NANO 703/703L – Fall 2016
Instrumentation & Characterization of Nanomaterials
Course Description

Overview: This is an introductory course on instrumentation used in characterization of nano-scaled materials. The course is aimed at entry-level graduate students who want to learn characterization of nano-scale materials using modern instruments.

Credit Hours: 4

Classrooms: Lecture: EP 251A
Labs: Lab locations are specified on the Course Schedule.

Time: Lecture: MWF 10:00 AM-10:50 AM
Labs will be conducted in small groups. Please select a time slot on sign-up sheet.

Instructor: S. P. Ahrenkiel
Office: EP 221; Hours: MWF 11:00 AM-11:50 AM, and by appointment
Phone: 605-394-5238
Internet: e-mail: Phil.Ahrenkiel@sdsmt.edu
URL: http://ahrenkiel.sdsmt.edu/

Required Text:
Transmission Electron Microscopy, D. B. Williams & C. B. Carter, 2nd Ed. (Springer, 2009)

Optional Texts:
Scanning Electron Microscopy and X-Ray Microanalysis, 3rd Ed., J. Goldstein et al. (Springer, 2003)
Elements of X-Ray Diffraction, 3rd Ed., B. D. Cullity & S. R. Stock, (Prentice Hall, 2001)

Equipment: Always bring a calculator (w/trig., log. functions) to class. Access to a personal computer will be needed to complete some assignments. If you have a laptop, it will be useful to bring it to lab. Note-taking accessories are essential. Evidence of consistent and active note-taking will be *verified*. A bound notebook is *required* for lab sessions.

Labs: The course includes about 12 experimental labs.

Exams: There will be two midterms exam covering specified lecture and lab material.

Final: The final exam will include specified lecture and lab material from throughout the semester.

Quizzes: There will be quizzes, both announced and unannounced. Attendance or prior arrangement is required for credit.

Homework: Homework problems will be assigned with specified due dates. Late submissions may be assessed a score reduction. Original work and legibility are required.

Attendance: Attendance is essential and may be recorded. Work may be deferred only upon prior arrangement.

Grading: Assignments will have the following weight toward the final grade:
Labs: 25%; Homework: 25%; Midterm Exams: 25%; Final Exam: 20%;
Quizzes, Attendance & Participation: 5%

Policies:

- Assignments should be submitted to the instructor in *hardcopy* form at the specified time, unless prior arrangements have been made with the instructor.
- Electronically submitted assignments will be accepted *only* after prior arrangment and *only* in .pdf format by email to the instructor. Student name or ID must be included in the file name and *also* within the document.
- All submitted work must be original. Exams and in-class assignments are strictly independent.
- Cooperation on homework assignments is permissible, but each submission must be unique.
- Brief duplication from third-party sources is acceptable *only* if the source is explicitly identified.
- Direct quotations must be indicated with quotation marks, offset margins, and/or altered font.

Special Needs: Students with special needs or requiring special accommodations should contact the instructor and/or the campus ADA coordinator, Megan Reder-Schopp (605-394-6988, megan.reder-schopp@sdsmt.edu) at the earliest opportunity.