



NOTRE DAME
OF MARYLAND
UNIVERSITY

Examination of Pathways to Excellence Scholarship Program for women in STEM fields*

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Description of Program

Notre Dame of Maryland University (NDMU) has completed the third year of a NSF S-STEM grant that awards 11 scholarships annually to academically talented women undergraduates with financial need in physics, mathematics, engineering and computer systems. The program provides in addition to scholarships, support and activities to encourage pursuit of STEM fields.

Profile of Scholars

First year (2011-2012):

10 scholars: 5 first year, 5 current students

Diversity: Under-represented: 40%

Majors: Physics/Engineering: 7

Mathematics: 1

Computer Systems: 1

Undecided: 1

Retention: 70% (loss of 3 first year students)

Second year (2012-2013):

11 scholars: 1 first year, 10 current students

Diversity: Under-represented: 45%

Majors: Physics/Engineering: 7

Mathematics: 3

Computer Systems: 1

Retention: 91%*

*** Three went on to engineering school and one to graduate school
by fall 2013**

Profile of Scholars (cont'd)

Third year (2013-2014):

11 scholars: 1 first year, 1 transfer student, 9 current students

Diversity: Under-represented: 37%

Majors: Physics/Engineering: 4

Mathematics: 5

Computer Systems: 2

Retention: 82%**

**** One is going on to engineering school and two to graduate school in fall 2014.**

Program Academic and Professional Development Support

- One credit course in fall semester
- Tri-mentoring system: Each scholar has three mentors: faculty, peer (for new scholars) and external to provide academic and career advisement
- Career Development: Each scholar participates in career assessment sessions and constructs an Annual Career Development Plan assisted by mentors and members of the Career and Student Success Center.

Program Activities

First Year (2011-2012): Renewable Energy and Sustainability

**Attendance at Energy and Sustainability Conference
University of Delaware**

**Seminar with environmental activist and artist Robert
Shetterly**

**Sustainability field experience using GPS with Environmental
Scientist Dr. Cynthia Hamel.**

Second Year (2012-2013): Space Science and Engineering

**Meet and Greet NASA Electrical Engineer and alum LaVida
Cooper**

**Presentation by NASA Scientist, Dr. David Batchelor on the
Feasibility of Silicon Based Life Forms**

Trip to NASA/Goddard Space Flight Center

Program Activities Third Year (2013-2014)

Computer Systems and Robotics

CyberMaryland 2013 Conference
October 8-9, Baltimore, MD



Trip and Tour of NASA/Goddard Space Flight Center – Microelectronics Branch October 22, Greenbelt, MD



Technology and Sustainability Field Experience with Dr. Cynthia Hamel November 9, Baltimore, MD



Admission, Retention, and Matriculation

Table 1

Decision

**Influenced decision
(% reporting “Yes”)**

Program year 2

Program year 3

To attend NDMU

67

70

Have declared STEM major

67

70

First Generation College

33

60

Mentor Support

To the Objective of providing career trajectory support from professionals in the field

Table 2
Discussion of goals with Mentors

Discussion Type	Percentage Reporting	
	Program Year 2	Program Year 3
Mentor, long term career	89	90
Mentor, academic/scholarly	68	100

Subjective reports from Participants on Their Experiences in the STEM program vs Control Group

Table 3

Item	Mean (Median)		
	Year 2	Year 3	Control*
Scholars found the program intellectually/ scholastically challenging	4.56(5)**	5.50(5.5)	5.60 (7)**
See academic advisor more since joining STEM program	5.00 (5)	4.67(5)	
Career goals clarified by participation	5.56 (5)	5.00(4.5)	5.08(6)
Program has been a <i>positive</i> experience	6.33 (6)	6.30(7)	
Program has been an <i>essential</i> experience	6.78(7)	5.70(6)	

*Control data collected for 12 students majoring in Biology/Psychology

**Likert-type scale: Score of 1 denotes disagreement with the statement, score of 7 denotes complete agreement

Table 4

Totals of activities/meetings since joining STEM and a comparisons to Non-STEM Science Majors.*

Activity	STEM students	Control Cohort
Meet with advisor	6.62	6.20
Met with Mentor/ Other professional	2.44	4.00**
Meet peer	2.80	
Overall Number Of seminar/ Lectures attended	3.36	3.30
Attended Conference Or presented scholarly work	0.80	1.33

Internships	Year 1: 0	Year2: 2	Year 3: 6
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Study Abroad	Year 1: 0	Year 2: 1	Year 3: 2
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* Data is by semester participation for individual students, not program years.

** One outlier in this distribution

Figure 1

Professional Contacts across semesters for STEM and Control Cohort Majors

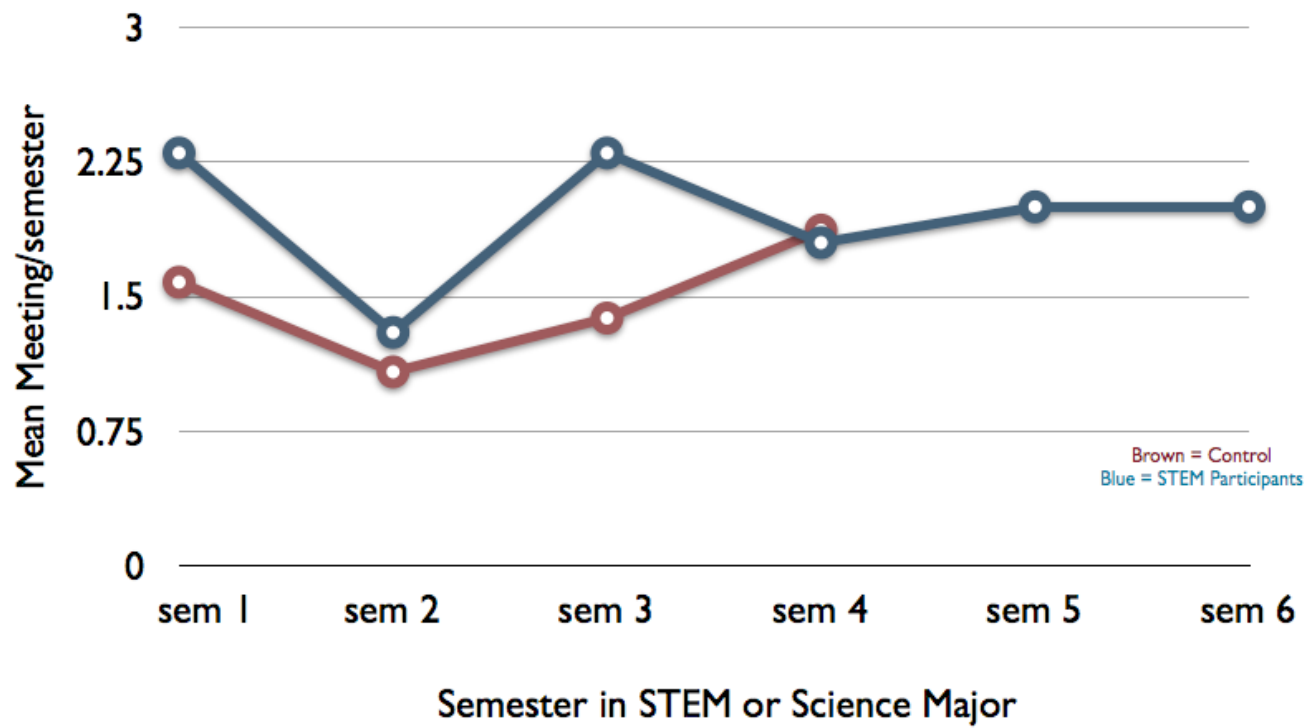


Figure 2

Contacts with Professionals and Mentors
(other than advisors) for STEM participants and Control Cohort MAJ

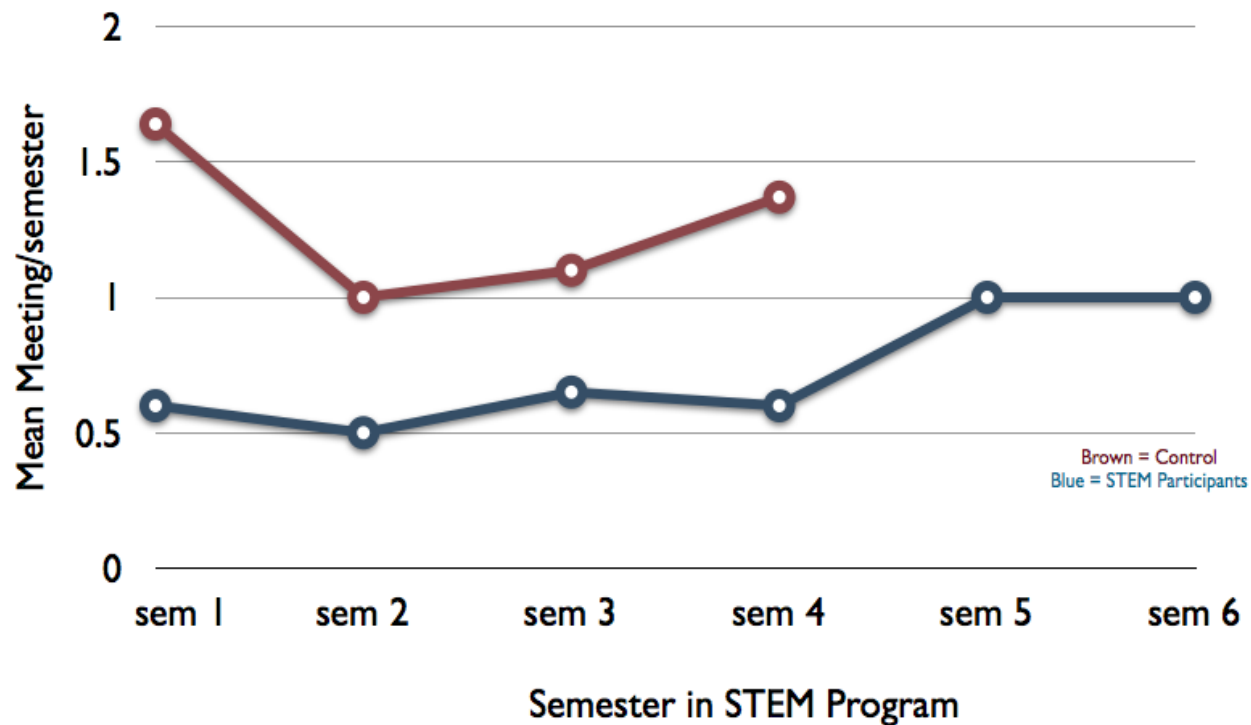
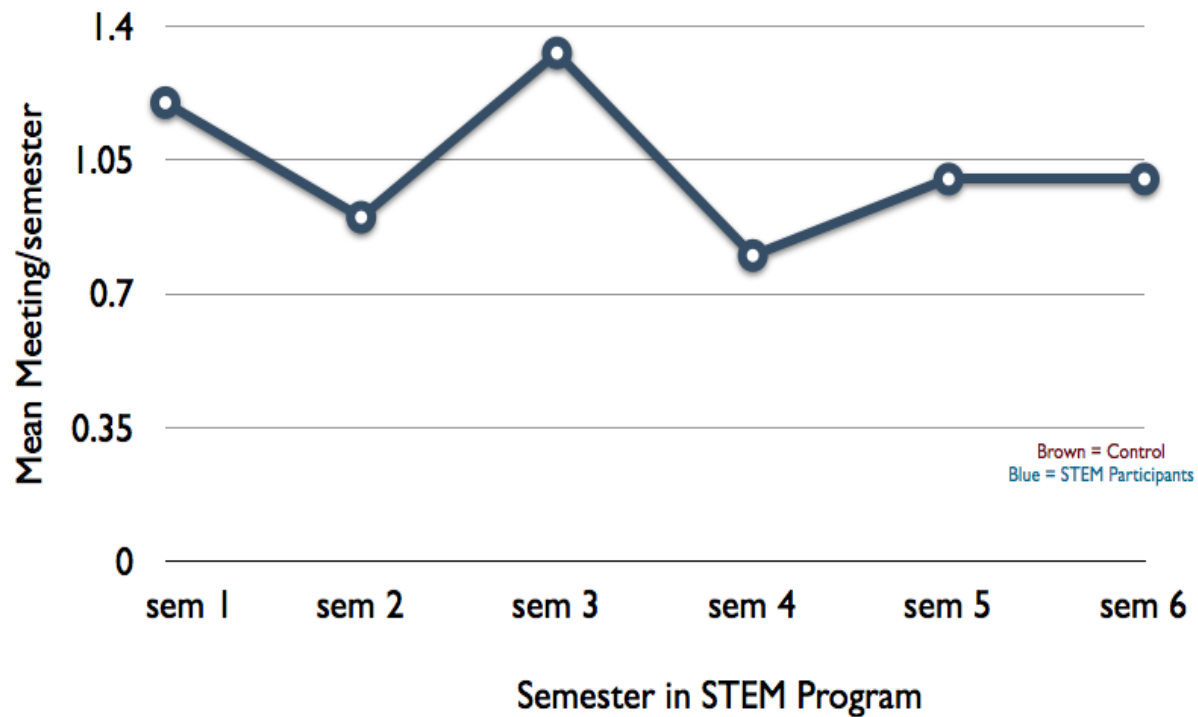


Figure 3

Contacts with Peers Across Semesters for STEM PARTICIPANTS



Lessons Learned

- Value of one credit course in fall to encourage participation in activities
- Need to include research component in activities
- Peer mentors need better training and development
- Build network of alumnae scholars to support current scholars

Acknowledgements

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and

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Ad Astra

