

**From:** joe andrade <joeandrade@uofu.net>  
**Subject:** **Please Help! Ut Sci Center and Bioeng**  
**Date:** January 3, 2002 8:14:12 PM MST  
**To:** brandt adams <brandtadams@hotmail.com>, paul dryden <paul.dryden@m.cc.utah.edu>, dana overacker <dana.overacker@m.cc.utah.edu>, lara brewer <L.Brewer@m.cc.utah.edu>, rupert davies <rupert.davies@m.cc.utah.edu>, D.Bartholomeusz@m.cc.utah.edu, linda pak <Lunamin@aol.com>, r hardman <ardemaut@yahoo.com>, cory king <c.king@m.cc.utah.edu>, j abernathy <jeremy\_abernathy@hotmail.com>, s kern <skern@remi.med.utah.edu>, d westenskow <dwayne@remi.med.utah.edu>, laya kesner <kesner@chemistry.utah.edu>, justin clark <medicalphysics@clarkwork.com>, Clint Eliason <discover@cc.usu.edu>, katie mullaly:km7910@utah.edu, katiemullaly@hotmail.com;, s barker <s.barker@m.cc.utah.edu>, Andy White <mrandywhite@msn.com.>

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The 100 plus Bioengineering Freshman class is in for a challenging Spring term--designing and building chem/biochem--related activities for the Utah Science Center. We hope you will agree to help and lend your expertise and resources as advisor/consultant to one or more of the projects.

A brief description of the class and the projects is given below; I have also attached a 2 p summary on the Sci Center. A comprehensive 30 plus page PLAN is also available. I can also send you the complete course syllabus if you like.

One or more of the project groups may want to talk with you one or more times during the term. Please do help--and suggest others who might help.

Many, many thanks!

**Fundamentals of Bioengineering I and II (BIOEN 1101 and 1102)** introduces students to the broad field of Biomedical Engineering and to principles, tools and techniques used in the

profession. The material is organized around unified concepts of flux, transport and conservation in biological and engineered systems. Fundamental laws of physics and chemistry are applied to the analysis of biological systems and to the design of biomedical devices. Calculus and chemistry should be taken concurrently. BIOEN 1101 focused on physical principles.

BioE 1102 adds chemical and biochemical principles and physico-chemical coupled phenomena, with an **emphasis on Energy and Bioenergetics**.

### **Major Project:**

A major project is a key component of the course and is designed to integrate and connect the topics in the course to practical engineering design and development activities; this project will also utilize many of the topics and skills from BioE 1101.

Each student is considered a virtual employee of a virtual company (Bioengineering-Based Exhibits, Inc. or BBE, Inc. One of BBE's major clients is the Utah Science Center, an interactive, hands-on science center now being built in Utah (see [www.utahsciencecenter.org](http://www.utahsciencecenter.org)). BBE's task is to design, prototype, and test interactive, hands-on, experiential science/technology exhibits/experiences related to biochemistry and bioenergetics. The Utah Science Center's themes include ENERGY and YOU!. Given the emphasis of the course on bioenergetics, metabolism, biochemistry, and coupled phenomena, BBE's projects will reflect those topics.

Each lab section will be organized into one or two project teams. Projects will be assigned to each team during the week of Jan. 7.

Each team will be responsible for one complete exhibit/experience. Each team will self-organize, with the help of the TA, undergraduate TA, and the professor. Each student will have a specific job/task on the team. The major project grade is 30% of the course grade<15% is on your individual participation and output; 15% is based on the group performance.

This major project will be discussed extensively in class; a complete description and schedule will be available during the first laboratory section meeting of the Spring Semester. Lab sections begin the week of Jan. 7 (first full week of classes). Major Project Report format and contents will be distributed and discussed in class.

The first project check-off will be Jan. 28, before the Olympics break; it will focus on what you (and your group) WANT to do and how you will get the information needed. Check-off 2 is the week of Mar. 4 (shortly after the Olympics break)<focusing on what you WILL do, including a time/task list, budget, experts, resources, etc. . The third check-off in early April focuses on what you CAN do and commit to do; the final check-off will deal with what you DID do and on what more needs to be done.

### **Labs and Projects:**

Lab 1102-2 T 9:40-12:40 MEB 2560 Paul Murdock  
pmurdock@pcmindustries.com  
Project A: Hematocrit<non-invasive  
Project B: Oximetry

Lab 1102-3 W 9:40-12:40 MEB 2560 Carlos  
Bruckner el\_piel@yahoo.com

Project C: Calorimetry  
Project D: Sweat pH and Chloride

Lab 1102-4    H    9:40-12:40    MEB 2560    Russ  
Bjorklund  
[russbj@hotmail.com](mailto:russbj@hotmail.com)

Project E: Anaerobic Energetics  
Project F: Aerobic Energetics

Lab 1102-5    F    8:35-11:35    MEB 2560    Lindsay  
Foot  
[lindsay.foot@m.cc.utah.edu](mailto:lindsay.foot@m.cc.utah.edu)

Project G: Water pH and hardness  
Project H: Water--conductivity

Lab 1102-6    F    2:00-5:00 pm    MEB 2560    Jessica  
Faber  
[jafaber15@hotmail.com](mailto:jafaber15@hotmail.com)

Project I: Bacteria via ATP  
Project J: Urine color, pH, glucose

Lab 1102-8    T    6:00-9:00 pm    MEB 2560    Kristi  
Kozola  
[DrKoz21@cs.com](mailto:DrKoz21@cs.com)

Project K: Expired Air: O<sub>2</sub>, CO<sub>2</sub>, Š  
Project L: Expired Air: Alcohol

Advisors:        Brandt Adams  
                  Andrash Pungor  
                  Paul Dryden  
                  Dana Overacker

Lara Brewer  
Rupert Davies  
Daniel Bartholomeusz  
Rulon Hardman

Cory King  
Jeremy Abernathy

Linda Pak  
Andy White

Dr. Laya Kesner, Chemistry  
Dr. Justin Clark  
Dr. Steve Kern  
Dr. Dwayne Westenskow

Client Representatives: Joe Andrade, Clint Eliason, Katie Mullaly,  
Stephanie Barker

Client Consultants: OMSI?, Exploratorium?, Pacific Sci Center?

Joseph D. Andrade, Dist. Professor  
Depts. of Bioengineering, Materials Science, and Pharmaceutics  
Lab for the Modeling, Measurement, and Management of the  
Metabolome (4M Lab)  
University of Utah  
50 S. Campus Center Dr., Rm. 2480 MEB,  
Salt Lake City, UT 84112-9202  
Phone: 801-581-4379  
Fax: 801-585-5361  
[joe.andrade@m.cc.utah.edu](mailto:joe.andrade@m.cc.utah.edu)  
[www.bioen.utah.edu/faculty/jda](http://www.bioen.utah.edu/faculty/jda)