committee and the Graduate School using the graduate course transfer form. These credits must not have been applied to any other degree (see bulletin for the accelerated B.S-M.S. in Computer Science program for exception to this rule); however, they may have been taken as part of a post-baccalaureate graduate certificate program.

Students must satisfy breadth requirements by taking two courses from each of the foundational areas. There are three foundational areas for computer science graduate studies: theory, systems and applied computer science.

Degree candidacy requirements (thesis option only)
In order to advance to master’s candidacy, the student must:
1. Have completed required course work
2. Have a minimum 3.0 GPA in graduate course work

For fulfilling candidacy requirements:
1. Students may not present courses receiving grades less than C or not conforming to Graduate School graduation requirements. No more than six credit hours with a grade of C may be presented.
2. Students must be in compliance with candidacy requirements of VCU Graduate School and be in compliance with the time to degree, which is six years for a master’s degree.
3. The student will produce a written thesis in the format specified by the VCU Graduate School and will publicly defend the thesis before a committee consisting of the thesis adviser, at least one other faculty member from the computer science program and a faculty member from outside of the computer science program.
Typical plan of study

Students should choose thesis or non-thesis option during their first semester of study. The non-thesis option is the default.

The typical plan of study for non-thesis option students involves doing between nine and 15 credit hours per semester and fulfilling the requirements of the program typically in three semesters.

A plan of study for thesis option students should be designed with the research adviser of the student to take into account the direction of thesis research.

Engineering, Doctor of Philosophy with a concentration in computer science

http://bulletin.vcu.edu/graduate/school-engineering/engineering-phd-concentration-computer-science/#degreeerequirementstext

Degree requirements

In addition to the VCU Graduate School graduation requirements, students must meet the following requirements.

A minimum of 60 credit hours beyond the bachelor’s degree, or 30 credits beyond a master’s degree, including research credits, is required for the Ph.D. in Engineering.

A minimum of three years of study, including research, is necessary to complete all requirements for the Ph.D. A period of residence of at least three consecutive semesters is required. Residency is defined as registration for at least nine credits per semester. A time limit of seven calendar years, beginning at the time of first registration, is placed on work to be credited toward the Ph.D.

Up to 30 percent of a student’s required non-research graduate-level credits can be transferred into the Ph.D. program from another college or university. No more than 30 percent of student’s non-research credits in graduate-level courses taken at VCU before admission to the Ph.D. program may be counted toward the Ph.D. degree. No credits may be used for both M.S. and Ph.D. degrees.

A student will pursue a Ph.D. under the guidance of a computer science graduate faculty member who will serve as the dissertation adviser. Interdisciplinary programs of study that involve computer science and another discipline are encouraged; however, a core of computer science courses is required. Courses not labeled CMSC must show relevance to the student’s program of study and must be submitted for approval by the dissertation adviser. The advisory committee will conduct an annual review of student progress, with written minutes of committee recommendations prepared by student and signed by all advisory committee members.

The detailed requirements depend on the student’s academic background.

Students with M.S. in Computer Science must take a minimum of 12 credit hours of didactic course work at the graduate level and 18 credit hours of directed research for a minimum of 30 credits.

- A minimum of four courses that should satisfy the following:
  - At least two courses at the 600 level or greater
  - At least one course from each of the following two foundational areas: theory and systems.
Students admitted into the Ph.D. program with only a B.S. degree must take a minimum of 60 credit hours of course work.

- A minimum of 33 didactic credits, including
  - At least two courses from each of the three foundational areas: theory, systems and applied computer science (CMSC 501 must be one of these courses.)
  - At least 17 credits at the 600 level or greater

In addition, a student admitted to this program may need to take other undergraduate computer science courses in order to prepare for the required graduate-level courses. The choice of these courses will be left to the discretion of the student’s adviser.

A minimum of 18 credits of directed research is required.

Students admitted into the Ph.D. program without an M.S. in Computer Science must take a minimum of a minimum of 36 credit hours of course work.

- A minimum of 18 didactic credits, including
  - A minimum of two courses from each of the following two foundational areas: theory and systems (CMSC 501 must be one of these courses.)
  - At least nine credits at the 600 level or greater

In addition, a student admitted to this program may need to take other undergraduate computer science courses in order to prepare for the required graduate-level courses. The choice of these courses will be left to the discretion of the student’s adviser.

A minimum of 18 credits of directed research is required.

**Comprehensive examinations**

Before advancing to doctoral candidacy, the student must pass both qualifying and oral comprehensive examinations.

*Qualifying comprehensive examination*

The qualifying examination focuses on the subject matter deemed critical as a foundation in the program.

- The examination is largely based on material covered in required course work and its application to theoretical and practical problems.
- The examination will cover knowledge in three areas, and in order to pass students must score a minimum of 75 percent in each area.
  - The exam must include material based on CMSC 501 from the theory area and on at least one course from the systems foundational area.
  - The third is the area of specialization based on courses to be decided by the dissertation adviser.
- Students are allowed to take the comprehensives based on courses they may not have taken at VCU, however, they have to satisfy the course requirements as mentioned above.
- Students can contact the lead professor for any area and obtain a list of topics that will be covered in the exam.
• The exam will be conducted a minimum of once a year and will be organized by the graduate
director, with prior approval of the exam questions by the graduate committee.

• A student who fails the qualifying comprehensive exam is allowed one more attempt to pass it. The
re-examination requires the approval of the student’s advisory committee. A student who fails one
area of the required three comprehensive exam areas must retake the exam in the failed area within
the following year. The department may organize and schedule, no earlier than 60 days after the
failed exam, a special comprehensive exam for such students. A student who fails two or more exam
areas must retake the entire comprehensive exam at the regularly scheduled comprehensive exam
within the following year.

• Graduate students may not take the comprehensive exam if their overall GPA falls below the
minimum 3.0. They also must have a minimum GPA of 3.0 from the courses covering the exam
areas.

*Oral comprehensive examination*
The oral examination, which follows only after successful completion of the qualifying examination, is
administered to assess the ability of the student to integrate information and display an appropriate
mastery of problem-solving capabilities. The student is required to prepare a written proposal of original
research and to defend it in front of the dissertation committee.

**Admission to candidacy**
Before admission to doctoral candidacy, students must have:

1. Completed required course work
2. Successfully completed the comprehensive examinations
3. Fulfilled all additional departmental requirements.

A student may seek admission to candidacy for the Doctor of Philosophy degree without first
completing the research and thesis portion of the Master of Science degree.

**Dissertation research**
The student must conduct a substantial original investigation under the supervision of the permanent
adviser and prepare a dissertation reporting the results of this research and analyzing its significance in
relation to existing scientific knowledge. There should be a student advisory committee meeting no later
than three months prior to dissertation defense to certify student readiness to write, and this should be
signed by all advisory committee members. When the dissertation has been completed, copies in
accepted form and style are submitted to the members of the advisory committee.

**Final dissertation defense**
If the advisory committee accepts the dissertation for defense, the candidate appears before them for a
final oral examination. This examination is open to all members of the faculty and students.

Since the Ph.D. is awarded for completion of work on an original research problem, peer-reviewed
evidence of the quality of this work, in terms of at least one accepted journal paper or published high-
quality conference paper (publications should be in a student’s research area), must be approved by the
dissertation committee and the graduate committee before the final oral examination can be scheduled.
Specific publication requirements are available at the computer science department website as well as in the College of Engineering graduate handbook.
The final oral examination will be limited to the subject of the candidate’s dissertation and related matters. A favorable vote of the candidate’s advisory committee and no more than one negative vote shall be required for passing the final oral examination. All committee members must vote. There shall be an announcement of the candidate’s name, department and title of dissertation, together with the day, place and hour of the final oral examination at least 10 working days in advance.
ELECTRICAL AND COMPUTER ENGINEERING

Engineering, Master of Science with a concentration in electrical and computer engineering
http://bulletin.vcu.edu/graduate/school-engineering/engineering-ms-concentration-electrical-computer/#degreerequirementstext

Degree requirements
In addition to the VCU Graduate School graduation requirements, students must meet the following requirements.

Thesis option

Students seeking the M.S. degree are required to take a minimum of 30 credit hours of approved graduate courses (including research). Each student must complete 12 credit hours in concentration course work, 12 credit hours in concentration electives course work and six credit hours in thesis research. The student’s adviser must review and approve all course work and thesis research credit hours. The total of all credit hours must be at least 30. No elective courses may be used for both M.S. and Ph.D. degrees. At least half of the didactic credit hours required in the student’s program must be those designated as exclusively for graduate students, that is, those at the 600 level or above. Students may not present courses receiving grades lower than “B” for fulfilling degree requirements. More than six credits of grade “C” or lower in the student’s transcript will be considered unsatisfactory performance and may result in termination from the program.

Each student must conduct an original investigation under the supervision of the permanent adviser and prepare a thesis reporting the results of this research and analyzing its significance in relation to existing scientific knowledge. This study is reported in a thesis prepared in acceptable form and style. Upon approval of the thesis by the adviser, the student submits a copy to each member of the advisory committee. The student’s advisory committee members examine the thesis and decide upon its acceptability. Each committee member reports to the student’s adviser when the thesis is acceptable for defense. The thesis is approved for defense only if accepted unanimously. Upon approval of the thesis, the student appears for a final oral examination administered by the student’s advisory committee. This examination of an M.S. candidate includes the subject matter of course work as well as the thesis.

Non-thesis option

Students seeking the non-thesis M.S. degree are required to take a minimum of 30 credit hours of approved graduate courses. Each student must complete 15 credit hours in concentration course work and 15 credit hours in option electives course work.

Each non-thesis student must have a plan of study by the end of the first semester or prior to completing nine credit hours. This plan of study (and all revisions) must be approved by the student’s adviser (Graduate Program Director) and the assistant dean for graduate affairs of the College of Engineering. The student’s adviser must review/approve all course work in advance of enrollment. At least half the didactic credit hours required in the student’s program must be designated as 600 level or above.
Students may not present courses receiving grades lower than “B” for fulfilling degree requirements. More than six credits of grade “C” or lower in the student’s transcript will be considered unsatisfactory performance and may result in termination from the program.

**Engineering, Doctor of Philosophy with a concentration in electrical and computer engineering**
http://bulletin.vcu.edu/graduate/school-engineering/engineering-phd-concentration-electrical-computer/#degreerequirementstext

**Degree requirements**
In addition to the VCU Graduate School graduation requirements, students must meet the following requirements.

A minimum of 60 credit hours beyond the bachelor’s degree, including research credit hours, is required for the Ph.D. in Engineering. Students holding the master’s degree must complete a minimum of six credit hours in concentration course work and 21 credit hours in dissertation research. The student’s adviser must approve all course work. Ph.D. students must take a minimum of 30 credit hours (including research) beyond the master’s degree. No elective courses may be used for both M.S. and Ph.D. degrees. At least half of the didactic credit hours required in the student’s program must be those designated as exclusively for graduate students, that is, at the 600 level or above. **Students may not present courses receiving grades lower than “B” for fulfilling degree requirements. More than six credits of grade “C” or lower in the student’s transcript will be considered unsatisfactory performance and may result in termination from the program.**

A minimum of three years of study, including research, is necessary to complete all requirements for the Ph.D. A period of residence of at least three consecutive semesters is required. Residency is defined as registration for at least nine credits per semester. A time limit of eight calendar years, beginning at the time of first registration, is placed on work to be credited toward the Ph.D.

**Comprehensive examination (also referred to as the Ph.D. Qualifier Examination)**

In order to advance to doctoral candidacy, the student must pass the comprehensive examination that is composed of written and oral parts. The examination focuses on the subject matter deemed critical as a foundation in the program and in the student’s research area. It is based on the material covered in required coursework and its application to theoretical and practical problems as well as assessment of the student’s proficiency and ability to comprehend and explain new knowledge in his/her area of study. Post-baccalaureate students must take the PhD comprehensive exam for the first time within 24 months of their acceptance into the PhD program. Post master’s students must take it for the first time within the first 16 months of their acceptance into the PhD program. Graduate students may not take the comprehensive exam if their overall GPA is less than 3.0. Students must also have a minimum GPA of 3.0 for courses within the program in order to take the comprehensive exam. For further details, see the graduate program director or the program chair.

**Note:** ECE currently refers to this as the Comprehensive Exam with written and oral parts.
Proposal defense (also referred to as the Ph.D. Candidacy Examination)

The student should defend his/her research proposal within 36 months from enrollment. The purpose of the proposal defense is to assess the ability of the student to integrate information and display mastery of problem-solving capabilities in the chosen research area. Student is required to prepare a written dissertation proposal and to defend it in front of the doctoral advisory committee. The format of the proposal defense is an oral presentation by the candidate and questions by the Doctoral Advisory Committee during and/or following the presentation. All committee members are required to vote, and a favorable decision with no more than one negative vote is required to pass the proposal defense. All members of the committee should be present at the dissertation proposal defense; in exceptional cases, the defense may go forward with one committee member other than the dissertation advisor absent but the absent committee member must provide the student an opportunity to present and discuss the proposal before voting. Graduate students may not take the proposal exam if their overall GPA is less than 3.0. Students must also have a minimum GPA of 3.0 for courses within the program in order to take the proposal exam. For further details, see the graduate program director or the program chair.

Admission to candidacy

Before admission to doctoral candidacy, post master’s students must have completed all required course work and post-baccalaureate students must have no more than 6 credits of elective coursework remaining. For candidacy, students must in addition have passed the comprehensive exam and the proposal defense and fulfilled all departmental requirements. Students. A student may seek admission to candidacy for the Doctor of Philosophy degree without first completing the research and thesis portion of the Master of Science degree.

Dissertation research

The student must conduct a substantial original investigation under the supervision of the permanent adviser and prepare a dissertation reporting the results of this research and analyzing its significance in relation to existing scientific knowledge.

When the dissertation has been completed, copies in accepted form and style are submitted to the members of the advisory committee. The committee members decide upon the acceptability of the candidate’s dissertation. A favorable unanimous vote is required to approve the dissertation for defense and all members are required to vote.

If the advisory committee accepts the dissertation for defense, the candidate appears before them for a final oral examination. This examination is open to the public and is limited to the subject of the candidate’s dissertation and related matters. There shall be an announcement of the candidate’s name, department and title of the dissertation, together with the day, place and hour of the final oral examination at least ten business days in advance. All members of the doctoral advisory committee must be present at the dissertation defense; in exceptional cases, the defense may go forward if no more than one committee member other than the dissertation advisor is absent, but the absent committee member has to provide the student an opportunity to present and discuss the dissertation before voting. A favorable vote of the candidate’s advisory committee which can include no more than one negative vote shall be required for passing the final oral examination. All committee members must vote.
Publication requirement

Peer-reviewed evidence of the quality of the dissertation work, in terms of at least one accepted or published reputable journal paper or published high-quality conference paper and a second manuscript submitted to a journal or a high-quality conference, must be approved by the doctoral advisory committee and the ECE graduate program director before the dissertation defense can be scheduled. These publications should be based on the student’s dissertation research, with the student as the primary author.
Mechanical and Nuclear Engineering, Master of Science
http://bulletin.vcu.edu/graduate/school-engineering/mechanical-nuclear-engineering/mechanical-nuclear-engineering-ms/#degreerequirementstext

Degree requirements
In addition to the VCU Graduate School graduation requirements, students must meet the following requirements.

The Master of Science in Mechanical and Nuclear Engineering program utilizes the faculty and research facilities of the Department of Mechanical and Nuclear Engineering to expose students to advanced and emerging technologies in mechanical and nuclear engineering. Research thrusts in the department include but are not limited to smart materials, micro/nanotechnology, energy conversion systems, sensors, aerosol science, nuclear engineering, fluid mechanics, medical devices, robotics and biomechanics.

The M.S. degree program offers a thesis or non-thesis option and can be tailored to meet the individual student’s academic goals and research interests. Eighteen to 24 months of full-time study usually are necessary to complete the requirements for the thesis-option. The non-thesis option generally requires 12 months of full-time study or up to four years of part-time study. A time limit of six calendar years, beginning at the time of first registration, is placed on work to be credited toward the master’s degree. Generally, a maximum of six credit hours of approved graduate course work required for a master’s degree may be transferred from another program at VCU or outside institution and applied toward the degree.

The following are the minimum credit hour requirements for the proposed graduate degree program options:

**M.S. thesis option** – minimum 30 credit hours including nine credit hours in core courses, 15 credit hours in technical electives (engineering, science or related areas) and six credit hours in directed research EGMN 67.

**M.S. non-thesis option** – minimum 30 credit hours including nine credit hours in core courses and 21 credit hours in technical electives (engineering, science or approved courses)

The mechanical and nuclear engineering M.S. degree program contains three curricular components:

1. **Core component:** This component consists of three required core courses that provide the foundation of the M.S. curriculum. See below for specific course requirements.
2. **Technical elective component:** This component allows the student to take courses in either engineering, science or other areas with approval of the student’s adviser and graduate program director.
3. **Directed research component:** This component emphasizes research directed toward completion of M.S. degree requirements under the direction of an adviser and thesis committee.

Depending on the option pursued, students will have to take courses from two or all three of the curricular components. Students should select their concentration component courses based upon their concentration areas. Selecting one concentration area over another does not preclude a student from choosing courses from other areas.
Degree requirements
In addition to the VCU Graduate School graduation requirements, the Ph.D. degree will require a minimum of 68 credit hours beyond the B.S. degree or a minimum of 36 credit hours beyond the M.S. degree. Students may enter the Ph.D. program with either a B.S. or M.S. degree.

Transfer policy
Transfer courses must be approved by the MNE graduate committee and must fulfill all requirements of the VCU Graduate School as described in the student handbook. For students entering with a B.S. degree, a maximum of nine credit hours of technical electives may be transferred from another VCU program or outside institution and, if not applied previously toward another degree, may be applied toward the Ph.D.

Doctoral comprehensive oral examination guidelines

Goals
A comprehensive oral examination is used to determine admission of graduate students to Ph.D. candidacy in the Department of Mechanical and Nuclear Engineering. The CO exam is administered by the graduate examination committee (a standing committee of four MNE faculty members with rotating one year terms selected by the graduate program committee) with the goals of:

1. Assessing the student’s understanding of MNE foundational material at the Ph.D. level
2. Evaluating the student’s critical-thinking and problem-solving skills
3. Determining the student’s ability to communicate ideas clearly and effectively

Format
The CO will be administered by the graduate examination committee, which is organized by the MNE graduate program committee as outlined in the graduate student handbook. The format of the CO is as follows:

• The student provides a brief presentation (~five slides). The student should provide a copy of his or her presentation to the committee at least one week prior to the CO exam detailing:
  • His or her academic background
  • Courses taken in graduate school at VCU (including a printed copy of the VCU transcript made available to committee members)
  • The remaining planned course of study

• The student then provides a brief presentation (~two to three slides) describing:
  • The expected dissertation research area
  • The proposed methods for addressing the research topic
• The GEC then presents questions in an oral format to the student.
• The question-and-answer session of the CO should not exceed 1 hour.
• After the question-and-answer component of the CO, the GEC meets in closed session to discuss their assessment of the candidate's responses and vote on admission to Ph.D. candidacy.

Assessment
The purpose of the CO is to assess items 1-3 provided under “Goals” in order to determine if the student should be admitted to Ph.D. candidacy. The committee will discuss the responses, including strengths and weaknesses observed. Correct answers are not required for a certain percentage of questions. Instead, the committee is to deliberate on the potential of the candidate to successfully complete the Ph.D. degree and become a successful professional. The committee then grades the student as pass or fail in each area of the goals. The committee also votes “yes” or “no” on admission to Ph.D. candidacy. A majority vote for promotion to candidacy is required for successful completion of the CO. At least three (of the four GEC) voting committee members must be present in the CO exam and vote.

Preparation
To prepare for the CO exam, the student should review course work completed in the first year of graduate study as a Ph.D. student and foundational MNE undergraduate courses.

Scheduling
It is anticipated that the student will have completed two full semesters of courses in graduate school at VCU at the time of the CO exam and have a firm understanding of undergraduate concepts. The student must pass the CO before the end of their fourth semester (excluding summer sessions) as a Ph.D. student at VCU. The primary CO will be administered during the second week of the fall semester. The graduate coordinator will provide a sign-up list of available times to graduate students. A secondary CO will be offered in the second week of the spring semester of each year for students who started in the spring semester of the previous year and for second chance exams.

Successful completion of the CO
Upon successful completion of the CO, the student works with his or her adviser to develop the dissertation proposal document for presentation to the committee at the proposal presentation. The proposal presentation will focus on the research topic an emphasis on objectives (or hypotheses) and a discussion of completed and future work.

Unsuccessful CO
In the event of an unsuccessful CO, the student may retake the exam once. The adviser is expected to work with the student on weaknesses identified by the committee. The CO is then re-administered and must be completed successfully within the first four semesters as a Ph.D. student at VCU. Failure to successfully complete the CO within the first four semesters is grounds for dismissal from the program. Special circumstances in scheduling within the four-semester timeline can be accommodated with written approval from the MNE graduate program director and approval from the student’s primary adviser.
Benefits of the CO format

The CO is intended to benefit the student, primary adviser and department by:

- Providing feedback to the student at an early stage regarding admission to Ph.D. candidacy
- Critically evaluate Ph.D. candidates by committee consensus at an early stage
- Continue the development of well-trained successful Ph.D. applicants and professionals

For more information, contact the graduate program director.

Research adviser and graduate dissertation committee

Students will be expected to select a research adviser and dissertation committee within 12 months of enrollment in the Ph.D. program. The dissertation committee will consist of five faculty members, including the primary research adviser and at least two other faculty members from the mechanical and nuclear engineering graduate program. This committee reviews and votes to approve or disapprove the student’s dissertation research proposal, oral candidacy exam, and the final Ph.D. dissertation and oral defense. This committee also makes the final recommendation to award the Ph.D. degree. All voting members of the committee must be members of the graduate faculty. Additional, nonvoting members may serve on the committee with the approval of the MNE graduate program director.

Proposal presentation exam

Within nine months after passing the qualifying examination the student will submit one copy of an original dissertation research proposal based upon their proposed research project to each member of his or her dissertation committee. The proposal consists of the research topic and proposed research plan. The proposal should include a thorough literature review of the topic and contain information sufficient to judge the feasibility, scope and potential impact of the research. The dissertation committee will then administer an exam based on the material submitted in the dissertation research proposal. The format of the exam is an oral presentation by the candidate with questions by the dissertation committee members. A favorable decision by the dissertation committee with no more than one negative vote (all members are required to vote) shall be required to pass the exam. If a student fails the exam, one re-examination may be given with the consent of the dissertation committee. Failure to pass the second exam will result in dismissal from the program.

Publication requirement

A Ph.D. student appearing for the final defense in the Department of Mechanical and Nuclear Engineering must provide evidence of a minimum of two manuscripts accepted for publication in peer-reviewed archival journals recognized by the ISI Web of Science at the time of defense. These publications should be based on the student’s dissertation research and must also be acceptable to the student’s dissertation committee. The student is expected to have served as the first author in one or more of the papers. Specific publication requirements are available on the department’s website as well as in the College of Engineering graduate handbook.
Dissertation defense

No earlier than six months after passing the oral candidacy examination, the student will defend the dissertation in an open forum administered by the dissertation committee. At least two weeks prior to the defense, the candidate will submit a written copy of the dissertation to each committee member and schedule a date for the defense. The defense will be advertised and faculty and student colleagues will be invited to attend. During the defense, the student will present a detailed summary of their research project, which should be the original problem presented and approved during the proposal presentation exam. If a solution of the original problem proves elusive for reasons beyond the student’s control, the student may be allowed to redirect the research with permission from the dissertation committee and find an alternate pathway to the solution of a redefined problem. The format of the dissertation defense will be a presentation by the student followed by questions from the dissertation committee and other attendees. After the first round of questions are completed, the non-committee members in attendance will be asked to leave and the dissertation committee members will hold a second round of questions in closed session. After the second round of questions is completed the student will be asked to leave and the committee members will deliberate privately. The problem presented and solved must be of sufficient importance and interest to warrant publication in a peer reviewed journal in the student’s area of specialization. A favorable decision by the dissertation committee with no more than one negative vote (all members are required to vote) shall be required to pass the dissertation defense. If a student fails the dissertation defense, one re-examination may be given. Failure to pass the second dissertation defense will result in dismissal from the program.

Students entering with a B.S. degree who are terminated from the Ph.D. program because of a failure to pass the QE, proposal presentation exam or dissertation defense (but not for other reasons such as academic dishonesty) will have the option to continue toward the M.S. in Mechanical and Nuclear Engineering.

Time limit

It is anticipated that students entering with a B.S. will complete the program in four years from the time the student passes the qualifying examination. Students must be continuously enrolled in the program (minimum of one credit hour per semester). All requirements for the Ph.D. degree must be completed within six years of passing the qualifying examination.

It is anticipated that students entering with an M.S. degree will complete the program in three years from the time the student passes the qualifying examination. Students must be continuously enrolled in the program (minimum of 1 credit hour per semester). All requirements for the Ph.D. must be completed within five years of passing the qualifying examination.

Any student may request a one-year extension of the maximum time for extenuating circumstances such as a medical situation. The graduate program committee will review and approve or deny all such requests. The maximum time cannot be extended longer than one year. Students who do not satisfy the degree requirements within the maximum time will be dismissed from the program.

Because of the maximum time limits imposed on students in the Ph.D. program, the program does not accept part-time students.
Students enrolled in the program will have the option and are strongly encouraged to participate in the Preparing Future Faculty Program. The VCU Graduate School provides graduate students with ongoing opportunities for academic and professional development. The PFFP at VCU offers a series of short courses and professional development opportunities for graduate students interested in pursuing careers in higher education. The series is modeled on the national PFFP created by the Association of American Colleges and Universities. PFFP courses introduce graduate students to the roles and responsibilities of higher education; address teaching, learning and technology issues in the college classroom; and incorporate material on the academic job search and continued professional development. For those students who complete all course requirements, the capstone course is an internship/externship experience during which the student is mentored by a senior faculty member. The program offers access to resources and activities and service-learning experiences while providing networking opportunities with students and faculty from a wide range of disciplines as well as discipline-specific areas of study. Since most courses are one or two credit hours, students are able to add them easily into their academic program schedules.
TIMETABLE/GUIDELINES FOR GRADUATE STUDENTS

The following is a general guide to assist graduate students in Engineering and their advisors in the timely completion of graduate requirements. This should be useful in conjunction with documents such as the VCU Graduate Bulletin, the Engineering graduate course requirements, the VCU Schedule of Classes, and the VCU Academic Calendar.

MASTER OF SCIENCE
This timetable is applicable to students who are pursuing an M.S. only, as well as for those who will obtain an M.S. before advancing to doctoral candidacy.

**Year 1**

**Fall Semester**
August - Orientation and registration

November - Engineering faculty member reviews student progress  
- Advance registration for spring semester  
- Requires Graduate Program Director approval

December - Choose M.S. Advisor and laboratory for thesis research  
- Advisor must be a primary Engineering or affiliate faculty member  
- Approval of choice by Graduate Program Director and Engineering Associate Dean for Graduate Studies  
- The choice must be reported to the Engineering Graduate Office on Form SoEGS00.

**Spring Semester**
January - Begin research project in laboratory  
- Discuss plan of study with Advisor

April - Registration for summer semester  
- Requires Graduate Program Director approval  
- Confirm number of summer credit hours allowed with Graduate Financial Coordinator

- Advance registration for fall semester  
- Requires Advisor/Graduate Program Director approval

**Summer Semester**
June - Engineering faculty member (Advisor or Graduate Program Director) reviews student progress  
- Finalize M.S. research project and formulate M.S. Advisory Committee in coordination with M.S. advisor  
- Minimum 3 Graduate Faculty members  
  - 2 members (includes committee chair) from program/track  
  - 1 member from outside program/concentration  
  - Chair must be from program/ concentration
- Complete Graduate Degree Plan of Study form (SoEGS01) and M.S. Advisory Committee form (Form SoEGS02)
- Approval of committee by Graduate Program Director and Engineering Associate Dean for Graduate Studies

July
- Submit proposed project to Advisory Committee
  - Advisory Committee meets with student
  - Student orally presents proposed project (with slides/overheads)
  - Committee discusses/approves project and timetable for completion
  - Committee recommends course of study (i.e. additional courses)
  - M.S. Advisor details meeting results to Graduate Program Director

Year 2

Fall Semester
November
- Engineering faculty member reviews student progress
- Advance registration for spring semester
  - Requires Advisor/Graduate Program Director approval

Spring Semester
March
- M.S. Advisory Committee meets with student
  - Student presents current status of research and plan to finish
  - Committee approves status/timetable or suggests modifications
  - Advisor details meeting results to Graduate Program Director
  - Complete Admission to Master’s or Doctoral Degree Candidacy Form
  - Begin writing M.S. thesis

April
- Registration for summer semester
  - Requires Graduate Program Director approval
  - Confirm number of summer credit hours allowed with Graduate Office
  - Advance registration for fall semester (if necessary)
    - Requires Advisor/Graduate Program Director approval

Summer Semester
June
- Engineering faculty member reviews student progress
- Draft of M.S. thesis given to M.S. Advisor for review

July
- Complete Graduation checkout on e-services
  - Submit completed summer graduation application to Graduate Program Director
    (see VCU schedule of dates for deadline)
- Complete draft of M.S. thesis
- Arrange time with M.S. Advisory Committee to defend
  - Give final draft of M.S. thesis to committee (2 weeks before defense date)
  - Notify Graduate Office at least 14 days prior to the proposed presentation date using online link on College of Engineering website to announce Ph.D. Dissertation/M.S. Thesis Final Defense (see forms section).
- Orally defend M.S. research project
  - Complete Report on Master of Science Thesis Final Examination (Form SoEGS03)
- Make changes to M.S. thesis per Advisory Committee suggestions

August
- Submit final M.S. thesis before deadline date

**DOCTOR OF PHILOSOPHY**
This timetable is applicable to students not pursuing an M.S. before the Ph.D. degree (i.e. students who already have an M.S. in Engineering or a related engineering discipline).

**Year 1**
**Fall Semester**
August
- Orientation & registration

November
- Engineering faculty member reviews student progress
- Advance registration for Spring Semester
  - Requires Graduate Program/Track Director approval

December
- Choose Ph.D. advisor and laboratory for dissertation research
  - Advisor must be a primary Engineering or affiliate faculty member
  - Approval of choice by Graduate Program Director and Engineering Associate Dean for Graduate Studies
  - The choice must be reported to the Engineering Graduate Office on Form SoEGS00.

**Spring Semester**
January
- Begin research in laboratory
- Investigate topics for Ph.D. dissertation research
  - Discuss plan of study with advisor

April
- Registration for Summer Semester
  - Requires Graduate Program Director approval
  - Confirm number of Summer Credit hours allowed with Graduate Financial Coordinator
- Advance registration for Fall Semester
  - Requires Advisor/Graduate Program Director approval

**Summer Semester**
June
- Begin research in laboratory
- Formulate Ph.D. Advisory Committee in coordination with advisor
  - minimum 5 graduate faculty members
  - 3 members (including chair) from program/track
- 2 members outside program/track
- Complete Graduate Degree Plan of Study form (Form SoEGS01) and Ph.D. Advisory Committee form (Form SoEGS04)
- Approval of committee by Graduate Program Director and Engineering Associate Dean for Graduate Studies

**Year 2**

**Fall Semester**

- September
  - Ph.D. Advisory Committee meets with student to discuss chosen project for dissertation and written comprehensive exam requirements
  - Continue dissertation research

- November
  - Complete Written Comprehensive Exam
  - Report to Engineering Graduate Office (Form SoEGS05)
  - Engineering faculty member reviews student progress
  - Advance registration for Spring Semester
    - Requires Advisor/Graduate Program Director approval

**Spring Semester**

- May
  - Registration for Summer Semester
    - Requires Graduate Program Director approval
  - Confirm number of Summer Credit hours allowed with Graduate Financial Coordinator
  - Advance registration for Fall Semester
    - Requires Advisor/Graduate Program Director approval
  - Continue dissertation research
  - Ensure Doctoral Advisory Committee is established; Written Comprehensive Exam is completed.

**Year 3+**

- October
  - Ph.D. Advisory Committee meets with student to discuss chosen project for dissertation
  - Continue dissertation research
  - Begin writing Ph.D. dissertation

- November
  - Engineering faculty member reviews student progress
  - Advance registration for Spring Semester (if necessary)
    - Requires Advisor/Graduate Program Director approval

- April
  - Registration for Summer Semester (if necessary)
    - Requires Graduate Program Director approval
  - Confirm number of Summer Credit hours allowed with Graduate Office
  - At end of third year, complete Dissertation Proposal Defense (Oral Examination)
    - Report to Engineering Graduate Office (Form SoEGS06)
- Submit Admission to Master’s or Doctoral Degree Candidacy Form

- Advance registration for Fall Semester (if necessary)
  - Requires Advisor/Graduate Program Director approval

- Complete draft of Ph.D. dissertation

- Arrange time with Ph.D. Advisory Committee to defend

- Notify Graduate Office at least 14 days prior to the proposed presentation date using online link on College of Engineering website to announce Ph.D. Dissertation/M.S. Thesis Final Defense (see forms section).
  - Orally defend Ph.D. research project

  - Complete Report on Ph.D. Dissertation Final Examination (Form SoEGS07)

- Make changes to Ph.D. dissertation per Advisory Committee suggestions

- Submit final Ph.D. dissertation and graduation application

GRADUATE WITH A DOCTOR OF PHILOSOPHY
COMMONWEALTH GRADUATE ENGINEERING PROGRAM

The Commonwealth Graduate Engineering Program (CGEP) is a distance learning graduate program of five universities in the State of Virginia: George Mason University (GMU), Old Dominion University (ODU), University of Virginia (UVA), Virginia Commonwealth University (VCU), and Virginia Tech (VT). CGEP offers qualified individuals the opportunity to earn a master’s degree part time and the ability to participate in engineering courses by means of on-line learning technologies, both synchronous and asynchronous.

Course Transfer Rule
CGEP students may earn up to 50% of the graded credit hours needed to satisfy the minimum requirements for their graduate degree through transfer from another CGEP university. All such credits must have earned grades of “C” or better, have been earned while in good standing in graduate status, and must have been offered for graduate credit at the institution where the student took the course. All transfer courses must be approved on the student’s Plan of Study and must have been completed within the time limits prescribed for satisfying degree requirements.

Registration Policies
Course registration policies and procedures vary from university to university. The applicable registration policies for a specific course are those of the offering university. Students should refer to the individual university CGEP website for details on the applicable registration policy.

For Full-Time VCU Students: If VCU is your home institution and you are registered full-time in the semester you enroll in a CGEP course: (1) Complete the application form found on Blackboard in the “Resources for Engineering Graduate Students” folder under “Graduate Student Forms,” (2) Contact your faculty advisor to verify that the CGEP course will count toward your degree, (3) Obtain your advisor’s signature on the form, (4) Register at both your host institution and here at VCU for the parallel course. Your tuition for the CGEP course is paid only at VCU. Your final grade will be added to your VCU transcript at the end of the course.

For Part-Time VCU Students: If you will be registered part-time in the semester you enroll in a CGEP course: (1) Complete the application form found on Blackboard in the “Resources for Engineering Graduate Students” folder under “Graduate Student Forms,” (2) Contact your faculty advisor to verify that the CGEP course will count toward your degree, (3) Obtain your advisor’s signature on the form, (4) Register with and pay your tuition and fees directly to the host institution. Once you receive your final grade, you may have to request a transcript from the host institution. Policies can vary at each institution. Check with your course instructor for guidance.

Further course registration information can be found on Blackboard in the “Resources for Engineering Graduate Students” folder under “Graduate Student Forms.”

An up-to-date listing of the available courses and registration processes at each of the CGEP universities is maintained on the CGEP website: http://cgep.virginia.gov/.
GRADUATE STUDENT RESPONSIBILITIES

VCU Honor System
Virginia Commonwealth University is committed to the intellectual and academic success of a diverse student body; research and discovery that advances knowledge, inspires creativity, and improves human health; and the global engagement of students, faculty, and staff that transforms lives and communities. In pursuit of these goals, the university’s core values are accountability, achievement, collaboration, freedom, innovation, service, diversity, and integrity.

VCU recognizes that honesty, truth, and integrity are values central to its mission to advance knowledge and student success both in the world VCU students will enter, or return to, once they have graduated and in the university community as a microcosm of that world. In a community devoted to learning, a foundation of honor must exist if that community is to thrive with respect and harmony. Therefore, all members of the university community must conduct themselves in accordance with the highest standards of academic honesty, ethics, and integrity at all times. Additional standards of academic and professional integrity consistent with this Honor System may apply to students in professional programs.

Because academic dishonesty is a violation of the profound trust of the entire academic community, the Honor System intends to:

- Foster an environment at VCU where academic dishonesty is not tolerated;
- Prevent any student from gaining, or attempting to gain, an unfair advantage over other students through academic misconduct;
- Define what constitutes academic misconduct and what conduct is expected of all members of the university community;
- Cultivate a centralized system of education and awareness of the Honor System; and
- Instill in members of the university community their responsibility for upholding academic integrity by recognizing that:
  - There is NO neutral stance when dishonesty occurs;
  - Apathy or acquiescence in the presence of academic dishonesty is not a neutral act;
  - Failure to take action detracts from a community of trust; and
  - Knowingly allowing others to represent the work of others as their own is as serious an offense as submitting another’s work as your own.

It is important to report EVERY suspected incident of academic misconduct to ensure consistency across courses and departments, due process rights, appropriate response to repeated academic misconduct, and protection from unfounded allegations of misconduct.

To read more about your rights and responsibilities please visit the Office of Student Conduct and Academic Integrity’s Web site: https://students.vcu.edu/studentconduct/vcu-honor-system/.
VCU Statement on Safety
What to know and do to be prepared for emergencies at VCU:
- Sign up to receive VCU text messaging alerts (www.vcu.edu/alert/notify). Keep your information up-to-date in e-Services.
- Know the safe evacuation route from each of your classrooms. Emergency evacuation routes are posted on-campus classrooms.
- Listen for and follow instructions from VCU or other designated authorities.
- Know where to go for additional emergency information (www.vcu.edu/alert).
- Know the emergency phone number for the VCU Police (828-1234). Report suspicious activities and objects.

More information can be found at the VCU Police Department’s Web site: https://police.vcu.edu/.

Statement on Americans with Disabilities Act
Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 require Virginia Commonwealth University to provide an 'academic adjustment' and/or a 'reasonable accommodation' to any qualified individual with a physical or mental disability who self-identifies as having such. Students should contact the Disability Support Services office on the Monroe Park Campus (828-2253) or Division for Academic Success on the MCV Campus (828-9782) for appropriate academic adjustments or accommodations.

To view services that the University provides please visit: http://equity.vcu.edu/ada/.

Title IX
20 USCA Sec.1681(a) Provides that, no person in the U.S. shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program receiving Federal financial assistance. The VCU Title IX leadership team ensures that all incidents of gender inequity, sexual misconduct, violence, exploitation, inappropriate language and harassment are addressed. The Title IX leadership team has oversight of VCU’s internal Civil Rights Act enforcement process and is responsible for making reports regarding Title IX incidents, resolution of internal complaints and external changes, and success of training and campus trends to the VCU Board of Visitors, president, provost, vice presidents and deans. Details can be found at: http://equity.vcu.edu/titleix/.

Facilities Access
Each student’s VCU Card number will be programmed into authorized buildings/rooms for access. All College of Engineering room access key requests must be made by filling out the Key Request Form which includes the approval signature of the Department Chair or faculty supervisor and emailing it to egrkey@vcu.edu. Electronic swipe access must be requested by the Faculty Supervisor/PI by filling out the Electronic Swipe Access Request Form on the website http://www.egr.vcu.edu/school-engineering-operations-management/forms/swipe-access-form/. 
Contact Information
Virginia Commonwealth University has four exchanges for telephone numbers, 828-xxxx and 827-xxxx, 225-xxxx, and 440-xxxx. When calling within the university, it is only necessary to use the last digit of the three-digit prefix, followed by the four-digit suffix. Thus, 77033 is actually 827-7033.

Important Dates
The 2018-2019 academic calendar is available at http://academiccalendars.vcu.edu/.
Recreation Centers
There are recreation centers located on both campuses. The Monroe Campus recreation center, Cart Street Gym, is located at 101 South Linden Street. The MCV recreation center is located off 10th St. and Turpin St. They post their hours at the beginning of each semester. Students need their VCU Card to gain access. The Web site for Recreational Sports has facility information as well as programs available to students: http://www.recsports.vcu.edu/.

Bookstores
There are two bookstores located on both campuses. The Monroe Campus Bookstore is located at the West Broad Street Parking Deck. The MCV bookstore is located at 10th and Leigh Streets, in the N Deck. Bookstore hours can be found on the VCU Barnes & Noble Web site: http://vcu.bncollege.com/webapp/wcs/stores/servlet/BNCBHomePage?storeId=55552&catalogId=10001&langId=-1.

Libraries
There are two main libraries for VCU. The library on the Monroe Campus is the James Branch Cabell Library located 901 Park Ave. The VCU Campus Connector drops students off directly in front of this library. The library on the MCV campus is the Tompkins-McCaw Library located at 509 N. 12th Street. Library hours and other information on what the libraries have to offer can be found on their Web site: https://www.library.vcu.edu/.

Computer Services
VCU Technology Services provides computer support to the University to make sure technology resources are available anywhere at any time. They offer IT support, a software center to download packages and help with e-mail. Their Web site is: http://www.ts.vcu.edu/.

There is also a computer store on campus called RamTech. There are excellent discounts for VCU students at the store and is a great place to browse and ask questions while researching your next computer. http://apps.bsv.vcu.edu/RamTech/Index.html

Shuttle Service
RamRide is a VCU shuttle service for students, faculty and staff that runs from the Monroe Park Campus to the MCV Campus. Buses run year-round and there’s an app for your phone that you can download to track the bus’ progress. That information including bus service times are located on the Parking & Transportation Web site: www.parking.vcu.edu/transportation/ramride/
Parking and Transportation both at VCU and with the City of Richmond

The College of Engineering strongly recommends students obtain parking from the University. The Parking and Transportation Office is responsible for the management and maintenance of all university-owned parking spaces and for enforcement of parking policies and procedures. Signs at lot entrances designate all decal/permit-controlled lots. Vehicles not displaying the appropriate decals or permits will be ticketed when found parked in these areas and are subject to being towed.

To obtain information on the cost of the different lots and obtain a VCU parking pass, students can visit their Web site: http://www.parking.vcu.edu/parking/. Students living in university-operated housing may purchase 24-hour subscriptions on a per semester basis to the West Main Street Deck or Jefferson Street Deck.

Automobile/Motorcycle Licensing

Out-of-state residents enrolled full-time at an accredited Virginia school may drive in Virginia with their home-state licenses and vehicle registration plates.

However, out-of-state students with a driver’s license who are gainfully employed here, full-time or part-time, are required to be licensed to drive in Virginia, and their vehicles must be registered by Virginia. New residents must obtain Virginia driver’s licenses within 30 days of residency.

To obtain a drivers’ licenses and/or vehicle registration for the Commonwealth of Virginia please visit the Department of Motor Vehicles Web site: https://www.dmv.virginia.gov/#/.

Vehicle Inspection

Vehicle inspection is required immediately after registration. This must be done at an official inspection station. Equipment checked includes, but is not limited to, brakes, lights, steering, signal devices, suspension, mirrors, horn, windshield glass and wipers, tires exhaust system, license plate mounting, safety belts, emission control devices and hood latch. Numerous garages provide this service.

City Decals

Virginia localities also register residents’ vehicles. The City of Richmond requires purchase and display of a city decal on vehicles registered in Virginia except those displaying a decal from another locality. Students with no locality decal must purchase a Richmond decal from the City: http://www.richmondgov.com/Finance/FAQ.aspx.

Bicycles

On-campus residents are advised to register their bicycles with the VCU Police Department. There is an online registration located at: http://www.bikes.vcu.edu/safety-regulation/bike-registration/.

City Buses

Mass transportation in Richmond and Henrico County is provided by the Greater Richmond Transit Company (GRTC), with express routes operating during the peak traffic periods between downtown Richmond and outlying areas. The VCUCard with a VCU Student Transit Pass (obtained from the Parking and Transportation Office) is a bus pass for students to ride the GRTC buses. Senior citizens and
the disabled may ride for reduced fares. GRTC schedules are available in the Commuter Student Lounge of the Commons, 907 Floyd Ave. More information about the transit pass is located here: http://www.parking.vcu.edu/transportation/transit-pass/.

Student Health Services
Student Health Services provides quality outpatient care and public health services to students as part of your student health fee. Student Health Services is located at 1300 West Broad Street, Suite 2200. Students can obtain cold and flu medicine inexpensively. Student Health Services on the MCV campus is located in the VMI building, 1000 East Marshall St., Suite 305. Information on making appointments, the staff and hours can be found on their Web site: https://students.vcu.edu/health/.

Graduate Student Association
The Graduate Student Association (GSA) at VCU is committed to facilitating programs that enhance the academic skills, professional development, and social environment of all graduate students. The GSA also serves as an advocate for the issues and needs of graduate students at VCU. Just by being a graduate student, students are automatically members of the GSA. With that membership comes many opportunities. We are working hard to do more for all graduate students at VCU. Become more informed by joining GSA Listserv. Students who join Listserv will receive announcements and important information about the GSA. Students are invited to GET INVOLVED and attend GSA meetings and socials. For additional information, please visit the GSA website at http://www.graduate.vcu.edu/life/association.html.
FORMS
The following pages include a list of mandatory forms to be filled out during the various stages of degree completion and a checklist of degree requirements.

All forms are found online at:
https://egr.vcu.edu/academics/student-services/resources-forms/

- Plan of Study for the M.S. Degree (Form M1)
- Plan of Study for the Doctoral Degree (Form D1)
- Appointment of Master of Science for Thesis Advisory Committee (Form M2)
- Doctoral Committee Approval and Qualifying Exam Results (Form D2)
- Notice of Dissertation Proposal Defense for the Ph.D. Degree
- Notice of Final Defense Examination for Degree of M.S. and Ph.D.
- Admission to Master’s or Doctoral Degree Candidacy
- ETD Approval Form
Graduation checklist for all Graduate Students, Graduate Student Advisors, and Graduate Program Directors

The total number of semester credits required for graduation depends upon the degree program. Specific information may be found under degree program descriptions. In addition to the specific requirements listed by the department, the following graduation checklist for graduate students, advisers and program directors summarizes all general requirements for graduation as determined by the University Graduate Council.

- Candidates enrolled at time of application/reapplication to graduate (i.e., semester in which candidates plan to graduate).
- Overall graduate GPA is greater than or equal to 3.0.
- Graduate GPA based on all graduate course work attempted after acceptance into program.
- For repeated courses, both original grade and repeat grades included in calculation of graduate GPA.
- No more than six credit hours or 20 percent of total credit hours attempted (whichever greater) at C or below level (D, F, U). **Note: ECE does not allow any grades below “B” to be used for degree requirements.**
- No course work approved for transfer below grade of B; no course work approved for transfer included in calculation of GPA.
- Graduate course work (500 level or higher) only may be applied to a graduate degree with at least one half of required course work designated exclusively for graduate students (600 or higher).
- All Incompletes (I) converted to letter grade by last day of class of semester in which candidate plans to graduate.
- All grades of Continued (CO), Progress (PR) and Not Reported (NR) converted to letter grades by last day of class of semester in which candidate plans to graduate.
- All course work taken within prescribed time limits (M.S., six years; Ph.D., eight years with any extensions approved by the Graduate School).
- All requirements for thesis/dissertation (if applicable) completed by the deadline published in the Academic Calendar of the semester in which candidate plans to graduate, including
  - Signature sheet with all approval signatures, including graduate dean’s and, if applicable, documentation of IRB or IACUC approval number.
  - Required copies submitted to VCU Libraries, with appropriate forms and fees, for binding, copywriting (if applicable), etc., according to instructions in University Graduate Council’s Thesis/Dissertation Manual and/or VCU Libraries Electronic Thesis/Dissertation procedures and program/school handbooks. (Candidate should confirm with adviser/program director all internal schedules for submission of copy, defense and approval.)
  - Submission of Survey of Earned Doctorates to graduate dean (doctoral students only). To complete the survey electronically, go to [http://www.norc.uchicago.edu/sed](http://www.norc.uchicago.edu/sed).
  - Students must settle all financial obligations with VCU Student Accounting Department.