Graduate Student Handbook for the University of Vermont Electrical Engineering Graduate Degree Programs

Applicable for all students beginning their graduate studies on or after June 1, 2018.

May 29, 2018

The guidelines in this handbook are applicable for all students beginning their graduate studies on or after June 1, 2018. Students who started their degree program before this date are encouraged to transition to the requirements in this handbook, in consultation with their advisor and the Graduate Program Coordinator.
1 Introduction

The Electrical Engineering (EE) program at the University of Vermont (UVM) offers programs of study leading to the M.Sc. and Ph.D. degrees in Electrical Engineering. In addition the EE program partners with other academic units to offer M.Sc. and Ph.D. degrees in materials science and the Ph.D. degree in bioengineering. Areas of research expertise in electrical engineering include...
control systems, electromagnetics & optics, electric energy & power systems, solid state physical electronics, semiconductor materials and devices, wireless communications, VLSI design & testing, and biomedical engineering.

This guide to the graduate program in Electrical Engineering at the University of Vermont is designed to help each student plan a program of graduate study leading to either, or both, the M.Sc. or Ph.D. degrees in electrical engineering. As such, it is devoted to the policies, rules, and procedures of our graduate program in Electrical Engineering with the intention of providing a general framework for your graduate studies. Any unanswered questions should be addressed to your faculty advisor, the EE graduate program coordinator, or the Graduate College. Notice that the program requirements for both the M.Sc. and Ph.D. degrees subsume the Graduate College requirements that are described in the Graduate Catalogue. It is the Graduate College that awards each graduate degree so that their rules must either be satisfied or subsumed by program rules. For general information regarding graduate studies at the University of Vermont, see the Graduate College website [http://www.uvm.edu/~gradcoll/](http://www.uvm.edu/~gradcoll/).

## 2 Electrical Engineering Graduate Program Faculty

The following full-time faculty members advise students pursuing M.Sc. and Ph.D. degrees in Electrical Engineering:

- **Professor Jeff Frolik** (Ph.D., University of Michigan, 1995). Sensor networks, wireless communications, and distributed control.
- **Professor Josh Bongard** (Ph.D., University of Zurich, 2003). Evolutionary robotics, machine learning and crowdsourced design.
- **Assistant Professor Mads Almassalkhi** (Ph.D., Univ. of Michigan, 2013). Power systems, model predictive control and optimization.
- **Assistant Professor Hamid Ossareh** (Ph.D. University of Michigan, 2013) Systems and control theory, constrained and predictive control, applications of control theory to automotive and power systems.
- **Research Assistant Professor Luis Duffaut-Espinosa** (Ph.D. Old Dominion University), Control systems, stochastic processes, power and energy.
- **Professor Byung Lee** (Ph.D. Stanford University), database systems, data mining, causal modeling and causal query processing over data streams.
3 Graduate Student General Requirements and Classifications

Graduate students in electrical engineering are classified as either Master of Science (M.Sc.) Program Students, Master of Science (M.Sc.) Candidates, Ph.D. Program Students, or Ph.D. Candidates. Each of these classifications is defined below along with general requirements that are common to all graduate students.

3.1 Electrical Engineering Core Requirement

Advancing to candidacy in any of the EE graduate degree programs requires that students demonstrate mastery of core electrical engineering material. The core EE material includes linear circuit analysis (EE 3/4) and the material from at least two of the following courses:

- Analog Electronics (EE 120)
- Microcontroller Systems (EE 134) or Fundamentals of Digital Design (EE 131)
- Electromagnetic Field Theory (EE 141)
- Signals and Systems (EE 171)

Students may demonstrate mastery in a subject by (a) holding a bachelors’ degree in electrical engineering from an accredited institution, (b) completing the class at an accredited institution with a grade of B or better, (c) completing a higher-level class that requires the core course as a prerequisite with a grade of B or better, or (d) auditing the class and completing the requisite exams with a grade of B or better. Each student who does not have an existing EE degree should obtain approval of their plan for completing the EE core requirement from the graduate program coordinator before the end of their first semester.

In addition to the undergraduate core above, EE 301 (Systems Theory) and EE 302 (Stochastic Processes) are considered core graduate courses. Ph.D. students are expected to complete EE 301 and 302 with a grade of B or better, and M.Sc. students are expected to complete at least one of the two EE graduate core courses.

All graduate students should be prepared to address questions related to the core EE material, as defined above, in their M.Sc. or Ph.D. comprehensive exams.

3.2 Graduate seminar

All EE graduate students are required to regularly attend the graduate seminar course (EE393, 0 - 1 credit) each semester. Graduate students should register for 1 credit at least once prior to graduation. Thesis/Dissertation students should register for this credit in association with the presentation of the student’s thesis proposal during the graduate seminar time slot.

3.3 M.Sc. Program Admission

Requires an accredited bachelors’ degree in engineering, physics, mathematics, computer science, or other appropriate field. Admission into the M.Sc. Program requires that the applicant have an undergraduate grade point average above 3.0 (based on a 4.0 scale), that their EE course grades are strong (B average or better), and that their letters of recommendation are positive. In borderline cases, specific scholastic requirements may need to be set by the EE Graduate Program Committee.
3.4 M.Sc. Candidacy
Requires either a bachelors’ degree in electrical engineering from an accredited institution, or demonstrated mastery of core electrical engineering material, and completion of the M.Sc. Comprehensive Exam requirements.

3.5 Ph.D. Program Admission
Requires a M.Sc. degree in Electrical Engineering or its equivalent. A graduate student who meets the requirements for candidacy for the M.Sc. degree in Electrical Engineering and has completed twenty-four (24) credit hours of appropriate graduate course work with a B average (3.0 on a 4.0 scale) or better qualifies to apply to the Ph.D. program. An applicant to the Ph.D. program may be admitted provisionally based on a B average or better in twenty-four (24) hours of appropriate graduate coursework toward the M.Sc. in Electrical Engineering.

3.6 Direct Ph.D. Program Admission after a B.Sc. degree
Exceptionally qualified and committed students may be considered for direct admission to the Ph.D. program, subject to advisor and grad coordinator approval. Students who are interested in this path should specifically describe why they are interested to pursue the Ph.D. degree in their application essay.

3.7 Ph.D. Candidacy
Requires that the student complete the Ph.D. coursework requirements, complete the Ph.D. Comprehensive Examination, demonstrate mastery of core electrical engineering material (as defined previously), and successfully defend the student’s dissertation proposal.

3.8 Admissions classification
After reviewing an applicant’s materials, appropriately qualified applicants to our graduate program are either (1) admitted to graduate studies leading to the M.Sc. degree, or (2) admitted to graduate studies leading to the Ph.D. degree.

4 Requirements for the M.Sc. Degree in Electrical Engineering
The M.Sc. degree in electrical engineering requires, at a minimum, 30 credit hours at the 200 level or higher, including the EE M.Sc. core requirement consisting of either EE 301 (System Theory) or EE 302 (Stochastic Processes), and the completion of a comprehensive examination. All courses should be selected in consultation with the student’s graduate advisor in order to best prepare the student for their research and/or career objectives. To bolster his/her background in a particular area and with pre-approval from the graduate college and the student’s advisor, a student may apply up to three credits of EE 100 or higher coursework to their M.Sc. degree requirements.

Students can choose, in consultation with their graduate advisor, between a thesis option, a project option, and a coursework option. Students who are funded with a GTA or a GRA are required to choose between the thesis or project options. Students are highly encouraged to check frequently with the graduate college for UVM M.Sc. degree requirements and deadlines, which all graduate students are required to meet.
4.1 M.Sc. Thesis Option

The table below summarizes the requirements for the thesis option M.Sc. degree in EE.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total credits</td>
<td>( \geq 30 ) credits, selected with guidance from a graduate faculty advisor</td>
</tr>
<tr>
<td>EE coursework</td>
<td>( \geq 15 ) credits, selected with guidance from a graduate faculty advisor, including either EE 301 or EE 302 or equivalent</td>
</tr>
<tr>
<td>Elective coursework</td>
<td>( \geq 9 ) credits selected from EE or related graduate courses in science, technology, engineering and math, or thesis credits (EE 391), selected with guidance from the student’s advisor.</td>
</tr>
<tr>
<td>Thesis research credits</td>
<td>( \geq 6 ) credits (EE 391) under supervision of an EE graduate program faculty member</td>
</tr>
<tr>
<td>Thesis committee &amp; Comprehensive exam</td>
<td>The student must orally present a proposal for their thesis research at least 3 months prior to graduation. After this presentation the student’s thesis committee will orally examine the student based on the student’s coursework and research focus, including the electrical engineering core and EE 301 or EE 302. Successful completion of this step will meet the requirements for a comprehensive exam.</td>
</tr>
<tr>
<td>Thesis</td>
<td>A thesis must be completed, under the supervision of an EE graduate program faculty member. The written thesis must meet Graduate College requirements and be defended orally in public forum. See the Graduate College requirements.</td>
</tr>
</tbody>
</table>

4.2 M.Sc. Project Option

The table below summarizes the requirements for the project option M.Sc. degree in EE. Note that within the project option students are limited to 3 credits of EE 392.
<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total credits</td>
<td>≥ 30 credits, selected with guidance from a graduate faculty advisor</td>
</tr>
<tr>
<td>EE coursework</td>
<td>≥15 credits, selected with guidance from the student’s advisor, including either EE 301 or EE 302 or equivalent</td>
</tr>
<tr>
<td>Elective coursework</td>
<td>≥12 credits selected from EE or related graduate courses in science, technology, engineering and math, with guidance from the student’s advisor.</td>
</tr>
<tr>
<td>Project research credits</td>
<td>3 credits (EE 392) under supervision of an EE graduate program faculty member</td>
</tr>
<tr>
<td>Project committee</td>
<td>The student should work with their graduate advisor to choose a project committee by their second semester consisting of two to three regular faculty members, with not less than two from the EE graduate program faculty who approve the project.</td>
</tr>
<tr>
<td>Comprehensive exam</td>
<td>The student must orally present a proposal for their project research at least 3 months prior to graduation. The student’s project committee will orally examine the student based on the student’s project proposal as well as material from the EE core.</td>
</tr>
<tr>
<td>Project</td>
<td>The project topic is selected after consultation with an EE graduate faculty member and must not be the same as any project performed as part of a paid position. A written project report must be completed under the supervision of an EE graduate faculty member. The project should be orally presented in a public forum and approved by a committee of at least three faculty members, with not less than two from the EE graduate program faculty.</td>
</tr>
</tbody>
</table>

### 4.3 M.Sc. Coursework Option

The table below describes the requirements for the coursework option M.Sc. degree in EE.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total credits</td>
<td>≥ 30 credits, selected with guidance from a graduate faculty advisor</td>
</tr>
<tr>
<td>EE coursework</td>
<td>15 credits, selected with guidance from advisor, including either EE 301 or EE 302 or equivalent</td>
</tr>
<tr>
<td>Elective coursework</td>
<td>15 credits selected from EE or related graduate courses in science, technology, engineering and math, with guidance from the student’s advisor.</td>
</tr>
<tr>
<td>Exam committee</td>
<td>As needed to meet the requirements below, the student should work with their graduate advisor to choose a comprehensive exam committee consisting of two to three regular faculty members, with not less than two from the EE graduate faculty.</td>
</tr>
<tr>
<td>Comprehensive exam</td>
<td>Any student who demonstrates mastery in the EE core and completes their EE coursework requirements with a grade of B+ or better in all of the courses that meet this requirement, meets the requirements for a comprehensive exam. If the student does not meet this threshold, the graduate program coordinator and the student’s advisor will jointly select two or more courses at the level of EE 200 or above and will provide the student with an oral exam on this course material. The student must complete this exam at the B+ level or better.</td>
</tr>
</tbody>
</table>

### 4.4 Accelerated Master's Program

Qualified undergraduate students who plan to earn a thesis or project-based master’s degree in Electrical Engineering may apply for the program’s Accelerated M.Sc. Degree Program (AMP).
This program enables the student to begin working on a master’s degree while still an undergraduate student. The basic requirements for admission to and completion of this program are as follows:

- Interested students must apply to the Accelerated M.Sc. Program in the second semester of their junior year no later than April 15.

- In order to be admitted to the Accelerated M.Sc. Program, the student must have a cumulative grade point average of at least 3.2 at the time of application, and they must submit a letter of application to the EE Graduate Program Coordinator naming an EE graduate program faculty member who has agreed to serve as their graduate advisor.

- Upon being admitted into the Accelerated M.Sc. Program, the student may take up to 9 credit hours of courses for graduate credit while still an undergraduate. Of these, up to 6 credit hours of 200-level or higher courses can be counted toward both the B.Sc. and M.Sc. degrees, subject to the approval of the student’s graduate advisor.

- Students in the AMP typically begin work toward their master’s thesis or project starting in the summer following their junior year.

- All other requirements for the thesis or project option M.Sc. degree apply.

5 Requirements for the Ph.D. Degree in Electrical Engineering

The Ph.D. degree in electrical engineering is designed to prepare students for advanced careers in engineering research, development and education.

Students seeking admission to the Ph.D. degree program are required to have completed the M.Sc. degree in Electrical Engineering or its equivalent, or to meet the qualifications for the direct-to-Ph.D. route.

Once admitted Ph.D. students must successfully meet each of the following requirements: (a) coursework, (b) comprehensive exam, (c) dissertation proposal, (d) dissertation defense, (e) final dissertation submission to the graduate college.

The following sections describe each of these requirements.

5.1 Coursework

Per the graduate college’s requirements, the Ph.D. degree requires a total of seventy-five (75) semester credits total, with at least 51 credits taken in residence at UVM, and at least 30 credits in graded coursework of which at least 15 credits is not to be counted toward a student’s master’s degree. For the Ph.D. program in electrical engineering, these credits should be selected to meet the following requirements:

- Two courses to satisfy the EE Ph.D. core requirement (≥6 credit hours), which consists of EE 301 (System Theory) and EE 302 (Stochastic Processes). These courses are typically offered in alternate years in the fall semester. To achieve candidacy, students must complete both courses with a B or better grade.

- At least three additional courses (≥ 9 credit hours) of advanced topics in electrical engineering (200 or higher) specifically selected with your graduate advisor to facilitate your research goals.
• To bolster a student’s background in a particular area and with approval from a students advisor, the EE grad program coordinator, and the graduate college, a student may apply three credits of EE 100 or higher coursework to their Ph.D. degree requirements. These may not be applied to the 15 credits of EE coursework specified above.

• A student with a M.Sc. degree in Electrical Engineering can apply up to twenty-four (24) credit hours from their M.Sc. degree toward the Ph.D. coursework requirements, subject to the approval of the EE graduate studies committee.

• At least 20 credit hours of EE 491, doctoral dissertation research, supervised by the students Ph.D. advisor.

• Following the successful completion of all course and research credits, students requiring continuing registration must enroll in either GRAD 901 (less than 50% effort), GRAD 902 (50% effort), or GRAD 903 (more than 50% effort) as a reflection of their current research activity.

• Students should complete a coursework plan in their first year of Ph.D. studies, and submit this plan to the graduate studies committee for review.

5.2 Comprehensive exam

In order to be advanced to candidacy for the Doctor of Philosophy in Electrical Engineering, a Ph.D. student is required to pass the Comprehensive Examination, prior to the start of a candidates 4th semester of study, and no later than the end of the student’s 4th semester (with the potential for an adjusted timeline for part-time students). To be eligible for taking the exam, the student must have completed taking at least one of the two EE core courses (EE 301 and EE 302) with passing grades B or higher. Candidacy is achieved with successful completion of the exam and successful completion (B or higher) of the second EE core course (EE 301 or EE 302) in their 3rd semester. Part-time Ph.D. students should coordinate their schedule with their advisor and with the graduate program advisor.

The comprehensive exam consists of a written part and an oral part.

5.2.1 The Written Part

The written part of the examination will be a report presented in the form of an IEEE conference paper, with the format of double column and maximum length of 6 pages. The paper will be focused on a research topic in the area of the candidates dissertation work, and will comprise three Specific Aims.

1. Introduction, background and literature review related to the research problem. Development of a comprehensive bibliography related to their research topic.

2. A clear description of open issues related to the research topic. Discussion of the value and innovative aspects of the students proposed research.

3. Proposed research approach description, hypothesis(es) and/or goal(s), potential barriers and possible solutions, preliminary data, and experimental design plan.

The first aim will demonstrate the students ability to collect and contextualize prior art in the area of research. The second aim will demonstrate the students ability to identify new research
problems and justify their value to the field. The third aim will be a “stretch aim that extends beyond the completed aspects of the candidates research. In this third aim, the candidate will be expected to exhibit evidence of an ability to generate imaginative and thoughtful hypotheses, and to think laterally about how their PhD research area could be developed in a new direction. The candidate should gain the approval of their thesis committee regarding the general area of the proposal prior to beginning work on it.

5.2.2 The Oral Part

The oral part of the comprehensive examination will be a formal seminar (approximately 30 minutes, and no more than 40 minutes) by the student in front of the faculty committee, to take place after the committee members have had a chance to review the written report, which should be in the hands of the committee members at least 2 weeks prior to the oral presentation. The student’s comprehensive exam committee should include at least three members of the graduate faculty, at least two of whom should be members of the EE graduate program. The student should invite all EE faculty to attend the student’s comprehensive exam.

After the presentation, the student will be asked to defend the paper and to answer additional questions related to the student’s research and coursework completed in fulfillment of the Electrical Engineering Core Requirement. Both the student’s research and electrical engineering core (as previously defined) are important to passing the comprehensive exam.

A student may (but is not required to) invite non-committee members (e.g., fellow students) to attend the 30-minute presentation portion of the exam. After this presentation the general audience will be dismissed to facilitate detailed discussions with the committee. Students should schedule at least 1.5 hours for the oral part of the comprehensive exam.

5.2.3 Outcomes from the comprehensive exam

After the oral part of the exam, the exam committee will meet to discuss both the written and oral components. The committee will then decide if the student

- Passed at the Ph.D. level and can proceed to complete the Ph.D. requirements.
- Passed at the M.Sc. level and will be allowed to retake the exam (1 time maximum).
- Did not pass the exam.

If the student does not pass at the Ph.D. level, but does pass at the M.Sc. level, the student may be allowed to complete work for a masters degree.

After successful completion of the exam, the student may still need to complete his/her second EE core course (EE 301 or EE 302) with a B grade or better to achieve candidacy. It is expected that Ph.D. students will achieve candidacy no later than the beginning of their 4th semester of studies.

5.3 Dissertation proposal

Nominally in their third year of study, a Ph.D. candidate will form a dissertation committee, in consultation with the students research advisor. This committee should be composed of 4-5 members of the UVM Graduate College, with at least one member from outside of the EE faculty (to serve as Chair) and at least two members from within the EE graduate program faculty.
A dissertation proposal should be developed after the student has submitted at least one journal paper or very high quality conference paper (accepted) based on their research at UVM. The dissertation proposal, which is comprised of a written proposal with an oral presentation (open to the public), requires a comprehensive prior art review, a discussion of the students work to date, and a detailed plan for the research that is expected to complete the dissertation.

5.4 Dissertation Defense

The dissertation defense is to be scheduled after the dissertation proposal has been successfully completed and approved by the dissertation committee, and the student has completed the proposed research.

The written dissertation should comprehensively describe the methodology and results from the students research. The minimum standard for the dissertation is the completion of at least two manuscripts appropriate for publication in a high quality, peer-reviewed venue, such as an IEEE transactions journal or a leading international peer-reviewed conference, at least one of which should be accepted for publication. Specific advisors may have additional requirements.

The dissertation defense is open to the public, and should include a comprehensive oral presentation of the students research results, as well as questioning from the public and the students dissertation committee.

5.5 Final Dissertation Submission

The student is responsible to ensure that all comments from the committee are addressed and a final dissertation document is submitted to the graduate college, in accordance with graduate college requirements, for publication.

6 General information for graduate students

6.1 Graduate Program Applications

In order to be considered for admission to Electrical Engineering or Biomedical Engineering M.S. or Ph.D. programs, you will need to complete the UVM graduate admissions application process. In addition, if you are interested in financial support in the form of a Graduate Research Assistantship or a Graduate Teaching Assistantship you may wish to write to one of the program faculty members whose research interests align with yours. However, please note that offers of financial support can only be made after a student has completed the application process described below.

Checklist of Required Application Materials:

- Application (online) [https://www.applyweb.com/uvmg/](https://www.applyweb.com/uvmg/)
- Resume
- Statement of Purpose
- Three Letters of Recommendation
- Transcripts: One official Transcript from each institution attended
- Test Scores: GRE, TOEFL/IELTS (can be waived for the student who has received a college degree from a University in North America).
- Application fee: paid with submission of online application
6.1.1 Deadline for Application and Financial Aid

**Fall Semester Enrollment**: The official deadline is April 1. However, the Department of Electrical and Biomedical Engineering will start the graduate application reviews and assistantship position (GRA/GTA) allocations starting from January 1, and will continue until all positions have been filled. Applicants are highly encouraged to complete their complete application packages submitted on or before January 1.

**Spring Semester Enrollment**: The official deadline is November 15. However, the Department of Electrical and Biomedical Engineering typically starts graduate application review and assistantship (GRA/GTA) allocation starting on October 1. Applicants are highly encouraged to complete their application packages before October 1.

6.1.2 Test Scores Requirement for GRE and English Proficiency Examinations

- **Graduate Record Examination (GRE)**: Verbal and quantitative scores are required.

- **TOEFL or IELTS score**: TOEFL or IELTS scores are required for an international student who does not have a college degree from an accredited university in North America. The minimum acceptable TOEFL scores for admission is 90 for the Internet-based test, and 577 for the paper-based test.
  - Minimum acceptable TOEFL scores for Graduate Teaching Assistant (GTA) funding:
    - Internet based: 100
    - Paper Based: 600
  - Minimum acceptable IELTS (academic version) scores for admission: 6.5
  - Minimum acceptable IELTS (academic version) scores for GTA funding: 7.0

6.2 Funding Policies

In order to maintain a healthy level of activity in our graduate program, a proper balance must be maintained between the University supported GTA positions and externally supported Research Assistantships (GRA positions). In recruiting students, special attention must be given to diversity and excellence and capability of performing well as Graduate Teaching Fellows in the operation of our teaching laboratories and courses.

GTA funding is typically awarded only to Ph.D. and M.Sc. thesis option students with a priority given to full-time Ph.D. students.

In order to assist in the effort to locate qualified individuals and to help maintain a healthy stream of potential GRAs to our research programs, each faculty member will be encouraged to recruit (on average) at least one new graduate student annually. It will be the responsibility of each faculty member to both seek an individual that meets the goals stated above, and to initially welcome and advise that student once arriving at UVM. Once at UVM the student may elect to take any member of the EE Graduate Program Faculty as their advisor (with that faculty members concurrence) without affecting their original graduate teaching assistantship.

The EE Graduate Program Faculty will discuss the awards of GTA positions in a meeting chaired by the EE Graduate Program Coordinator. All the operational duties of the Graduate Program, such as organizing applications and assisting committees in administrating comprehensive examinations, will be performed by the EE Graduate Program Coordinator. Awards made during the summer will be coordinated with two members of the Graduate Program Faculty, if possible.

The potential faculty advisor may select a student who has originally stated an interest in pursuing a degree in either the Materials Science or Biomedical/Bioengineering Engineering Programs.
with their advisor in Electrical Engineering. If the student wishes to change to an advisor who is not a member of the EE Graduate Program Faculty, they will forfeit their GTA position.

6.3 Duration of GTA Funding

A M.Sc. thesis option student may receive GTA funding for no more than two years. If the student then continues on to the Ph.D. program, this two years of funding is then counted in the same manner as any other Ph.D. student (i.e., flexibility in funding is allowed).

Maintaining GTA funding requires that a student maintain good academic standing as evidenced by an overall GPA of 3.0 or higher, the completion of appropriate coursework, and acceptance as a thesis student by one of the EE Graduate Program Faculty, and adequately meeting all GTA responsibilities.

The performance of GTA-funded students will be reviewed midway through each semester in order to determine whether or not funding will be continued in the following semester.

6.4 Graduate Student Grants and Travel Funds

UVMs Graduate College provides information for graduate students seeking specific funding for academic, research, and travel endeavors. The Funding Manual for Graduate Students, which includes a list of graduate student fellowship competitions sponsored by such organizations as the National Science Foundation, the American Association of University Women, and the Ford Foundation, is updated each year and published in the Spring. This manual is available in the Graduate College and in the UVM Libraries. In order to assist graduate students in attending national meetings to present papers or poster, the Graduate College, through the Graduate Student Advisory Committee (GSAC), can provide some funds on a department matching-fund basis. Application forms are available in the Graduate College Office.

The Department of Electrical and Biomedical Engineering may provide a 1:1 match for funds obtained from the Graduate College to support student travel. Requests for these funds must be made in written to the Department Chair.

6.5 Information Available Online

The best place for updated information about graduate studies at UVM is the graduate college web site: http://www.uvm.edu/~gradcoll/

The following links may also be helpful.

Graduate Student Costs at UVM:

- Tuition and fees: http://www.uvm.edu/~stdfinsv
- Living and housing: http://www.uvm.edu/studentlife and http://reslife.uvm.edu

Application Procedure & General Information:

- Admissions web site with application deadlines: https://www.uvm.edu/graduate/prospective_student_resources
- UVM catalog: http://www.uvm.edu/academics/catalogue
- Graduate college: http://www.uvm.edu/~gradcoll/
6.6 Cyril G. Veinott Award

The Cyril G. Veinott \(^1\) (Graduate) Award, first given in 1989, is given annually to a senior graduate student in electrical engineering “for excellence in performance and greatest promise of success. Past recipients of the Cyril G. Veinott (Graduate) Award are:

- 2018 - James Jamison, III
- 2016 - Yu Zhang
- 2015 - Pooya Rezaei
- 2014 - Clark VanDam
- 2013 - Anbu Venkatachalam
- 2012 - Christopher Palombini
- 2008 - Richard P. Ketcham
- 2007 - Mohamed Elfataoui
- 2006 - Benji L. Capsuto
- 2005 - J. Brooks Zurn
- 2004 - Timothy J. Campbell
- 2003 - Seth A. Maciejowski
- 2002 - Jacob H. Galbreath
- 2001 - Thang V. Nguyen
- 2000 - Theodore M. Kawenski
- 1999 - Tien H. Nguyen
- 1998 - Hong Xiao
- 1997 - Matthew W. Deming
- 1996 - Valerie H. Chickanosky
- 1995 - Mohamed Z. Abd El Aziz
- 1994 - Paul D. Smith
- 1993 - Randall J. Landry
- 1992 - Judith Elizabeth Keil Laurens
- 1991 - Frederick L. Stone
- 1990 - William H. Tihen
- 1989 - Nicholas L. Volkringer

\(^1\)Cyrill G. Veinott (1905-2001) graduated from UVM in 1926 with a B.Sc. degree in electrical engineering and became the Chief Engineering Analyst of Reliance Electric Company. In 1977 he was awarded the IEEE Nikolai Tesla Award for “his leadership in development and application of small induction motors.”