

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

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**PI/PD Name:** Genele Rhoads

**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**

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**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.

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**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.

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**PI/PD Name:** Jose Ballesteros

**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

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**PI/PD Name:** Zhen Chen

**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

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**PI/PD Name:** Charles Spillner

**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

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**PI/PD Name:** Zhanjing Yu

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

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### **SUGGESTED REVIEWERS:**

Not Listed

### **REVIEWERS NOT TO INCLUDE:**

Not Listed

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## 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 14-1					<b>FOR NSF USE ONLY</b>	
NSF 12-529			08/12/14		<b>NSF PROPOSAL NUMBER</b>	
FOR CONSIDERATION BY NSF ORGANIZATION UNIT(S) (Indicate the most specific unit known, i.e. program, division, etc.)					<b>1457942</b>	
<b>DUE - S-STEM: SCHLR SCI TECH ENG&amp;MATH</b>						
DATE RECEIVED	NUMBER OF COPIES	DIVISION ASSIGNED	FUND CODE	DUNS# (Data Universal Numbering System)	FILE LOCATION	
08/06/2014	1	11040000 DUE	1536	071680730	01/14/2015 2:34pm S	
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)		
371530205						
NAME OF ORGANIZATION TO WHICH AWARD SHOULD BE MADE			ADDRESS OF AWARDEE ORGANIZATION, INCLUDING 9 DIGIT ZIP CODE			
Solano Community College			Solano Community College 4000 Suisun Valley road Fairfield, CA. 945343197			
AWARDEE ORGANIZATION CODE (IF KNOWN)						
7203577098						
NAME OF PRIMARY PLACE OF PERF			ADDRESS OF PRIMARY PLACE OF PERF, INCLUDING 9 DIGIT ZIP CODE			
Solano Community College			Solano Community College 4000 Suisun Valley Rd Fairfield ,CA ,945343197 ,US.			
IS AWARDEE ORGANIZATION (Check All That Apply) (See GPG II.C For Definitions)		<input type="checkbox"/> SMALL BUSINESS <input type="checkbox"/> FOR-PROFIT ORGANIZATION		<input type="checkbox"/> MINORITY BUSINESS <input type="checkbox"/> WOMAN-OWNED BUSINESS		<input type="checkbox"/> IF THIS IS A PRELIMINARY PROPOSAL THEN CHECK HERE
TITLE OF PROPOSED PROJECT <b>2+1 STEM Scholarship Program</b>						
REQUESTED AMOUNT \$	PROPOSED DURATION (1-60 MONTHS)	REQUESTED STARTING DATE	SHOW RELATED PRELIMINARY PROPOSAL NO. IF APPLICABLE			
622,715	60 months	07/01/15				
THIS PROPOSAL INCLUDES ANY OF THE ITEMS LISTED BELOW						
<input type="checkbox"/> BEGINNING INVESTIGATOR (GPG I.G.2)			<input type="checkbox"/> HUMAN SUBJECTS (GPG II.D.7) Human Subjects Assurance Number _____ Exemption Subsection _____ or IRB App. Date _____			
<input type="checkbox"/> DISCLOSURE OF LOBBYING ACTIVITIES (GPG II.C.1.e)			<input type="checkbox"/> INTERNATIONAL ACTIVITIES: COUNTRY/COUNTRIES INVOLVED (GPG II.C.2.j)			
<input type="checkbox"/> PROPRIETARY & PRIVILEGED INFORMATION (GPG I.D, II.C.1.d)						
<input type="checkbox"/> HISTORIC PLACES (GPG II.C.2.j)						
<input type="checkbox"/> VERTEBRATE ANIMALS (GPG II.D.6) IACUC App. Date _____ PHS Animal Welfare Assurance Number _____			<input checked="" type="checkbox"/> COLLABORATIVE STATUS			
<input checked="" type="checkbox"/> FUNDING MECHANISM <b>Research - other than RAPID or EAGER</b>			<b>Not a collaborative proposal</b>			
PI/PD DEPARTMENT		PI/PD POSTAL ADDRESS				
Mathematics & Science		4000 Suisun Valley Rd				
PI/PD FAX NUMBER		Fairfield, CA 945343197				
707-646-2093		United States				
NAMES (TYPED)	High Degree	Yr of Degree	Telephone Number	Email Address		
PI/PD NAME						
Genele Rhoads	MA	1992	707-863-7866	genele.rhoads@solano.edu		
CO-PI/PD						
Jose Ballesteros	DPhil	2011	707-863-7866	jose.ballesteros@solano.edu		
CO-PI/PD						
Zhen Chen	MS	1993	707-863-7866	zhen.chen@solano.edu		
CO-PI/PD						
Charles Spillner	DPhil	1973	707-863-7866	charles.spillner@solano.edu		
CO-PI/PD						
Zhanjing Yu	DPhil	1991	707-863-7866	zhanjing.yu@solano.edu		

## CERTIFICATION PAGE

### Certification for Authorized Organizational Representative (or Equivalent) or Individual Applicant

By electronically signing and submitting this proposal, the Authorized Organizational Representative (AOR) 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 conflict of interest (when applicable), drug-free workplace, debarment and suspension, lobbying activities (see below), nondiscrimination, flood hazard insurance (when applicable), responsible conduct of research, organizational support, Federal tax obligations, unpaid Federal tax liability, and criminal convictions as set forth in the NSF Proposal & Award Policies & Procedures Guide, Part I: the Grant Proposal Guide (GPG). 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).

### Certification Regarding Conflict of Interest

The AOR is required to complete certifications stating that the organization has implemented and is enforcing a written policy on conflicts of interest (COI), consistent with the provisions of AAG Chapter IV.A.; that, to the best of his/her knowledge, all financial disclosures required by the conflict of interest policy were made; and that conflicts of interest, if any, were, or prior to the organization's expenditure of any funds under the award, will be, satisfactorily managed, reduced or eliminated in accordance with the organization's conflict of interest policy. Conflicts that cannot be satisfactorily managed, reduced or eliminated and research that proceeds without the imposition of conditions or restrictions when a conflict of interest exists, must be disclosed to NSF via use of the Notifications and Requests Module in FastLane.

### Drug Free Work Place Certification

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

### Certification Regarding Lobbying

This 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 Certification Pages, the Authorized Organizational Representative (or equivalent) 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 Certification Pages, the Authorized Organizational Representative (or equivalent) 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.

### Certification Regarding Responsible Conduct of Research (RCR)

**(This certification is not applicable to proposals for conferences, symposia, and workshops.)**

By electronically signing the Certification Pages, the Authorized Organizational Representative is certifying that, in accordance with the NSF Proposal & Award Policies & Procedures Guide, Part II, Award & Administration Guide (AAG) Chapter IV.B., the institution has a plan in place to provide appropriate training and oversight in the responsible and ethical conduct of research to undergraduates, graduate students and postdoctoral researchers who will be supported by NSF to conduct research. The AOR shall require that the language of this certification be included in any award documents for all subawards at all tiers.



**CERTIFICATION PAGE - CONTINUED**

**Certification Regarding Organizational Support**

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is certifying that there is organizational support for the proposal as required by Section 526 of the America COMPETES Reauthorization Act of 2010. This support extends to the portion of the proposal developed to satisfy the Broader Impacts Review Criterion as well as the Intellectual Merit Review Criterion, and any additional review criteria specified in the solicitation. Organizational support will be made available, as described in the proposal, in order to address the broader impacts and intellectual merit activities to be undertaken.

**Certification Regarding Federal Tax Obligations**

When the proposal exceeds \$5,000,000, the Authorized Organizational Representative (or equivalent) is required to complete the following certification regarding Federal tax obligations. By electronically signing the Certification pages, the Authorized Organizational Representative is certifying that, to the best of their knowledge and belief, the proposing organization:

- (1) has filed all Federal tax returns required during the three years preceding this certification;
- (2) has not been convicted of a criminal offense under the Internal Revenue Code of 1986; and
- (3) has not, more than 90 days prior to this certification, been notified of any unpaid Federal tax assessment for which the liability remains unsatisfied, unless the assessment is the subject of an installment agreement or offer in compromise that has been approved by the Internal Revenue Service and is not in default, or the assessment is the subject of a non-frivolous administrative or judicial proceeding.

**Certification Regarding Unpaid Federal Tax Liability**

When the proposing organization is a corporation, the Authorized Organizational Representative (or equivalent) is required to complete the following certification regarding Federal Tax Liability:

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is certifying that the corporation has no unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

**Certification Regarding Criminal Convictions**

When the proposing organization is a corporation, the Authorized Organizational Representative (or equivalent) is required to complete the following certification regarding Criminal Convictions:

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is certifying that the corporation has not been convicted of a felony criminal violation under any Federal law within the 24 months preceding the date on which the certification is signed.

AUTHORIZED ORGANIZATIONAL REPRESENTATIVE		SIGNATURE		DATE
NAME <b>Cynthia K Garcia</b>		<b>Electronic Signature</b>		<b>Aug 6 2014 8:00PM</b>
TELEPHONE NUMBER <b>707-863-7866</b>	EMAIL ADDRESS <b>cynthia.garcia@solano.edu</b>		FAX NUMBER <b>707-646-2093</b>	

**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):

**Rhoads, Genele**

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

**Solano Community College**

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

**Benicia Unified School District, Benicia, CA**

**Buckingham Charter Magnet High School, Vacaville, CA**

**Canada College, Redwood City, CA**

**Connecticut College of Technology, Hartford, CT**

**Florence-Darlington Technical College, Florence, SC**

**University of Texas-Pan American, Edinburg, TX**

**Project Data:**

A. Major Discipline Code: **99**

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

C. Highest Degree Code: **A**

D. Category Code: \_\_\_\_\_

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

F. Audience Code: **M** \_\_\_\_\_

G. Institution Code: **PUBL**

H. Strategic Area Code: \_\_\_\_\_

I. Project Features: **1 2 5** \_\_\_\_\_

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

J. Undergraduate Students: **165**

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

L. College Faculty: **15**

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

N. Graduate Students: **0**

**NATIONAL SCIENCE FOUNDATION**  
**Division of Undergraduate Education**

**NSF FORM 1295: PROJECT DATA FORM**

**(cont'd) Other Institutions** involved in the project's operation:

**Winters High School, Winters, CA**

## PROJECT SUMMARY

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### **Overview:**

Solano Community College (SCC) is proposing a 2+1 STEM Scholarship Program (21SSP) to award 25 to 35 scholarships per year over a five-year period to academically-talented and financially needy students majoring in Astronomy, Biology, Biotech, Chemistry, CADD, Computer Science, Engineering, Geology/ Geography, Horticulture, Mathematics, Physics, Surveying, and Water/Waste Water treatment. All 21SSP Scholars will receive two years of support if they maintain a 3.0 GPA. If they transfer to a four-year institution in a STEM major, they will be awarded an additional year to continue their study at that institution, hence the program name 2+1. The 21SSP builds on existing student support services such as the MESA (Mathematics, Engineering, Science Achievement) program, the Academic Success Center, the Math Activities Center, Embedded Tutoring, and the First-Year Experience Program. Further, it develops new services such as the STEM Learning Center, faculty mentoring, peer tutoring, industry and business internships, academic success workshops, STEM clubs, professional development, participation in professional societies, and conference attendance. The objectives of the project are: 1) Award a total of 165 scholarships to academically-talented, financially needy students in the aforementioned majors; 2) Graduate or transfer at least 90% of the 21SSP Scholars; 3) Experiment with new student services that can be implemented by SCC and other institutions to improve student service infrastructure; 4) Explore ways to improve the STEM student pipeline from high schools through community colleges to four-year institutions by awarding scholarships to high school seniors who plan to attend SCC and to SCC students who plan to transfer to four-year institutions; and 5) Build partnerships with industry to provide more learning and internship opportunities for students and to improve our curricula to meet the industry needs.

### **Intellectual Merit :**

Many community college students come from economically-disadvantaged backgrounds and have to work to pay for college. They may not have sufficient time to study, resulting in a high attrition rate and longer time frame to completion. The S-STEM scholarships will provide the scholars with the needed financial resources to improve their success rate. By awarding 2+1 Scholarships to high school seniors, the project will help attract more high school graduates to attend community college which will lower the cost of higher education in this country and improve the efficiency of its higher education system, especially considering the fact that the cost of attending some private colleges approaches \$60,000 per year. By assessing the effectiveness of the existing student support services and experimenting with new ones, the project will contribute to the knowledge base of successful student intervention strategies.

### **Broader Impacts :**

The project will improve STEM education at SCC and help to broaden participation by underrepresented minorities and rural residents. Although the STEM programs at SCC are all very strong, the additional services to be implemented or developed in the project will help with student success. With a 16% African American and 23.3% Hispanic student population at SCC, the project will help to improve diversity in the STEM fields. Although Solano County is considered part of the San Francisco Bay Area, some of the areas are rural such as Winters and Dixon. The project will attract more rural students into STEM. The targeted 90% graduation rate for the 21SSP Scholars will require a tremendous effort from both the students and the College and the experience can be shared with other programs and institutions, contributing to the national effort to produce more STEM graduates. The partnership with industry/ business will help the project to reach beyond the education system.

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For font size and page formatting specifications, see GPG section II.B.2.

	<b>Total No. of Pages</b>	<b>Page No.* (Optional)*</b>
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) <b>(Exceed only if allowed by a specific program announcement/solicitation or if approved in advance by the appropriate NSF Assistant Director or designee)</b>	15	_____
References Cited	1	_____
Biographical Sketches (Not to exceed 2 pages each)	12	_____
Budget (Plus up to 3 pages of budget justification)	7	_____
Current and Pending Support	8	_____
Facilities, Equipment and Other Resources	1	_____
Special Information/Supplementary Documents (Data Management Plan, Mentoring Plan and Other Supplementary Documents)	11	_____
Appendix (List below. ) <b>(Include only if allowed by a specific program announcement/ solicitation or if approved in advance by the appropriate NSF Assistant Director or designee)</b>	_____	_____
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.

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Solano Community College (SCC), a member of the California Community College System, serves the population of Solano County and the community of Winters in Yolo County, and is located on the eastern side of the San Francisco Bay Area in California. The main campus is located in Fairfield, California. Two college centers are located in Vacaville and Vallejo. SCC also offers courses at Nut Tree Airport and Travis Air Force Base. In 2012-2013, SCC had 12,863 total students and 7,193 full-time equivalent students. Solano County encompasses the Vallejo-Fairfield Metropolitan Statistical Area (MSA), the most racially diverse MSA in the nation, according to a 2010 Brown University study. SCC's mission is to educate a culturally and academically diverse student population. SCC is committed to helping students achieve their educational, professional, and personal goals centered in transfer-level education, basic skills education, and workforce development and training.

## **1. Results from Prior NSF Support**

Solano Community College was notified July 23, 2014, that it received its first-ever NSF grant, ATE DUE-1405766. The project, entitled “Single-Use Bioreactor Systems Education and Training” (SUBSET), will expand SCC’s biotechnology program to incorporate single-use disposable bioreactor technology, develop curriculum and course materials, and dissemination to other colleges through the Bio-Link network. The project will develop short courses for students and incumbent workers and workshops for faculty. The program proposed in this application will collaborate with SUBSET in providing the proposed 2+1 STEM Scholarship Program (21SSP) Scholars with academic enhancing experience. The PIs of SUBSET, Prof. Jim DeKloe and Dr. Ed Re, will participate actively in the proposed project activities. The synergy created by the two projects will benefit both projects and enhance STEM education at SCC.

## **2. Project Objectives and Plans**

21SSP at Solano Community College would support academically talented, financially needy students to attain an associate’s degree in a STEM major and/or transfer to a four-year college/university. The objectives of the project are: 1) award a total of 165 scholarships to academically-talented, financially needy students; 2) graduate or transfer at least 90% of the 21SSP Scholars; 3) experiment with new student services that can be implemented by SCC and other institutions to improve student service infrastructure; 4) explore ways to improve the STEM student pipeline from high schools, through community colleges, to four-year institutions by awarding scholarships to high school seniors who plan to attend SCC and to SCC students who plan to transfer to four-year institutions; and 5) build partnerships with industry/business to provide more learning and internship opportunities for students.

### ***2.1. Award 165 scholarships to academically talented, financially needy students.***

SCC will award 165 scholarships to financially needy students who major in Astronomy, Biology, Biotech, Chemistry, CADD, Computer Science, Engineering, Geology/Geography, Horticulture, Mathematics, Physics, Surveying and Water/Waste Water treatment, removing the economic barrier that hinders them from attending SCC full-time and attaining their professional goals. Prospective and current

SCC students that are STEM majors will be eligible for scholarships for two years, allowing them to focus on their education. 21SSP Scholars will also be eligible to receive a scholarship for their first year of study at a four-year institution to which they transfer. The 165 scholarships will be awarded over a five-year period with each scholarship in the \$1,000 to \$5,000 range with an average of \$3,000, depending student's financial needs. The plan is to make 25 awards the first year, 35 each for the other four years and students can renew the scholarship for up to two more years.

## ***2.2. Graduate or transfer at least 90% of the 21SSP Scholars***

Attrition rates for STEM majors are historically high among community college students, especially among first generation college students. 21SSP programming will be structured to retain students who enter as a STEM major so that 90% of 21SSP Scholars receive an associate degree or transfer to a four-year college/university. Scholarships, support services, tutoring and mentoring components will assist the students to persist in their goal of becoming a STEM professional and will ensure that the 90% target is met.

## ***2.3. Implement new student services that lead to 21SSP Scholar success***

Scholar support services will include activities currently present on campus and available to a limited number of students and new services for the 21SSP Scholars. Details of these services are presented in Sections 4 and 7 of this proposal. The Mathematics, Engineering, Science Achievement (MESA) program academic and professional workshops currently provided only to MESA students will be extended to the 21SSP Scholars. These services are tutoring, professional development opportunities, academic workshops, and study groups. New services will include partnering of students with mentors, career planning and life skills coaching. Mentors will be faculty, industry, and peer mentors. According to Stephen, et al., senior first generation college students mentoring new first generation college students have significantly closed the first generation college student achievement gap<sup>1</sup>. This is a strategy that will be implemented and tested with this proposed project. If shown to yield positive results, it can be expanded to the general population.

## ***2.4. Improve the high school→community college→four year institution STEM student pipeline by providing scholarships to high school and transferring students.***

Partnering with area high schools, 21SSP will setup scholarships on their campuses and conduct workshops and seminars among faculty and students to recruit candidates for the scholarship. High schools representatives will serve on the Advisory Committee of 21SSP. The high schools will help to recommend and select scholars from their schools based on the criteria set in Section 6 and awards will be made in a ceremony during high school graduation. This will enhance the collaboration between SCC and its feeder high schools and attract more STEM students to attend community colleges. 21SSP will encourage the scholars to transfer to a four-year institution on a STEM major after two years of study at SCC by providing them with an additional year of support after they transfer. This program design enhances the STEM pipeline from high schools to four-year colleges via community colleges and increases the number of students who achieve a Bachelor's degree in STEM fields.

**2.5. *Build partnerships with local industry to provide students with internships and work-based learning opportunities.***

The SCC District is located in the San Francisco Bay Area, near the intersection of Interstates 80 and 680, major north-south and east-west corridors of travel. Because of its strategic Bay Area location, Solano College has geographic proximity to many employers. SCC's Small Business Development Center (SBDC) and Workforce Development and Continuing Education Division (WDCE) have developed relationships with biotechnology companies, research universities, and employers by offering a wide range of training and education services. SCC will utilize these existing and planned partnerships with industry to seek internship and learning opportunities for 21SSP Scholars. These partnerships will allow students access to STEM professionals who will share their educational and professional pathways and provide career guidance and professional mentoring opportunities for the students. Industry representatives will also serve on the 21SSP Advisory Committee. Additionally, SCC employs an Occupational Education Faculty Coordinator who oversees the work-based learning, internship placement opportunities at the college. Occupational Education provides the system through which 21SSP Scholars will receive college credit for their volunteering and internships.

**3. Significance of Project and Rationale**

Solano Community College has a diverse student population that is representative of the diversity in the community with 32.1% White, 23.3% Hispanics, 16% African American, and 14.8% Asian and Pacific Islanders. The School of Math and Science, serving over 5,000 students each semester, reflects that diversity. Many of the students come from economically-disadvantaged backgrounds and have to work to pay for college. They may not have sufficient time to study, resulting in a high attrition rate and longer time frame to completion. The S-STEM scholarships will provide the scholars with the needed financial resources and improve their success rate.

49.7% of the SCC students tracked for the six -year period ending Spring 2012 earned a degree or certificate or transfer to a four-year institution. However, for those who are college-ready as defined by passing the A-G requirements for UC and CSU in high school, 67.8% of them achieved that feat. We believe that our target of 90% graduation or transfer is achievable for these reasons: 1) these are talented students as defined in Section 6; 2) additional student support services will be provided for the 21SSP scholars as described in Section 7; and 3) according to Whalen and Shelley<sup>6</sup>, a \$1,000 award can increase the six year graduation/retention rate by 9%.

A total of 165 scholarships will be awarded to the 21SSP students (see table below) in this project. There will be 25 scholarships during the first year followed by 35 scholarships for each of the following four years. Full-time study at Solano Community College costs California residents \$12,081 if living at home as a dependent and \$18,858 if living independently and self-supporting through college. The average unmet need of a Solano Community College student is \$10,553. On average, students receive \$1,212 in scholarships, \$3,179 in grants, \$729 in BOGG fee waivers and \$2,671 for on-campus work study; totaling



\$7,792. The \$3,000 provided by the scholarship would satisfy the unmet need so that students do not need to work off campus.

Level	Amount	Number of 21SSP Awards				
		2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
Year One	<b>\$3,000</b>	15	15	15	15	15
Year Two	<b>\$3,000</b>	10	10	10	10	10
Transfer	<b>\$3,000</b>	0	10	10	10	10
Total Number of Awards		<b>25</b>	<b>35</b>	<b>35</b>	<b>35</b>	<b>35</b>
Award Totals		<b>\$75,000</b>	<b>\$105,000</b>	<b>\$105,000</b>	<b>\$105,000</b>	<b>\$105,000</b>

Year One scholarships include awards to high school seniors who plan to attend SCC. By awarding 21SSP scholarships to high school seniors, the project will help to attract more high school graduates to attend community college, which will lower the cost of higher education in this country and improve the efficiency of its higher education system, especially considering the fact that the cost of attending some private colleges approaches \$60,000 per year.

The project will improve STEM education at SCC and help to broaden participation by underrepresented minorities and rural residents. Although the STEM programs at SCC are all very strong, the additional services to be implemented or developed in the project will help with student success. With a 16% African American and 23.3% Hispanic student population at SCC, the project will help to improve diversity in the STEM fields. Although Solano County is considered part of the San Francisco Bay area, some of the areas are rural, such as Winters and Dixon. The project will attract more rural students into STEM.

**4. Activities on Which the Current Project Builds**

The 2+1 STEM Scholarship Program builds on existing student support services such as MESA (Mathematics, Engineering, Science Achievement) program, Academic Success Center, Math Activities Center, Basic Skills Initiative, embedded tutoring and supplemental instruction, First-Year Experience Program, UMOJA Scholars Program, Financial Aid, Extended Opportunity Program and Services (EOPS), Veteran’s Affairs Center, honor societies, and Transfer Center.

Mathematics, Engineering, Science Achievement (**MESA**) at SCC follows the nationally recognized, innovative, and effective academic development program. The MESA program at SCC is part of the MESA Community College Program (MCCP) and is administered thorough the California Community College Chancellor’s Office. MESA engages educationally and economically disadvantaged students so they excel in math and science and transfer to a four-year college/university in a math-based major. MESA produces math-based graduates by providing support such as academic and career workshops, peer to peer tutoring, hands-on competitions, leadership development, counseling, personalized

educational planning, transfer support, university/college visits, STEM-based clubs, research opportunities, and a community environment for students. The SCC MESA program assists students to transfer to four-year universities; 21 SCC MESA students transferred at the end of the spring 2014 semester. Many students in 21SSP will be eligible for MESA and will be encouraged to participate in MESA.

The **Academic Success Center (ASC)** facilitates academic success through services such as help navigating the enrollment process, workshops (i.e. study skills, exam preparation, research and writing papers); referrals to important campus support resources, financial aid, and transfer; and providing high quality faculty development opportunities and instructional resources.

Many math classes have a lab component which is completed in the **Math Activities Center (MAC)**. The MAC is a math study area for students to get help with their math assignments and to complete the math activities for their course. Students find a combination of peer tutors, staff, and faculty on duty to assist them all hours the MAC is open. Workshops held in the MESA Center and the Academic Success Center will complement the support provided in the MAC.

SCC employs **embedded peer tutors** in science and math classes. Their primary roles are to model successful student behavior, assist the instructor in answering questions, and run open labs during which students seek help. SCC instructors who have embedded tutors note that students often feel more comfortable seeking help from a peer. 21SSP Scholars will take classes that have embedded tutors and will be encouraged to become employed as embedded tutors to reinforce their knowledge of the subject and gain new insights by learning how to help others learn.

SCC will expand the use of **Supplemental Instruction (SI)** in Math and English classes starting Spring 2015. SI leaders provide additional instruction to students outside the classroom. The SI leaders attend lectures and with the instructor plan outside sessions to facilitate student learning.

The **First Year Experience Program (FYE)** is designed to provide students with a cohort-based, supported program while transitioning to college-level courses. FYE cohorts are provided with supplemental supports such as counseling, embedded tutoring, faculty advising, and team building exercises. The college has made a large investment in the program: A team of nine faculty and administrators attended a Learning Communities Institute in July 2014 with the goal of planning a major expansion of the program. 21SSP Scholars may participate in a STEM-themed FYE cohort.

The **Financial Aid Program** offers financial assistance with educational costs, including fee waivers, grants, loans, federal work-study, and a limited number of Emergency Book Loans. **Extended Opportunity Programs and Services (EOPS)** at Solano College provides financially and educationally disadvantaged students with support services that include counseling, financial assistance, referrals, Basic Skills tutoring, EOPS Lab space, EOPS Library, bus tours, EOPS Grant, and assistance towards the

purchase of required textbooks. EOPS is designed to increase the success rate of students that are affected by socio-economic or language barriers. 21SSP Scholars will receive guidance to navigate the Financial Aid system and those who are eligible will be enrolled in EOPS services.

The **Transfer Center** allows students to research information about UC and CSU systems as well other four-year universities. Students meet with university representatives. The Transfer Center also provides transfer admissions agreement (TAA) programs and coordinates field trips to four-year colleges and universities. Since many of the 21SSP Scholars will be preparing for transfer, the Transfer Center will provide critical support.

In addition to financial assistance, the 21SSP Scholars will receive support services that will include academic counseling, tutoring, priority registration, a STEM drop-in learning center housed in the Academic Success Center, Supplemental Instruction and Embedded Tutors in their classes, along with support from the Transfer Center. All 21SSP students will be informed of existing support services on campus, will receive support from those programs as appropriate, and will benefit from active and intrusive interventions, if needed.

## **5. Project Management Plan**

The 21SSP project will be managed by one PI and four co-PIs. The Principal Investigator for this project is Prof. Genele Rhoads, and the co-PIs are Dr. Jose Ballesteros, Dr. Charles Spillner, Prof. Zhen Chen and Dr. John Yu. Prof. Rhoads is a tenured professor in Mathematics and the SCC Basic Skills Coordinator in Math. She was an Interim Dean for the School of Mathematics when it was a separate division and the President of Solano County Mathematics Educators. She has many years of teaching experience and has experimented with innovations to improve student learning. She will be responsible for the overall performance of the project including project management, operation and reporting.

Dr. Jose Ballesteros is the current MESA Director and served as Interim Director for Student Development. He is a biologist by training and has both teaching and research experience. He will assist Prof. Rhoads in all aspects of the project, coordinate the synergistic activities between MESA and 21SSP, serve as a liaison with high schools, and work with Prof. Rhoads to recruit high school students for the scholarships.

Dr. Charles Spillner is a tenured professor in Chemistry, the SCC Academic Success Center Coordinator, MESA Academic Advisor, and Flex Cal (Staff Development and Activities) Committee Chair. He is instrumental in implementing many of the student success strategies at SCC. Dr. Spillner also worked in industry for many years. He will be responsible for implementing new student interventions and will work with industry/business for presentations and internships.

Prof. Zhen Chen is an adjunct professor in Computer Science and a visiting scholar at UC Berkeley. She was a tenured professor at Salt Lake Community College before working as a software engineer for 14

years. She will be responsible for developing the project website, project dissemination, and working with Dr. Spillner on industry/business partnerships.

Dr. John Yu is the Dean for the School of Math and Science. He was a program director at NSF before joining SCC and a project director for three NSF projects. He was also a tenured professor at Evergreen Valley College for 17 years. Dr. Yu is responsible for resolving administrative issues related to the implementation of the project plans and communicating with NSF and he will serve as a resource person for the project as he has much experience with NSF projects.

In addition to the PI and co-PIs, Peter Cammish, Dean of Institution Planning and Effectiveness, and Pei-Lin Van't Hul, Lead Research Analyst, will serve as project evaluators.

The PI and co-PIs are responsible for 21SSP scholar selection and mentor recruiting with help from Dr. Dorothy Hawkes, Professor Emeritus in Mathematics, Prof. Randy Robertson of Mathematics, Dr. Patsy Itaya of Anatomy/Physiology, Dr. Rennee Moore of Biology, Prof. Jim DeKloe and Dr. Ed Re of Biotech, Dr. Mark Feigner of Geology, Prof. Danielle Widemann of Geography, Dr. Melanie Lutz of Engineering/Physics, and Dr. Michael Gregg of Astronomy/Physics.

The project will be advised by the 21SSP Advisory Committee which includes: the PI and co-PIs; Robin Darcangelo, Associate Dean for Financial Aid; Barbara Fountain, Associate Dean for Admission and Records; Maire Morinec, Dean for the School of Applied Technologies and Business; Dr. Shirley Lewis, Dean and Chief Student Service Officer; Diane White, Vice President for Academic Affairs; two student mentors; two 21SSP scholars; two high school representatives; and two industry/business representatives.

## **6. Student Selection Process and Criteria**

Awards to students in 21SSP will be based upon completion of a student application and through a recommendation process. The application packet will include a personal essay, high school and/or community college transcripts, FAFSA data, and two letters of recommendation. The PIs and other interested faculty and staff will form a committee to read the applications and score using the rubric below. Based on the initial scores, selected candidates will then be interviewed by the committee for the scholarship.

The most common characteristics of students who will be selected are those committed to learning, enthusiastic about an academic challenge, willing to work hard, ability to self-manage, and having a desire to earn a college degree in a STEM field. 21SSP Scholars will be chosen among students with the following characteristics:

- A. College or career goal in a STEM field
- B. Full-time student

- C. Overall GPA greater than or equal to 3.0
- D. Pattern of responsible behavior
- E. Pattern of campus and/or community involvement
- F. Evidence of financial need
- G. First generation college student and/or first to pursue STEM degree in family
- H. Eligible for college level math
- I. Commitment to take a minimum of one STEM course per semester.

<b>21SSP Selection Criteria Rubric</b>			
	<b>2</b>	<b>1</b>	<b>0</b>
STEM goal	Clear evidence of STEM goal in personal essay	Some evidence of STEM goal, not well-defined	No STEM goal
Current HS or CC GPA	3.5 or greater	3.0 to 3.49	Less than 3.0
Pattern of responsible behavior	Recommendation letters indicate a strong pattern	Recommendation letters indicate a satisfactory pattern	Recommendation letters do not address
Campus/Community Involvement	Recommendation letters and personal essay indicate strong involvement	Recommendation letters and personal essay indicate some involvement	No involvement
Financial Need as indicated on FAFSA	High need	Some unmet need	Not eligible for Financial Aid
Math Preparation	Eligible for college level math	Eligible for Intermediate Algebra	Basic Skills level math placement

21SSP scholars will be monitored for effective progress toward their goal, remaining a full-time student, taking at least one STEM course per semester, and maintaining a 3.0 or higher GPA in order to receive the full 2+1 year scholarship.

**7. S-STEM Student Support Services and Programs**

New support services fall into three categories: Direct Academic Support, Building Academic Capital, and Enrichment. These types of support services have been used successfully in other STEM programs.<sup>7, 8</sup>

**7.1. Academic Supports**

Academic support directly impacts student learning and success at achieving educational goals.

- A. Priority registration will be provided for the 21SSP scholars so they will be assured of enrollment in their classes.

- B. There will be a 21SSP Counselor assigned to the cohort with specific expertise focused on STEM majors, who will provide academic advising, develop individual Student Education Plans (SEP) and help 21SSP scholars with goal planning that will include transfer plans and career paths.
- C. 21SSP scholars will receive academic coaching at the beginning of the program. A Summer Bridge by the STEM Counselor and faculty will be provided for students to develop study skills necessary for college success. One model for this is based on Donna O. Johnson's Guaranteed 4.0 Learning System<sup>8</sup>. The three-day Guaranteed 4.0 Workshop combines study methods with stress and time management techniques to provide an overall framework for academic success. The core emphasis of the curriculum involves developing strategies for classroom success: active listening skills during classroom instruction; self-efficacy and self-advocacy skills for working with college professors; and a note-taking system for classroom lecture, assigned reading and problem sets, and exams based on pre-conditions, repetition, and effecting information input.
- D. Currently there is no STEM Learning Center at Solano Community College. A STEM Learning Center will be established in the Academic Success Center (ASC) at SCC. The ASC provides Drop-In Labs for math and writing with support from Basic Skills and offers one-hour Success Workshops on topics such as Test Anxiety, Balancing Your Life, Study Skills, and Life Skills. The ASC also provides space and technology for students to study individually or in groups.
- In addition to the support provided by the ASC, the STEM LC will provide Drop-In Labs staffed by science instructors.
  - Success Workshops specifically targeting the 21SSP scholars will be provided by faculty.
  - Tutoring by embedded tutors in math and science classes will be offered in the STEM LC and in the SCC Tutoring Center.
  - Drop-in and class specific study sessions lead by peer tutoring will be provided for advanced science courses since most of the students who have previously completed these courses have already transferred. For such courses (Physics, Organic Chemistry, Dynamics and Circuits), a Peer Instruction Model will be adopted. In this model, 21SSP students who are doing well in the classes will be hired as peer instructors who will be working closely with the course instructors to provide additional support for students.
  - Effort will be made to provide access into the evenings in addition to the daytime access (Late night study halls).
  - In the future, a dedicated space for the STEM LC will be built as part of a large College-wide expansion and renovation resulting from a building bond, Measure Q, passed by the citizens of Solano County in 2012.
- E. Monitoring success of 21SSP scholars toward their educational and career goals will be conducted each semester during their participation in the program.

### ***7.2. Building Academic Capital***

Building academic capital involves adding to the 21SSP Scholars academic experience outside of the classroom. It creates a bridge between academics and career and involves the wider community in their experience as 21SSP scholars.

- A. Annual 21SSP Scholar Retreat and Poster Symposium. Every fall semester, all scholars and their parents will be invited to an annual scholar retreat. The retreat will include an orientation to the 21SSP Program, the academic and support services available to scholars, and an overview of the STEM educational and career pathways to help students and their families understand the benefits of STEM careers and the commitment needed for students to succeed. The event will also provide an opportunity for parents to meet the faculty mentors, other STEM faculty, and staff.
- B. A mentoring component for 21SSP Scholars will be included in the program. Mentors will include more advanced peers, STEM graduate students, STEM faculty and other STEM professionals. These mentors will provide one part of the support offered by the program. At a fall mentoring kick-off luncheon, new scholars will be introduced, and students and mentors will be given an orientation to the mentoring program, including the expectations and responsibilities of scholars. Mentors will be expected to meet with their mentees either individually or in groups to review Student Educational Plans, to discuss academic progress, to help devise strategies to improve student performance, to help connect students with resources, to provide career counseling, and to help students in completing applications for transfer to a four-year university, as well as applying for scholarships and internships. Mentoring has been consistently ranked highest by student surveys as one of the most useful support programs.<sup>9</sup> A study by Stephens, et al.<sup>1</sup> has shown that mentoring of first generation college student by peers was effective and this project will test it.
- C. The program will use the 21SSP scholars as embedded tutors in STEM classes. Besides helping other students they will be helping themselves by reinforcing their learning in the subject they are tutoring.
- D. The 21SSP Scholars will maintain connections with their high schools by giving presentations at their high schools to prospective STEM students. In this role they will be STEM Ambassadors that will be an extension of an existing outreach program at SCC.
- E. Participate in STEM community activities such as volunteering at local science museums, acting as judges at local middle and high school science fairs and STEM outreach at local K-12 schools by providing science shows.

### **7.3. Enrichment**

Enrichment will provide the encouragement and motivation for the 21SSP scholars to keep on track and maintain focus on their academic and career goals in a rigorous STEM academic program.

- A. Faculty supported STEM-related student clubs will provide opportunities for social interaction and fellowship with the other 21SSP scholars and other STEM enrichment activities.
- B. Field trips to Bay Area science museums (such as the Lawrence Hall of Science, the Exploratorium, the California Academy of Science and the Lindsay Wildlife Museum), 4-year universities, government and private sector research labs and STEM based companies will be provided through the program.
- C. Attendance at professional conferences and other science meetings and lectures will be organized for the 21SSP scholars. Student leadership retreats, professional conferences, and participation as

student members in professional societies build student leadership skills and motivation while developing relationships with other students and industry professionals.

- D. The 21SSP scholars will organize a “Science Day” on campus that will include hands-on displays and demonstrations.
- E. Research and internship opportunities will be promoted and facilitated by the STEM faculty and staff. This will be supported by the SCC Career Center<sup>9</sup> that will provide help with applications, resumes and interviews on an individual and group basis.
- F. A SCC webpage and other social media pages (Facebook, etc.) will be established to promote and publicize the program and the accomplishments of our 21SSP scholars.
- G. A STEM SPEAKER series will be established for the 21SSP scholars. This will include some or all of the following.
  - Lunchtime with a STEM professional from education, government or industry.
  - Seminars by STEM professionals from education, government or industry.
  - Presentations by SSC educated STEM professionals.
- H. Workshops on the different career pathways for the STEM majors will be provided by the SCC Career Center. The center offers one-stop services to include career exploration and skills assessment, labor market information and free employment assistance to all Solano College students and alumni in obtaining full or part-time employment on and off campus.
- I. Economic needs will be partially satisfied by the 21SSP Scholarships but in addition some 21SSP Scholars will be placed in STEM appropriate work/study positions at SCC.

## **8. Quality Educational Programs**

The School of Math and Science, the largest at Solano Community College, serves approximately 5,000 students in Astronomy, Biology, Biotech, Chemistry, Engineering, Geology/Geography, Horticulture, Mathematics, Physics, and Water/Waste Water treatment with 47 full-time faculty and staff and over 100 adjunct faculty. In addition, the School of Applied Technologies and Business also offers many technical career programs, three of which, Computer Science, CADD, and Surveying, are included in this project. SCC produces one of the highest transfer rates in the 112-campus California community College system with 33% while the CCC system as a whole averages 13.6%. Many of our STEM students transfer to UC Davis, UC Berkeley, Sonoma State, Sacramento State, San Jose State, CSU East Bay, and other four-year institutions.

Our largest department, Mathematics, offers a full range of courses from developmental math to differential equations and linear algebra. Our math faculty is active and leaders in their field in the California Community Colleges. One of our math professors, Dr. Joe Conrad, is the President of the California Mathematics Council for Community Colleges and Prof. Susanna Gunther, another math faculty member, was the Past President. The PI of this project, Prof. Genele Rhoads, is the President of the Mathematics Educators of Solano County. With such dedicated faculty, our math students have achieved much. Nick Sherman, a second year student, won first place with his poster on variational methods in mechanics in a California Community College math conference. Our student math club participates annually in the American Mathematical Association of Two-Year Colleges Student



Mathematics League national contest. This year, 17 students participated in the contest and our team finished among the top one-third of the 190 colleges.

Our Biology/Biotech Department is one of the largest among area community colleges with 11 full-time faculty. The department offers classes in general biology, cellular and molecular biology, pre-health, marine and environmental biology, and biotech. These classes give students the knowledge and laboratory skills required to transfer to a university as a major in the biological sciences. The pre-health program also prepares students to get into registered nurse programs and the biotech program provides students with practical skills to become lab technicians. Our anatomy course in the pre-health program is cadaver-based and has such a great reputation that many students from area four-year institutions come to SCC to take the course. As a result, our pre-health program has reached its physical limitation and fortunately, a plan to build a new anatomy lab is in the works. Our biotech program, under the stewardship of Prof. Jim DeKloe and Dr. Ed Re, pioneered the teaching within the manufacturing sector of the biotechnology industry; this was the component of the industry that built facilities in California. The SCC Industrial Biotechnology curriculum has two-tracks: a program with a certificate as a main option and an A.S. degree as an alternative. SCC exported the biomanufacturing curriculum to other California colleges. As mentioned earlier, the biotech program recently received SCC's first NSF grant to pioneer curriculum in the use of disposable bio-reactors.

The Chemistry department is our third largest department. With six full-time faculty, it is one of the largest in area community colleges. The program offers an associate's degree in science, and provides students with courses that meet lower division requirements for many STEM majors such as engineering, physics, chemistry, biology, and nursing. The department has grown over the last ten years. Its students gain the theoretical knowledge and lab skills necessary to complete their upper division studies and prepare them for a successful STEM career.

Although our other departments are relatively small, they have produced strong results and provide



*Figure 1. A "Rubens' tube" (above), designed and built by students at SCC.*

important access to our students. For example, this summer, two of our engineering students are working at Stanford University and Colorado School of Mines, one as an intern at the Stanford Linear Accelerator Center and the other as a participant of the NSF REU program. James Morad, a SCC alumni and Ph.D. student in Physics at

UC Davis, designed the Rubens' Tube, which graphically shows the relationship between sound waves and pressure in a tube (Figure 1), while attending SCC.

Our Water/Waste Water Treatment program, which offers a certificate and associate's degree, has produced many, much-needed water/waste water treatment technicians in the San Francisco Bay Area in collaboration with the Bay Area Consortium for Water and Wastewater Education (BACWWE) and is one of the best in the state. Our Horticulture program is unique in the SF Bay area and provides many of the landscaping professionals in the area.

Recognizing the excellence of our programs, the voters of Solano and Yolo Counties approved a \$348 million bond to enhance our STEM and other programs. The first phase of the bond will include two STEM buildings, one at the main campus for Science and Math and the other at SCC Vacaville Center focusing on Biotech and Science. The new buildings will include at least ten new labs, several new classrooms and a STEM Learning Center. The new labs and classrooms will provide state-of-the-art facilities in STEM fields and instructional technologies and further enhance SCC's STEM programs. The STEM Learning Center will provide new advising, tutoring and mentoring services to STEM students and enhance our students' experience by building a more closely knitted STEM learning community that students can call it home while on campus. In addition to infrastructure, we are also investing in human capital and last semester, we hired three new tenure-track faculty, one in anatomy, one in Chemistry, and one in Physics/Astronomy.

The quality of our programs of also attracted Dr. John Yu to our school as its dean. Dr. Yu has more than 17 years of teaching experience, published more than 30 papers in engineering and education, brought three NSF projects to Evergreen Valley College where he used to teach and served as Program Director at the NSF, one of the very few from a community college. His vision is to build one of the best STEM divisions in the San Francisco Bay area by updating our facilities, expanding our offerings, developing new programs, and attracting external funding to improve instruction and provide more service to our students. Dr. Yu is a co-PI for this project.

## **9. Assessment and Evaluation**

It is important for the evaluation process to be able to answer a number of formative and summative questions relating to the performance of the initiative to change the lives of students taking the first step in a STEM career. Formative evaluation will allow us to monitor effects of the program as it is happening, enabling us to make changes as the program is being run. Summative evaluation will look at the end results of the program, in particular the effects on participating students.

### **9.1 *Formative Evaluation***

Formative evaluation will take place every quarter. This is self-evaluation of the ongoing activities.

Research areas	Assessment actions	Responsible party
<p>Program participation</p> <ul style="list-style-type: none"> <li>How many students apply, are accepted and enroll in the program?</li> <li>What are the socio-economic and demographic attributes of participants?</li> </ul>	<p>Using Banner (our database system) data, Office of Institutional Research will count students at each step of the application process. Examination of areas of disproportionate impact in the recruitment process.</p> <p>Using data from Banner, analysis of student socio economic and demographic attributes in comparison with other incoming students.</p>	<p>Evaluators Technology Services Office of Admissions and Records</p>
<p>Support services</p> <ul style="list-style-type: none"> <li>What support services are offered?</li> <li>What is the perceived effectiveness of services?</li> </ul>	<p>Program manager to produce written description of support services being offered.</p> <p>IR will develop online survey of participants examining perceived effectiveness of support services.</p>	<p>PI and Co-PIs Evaluators</p>
<p>Program efforts and costs</p> <ul style="list-style-type: none"> <li>Does the program adhere to the timeline?</li> <li>What are the startup costs?</li> <li>Do fiscal forecasts match with program deliverables?</li> </ul>	<p>Periodically gain consensus and agreement on project planned efforts and financial feasibility.</p>	<p>Director of Fiscal Services PI and Co-PIs Evaluators</p>
<p>Implementation issues</p> <ul style="list-style-type: none"> <li>What are the risks and issues associated with implementation?</li> </ul>	<p>All principal program participants will have access to a risk and issue log that is reviewed and discussed periodically.</p>	<p>PI and Co-PIs Technology Services Evaluators</p>

## 9.2 Summative Evaluation

Summative evaluation has a strong focus on the outcomes of the project. Since the project will have a strong positive effect on the lives of students this component will evaluate that effect. It is important to track students using a cohort model through all enrolled courses for each semester. To facilitate this, it is important that all students are identified within the Banner system.

Research Area	Assessment actions	Responsible party
<p>Student retention</p> <ul style="list-style-type: none"> <li>How well are participants retained throughout program?</li> </ul>	<p>Using data from Banner develop a multiple semester retention model that can be analyzed by a variety of demographic and curricular attributes.</p>	<p>Evaluators Technology Services</p>

Research Area	Assessment actions	Responsible party
Student success <ul style="list-style-type: none"> <li>Are students passing key courses?</li> <li>Are students maintaining adequate GPA?</li> </ul>	Using data from Banner develop a multiple semester, multiple course student success model. Allow data to be analyzed by a variety of curricular and demographic attributes.	Evaluators Technology Services
Academic outcomes <ul style="list-style-type: none"> <li>Are students transferring to other institutions?</li> <li>Are students obtaining successful academic outcomes?</li> <li>How long does it take to reach a successful academic outcome?</li> </ul>	Using data from National Student Clearinghouse examine participants rate of transfer to other institutions as well as declared major.  Using California Community College Chancellors Office definition of successful outcomes develop and analysis model for academic outcome attainment that can be viewed by a variety of demographic attributes as well as time taken.	Evaluators Technology Services Office of Admissions and Records
Student engagement <ul style="list-style-type: none"> <li>Are students engaged in course delivery?</li> <li>Are students engaged in support services?</li> </ul>	Using an online survey IR will report on student and faculty perceived participation in STEM courses and program support services.	Evaluators Technology Services

## 10. Dissemination

The most effective dissemination plan is to incorporate the dissemination strategies into the earliest project planning stages. The dissemination plan for the 21SSP proposal includes:

- Share findings at the NSF STEM PI meeting each year.
- Create a webpage on the SCC website to describe 21SSP with a question and answer section.
- Publicize activities and successes about 21SSP in SCCD Press Releases.
- Implement a website that will have detailed information of 21SSP, application procedure, requirement, and application form.
- Interview successful 21SSP students and make a short video to share their 21SSP experience. Link the video to the 21SSP website and SCC website.
- Print and distribute 21SSP information brochures to targeted high schools, prospective students.
- Give workshops and seminars to regional high schools, local companies and SCC student services personnel, including Counseling, Financial Aid, and Admissions and Records.

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2. National Math + Science Initiative (2014). *Increasing the achievement and presence of under-represented minorities in STEM fields*. [www.nms.org](http://www.nms.org)  
<https://nms.org/Portals/0/Docs/whitePaper/NACME%20white%20paper.pdf>
3. California Community College Chancellors Office (2014). *Student Success Scorecard: Solano Community College*.  
<http://scorecard.cccco.edu/scorecardrates.aspx?CollegeID=281#home>
4. 2013 SCC Student Equity Report, Solano Community College, Fairfield, California.
5. Chen, X. (2013). *STEM Attrition: College Students' Paths Into and Out of STEM Fields (NCES 2014-001)*. National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.  
<http://nces.ed.gov/pubs2014/2014001rev.pdf>
6. Whalen, D.F., and Shelley, M.C.II. (2010). *Academic success for STEM and non-STEM majors*. *Journal of STEM education* 11(1):45-60.
7. Enriquez, Amelito, Lipe, Catherine B., and Price, Brandon (2014), *Enhancing the Success of Minority STEM Students by Providing Financial, Academic, Social, and Cultural Capital*, 121st ASEE Annual Conference and Exposition, Paper ID #8693, Indianapolis, IN.
8. Catalano, George D. and Catalano, Karen (2004). *The Binghamton Success Program: Institutionalizing a Minority Engineering Program*, 34th ASEE/IEEE Frontiers in Education Conference, Session S1G, Savannah, GA.
9. Kendricks, Kimberly D., Nedunuri, K. V., and Arment, Anthony R. (2013). *Minority Student Perceptions of the Impact of Mentoring to Enhance Academic Performance in STEM Disciplines*, *Journal of STEM Education: Innovations & Research*, Vol. 14 Issue 2, p38-46
10. National Research Council (2012). *Discipline-Based Education Research: Understanding and Improving Learning in Undergraduate Science and Engineering*. S. R. Singer, N. R. Nielsen and H. A. Shweingruber, Editors, Washington, DC, National Academies Press.
11. National Research Council and National Academy of Engineering (2012). *Community Colleges in the Evolving STEM Education Landscape: Summary of a Summit*. S. Olson and J. B. Labov. Washington DC: The National Academies Press.
12. OECD. (2011). *Against the Odds: Disadvantaged Students who Succeed in School*, PISA, OECD Publishing. Doi: <http://dx.doi.org/10.1787/9789264090873-en>

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**(a) Professional Preparation**

Napa Valley College	Computer Studies	A.S. 1987
University of California, Davis	Mathematics	B.S. 1990
University of California, Davis	Mathematics	M.A.T. 1992
California Clear Single Subject Teaching Credential		Mathematics 1992

**(b) Appointments**

Mathematics Instructor, Solano Community College, January 1997 – January 2013 and August 2013 – present.  
Basic Skills Initiative Math Coordinator, Solano Community College, August 2013 – present.  
Interim Dean of Mathematics, Solano Community College, January 2013 – July 2013.  
Math/Science Division Student Learning Outcome Trainer, August 2007 – May 2009.  
Mathematics Adjunct Instructor, Solano Community College, January 1993 – December 1996.  
Mathematics Adjunct Instructor, Napa Valley College, August 1991 – December 1996.

**(c) Publications**

“Get Out of Jail Free—Is it Likely?” CMC ComMuniCator, Volume 31, Number 4.

**(d) Synergistic Activities**

Curriculum development:

Math 112—Algebraic Reasoning. This course will be piloted in fall 2014 as an alternative Intermediate Algebra course for Humanities students who intend to take Statistics or Math Ideas as a terminal math course.

Math 018—Exploring Math and Science Teaching. The course was articulated with MAST I, the first course in the Math and Science Teaching program at University of California, Davis. As part of the course, students volunteer in elementary or secondary school classrooms. The course was offered twice, then cancelled due to low enrollments.

‘Statistics for Teachers’ and ‘Mathematics Tutoring’ were two other courses that I developed, but neither attracted enough students to become permanent offerings.

Conference Presentations:

“Statistics Projects”, CMC Asilomar Conference, December 2003

“Box-and-Whisker and Stem-and-Leaf Plots”, CMC Asilomar Conference, December 2004

“Buffon’s Needle Problem”, CMC Asilomar Conference, December 2005

“Neato, Bosso, Keno”, MESC conference—*Mathematics is Fluid*, April 2005

“Grant Writing”, MESC conference—*Pi is More than Delicious*, February 2007

“Graphing, A Relationship that Lasts”, MESC conference—*The Certainty of Math in Uncertain Times*, February 2010

“Make It – Take It, Accordion Books”, MESC conference – *Preview Coming Attractions in Math*, February 2011

“Geometry Through Paper Folding”, MESC conference – *Math: To Enrich and Inspire*, April 2012

President, Mathematics Educators of Solano County (MESC). I have coordinated the Solano County Math Steeplechase, a problem-solving competition. I helped plan the annual mini-conference which was held at Solano six times.

Advisor, Alpha Gamma Sigma, Alpha Theta Chapter of the California Community College Honor Society

Continuing Education:

During winter and spring quarters of 2005, I returned to the University of California at Davis to take 20 more units of upper division mathematics, statistics, and probability courses as part of a sabbatical leave project.

**(e) Other Affiliations (no collaborators to report)**

Participant in the California Articulation Partnership Program (CAPP) with Winters High and Solano Community College, Vacaville Center.

Mathematics Consultant and Instructor for the UC Davis Mathematics Project from summer 2002 through 2007. In that capacity, I taught three summer institutes for teachers on the Statistics, Data Analysis, and Probability state standards and I presented monthly workshops at the Solano and Yolo county Offices of Education.

Mathematics Consultant and Teacher Leader for Vallejo City Unified School District as part of a federal partnership grant that was developed to improve the teaching and learning of algebra in that district, 2006 – 2008.

# Jose M. Ballesteros Ph.D.

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## A) Professional Preparation

Doctor of Philosophy (Ph.D),  
Molecular, Cellular & Integrative Physiology  
University of California, Davis, Davis, CA  
Dissertation Title: The role of retinal activity and genetic cues in retino-geniculate projection development.  
Received March 2011

Bachelor of Science (B.S),  
Biology, Concentration in Physiology  
San Francisco State University  
Received May 2004

## B) Professional Experience

**Interim Director**, Student Development and Mathematics Engineering Science Achievement (MESA) program, Solano Community College, August 2013-Current.

Serving as the director for student development and MESA program; will be full-time MESA Coordinator after July 2014. These roles have allowed me to work with the students participating in student government and students aiming to transfer in a science, technology, engineering or technology major. Duties include advising students, directing services, administering budgets, providing periodic reporting and managing staff.

**Adjunct Professor**, Solano Community College and Cosumnes River College, Spring 2011-Summer 2013

Taught Human Anatomy (Bio 5) and Human Anatomy and Physiology (Bio 430 and 431) that covers cellular physiology, systemic physiology and anatomy using models and cadavers. Led class lecture and laboratory teaching students preparing to apply for nursing programs and for transfer. Duties included assessing student learning and assisting students with study strategies.

**Adjunct Professor**, Napa Valley College, Spring 2012

Taught Human Biology (Bio 105) that covered a survey of anatomy, physiology, tissues and organ systems. The class is aimed to prepare students to take anatomy and physiology. Duties included assessing student learning and assisting students with study strategies.

**Graduate Student Researcher**, University of California, Davis, 2005-present

Principal Investigator: Leo M. Chalupa, Ph.D. and Barbara Chapman Ph.D.

Studying the role of cholinergic innervations, molecular cues and spontaneous retinal activity play in visual system development in the mouse model.



**Graduate Student Researcher**, University of California, Davis, 2004-2005

Principal Investigator: Phyllis M. Wise, Ph.D. Examined female reproductive aging by investigating changes in dendritic spines in the medial preoptic nucleus between cycling and non-cycling animals.

**Undergraduate Researcher**, San Francisco State University, 2001-2004

Principal Investigator: Christopher Moffatt, Ph.D. The environmental regulation of reproductive physiology and behavior to reproductively stimulating and inhibiting chemosignals was investigated in the mouse model (*Mus musculus*).

### C) Publications

Rubin, C., van der List, D., Ballesteros, J., Goloshchapov, A., L.M. Chalupa and B.X. Chapman. Mouse mutants for the nicotinic acetylcholine receptor and neurodegeneration response genes. PLoS One 6(4):e18626.  2 subunit of

Sun, C., Warland, D.K., Ballesteros, J., van der List, D. and L.M. Chalupa (2008). Retinal waves in mice lacking the  2 subunit of the Academy of Sciences 105(36):13638-43.

Ballesteros, J., Van Der List, D. and L. Chalupa. (2005) Formation of eye-specific retinogeniculate projections occur prior to the innervation of the dorsal lateral geniculate nucleus by cholinergic fibers. *Thalamus and Related Systems* 3(2):157-63.

Reyes, R., Mendoza, J., Ballesteros, J. and C. Moffatt. (2004) Male chemosignals inhibit neural responses of male mice to female chemosignals. *Brain Research Bulletin* 63(4):301-8.

### D) Academic Service

Faculty Advisor, Society for Advancement of Chicanos and Native Americans in Science (SACNAS) club, Solano Community College, Spring 2013-Present

Faculty Mentor, National Science Foundation STEM Scholarship, Cosumnes River College, Spring 2013

Founding Member, Society for Advancement of Chicanos and Native Americans in Science (SACNAS), Davis, CA 2009-2010

Planning Committee Member, Chicano/Latino Graduation Ceremony at University of California, Davis, CA 2008-2009

Student Representative, Molecular, Cellular and Integrative Physiology Graduate Group, University of California Graduate Student Association, 2008-June 2010

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#### **A) Professional Preparation**

**Master of Science in Electrical Engineering.** Southern Illinois University at Carbondale. 1990 – 1993

**Bachelor of Science in Electrical Engineering.** Shandong University of Science and Technology, Shandong, People's Republic of China. 1978 - 1982

#### **B) Appointments**

**Professor,** School of Career Technical Education and Business, Solano Community College. 2013 – Present.  
Teaches computer science, computer information system, and computer network classes.

**Professor (Tenured),** Department of Engineering, Salt Lake Community College. 1993-1997.  
Taught engineering and computer science such as Computer Architecture, C Programming, Electric Circuits, Electronic Measurements courses.

**Sr. Staff Software Engineer,** BROADCOM Corporation. 2007 – 2012  
Software development for wireless devices.  
Wireless LAN and Bluetooth coexistence test development.  
Wireless device validation system calibration program development.

**Sr. Software Engineer,** LSI Corporation. 2001 – 2007  
Software development for ADSL modem.  
Embedded software development for DVD Recorder Processors.  
Development for Automatic DVD Recorder/Player AV quality test program.  
Created MPEG video and WAV audio AV test patterns.

**Software Engineer,** PLX Technology Inc. 1997 – 2001  
Test software development.  
Development for embedded software and host control program to enable the communication between the PCI I/O Processor's Reference design board and PC host.

**Teaching Assistance**, Department of Electrical Engineering, Southern Illinois University.  
1990 – 1992

**C) Synergistic Activities**

Served on Salt Lake Community College Diversity Committee, 1995 - 1996

National Science Foundation TUES proposal review panelist, April, 2011

National Science Foundation ATE proposal review panelist, November, 2011

Visiting Scholar at University California Berkeley, Summer 2014.

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**A) Professional Preparation**

University of Utah, Salt Lake City, Utah, Organic Chemistry, 1969-1973, Ph. D. 1973  
University of California, Davis, 1965-1969, Chemistry, B. S. 1969

**B) Appointments**

**Professor (Tenured)**, Department of Chemistry, Solano Community College, Fairfield, CA, 8/00 –present

Teacher for the first two years college chemistry courses such as general chemistry and one and two semester allied health chemistry courses. Developer of a one semester Allied Health Chemistry course.

**Principal Research Chemist**, AstraZeneca, Inc. (formerly Zeneca, Inc.), Richmond, CA, 6/96 – 7/00

Study director and product manager for regulatory field studies and market basket studies. Planned and completed, to strict timelines, complex agricultural field studies across the United States. Coordinated the activities between the commercial, regulatory, field research and analytical research personnel. Coordinated and evaluated work with outside contract facilities.

**Senior Research Chemist**, ICI Americas, Inc., Richmond, CA, 8/86 - 6/96 &

**Senior Research Chemist**, Stauffer Chemical Company, Mountain View, CA., 11/76 - 8/86

Study director/team lead for <sup>14</sup>C-pesticide laboratory/field animal/plant metabolism and environmental fate studies. Supervised four employees conducting up to six studies annually. Required study design, protocol and report writing, training, technical guidance and study management.

**C) Synergistic Activities**

Academic Success Center Coordinator, Solano Community College, 7/13-present.  
Plan and coordinate student success and faculty development workshops at Solano Community College.

Faculty Flex Cal committee chair, a subcommittee of the Faculty Senate (2005-present)  
SCFA PAC committee member (2008-present)

Math Engineering Science Achievement (MESA) Student Club advisor (2001-2006)

**D) Sample Presentations and Publications**

*Identification of fonofos metabolites in Lатуca sativa, Beta vulgaris, and Triticum aestivum by packed capillary flow fast atom bombardment tandem mass spectrometry, J Agric Food Chem. 2002 Mar 27;50(7):1922-8.*

*A method for estimating half-life of pesticide degradates in soil and water. Poster session Second SETAC World Congress (16<sup>th</sup> Annual Meeting) Vancouver, British Columbia, Canada, 1995*  
*Metabolism of O-ethyl-S-phenyl ethylphosphonodithioate (Fonofos) in Rotational Crops AGRO 21 presented at the 207<sup>th</sup> ACS National meeting in San Diego, California, April 1994*

*Identification of Cycloate Soil Metabolites Poster session IUPAC International Pesticide Conference, Hamburg, Germany, 1990.*

*Environmental Fate and Metabolism of Esprocarb, Weed Research, 33 suppl., 27 (1988).*  
*A Comparative Study of the Relationship Between the Mobility of Alachlor, Butylate, Metolachlor in Soil and their Physicochemical Properties, in Fate of Chemicals in the Environment, ACS Symposium Series 225, American Chemical Society, Washington, D.C., 1983.*

*Degradation of Fenitrothion in Forest Soil and Effects on Forest Soil Microbes, J. Ag. Food Chem., 27,1054 (1979).*

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## **A) Professional Preparation**

Virginia Tech, Blacksburg, Virginia, Geotechnical and Mining Engineering, 1987-1991,  
Ph.D. 1991

Virginia Tech, Blacksburg, Virginia, Geotechnical and Mining, 1985-1987, M. S. 1987

University of Utah, Salt Lake City, Utah, Civil and Environmental engineering, 1994-1995,  
M. S. 1995

Shandong Institute of Mining and Technology, Shandong, China, Mining Engineering,  
1978-1982, B. S. 1982

State of Illinois, Civil Engineering, Registered Professional Engineer since 1996

## **B) Appointments**

**Dean**, School of Mathematics and Sciences, Solano Community College, Fairfield, CA.  
August, 2013- present. Manage the operation of the school with over 150 faculty and  
staff and over 5,000 students in Astronomy, Biology/Biotech, Chemistry, Engineering,  
Geography, Geology, Horticulture, Mathematics, MESA, Physical Science, Physics and  
Water/Waste Water Treatment.

**Program Director**, Division of Undergraduate Education, National Science Foundation,  
Arlington, VA. January, 2011- August, 2013. Program officer in several programs  
including ATE, S-STEM and TUES and oversaw more than 100 projects totaling more  
than \$50 million.

**Professor (Tenured)**, Department of Engineering, Evergreen Valley College, San Jose,  
California, August, 1996 –August, 2013. Taught classes in engineering and engineering  
technology such as computer-aided design and engineering graphics, engineering  
processes and tools, surveying and related courses. Developed several courses. Worked  
on several NSF Projects.

**Research Associate**, Center for Environmental Technology, University of Utah/**Adjunct  
Professor**, Salt Lake Community College, June, 1994 – August, 1996.

Conducted research in civil engineering including modeling contaminant transport in  
groundwater, removal of volatile organic contaminants by soil vapor extraction, landfill  
liner system design, and electro-chemical treatment of perchlorate-contaminated water.  
Taught undergraduate classes in engineering.

**Research Associate**, Southern Illinois University at Carbondale, October, 1990 - June, 1994. Principal investigator for four research projects (Approximate budget: \$500,000).

**C) Synergistic Activities**

Panelist, on several National Science Foundation Proposal Review Panels  
Panelist, Department of Labor  
Advisory Committee Member, San Jose High Academy's PLTW program.  
Member, American Society for Engineering Education  
Member, American Society for Civil Engineering.  
Member, California Land Surveyors Association.

**D) Sample Presentations and Publications**

Yu, Z. and Brown, P., *Introduction to Funding Opportunities for Undergraduate STEM Education at the National Science Foundation*, HI-TEC Conference, Denver, CO, July, 2012.

Yu, Z. and Brown, P., *Proposal Writing Strategies Workshop*, HI-TEC Conference, Denver, July, 2012.

Yu, Z., Gee, G., Tabrizi, A., Torres, D., Redd, T., Miller, J. and Mourtos, N. , *Development and Implementation of a 3D Laser Scanning Course for Land Surveying*, Surveying and Land Information Science, Vol. 70, No.1, 2010.

Yu, Z., *Education in Surveying – Class in 3D*, Professional Surveyor Magazine, Vol. 29, No. 11, 2009.

Yu, Z. , *Terrestrial 3D Laser Scanning with Trimble GX 3D Laser Scanner System and RealWorks Survey*, Manuscript, Evergreen Valley College, San Jose, California, 2009.

## **Peter Cammish**

Dean, Research, Planning and Effectiveness

Solano Community College

4000 Suisun Valley Road

Fairfield, CA 94534

peter.cammish@solano.edu

707-864-7278

### A) Professional Preparation

M.Sc Business Information Technology - Northumbria University 2004

### B) Appointments

#### **Dean of Research Planning and Effectiveness**

2011—

Solano Community College

Fairfield, CA 94534

- Lead and refine pragmatic institution-wide research and planning efforts
- Develop, nurture and influence culture of evidence-based decision-making
- Chair key planning and enrollment management committees
- Program and deploy business intelligence solutions from Banner database

#### **Head of Research Planning and Assessment**

2008—2011

College of the Marshall Islands

Majuro, MH 96960

- Lead institutional and departmental program review process
- Manage, collate and communicate campus-wide assessment activities
- Act as authority and expert on planning, research and assessment matters
- Lead Information Systems development team



### **Institutional Research Associate**

2007-2008

University of Texas (PB)

Odessa, TX 79763

- Set up new systems and processes to produce research and analysis faster
- Produced comprehensive organizational 'fact book'
- Designed office automation procedures and systems

### **Senior Project Officer**

2004-2005

Newcastle City Council

Newcastle, NE99 2BN, UK

- Provided executive level consultation, training and reporting to \$2m+ projects
- Was instrumental in helping organization achieve accreditation

### **Information and Risk Manager**

1998-2004

IR NTC Project

Newcastle, NE99 1BB, UK

- Produced complete risk management process for major national project
- Chaired knowledge management executive working groups

## **C) Synergistic Activities**

### **Conferences, Workshops & Memberships**

- PacAir Best Paper "Organizing Assessment Data for Multi-Level Feedback" 2010
- Association of Institutional Research 2008-2014 (member)
- PacAIR IPEDS Data and Decisions Workshop (Team leader) 2010
- Using Assessment Data to Enhance Student Feedback (Presenter—faculty in-service January 2010)
- AACU Greater Expectations Institute 2010
- WASC Assessment Level II 2010
- WASC Assessment Level I (Team Leader) 2009
- Foundations of Excellence 2008

# SUMMARY PROPOSAL BUDGET

YEAR 1

ORGANIZATION <b>Solano Community College</b>				FOR NSF USE ONLY			
				PROPOSAL NO.	DURATION (months)		
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR <b>Genele Rhoads</b>				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.	<b>Genele Rhoads - PI</b>			0.00	0.00	0.50	<b>4,000</b>
2.	<b>Jose Ballesteros - Co-PI</b>			0.60	0.00	0.00	<b>2,500</b>
3.	<b>Charles Spillner - Co-PI</b>			0.00	0.00	0.25	<b>2,000</b>
4.							
5.							
6.	( 0 ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)			0.00	0.00	0.00	<b>0</b>
7.	( 3 ) TOTAL SENIOR PERSONNEL (1 - 6)			0.60	0.00	0.75	<b>8,500</b>
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)							
1.	( 0 ) POST DOCTORAL SCHOLARS			0.00	0.00	0.00	<b>0</b>
2.	( 0 ) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)			0.00	0.00	0.00	<b>0</b>
3.	( 0 ) GRADUATE STUDENTS						<b>0</b>
4.	( 10 ) UNDERGRADUATE STUDENTS						<b>5,000</b>
5.	( 0 ) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)						<b>0</b>
6.	( 0 ) OTHER						<b>0</b>
TOTAL SALARIES AND WAGES (A + B)							<b>13,500</b>
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)							<b>750</b>
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)							<b>14,250</b>
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)							
TOTAL EQUIPMENT							<b>0</b>
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)							<b>2,000</b>
2. FOREIGN							<b>0</b>
F. PARTICIPANT SUPPORT COSTS							
1.	STIPENDS	\$	<b>75,000</b>				
2.	TRAVEL		<b>3,000</b>				
3.	SUBSISTENCE		<b>0</b>				
4.	OTHER		<b>0</b>				
TOTAL NUMBER OF PARTICIPANTS ( 0 ) TOTAL PARTICIPANT COSTS							<b>78,000</b>
G. OTHER DIRECT COSTS							
1.	MATERIALS AND SUPPLIES						<b>500</b>
2.	PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION						<b>0</b>
3.	CONSULTANT SERVICES						<b>0</b>
4.	COMPUTER SERVICES						<b>0</b>
5.	SUBAWARDS						<b>0</b>
6.	OTHER						<b>1,000</b>
TOTAL OTHER DIRECT COSTS							<b>1,500</b>
H. TOTAL DIRECT COSTS (A THROUGH G)							<b>95,750</b>
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) <b>All direct costs less participant costs (Rate: 27.0000, Base: 17750)</b>							
TOTAL INDIRECT COSTS (F&A)							<b>4,793</b>
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)							<b>100,543</b>
K. RESIDUAL FUNDS							<b>0</b>
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)							<b>100,543</b>
M. COST SHARING PROPOSED LEVEL \$ <b>0</b>				AGREED LEVEL IF DIFFERENT \$			
PI/PI NAME <b>Genele Rhoads</b>				FOR NSF USE ONLY			
ORG. REP. NAME* <b>Cynthia Garcia</b>				INDIRECT COST RATE VERIFICATION			
		Date Checked	Date Of Rate Sheet	Initials - ORG			

# SUMMARY PROPOSAL BUDGET

YEAR **2**

ORGANIZATION <b>Solano Community College</b>				FOR NSF USE ONLY			
				PROPOSAL NO.	DURATION (months)		
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR <b>Genele Rhoads</b>				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. <b>Genele Rhoads - PI</b>	0.00	0.00	0.50		<b>4,000</b>		
2. <b>Jose Ballesteros - Co-PI</b>	0.60	0.00	0.00		<b>2,500</b>		
3. <b>Charles Spillner - Co-PI</b>	0.00	0.00	0.25		<b>2,000</b>		
4.							
5.							
6. ( <b>0</b> ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00		<b>0</b>		
7. ( <b>3</b> ) TOTAL SENIOR PERSONNEL (1 - 6)	0.60	0.00	0.75		<b>8,500</b>		
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)							
1. ( <b>0</b> ) POST DOCTORAL SCHOLARS	0.00	0.00	0.00		<b>0</b>		
2. ( <b>0</b> ) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00		<b>0</b>		
3. ( <b>0</b> ) GRADUATE STUDENTS					<b>0</b>		
4. ( <b>10</b> ) UNDERGRADUATE STUDENTS					<b>5,000</b>		
5. ( <b>0</b> ) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)					<b>0</b>		
6. ( <b>0</b> ) OTHER					<b>0</b>		
TOTAL SALARIES AND WAGES (A + B)					<b>13,500</b>		
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)					<b>750</b>		
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)					<b>14,250</b>		
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)							
TOTAL EQUIPMENT					<b>0</b>		
E. TRAVEL					<b>2,000</b>		
1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)							
2. FOREIGN					<b>0</b>		
F. PARTICIPANT SUPPORT COSTS							
1. STIPENDS \$		<b>105,000</b>					
2. TRAVEL		<b>3,000</b>					
3. SUBSISTENCE		<b>0</b>					
4. OTHER		<b>0</b>					
TOTAL NUMBER OF PARTICIPANTS ( <b>0</b> )				TOTAL PARTICIPANT COSTS	<b>108,000</b>		
G. OTHER DIRECT COSTS							
1. MATERIALS AND SUPPLIES					<b>500</b>		
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION					<b>0</b>		
3. CONSULTANT SERVICES					<b>0</b>		
4. COMPUTER SERVICES					<b>0</b>		
5. SUBAWARDS					<b>0</b>		
6. OTHER					<b>1,000</b>		
TOTAL OTHER DIRECT COSTS					<b>1,500</b>		
H. TOTAL DIRECT COSTS (A THROUGH G)					<b>125,750</b>		
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)							
<b>Total direct cost less participant expenses (Rate: 27.0000, Base: 17750)</b>							
TOTAL INDIRECT COSTS (F&A)					<b>4,793</b>		
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)					<b>130,543</b>		
K. RESIDUAL FUNDS					<b>0</b>		
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)					<b>130,543</b>		
M. COST SHARING PROPOSED LEVEL \$ <b>0</b>				AGREED LEVEL IF DIFFERENT \$			
PI/PI NAME <b>Genele Rhoads</b>				FOR NSF USE ONLY			
ORG. REP. NAME* <b>Cynthia Garcia</b>				INDIRECT COST RATE VERIFICATION			
		Date Checked	Date Of Rate Sheet	Initials - ORG			

# SUMMARY PROPOSAL BUDGET

YEAR 3

ORGANIZATION <b>Solano Community College</b>				FOR NSF USE ONLY			
				PROPOSAL NO.	DURATION (months)		
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR <b>Genele Rhoads</b>				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.	<b>Genele Rhoads - PI</b>	0.00	0.00	0.50	<b>4,000</b>		
2.	<b>Jose Ballesteros - Co-PI</b>	0.60	0.00	0.00	<b>2,500</b>		
3.	<b>Charles Spillner - Co-PI</b>	0.00	0.00	0.25	<b>2,000</b>		
4.							
5.							
6.	( 0 ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00	<b>0</b>		
7.	( 3 ) TOTAL SENIOR PERSONNEL (1 - 6)	0.60	0.00	0.75	<b>8,500</b>		
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)							
1.	( 0 ) POST DOCTORAL SCHOLARS	0.00	0.00	0.00	<b>0</b>		
2.	( 0 ) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00	<b>0</b>		
3.	( 0 ) GRADUATE STUDENTS				<b>0</b>		
4.	( 10 ) UNDERGRADUATE STUDENTS				<b>5,000</b>		
5.	( 0 ) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				<b>0</b>		
6.	( 0 ) OTHER				<b>0</b>		
TOTAL SALARIES AND WAGES (A + B)					<b>13,500</b>		
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)					<b>750</b>		
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)					<b>14,250</b>		
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)							
TOTAL EQUIPMENT					<b>0</b>		
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)					<b>2,000</b>		
2. FOREIGN					<b>0</b>		
F. PARTICIPANT SUPPORT COSTS							
1.	STIPENDS \$ <u>105,000</u>						
2.	TRAVEL <u>3,000</u>						
3.	SUBSISTENCE <u>0</u>						
4.	OTHER <u>0</u>						
TOTAL NUMBER OF PARTICIPANTS ( 0 ) TOTAL PARTICIPANT COSTS					<b>108,000</b>		
G. OTHER DIRECT COSTS							
1.	MATERIALS AND SUPPLIES				<b>500</b>		
2.	PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				<b>0</b>		
3.	CONSULTANT SERVICES				<b>0</b>		
4.	COMPUTER SERVICES				<b>0</b>		
5.	SUBAWARDS				<b>0</b>		
6.	OTHER				<b>1,000</b>		
TOTAL OTHER DIRECT COSTS					<b>1,500</b>		
H. TOTAL DIRECT COSTS (A THROUGH G)					<b>125,750</b>		
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) <b>Total direct cost less participant expenses (Rate: 27.0000, Base: 17750)</b>							
TOTAL INDIRECT COSTS (F&A)					<b>4,793</b>		
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)					<b>130,543</b>		
K. RESIDUAL FUNDS					<b>0</b>		
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)					<b>130,543</b>		
M. COST SHARING PROPOSED LEVEL \$ <b>0</b> AGREED LEVEL IF DIFFERENT \$							
PI/PI NAME <b>Genele Rhoads</b>				FOR NSF USE ONLY			
ORG. REP. NAME* <b>Cynthia Garcia</b>				INDIRECT COST RATE VERIFICATION			
		Date Checked	Date Of Rate Sheet	Initials - ORG			

# SUMMARY PROPOSAL BUDGET

YEAR 4

ORGANIZATION <b>Solano Community College</b>				FOR NSF USE ONLY			
				PROPOSAL NO.	DURATION (months)		
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR <b>Genele Rhoads</b>				Proposed	Granted		
				AWARD NO.			
A. SENIOR PERSONNEL: PI/PD, 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. <b>Genele Rhoads - PI</b>	0.00	0.00	0.50		<b>4,000</b>		
2. <b>Jose Ballesteros - Co-PI</b>	0.60	0.00	0.00		<b>2,500</b>		
3. <b>Charles Spillner - Co-PI</b>	0.00	0.00	0.25		<b>2,000</b>		
4.							
5.							
6. ( <b>0</b> ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00		<b>0</b>		
7. ( <b>3</b> ) TOTAL SENIOR PERSONNEL (1 - 6)	0.60	0.00	0.75		<b>8,500</b>		
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)							
1. ( <b>0</b> ) POST DOCTORAL SCHOLARS	0.00	0.00	0.00		<b>0</b>		
2. ( <b>0</b> ) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00		<b>0</b>		
3. ( <b>0</b> ) GRADUATE STUDENTS					<b>0</b>		
4. ( <b>10</b> ) UNDERGRADUATE STUDENTS					<b>5,000</b>		
5. ( <b>0</b> ) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)					<b>0</b>		
6. ( <b>0</b> ) OTHER					<b>0</b>		
TOTAL SALARIES AND WAGES (A + B)					<b>13,500</b>		
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)					<b>750</b>		
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)					<b>14,250</b>		
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)							
TOTAL EQUIPMENT					<b>0</b>		
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)					<b>2,000</b>		
2. FOREIGN					<b>0</b>		
F. PARTICIPANT SUPPORT COSTS							
1. STIPENDS \$ _____					<b>105,000</b>		
2. TRAVEL _____					<b>3,000</b>		
3. SUBSISTENCE _____					<b>0</b>		
4. OTHER _____					<b>0</b>		
TOTAL NUMBER OF PARTICIPANTS ( <b>0</b> )				TOTAL PARTICIPANT COSTS	<b>108,000</b>		
G. OTHER DIRECT COSTS							
1. MATERIALS AND SUPPLIES					<b>500</b>		
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION					<b>0</b>		
3. CONSULTANT SERVICES					<b>0</b>		
4. COMPUTER SERVICES					<b>0</b>		
5. SUBAWARDS					<b>0</b>		
6. OTHER					<b>1,000</b>		
TOTAL OTHER DIRECT COSTS					<b>1,500</b>		
H. TOTAL DIRECT COSTS (A THROUGH G)					<b>125,750</b>		
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)							
<b>Total direct cost less participant expenses (Rate: 27.0000, Base: 17750)</b>							
TOTAL INDIRECT COSTS (F&A)					<b>4,793</b>		
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)					<b>130,543</b>		
K. RESIDUAL FUNDS					<b>0</b>		
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)					<b>130,543</b>		
M. COST SHARING PROPOSED LEVEL \$ <b>0</b>				AGREED LEVEL IF DIFFERENT \$			
PI/PD NAME <b>Genele Rhoads</b>				FOR NSF USE ONLY			
ORG. REP. NAME* <b>Cynthia Garcia</b>				INDIRECT COST RATE VERIFICATION			
		Date Checked	Date Of Rate Sheet	Initials - ORG			

# SUMMARY PROPOSAL BUDGET

YEAR 5

ORGANIZATION <b>Solano Community College</b>				FOR NSF USE ONLY				
				PROPOSAL NO.	DURATION (months)			
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR <b>Genele Rhoads</b>				Proposed	Granted			
				AWARD NO.				
A. SENIOR PERSONNEL: PI/PP, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)				NSF Funded Person-months				
				CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. <b>Genele Rhoads - PI</b>				0.00	0.00	0.50	<b>4,000</b>	
2. <b>Jose Ballesteros - Co-PI</b>				0.60	0.00	0.00	<b>2,500</b>	
3. <b>Charles Spillner - Co-PI</b>				0.00	0.00	0.25	<b>2,000</b>	
4.								
5.								
6. ( <b>0</b> ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)				0.00	0.00	0.00	<b>0</b>	
7. ( <b>3</b> ) TOTAL SENIOR PERSONNEL (1 - 6)				0.60	0.00	0.75	<b>8,500</b>	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)								
1. ( <b>0</b> ) POST DOCTORAL SCHOLARS				0.00	0.00	0.00	<b>0</b>	
2. ( <b>0</b> ) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)				0.00	0.00	0.00	<b>0</b>	
3. ( <b>0</b> ) GRADUATE STUDENTS							<b>0</b>	
4. ( <b>10</b> ) UNDERGRADUATE STUDENTS							<b>5,000</b>	
5. ( <b>0</b> ) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)							<b>0</b>	
6. ( <b>0</b> ) OTHER							<b>0</b>	
TOTAL SALARIES AND WAGES (A + B)							<b>13,500</b>	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)							<b>750</b>	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)							<b>14,250</b>	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)								
TOTAL EQUIPMENT							<b>0</b>	
E. TRAVEL							<b>2,000</b>	
1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)							<b>2,000</b>	
2. FOREIGN							<b>0</b>	
F. PARTICIPANT SUPPORT COSTS								
1. STIPENDS \$ <u>105,000</u>								
2. TRAVEL <u>3,000</u>								
3. SUBSISTENCE <u>0</u>								
4. OTHER <u>0</u>								
TOTAL NUMBER OF PARTICIPANTS ( <b>0</b> )								
TOTAL PARTICIPANT COSTS							<b>108,000</b>	
G. OTHER DIRECT COSTS								
1. MATERIALS AND SUPPLIES							<b>500</b>	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION							<b>0</b>	
3. CONSULTANT SERVICES							<b>0</b>	
4. COMPUTER SERVICES							<b>0</b>	
5. SUBAWARDS							<b>0</b>	
6. OTHER							<b>1,000</b>	
TOTAL OTHER DIRECT COSTS							<b>1,500</b>	
H. TOTAL DIRECT COSTS (A THROUGH G)							<b>125,750</b>	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)								
<b>Total direct cost less participant expenses (Rate: 27.0000, Base: 17750)</b>								
TOTAL INDIRECT COSTS (F&A)							<b>4,793</b>	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)							<b>130,543</b>	
K. RESIDUAL FUNDS							<b>0</b>	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)							<b>130,543</b>	
M. COST SHARING PROPOSED LEVEL \$ <b>0</b>				AGREED LEVEL IF DIFFERENT \$				
PI/PP NAME <b>Genele Rhoads</b>				FOR NSF USE ONLY				
ORG. REP. NAME* <b>Cynthia Garcia</b>				INDIRECT COST RATE VERIFICATION				
		Date Checked		Date Of Rate Sheet		Initials - ORG		

# SUMMARY PROPOSAL BUDGET Cumulative

ORGANIZATION <b>Solano Community College</b>				FOR NSF USE ONLY		
				PROPOSAL NO.	DURATION (months)	
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR <b>Genele Rhoads</b>				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. <b>Genele Rhoads - PI</b>				0.00	0.00	2.50
2. <b>Jose Ballesteros - Co-PI</b>				3.00	0.00	0.00
3. <b>Charles Spillner - Co-PI</b>				0.00	0.00	1.25
4.						
5.						
6. ( ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)				0.00	0.00	0.00
7. ( <b>3</b> ) TOTAL SENIOR PERSONNEL (1 - 6)				3.00	0.00	3.75
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)						
1. ( <b>0</b> ) POST DOCTORAL SCHOLARS				0.00	0.00	0.00
2. ( <b>0</b> ) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)				0.00	0.00	0.00
3. ( <b>0</b> ) GRADUATE STUDENTS						
4. ( <b>50</b> ) UNDERGRADUATE STUDENTS						
5. ( <b>0</b> ) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)						
6. ( <b>0</b> ) OTHER						
TOTAL SALARIES AND WAGES (A + B)						
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)						
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)						
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)						
TOTAL EQUIPMENT						
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)						
2. FOREIGN						
F. PARTICIPANT SUPPORT COSTS						
1. STIPENDS \$ <b>495,000</b>						
2. TRAVEL <b>15,000</b>						
3. SUBSISTENCE <b>0</b>						
4. OTHER <b>0</b>						
TOTAL NUMBER OF PARTICIPANTS ( <b>0</b> ) TOTAL PARTICIPANT COSTS						
G. OTHER DIRECT COSTS						
1. MATERIALS AND SUPPLIES						
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION						
3. CONSULTANT SERVICES						
4. COMPUTER SERVICES						
5. SUBAWARDS						
6. OTHER						
TOTAL OTHER DIRECT COSTS						
H. TOTAL DIRECT COSTS (A THROUGH G)						
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)						
TOTAL INDIRECT COSTS (F&A)						
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)						
K. RESIDUAL FUNDS						
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)						
M. COST SHARING PROPOSED LEVEL \$ <b>0</b> AGREED LEVEL IF DIFFERENT \$						
PI/PI NAME <b>Genele Rhoads</b>				FOR NSF USE ONLY		
ORG. REP. NAME* <b>Cynthia Garcia</b>				INDIRECT COST RATE VERIFICATION		
				Date Checked	Date Of Rate Sheet	Initials - ORG

C \*ELECTRONIC SIGNATURES REQUIRED FOR REVISED BUDGET

**Solano Community College 2+1 STEM Scholarship Program**

**BUDGET JUSTIFICATION**

<b>Budget Details</b>	Year 1	Year 2	Year 3	Year 4	Year 5	Total
<b>A. Personnel</b>						
Genele Rhoads, Summer salary for 0.5 salary	\$ 4,000	\$ 4,000	\$ 4,000	\$ 4,000	\$ 4,000	\$20,000
Jose Ballesteros, 5% release time	\$ 2,500	\$ 2,500	\$ 2,500	\$ 2,500	\$ 2,500	\$12,500
Charles Spillner, Summer salary for 0.25 month	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$10,000
Zhen Chen	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Zhanjing (John) Yu	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Subtotal</b>	<b>\$ 8,500</b>	<b>\$ 8,500</b>	<b>\$ 8,500</b>	<b>\$ 8,500</b>	<b>\$ 8,500</b>	<b>\$42,500</b>
<b>B. Other personnel</b>						
Undergraduate Mentors; \$500 per mentor per year for 10 mentors	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$25,000
<b>Total Salary and Wages</b>	<b>\$13,500</b>	<b>\$13,500</b>	<b>\$13,500</b>	<b>\$13,500</b>	<b>\$13,500</b>	<b>\$67,500</b>
<b>C. Fringe benefits</b>						
1. Fringe Benefit 30% of Salary for A excluding summers	\$ 750	\$ 750	\$ 750	\$ 750	\$ 750	\$ 3,750
<b>Total Salary, Wages and Benefits</b>	<b>\$14,250</b>	<b>\$14,250</b>	<b>\$14,250</b>	<b>\$14,250</b>	<b>\$14,250</b>	<b>\$71,250</b>
<b>D. Equipment</b>						
None.	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>E. Travel</b>						
PIs and Mentors travel to conference with the scholars	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$10,000
<b>F. Participant Support</b>						
1. Stipends: Scholarship Support \$3000/student/yr. tuition, books and supplies for 25 students for the first year and 35 each year for Year 2 though 5	\$75,000	\$105,000	\$105,000	\$105,000	\$105,000	\$495,000
2. Travel: Conferences for scholars	\$ 3,000	\$ 3,000	\$ 3,000	\$ 3,000	\$ 3,000	\$15,000
<b>Total Participant Cost</b>	<b>\$78,000</b>	<b>\$108,000</b>	<b>\$108,000</b>	<b>\$108,000</b>	<b>\$108,000</b>	<b>\$510,000</b>
<b>G. Other Direct Costs</b>						
1. Materials and Supplies	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 2,500
2. Website Development and maintenance	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 5,000
<b>Total Other Direct Costs</b>	<b>\$ 1,500</b>	<b>\$ 1,500</b>	<b>\$ 1,500</b>	<b>\$ 1,500</b>	<b>\$ 1,500</b>	<b>\$ 7,500</b>
<b>H. Total Direct Cost</b>	<b>\$95,750</b>	<b>\$125,750</b>	<b>\$125,750</b>	<b>\$125,750</b>	<b>\$125,750</b>	<b>\$598,750</b>
<b>I. Indirect Cost</b>						
27% direct cost	\$ 4,793	\$ 4,793	\$ 4,793	\$ 4,793	\$ 4,793	\$23,965
<b>J. Total Cost</b>	<b>\$100,543</b>	<b>\$130,543</b>	<b>\$130,543</b>	<b>\$130,543</b>	<b>\$130,543</b>	<b>\$622,715</b>



***Current and Pending Support***

Project Title: 2+1 STEM Scholarship Program

Source of Support: National Science Foundation S-STEM

Project Location: Solano Community College Main Campus  
4000 Suisun Valley Rd, Fairfield, CA 94534

Total Award Amount: \$622,715

Start Date: 07/01/2015

End Date: 06/30/2020

Support Type: Pending

**Person-Months Per Year Committed to the Project**

<b>Calendar</b>	<b>Calendar</b>	<b>Academic</b>	<b>Summer</b>
Genele Rhoads	0	0	0.5
Jose Ballesteros	0.6	0	0
Charles Spillner	0	0	0.25
Zhen Chen	0	0	0
Zhanjiang Yu	0	0	0

Project Title: Single-Use Bio-Reactor System Education and Training (SUBSET)

Source of Support: National Science Foundation Advanced Technician Training

Project Location: Solano Community College Main Campus  
4000 Suisun Valley Rd, Fairfield, CA 94534

Total Award Amount: \$199,960

Start Date: 07/01/2014

End Date: 06/30/2016

Support Type: Current

Person-Months Per Year Committed to the Project

<b>Calendar</b>	<b>Academic</b>	<b>Summer</b>
James DeKloe	0	2
Ed Re	0	2
Zhanjiang Yu	0	0

## 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: Genele Rhoads	Other agencies (including NSF) to which this proposal has been/will be submitted.
Support: <input type="checkbox"/> Current <input checked="" type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title: 2+1 STEM Scholarship Program	
Source of Support: National Science Foundation S-STEM Total Award Amount: \$ 622,715 Total Award Period Covered: 07/01/15 - 06/30/20 Location of Project: Solano Community College, Fairfield, CA Person-Months Per Year Committed to the Project.    Cal:0.00    Acad: 0.00    Sumr: 0.50	
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *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: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *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: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *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: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *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.



## 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: Zhen Chen	Other agencies (including NSF) to which this proposal has been/will be submitted.
Support: <input type="checkbox"/> Current <input checked="" type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title: 2+1 STEM Scholarship Program	
Source of Support: National Science Foundation S-STEM Total Award Amount: \$ 622,715 Total Award Period Covered: 07/01/15 - 06/30/20 Location of Project: Solano Community College, Fairfield, CA Person-Months Per Year Committed to the Project.    Cal:0.00    Acad: 0.00    Sumr: 0.00	
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *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: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *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: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *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: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *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.

## 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: Charles Spillner	Other agencies (including NSF) to which this proposal has been/will be submitted.
Support: <input type="checkbox"/> Current <input checked="" type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title: 2+1 STEM Scholarship Program	
Source of Support: National Science Foundation S-STEM Total Award Amount: \$ 622,715 Total Award Period Covered: 07/01/15 - 06/30/20 Location of Project: Solano Community College, Fairfield, CA Person-Months Per Year Committed to the Project.    Cal:0.00    Acad: 0.00    Sumr: 0.25	
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *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: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *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: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *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: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *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.



## 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: Peter Cammish	Other agencies (including NSF) to which this proposal has been/will be submitted.
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title: Not Applicable	
Source of Support: Total Award Amount: \$                      0 Total Award Period Covered:    01/01/00 - 01/01/00 Location of Project: Person-Months Per Year Committed to the Project.    Cal:0.00    Acad: 0.00    Sumr: 0.00	
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *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: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *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: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *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: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *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.



***Facilities, Equipment, and Other Resources***

**Facilities**

The Solano Community College (SCC) main campus is located at 4000 Suisun Valley Road in Fairfield, California. Two college centers are located in Vacaville and Vallejo, California. SCC also offers courses at Nut Tree Airport in Vacaville and at Travis Air Force Base. In 2012, the voters in the district passed Measure Q, a \$348 million facilities bond measure which will allow the college to build a new, state-of-the-art science/biotech building at the Vacaville Center.

**Equipment**

SCC has fully-equipped laboratories for astronomy, biology, biotech, chemistry, physics engineering, horticulture science, general science, and anatomy classes.

**Other Resources**

Several organizations are committed to support the projects as shown in the Supplemental Documents Section. Other resources also include the time and efforts of administrative personnel, including the Dean of Math and Science and Grants and Resource Development Manager.

## **Expected Data**

The following data is expected to be produced in the course of this project:

- Program participant data: demographics, persistence/retention, success, engagement
- Program effectiveness data and best practices
- Financial cost data

Demographic and other data required by the National Science Foundation is reported to NSF via the secure NSF/SSTEM database via <https://www.s-stem.org> when a new 21SSP scholar is selected and/or enrolled. Upon graduation, additional data is gathered via survey and used to update the graduate's information within the S-STEM database.

## **Period of Data Retention**

All data will be retained for at least 3 years after the conclusion of the award or 3 years after public appearance of the final publication of the research results, whichever is later. However, it is expected that data will be retained longer than that. Preparation of manuscripts will begin immediately following analysis and validation of research results. Data will be available for dissemination to requesters immediately upon its publication in the literature. No patents are expected to arise from this project, but if they do, associated data will be retained until expiration of the patent.

## **Data Formats**

All data will be electronic. Numerical data and graphical data will be in the form of Microsoft Excel files. When requested, data will be disseminated by email by a team member. Data will also be downloadable by interested parties from a public folder set up on the College's website. The front page of SCC Math and Science Department's website will have a direct link to the public folder containing the data. Researchers seeking data will either email the PI or go to the website.

The project includes data gathered from students. The identity of the students is not made available to researchers, so there is no danger of student privacy rights being violated through the dissemination of data. Data on students are linked to identifying information within the Banner database located on a password-protected computer, connected to a password protected server. No data sharing originates from the primary database that contains the names, and the files that would contribute information to data sharing do not contain names. Any findings that include student or other stakeholder data will comply with Federal policy for the protection of human subjects with respect to privacy.

## **Data Dissemination**

2+1 STEM Scholarship Program (21SSP) will develop then disseminate best practices and program data to all community and technical colleges interested in developing an S-STEM program. Project staff will disseminate the best practices in a number of ways. Beginning in the pre-grant period, the project partners will raise awareness of the program locally and regionally through conference presentations and a

designated college website. The most effective dissemination plan is to incorporate the dissemination strategies into the earliest project planning stages. The dissemination plan for 21SSP proposal includes:

- Share findings at the NSF STEM PI meeting each year
- Create a webpage under Solano Community College District (SCCD) website to describe 21SSP and a question and answer section on the webpage
- Publicize activities and successes about 21SSP in SCCD Press Releases
- Implement a website that will have detailed information of 21SSP, application procedure, requirement, and application form
- Interview successful 21SSP students and make a short video to share their 21SSP experience. Link the video to the 21SSP website and SCC website
- Print and distribute 21SSP information brochures to targeted high schools and prospective students
- Give workshops and seminars to regional high schools, local companies and SCC student service personnel which include academic counseling, Financial Aid and Admissions and registration assistance.



July 30, 2014

Dr. Joyce Evans  
Program Director  
DUE/EHR  
National Science Foundation  
4201 Wilson Boulevard, Suite 835  
Arlington, VA 22230

Dear Dr. Evans:

On behalf of Benicia Unified School District, I am pleased to support the proposal “The 2+1 STEM Scholarship Program” being submitted to the National Science Foundation by Solano Community College (SCC).

Benicia Unified School District, is an excellent district with an enrollment of approximately 1700 students. We are a high achieving district with the highest academic achievement and graduation rates in Solano County. Many of our graduates attend Solano Community College. We are excited to be part of the project to attract and produce more STEM graduates.

Our support can be described as follows:

1. Our district will serve on the advisory committee of this project. We will add the 2+1 STEM Scholarships to our graduation award list.
2. We will invite the PIs to our schools to give presentations about the scholarship program and encourage our students to participate in the activities designed for potential scholarship recipients.
3. We will assist in selecting scholarship recipients among our graduating seniors.

We look forward to working with SCC on this exciting project.

Sincerely  


Janice Adams, Superintendent



## BUCKINGHAM CHARTER MAGNET HIGH SCHOOL

Jeff Erickson, Principal

Sandra Ohara, Assistant Principal

Toni Salcido-Henry, Coordinator  
of Student Services

July 16, 2014

Dr. Joyce Evans  
Program Director  
DUE/EHR  
National Science Foundation  
4201 Wilson Boulevard, Suite 835  
Arlington, VA 22230

Dear Dr. Evans:

As the Principal of Elise P. Buckingham Charter Magnet High School I am pleased to support the proposal for "The 2+1 STEM Scholarship Program" being submitted to the National Science Foundation by Solano Community College (SCC).

Buckingham is a small college preparatory charter high school of about 460 students in Vacaville, California. This fall we are excited to begin offering an engineering pathway with curriculum from Project Lead the Way. Our first STEM courses will be Introduction to Engineering Design and Biotechnology, and we believe that there will a high level of student interest in these courses and others that we will be adding to our schedule over the following two years. Currently, many of our students take classes at Solano Community College through concurrent enrollment, and about 40% of our graduates go on to attend SCC. I'm excited to support the 2+1 STEM Scholarship Program as an additional motivator for our STEM students.

Buckingham's support of this STEM scholarship program will involve participation on the advisory committee, bringing program speakers to our school to support STEM and promote these scholarships, and assistance in the selection of scholarship recipients from our own graduating class. We look forward to continuing our strong and productive relationship with Solano Community College and to supporting the 2+1 STEM Scholarship Program.

Sincerely,

A handwritten signature in black ink, appearing to read "JErickson".

Jeff Erickson  
Principal



Dr. Joyce Evans  
Program Director  
DUE/EHR  
National Science Foundation  
4201 Wilson Boulevard, Suite 835  
Arlington, VA 22230

Dear Dr. Evans:

We currently have an S-STEM grant (DUE- 0849660) and we will share our experience with Solano Community College (SCC) S-STEM team on scholar recruitment, selection, retention and enrichment activities. We believe the collaboration among the S-STEM teams from different institutions will create the synergy that elevates the S-STEM program to a new level.

We look forward to the collaboration with the SCC STEM team.

Sincerely,

Amelito G. Enriquez, Ph. D.  
Professor of Engineering and Mathematics  
Cañada College  
4200 Farm Hill Blvd, Redwood City, CA 94061  
enriquez@smccd.edu  
(650) 306-3261

**Connecticut College of Technology**  
**Regional Center for Next Generation Manufacturing**  
61 Woodland Street, Hartford, Connecticut 06105  
email: [karenlee@snet.net](mailto:karenlee@snet.net); phone 860 723 0075



July 28, 2014

Dr. Joyce Evans  
Program Director  
DUE/EHR  
National Science Foundation  
4201 Wilson Boulevard, Suite 835  
Arlington, VA 22230

Dear Dr. Evans:

As the State Director of the Connecticut Community Colleges' College of Technology and the PI and Executive Director of the Regional Center for Next Generation Manufacturing, I am writing this letter of strong commitment for the proposal entitled "*2+1 STEM Scholarship Program (21SSP)*" by Solano Community College (SCC).

The Connecticut College of Technology (COT) is a statewide initiative that provides career pathways for students to earn certificates, A.S. and B.S. degrees in Engineering and Technology disciplines. The COT is an umbrella for Connecticut's twelve community colleges and six public and private partner universities, and reduces barriers to education by providing a seamless articulation between the community colleges and the four-year partner universities. The COT's Regional Center for Next Generation Manufacturing (RCNGM), funded by the National Science Foundation, addresses the need for highly skilled STEM graduates. We feel that to keep the U.S. competitive edge in the global market and the economy strong, it is imperative that we produce enough highly skilled STEM graduates. To this end, we strongly support the S-STEM project.

The College of Technology's Regional Center for Next Generation Manufacturing is committed to supporting the program with the following:

- Provide recruiting materials, mentors for students, and guest lecturers.
- Disseminate the promising practices of the scholarship program both regionally and nationally through the COT-RCNGM website and professional activities that the RCNGM sponsors and organizes
- Serve on the 21SSP advisory board.

We look forward to working with SCC on this important project.

Sincerely,

A handwritten signature in black ink that reads 'Karen Wosczyzna-Birch'.

Dr. Karen Wosczyzna-Birch  
State Director, Connecticut College of Technology  
Executive Director, Regional Center for Next Generation Manufacturing  
c/o CT Colleges and Universities (CSCU)  
Email: [kwosczyzna-birch@commnet.edu](mailto:kwosczyzna-birch@commnet.edu)  
Cell Phone: 860 490 4545



# County of Santa Clara

## Planning and Development

### Office of the County Surveyor

County Government Center  
70 West Hedding Street, E. Wing, 7<sup>th</sup> Floor  
San Jose, California 95110  
(408) 299-5730



July 25, 2014

Dr. Joyce Evans  
Program Director  
DUE/EHR  
National Science Foundation  
4201 Wilson Boulevard, Suite 835  
Arlington, VA 22230

Dear Dr. Evans:

On behalf of the County of Santa Clara, Office of the County Surveyor, I am pleased to support the proposal "The 2+1 STEM Scholarship Program" being submitted to the National Science Foundation by Solano Community College (SCC).


Our Office is involved in land surveying, engineering and land development in the unincorporated areas of Santa Clara County. Our office also supports other County departments with land surveying services for capital projects. These projects include design, construction and environmental studies which involve graduates from various related STEM fields. We employ and work with many graduates with science, engineering and technology backgrounds. We feel that to keep the U.S. competitive edge in the global market and the economy strong, it is imperative that we produce enough highly skilled STEM graduates. To this end, we strongly support the S-STEM project.

Our contributions to the project include:

1. Our company will serve on the advisory committee of this project and advise the PIs on the skills that industry needs from STEM graduates.
2. We will try to provide opportunities for students to gain practical experience through paid or unpaid internships.
3. We will provide speakers to give presentations at the S-STEM scholar events.

We look forward to working with SCC on this important project.

Sincerely

  
Gwendolyn Gee, PLS, CFedS  
County Surveyor





**21 July, 2014**

Dr. Joyce Evans  
Program Director  
DUE/EHR  
National Science Foundation  
4201 Wilson Boulevard, Suite 835  
Arlington, VA 22230

Dear Dr. Evans:

On behalf of MuriGenics, Inc., I am pleased to support the proposal “The 2+1 STEM Scholarship Program” being submitted to the National Science Foundation by Solano Community College (SCC).

MuriGenics, is involved in biotechnology. We employ many graduates with science backgrounds. We feel that to keep the U.S. competitive edge in the global market and the economy strong, it is imperative that we produce enough highly skilled STEM graduates. To this end, we strongly support the S-STEM project.

Our contributions to the project include:

1. Our company will serve on the advisory committee of this project and advise the PIs on the skills that industry needs from STEM graduates.
2. We will try to provide opportunities for students to gain practical experience through paid or unpaid internships.
3. We will provide speakers to give presentations at the S-STEM scholar events.

We look forward to working with SCC on this important project.

Sincerely

*Henry Lopez*

Henry Lopez PhD  
Chief Executive Officer  
Chief Scientific Officer



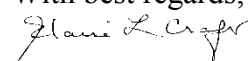
Dr. Joyce Evans  
Program Director  
DUE/EHR  
National Science Foundation  
4201 Wilson Boulevard, Suite 835  
Arlington, VA 22230

Dear Dr. Evans:

Florence-Darlington Technical College (FDTC), Florence, SC has current S-STEM grant awards (DUE#0806514 and DUE #1259402), and we will share our experiences with the Solano Community College (SCC) S-STEM team on scholar recruitment, selection, retention and enrichment activities. “Tech Stars” S-STEM awards at FDTC are managed by the SC ATE Center of Excellence (partially funded by the NSF ATE program). Innovations in S-STEM awards and student support that we have developed and refined at FDTC, such as a loan-to-own laptop computer program, have made a huge difference in the lives of many STEM students and produced excellent results. The DUE #0806514 project alone has awarded 177 scholarships. To date, 125 of these “Tech Stars” have graduated, and 11 more anticipate graduation this summer (~ 79% retention to graduation rate with GPA > 3.0 as compared to an overall completion rate (all GPAs) of 46% for the college). In addition, in the past year, 22 of 35 Tech Stars were placed in paid internships.

We believe the collaboration among the S-STEM teams from different institutions will create the synergy that elevates the S-STEM program to a new level. I have personally known and worked with Dr. Zhanjing (John) Yu for a number of years and have great confidence in his leadership and ability to maximize the outcomes of an S-STEM scholarship program at Solano Community College. It will be my pleasure to work with Dr. You and to serve as the liaison between our colleges for “best practice” sharing.

The SC ATE Center staff and FDTC S-STEM team look forward to the collaboration with the SCC STEM team.

With best regards,  


Elaine L. Craft, Director  
SC ATE Center of Excellence



MECHANICAL ENGINEERING DEPARTMENT  
SCHOOL OF ENGINEERING AND COMPUTER SCIENCE

THE UNIVERSITY OF TEXAS - PAN AMERICAN

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Dr. Joyce Evans  
Program Director  
DUE/EHR  
National Science Foundation  
4201 Wilson Boulevard, Suite 835  
Arlington, VA 22230

Dear Dr. Evans:

We currently have an S-STEM grant (DUE-1154496) and we will share our experience with Solano Community College (SCC) S-STEM team on scholar recruitment, selection, retention and enrichment activities. We believe the collaboration among the S-STEM teams from different institutions will create the synergy that elevates the S-STEM program to a new level.

We look forward to the collaboration with the SCC STEM team.

Sincerely,

Arturo A. Fuentes, Ph.D.  
ME Undergraduate Program Director, Professor  
Department of Mechanical Engineering  
The University of Texas-Pan American

# WINTERS HIGH SCHOOL

PROUD PAST, PROMISING FUTURE

PAUL FAWCETT, ED.D.  
PRINCIPAL  
BYRON LAIRD  
ASSISTANT PRINCIPAL

MARCELLA HEREDIA  
CARLA SERRATOS  
COUNSELORS

RAENA LAVELLE  
ACTIVITIES DIRECTOR  
DANIEL WARD  
ATHLETIC DIRECTOR

Dr. Joyce Evans  
Program Director  
DUE/EHR  
National Science Foundation  
4201 Wilson Boulevard, Suite 835  
Arlington, VA 22230

Dear Dr. Evans:

On behalf of Winters Joint Unified School District, I am pleased to support the proposal "The 2+1 STEM Scholarship Program" being submitted to the National Science Foundation by Solano Community College.

Winters Joint Unified School District, is an excellent district located in Winters, California with an enrollment of approximately 1500 students. The student population is approximately 62% Hispanic, 35% Caucasian, 3% other include Asian and African American. Many of our graduates attend Solano Community College. In recognition of the need to produce more students interested in the STEM fields, over the past year our district has made a commitment to fortify our STEM career pathway offerings. We are excited to be part of the project to attract and produce more STEM graduates.

Our support can be described as follows:

1. Our district will serve on the advisory committee of this project. We will add the 2+1 STEM Scholarships to our graduation award list.
2. We will invite the PIs to our schools to give presentations about the scholarship program and encourage our students to participate in the activities designed for potential scholarship recipients.
3. We'll assist in selecting scholarship recipients among our graduating seniors.

We look forward to working with SCC on this exciting project.

Sincerely,



Paul Fawcett  
Principal, Winters High

