

BSCI348U: Scientific Teaching Internship Description. 3credits. Instructor: Ann C. Smith

Goal:

This course was designed to support the Undergraduate Teaching Assistants of General Microbiology (BSCI223). Discussions include both theoretical and practical aspects of the UTA mission of BSCI223.

UTA Mission:

For BSCI 223: to support the active learning initiative of BSCI 223. Engage students in learning; provide feedback to students through questions, conversations, discussion both face to face and online. Serve as mentors. Serve to bring the Abig picture@ of course goals to the student. Support the technology needs of the course (image capture, web page design support, on line discussion support)

For the UTA: to develop skills that will be valuable in a future career in the sciences. These will include skills in communication both on-line and face to face, leadership as you serve as a peer mentor, coach, role model, self confidence in sharing what you know and what you do not know, and specific skills and knowledge/understanding of relevant to microbiology and scientific research.

Requirements and Grading:

Course Requirements:

Attendance: BSCI348U weekly meeting and assigned lab section.

Completion of Weekly reading and on-line Journal entries

Completion of Major responsibilities

Grading:

Lapse in coverage of major responsibility - drop in one letter grade

Poor contribution to in class discussions, journal - drop in one letter grade (one warning)

Two unexcused absences from UTA class – drop in one letter grade

Major responsibilities:

UTA projects:

- Project 1: Demonstration of proficiency in use of the microscope, image capture and standard microbiology staining techniques.
- Project 2: Design Icebreaker for lab
- Project 3: UTA Portfolio
 - o Goals – write these at beginning of the semester.
 - o Examples of three teaching techniques tried in lab and comments
 - o Examples of three lessons learned about teaching
 - o Examples of three journal submissions that show reflections on teaching.
 - o Choose three articles read in the course of the semester, describe why

these were useful to you.

- End of semester reflection on goals. Were your expectations fulfilled? Explain. Did you learn something that you did not expect to learn? Did you benefit in some unsuspected way by this experience? How could this experience be improved? What was the most important aspect that you brought to this experience (for example was there some sort of prior knowledge or training that you felt helped you during this experience?)
 - Do you feel that you made gains in developin skills of communication, leadership, self confidence and microbiology?
 - What about this experience helped you most in the development of these skills?

- Reflect upon comments from your GTA and your students.

Serve various roles for the success of BSCI223 course assignments:

Face to face discussion facilitator in lab.

- Discussion of BSCI223 Case 1: ELVIS: Discussion of preparation of a space craft/sampling vessel for launching, disinfection, sterilization. Linked with goals of the lab on control of microbial growth. (This is PAK 1.4 for the ELVIS case.) Each UTA will facilitate a discussion among 18 students in lab.
- Discussion of BSCI223 Assignment 2: A Farmer's Dilemma: Three major issues. Face to face discussion that follows the small group online discussions. Students (2-3 lab sections) discuss what they learned in on-line discussion. UTA's for the lab sections facilitate.

Lab lecturer: Each UTA will present to their assigned lab section of 18 students.

- For course Assignment 2, introduce the goals and expectations of the assignment to the students.
- Serve as the lab lecturer for Lab 15: Yogurt as a probiotic – taking on the role of the GTA

On-line discussion facilitator: Each UTA will monitor 3 on-line discussion groups with 6 students each. The discussion occurs over a one month period.

- Responsibility for the on-line discussion component of BSCI 223 Assignment 2. UTA's facilitate the discussion, monitor and record student participation in the discussion and evaluate student written summary of the discussion.

Overall Responsibilities of the UTA:

Serve as a resource to students,

Use active learning strategies to engage students.

Use questions to challenge students with respect to analysis and interpretation of data, knowledge, and understanding of microbiology, terms, techniques, and concepts

Provide support for course technology and image capture.

Serve as a partner to the GTA assigned to the lab section.

Support the active learning mission of the course.

Reflect on actions taken as a UTA, readings and discussions in weekly journal submission.

BSCI223 Module The course is divided into 3 modules (Smith et al 2005)	UTA activity	BSCI348U Discussion topics and readings
Prior to first lab	Introduction to UTA role. Training and completion of UTA Project 1	Active learning, Course Philosophy, Role of the UTA Readings 1- x
Module 1: weeks 1-6 Course content: Bacterial structure, function, metabolism, growth Labs: culture technique, staining, metabolism, growth Case Study 1: ELVIS: fictional sampling robot returns from mission to space with microbial degradation and carrying samples with microbes. Assignment 1: In lab students culture and phenotypically characterize mock samples from “ELVIS mission”, capture images and present data in a webpage report.	Attend lab, Implement the lab “ice breaker” Support students in data interpretation, learning of standard techniques, and the use of technology, microscopy, image capture, and design of web page. Engage students by asking questions. Facilitate in-lab discussion on Case 1 issue: Planetary Protection and the fictional sampling robot.	Learning Styles Leading a discussion Engaging students using questions. Groups – collaborative learning Blooms Taxonomy Muddiest Point Microscopy Standard protocols for Staining of microbes, aseptic technique, microbial culture, growth, control of growth and identification. Astrobiology, Planetary Protection. Image capture, webpage design Readings: see BSCI348U reading list weeks 1-5
Module 2: 7-10 Course Content: Bacterial Genetics and Biotechnology Labs: bacterial genetics labs and the making a transgenic plant. Case Study 2: A Farmer’s Dilemma: Should organic Farmer’s plant transgenic corn to save the farm? Assignment 2: Response “Farmers Dilemma” On-line discussion of Issues followed by face to face Discussion and group report	Attend lab to introduce Assignment 2. Move to an on-line role, do not attend lab, but “meet” with students virtually in on-line discussion. Each UTA monitors three small group discussions of 6 students with each assigned one of the three Assignment 2 issues. At completion of the online discussion, attend lab for face to face discussion of issues raised in Assignment 2 on-line discussion.	Use of on-line databases. Reliable sources Face-face discussion vs on-line discussion Facilitating on line learning Encouraging and Evaluating student participation Plagiarism Biotechnology Bt corn Readings: See BSCI348U reading list weeks 6-10
Module 3: 11 - 14 Course Content: Host-Pathogen Interactions Labs: Characteristics of pathogens, Investigation of a mock food-borne disease outbreak, Microbes in food preparation. Case Study 3: “Wanda’s Woes”: Host Pathogen interactions and <i>Streptococcus pneumoniae</i> Assignment 3: Design an approach to identify the source of a mock food-borne disease outbreak, teams of students report orally.	Attend lab. Support students in lab design, data interpretation, learning of standard techniques, and preparation of oral report. Present the “Microbes in food preparation” lab. Complete UTA portfolio	Teaching Techniques Protocol design Foodborne disease Epidemiology Probiotics Normal flora vs Transient flora Microbes and food preparation. Readings: See BSCI 348U reading list weeks 11-12