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| **Course Credit:** | 1 Credit |
| **Time and Location:** | Thursday: Class 11:00-11:50amNURS RM 210 |
| **Instructor:** | Chelsie Wheatley, BSRS, BSDMS, RT(R), RDMS, RVT |
| **Phone:** | 208-241-1599 or 282-4042 (Secretary, Alyssa) |

**Overview:** This course covers advanced sonography principles and instrumentation, QA, clinical safety, physical principles, and pulsed echo instrumentation. Current technology will be examined and emphasis will be placed on image optimization, quality assurance, sonographers in a clinical setting and bioeffects. The majority of this course will be a cumulative review of sonography principles and instrumentation and preparations will be made to sit for the ARDMS Sonography Principles and Instrumentation (SPI) Examination. This examination will be taken as part of a requirement to fulfill the course objectives.

**Textbooks:** Edelman, Sidney K. *Understanding Ultrasound Physics.* 4th Edition. Woodlands, TX: Sidney K. Edelman; 2012. ISBN 0-9626444-5-5

**Method of Presentation:**  Lecture, PowerPoint, Handouts, X-Zone

**Code of Ethics:** DMS 4409 adheres to the ISU Code of Conduct.  In particular, academic dishonesty, however small, creates a breach in academic integrity.  A student's participation in this course comes with the expectation that his or her work will be completed in full observance of the ISU Code of Student Conduct.

**Course Learning Objectives/Goals:** This course has been designed to prepare student sonographers for the responsibilities of sonographic imaging. The student will learn about quality assurance, bioeffects, and sonographers in a clinical setting. They will also review the entirety of SPI I and SPI II course information in preparation for the SPI examination, and sit for the exam during the semester. Once the ARDMS SPI examination is taken and passed, the student has completed the course.

**Course Learning Outcomes: Upon completion of this course, the student will be able to:**

* Define Quality Assurance and list the requirements, goals, devices and methods for it
* Discuss tissue equivalent, slice thickness, and Doppler phantoms
* Explain the principles of bioethics
* Define informed consent
* Discuss proper patient-sonographer interaction, and sonographer-work environment interaction
* List facility responsibilities on ergonomics and the agency that regulates it
* Define a hydrophone and explain the uses for it
* Discuss biologic effects and safety of ultrasound
* Compare and contrast the mechanistic and empirical approaches
* Compare and contrast thermal mechanism and cavitation mechanism
* List limitations of epidemiologic studies

**Academic Dishonesty Policy:**

Academic dishonesty (cheating, plagiarism, etc.) will not be tolerated in this class and may result in suspension or dismissal from this course and from the program. Cases will also be referred to the Dean of Students for possible dismissal from the university.

Cheating includes, but is not limited to, (1) use of any unauthorized assistance in taking quizzes, tests, or examinations; (2) dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or completing other assignments; or (3) the acquisition of tests or other academic materials belonging to the university faculty or staff without permission.

Plagiarism includes, but is not limited to, the use of, by paraphrase or direct quotation without correct recognition, the published or unpublished works of another person. The use of materials generated by agencies engaged in "selling" term papers is also plagiarism.

Many components of DMS 4409 are designed to be highly interactive.  Students are encouraged to take full advantage of the many resources available including Internet sites, handouts and workbooks, other textbooks and journals, faculty, and peers. This interactive collegial learning environment is conducive for life-long learning.

***When students submit their efforts for grading, they are attesting that they have abided by these rules.***

**Classroom Procedure:**

1.  **Attendance:**  You are expected to attend class regularly.  It is your responsibility to maintain a level of attendance which will allow you to derive maximum benefit from the instruction.  Excessive absences (>10%) will result in a lower course grade if you are borderline between two grades.  Conversely, if you have good attendance and are border line between two grades, I will award the higher grade.

2.  **Grading Procedure:**

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| **Assessment Method** | **Percentage Value** |
| Test #1 = Chapters 22-24 | 25% |
| Review Questions | 25% |
| Mock Examination #1 | 25% |
| Mock Examination #2 | 25% |
| Total | 100% |

\*\*If the student passes the ARDMS Sonography Principles & Instrumentation Examination, an automatic A grade will be given for the course. If they do not pass the examination on their first try, they should have time during the semester for a second attempt. If the examination is not passed on the second attempt, the grade will be given based on the assessment method shown above.

**This grading Scale will be used:**

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| +/- System |  |
| 93-100% A | 73-76% C |
| 90-92% A- | 70-72% C- |
| 87-89% B+ | 67-69% D+ |
| 83-86% B | 63-66% D |
| 80-82% B- | 60-62% D- |
| 77-79% C+ | 59% Below F |

*Note: A grade of C or better is required in this course in order to receive a certificate from the Department of Radiographic Science.*

3. **Computer Account:** All students are required to have an ISU student computer account.  There is no fee required for this account. Obtain the account at the Computer Center, which is located in the basement of the College of Business Building or in the Rendezvous Lab. This account will be used for the first test, as well as for x-zone and other review resources.

4.  **Make-up:** If you are unable to sit for an examination, you may request a make-up exam.  You must inform me that you will not be present for the examination **prior** to the scheduled time.  An additional 10% drop in the test grade will result if prior notification is not given and is not accepted by me prior to taking the test.  The highest grade you can receive for a make-up exam is 89% unless you provide me with an acceptable excuse. An acceptable excuse is defined **as very** sick; a death in the immediate family; some unforeseen circumstance that would prohibit you from taking the exam. The key is to communicate with me directly via email, phone, or in person. Do not speak to another faculty member or the department secretary. I’m very easy to catch with email, but make sure your email is received by me prior to the test deadline.

*In addition, it is a requirement to take all tests offered during the semester.  An incomplete will be issued for the class if a test is not taken.*

**Cell phone policy:** Cell phones should not be used in class. They should be place in silent or vibrating mode or turned off. Additionally receiving and retrieving text messages should not occur during class or in labs. Failure to follow this policy will result in a deduction of grade up to 10% at the discretion of the instructor. If you need to communicate to someone outside of the class in an emergency situation please inform the instructor so accommodations to this policy may be made.

**Disability Services:** Students with disabilities who wish to have accommodations provided by the University must self-identify with Disability Services (236-3599) in order to have accommodations provided. Information and applications are available in the Center and may be picked up in person or requested by telephone. The URL is <http://www.isu.edu/ada4isu/>