

# GUIDELINES

## ***Richard Barrett Scholarships: Promoting Undergraduate Expertise in Environmental Engineering***

### **1. Program Purpose**

The purpose of this program is to provide prestigious, competitive awards to outstanding undergraduate engineers who wish to pursue a specific research project under the mentorship of a faculty member. The proposed projects must fit within the general research area of the faculty advisor and must be approved prior to proposal submission. In this way, undergraduates have the opportunity and resources to pursue independent research as well as work closely with active faculty members who are leading scholars in their fields. The competition is structured to mirror both the application process and the execution of a program that would typically be funded by an external granting agency: students are required to submit a proposal describing a specific research project to be completed under the direction of a faculty mentor; proposals are evaluated by a panel of 4 UVM College of Engineering and Mathematical Sciences faculty, and the top ranked proposals are elected for funding; awardees carry out the research, during a semester and a summer, create and present a poster describing their work and their results, and submit a final report detailing the outcomes. In many instances, results may be suitable for presentation at regional or national conferences and/or publication. Finally, the awardees will be honored at a special event each year, and their efforts will be publicized by the University.

### **2. Eligibility**

The *Richard Barrett Scholarships* are open to all full-time UVM Engineering undergraduates (all years). Any UVM CEE faculty member may act as a student's mentor or so-mentor. However, the proposed research must be in the general area of Environmental Engineering with a focus on interdisciplinary experiences. The *Richard Barrett Scholarships* are intended to facilitate undergraduate research experiences that are over and above research normally conducted in the context of courses taken for academic credit. Mentored independent student research projects that are not associated with a for-credit course, including summer research, are thus eligible for *Richard Barrett Scholarships*.

### **3. Application Process**

Each student proposer is required to submit the following:

- i. A completed ***cover page***.
- ii. A ***project description*** consisting of a detailed description of the proposed project, not more than **3 pages** (12 pt font) in length excluding references and necessary addenda. The description should adequately address the background, hypothesis, specific aims, methods and interpretation of results (and where appropriate for quantitative projects involving data collection and statistics, detail of statistical

- design and power analysis) at a level of detail sufficient to render the project clear and intelligible to faculty within Environmental Engineering although not necessarily experts in the specifics of the research project. Students can talk with the mentors to flush out the project details and a potential outline, **but advisors are not to participate in the actual writing of the proposal**. Mentors may, however, review and comment on the written proposal before submittal.
- iii. A **budget page** listing specific equipment, items, travel, etc. necessary to complete the project together with estimated costs.
  - iv. A **budget justification page** giving specific justification for all budget items.
  - v. A **resume** for the student proposer, not more than **2 pages**, containing the student's current GPA as well as a list of specific courses relevant to conducting research in the proposed area. It is the responsibility of the student to demonstrate that they have the qualifications to successfully carry out the research.
  - vi. A **short curriculum vitae** for the faculty mentor, not more than **2 pages (NSF style)**, indicating the faculty member's expertise in the research area and his/her experience supervising students.
  - vii. All of the above documents must be submitted both as a printed copy and electronically via email to Dr. Rizzo, 219 Votey, [drizzo@cems.uvm.edu](mailto:drizzo@cems.uvm.edu).

**Printed copy:** Students must bring two printed copies of their proposal to the CEE office (213 Votey) along with the cover page, signed by both the proposer and their faculty mentor. By signing this page both the student and faculty member certify that the proposal was written by the student.

**Electronic submission:** Students should save their proposals (as one file) in **.pdf** format in the following format: **RBS-jdoe.pdf**. Each component of the proposal should be saved as a separate page(s) within the file. Files are to be submitted electronically via email to: [drizzo@cems.uvm.edu](mailto:drizzo@cems.uvm.edu).

## 4. Timelines

- I. Student proposers must submit their signed Cover Page, two hardcopies of their proposal, and an electronic copy (via email) 213 Votey **by Friday, February 17, 2006**.
- II. Awards will be announced by mid March.
- III. Budget accounts will be available for use by student researchers by **March 24, 2006**.
- IV. All project funds must be used by **September 30, 2006**. Accounts will be closed and funds will not be accessible or reimbursable thereafter except in unusual cases in which explicit prior approval.
- V. A final report on the outcomes of the proposed research must be submitted as a WEB SITE on UVM CEM network **by October 1, 2006**. There are no restrictions on the length or format of the report, although it must contain an abstract (**at most 1 page**) that is accessible to an audience of non-specialists.
- VI. Awardees will be honored at the UVM-CEM Honor's Day Ceremony at the end of Spring semester 2006.

- VII. A reception will be held in the Fall to recognize and celebrate the work of *Richard Barrett Scholarship* awardees who will display posters describing their work and their results along the walls in Votey. These posters will form the impetus for discussion with faculty members, other presenters and the student body at large about the work displayed, its implications and illustrates the intellectual excitement and opportunities of research.

## **5. Award Amount and Budget Constraints**

- I. There will be a total of 4 awards in the 2006-07 competition. This is currently a pilot program that we hope will continue and grow from year to year.
- II. Each funded award will provide funded summer internship in the amount of \$6,500 to the student proposer.
- III. The operating budget request may not exceed \$1,500 (over and above the scholarship award). Additional supplemental funding may not be requested at a later date. If the proposed research entails expenses and/or equipment that cannot be acquired within the \$1,500 limit, the proposer must specify the source of the other funds/equipment in order that the project be deemed fundable.
- IV. Equipment or computers that should normally be part of a research facility where the project is to be carried out-or are readily available, may not be requested in the budget (although rental fees might be appropriate). All equipment purchased as part of the project accrues to the faculty supervisor's home department upon completion of the project.
- V. The faculty mentor, by signing the cover page, agrees to assume fiduciary responsibility for the project budget. Budget overages will accrue to the mentor's home department. Consequently, faculty mentors should obtain approval from the Budget Director of CEE before signing the cover page of a proposal.
- VI. Student travel and living expenses to sites and/or conferences may be funded, including conferences where the student may present the research results. Support for faculty mentors (including travel, even if with the student) is not allowable. "No cash advances for travel are permitted. Students must follow the University's Policies and Procedures for Travel and should contact the General Accounting Office at 656-1477 or email [general.accounting@uvm.edu](mailto:general.accounting@uvm.edu) for more information prior to making any travel plans.
- VII. All operating expenses must be used to support the specific project funded-monies cannot be applied to or interchanged with other (departmental) expenses. Operating funds cannot be accumulated or rolled-over in anticipation of multiple-year funding.

## **6. Evaluation Criteria**

The project description should be as detailed as possible, including considerations such as: some background for the project in the context of existing work in the literature, an analysis of the problem including its importance to the research infrastructure, clear statements of hypotheses to be tested, proposed methodologies, strategies for quality control of experiments and analysis of data, benchmarking, and possible outcomes together with their significance.

Proposals will be evaluated based on the quality of the proposed research, the relevance of research to Environmental Engineering in general, the value of research experience for the student, and the record of faculty members with regard to his/her ability to provide sound mentoring in the proposed research area. Consideration will be given to the content, grammatical correctness, and lucidity of the narrative. Evaluators will also consider whether student proposer has made clear his/her qualifications to carry out the research, and whether the research can be successfully completed within the proposed budget and facilities constraints.

Each proposal must clearly document the student's original contribution to a research endeavor, especially if the project is part of a larger (faculty) research project. Student applicants collaborating on a larger project must submit separate proposals specifying their individual roles and expected contributions.

## **7. Evaluation Process**

Each proposal will be evaluated by at least two faculty members, and then by a review panel of CEE faculty. The review panel will make recommendations to the CEE Department Chair, who shall make the final decision on the awards.

For any questions on the application process, project description, allowable expenses, or review process, please contact Professor Dr. Donna Rizzo ([drizzo@emba.uvm.edu](mailto:drizzo@emba.uvm.edu)) of the Civil & Environmental Engineering Department of UVM.

Once the awards have been made, a letter will be sent to students and faculty mentors detailing how the awards will be implemented. Students must work with their faculty mentors to access the operating funds. All student proposers will receive written evaluations of their proposals.