

Meeting Times:	M,W 9:00-11:00 pm
Units	4
Instructor:	Jeremy R. Babendure, PhD
Teaching Assistant:	Mark Salata, PhD
Class Location	Skaggs Pharmacy School Bldg, Room TBA
E-mail:	jbabendure@ucsd.edu

Course Description:

This course combines lecture, biotechnology laboratory training, and group discussions to prepare undergraduate and graduate students to effectively communicate scientific concepts and their applications in medicine and technology to high school/middle school students in underserved communities of San Diego (e.g. Sweetwater Union District). Students will gain practical experience while working with the BioBridge Network in bridging the gap between state-of-the-field scientific and medical research and the high school science curriculum through participation in supervised group mentoring students and teachers at local high/middle schools during the implementation of new science laboratory activities. Lectures, laboratory training, discussions, field exercises, and assignments are selected to achieve the following goals of the course:

1. Develop proficiency in basic and state-of-the-field laboratory skills to demonstrate key science concepts and train high school students early in the skills to be at the forefront of future research;
2. Prepare students entering careers in research, technology, public health and medicine to effectively communicate new concepts and their applications (e.g. health, medicine) to the community;
3. Explore the impact of the community environment on student learning, in particular gain awareness of cross-cultural and socio-economic issues affecting access to education;
4. Explore the structure of a partnership between the community, higher education institutions, research institutions and industry through field experience in implementing new science activities necessary to meet high school curriculum needs;
5. Develop skills of trained observation to critically evaluate progress towards project goals.

Prerequisites: Open to undergraduate students, 2nd year and above, in good standing in any major who are interested in mathematics, science and science education. Chem 6B and one biology course is recommended but not required.

Course Expectations:

1. Participate in field experience (a minimum of 5 events or 20 hours)*.
2. Attend weekly lectures
3. Complete assigned readings and written assignments
4. Maintain journal
5. Final Written Project Proposal
6. Final Oral Presentation

Final Exam

Oral Presentation of Final Projects

Written Project Proposal due Friday of Final's week. 1 point deducted for every hour or part of an hour that proposal is late.

Lecture Topics

Weekly Topics	Assignment
Week 1: Introduction I. The BioBridge Network II. Course Expectations and Journal III. CA State and National Standards	Read: BioBridge Handbook “FP Transformation”
Week 2: FP Transformation Lab	Read: BioBridge Handbook “FP Transformation”
Week 3: FP Purification Lab	Read: Chapter 4: "'Seeing' beyond personal experiences and expectations" Learning to observe systematically"
Week 4: Laboratory Orientation and Safety Training	
Week 5: Enzymes Lab	Read: “Entering Mentoring” Chapter 2: What is a Mentor?
Week 6: Teaching Science to Students of Cross-cultural Backgrounds	Read: “Turning Despondency into Hope” by Alberto Rodriguez, Ph.D.
Week 7: I. Writing a Grant Proposal II. Project Discussion	Written Assignment: 1 page description of project
Week 8: Evaluation and Observation: Tool to Critically Evaluate Achievement of Project Goals	Read: Chapter 10: "Examining engagement in the learning process" pp. 209-232.
Week 9: Science Leadership Skills Activity	Written Assignment: 1 page Specific Aims of Proposal
Week 10: How to obtain funding for projects	

Student Evaluation:

Course grades will be based on attendance at lectures and labs, field hours, participation and contribution to discussions, quality of written assignments, and oral presentation.

Journal*	10 points
Mentor Performance**	50 points
Class Participation	10 points
Written Project Proposal	20 points
Oral Final	10 points

* Weekly journal consists of one page of thoughts, reflections, and progress on project proposal.

**Mentors will be evaluated by the course instructor(s) based on performance, initiative, attitude, behavior, professionalism, growth, ability to assess learning difficulties in students, rapport established with students, and the ability to motivate students. Students will be required to take on a leadership role at each event. Each field experience must be followed up by a written Event Evaluation turned in within 72 hours of the activity and the “Field Hours Log Sheet” must be signed by BioBridge staff for full credit.

Guidelines for Written Project Proposal (20 points)

Typed (Ariel 11 pt font—single spaced) written report must be a detailed proposal/plan on how the project will be completed and carried out by you or your predecessors. The proposal must include:

- (1) The goals and objectives of the project (4 points)
- (2) Background information on the relevance of the project and how your objectives will fill current gaps. References should be cited. Who will benefit from the project and how? Existing programs that are similar to your project—how is your project different? (5 points)
- (3) Methods (8 points) for completing the objectives to include. Must show feasibility of project.
 - (i) A detailed guideline on how to access tools and resources needed to complete and carry out the project and the cost involved
 - (ii) Documentation of contacts you have made with departments and organizations on campus or in the community that will be involved in carrying out the project. Provide names of contacts and their email/phone information.
 - (iii) Timeline for carrying out the proposed work;
 - (iv) Budget—itemized list of what this project will cost. List names of vendors and price.
- (4) Discuss (3 points):
 - (i) How will your project/program be sustained after you leave?
 - (ii) How will your project add to the sustainability of the BioBridge Network as a whole?
 - (iii) How can your project expand to reach a larger audience?

Guidelines for oral presentation proposed project (10 pts)

10 minute PowerPoint Presentation (<8 slides) with a 3 minute discussion.

Slide 1: Title of Project

Slide 2: Objectives of your project

Slide 3: Relevance: who will this benefit, gaps in current resources, how project will fill existing gaps

Slides 4-5: Methods to carry out your project

Slide 6: Preliminary Results

Slide 5: Timeline to carry out project

Slide 8: Budget

Slide 9: Acknowledgements: thank your student partners who helped you

Field Work:

BioBridge will be holding a number of events Fall Quarter 2009. Please check website regularly. <http://biobridge.us/>

(1) Phase I Teacher Training Sessions are held on campus on Fridays.

Leadership opportunities are available in the following areas:

- Organizing “Meet & Greet” session for teachers (7:30am-8-30am)
- Laboratory Set-up (7:30am-9:00am)
- Teaching Assistant during lab activity (9:00am-noon)
- Organizing lunch discussion (11:30am-1:30am)
- Tour guide (1:00-2:30pm): escorting and assisting at special activity
- Preparation of Materials for Training Session (several days before event)

(2) Phase II Trainings at High Schools are held at high school sites on Saturdays.

Leadership opportunities are available in the following areas:

- Organizing “Meet & Greet” Breakfast session for high school students (8:00am-9:00am)
- Laboratory Set-up (7:30am-9:00am)
- Teaching Assistant during lab activity (9:00am-noon)
- High School Leadership Training
- Preparation of Materials for Training Session (several days before event)

(3) Tech Site at High Schools

BioBridge has two tech sites at local high schools which we visit regularly.

SciTech at San Diego High School under direction of Sara Dozier and Castle Park High School under direction of Stephanie Gaudreau. Opportunities are endless and include organizing lab activities, mentoring and discussing college life, setting up lab kit distribution.

(4) Phase IV Classroom Implementation

Teachers may request undergraduate mentors during the first day of new activity implementation. Contact Heather Gastil (hgastil@ucsd.edu).

(5) Laboratory Kit Assembly for Distribution to High Schools and for training sessions

Contact Mark Salata (msalata@ucsd.edu)

(6) Join a BioBridge Club Committee (contact Alegra Bartzat abartzat@ucsd.edu)**(7) Special Events such as “The Science Festival”****School Sites:**

- Sweetwater Union High School District (SUHSD)
- Grossmont High School District (SUHSD)
- San Diego City Schools (SDCS)

BioBridge Practicum Event Evaluation

(page 1 of 2)

(Submit to msalata@ucsd.edu within 72 hours of the event for full credit.)

Your Name: _____

Event Name:

Date and Time of Event:

Exact Time You Participated (e.g. 2:15pm-4:30pm):

Number of Participants (High School Students/Teachers/Parents/Undergrads):

Demographics of Participants:

Hispanic= , White= , African-American= , Vietnamese=

Chinese= , Filipino= , Other (_____) = ,

Other (_____) =

Number of UCSD Undergraduate Student Mentors Assisting at the event =

Number of BioBridge Faculty and Staff =

(1) Purpose/Goals of this event:

(2) Were the goals met? Discuss how this event relates to the larger framework of improving science education or science knowledge in the community.

BioBridge Practicum Event Evaluation
(page 2 of 2)

(3) How many high school students did you *directly* (talked to, presented to) interact with? N=

**(4) Highlights of your conversation with students.
(What did they ask you? What did you ask them and what was their response?)**

(5) Discuss any challenges you faced in carrying out your mentor duties and how you overcame the challenges. Include recommendations for preparing mentors at future events.

(6) Ideas for improving the event in the future:

Field Hours Log Sheet

Students are required to take Log Sheet to each event for full credit for participation. Completed sheets will be turned in **Wed of Week 10** in class.

NAME: _____

Event Name					
Date					
Time In-Time Out*					
Staff Name					
Staff Signature					
Total Hours					

Event Name					
Date					
Time In-Time Out*					
Staff Name					
Staff Signature					
Total Hours					

*Example entry for "Time-In-Time-Out": 2:15pm-4:30pm

An Event Evaluation must be submitted within 72 hours after the event to receive credit for field hours.

Credit will not be given without signature from a staff member. There will be a staff member at each event. Signatures may be obtained from: Jeremy Babendure, Alegra Bartzat, Shelley Glenn, Mark Salata, Loren Thompson, Brinda Rana. For Phase IVs, signature of the teacher is required if a staff member is not present.