I. LOCATOR INFORMATION:
Instructor: Subir K. Nagdas, Ph.D.
Course Number and Name: BICH 421 and BIOCHEMISTRY
Office Location: LSA336
Semester Credit Hours: 1.0
Office Hours: Monday- 2pm-5pm
   Wednesday- 2pm-5pm
Day and Time Class Meets Laboratory: F 2:00 to 3:50 pm LSA 347
Telephone: 672-2073
Total Contact Hours for Class: 30 hours
Email: snagdas@uncfsu.edu

FSU Policy on Electronic Mail: Fayetteville State University provides to each student, free of charge, an electronic mail account that is easily accessible via the Internet. The university has established email as the primary mode of communicating with enrolled students about impending deadlines, upcoming events, and other information important to student progression at the university. Students are responsible for reading their email on a regular basis to remain aware of important information disseminated by the university. The university maintains open-use computer laboratories throughout the campus that can be used to access electronic mail.
Students making inquiries via email to FSU faculty and staff about academic records, grades, bills, financial aid, and other matters of a confidential nature are required to use their FSU email account.
Rules and regulations governing the use of FSU email may be found at: http://www.uncfsu.edu/PDFs/EmailPolicyFinal.pdf

II. Course Description: This laboratory course will instill the application of biochemical principles and techniques to the separation, purification and quantitative analysis of biological molecules. The emphasis will be given on the principles of enzyme’s action and regulation, with consideration of structure/function relationship and quantitative analysis and the metabolism and the regulation of the metabolism of the major classes of macromolecules.

III. Course Rationale: This course will assist students pursuing a career in biochemistry and other scientific areas. Students will acquire the experience on the use of the various methods such as identification, purification and characterization of major classes of bio-molecules.
Prerequisites: BICH 411

IV. Student Learning Outcomes: Upon completion of this course, the students should have obtained the following competencies: (1) A detailed understanding of the biochemical methods employed to identify and to characterize macromolecules; (2) A detailed understanding of enzyme kinetics; (3) A thorough understanding of the concepts and techniques used for the isolation, purification and characterization of proteins; (4) An in-depth knowledge of the biochemical techniques related to the study of metabolism; (5) A basic knowledge of the scientific writing process.

V. Course Requirements and Evaluation Criteria:

Laboratory Reports- 100% of total grade

Laboratory reports are to be typed (double-space) including all graphs and tables. The reports should be under the following headings: 1. Title of the experiment, 2. Introduction and Objective(s), 3. Materials, 4. Methods, 5. Results, 6. Discussion, and 7. Conclusions.
Any laboratory report will not be accepted after the due date. Lab report due date and the exam dates will be announced prior to each test.

Grading Scale:  
A: 90-100%  B: 80-89%  C: 70-79%  D: 60-69%  F: below 60%

Attendance Requirements: Students are expected to attend all lecture sessions, except in cases of illness and other unforeseen emergencies. It is the student’s responsibility to contact the instructor about the steps that must be taken for making up any and all missed assignments. The university policy concerning absences from class will be strictly enforced. The instructor will request administrative withdrawal for students who either incur TWO CONSECUTIVE ABSENCES, or whose absences exceed 10% of the total course hours of the semester.

General Grading Policies: Take examinations on the scheduled dates. Dates of the examinations will be announced in due time. No student will be allowed to take an exam before or after the scheduled exam time. The only exceptions will apply to those students who have the learning disabilities. The learning disability should be approved by the appropriate authority of the university. Make-up tests are never given because they are annoying and not fair to other students. Tests missed will result in a grade of zero. Every student should take the final exam. At the discretion of the instructor, if a valid excuse is presented, arrangements can be made to take the make-up tests or final at a different time. Please be advised that common cold and similar illnesses may
not constitute emergency. Note that makeup exams may be longer, more difficult, and have a different format than the exam given to the class.

Academic Integrity: Any student engaging in an act of academic dishonesty, including but not limited to: cheating on exams, copying problem sets, using notes during the exam, asking another student for help or answers during an exam, having another person to take an exam for you will receive a grade of zero for the work on which the offence was committed and will be reported for appropriate action.

Drop Deadline: No student will be allowed to drop the class after the university deadline that is listed in the Academic Calendar.

Student behavior Expectations: Students are not allowed to use any electronic gadgets in class (i.e., cell phones, pagers, beepers etc.) and during any exams. Food and drinks are not allowed in the laboratory.

VI. List of Experiments:
1. Bradford Protein Assay
2. Nelson Assay for Reducing Sugars
3. Purification of Protein:
   a) Ion-exchange Chromatography
   b) Affinity Chromatography
   c) Polyacrylamide Gel Electrophoresis
4. a. Quantitation of an Antigen Using ELISA.
   b. Western Blot to Identify an Antigen.
5. Enzyme Kinetics:
   a) Enzyme Activity (Acid Phosphatase) Assay and the Calculation of Specific Activity
   b) Determination of the pH Optimum for the Acid Phosphatase Activity
   c) To Determine the Substrate Specificity of Acid Phosphatase
   d) Lineweaver-Burk Plot (Km and Vmax)
   e) Enzyme-Inhibitor Kinetics
6. Thin-layer Chromatography of Lipids
7. Amplification of a DNA Fragment Using Polymerase Chain Reaction

VII. BIBLIOGRAPHY:

Students are encouraged to review each current issue and read appropriate articles and the techniques utilized to get the results (in the methods section) in the following journals, also available in the C. W. Chestnutt Library: