



NUTR 753 Experimental Techniques in Nutrition and Metabolism

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Class Credits, Time & Location:

Course Description: Examination of laboratory methods used in nutrition research through experiments requiring variations in diet, and techniques for obtaining and analyzing samples. Emphasis on data collection, analysis, and presentation of results.

General Course Objectives

- Describe the complicated facets of nutrition research
- Demonstrate the type of approaches taken in nutrition research
- Become familiar with the limits of various assays
- Develop analytical skills necessary to function in a research laboratory

Textbook:

1. A Flexible System of Enzymatic Analysis; Lowry & Passonneau
2. Hawks Physiological Chemistry
3. Methods in Enzymology
4. Nutritional Methodology in Metabolic Research with Rats; Greenfield & Briggs, Annu. Rev. Biochem. 40:549-572, 1971

Tentative Schedule

Week Topic

1. Orientation; spectrophotometry and pipetting
2. Urinary creatinine determination (colorimetric assay)
3. Verify method used to quantify urinary ascorbic acid for 24 hr excretion studies
4. Analyze 24 hr urine collection for ascorbic acid and creatinine
5. Determination of blood lactate assay – colorimetric vs enzyme end-point assays

6. Design pyridoxine deficiency enzyme adaptation experiment, prepare diets, weigh and assign rats to treatment groups
7. Determine optimum conditions for hepatic dehydrogenase enzyme assays; G-6-PDH, LDH, and MDH
8. Determine hematocrit; work out iron and iron binding capacity assays
9. Terminate pyridoxine deficiency experiment; sacrifice rats, assay enzymes in liver
10. Continue assays for liver enzymes
11. Conclude assays for liver enzymes
12. Carry out cell fractionation by differential centrifugation
13. Determine subcellular distribution of hepatic dehydrogenase enzymes in the nuclear, mitochondrial, microsomal, lysosomal, and cytosolic fractions in rat liver homogenate
14. Conclude enzyme assays of subcellular fractions
15. Set up and work out assays for the Biuret and Lowry assays for protein

Final exam: Determination of urea in blood and urine – final written and oral report to be presented to instructor

Grading and Exam Policy

Two thirds of the course grade will come from the written laboratory reports and laboratory discussions; one third from the final exam.

Lab reports are intended to give students an opportunity to demonstrate an understanding of the objectives of the procedure, the mechanics of analysis, and the limitations of the procedure. Lab reports should contain an Introduction describing the significance of the assay; Methods indicating the principles of the chemistry involved; Results presenting the data collected, calculations, and statistical analysis; Discussion evaluating the results with respect to literature values.

Course Policies

1. Please be on time for class. Repeated lateness will affect your course grade.
2. Attendance is mandatory in this course. We will be covering some material and performing some activities that cannot be duplicated from reading a text book. Your final grade will be reduced if you repeatedly miss class (see points above).
3. Please turn off your cell phones or any other electronic devices before class.
4. Assigned readings are to take place before the class meeting. It will be the student's responsibility to ask questions in class or during an appointment if any information is unclear.
5. If you miss a class, you are responsible for any announcements made and all material covered. The instructor will not repeat lectures during an appointment.
6. Missed exams and/or projects must be discussed with the instructor prior to the project due date. In the event of a legitimate emergency, the instructor must be contacted within a reasonable amount of time. Failure to do so will result in a zero. Any make-ups will be at the discretion of the instructor. A conflict with a work schedule will not be considered sufficient reason to be allowed to make-up assignments. Late projects, if approved by the instructor, are subject to a 10% per calendar day penalty. All late projects must be submitted in BHS 319 and date stamped. Leaving the project with anyone else may result in a delay and subsequent loss of points. The official receive date is when the instructor receives the project, not when it is delivered.
7. Exam, assignment and project grades will be available to students via WebCampus.

Additional Policies

Professional Behavior- It is expected that all students will behave in a professional and courteous manner when communicating with their instructor, teaching assistants, and fellow students. Rude behavior will not be tolerated. If you engage in any of these behaviors, and fail to correct the problem, a report will be sent to the UNLV Office of Student Conduct. A student who chooses not to comply is subject to an administrative course drop. Of course, professional participation via questions and comments directed toward the instructor or other student is encouraged.

Academic Misconduct—Academic integrity is a legitimate concern for every member of the campus community; all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy and are encouraged when faced with choices to always take the ethical path. Students enrolling in UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's function as an educational institution.

An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another, from the Internet or any source, without proper citation of the sources. See the Student Academic Misconduct Policy (approved December 9, 2005) located at: <https://www.unlv.edu/studentconduct/student-conduct>.

Copyright—The University requires all members of the University Community to familiarize themselves with and to follow copyright and fair use requirements. You are individually and solely responsible for violations of copyright and fair use laws. The university will neither protect nor defend you nor assume any responsibility for employee or student violations of fair use laws. Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional information can be found at: <http://www.unlv.edu/provost/copyright>.

Disability Resource Center (DRC)—The UNLV Disability Resource Center (SSC-A 143, <http://drc.unlv.edu/>, 702-895-0866) provides resources for students with disabilities. If you feel that you have a disability, please make an appointment with a Disabilities Specialist at the DRC to discuss what options may be available to you. If you are registered with the UNLV Disability Resource Center, bring your Academic Accommodation Plan from the DRC to the instructor during office hours so that you may work together to develop strategies for implementing the accommodations to meet both your needs and the requirements of the course. Any information you provide is private and will be treated as such. To maintain the confidentiality of your request, please do not approach the instructor in front of others to discuss your accommodation needs.

Religious Holidays Policy—Any student missing class quizzes, examinations, or any other class or lab work because of observance of religious holidays shall be given an opportunity during that semester to make up missed work. The make-up will apply to the religious holiday absence only. It shall be the responsibility of the student to notify the instructor within the first 14 calendar days of the course for fall and spring courses (excepting modular courses), or within the first 7 calendar days of the course for summer and modular courses, of his or her intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit: <http://catalog.unlv.edu/content.php?catoid=6&navoid=531>.

Transparency in Learning and Teaching—The University encourages application of the transparency method of constructing assignments for student success. Please see these two links for further information: <https://www.unlv.edu/provost/teachingandlearning> and <https://www.unlv.edu/provost/transparency>

Incomplete Grades—The grade of I—Incomplete—can be granted when a student has satisfactorily completed three-fourths of course work for that semester/session but for reason(s) beyond the student’s control, and acceptable to the instructor, cannot complete the last part of the course, and the instructor believes that the student can finish the course without repeating it. The incomplete work must be made up before the end of the following regular semester for undergraduate courses. Graduate students receiving “I” grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the time indicated, a grade of F will be recorded and the GPA will be adjusted accordingly. Students who are fulfilling an Incomplete do not register for the course but make individual arrangements with the instructor who assigned the I grade.

Tutoring and Coaching—The Academic Success Center (ASC) provides tutoring, academic success coaching and other academic assistance for all UNLV undergraduate students. For information regarding tutoring subjects, tutoring times, and other ASC programs and services, visit <http://www.unlv.edu/asc> or call 702-895-3177. The ASC building is located across from the Student Services Complex (SSC). Academic success coaching is located on the second floor of the SSC (ASC Coaching Spot). Drop-in tutoring is located on the second floor of the Lied Library and College of Engineering TEB second floor.

UNLV Writing Center—One-on-one or small group assistance with writing is available free of charge to UNLV students at the Writing Center, located in CDC-3-301. Although walk-in consultations are sometimes available, students with appointments will receive priority assistance. Appointments may be made in person or by calling 702-895-3908. The student’s Rebel ID Card, a copy of the assignment (if possible), and two copies of any writing to be reviewed are requested for the consultation. More information can be found at: <http://writingcenter.unlv.edu/>.

Rebelmail—By policy, faculty and staff should e-mail students’ Rebelmail accounts only. Rebelmail is UNLV’s official e-mail system for students. It is one of the primary ways students receive official university communication such as information about deadlines, major campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the university. Students’ e-mail prefixes are listed on class rosters. The suffix is always @unlv.nevada.edu. Emailing within WebCampus is acceptable and the communication method in this online course.

Final Examinations—The University requires that final exams given at the end of a course occur at the time and on the day specified in the final exam schedule. See the schedule at: <http://www.unlv.edu/registrar/calendars>.