

# We have promoted and fostered undergraduate research using a required technical communication course



**Jenny Lo**  
Engineering Education  
Virginia Tech

**Lisa McNair**  
Engineering Education  
Virginia Tech

**Whitney Edmister**  
Enhancement of Engineering Diversity  
Virginia Tech

**Michael Alley**  
College of Engineering  
Penn State



## Introduction

The Boyer Commission Report has urged universities to “make research-based learning the standard” for the education of undergraduates.

One idea to promote undergraduate research is to use an option in the traditional technical communication course, which many engineering curricula already require. This project assesses such an option in the College of Engineering at Virginia Tech.



Undergraduate Research Experiences  
Summer

## Research Experiences: Summers 2005 and 2006

Army Research Laboratory  
East Tennessee State University  
MIT  
Univ. of Illinois at Urbana-Champaign  
Univ. of South Carolina  
Vanderbilt University  
Woods Hole Oceanographic Institution

Bucknell  
Georgia Tech (2 students)  
Penn State (2 students)  
Univ. of Karlsruhe  
Univ. of Virginia  
Virginia Tech (17 students)



Preparing for Research (1-credit)  
Spring



Documenting Research (2-credits)  
Fall

## Results

	Goal	Outcome
Number of students: 05 course	25	20
% of students: underrepresented groups	40%	55%
% of enrollees who obtained offers for funded summer research positions	100%	100%
Participants in 2005 research symposium (trigger for 06 course)	25	42
Number of students: 06 course	25	16
% of students: underrepresented groups	40%	37.5%
% of enrollees who obtained offers for funded summer research positions	100%	87.5%
Participants in 2006 research symposium (trigger for 07 course)	25	21



## Conclusions

The tested course has been a success at promoting and fostering research among undergraduates, especially those from underrepresented groups.

Two students have won NSF Graduate Research Fellowships. In addition, several students have achieved professional publications from their summer research:

5 conference papers      Students as lead authors  
5 journal papers      Students as co-authors

The main problem has been the logistics of a 2-semester course sequence. Next year, at Penn State, we will attempt a 1-semester version that follows the summer research experience and that is preceded by preparation workshops in the spring.



Undergraduate Research Symposium  
Fall