

Proposal in Response to Call for Proposals
Engineering Entrepreneurship Curriculum Development Grant

Incorporating Entrepreneurship into
"Essential Communications Skills for Engineers" NUCL 497W / 597W

Prepared by Audeen Fentiman, Professor, Nuclear Engineering
April 30, 2010

This is a proposal to incorporate instruction on writing and presenting a technical proposal into the undergraduate and graduate communications courses in Nuclear Engineering. The tasks to be completed under the program will be: (1) prepare an instructional module on proposals, (2) develop one or more realistic requests for proposals on technical topics that are familiar to the students, complete with specifications and evaluation criteria, (3) construct rubrics for evaluating the written and oral proposals and providing feedback to the students, and (4) specify how the instruction and the assignments on proposals will be incorporated into the communications courses. The proposed work will be conducted by Prof. Audeen Fentiman who teaches the communications course in Nuclear Engineering and has had experience writing and evaluating proposals in industry, national labs, and universities.

Materials prepared under the proposed program will initially be used in two courses. The first is NUCL 597W, Essential Communications Skills for Engineers, a 3-credit hour course required for all graduate students in the School of Nuclear Engineering. A permanent course number will soon be proposed for the NUCL 597W course. The second is NUCL 497W, an undergraduate course that covers many of the same skills as the 597 course and is taken by students who do not plan to attend graduate school. The expressed intent of the Nuclear Engineering faculty is to convert NUCL 497W into a permanent course that will be required of all undergraduate Nuclear Engineering students.

Students are told one reason the communications course is valuable is that they are likely to write many proposals during their careers and what they learn in the course will help them to write more effective proposals. The students have several writing and speaking assignments in the class, but they are not required to prepare a written proposal or to present it. Incorporating some information on writing and presenting proposals into the communications course and giving students some practice with proposals, including feedback on their work, would strengthen the course considerably. Furthermore, the instructional module, the format for the request for proposals, and the evaluation rubric will be developed in a manner that will allow them to be adopted or adapted for almost any technical course.

Specific content requested in the call for proposals is provided below:

1. Learning objectives: Students who complete the instructional module and assignments will be able to read a request for proposals, identify the key points, write a responsive

- proposal (including the budget), prepare a presentation for the sponsor, and evaluate other people's proposals.
2. Course material: PowerPoint slides, example requests for proposal, and example proposals students can review to learn about writing proposals; at least one and probably more requests for proposals on a topic with which students should be familiar; rubrics for evaluating written and oral proposals.
 3. Prior experience using the proposed material: No experience using the proposed materials since they do not exist. However, the project PI has long experience teaching communications skills, writing proposals, and evaluating proposals.
 4. Dissemination: PowerPoint slides, format for a request for proposals, and rubric for evaluating the proposals will be designed so that they can be incorporated into almost any technical course, particularly those in which the students have a term project or significant writing assignment. The materials will be designed to be applicable in any engineering discipline. The primary difference between disciplines will be in the technical topic addressed in the request for proposal.
 5. Work plan and timeline:
 - a. Task 1 – prepare PowerPoint slides on effective proposals (one 50-minute lecture) – by July 17
 - b. Task 2 – locate or prepare one or more appropriate requests for proposals – by July 31
 - c. Task 3 – develop a standard format for a request for proposals – by August 7
 - d. Task 4 – develop (or adapt) a rubric for evaluating a written proposal and a second rubric for evaluating the oral presentation – by August 14
 - e. Task 5 – specify how the module and assignment on proposals will be incorporated into the course – by July 17
 6. Deliverables for the E2020 Workshop: A written and electronic document that includes a PowerPoint file for instruction on proposals, a format for and example of a request for proposals, and rubrics for evaluating written proposals and oral presentations of proposals
 7. Budget: \$3,000 for faculty time to be spent on completing Tasks 1-5 above. Formal budget page is attached.
 8. Letter of cost-sharing: No cost sharing is required. Literally hundreds of hours have been devoted to developing, evaluating, and modifying the Nuclear Engineering communications course. What was learned during that process will contribute to the success of this project.
 9. Departments, colleges, and faculty involved: Initially, the work will be done by Prof. Audeen Fentiman in the School of Nuclear Engineering, College of Engineering. She is willing to share information and experience with other faculty members across the college or campus.
 10. CV for Prof. Fentiman: Attached.

Engineering Entrepreneurship Curriculum Development Grant
PI: Audeen Fentiman - Purdue University
Budget Period 07/01/2010 - 08/31/2010

Personnel		Year 1
Senior Faculty		
PI - Audeen Fentiman (partial summer month)	14.37%	\$2,185

Other Personnel

Total Salary		\$2,185
Total Fringe Benefits		\$815
Total Personnel		\$3,000

Other Expenses

Total Other		\$0
Total Direct Costs		\$3,000
Total Indirect Costs (54.0% MTDC)		\$0
Total Cost to Sponsor		\$3,000

Biographical Sketch
AUDEEN W. FENTIMAN

a. Professional Preparation

Glenville State College	Mathematics (Physics minor)	B.S.	1972
West Virginia University	Mathematics	M.A.	1974
The Ohio State University	Nuclear Engineering	M.S.	1977
The Ohio State University	Nuclear Engineering	Ph.D.	1982

b. Appointments

2006-present	Associate Dean for Graduate Education and Interdisciplinary Programs, College of Engineering, Purdue University
2006-present	Professor, Nuclear Engineering, Purdue University
2001-2006	Chair, Nuclear Engineering Program, The Ohio State University
2003-2006	Director, Nuclear Reactor Laboratory, The Ohio State University
1999-2001	Associate Dean for Outreach and Special Programs, College of Engineering, The Ohio State University (50% appointment), responsible for Communications, Women in Engineering Program, Minority Engineering Program, Alumni Affairs, special events, distance education, and other new or innovative programs.
1998-2001	Director, Environmental Science Graduate Program, an interdisciplinary program involving over 80 faculty from more than 20 departments across the University
1996-present	Associate Professor, Department of Civil and Environmental Engineering and Geodetic Science
1990-1996	Assistant Professor, Department of Civil and Environmental Engineering and Engineering Graphics, The Ohio State University.
1989-1990	Senior Specialist, Technology Department, EG&G Mound Applied Technologies, Department of Energy's Mound Laboratory.
1979-1989	Battelle Memorial Institute, Columbus, Ohio. Held various positions with increasing responsibility as indicated below:
1987-1989	Associate Department Manager, Ordnance Systems and Technology.
1985-1987	Senior Engineer, Office of Nuclear Waste Isolation (ONWI)
1984-1985	Associate Section Manager, Nuclear Systems.
1981-1984	Principal Research Scientist, Nuclear Systems.
1979-1981	Research Scientist, Nuclear Systems.
1977-1979	Research Associate, National Regulatory Research Institute, The Ohio State University.
1976-1977	Research Assistant, Nuclear Engineering Department, The Ohio State University.
1974-1976	High School Mathematics Teacher, St. Marys High School, St. Marys, West Virginia.
1973 summer	Legislative Assistant, Congressman John Slack, Washington, D.C.

c. Selected Professional Society Leadership

American Nuclear Society

Chair, Public Policy Committee – 2008

Chair, Local Sections Committee – 2008

Member, President's Special Committee on Future Federal

Investment in Nuclear Education – 2006-07

Member, Board of Directors, 2003-2006

Chair, National Planning Committee 2001-2004

Chair, Southwest Ohio Section, 1991

Advisor, OSU Student Branch, 1991-1999, 2001-2004

American Society for Engineering Education

Chair, Nuclear and Radiological Engineering Division, 2002

Program Chair, Nuclear and Radiological Engineering Division, 2001

Chair, Environmental Engineering Division, 2000

Program Chair, Environmental Engineering Division, 1999

Sigma Xi

Chair, Central Ohio Section, 2002

d. Selected Institutional and Professional Service

Member, Nuclear Energy Institute Board of Directors – 2008-present

Member, GEM Executive Committee - 2008- present

Member, Strategic Advisory Committee for National and Homeland Security, Idaho

National laboratory – 2008-present

Member, National Nuclear Accrediting Board – 2003-2010

Vice-Chair, Chair Elect, Nuclear Engineering Department Heads Organization 2010

Reviewer, NSF Graduate Research Fellowships – 2007 – 2009

Reviewer, EPA Fellowship applications – 2005

American Nuclear Society Task Force on Nuclear Workforce – 2002 – 2004

Development and Implementation of Introduction to Engineering Course for high school seniors – 2000-present (now in 3 high schools)

University Radiation Safety Committee, 1992-1996

Industrial and Professional Advisory Committee, Penn State Engineering, 2009 –

External Advisory Committee, University of Tennessee Nuclear Engineering Program – 2009 -

e. Selected Publications

(1) Smith, M.A., I.L. Larsen, and A.W. Fentiman, "Fate of ⁶⁰Co at a Sludge Land Application Site, Journal of Environmental Radioactivity, Vol. 99, Oct. 2008, pp 1611-1616.

(2) Smith, S.E., X. Sun, C.A. Ford, A.W. Fentiman, "MCNP Simulation of Neutron Energy Spectra for a TN-32 Dry Shielded Container", Annals of Nuclear Energy, Vol. 35, 2008, pp 1296-1300.

(3) Aldemir, T., Miller, D, Stovsky, M., Kirschenbaum, J., Bucci, P., Mangan, L.A., Fentiman, A.W., and Arndt, S., "Methodologies for the Probabilistic Risk Assessment of Digital Reactor Protection and Control Systems," Nuclear Technology, Vol 159, No 2, pp 167-191, August 2007.

(4) Saling, J.H. and Fentiman, A.W., Radioactive Waste Management, Taylor and Francis, NY, NY, 2002.

(5) Fentiman, A.W., "Elements of a Course in Radioactive Waste Management", Nuclear Technology, Vol. 105, No. 3, pp.441-446, March 1994.

f. Security Clearances

Previously held: DOD Top Secret, DOE Q