

**Fayetteville State University
College of Arts and Science
Department of Natural Sciences
BTCH 450, Problems in Biotechnology
Spring 2009**

I. Locator Information:

Instructor: Dr. Muhammad A. Lodhi

Course # and Name: BTCH 450, Problems in Biotechnology Office Location: LSA 320

Semester Credit Hours: 3-3-0

Office hours: MW 10:00 AM-1:00 PM

TR 8:00 – 9:00 AM

Day and Time Class Meets: TR 12:30 1:45 PM

Office Phone: 672-1658

Location of Class Meets: LS 205

Email address: mlodhi@uncfsu.edu

The following statement should appear on the first page of each course syllabus:

FSU Policy on Electronic Mail: Fayetteville State University provides to each student, free of charge, an electronic mail account (username@uncfsu.edu) that is easily accessible via the Internet. The university has established FSU email as the primary mode of correspondence between university officials and enrolled students. Inquiries and requests from students pertaining to academic records, grades, bills, financial aid, and other matters of a confidential nature must be submitted via FSU email. Inquiries or requests from personal email accounts are not assured a response. The university maintains open-use computer laboratories throughout the campus that can be used to access electronic mail.

Rules and regulations governing the use of FSU email may be found at

<http://www.uncfsu.edu/PDFs/EmailPolicyFinal.pdf>

II. Course Description: A course designed to give students interactive exposure to and experience in biotechnology environments. Students will learn several aspects of *Biotechnology Research* as applied in industry. Several topics such as designing and conducting scientific research, maintaining of laboratory notebook, product development procedure, career in biotechnology and job search strategies, report writing and presentations and intellectual property. Students will conduct a short supervised research project to learn different aspects of scientific research.

III. Disabled Student Services: In accordance with Section 504 of the 1973 Rehabilitation Act and the Americans with Disabilities Act (ACA) of 1990, if you have a disability or think you have a disability to please contact the Center for Personal Development in the Spaulding Building, Room 155 (1st Floor); 910-672-1203.

IV. Textbook: No text is required. However suggested text is, “Basic Laboratory Methods for Biotechnology” 2nd edition, LA Seidman and CJ Moore. Benjamin Cummings, 2009.

V. Student Learning Outcomes – Upon completion of this course, students will be able to:

- a. Demonstrate knowledge and comprehension of the core concepts, which include knowledge of genetics, cell biology, molecular biology, microbiology, bioinformatics and immunology as evidenced by quizzes, journal club and final report written for the course
- b. Display a sound knowledge of important technical, business and ethical issues related to biotechnology and its applications as demonstrated by the quizzes and project reports
- c. Critically evaluate and analyze original research publications and ably communicate this through appropriate means such as written reports, poster or oral presentation
- d. Demonstrate a thorough understanding of the Biotechnology Research and technical paper writing skills as determined by project reports, poster and final paper
- e. Design experiment, collect data and apply statistical analysis as assessed by the project report
- f. Develop basic skills in the use of laboratory equipment and techniques as evidenced with quizzes and mentoring

- V. **Course Requirements and Evaluation Criteria** - This section should indicate how the student's final grade for the course will be calculated. It must include each of the following:
- Grading Scale – Following standard FSU grading scale will be used

Percent of Points	Grade
91 – 100	A
82 – 90	B
73 – 81	C
65 – 72	D
<65	F
Excessive absences	EA
Incomplete	I
No Show	X

- Final grade will be based on the following evaluation components

	Item	Number of Items	Points/Item	Total points	%age
1.	Participation in Research Project	1	80	80	25.8
2.	Project reports	3	10	30	9.7
3.	Notebook	1	40	40	12.9
4.	Quizzes	4	15	60	19.4
5.	Journal Club	1	20	20	6.4
6.	Poster Presentation	1	40	40	12.9
7.	Final Report	1	40	40	12.9
	Total	1		310	100

- Participation in Research Project – Students are expected to take part in the research project assigned to him/her. Project will be developed and run in under the supervision of a mentor. Project aims, plans and timelines will be discussed and developed. The instructor will provide the information on the project.
- Project reports – Students will be responsible for providing 3 written reports on the project at times scheduled in the course schedule. These reports will be provide updates on the projects.
- Notebook – Students will maintain a lab notebook. These could be 3-ring binder or hard-bound composition type notebooks. All the work done on the project will be written in the notebook and endorsed by the peers periodically.
- Quizzes – During the course of the semester, 4 quizzes will be given to the students related to the topics discussed in the class or procedures done in the lab
- Journal Club – Each student will present one paper critique to the class. Papers topics will be distributed and students will be asked to read it and present its summary and his/her comments to the class. Students can use Power Point presentation or lead a class discussion.
- Poster Presentation – Students will prepare a poster on their research work and present it at the Science Exposition at FSU at the end of April. Students are responsible to submit abstracts and know the deadlines of submission and presentation.
- Final Report – The final report should be written in the form of a research paper and include; Introduction, Materials and Method, Results, Discussion and Bibliography. Rubrics will be provided.
- Attendance Requirements – Each student will be excused for missing 3 classes throughout the semester. Each additional absence will result in a decrease of the grade by a letter grade.

Please note: If these evaluation criteria must be revised because of extraordinary circumstances, the instructor will distribute a written amendment to the syllabus.

FSU Policy on Disruptive Behavior in the Classroom (Optional)

The *Code of the University of North Carolina* (of which FSU is a constituent institution) and the *FSU Code of Student Conduct* affirm that all students have the right to receive instruction without interference from other students who disrupt classes.

FSU Core Curriculum Learning Outcome under Ethics and Civic Engagement (6.03): All students will “prepare themselves for responsible citizenship by fulfilling roles and responsibilities associated with membership in various organizations.” Each classroom is a mini-community. Students learn and demonstrate responsible citizenship by abiding by the rules of classroom behavior and respecting the rights all members of the class.

The FSU Policy on Disruptive Behavior (see FSU website for complete policy) identifies the following behaviors as disruptive:

1. Failure to respect the rights of other students to express their viewpoints by behaviors such as repeatedly interrupting others while they speak, using profanity and/or disrespectful names or labels for others, ridiculing others for their viewpoints, and other similar behaviors;
2. Excessive talking to other students while the faculty member or other students are presenting information or expressing their viewpoints.
3. Use of cell phones and other electronic devices
4. Overt inattentiveness (sleeping, reading newspapers)
5. Eating in class (except as permitted by the faculty member)
6. Threats or statements that jeopardize the safety of the student and others
7. Failure to follow reasonable requests of faculty members
8. Entering class late or leaving class early on regular basis
9. No cell phones, pagers or text messaging will be allowed in the class.

The instructor may take the following actions in response to disruptive behavior. Students should recognize that refusing to comply with reasonable requests from the faculty member is another incidence of disruptive behavior.

1. Direct student to cease disruptive behavior.
2. Direct student to change seating locations.
3. Require student to have individual conference with faculty member. At his meeting the faculty member will explain the consequences of continued disruptive behavior.
4. Dismiss class for the remainder of the period. (Must be reported to department chair.)
5. Lower the student’s final exam by a maximum of one-letter grade.
6. File a complaint with the Dean of Students for more severe disciplinary action.

Students who believe the faculty member has unfairly applied the policy to them may make an appeal with the faculty member’s department chair.

- VI. Academic Support Resources** – Students who are earning less than a “C” average will be encouraged to attend tutorial sessions provided free by various units and centers below.

<http://www.uncfsu.edu/univcoll/services.asp>

<http://www.uncfsu.edu/learningcenter/>

<http://www.uncfsu.edu/sss/>

<http://www.uncfsu.edu/cpser/tutorialservices.htm>

Online tutoring is also available through Smartthinking:

<http://www.uncfsu.edu/fsuretention/smarthinkingflyer.pdf>

- VII. Course Outline and Assignment Schedule**
(Provided separately and course schedule)

VIII. Teaching Strategies

Students will spend considerable part of the semester working in the laboratory on different assignments, techniques and projects. Also, students will be given assignments and research papers to independently learn or enhance their understanding of the subject. Students will also be taught on maintaining of lab notebooks.

IX. Bibliography

1. National Center of Biotechnology Information (<http://www.ncbi.nlm.nih.gov/>)
2. National Library of Medicine (<http://www.ncbi.nlm.nih.gov/sites/entrez?db=PubMed>)
3. Molecular Biology – Genes to Proteins, 3rd ed, 2008, Burton E. Tropp, Jones and Bartlett.
4. Genes IX, 2008, Benjamin Lewin, Jones and Bartlett.
5. North Carolina Biotechnology Center (www.ncbiotech.org)