

**02 INFORMATION ABOUT PRINCIPAL INVESTIGATORS/PROJECT DIRECTORS(PI/PD) and
co-PRINCIPAL INVESTIGATORS/co-PROJECT DIRECTORS**

Submit only ONE copy of this form for each PI/PD and co-PI/PD identified on the proposal. The form(s) should be attached to the original proposal as specified in GPG Section II.B. Submission of this information is voluntary and is not a precondition of award. This information will not be disclosed to external peer reviewers. **DO NOT INCLUDE THIS FORM WITH ANY OF THE OTHER COPIES OF YOUR PROPOSAL AS THIS MAY COMPROMISE THE CONFIDENTIALITY OF THE INFORMATION.**

PI/PD Name: Herbert L Dershem

Gender: Male Female
Ethnicity: (Choose one response) Hispanic or Latino Not Hispanic or Latino

Race:
(Select one or more)
 American Indian or Alaska Native
 Asian
 Black or African American
 Native Hawaiian or Other Pacific Islander
 White

Disability Status:
(Select one or more)
 Hearing Impairment
 Visual Impairment
 Mobility/Orthopedic Impairment
 Other
 None

Citizenship: (Choose one) U.S. Citizen Permanent Resident Other non-U.S. Citizen

Check here if you do not wish to provide any or all of the above information (excluding PI/PD name):

REQUIRED: Check here if you are currently serving (or have previously served) as a PI, co-PI or PD on any federally funded project

Ethnicity Definition:

Hispanic or Latino. A person of Mexican, Puerto Rican, Cuban, South or Central American, or other Spanish culture or origin, regardless of race.

Race Definitions:

American Indian or Alaska Native. A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.

Asian. A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

Black or African American. A person having origins in any of the black racial groups of Africa.

Native Hawaiian or Other Pacific Islander. A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

White. A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

WHY THIS INFORMATION IS BEING REQUESTED:

The Federal Government has a continuing commitment to monitor the operation of its review and award processes to identify and address any inequities based on gender, race, ethnicity, or disability of its proposed PIs/PDs. To gather information needed for this important task, the proposer should submit a single copy of this form for each identified PI/PD with each proposal. Submission of the requested information is voluntary and will not affect the organization's eligibility for an award. However, information not submitted will seriously undermine the statistical validity, and therefore the usefulness, of information received from others. Any individual not wishing to submit some or all the information should check the box provided for this purpose. (The exceptions are the PI/PD name and the information about prior Federal support, the last question above.)

Collection of this information is authorized by the NSF Act of 1950, as amended, 42 U.S.C. 1861, et seq. Demographic data allows NSF to gauge whether our programs and other opportunities in science and technology are fairly reaching and benefiting everyone regardless of demographic category; to ensure that those in under-represented groups have the same knowledge of and access to programs and other research and educational opportunities; and to assess involvement of international investigators in work supported by NSF. The information may be disclosed to government contractors, experts, volunteers and researchers to complete assigned work; and to other government agencies in order to coordinate and assess programs. The information may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records", 63 Federal Register 267 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records", 63 Federal Register 268 (January 5, 1998).

List of Suggested Reviewers or Reviewers Not To Include (optional)

SUGGESTED REVIEWERS:

Not Listed

REVIEWERS NOT TO INCLUDE:

Not Listed

COVER SHEET FOR PROPOSAL TO THE NATIONAL SCIENCE FOUNDATION

PROGRAM ANNOUNCEMENT/SOLICITATION NO./CLOSING DATE/if not in response to a program announcement/solicitation enter NSF 08-1					FOR NSF USE ONLY			
NSF 07-524			08/12/08		NSF PROPOSAL NUMBER			
FOR CONSIDERATION BY NSF ORGANIZATION UNIT(S) (Indicate the most specific unit known, i.e. program, division, etc.)								
DUE - S-STEM: SCHLR SCI TECH ENG&MATH								
DATE RECEIVED	NUMBER OF COPIES	DIVISION ASSIGNED	FUND CODE	DUNS# (Data Universal Numbering System)	FILE LOCATION			
				050947084				
EMPLOYER IDENTIFICATION NUMBER (EIN) OR TAXPAYER IDENTIFICATION NUMBER (TIN)		SHOW PREVIOUS AWARD NO. IF THIS IS <input type="checkbox"/> A RENEWAL <input type="checkbox"/> AN ACCOMPLISHMENT-BASED RENEWAL		IS THIS PROPOSAL BEING SUBMITTED TO ANOTHER FEDERAL AGENCY? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> IF YES, LIST ACRONYM(S)				
381381271								
NAME OF ORGANIZATION TO WHICH AWARD SHOULD BE MADE			ADDRESS OF AWARDEE ORGANIZATION, INCLUDING 9 DIGIT ZIP CODE					
Hope College			Hope College					
AWARDEE ORGANIZATION CODE (IF KNOWN)			141 E. 12th					
0022731000			Holland, MI. 494229000					
NAME OF PERFORMING ORGANIZATION, IF DIFFERENT FROM ABOVE			ADDRESS OF PERFORMING ORGANIZATION, IF DIFFERENT, INCLUDING 9 DIGIT ZIP CODE					
PERFORMING ORGANIZATION CODE (IF KNOWN)								
IS AWARDEE ORGANIZATION (Check All That Apply) (See GPG II.C For Definitions)								
		<input type="checkbox"/> SMALL BUSINESS		<input type="checkbox"/> MINORITY BUSINESS		<input type="checkbox"/> IF THIS IS A PRELIMINARY PROPOSAL THEN CHECK HERE		
		<input type="checkbox"/> FOR-PROFIT ORGANIZATION		<input type="checkbox"/> WOMAN-OWNED BUSINESS				
TITLE OF PROPOSED PROJECT Scholarships for Pursuing Applications and Research in Computer Science								
REQUESTED AMOUNT		PROPOSED DURATION (1-60 MONTHS)		REQUESTED STARTING DATE		SHOW RELATED PRELIMINARY PROPOSAL NO. IF APPLICABLE		
\$ 526,800		60 months		03/01/09				
CHECK APPROPRIATE BOX(ES) IF THIS PROPOSAL INCLUDES ANY OF THE ITEMS LISTED BELOW								
<input type="checkbox"/> BEGINNING INVESTIGATOR (GPG I.G.2)		<input checked="" type="checkbox"/> HUMAN SUBJECTS (GPG II.D.6) Human Subjects Assurance Number _____						
<input type="checkbox"/> DISCLOSURE OF LOBBYING ACTIVITIES (GPG II.C)		Exemption Subsection 1,2 or IRB App. Date _____						
<input type="checkbox"/> PROPRIETARY & PRIVILEGED INFORMATION (GPG I.D, II.C.1.d)		<input type="checkbox"/> INTERNATIONAL COOPERATIVE ACTIVITIES: COUNTRY/COUNTRIES INVOLVED (GPG II.C.2.j)						
<input type="checkbox"/> HISTORIC PLACES (GPG II.C.2.j)		_____						
<input type="checkbox"/> SMALL GRANT FOR EXPLOR. RESEARCH (SGER) (GPG II.D.1)		<input type="checkbox"/> HIGH RESOLUTION GRAPHICS/OTHER GRAPHICS WHERE EXACT COLOR REPRESENTATION IS REQUIRED FOR PROPER INTERPRETATION (GPG I.G.1)						
<input type="checkbox"/> VERTEBRATE ANIMALS (GPG II.D.5) IACUC App. Date _____		_____						
PHS Animal Welfare Assurance Number _____								
PI/PD DEPARTMENT			PI/PD POSTAL ADDRESS					
Department of Computer Science			27 Graves Place					
PI/PD FAX NUMBER			Holland, MI 494229000					
616-395-7123			United States					
NAMES (TYPED)		High Degree	Yr of Degree	Telephone Number	Electronic Mail Address			
PI/PD NAME								
Herbert L Dershem		PhD	1969	616-395-7508	dershem@cs.hope.edu.			
CO-PI/PD								
CO-PI/PD								
CO-PI/PD								
CO-PI/PD								

CERTIFICATION PAGE

Certification for Authorized Organizational Representative or Individual Applicant:

By signing and submitting this proposal, the Authorized Organizational Representative or Individual Applicant is: (1) certifying that statements made herein are true and complete to the best of his/her knowledge; and (2) agreeing to accept the obligation to comply with NSF award terms and conditions if an award is made as a result of this application. Further, the applicant is hereby providing certifications regarding debarment and suspension, drug-free workplace, and lobbying activities (see below), nondiscrimination, and flood hazard insurance (when applicable) as set forth in the NSF Proposal & Award Policies & Procedures Guide, Part I: the Grant Proposal Guide (GPG) (NSF 08-1). Willful provision of false information in this application and its supporting documents or in reports required under an ensuing award is a criminal offense (U. S. Code, Title 18, Section 1001).

Conflict of Interest Certification

In addition, if the applicant institution employs more than fifty persons, by electronically signing the NSF Proposal Cover Sheet, the Authorized Organizational Representative of the applicant institution is certifying that the institution has implemented a written and enforced conflict of interest policy that is consistent with the provisions of the NSF Proposal & Award Policies & Procedures Guide, Part II, Award & Administration Guide (AAG) Chapter IV.A; that to the best of his/her knowledge, all financial disclosures required by that conflict of interest policy have been made; and that all identified conflicts of interest will have been satisfactorily managed, reduced or eliminated prior to the institution's expenditure of any funds under the award, in accordance with the institution's conflict of interest policy. Conflicts which cannot be satisfactorily managed, reduced or eliminated must be disclosed to NSF.

Drug Free Work Place Certification

By electronically signing the NSF Proposal Cover Sheet, the Authorized Organizational Representative or Individual Applicant is providing the Drug Free Work Place Certification contained in Exhibit II-3 of the Grant Proposal Guide.

Debarment and Suspension Certification

(If answer "yes", please provide explanation.)

Is the organization or its principals presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency?

Yes

No

By electronically signing the NSF Proposal Cover Sheet, the Authorized Organizational Representative or Individual Applicant is providing the Debarment and Suspension Certification contained in Exhibit II-4 of the Grant Proposal Guide.

Certification Regarding Lobbying

The following certification is required for an award of a Federal contract, grant, or cooperative agreement exceeding \$100,000 and for an award of a Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding \$150,000.

Certification for Contracts, Grants, Loans and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Certification Regarding Nondiscrimination

By electronically signing the NSF Proposal Cover Sheet, the Authorized Organizational Representative is providing the Certification Regarding Nondiscrimination contained in Exhibit II-6 of the Grant Proposal Guide.

Certification Regarding Flood Hazard Insurance

Two sections of the National Flood Insurance Act of 1968 (42 USC §4012a and §4106) bar Federal agencies from giving financial assistance for acquisition or construction purposes in any area identified by the Federal Emergency Management Agency (FEMA) as having special flood hazards unless the:

- (1) community in which that area is located participates in the national flood insurance program; and
- (2) building (and any related equipment) is covered by adequate flood insurance.

By electronically signing the NSF Proposal Cover Sheet, the Authorized Organizational Representative or Individual Applicant located in FEMA-designated special flood hazard areas is certifying that adequate flood insurance has been or will be obtained in the following situations:

- (1) for NSF grants for the construction of a building or facility, regardless of the dollar amount of the grant; and
- (2) for other NSF Grants when more than \$25,000 has been budgeted in the proposal for repair, alteration or improvement (construction) of a building or facility.

AUTHORIZED ORGANIZATIONAL REPRESENTATIVE		SIGNATURE	DATE
NAME			
TELEPHONE NUMBER	ELECTRONIC MAIL ADDRESS	FAX NUMBER	

*SUBMISSION OF SOCIAL SECURITY NUMBERS IS VOLUNTARY AND WILL NOT AFFECT THE ORGANIZATION'S ELIGIBILITY FOR AN AWARD. HOWEVER, THEY ARE AN INTEGRAL PART OF THE INFORMATION SYSTEM AND ASSIST IN PROCESSING THE PROPOSAL. SSN SOLICITED UNDER NSF ACT OF 1950, AS AMENDED.

NATIONAL SCIENCE FOUNDATION
Division of Undergraduate Education

NSF FORM 1295: PROJECT DATA FORM

The instructions and codes to be used in completing this form are provided in Appendix II.

1. **Program-track** to which the Proposal is submitted: **S-STEM: SCHLR SCI TECH ENG & MATH**

2. Name of **Principal Investigator/Project Director** (as shown on the Cover Sheet):

Dershem, Herbert

3. Name of submitting **Institution** (as shown on Cover Sheet):

Hope College

4. **Other Institutions** involved in the project's operation:

Project Data:

A. Major Discipline Code: **31**

B. Academic Focus Level of Project: **BO**

C. Highest Degree Code: **B**

D. Category Code: **--**

E. Business/Industry Participation Code: **NA**

F. Audience Code:

G. Institution Code: **PRIV**

H. Strategic Area Code: **IT**

I. Project Features: **4**

Estimated number in each of the following categories to be directly affected by the activities of the project during its operation:

J. Undergraduate Students: **12**

K. Pre-college Students: **0**

L. College Faculty: **5**

M. Pre-college Teachers: **0**

N. Graduate Students: **0**

Project Summary

The Scholarships for Pursuing Applications and Research in Computer Science (SPARCS) project will provide scholarships for academically talented students with financial need to study computer science at Hope College. In each of two years these scholarships will be granted to 6 incoming first-year students. The scholarships will continue until the end of the student's fourth year of undergraduate study as long as the student meets the eligibility requirements, including continuing progress toward a computer science major at Hope College.

The objectives of the SPARCS project are (1) to increase the number of majors in computer science at Hope College; (2) to increase the number of female majors in computer science at Hope College; (3) to increase the retention of students who come to Hope College planning to major in computer science; and (4) to recruit students who would not ordinarily consider attending Hope College to apply to Hope and to major in computer science.

Recruiting of SPARCS scholars will focus on a target set of high schools that are either located in close proximity to the Hope College campus or produce a high number of students who wish to study computer science. The recruiting will be initiated through contact with mathematics, computer science, and technology teachers at those high schools.

Recipients of all scholarships will be selected after personal interviews, a high school faculty reference, and a review of their college admissions packets. They will be chosen on the basis of promise for academic success and perceived potential for the scholarship to influence the candidate's career choice.

Students receiving SPARCS scholarships will be supported in their programs of study by a specially designed First-Year seminar, intensive faculty advising, timely and appropriate academic assistance, peer mentoring, career counseling and education, alumni mentoring, internship and research opportunities, and a program for building community among all SPARCS scholars.

Intellectual Merit: This project will build upon the highly successful computer science program at Hope College, a soon-to-be-completed NSF CSEMS project, and the college's extensive infrastructure for student support in order to encourage 12 students to begin and continue the pursuit of degrees in computer science. The assessment of the success of recruiting and retention activities for computer science will be used to improve those activities both at Hope College and other institutions.

Broader Impacts: All activities of this project will encourage students from underrepresented groups to pursue the study of computer science. Many of the Western Michigan high schools that will be targeted have high minority enrollments. All recruiting and retention activities will be especially useful in encouraging participation by women and minority students. This project will enhance the partnership between the Hope College computer science department and local high schools and businesses through the recruiting activities and the establishment of an alumni mentor program.

TABLE OF CONTENTS

For font size and page formatting specifications, see GPG section II.C.

	Total No. of Pages	Page No.* (Optional)*
Cover Sheet for Proposal to the National Science Foundation		
Project Summary (not to exceed 1 page)	1	_____
Table of Contents	1	_____
Project Description (Including Results from Prior NSF Support) (not to exceed 15 pages) (Exceed only if allowed by a specific program announcement/solicitation or if approved in advance by the appropriate NSF Assistant Director or designee)	15	_____
References Cited	_____	_____
Biographical Sketches (Not to exceed 2 pages each)	2	_____
Budget (Plus up to 3 pages of budget justification)	7	_____
Current and Pending Support	1	_____
Facilities, Equipment and Other Resources	0	_____
Special Information/Supplementary Documentation	1	_____
Appendix (List below.) (Include only if allowed by a specific program announcement/ solicitation or if approved in advance by the appropriate NSF Assistant Director or designee)	_____	_____
Appendix Items:		

*Proposers may select any numbering mechanism for the proposal. The entire proposal however, must be paginated. Complete both columns only if the proposal is numbered consecutively.

Project Description

a. Results from Prior NSF Support

Hope College is currently receiving NSF support for a CSEMS project DUE-0422388, "CSEMS Scholarship Program in Computer Science, Engineering, and Mathematics" and S-STEM project DUE-0728574. The PI of the proposed SPARCS (Scholarships for Pursuing Applications and Research in Computer Science) project is also the PI of both of these projects. The CSEMS project, in its fifth year of six, has supported 34 undergraduate students in the study of computer science, engineering, and mathematics at Hope College. These students have been enrolled in a focused first-year seminar and have received additional counseling and assistance through the CSEMS program. The goals of this CSEMS project are to increase the retention of students and enrollment of underrepresented groups in the CSEMS disciplines at Hope College. Preliminary assessment data for this project are included in the table below:

Summary of Results from Hope College CSEMS Project DUE-0422388												
Start Date	N	Retention at Hope				Retention in CSEMS Field				Ave GPA	Female	Minority
		1 yr	2 yr	3 yr	4 yr	1 yr	2 yr	3 yr	4 yr			
2004	6	100%	100%	100%	100%	83%	83%	83%	83%	3.29	50%	17%
2005	16	94%	94%	94%	-	100%	94%	81%	-	3.49	25%	13%
2006	12	100%	100%	-	-	100%	92%	-	-	3.40	25%	8%
Total	34	97%	97%	96%	100%	97%	91%	91%	83%	3.40	29%	12%
Institution	3203	88%	82%							3.30		4%

Noteworthy in the above table are the following:

- Retention at Hope of CSEMS participants significantly exceeds the overall campus retention percentage. (**97%** to **88%** for 1 year and **97%** to **82%** for 2)
- Although CSEMS recipients are not selected for academic excellence and their course work is more demanding than typical Hope students, their GPAs exceed the institutional average. (**3.40** to **3.30**)
- While the percentage of females in CSEMS is about half of the institution's, it exceeds the overall average in the CSEM disciplines. (**29%** to **23%**)
- The percentage of CSEMS students from minority groups greatly exceeds the institutional percentage. (**12%** to **4%**)

All of these preliminary figures point to success in meeting the goals of the CSEMS project. The proposed project is similar to this CSEMS project with a focus on computer science, increased scholarship amounts, and additional recruiting strategies.

The proposed project (SPARCS) has a much different focus than the ongoing S-STEM project in that the ongoing project, which is currently in its first year, provides scholarships exclusively for transfer students from two-year colleges. In addition, while the proposed project will recruit students in computer science only, the ongoing S-STEM project recruits students in all STEM disciplines. Seven two-year college transfer students have been recruited for the first cohort group, five of whom are chemistry majors, one biochemistry, and one mathematics. These students will arrive on the Hope campus in August, 2008.

b. Project Objectives and Plans

The objectives of the proposed project are:

1. To increase the number of majors in computer science at Hope College.

2. To increase the number of female majors in computer science at Hope College.
3. To increase the retention of students who come to Hope College planning to major in computer science.
4. To recruit students who would not ordinarily consider attending Hope College to apply to and major in computer science at Hope College.

Program Plan

The overall plan for this project includes the awarding of scholarships plus program activities that will facilitate the recruitment and retention of the scholarship holders and others as successful students pursuing a major in computer science at Hope College.

Six scholarships of up to \$10,000 annually will be awarded to incoming first-year students in each of the first two years of the program. These scholarships will be offered to talented high school seniors with an interest in computer science who meet the scholarship eligibility criteria and are chosen through an extensive selection process. Students receiving these scholarships will retain their scholarships for four years if they continue to satisfy all criteria including timely progress toward a computer science major. In addition, they will benefit from a number of project activities.

Project Activities

Six students each year receiving SPARCS scholarships will be provided faculty advising, academic assistance, student, faculty, and alumni mentoring, community-building events, encouragement to participate in research and internship opportunities, and career exposure seminars. The academic assistance and peer mentoring will encourage students to achieve their best academic performance. The alumni mentoring, research experiences, internship opportunities and career exposure seminars will enable the SPARCS scholars to enter the workforce or continue studies in computer science.

c. Significance of Project and Rationale

How this project supports the goals of S-STEM

1. Improved educational opportunities for students.

This project provides financial aid to students with financial need to permit them to pursue a degree in computer science. This aid and project activities will encourage students who might not otherwise consider pursuing this discipline to do so. Also, it is expected that the availability of the scholarships will encourage a larger number of prospective students to consider studying computer science at Hope College, resulting in a further increase in the number of students entering the field of computer science and pursuing their studies in the distinctive environment provided at Hope.

2. Increased retention of students to degree achievement.

By both the financial incentive and through the many forms of encouragement included in the SPARCS program activities, retention in the degree program and in the computer science discipline will be improved.

3. Improved student support programs at institutions of higher education.

The advising and mentoring aspects of this project will build upon and improve present support activities for Hope College students as well as those established by the preceding CSEMS project, especially in regard to students with the special qualifications required of SPARCS scholars.

4. *Increased numbers of well educated and skilled employees in technical areas of national need.*

This project will meet this objective by offering support and encouragement for at least 12 students to successfully prepare for careers in computer science. In addition, the activities and infrastructure provided by this project will have an impact on many other students both during the timeframe of this project and in the future.

Information on Demographics

Since students do not enter Hope College with a declared major, there is no retention data for computer science as a discipline. The most recent retention data for the general student population at Hope College is given below:

Hope College Retention Rates ending 2006					
At end of Year 1	At End of Year 2	At End of Year 3	At End of Year 4	At End of Year 5	At End of Year 6
87.7%	82.4%	79.8%	75.7%	76.1%	76.3%

We expect that with the special services provided to SPARCS scholars, the retention rate of this group will meet or exceed the percentages above.

The number of graduating seniors with a major in computer science over the past five years and enrollments in CSCI 225, the computer science major gateway course, are given in the following table:

Hope College Computer Science							
Department	2002-3	2003-4	2004-5	2005-6	2006-7	2007-8	% female
Graduating Majors	18	14	9	7	7	8	18.2%
Enrollment in gateway course	31	20	13	20*	24*	17	

* Reflects the enrollment of CSEMS scholars

As shown in the above table, the CSEMS project produced higher enrollments in the gateway course in 2005-6 and 2006-7 and will result in an increase in majors graduating in 2009 and 2010. But gateway enrollments indicate that a drop in majors will occur after that. Projections for enrollment in the gateway course for 2008-2009 based on Fall 2008 enrollment is 10.

These data show that, in line with national data, women are greatly underrepresented in the Hope College computer science department.

The percentage of enrolled Hope College students who are members of ethnic minority groups is given in the Table below:

Hope College Enrollment by Ethnic Group					
Year	White non-Hispanic	Black non-Hispanic	Asian or Pacific Islander	Hispanic	American Indian or Alaskan Native
2005	91.47%	1.85%	1.97%	2.04%	0.38%
2006	91.35%	1.72%	1.65%	2.37%	0.72%
2007	90.08%	2.26%	2.36%	2.91%	0.71%

Although these data are not collected by department, the minority enrollment in computer science is not significantly different from the institutional percentages.

The number of students applying to Hope who list their major choice as computer science has shown an alarming drop in recent years despite increased efforts on the part of the Computer Science Department and the college to identify and nurture such students. This drop occurred following 2005 and 2006 when our CSEMS project supported 5 first-year computer science students annually. The two most recent years' data is shown in the table below:

Hope College Applicants with interest in Computer Science					
Year	Applied	Admitted	%	Enrolled	%
2007	34	31	91%	13	62%
2008	21	14	67%	6	43%
College-wide			83%		35%

Rationale for number of scholarships and scholarship amount

We propose funding six incoming students per year each year of the project for the amount of unmet need up to a maximum of \$10,000. Of the 2008 entering Hope College students, 50% had need exceeding \$10,000. Our ongoing S-STEM program has seen 100% of its applicants having need exceeding \$10,000 in its first year. The amount of \$10,000 will maximize the effectiveness of this project as an incentive for students to apply to, enroll in, and remain in the Hope College computer science program. In addition to the six students awarded the scholarships each year, it is anticipated that the availability of the scholarship will encourage many more students with an interest in computer science to apply to Hope College, thus increasing the pool of students that we can reach by our recruiting efforts. Furthermore, unused scholarship funds due to student need under \$10,000 will be used to fund additional partial SPARCS scholarships.

The plan for awarding the scholarships is given below:

	2009-10 Year 1	2010-11 Year 2	2011-12 Year 3	2012-13 Year 4	2013-14 Year 5
Incoming student scholarships	6	6	0	0	0
Continuing student scholarships	0	6	12	12	6
Total scholarships awarded	6	12	12	12	6

This plan is based on the assumption that there will be no attrition among the scholarship recipients. Any scholarship funds made available through attrition will be distributed as described in Section e under the heading *Eligibility and Replacement Process*.

d. Activities on Which the Current Project Builds

CSEMS Project: The SPARCS project builds directly upon the previous Hope College CSEMS project, which provided scholarships of up to \$3,125 per year to two cohort groups of 12 incoming students. In addition, the CSEMS project provided retention scholarships that were awarded to 12 students who were already enrolled at Hope.

The SPARCS project retains many of the features of this CSEMS project including recruiting through contacts with teachers in regional high schools, the First-Year Seminar experience, faculty and peer mentoring, and community building activities

The CSEMS program successfully encouraged enrollment in all three disciplines (computer science, engineering, and mathematics) at Hope. In the two years since the

last cohort of CSEMS scholars arrived on campus, the number of incoming students with engineering interest has increased, the number of incoming students with mathematics interest has remained steady, but the number of incoming students with computer science interest has declined. This observation indicates the need for this SPARCS project to further stimulate computer science enrollment.

The proposed SPARCS project differs from the earlier CSEMS project in the following ways: (1) maximum scholarship amount is increased from \$3,125 to \$10,000; (2) participation is limited to computer science students instead of the three CSEMS disciplines; (3) a program to contact all students in the admissions database with interest in computer science has been added; and (4) alumni mentoring to foster better retention and internship activity has been added.

The final cohort of CSEMS scholars will be seniors as the first cohort of SPARCS scholars arrives on campus and will serve as peer mentors to the incoming students.

First-Year Seminars: Hope College offers First-Year Seminars, which are required of all Hope College students during the fall semester of their initial year. First-Year Seminars are small, discussion-driven classes taught by professors who serve as academic advisors for students in their seminar. The First-Year Seminar helps introduce new college students to the life of the mind and to the kind of college-level learning expected in other classes at Hope College. Each section of the First-Year Seminar focuses on a different topic that is chosen by the professor. Each incoming group of students of the preceding CSEMS project enrolled in a First-Year Seminar entitled “The Paleness and Maleness of Science and Engineering” taught by Professor Dershem.

The topic of the SPARCS First-Year Seminar section will be related to technology and computers in society and will be designed by all five faculty members in the Hope Computer Science Department during the summer of 2009. The course will be taught by the PI who will also be assigned as the first-year academic advisor for all SPARCS scholars. In addition to the six SPARCS scholars, this course will be populated each year by 14 other students who will have expressed an interest in this topic. This course will serve as an important vehicle for interesting these other 14 students in taking computer science courses and possibly pursuing a major or minor in the field. Many of the activities and services of the SPARCS project will be provided through the structure of the First-Year Seminar program and it will ensure semi-weekly contact between the PI and every first-year SPARCS scholar during the students’ first semester on campus.

Undergraduate Research: Previous activities within the Hope College Computer Science Department to recruit and retain students have focused on undergraduate research. Hope Computer Science has a long-established REU Site project where undergraduates participate in research projects with department faculty. Each summer for the past 17 years between 8 and 16 students have participated in undergraduate research projects in computer science on the Hope campus. These REU projects have been effective tools in the recruitment and retention of talented students. All students in the present S-STEM project and 83% of the Hope CSEMS scholars have participated in summer undergraduate research. The SPARCS project will permit Hope to reach out to a broader range of students, including those whose initial interest may not be in pursuing scientific research.

Computer Science workshops for high school students: The Hope College Computer Science Department will begin offering computer science workshops for high school students based on the Alice programming environment in 2009. These workshops will be used as a vehicle for recruiting students to the SPARCS program and SPARCS scholars will be given the opportunity of serving as undergraduate instructors in this program.

Academic Support Center: The Hope College Academic Support Center assists students in the transition to college and helps them improve their study habits, learning skills, and class performance. It provides its services to all Hope students, individually or in small groups. These services include individual peer tutoring at all levels, small group help sessions, workshops, academic counseling, and a mathematics and statistics lab. SPARCS scholars will learn about the Academic Support Center during their First-Year Seminar and will be encouraged by the PI and their advisors to utilize the services of the Office as appropriate. The PI will work with the Academic Support Center to develop new initiatives to meet the needs of SPARCS students.

e. SPARCS Project Management Plan

Personnel

The ongoing operation and management of this program will be the responsibility of the Principal Investigator, Herbert Dershem, who is Professor of Computer Science. Professor Dershem served as chair of the Hope College Computer Science Department for 28 years, directed the Hope College Computer Science NSF-REU Site program for 12 years, and has served as the PI for the Hope College CSEMS program for the past five years and of the Hope College Community College Transfer S-STEM program for one year. He was interim Dean of the Natural Sciences at Hope College in 2005. He has also served as the admissions liaison for the Hope College Computer Science Department for 28 of the past 30 years. In that capacity, he meets with many prospective students, their parents, and counselors each year for the purpose of recruiting these students to Hope College. Professor Dershem will be assisted in all project activities by the other four faculty members in the Hope College Computer Science Department, Michael Jipping, Ryan McFall, Matthew DeJongh, and Charles Cusack. All department faculty members will be engaged in the design of the First-Year Seminar course as well as recruiting and advising activities.

In addition, an **oversight team** will advise and evaluate the SPARCS program. This team will consist of the PI plus the following members of the Hope College community:

- Moses Lee, Dean of the Natural and Applied Sciences
- William Vanderbilt, Vice President for Admissions
- Phyllis Kleder Hooyman, Director of Financial Aid
- Jon Huisken, Dean for Academic Services and Registrar

The oversight team will be consulted on a regular basis and at the conclusion of each academic year will review the SPARCS program, evaluate its success in meeting its objectives, and determine adjustments that need to be made. The PI will be responsible for presenting a report for the team's review and implementing their recommendations.

In addition, the Department of Computer Science will review the SPARCS project on a monthly basis at a department meeting to assess the SPARCS program from the

departmental viewpoint and to institute modifications. The department will consult with members of the oversight team when appropriate.

Recruiting

Recruiting SPARCS scholars will be coordinated by the PI working closely with the Hope College Computer Science Department faculty and the Hope College Admissions Office.

Recruiting will begin during the summer prior to the candidates' high school senior year and will proceed as follows:

- *July* – Identify High School seniors who have an interest in computer science through various college search services and make an initial contact with those students, describing the benefits of studying computer science at Hope College and the availability of the scholarships. We will invite the students to visit campus during the Hope College computer science summer research program. Data from the past three years has shown that this pool of prospective students has averaged 110 students a year, less than 25% of whom actually apply. The other 75% have not received any contact regarding Hope College computer science. This initiative would leverage the scholarships and the SPARCS program to persuade a higher percentage of these students to submit their application and visit the Hope campus.
- *September* – Make contact with high school teachers identified by the high school senior prospective students and past or present Hope College computer science majors as having an influence on their choice of computer science. In addition, we will include high school teachers who are part of the network of teachers established by our previous CSEMS project. We will especially target teachers in schools in the West Michigan area and those that produce a large number of students who go into computer science. We will describe to these teachers the benefits of the computer science program at Hope College and invite them to submit the names of their students who might be strong candidates for the SPARCS scholarship.
- *October through January* – Work with Hope College computer science faculty members and admissions staff to encourage qualified students to apply for admission to Hope College and for the SPARCS scholarship. Students from groups who are underrepresented in computer science will be especially targeted. Hope College computer science majors (including SPARCS scholarship recipients after the first year) will also be enlisted in this recruiting process.

It should be noted that this recruiting process has already been put into place in the summer of 2008 so that if this proposal is funded we will be prepared to proceed with the selection process for students who will be entering in the fall of 2009.

Selection

SPARCS scholarship candidates identified by the above recruiting process will be invited to submit an online application for a SPARCS scholarship. The deadline for application will be March 1. All candidates will be interviewed by the PI, either in person or by phone. As availability permits, we will attempt to have on-campus interviews with a number of candidates coming to campus at the same time so that the candidates will be able to meet each other and begin forming a cohort group. In addition, each candidate will be asked to provide contact information for a high school teacher, who will be

contacted as a reference by the PI. The Hope College Computer Science faculty members will also review all of the admissions materials submitted by the candidates with their college application and will apply the eligibility and selection criteria given in Section f to determine the recipients of the scholarships. An ordered list of qualified alternates will be maintained to provide a pool of recipients in cases where successful applicants decide to attend a school other than Hope College or when the need level of awardees allows the offering of additional scholarships. In addition, qualified alternates will be encouraged to continue to consider Hope College after considering the need-based and merit financial aid package that the college offers. The application form and all other aspects of this selection process are similar to those employed in the earlier CSEMS project.

Record Maintenance and Reporting

The PI will be responsible for collecting all data needed for eligibility determination, assessment of the project, reporting to the Hope College oversight team, and reporting to the National Science Foundation. He will be assisted in these efforts by the Hope College Frost Center for Social Science Research, Registrar's Office, Sponsored Research Office, Admissions Office, and Financial Aid Office.

Student Support Services Oversight

The support services portion of the SPARCS project, described in Section g, will utilize services already present on the Hope campus. In many cases, Hope students who could benefit from these services fail to do so because they fail to take the initiative required, do not know a service exists, or are unaware that they could benefit from the service.

The PI will be responsible for making all SPARCS recipients aware of the support services provided by the college in conjunction with the SPARCS program. This will include the opportunity to participate in undergraduate research, internships, career planning activities, and other special projects within the computer science department.

Each SPARCS recipient will have an academic advisor who is a faculty member in the Computer Science Department. Each SPARCS scholar will meet with her or his faculty advisor regularly, either individually or as a group. These meetings will be used to assess the scholar's progress in the academic program, provide career counseling, and identify other issues that need to be addressed to assure the scholar's success in pursuing a degree in computer science.

The PI will also coordinate mentoring, research, and internship activities with the Computer Science Department by working closely with the department chair, the department's internship coordinator, and the department's undergraduate research coordinator.

The academic support program for SPARCS scholars will be run through the Hope College Academic Support Office. See Section d for a further description of this office. The PI will work with the Director of Academic Support to ensure appropriate assistance is available through tutoring, academic skills building, or the formation of directed study groups. The PI will also work with the academic advisors to encourage SPARCS scholars to utilize the academic support services that are provided.

The career investigation component of the SPARCS program will be directed by the PI in partnership with Sara DeVries, the Assistant Director of Career Services at

Hope College. Career planning will begin in the First-Year seminar and be integrated throughout the students' time at Hope.

All student support services will be conducted in a way similar to those employed in the earlier CSEMS project.

Eligibility and Replacement Process

At the time of the selection of SPARCS scholars and at the conclusion of each semester, the PI will determine if each candidate or scholar meets the eligibility requirements as listed in Section f.

When a SPARCS scholar becomes ineligible to continue receiving the scholarship, the remaining funds for that scholar will be reallocated by action of the Computer Science faculty to one of the following:

- A SPARCS student who previously lost eligibility, but has since regained it.
- A student transferring to Hope College who meets the eligibility requirements.
- A student who is already enrolled at Hope College who meets the eligibility requirements.

Preference for replacement scholarships will be given to students who have a large amount of unmet need. These scholarships will be awarded for at least one year, but will not necessarily be for the full \$10,000 nor renewed for a second year, even if eligibility requirements continue to be met. Recipients of replacement scholarships will receive all of the other benefits of being a SPARCS Scholar.

Evaluation and Assessment

The assessment and evaluation plan described in Section i will be directed by the PI in consultation with the Hope College Frost Center for Social Science Research. In addition, the evaluations performed by the Computer Science Department and the oversight team will be coordinated by the PI.

Rationale for Size of Program

The earlier CSEMS project had the objective of increasing the enrollments in the Hope College Computer Science, Engineering, and Mathematics programs. While that objective was met during the recruiting years of this project, enrollments in computer science fell in following years, consistent with the national trend of decreased interest in the field. The Computer Science Department has determined that it can support 20 majors per graduating class with present resources. The department presently has 4.67 full-time equivalent faculty members. Over the past 5 years the department has averaged 11 graduating majors per year. Therefore, the department can easily accommodate the 6 additional majors per class that will result from the SPARCS program. We anticipate that the recruiting initiatives and retainment practices included in this project will result in a greater increase in number of majors than the 6 who are supported by these scholarships.

Project Administration Calendar

The calendar of events for administration of the SPARCS project is given in the table below.

Hope College SPARCS Project Administrative Calendar			
	Year 0	Year 1	Year 2-5
Jun		Design First-Year Seminar	
Jul	Contact HS seniors*	Contact HS seniors	
Sept	Contact HS teachers*	Contact HS teachers	
Oct-Feb	Recruit HS seniors*	Recruit HS seniors	
Dec		Eligibility check	
Mar	SPARCS scholar interviews and selection		
May		Eligibility check Oversight Team review	

* Activities carried out prior to notification of NSF funding and without NSF support

f. Student Selection Process and Criteria

High school seniors will be eligible for a SPARCS scholarship if they meet the following criteria:

1. The student must meet the eligibility requirements for citizenship and financial need as specified in the S-STEM guidelines.
 2. The student must have been accepted for admission to Hope College.
 3. The student must have indicated an interest in pursuing a major in Computer Science.
- Each candidate for a SPARCS scholarship will be required to submit a statement indicating her academic and career goals and stating how the SPARCS scholarship will benefit the student in attaining those goals. Each candidate will also be required to submit the name of a high school teacher who will serve as a reference for the student. In addition, the candidate will be interviewed by the PI and one other member of the Hope College Computer Science faculty during a visit to the Hope College campus.

Students selected as SPARCS scholars will be selected from among qualified applicants by the Computer Science faculty members using the following criteria:

1. Promise of academic success as indicated by high school GPA, ACT scores, and high school faculty reference.
2. Interest in an academic and professional career in computer science as indicated by high school faculty reference and interview.
3. Perceived impact the scholarship will have on the student's pursuing a major in computer science at Hope College as indicated by high school faculty reference and interview.

Preference will be given to candidates from underrepresented groups when they meet all of the above criteria. Our experience with the earlier NSF-funded scholarship programs indicates that because of the financial aid policies of Hope College, members of minority ethnic groups who qualify for a SPARCS scholarships are likely to receive enough grant aid from other sources that they do not meet the need requirements of this program. Such students, though not awarded SPARCS scholarships, will be invited to participate in all other aspects of the SPARCS program. Every effort will be made to achieve gender balance among the SPARCS scholars.

Scholarship Renewal

At the completion of each semester of their academic program, recipients of the SPARCS scholarships must meet the following criteria in order to retain their scholarship for the

following semester:

1. The student must maintain an overall GPA of 3.0 or better on a 4.0 scale.
2. If the student has just completed her first, second, or third semester of college study, she must have successfully completed a computer science course with a grade of C or higher during the previous semester and be enrolled in a computer science course in the upcoming semester.
3. If the student has just completed her fourth or later semester, she must have declared and maintain satisfactory progress toward a major in computer science
4. The student must have participated in all SPARCS-sponsored student activities during the semester just completed.

When a student fails to meet all of these eligibility requirements, she will no longer be a participant in the SPARCS program nor receive the SPARCS scholarship. If that student meets the requirements in a later semester, she will be eligible to again become a SPARCS scholar subject to the availability of funds and according to the process outlined in the Replacement Process described above.

g. SPARCS Student Support Services and Programs

Faculty Advising

The PI will be the academic advisor during the first year for each SPARCS participant as a result of being a First-Year Seminar instructor. When a SPARCS scholar declares a computer science major, she will be assigned different computer science professor as her academic advisor. After that time the PI will meet at least once each semester with each SPARCS scholar, either individually or as a group. Through these meetings, the PI will monitor the students' academic progress and continued interest in computer science. In addition, the PI will meet with the student's academic advisor, a computer science faculty member, on a monthly basis to discuss the student's progress.

Academic Assistance

The Hope College Academic Support Center provides tutoring in specific courses and assistance with a variety of academic skills. All SPARCS scholars will be informed during their first semester of the services provided by the Academic Support Center and the faculty advisors and the PI will direct the SPARCS scholars to the Center as appropriate. In addition, the PI will encourage the formation of SPARCS study groups in courses where such groups will be helpful.

Peer Mentoring

Each SPARCS scholar who is in the first two years of study will be paired with a sophomore, junior, or senior computer science major. During the first year of the program these mentors will be seniors from the preceding CSEMS project. In the second year, the mentors will be second-year participants in this SPARCS program or other upper-class computer science majors. The peer mentor will meet informally with the SPARCS scholar at least once each semester and will also be asked to personally invite the SPARCS scholar to attend departmental events.

Career Services

The SPARCS scholars will be introduced to the resources of the Hope College Career Services Office during their first semester as SPARCS recipients.

These resources are useful for the choice of career and for assisting students in the process of finding a job upon graduation.

Multicultural Life

The Hope College Office of Multicultural Life works with students of all racial/ethnic backgrounds in a variety of ways, providing personal guidance, assistance with financial aid questions and linking students with campus organizations and departments or offices. SPARCS scholars will be counseled by the PI to make use of this resource whenever appropriate.

Internships and Alumni Mentors

The Hope College Computer Science department has an active internship program. During their first year as Hope College students, SPARCS scholars will be assigned an alumni mentor who is an employee of an organization in the local area that provides opportunities for interns. This relationship will serve to provide the student with information about career opportunities in computer science, encouragement to persist in their computer science studies, and a contact for future internship possibilities. Alumni mentors will meet with their assigned SPARCS student at least once each semester under direction and supervision of the PI.

Undergraduate Research

The Hope College Computer Science Department has an ongoing undergraduate research program with support from the NSF REU office. For the past 17 summers, students have been doing undergraduate computer science research on the Hope campus under the direction of Hope College faculty members. The number of students each summer ranges from 8 to 16. In addition, every semester Hope College Computer Science faculty members are directing research and software development projects. The SPARCS scholars will be encouraged to apply to these programs and to undergraduate research programs at other locations as well.

Community Building

Many community building activities are built-in to the structure of the First-Year Seminar at Hope College. In addition to those, a minimum of one activity will be scheduled each semester that will include all SPARCS scholars, with the objective being to build community among the scholars. These events will alternate between social events and informational sessions, with the emphasis being on informality and enthusiastic participation. When appropriate, students and faculty from the target high schools will be invited to attend these events as well. In addition, the Hope College Computer Science Department sponsors a colloquium series with 10-15 meetings each semester. These colloquia focus on research presentations and career information and invite speakers from both on and off the Hope campus. Faculty and peer mentors will be responsible for seeing that SPARCS scholars make maximum use of the colloquia series.

h. Quality Educational Programs

The Hope College Computer Science Department was established in 1975 and has been offering degrees in computer science ever since. It presently offers a major for both a Bachelor of Arts degree and a Bachelor of Science degree. In November 2006, the department was reviewed by a team of external faculty members. Their key findings were “The Hope College Computer Science Department is an outstanding department enjoying

national recognition for its excellence. The review team notes particular strengths in undergraduate research, innovation and effectiveness in teaching, and faculty relations with students.” The department has five full-time faculty members, four of whom are tenured and one on tenure-track. All five have a Ph.D. in computer science. The department has maintained a strong program in undergraduate research with support from 5 NSF REU grants. The department has received five NSF CCLI grants over the past 15 years in addition to funding for research from NASA, DARPA, Department of Defense, Argonne National Laboratory, and Hewlett-Packard. Hope College ranks 40th of all institutions in the nation in the Baccalaureate Origin of Computer Science Ph.D.’s in the five-year period 2000-2004.

The Division of Natural and Applied Sciences at Hope includes the departments of Biology, Chemistry, Computer Science, Engineering, Geological & Environmental Sciences, Mathematics, Nursing, and Physics and totals over 60 FTE faculty members. Hope College has a long-standing commitment to provide students opportunities to learn cutting-edge science in coherent and rigorous laboratory courses that stress hands-on, research-based modes of learning, and to work in an interdisciplinary and collaborative manner with faculty in research. The Division is recognized by Project Kaleidoscope as a whole "Program that Works" and as a model for other institutions, and Hope is one of only 10 liberal arts institutions to be recognized by the NSF with an Award for the Integration of Research and Education. Additionally, the undergraduate research program at Hope has been identified in *U.S. News & World Report* as among the leading programs in the nation (ranked 4th among all institutions in 2003).

The mission of the program in science and mathematics at Hope mirrors that of the college to provide an **innovative curriculum**, which intertwines **student learning** and **faculty development**. We operate on the principle that undergraduate research is an essential component of good teaching and effective learning. The collegial culture within the Division of Natural and Applied Sciences is the key ingredient in sustaining an intellectually vital learning community for faculty and students. In the past five years, Hope science faculty and administrators received awards totaling greater than \$2,400,000 annually in new resources from extramural sources to support research, education, and outreach programs

We seek to identify and sustain students who have a diversity of ethnic backgrounds. To assist us in this regard we have formed a unique partnership with the University of Michigan to cooperatively recruit students of color for fully-supported undergraduate education at Hope College followed by fully-supported graduate and/or medical education at the University of Michigan. This highly successful program, along with outreach programs to K-12 students representing traditionally underrepresented groups in science and mathematics, work together to assist us in our goal to provide opportunities for science/mathematics education to all individuals. A new outreach program to underrepresented students in local high schools is called REACH (Research Experiences Across Cultures at Hope). This program, initially funded internally and supplements from existing NSF grants and now supported by an ongoing HHMI grant, invites up to two teachers and twelve students from local high schools to participate in Hope College summer research projects along with undergraduates and professors.

An unusually high number of students (~40%) enter Hope with an interest in science and mathematics. During their time at Hope these students are integrated into a

supportive community of learners in an environment rich in research-based learning opportunities. On the average, in the past three summers over 150 students did research with faculty, supported in part by separate NSF-REU site awards. Although we do not have a research requirement, ~85% of Hope science and mathematics majors do research. Approximately 33% of Hope seniors graduate with a degree in science or mathematics. Of these, ~30% enter graduate school. About 35% of our science and mathematics graduates seek to enter professional school. The 10-year acceptance rate for these students is 71%, and it is 90% for students who engage in research while at Hope. The remaining students enter the workforce directly upon graduation, with many entering the teaching profession as K-12 educators.

Faculty and students sustain vitality by engaging in research. Hope College faculty rank 4th of all liberal arts institutions for numbers of faculty research publications and 14th overall for highest impact of those publications as measured by the Science Citation Index. Since 1990 over 300 undergraduate students have co-authored research publications with faculty.

i. Assessment and Evaluation

Formative Assessment.

The following will be used for formative assessment during the project. All data will be used for evaluation purposes by the oversight team, which will evaluate assessment data and recommend adjustments to the program.

1. Tracking data for SPARCS participants.

Data collected will include progress toward degree, academic performance, participation in internship and research, retention in the major, graduation rate, job placement, and percentage of minorities and females. The data for SPARCS participants will be compared to results prior to SPARCS support and to the results for non-SPARCS supported computer science majors during the period of this project. We will also track the change in the number and source of computer science majors at Hope College during the years of the SPARCS program.

2. Annual survey of all participants.

All participants in this program will be surveyed annually to determine the impact of the program. Student participants will also be surveyed prior to their arrival on the Hope campus.

3. Exit survey.

All participants, when exiting the program, will be asked to complete a survey. There will be separate surveys for students who depart the program prior to graduating and for those who graduate as SPARCS scholars.

4. Applications from students with computer science interest.

The number of applications to Hope College from students with an interest in computer science will be collected each year and compared with counts from years prior to the SPARCS program.

Summative Assessment

The objectives of this project are listed below along with the assessment data that will be used to evaluate each one.

1. To increase the number of majors in computer science at Hope College.

This will be evaluated by keeping a count of the number of computer science majors at Hope College at all levels.

2. *To increase the number of female majors in computer science at Hope College.*
The data collected for item 1 above will be broken out by gender.
3. *To increase the retention of students who come to Hope College planning to major in computer science.*
All students who enter Hope with an interest in majoring in Computer Science (not only SPARCS participants) will be tracked throughout their college career.
4. *To recruit students who would not ordinarily consider attending Hope College to apply to Hope and to major in computer science.*
Focus groups will be conducted with all Hope College Computer Science majors to determine the influences on their decision to study computer science at Hope College.

All data collection and survey design will be coordinated by the PI in consultation with the Hope College Frost Center for Social Science Research. Similar instruments already exist for the assessment and evaluation of the preceding Hope College CSEMS and S-STEM programs and these will be adapted for use in this project. The Frost Center will take responsibility for conducting all surveys and focus groups and compiling the results. The services of the Frost Center are found in the budget under Consultant Services.

This project has received an exemption from the Hope College Human Subjects Review Board. See letter in Supplementary Documents.

At the completion of this program, the faculty members of the Hope College Computer Science Department will review the evaluation data collected throughout the project for the purpose of determining those strategies that were effective in the recruitment and retention of computer science majors. This review will result in a plan for maintaining the progress that has been made as a result of this project through continued and new initiatives.

Results of this program will be disseminated through the construction of a project web page. This web page will contain complete information about the project, including all assessment data. The availability of this web page will be announced through the web page of the Hope College Computer Science Department and the web page of the Hope College Natural and Applied Sciences Division.

Summary

This project will provide an effective way to attract students to the Hope College computer science program who would not otherwise consider attending Hope and to retain them to the successful completion of that program. These students will have an opportunity to benefit from the strengths of the Hope College computer science program. As a result of this project, pipelines will be established between the high schools and Hope College that will benefit all institutions beyond this project's time frame.

Biographical Sketches

Principal Investigator: Herbert L. Dershem

(i) Professional Preparation

B.S. University of Dayton, 1965

M.S. (Computer Science) Purdue University, 1967

Ph.D. (Computer Science) Purdue University, 1969

(ii) Appointments

Hope College, Assistant Professor, 1969-1974, Associate Professor, 1974-1981, Professor, 1981-present, Chair, Computer Science Dept, 1976-2003, Interim Dean for Natural Science, 2005, Director of Institutional Research, 2007-present.

Oak Ridge National Laboratories, Visiting Research Scientist, 1977-1978

Boston University Overseas Program, Visiting Professor, 1982-1983

United States Air Force Academy, Distinguished Visiting Professor, 1993-1994

(iii) Publications

Up to 5 publications most closely related to the proposed project:

Dershem, H.L., McFall, R.L., and N. Uti*, "A Linked List Prototype for the Visual Representation of Abstract Data Types," *Interactive Multimedia Electronic Journal of Computer-Enhanced Learning*, 4,2(Oct, 2002).

Dershem, H.L., McFall, R.L., and N. Uti*, "Animation of Java Linked Lists," *SIGCSE Bulletin*, 34,1(Mar, 2001), 53-57.

Dershem, H.L., Dykstra*, J., and K. Suppes*, "An Abstract Window Toolkit Visualizer for Computer Science Instruction," *Proceedings of the 33rd Midwest Instruction and Computing Symposium (CD-ROM)*, April 14-15, 2000, Minneapolis, MN.

Dershem, H.L., Parker*, D.E., and R. Weinhold*, "A Java Function Visualizer," *Journal of Computing in Small Colleges*, 15,1(Oct, 1999), 221-230.

Dershem, H.L. and J. Vanderhyde*, "Java Class Visualization for Teaching Object-Oriented Concepts," *SIGCSE Bulletin*, 30,1(Mar, 1998), 53-57.

Up to 5 other significant publications, whether or not related to the proposed project:

Dershem, H.L. and P. Brummund*, "Tools for Web-Based Sorting Animation," *SIGCSE Bulletin*, 30,1(Mar, 1998), 222-226.

Dershem, H.L., Barth*, W., Bowsher*, C., and D. Brown*, "Data Structures with Ada Packages, Laboratories, and Animations," *Proceedings of the First Australasian Conference on Computer Science Education*, July, 1996, 32-38.

Dershem, H.L. and M.J. Jipping, *Programming Languages: Models and Structures: Second Edition*, PWS Publishing Co., 1995.

McFall*, R. and Dershem, "Finite State Machine Simulation in an Introductory Lab," *SIGCSE Bulletin*, 26,1(Mar, 1994), 126-140.

(iv) Synergistic Activities

a. Previous grants awarded:

Co-director, "Introduction of the Computer in the Statistics Curriculum", NSF Office of Computing Activities, 1971-1973, \$45,800.

Director, "A Modular Approach to the Introductory Course in Computer Science", NSF Local Course Improvement Program, 1978-1980, \$14,200

Co-Director, "A Microcomputer Laboratory for use in Teaching Statistics", NSF Instructional Scientific Equipment Program, 1979-1980, \$10,315.

Director, "CSNET Membership in Support of Computer Science Research", NSF RUI Program, 1987-1990, \$9,375.

Director, "Computer Science Undergraduate Research Program", NSF REU Program, 1992-1994, \$86,550; 1995-1997, \$114,393; 1998-2000, \$146,700; 2001-2003, \$163,213, 2004-2008, \$352,000.

Director, "Use of Ada, Laboratories, and Visualization in the Teaching of Data Structures and Discrete Mathematics", DARPA Curriculum Development Grant, 1993- 1994, \$23,010.

Director, "Curriculum and Textbook Development Using Ada 9X for the Teaching of Object-Oriented Concepts", US Air Force Contract, 1995-1996, \$34,464.

Co-Director, "An Integrated Classroom/Laboratory for Introducing Students to Object Oriented Concepts", NSF ILI Program, 1996-1998, \$46,356.

Director, "Computer Science, Engineering, and Mathematics Scholarship Program", NSF CSEMS Program, 2005-2008, \$398,040.

Director, "Scholarships for Transfer Students in Science, Engineering, and Mathematics", NSF S-STEM Program, 2007-2012, \$564,360.

b. Councilor for the Council on Undergraduate Research:

Councilor, Division of Mathematics and Computer Science, 1994-2000, 2003-present.

Member of consultants committee, 1996-present.

Leader at CUR Proposal Writing Institute, 2002.

c. Member of panels related to undergraduate research:

Dershem, H., with Engel G., McFall*, R., Lopez, A., and S. Wiltz*. "Research Experiences for Undergraduates," Twenty-fourth SIGCSE Technical Symposium on Computer Science Education, Indianapolis, IN, March, 1993.

Dershem, H., with Bard, G., and D. Berque. "Finding and Developing Research Experiences for Undergraduates in the Small College Setting," Third Annual CCSC Midwestern Conference, Greencastle, IN, October, 1996.

Dershem, H., with Sanders, D., Eller-Meshreki, R., and G. Pitts. "Undergraduate Research - Welcome to the 21st Century," Twenty-eighth SIGCSE Technical Symposium on Computer Science Education, San Jose, CA, February, 1997.

Dershem, H., with Hedges, H. "Birds of a Feather Session on NSF-REU Program for Computer Science," Twenty-ninth SIGCSE Technical Symposium on Computer Science Education, Atlanta, GA, March, 1998.

Dershem, H. with McGuffee, J., Lankewicz, L., Lewandowski, G., Lopez, D., and O. Slotterbeck. "Managing Undergraduate CS Research," Thirty-third SIGCSE Technical Symposium on Computer Science Education, Cincinnati, KY, 2002.

(v) Collaborations and Other Affiliations

a. Collaborators and Co-Editors

A list of scientists collaborated with on projects over the last 48 months would include:

Scott Grissom (Grand Valley State University), Michael Jipping (Hope College), Ryan McFall (Hope College), Myles McNally (Alma College), Thomas Naps (University of Wisconsin-Oshkosh), Samuel Rebelsky (Grinnell College), Henry Walker (Grinnell College).

b. Graduate and Postdoctoral Advisors

Robert E. Lynch (Purdue University)

c. Thesis Advisor and Postgraduate-Scholar Sponsor

None

SUMMARY PROPOSAL BUDGET

YEAR 1

ORGANIZATION Hope College				FOR NSF USE ONLY		
				PROPOSAL NO.	DURATION (months)	
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR Herbert L Dershem				AWARD NO.	Proposed	Granted
					NSF Funded Person-months	
A. SENIOR PERSONNEL: PI/PI, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)				CAL	ACAD	SUMR
1. Herbert L Dershem - PI				0.00	0.00	0.50
2.						
3.						
4.						
5.						
6. (0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)				0.00	0.00	0.00
7. (1) TOTAL SENIOR PERSONNEL (1 - 6)				0.00	0.00	0.50
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)						
1. (0) POST DOCTORAL SCHOLARS				0.00	0.00	0.00
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)				0.00	0.00	0.00
3. (0) GRADUATE STUDENTS						0
4. (0) UNDERGRADUATE STUDENTS						0
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)						0
6. (0) OTHER						0
TOTAL SALARIES AND WAGES (A + B)						5,225
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)						948
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)						6,173
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)						
TOTAL EQUIPMENT						0
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)						1,000
2. FOREIGN						0
F. PARTICIPANT SUPPORT COSTS						
1. STIPENDS \$ <u>60,000</u>						
2. TRAVEL <u>0</u>						
3. SUBSISTENCE <u>0</u>						
4. OTHER <u>0</u>						
TOTAL NUMBER OF PARTICIPANTS (0) TOTAL PARTICIPANT COSTS						60,000
G. OTHER DIRECT COSTS						
1. MATERIALS AND SUPPLIES						1,000
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION						0
3. CONSULTANT SERVICES						1,000
4. COMPUTER SERVICES						0
5. SUBAWARDS						0
6. OTHER						0
TOTAL OTHER DIRECT COSTS						2,000
H. TOTAL DIRECT COSTS (A THROUGH G)						69,173
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) (Rate: , Base:)						
TOTAL INDIRECT COSTS (F&A)						0
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)						69,173
K. RESIDUAL FUNDS						0
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)						\$ 69,173 \$
M. COST SHARING PROPOSED LEVEL \$ 0				AGREED LEVEL IF DIFFERENT \$		
PI/PI NAME Herbert L Dershem				FOR NSF USE ONLY		
ORG. REP. NAME*				INDIRECT COST RATE VERIFICATION		
				Date Checked	Date Of Rate Sheet	Initials - ORG

SUMMARY PROPOSAL BUDGET

YEAR 2

ORGANIZATION Hope College				FOR NSF USE ONLY		
				PROPOSAL NO.	DURATION (months)	
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR Herbert L Dershem				AWARD NO.	Proposed	Granted
				NSF Funded Person-months		
A. SENIOR PERSONNEL: PI/PI, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)				CAL	ACAD	SUMR
1. Herbert L Dershem - PI				0.00	0.00	0.50
2.						
3.						
4.						
5.						
6. (0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)				0.00	0.00	0.00
7. (1) TOTAL SENIOR PERSONNEL (1 - 6)				0.00	0.00	0.50
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)						
1. (0) POST DOCTORAL SCHOLARS				0.00	0.00	0.00
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)				0.00	0.00	0.00
3. (0) GRADUATE STUDENTS						
4. (0) UNDERGRADUATE STUDENTS						
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)						
6. (0) OTHER						
TOTAL SALARIES AND WAGES (A + B)						5,382
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)						977
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)						6,359
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)						
TOTAL EQUIPMENT						0
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)						1,050
2. FOREIGN						0
F. PARTICIPANT SUPPORT COSTS						
1. STIPENDS \$ <u>120,000</u>						
2. TRAVEL <u>0</u>						
3. SUBSISTENCE <u>0</u>						
4. OTHER <u>0</u>						
TOTAL NUMBER OF PARTICIPANTS (0) TOTAL PARTICIPANT COSTS						120,000
G. OTHER DIRECT COSTS						
1. MATERIALS AND SUPPLIES						1,000
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION						0
3. CONSULTANT SERVICES						1,000
4. COMPUTER SERVICES						0
5. SUBAWARDS						0
6. OTHER						0
TOTAL OTHER DIRECT COSTS						2,000
H. TOTAL DIRECT COSTS (A THROUGH G)						129,409
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) (Rate: , Base:)						
TOTAL INDIRECT COSTS (F&A)						0
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)						129,409
K. RESIDUAL FUNDS						0
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)						\$ 129,409 \$
M. COST SHARING PROPOSED LEVEL \$ 0				AGREED LEVEL IF DIFFERENT \$		
PI/PI NAME Herbert L Dershem				FOR NSF USE ONLY		
ORG. REP. NAME*				INDIRECT COST RATE VERIFICATION		
				Date Checked	Date Of Rate Sheet	Initials - ORG

SUMMARY PROPOSAL BUDGET

YEAR 3

ORGANIZATION Hope College				FOR NSF USE ONLY			
				PROPOSAL NO.	DURATION (months)		
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR Herbert L Dershem				AWARD NO.			
				Proposed	Granted		
A. SENIOR PERSONNEL: PI/PI, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)				NSF Funded Person-months		Funds Requested By proposer	Funds granted by NSF (if different)
				CAL	ACAD	SUMR	
1. Herbert L Dershem - PI				0.00	0.00	0.50	\$ 5,543
2.							
3.							
4.							
5.							
6. (0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)				0.00	0.00	0.00	0
7. (1) TOTAL SENIOR PERSONNEL (1 - 6)				0.00	0.00	0.50	5,543
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)							
1. (0) POST DOCTORAL SCHOLARS				0.00	0.00	0.00	0
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)				0.00	0.00	0.00	0
3. (0) GRADUATE STUDENTS							0
4. (0) UNDERGRADUATE STUDENTS							0
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)							0
6. (0) OTHER							0
TOTAL SALARIES AND WAGES (A + B)							5,543
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)							1,006
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)							6,549
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)							
TOTAL EQUIPMENT							0
E. TRAVEL							1,103
1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)							1,103
2. FOREIGN							0
F. PARTICIPANT SUPPORT COSTS							
1. STIPENDS \$ 120,000							
2. TRAVEL 0							
3. SUBSISTENCE 0							
4. OTHER 0							
TOTAL NUMBER OF PARTICIPANTS (0)							
TOTAL PARTICIPANT COSTS							120,000
G. OTHER DIRECT COSTS							
1. MATERIALS AND SUPPLIES							500
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION							0
3. CONSULTANT SERVICES							1,000
4. COMPUTER SERVICES							0
5. SUBAWARDS							0
6. OTHER							0
TOTAL OTHER DIRECT COSTS							1,500
H. TOTAL DIRECT COSTS (A THROUGH G)							129,152
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) (Rate: , Base:)							
TOTAL INDIRECT COSTS (F&A)							0
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)							129,152
K. RESIDUAL FUNDS							0
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)							\$ 129,152 \$
M. COST SHARING PROPOSED LEVEL \$ 0				AGREED LEVEL IF DIFFERENT \$			
PI/PI NAME Herbert L Dershem				FOR NSF USE ONLY			
ORG. REP. NAME*				INDIRECT COST RATE VERIFICATION			
				Date Checked	Date Of Rate Sheet	Initials - ORG	

SUMMARY PROPOSAL BUDGET

YEAR 4

ORGANIZATION Hope College				FOR NSF USE ONLY			
				PROPOSAL NO.	DURATION (months)		
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR Herbert L Dershem				AWARD NO.	Proposed	Granted	
				A. SENIOR PERSONNEL: PI/PI, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)			
				CAL	ACAD	SUMR	
1. Herbert L Dershem - PI				0.00	0.00	0.50	\$ 5,709
2.							
3.							
4.							
5.							
6. (0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)				0.00	0.00	0.00	0
7. (1) TOTAL SENIOR PERSONNEL (1 - 6)				0.00	0.00	0.50	5,709
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)							
1. (0) POST DOCTORAL SCHOLARS				0.00	0.00	0.00	0
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)				0.00	0.00	0.00	0
3. (0) GRADUATE STUDENTS							0
4. (0) UNDERGRADUATE STUDENTS							0
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)							0
6. (0) OTHER							0
TOTAL SALARIES AND WAGES (A + B)							5,709
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)							1,036
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)							6,745
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)							
TOTAL EQUIPMENT							0
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)							1,158
2. FOREIGN							0
F. PARTICIPANT SUPPORT COSTS							
1. STIPENDS \$ <u>120,000</u>							
2. TRAVEL <u>0</u>							
3. SUBSISTENCE <u>0</u>							
4. OTHER <u>0</u>							
TOTAL NUMBER OF PARTICIPANTS (0) TOTAL PARTICIPANT COSTS							120,000
G. OTHER DIRECT COSTS							
1. MATERIALS AND SUPPLIES							500
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION							0
3. CONSULTANT SERVICES							1,000
4. COMPUTER SERVICES							0
5. SUBAWARDS							0
6. OTHER							0
TOTAL OTHER DIRECT COSTS							1,500
H. TOTAL DIRECT COSTS (A THROUGH G)							129,403
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) (Rate: , Base:)							
TOTAL INDIRECT COSTS (F&A)							0
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)							129,403
K. RESIDUAL FUNDS							0
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)							\$ 129,403 \$
M. COST SHARING PROPOSED LEVEL \$ 0				AGREED LEVEL IF DIFFERENT \$			
PI/PI NAME Herbert L Dershem				FOR NSF USE ONLY			
ORG. REP. NAME*				INDIRECT COST RATE VERIFICATION			
		Date Checked		Date Of Rate Sheet		Initials - ORG	

SUMMARY PROPOSAL BUDGET

YEAR 5

ORGANIZATION Hope College				FOR NSF USE ONLY			
				PROPOSAL NO.	DURATION (months)		
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR Herbert L Dershem				Proposed	Granted		
				AWARD NO.			
A. SENIOR PERSONNEL: PI/PI, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)				NSF Funded Person-months		Funds Requested By proposer	Funds granted by NSF (if different)
				CAL	ACAD	SUMR	
1. Herbert L Dershem - PI				0.00	0.00	0.50	\$ 5,880
2.							
3.							
4.							
5.							
6. (0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)				0.00	0.00	0.00	0
7. (1) TOTAL SENIOR PERSONNEL (1 - 6)				0.00	0.00	0.50	5,880
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)							
1. (0) POST DOCTORAL SCHOLARS				0.00	0.00	0.00	0
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)				0.00	0.00	0.00	0
3. (0) GRADUATE STUDENTS							0
4. (0) UNDERGRADUATE STUDENTS							0
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)							0
6. (0) OTHER							0
TOTAL SALARIES AND WAGES (A + B)							5,880
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)							1,067
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)							6,947
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)							
TOTAL EQUIPMENT							0
E. TRAVEL							1,216
1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)							1,216
2. FOREIGN							0
F. PARTICIPANT SUPPORT COSTS							
1. STIPENDS \$ <u>60,000</u>							
2. TRAVEL <u>0</u>							
3. SUBSISTENCE <u>0</u>							
4. OTHER <u>0</u>							
TOTAL NUMBER OF PARTICIPANTS (0)							
TOTAL PARTICIPANT COSTS							60,000
G. OTHER DIRECT COSTS							
1. MATERIALS AND SUPPLIES							500
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION							0
3. CONSULTANT SERVICES							1,000
4. COMPUTER SERVICES							0
5. SUBAWARDS							0
6. OTHER							0
TOTAL OTHER DIRECT COSTS							1,500
H. TOTAL DIRECT COSTS (A THROUGH G)							69,663
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) (Rate: , Base:)							
TOTAL INDIRECT COSTS (F&A)							0
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)							69,663
K. RESIDUAL FUNDS							0
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)							\$ 69,663 \$
M. COST SHARING PROPOSED LEVEL \$ 0				AGREED LEVEL IF DIFFERENT \$			
PI/PI NAME Herbert L Dershem				FOR NSF USE ONLY			
ORG. REP. NAME*				INDIRECT COST RATE VERIFICATION			
				Date Checked	Date Of Rate Sheet	Initials - ORG	

SUMMARY PROPOSAL BUDGET

Cumulative

ORGANIZATION Hope College				FOR NSF USE ONLY			
				PROPOSAL NO.	DURATION (months)		
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR Herbert L Dershem				AWARD NO.	Proposed	Granted	
A. SENIOR PERSONNEL: PI/PI, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)				NSF Funded Person-months		Funds Requested By proposer	Funds granted by NSF (if different)
				CAL	ACAD	SUMR	
1. Herbert L Dershem - PI				0.00	0.00	2.50	\$ 27,739
2.							
3.							
4.							
5.							
6. () OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)				0.00	0.00	0.00	0
7. (1) TOTAL SENIOR PERSONNEL (1 - 6)				0.00	0.00	2.50	27,739
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)							
1. (0) POST DOCTORAL SCHOLARS				0.00	0.00	0.00	0
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)				0.00	0.00	0.00	0
3. (0) GRADUATE STUDENTS							0
4. (0) UNDERGRADUATE STUDENTS							0
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)							0
6. (0) OTHER							0
TOTAL SALARIES AND WAGES (A + B)							27,739
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)							5,034
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)							32,773
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)							
TOTAL EQUIPMENT							0
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)							5,527
2. FOREIGN							0
F. PARTICIPANT SUPPORT COSTS							
1. STIPENDS \$ 480,000							
2. TRAVEL 0							
3. SUBSISTENCE 0							
4. OTHER 0							
TOTAL NUMBER OF PARTICIPANTS (0) TOTAL PARTICIPANT COSTS							480,000
G. OTHER DIRECT COSTS							
1. MATERIALS AND SUPPLIES							3,500
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION							0
3. CONSULTANT SERVICES							5,000
4. COMPUTER SERVICES							0
5. SUBAWARDS							0
6. OTHER							0
TOTAL OTHER DIRECT COSTS							8,500
H. TOTAL DIRECT COSTS (A THROUGH G)							526,800
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)							
TOTAL INDIRECT COSTS (F&A)							0
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)							526,800
K. RESIDUAL FUNDS							0
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)							\$ 526,800 \$
M. COST SHARING PROPOSED LEVEL \$ 0				AGREED LEVEL IF DIFFERENT \$			
PI/PI NAME Herbert L Dershem				FOR NSF USE ONLY			
ORG. REP. NAME*				INDIRECT COST RATE VERIFICATION			
				Date Checked	Date Of Rate Sheet	Initials - ORG	

C *ELECTRONIC SIGNATURES REQUIRED FOR REVISED BUDGET

Budget Justification

A1. Senior Personnel: The PI is supported for one-half month each summer. This is calculated at 1/18 of the PI's 9-month salary of \$94,080 the first year with a 3% increment each succeeding year. This is support for management of the project, directing the assessment process, and preparation of reports.

C. Fringe Benefits: Fringe benefits for the PI are computed at 18.15% of salary. This covers the college contribution to FICA/MQFE (7.65%) and college contribution to retirement (10.5%).

E1. Travel: Travel costs are to support faculty and student travel between high schools and Hope College for the purposes of recruitment and conducting workshops. This is budgeted at \$1000 in year 1 and incremented by 5% each year thereafter.

F1. Participant Support Cost: The budget is calculated based on six new fully-funded participants each year for two years. It is anticipated that the 12 students will receive the maximum stipend of \$10,000 for four years. If a student's financial need is less than \$10,000, the amount of the need will be awarded. The total amount requested is \$480,000.

G1. Materials and Supplies: Supplies to support the recruiting of students. This will include expense for printed and web material development and distribution. These expenses are budgeted at \$500 per year in years 1 through 2. In support of activities associated with group cohesion, mentoring, and educational seminars and colloquia, funds are requested for hospitality and other activity expenses. These are budgeted at \$500 per year in all five years.

G3. Consultant Services: Project assessment and evaluation will be carried out by the Frost Center for Social Science Research at Hope College for \$1,000 per year.

Program Administration Costs:

Expenses under A1 (\$27,739), C (\$5,034), and supplies in G1 (\$1,000) are included as Program Administration Costs. The total Program Administration cost is \$33,773 which is 7.0% of the total scholarship amount of \$480,000..

Student Support Costs:

Expenses under E1 (\$5,527), activity support part of G1 (\$2,500), and consultant services G3 (\$5,000) are included as Student Support. The total Student Support cost is \$13,027 which is 2.7% of the total project budget of \$480,000.

Current and Pending Support

(See GPG Section II.C.2.h for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: **Herbert Dershem**

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: Current Pending Submission Planned in Near Future *Transfer of Support
Project/Proposal Title: **Scholarships for Transfer Students in Science, Engineering,
and Mathematics**

Source of Support: **National Science Foundation - S-STEM**
Total Award Amount: \$ **564,360** Total Award Period Covered: **09/01/07 - 08/31/12**
Location of Project: **Hope College**
Person-Months Per Year Committed to the Project. **Cal:0.00 Acad: 0.00 Sumr: 0.50**

Support: Current Pending Submission Planned in Near Future *Transfer of Support
Project/Proposal Title: **CSEMS Scholarship Program in Computer Science, Engineering,
and Mathematics at Hope College**

Source of Support: **National Science Foundation - CSEMS**
Total Award Amount: \$ **398,040** Total Award Period Covered: **08/01/04 - 01/31/09**
Location of Project: **Hope College, Holland, Michigan**
Person-Months Per Year Committed to the Project. **Cal:0.00 Acad: 0.00 Sumr: 0.00**

Support: Current Pending Submission Planned in Near Future *Transfer of Support
Project/Proposal Title: **Scholarships for Pursuing Applications and Research in
Computer Science**

Source of Support: **National Science Foundation - S-STEM**
Total Award Amount: \$ **526,800** Total Award Period Covered: **03/01/09 - 02/28/14**
Location of Project: **Hope College, Holland, Michigan**
Person-Months Per Year Committed to the Project. **Cal:0.00 Acad: 0.00 Sumr: 0.50**

Support: Current Pending Submission Planned in Near Future *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: \$ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. **Cal: Acad: Sumr:**

Support: Current Pending Submission Planned in Near Future *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: \$ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. **Cal: Acad: Summ:**

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.



HOPE COLLEGE

DEPARTMENT OF PSYCHOLOGY

MEMORANDUM

DATE: July 25, 2008

TO: Dr. Herb Dershem, Chemistry

FROM: Mary Inman, Chairperson HSRB
Psychology Dept.

MD

RE: Approval of research, HSRB exemption

I've read your proposal and heard your confirmation that the results of the data collected will only be used to report your assessment to NSF (not for public consumption).

Given these factors, your NSF research titled, "Scholarships for Pursuing Applications and Research in Computer Science," has been determined to be exempt from review as described in the Code of Federal Regulations [Title 45, Part 46, Protection of Human Subjects, Subpart A, Category 1 "...research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods." and Category 2, i.e., "research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior"].

Thank you for your CITI certificate, which is being sent on to the Frost Center.

Best wishes in your research.

Proposal Status | MAIN ▶

Organization: Hope College

Proposal Detail:

Proposal Information

Proposal Number: 0849691
Proposal Title: Scholarships for Pursuing Applications and Research in Computer Science
Received by NSF: 08/11/08
Principal Investigator: Herbert Dershem
Performing Organization: Hope College

This Proposal has been Electronically Signed by the Authorized Organizational Representative (AOR).

NSF Program Information

NSF Division: Division of Undergraduate Education
NSF Program: S-STEM: SCHOLARSHIPS IN SCI, TECH, ENG, AND MATH
Program Officer: Stephen C. Cooper
PO Telephone: (703) 292-8670
PO Email: sccooper@nsf.gov

Proposal Status

Status As of Today Dated: **02/18/09**

This proposal has been declined by NSF.

Comments from the cognizant Program Officer:

Dear Dr. Dershem:

As indicated in an e-mail that you will receive from the Director or Deputy Director of NSF's Division of Undergraduate Education, this proposal could not be funded within this year's budget for the NSF Scholarships in Science, Technology, Engineering, and Mathematics Program. We regret to inform you of this decision.

Your proposal was reviewed by a panel of STEM and student-support professionals. The reviews, together with the program officer's evaluation of the proposal, were a major factor in our decision not to fund the proposal. Please understand that individual reviewers' comments do not necessarily reflect NSF's policy or position.

Panelists found several positive aspects in the proposal. They recognized the strong academic programs at Hope College. They liked the strong support structures (especially the peer mentoring, alumni mentoring and first year seminar) in place at the college. They liked the emphasis on scholars participating in undergraduate research. They approved of the recruitment and outreach plans. They appreciated the successes with previous CSEMS/S-STEM grants. However, they also had a few concerns. Their most significant concern was the fact that most of the work fell on the shoulders of you as a single PI. They wanted to see a team, to be able to better distribute the project tasks. Also, they were concerned about your ability to solely manage this project on top of the other two CSEMS/S-STEM grants. Additionally, they struggled with the structure of the first half of the proposal. Reviewers reported getting lost among the figures, without getting the message of a coherent plan.

You are encouraged to revise the proposal to take account of reviewers' comments, and submit the revision to the program's next competition. However, there is no guarantee that a revised proposal will be funded. Revised proposals receive a de novo review, and recommendations for funding take into account both the quality of other proposals received and the availability of program funds.

We appreciate your interest in undergraduate education.

Stephen Cooper

Reviews

All of the reviews of your proposal that have been released to you by your NSF program officer can be viewed below. Please note that the Sponsored Project Office (or equivalent) at your organization is NOT given the capability to view your reviews.

Document:	Release Date:
Panel Summary #1	Dec 29 2008 3:11PM
Review #1	Dec 29 2008 3:11PM
Review #2	Dec 29 2008 3:11PM
Review #3	Dec 29 2008 3:11PM
Review #4	Dec 29 2008 3:11PM
Review #5	Dec 29 2008 3:11PM
Review #6	Dec 29 2008 3:11PM
Review #7	Dec 29 2008 3:11PM

Context Statement

National Science Foundation
Directorate for Education and Human Resources
Division of Undergraduate Education
NSF Scholarships in Science, Technology, Engineering, and Mathematics Program

GENERAL INFORMATION FOR APPLICANTS, FY2009

For the August 12, 2008, deadline, the NSF Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM) program received 277 proposals requesting about \$157 million. It is anticipated that approximately \$50 million will be available to support S-STEM projects in FY2009. These funds will permit support of approximately 85 awards.

Each proposal was evaluated by a panel of reviewers, who had electronic access to the proposals assigned to that panel through NSF's FastLane system. Each reviewer read proposals and wrote individual reviews, and then the panel convened as a group to discuss the proposals under consideration. Following these discussions, reviewers finalized their individual written reviews of each proposal. The written remarks are addressed to NSF and reflect the views of individual reviewers. For each proposal, one member of the panel prepared a summary of the discussion.

Decisions about particular proposals are often difficult, and factors other than reviewers' comments and ratings enter into the decision. Comments by a reviewer must sometimes be considered in the context of other reviews by the same person. The amount of funds available to the program for proposals and general Foundation policies are also important decision factors.

Principal and Co-Principal Investigators may read the Panel Summary and the individual reviews of their proposal via FastLane. Please feel free to contact the cognizant program officer if more information would be helpful. To see the awards that are made as a result of this competition, visit the S-STEM program's home page on NSF's Web site, http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5257, and click on the link "Abstracts of Recent Awards Made Through This Program."

The next deadline for S-STEM proposals is likely to be in August 2009. Please visit the S-STEM program's home page (http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5257) to find up-to-date information on the proposal deadline and to view the new program solicitation, which will be published at least three months before the proposal deadline.

[◀ Back to Status Search Results](#)

Download [Adobe Acrobat Reader](#) for viewing PDF files

Proposal Status | MAIN ▶

Organization: Hope College

Panel Summary #1

Proposal Number: 0849691

Panel Summary:

Panel Summary

Summary

Hope College Department of Computer Science plans to offer 6 four year scholarships, \$10,000 per year, to entering freshmen in the first two years of the proposed Scholarships for Pursuing Applications and Research in Computer Science (SPARCS) program. The program extends and complements two active CSEMS and S-STEM scholarship programs at the College by focusing solely on computer science majors. The panel suggests the PI resubmit with a more careful presentation of the proposal.

Intellectual Merit:

Strengths

The strong academic programs at Hope combined with the PIs experience with existing CSEMS and S-STEM scholarship programs and associated support structures are good indicators of success for the proposed program. The encouragement to participate in undergraduate research highlights the strong faculty commitment to the program as well as the involvement of all of the computer science faculty in various aspects of the program.

Concerns

The most significant weakness is the presentation style, which is sometimes disorganized, repetitive, and hard to understand. Another major concern is the ability of the lone PI to handle all of the tasks outlined in the proposal given his responsibilities for the two current scholarship programs. A division of labor with additional CO-PIs would be preferable and perhaps more realistic. Finally, the student support services and activities are effective only if students participate in them, and very few of them are required. The panel suggests formally building some of them into the program.

Broader Impacts:

Strengths

The personal contact with high school references was viewed as an effective recruiting strategy with both short and long term benefits.

Concerns

The assessment plan is too general and should be tied to the results of the previous CSEMS program.

◀ [Back to Proposal Status Detail](#)

Download [Adobe Acrobat Reader](#) for viewing PDF files

Proposal Status | MAIN ▶

Organization: Hope College

Review #1

Proposal Number: 0849691
Performing Organization: Hope College
NSF Program: S-STEM: SCHOLARSHIPS IN SCI, TECH, ENG, AND MATH
Principal Investigator: Dershem, Herbert L
Proposal Title: Scholarships for Pursuing Applications and Research in Computer Science
Rating: Good

REVIEW:

What is the intellectual merit of the proposed activity?

Intellectual Merit

Strengths û PI has past NSF funding experience with CSEMS Program and has achieved tremendous success in retaining students.

Selected students will receive scholarship support in the amount of \$10,000 with strong academic support , specifically mentoring, community building events, career exposure, research and internship opportunities. These programs provide the framework for student success according to the research.

Good recruitment plan which requires students to provide the name of high school teacher to serve as a reference. This serves as a good tool for future recruitment.

Underrepresented groups given preference û most ineligible because they are over awarded. This is a great problem to have as it is the reverse at most institutions.

Weakness û Single PI performing much of the work of the grant. Oversight team provides advice and evaluation but are not involved in the day-to-day program management.

What are the broader impacts of the proposed activity?

Good assessment and evaluation plan

If successful, project has the potential to provide considerable talent to the CS profession

Internships, professional mentoring and involvement in research provides a clear path to professional careers in CS or the pursuit of graduate studies.

Helps with the overall diversity initiatives at institution.

Summary Statement

Good proposal overall. Not sure that the details of the grant can be accomplished by a single individual.

◀ [Back to Proposal Status Detail](#)

National Science Foundation
4201 Wilson Boulevard, Arlington, Virginia 22230, USA
Tel: 703-292-5111, FRS: 800-877-8339 | TDD: 703-292-5090

[Privacy and
Security](#)

Proposal Status | MAIN ▶

Organization: Hope College

Review #2

Proposal Number: 0849691
Performing Organization: Hope College
NSF Program: S-STEM: SCHOLARSHIPS IN SCI, TECH, ENG, AND MATH
Principal Investigator: Dershem, Herbert L
Proposal Title: Scholarships for Pursuing Applications and Research in Computer Science
Rating: Good

REVIEW:

What is the intellectual merit of the proposed activity?

The University is trying hard to make a difference in student's lives. The support services for students are in place from the CSEMS grant. Students will attend a specially designed First-Year seminar; have intensive faculty advising, etc. Students will be recruited from high schools which have financially needy students. Female students will be targeted.

What are the broader impacts of the proposed activity?

Can 12 academically talented and financially needy students succeed in CS with a large scholarship made available to them? If this is true, the broader impact will be known.

Summary Statement

Data from the CSEMS grant is not always clear. In 2005 94% were retained at Hope but 100% were retained in the CSEMS fields. Nor is there any indication of how many of these students were CS majors for this new grant to build on it. The data on the % of females graduation in CS is said to be smaller than the national data, what is the national data. How is the second group being funded for their last year? Is this year six of the grant? CS workshops for HS students will not occur in time to recruit students for this grant.

◀ [Back to Proposal Status Detail](#)

Download [Adobe Acrobat Reader](#) for viewing PDF files

National Science Foundation
4201 Wilson Boulevard, Arlington, Virginia 22230, USA
Tel: 703-292-5111, FIRS: 800-877-8339 | TDD: 703-292-5090

[Privacy and Security](#)

Proposal Status | MAIN ▶

Organization: Hope College

Review #3

Proposal Number: 0849691
Performing Organization: Hope College
NSF Program: S-STEM: SCHOLARSHIPS IN SCI, TECH, ENG, AND MATH
Principal Investigator: Dershem, Herbert L
Proposal Title: Scholarships for Pursuing Applications and Research in Computer Science
Rating: Very Good

REVIEW:

What is the intellectual merit of the proposed activity?

Strengths

The institution is currently receiving a CSEMS and S-STEM grants with great success shown on the CSEMS. The proposal models the CSEMS project. A good student and academic support system is in place and will be enhanced. Good description of each program provided. The First Year Seminar course being geared to the participants and the undergraduate research have shown good results and will be maintained. The Academic Support Center will serve the participants well and the Computer Science workshops will add to the recruiting mix. The recruitment plan is well documented. Strong faculty commitment to the field with over 300 undergraduate co-authored publications with faculty since 1990.

What are the broader impacts of the proposed activity?

This project will help to increase the number of underrepresented students interested in the computer science. It will also enhance the partnership with the institution, area high schools and increase the awareness of the field to underrepresented groups. The assessment and evaluation plan would have benefited from base information for assessment. The information was presented in the CSEMS (number of majors, retention, etc) and that information could be used as baseline data for assessment in this plan.

Summary Statement

This was a very well written and supported proposal building off past successes of a CSEMS grant

[◀ Back to Proposal Status Detail](#)

Download [Adobe Acrobat Reader](#) for viewing PDF files

Proposal Status | MAIN ▶

Organization: Hope College

Review #4

Proposal Number: 0849691
Performing Organization: Hope College
NSF Program: S-STEM: SCHOLARSHIPS IN SCI, TECH, ENG, AND MATH
Principal Investigator: Dershem, Herbert L
Proposal Title: Scholarships for Pursuing Applications and Research in Computer Science
Rating: Very Good

REVIEW:

What is the intellectual merit of the proposed activity?

Hope has a proven record with a previous CSEMS grant and an S-STEM grant. In particular, they have a record with women and minorities that exceed institutional averages for minorities and national averages for women. All students take a freshman seminar aimed specifically at computer science students. They run a summer CS research program for students. They will rely on peer mentoring with upper level students.

What are the broader impacts of the proposed activity?

They have seen a marked decline in interest in computer science (as has virtually everyone else). . Scholarship money could, of course, help to reverse that trend. As an outreach activity, they will start doing workshops for high school students using Alice.

Summary Statement

This proposal focuses exclusively on computer science. They note that they have the capacity to handle additional computer science majors. They will strive for gender balance in the scholarships. Hope College has always been model for other institutions to emulate. They have a national reputation for doing things well. 40% of their students are interested in science or mathematics.

[◀ Back to Proposal Status Detail](#)

Download [Adobe Acrobat Reader](#) for viewing PDF files

Proposal Status | MAIN ▶

Organization: Hope College

Review #5

Proposal Number: 0849691
Performing Organization: Hope College
NSF Program: S-STEM: SCHOLARSHIPS IN SCI, TECH, ENG, AND MATH
Principal Investigator: Dershem, Herbert L
Proposal Title: Scholarships for Pursuing Applications and Research in Computer Science
Rating: Good

REVIEW:

What is the intellectual merit of the proposed activity?

Well-qualified PI and strong CS program. Experience with the current CSEMS and S-STEM projects are beneficial to proposed program, although the success of the current CSEMS program is unclear. Only having one PI and making him personally responsible for many of the details of the implementation seems unrealistic. The proposal would be strengthened by listing more CO-PIs and delegating the work.

Clear processes in place for recruitment and selection of participants, though no specific test score requirements are given. Recruitment activities already underway in anticipation of funding demonstrate a strong commitment to the program.

Effective support activities are available - peer mentoring, alumni mentoring, first year seminar, REU opportunities, social events, and colloquia. Many of these activities are optional and may need to be required to be effective for participants.

What are the broader impacts of the proposed activity?

The entire computer science faculty is involved with various activities of the program showing a strong buy in from the department.

Potential for significant impact on the enrollment in Hope College's computer science program, which continues to show declines.

Students are likely to participate in undergraduate research experiences at Hope or other colleges.

Summary Statement

Overall a strong proposal, but the presentation style is not clean - unclear and sloppy at times. Can the PI effectively direct this program in addition to the two current scholarship programs, CSEMS and S-STEM, for the next year in which all three are active?

◀ [Back to Proposal Status Detail](#)

Download [Adobe Acrobat Reader](#) for viewing PDF files

Proposal Status | MAIN ▶

Organization: Hope College

Review #6

Proposal Number: 0849691
Performing Organization: Hope College
NSF Program: S-STEM: SCHOLARSHIPS IN SCI, TECH, ENG, AND MATH
Principal Investigator: Dershem, Herbert L
Proposal Title: Scholarships for Pursuing Applications and Research in Computer Science
Rating: Good

REVIEW:

What is the intellectual merit of the proposed activity?

The program would fund two cohorts of six students majoring in computer science for the life of the project. They currently have some success with a CSEMS project and those participants, who would be seniors when this project starts, would be peer mentors for incoming freshmen. All 6 SPARCS students would be enrolled in a section of a FYS taught by the PI, along with 14 other students who have expressed interest in the field. Recruitment plans are somewhat sketchy, but do include inviting his teachers and students to some of the activities planned for SPARCS students, as well as computer science workshops for high school students based on Alice û which should help increase interest. There is some mention of assigning each student a faculty advisor and an alumni mentor from industry, but this is not spelled out in great detail. The proposal refers to making students aware of certain support services on campus and encouraging them to do certain things, but not much of this is built into the program.

What are the broader impacts of the proposed activity?

There is some mention of increasing participation from females and URM, but no real plan to detail how they will do this. They mention selection criteria, but do not specify what they are. The evaluation plan will be done by the same external evaluator used for CSEMS. This should provide objectivity as well as familiarity with the goals of the program.

Summary Statement

I found the first part of the proposal to be somewhat scattered and disjointed. The latter section which described the quality of the education programs was much more coherent and detailed numerous awards and innovative programs.

[◀ Back to Proposal Status Detail](#)

Download [Adobe Acrobat Reader](#) for viewing PDF files

Proposal Status | MAIN ▶

Organization: Hope College

Review #7

Proposal Number: 0849691
Performing Organization: Hope College
NSF Program: S-STEM: SCHOLARSHIPS IN SCI, TECH, ENG, AND MATH
Principal Investigator: Dershem, Herbert L
Proposal Title: Scholarships for Pursuing Applications and Research in Computer Science
Rating: Very Good

REVIEW:

What is the intellectual merit of the proposed activity?

Strengths: Cohort model and peer mentoring are strengths. The College has strong academic program in cs. Overall the College is ranked well nationally. They have shown good success in sending graduates on to advanced degrees. Faculty are well-qualified. Program is strong in undergraduate research.
Weaknesses: Not completely clear how well previous programs performed.

What are the broader impacts of the proposed activity?

Strengths: The recruiting and screening plan are solid.
Weaknesses: Previous projects have not uniformly successful. The number of students reached seems small for the dollars spent.

Summary Statement

Overall a solid proposal from a program with strong academic strengths.

[◀ Back to Proposal Status Detail](#)

Download [Adobe Acrobat Reader](#) for viewing PDF files

National Science Foundation
4201 Wilson Boulevard, Arlington, Virginia 22230, USA
Tel: 703-292-5111, FIRS: 800-877-8339 | TDD: 703-292-5090

[Privacy and Security](#)