

NUC 387: NUCLEAR CARDIOLOGY AND ECG INTERPRETATION
University of Nevada, Las Vegas
School of Allied Health Sciences. Department of Health
Physics Syllabus and Schedule

Credits: 3

Prerequisites: NUC 450 or consent of instructor

Course Description: Theory and principles of nuclear medicine cardiac imaging. Includes comprehensive examination of cardiovascular terminology, pathology and computer analysis. ECG interpretation and comprehension of life-threatening and dangerous cardiac rhythms.

Course Objectives:

1. Describe the anatomy, electrophysiology, coronary artery distribution, and the blood flow through the heart and lungs.
2. Identify the walls of the left ventricle and their normal coronary arterial distribution in the horizontal (short axis), sagittal (vertical long axis), and coronal (horizontal long axis) planes.
3. Describe and show an understanding of functional terms associated with the heart.
4. Compare and contrast infarction, ischemia, and aneurysm in relation to ejection fractions.
5. Compare and contrast the following cardiac studies in terms of diagnostic capabilities and findings; myocardial perfusion (rest and stress) in both planar and tomographic images; 1st pass ejection fractions (rest and stress); multigated acquisition functional imaging (rest and stress); acute myocardial infarct imaging, and cardiac shunts.
6. Identify, describe, and/or discuss the following elements for each of the cardiac studies listed in 5 above: most common indications; clinical findings that support the suspected pathology; radiopharmaceutical(s) of choice, their normal doses, mechanisms of localization, and Biodistribution; interfering procedures or drugs; contraindications; patient preparation; equipment, materials, ancillary drugs (pharmacologic stressing agents); general procedure including dose to image times, patient

- position, study parameters, and routine views or slices; normal and abnormal patterns of radiopharmaceutical distribution; and technical pitfalls.
7. Describe and identify the following waves, intervals and segments associated with an ECG: P, QRS and T waves; ST segment; PR interval.
 8. Determine various rates and voltages from the standard ECG paper.
 9. Differentiate positive and negative deflections from the base line and determine if these deflections are normal or abnormal.
 10. Differentiate normal rhythms from tachycardia and bradycardias.
 11. Differentiate normal sinus rhythms from atrial, junctional, and ventricular rhythms.
 12. Differentiate 1st, 2nd, and 3rd degree AV blocks and left and right bundle branch blocks.
 13. Describe and identify ischemia and/or infarctions (acute, resolving, chronic) events on electrocardiograms.
 14. Describe the proper placement of electrodes for a 3-lead and the normal 12 lead ECG.
 15. Describe the basic requirements of a "stress" test and define various exercise physiologic terms.

Teaching Methods: Lecture and discussion

Course Evaluation Methods:

Examinations: Two exams will be given: a mid-term and a comprehensive final.

Quizzes: Quizzes may be given at the first of each class, with or without prior notification. These cannot be made up.

Grading: Grading will be based upon the total points accumulated throughout the semester. The points allotted for each exam and each quiz will vary with the subject matter. A final letter grade will be assigned as a percentage of the total points according to the following scale:

A = 93-100	C = 74-77
A- = 90-92	C- = 71-73
B+ = 87-89	D+ = 68-70
B = 84-86	D = 65-67
B- = 81-83	D- = 62-64
C+ = 78-80	F = 0-61

PLEASE REMEMBER THAT YOUR CONTINUATION IN THE NUCLEAR MEDICINE PROGRAM DEPENDS ON YOUR ADHERENCE TO THE FOLLOWING: MAINTAIN A MINIMUM OF A 2.50 GPA EACH SEMESTER; HAVE NO NEGATIVE GRADE POINTS; AND, RECEIVE A "C" OR BETTER IN PROGRAM COURSES (NUC, CMI, HPS, AND RAD).

Attendance: Attendance, participation, and being on time are course expectations. There will be a letter grade reduction for every three absences or incidents of tardiness, (B to B-, C to C-, etc) incurred by any student unless emergency circumstances can be proved.

Textbooks:

Required: Christian, P and Waterstram-Rich, K. Nuclear Medicine and PET/CT Technology and Techniques. Mosby Elsevier. 2011.

Dubin, D. Rapid Interpretation of EKG's, 6th Ed. Cover. 2010.

Recommended: Crawford, E. and Husain, S. Nuclear Cardiac Imaging, Terminology and Technical Aspects. Society of Nuclear Medicine Technologist Section. 2003. ISBN 0-932004-74-1.

Mettler, F. and Guiberteau, M. Essentials of Nuclear Medicine Imaging, 5th Ed. W.B. Saunders. 2006.

If you have a documented disability that may require assistance, you will need to contact Disability Services (DS) for coordination in your academic accommodations. Disability Services is located within Learning Enhancement Services (LES), in the Reynolds Student Services Complex, Suite 137. The phone number is 895-0866 or TDD 895-0652.

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NUC 387: NUCLEAR CARDIOLOGY

Introduction to course; Cardiac structure and terms; Physiologic basis of myocardial perfusion imaging (MPI); orientation of planar images

Cardiac plane definition and display for tomographic imaging modalities; polar maps and circumferential profiles; MPI radionuclides and protocols

Gating; Recognition of SPECT artifacts in MPI

Artifacts, continued; Exercise and pharmacologic stress testing

Pharmacologic Stress Testing, continued; Quantitative Analysis of SPECT and GSPECT

Computer Processing of SPECT and GSPECT and image display

EXAM I

Functional Cardiac Imaging: 1st pass radionuclide angiography (RNA) and multigated equilibrium (MUGA)

Functional Imaging, continued; Acute myocardial infarction imaging

Introduction to ECG Interpretation, principles, waves, intervals and segments

Sinus rhythms and atrial/junctional (supraventricular) rhythms

Ventricular rhythms; heart blocks

Heart blocks, continued; infarct and ischemia

FINAL EXAM

UNIVERSITY POLICIES:

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: <http://studentconduct.unlv.edu/misconduct/policy.html>.

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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 before or after class 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 no later than the end of the first two weeks of classes, **September 22, 2015** 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>.

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. 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. Please note – Students cannot enroll in other nursing courses if they have an incomplete (I) in a course that is designated as a prerequisite to that course. (Per School of Nursing Policy C-12).

Tutoring – The Academic Success Center (ASC) provides tutoring and academic assistance for all UNLV students taking UNLV courses. Students are encouraged to stop by the ASC to learn more about subjects offered, tutoring times and other academic resources. The ASC is located across from the Student Services Complex (SSC). Students may learn more about tutoring services by calling 702- 895-3177 or visiting the tutoring web site at: <http://academicsuccess.unlv.edu/tutoring/>.

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.

Library Resources –Students may consult with a librarian (www.library.unlv.edu/consultation) about research needs. For this class, the subject librarian is Xan Goodman. UNLV Libraries provides resources to support students' access to information. Discovery, access, and use of information are vital skills for academic work and for successful post-college life. Access library resources and ask questions at www.library.unlv.edu/