Provost’s Learning Innovations Grant for Faculty  
Request for Full Proposal  
2004-2005

Please hand-deliver your completed grant proposal (4 pages, plus attachments),  
the original plus 15 copies, to:  
Susan DeWoody, 1530 Wallace (5)  
by 4:30 p.m.  
Friday, March 12, 2004.  
No hand written proposals will be accepted.  
Notification of awards will be made by Friday, April 9, 2004.

Project Title: Teaching Writing in Engineering

Applicant(s):

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<tr>
<td>Brian K. Thorn</td>
<td>475-6166</td>
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<td>Industrial and Systems Engineering</td>
<td>Engineering</td>
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<td>Lisa Hermsen</td>
<td>475-4553</td>
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1. Title and summary of proposed project: “Teaching Writing in Engineering”

Industrial and Systems Engineering students who intend to complete the MS degree are required to participate in the ISE Graduate Seminar Series (undergraduate ISE students enrolled in the BS/MS option also attend). The goal of the series is to expose students to research efforts in the areas of Industrial and Systems Engineering. In the past, presenters have included visiting scholars, industrial scientists and researchers, department faculty, and ISE graduate students who are completing their thesis work.

As a part of this grant project, we want to use this seminar series to offer the opportunity for ISE graduate students to improve their research, writing, and communication skills. During a given quarter, between 2 and 7 separate seminars may be offered. We will use about one third of these seminars to offer instruction in research and writing that will help graduate students make progress toward their own thesis work. We will use these seminars to guide graduate students toward producing thesis projects and presentations that reflect standards for professional research in the field of engineering. In this collaboration between a professor of engineering and a professor of rhetoric (and writing in the disciplines), we intend to design and deliver seminars that will be specifically tailored to RIT students in the ISE graduate program. We believe this tailored and supportive instruction—delivered cooperatively by faculty within the discipline and faculty with specialization in writing—will improve the quality of thesis work and lead to publishable research from our graduating students.

As a way to facilitate the disciplinary research and writing instruction, we intend to produce a pedagogical handbook or manual that will give students direction and guidance for writing their engineering theses. Chapter materials might include: “what is a thesis?”; “how to craft a research question”; “how to write a literature review”; “technical style guide for engineering”; “how to work with citations and respect intellectual property.”

Although this series is designed for the ISE population, we believe it could serve as a model for other programs, and the materials developed could work to enhance writing in engineering more broadly.

2. Targeted learners or population:

This program will initially be targeted at those students in the Industrial and Systems Engineering program who are pursuing the Master’s of Science degree in that discipline. This population includes full time and part time graduate students as well as undergraduate students who are enrolled in ISE’s combined BS/MS program. Upon successful completion of this pilot program, similar programs could be rolled out to the other engineering departments.

3. The number of students who will be affected.

Currently, there are 22 students enrolled in the MSIE program. In addition, 12 students are enrolled in the combined BS/MS program. When the fully developed program is rolled out for
other departments in the Kate Gleason College of Engineering, the total number of graduate students and BS/MS students affected will exceed 125 per year.

4. Anticipated impact on teaching and/or learning.

Every MS student works with at least one ISE faculty member who advises the student on the development of their Master’s thesis. Most students who have committed to completing a thesis have never engaged a written assignment as comprehensive as a Master’s thesis. Thesis advisors report that too much of their energy is directed toward coaching students on local textual writing matters (voice, grammar, organization, citations) rather than on more global content/research issues. The work proposed here will train students in the professional genres appropriate for thesis level writing. Students so trained will develop their theses more efficiently, with more effective rewrites and revisions. Additionally, it should be easier to extract publishable material from theses that are developed using the strategies that will be taught as a part of this project.

5. How will your project will impact student success (i.e., retention)?

Students frequently take too long to perform their research and write their theses. Occasionally, because they become frustrated with the thesis process or for other reasons, students leave the program before completing their thesis. Once they have left the department and start their career, it becomes very difficult for these students to complete their thesis project. It is hoped that the work proposed here will streamline the writing of the graduate thesis somewhat, and improve student chances for successful thesis completion.

6. How you will measure the impact, how you will report your findings, and what you will share about your project in a faculty forum.

Teaching and learning innovations that will result from this work include:
- Writing presented as an important professional practice for engineering.
- Design and development of materials and activities that promote effective writing in the discipline for ISE graduate students
- Design and development of materials and activities that develop skills for oral presentations in the discipline for ISE graduate students
- Creation of a technical style guide for the thesis writing task in the ISE graduate program.
- Support offered for writing, revising, editing, and presenting final thesis work within the College of Engineering for our ISE students.

We will evaluate these innovations in three ways:
1) Provide to students a survey, which asks about their satisfaction with the new instruction.
2) Provide to faculty a survey, which asks for an evaluation of the instruction and the effect in student writing skills.
3) Use a pre- and post-test writing sample (the prospectus) to evaluate improvement in student writing skills.
7. Present a rationale for your project, as it ties to the intent of the grant, including:

a. why it is not part of regular college business
Non native students who are accepted into the Master’s program in Industrial and Systems are tested for competency in English, but once they have cleared this hurdle there is very little additional language instruction included as a part of the graduate curriculum. Native MS students generally have little experience in how to prepare a work on the scope of a thesis and do not know how to write for an academic audience. Preparation in these areas is currently not a part of how we administer our graduate curriculum, but perhaps it should be.

b. its relevance to required cluster, college, and/or department competencies
Good writing enables good research. As we try to improve the quality of our graduate programs, it is vital that the work that emerges from the research efforts of our graduate students meets or exceeds disciplinary standards. Improved writing and presentation skills will enhance not only the Master’s theses that our students deliver, but also the journal articles that they write and the conference presentations that they deliver. The delivery of good research before these external audiences is a primary means to improving the reputation and recognition of a program.

c. describe how your project is relevant to other faculty and what you think it would take to transfer your success to other faculty.
The success of this project will benefit all faculty in the ISE department since all of the faculty act as advisors on one or more Master’s thesis. The faculty are already enthusiastic about the development and implementation of the work proposed here. Other departments in COE may have similar issues with the delivery of graduate theses, and would likely welcome the implementation of a similar program.

d. relevant credentials, experience of involved faculty/staff
Brian Thorn: Associate Professor, ISE, 18 yrs, advised/coadvised numerous graduate theses, internships, and capstone projects. Former member of the COE writing committee which developed the COE writing policy.

Lisa Hermsen: Assistant Professor, Language and Literature, specialization in writing in the disciplines, and in science and technical writing. Co-primary investigator on 2002/2003 PLIG project entitled Writing In the Disciplines: Across COLA and COS.

e. describe how this innovation is in your discipline or program
This project realizes “writing in the disciplines” theory in the best way possible, by using faculty who will collaborate to deliver writing instruction in the context of the engineering profession. Rather than separating disciplinary content from the written text (content courses in the technical fields from writing support in general education), this project approaches the study of writing as a process of socialization as well as an acquisition of competencies. That is, by offering instruction in both disciplinarity and communication, students receive something other than mere support and tutoring. In this context, students learn how to think and act like engineers as they learn to write professionally.
8. Provide a timetable of the development of the project.

June/July 2004   Develop seminar series (6 seminars) and instructional materials
August 2004     Final preparations and printing of materials
Fall 2004/05     Deliver 2 seminars
Winter 2004/05   Deliver 2 seminars
Spring 2004/05   Deliver 2 seminars
May              Deliver student and faculty surveys
June             Present project report at FITL

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1. Using attached form, complete a detailed budget for the project. Signatures of appropriate budget officers need to be included. Department Head signature is required for single department projects. College Dean signature is REQUIRED for interdepartmental (Adaptation and Implementation Program) projects.

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1. If co-funders are involved, attach statement(s) of support.

2. Letters of support from appropriate administrators are to be included.

Please Note:

No hand written proposals will be accepted.

Absolutely no proposals will be accepted after 4:30 p.m. on Friday, March 12, 2004. Hand-deliver the grant proposal (4 pages maximum, plus attachments) plus 15 copies to Susan DeWoody, 1530 Wallace (5)

Proposals and final reports will be posted on the web.