

Virginia State University

Biology Department

Lockett Hall

INVESTIGATIONS AND RESEARCH (BIOL 446-05)

Spring, 2004

Syllabus and Course Schedule

INSTRUCTOR: Dr. Ali Mohamed **OFFICE:** 201
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Phone: (804) 524-6919

TEXTBOOK: None. Materials will be provided based on the selected topic. Some E-books will be identified and used. The students will be able to use these books through VSU library website [<http://library.vsu.edu>]

SEMESTER: Spring, 2004

CLASS SCHEDULE: WF 1:00- 1:50 PM **ROOM:** 112, Lockett Hall

Course Credit: 2 semester hours

Prerequisites: BIOL 211 Comparative Vertebrate Anatomy, BIOL 320 Principles of Genetics

Materials: Writing instruments and paper, Calculator, and other materials as needed

Office Hours: See attached table.

University Mission:

To promote and sustain academic programs that integrate instruction, research, and extension of public service in a design most responsible to the needs and endeavors of individuals and groups within its scope of influence. The University is dedicated to providing for its students and education which challenges their intellect and prepares them to become knowledgeable, perceptive and equipped for personal fulfillment sensitive to the needs and aspirations of others, and committed to assuring productive roles in an ever-changing global society.

Department of Biology Mission:

The mission of the Department of biology is to provide the professional assistance needed to develop insight into biological research and preparation for medical or graduate study.

COURSE DESCRIPTION AND OBJECTIVES:

Course Objectives: This course is designed to train students in different aspects of research, including but not limited to literature search, experimental design, preparation of manuscript, presentation of their collected data and findings. Students will be able to apply of biological and/or biochemical/chemical techniques in their selected research topic under the guidance of a member of the biology faculty. The research training will be in areas of the student's interest. The course will expose students to research environments through conducting some research or visits to different research labs at VSU or other institutions, and state or federal agencies. The course is designed to meet the experience of individual student. Topics are listed in the attached course schedule. Upon completion of this course, the students will:

1. Understand the principles involved in research and concept of experimental design.
2. How to use the library to gather the recent published articles in area of interest.
3. How to read and understand research papers.
4. Be trained on the use of some scientific equipment.
5. Prepare scientific publications.
6. How to present scientific data using different techniques.

Course Activities:

Students will be requested to conduct library search to collect most recent information in biology, biochemistry, molecular biology or related areas. Students will be required to make presentation using power point, slides or to prepare a poster. Some of the data may be collected by students through involving in research. ***Students will require to provide essays on specific topics in biological sciences within their area of interest. Information on such activities will be provided to students at the appropriate time. Students must understand that this course is practical course and will require more time. It is 4 contact hours a week, however, research sometime requires more time and dedication to be able to produce reproducible results.***

Be advised that this is a difficult course from the standpoint of breath of material to be covered and the relentless pace through the semester. DO NOT GET BEHIND! I will strive to develop your ability to integrate basic information and develop your problem solving skills. Exams will be designed to make you think, not memorize and regurgitate basic facts. This course is designed to provide a basic background for students wishing to ultimately carry out research as a part of their degree program(s) here at VSU. I will be available to consult with students who need extra help on an ad hoc basis. If you get into a grade problem, please come see me before it gets irreparable.

CRITICAL THINKING:

Data show that college graduates and the general population are increasingly ignorant of science and are ill equipped to make intelligent decisions about issues such as biological systems and their interaction with environments. The lack of training in critical thinking is a major reason for this paucity of problem-solving skills. ***Critical thinking is broadly defined as the use of any cognitive skills higher than recall, or more narrowly as the process of evaluating a body of evidence, separating assumptions from observations, and reaching some conclusion based on the evidence.*** Therefore, a major goal of this course is to improve students' learning and understanding of biology by implementing student critical thinking in laboratory setting. This will be accomplished by:

- Teaching science as science is done-namely, as a process of learning with emphasis on observation and hands-on, discovery-based activities that lead to formulating and testing hypotheses;
- Starting lessons with explanations of why the topic is interesting and important and using everyday language coupled with scientific terminology;
- Presenting information as a constant state of flux rather than dogmatic "facts"; and
- Testing for and rewarding critical thinking rather than memorization.

Honor Code:

Each student is expected to adhere to the policies of the honor code as established by the University. All academic assignments, quizzes and tests are to be the result of individual effort. Any student found guilty of cheating will receive a failing grade (F) for the assignment or activity in question.

Classroom Conduct:

The classroom environments will be maintained in a manner that facilitates effective teaching and learning. The classroom environments should be such that it prepares students for behavior that is expected in the professional and corporate environments for which they are preparing to live and work.

Disruptive and disrespectful behavior on the part of any student will not be tolerated by the instructor. The instructor will always be in charge and has the right to determine appropriate standards of behavior in the classroom or laboratory as long as the requirement does not infringe upon the individual's rights. To cover extract information which will be provided in handouts or through e-mail or internet, students must be prepared to take lecture notes during the class, when lecture will be presented.

STUDENT STUDY AIDS:

Audio-visual aids are available on specific topics. These will be available to you after class on the web site provided by the instructor (during conference hours). The equipment needed to conduct some research will be available to interest students.

Research Report Format:

The first report will be due one week before Mid-Term (late reports are discounted)

You are to collect information on biological, biomedical or biochemical research at VSU or close institutions. I will provide you with some names of scientists to interview. The names of the scientists will be given to you in class. If you have someone in mind to interview, please provide me with the name, address, and e-mail. You will submit a report containing the following 10 components (10 points each)

- Title of Research
- Rationale
- Purpose(s) and Objective(s)
- Hypothesis
- Experimental Design
- Subjects
- Expected Findings
- Actual Findings or Preliminary Findings

Implications and Importance

Your Reaction and Reverence to Your Study

Students may access the following web address for further information about the course.

[Http://www.vsu.edu/blackboard](http://www.vsu.edu/blackboard)

Research Training:

Student will be asked to identify area of interest to conduct research. If the student is not interest in conducting actual research, a research topic will selected and specific information will be provided by student as listed above.

Based on the quality of research data, the student may be asked to present his/her finding at regional scientific meeting such as the Virginia Academy of Science at University of Virginia, May 2004.

GRADE EVALUATION:

Students will be evaluated individually based on their progress, presentation, and ability during their training. Because each student may have different activities, it is difficult to set complete evaluation criteria at this time. However, the evaluation criteria will be developed prior the mid semester.

In addition to written final exam, student will have an oral exam evaluate actual progress and ability to understand and to conduct independent research.

Examination Policy:

The grade will be based on presentations, term papers, library search, and manuscript preparation. The final grade will be based on the grades that will be given on all categories of this course.

GOOD LUCK TO YOU! I hope that this semester will be a rewarding experience for all and the course will adequately prepare you for more advanced classes in your specific curriculum.

Dr. Mohamed, Ali
Class Schedule and Office Hours
 Semester: Spring Year: 2004

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8:00		BIOL. SCI. GEBI-116-06 8:00-9:20 RM 204		BIOL. SCI. GEBI-116-06 8:00-9:20 RM 204		
9:00			Office Hours 9:00 - 12:00		Office Hours 9:00 - 12:00	
10:00						
11:00						
12:00	BIOL. SCI. GEBI-116-03 12:00-12:50 RM 204		BIOL. SCI. GEBI-116-03 12:00-12:50 RM 204		BIOL. SCI. GEBI-116-03 12:00-12:50 RM 204	Cytology BIOL-520-01 12:00-2:50 (RM 208)
1:00	Office Hours 1:00 - 4:00		Investigations and Research BIOL-446-05 1:00-1:50 (RM 112)		Investigations and Research BIOL-446-05 1:00-1:50 (RM 112)	
2:00			Office Hours 2:00 - 4:00		Office Hours 2:00 - 4:00 by Appointment	
3:00						
4:00						
5:00			MICROBIAL BIOCHEMISTRY BIOL-542-01 5:00- 7:50 RM 110			
6:00- 7:50						