Modern Nuclear Chemistry

Instructor    Sean Liddick
Title        Associate Professor
Office Address   1006 NSCL
Office Hours   by appointment
E-mail        liddick@chemistry.msu.edu
Location      Rm. 1309 NSCL
Times         MWF 9:10 am - 10:00 am
Start Date    January 6, 2018

Online Course Information and Content
Lectures, homework assignments, updates, and due dates are all provided on the Desire 2 Learn (D2L) platform under the SS20-CEM-485-001-Modern Nuclear Chemistry class. This can be accessed by anyone enrolled in the course by logging onto d2l.msu.edu with your MSU netid.

Required Text
Modern Nuclear Chemistry
Loveland, Morrissey, and Seaborg
ISBN 0471115320
Wiley Interscience, 2006
(Available online at MSU Libraries, www.lib.msu.edu ; search title “Modern Nuclear Chemistry”)

Course Objectives
The goal of this course is to cover the basics of nuclear chemistry to allow participants to confidently apply this knowledge to events in everyday life. Such applications include imaging methods, cancer therapy, tracer methods, food preservation, nuclear energy, nuclear non-proliferation, and accelerator techniques for waste transmutation. The scientific framework will include atomic nuclei, nuclear properties, radioactive decay modes, interaction of radiation with matter, nuclear models, nuclear structure, nuclear reactions, and nuclear fission.

Course Requirements
Exams:
There will be two mid-term examinations and no final examination.

Homework:
Homework problem sets will be assigned throughout the semester. Homework is due at the start of class on the respective due date. The homework will consist of questions from the course textbook, plus supplemental material. Some answers will require the use of Microsoft Excel.

Research Paper:
Each student is required to complete a research paper. The paper will be on a topic with relevance to nuclear chemistry and selected by the student in consultation with the course lecturer. Research topics are to be selected by Jan 29. An outline of the term paper, including bibliography, is due February 26. Final papers are due April 15.
Research Presentation:
Each student will give a 12 minute oral presentation on their term paper. The presentations will be given at the end of April. All students must be present for all research presentations. Failure to attend any one of the research presentations without a valid excuse (illness, death in the family, religious observance, etc.) will result in an automatic zero grade for class participation.

**Grade Scale:**
- 4.0: 85 - 100
- 3.5: 75 - 85
- 3.0: 70 - 75
- 2.5: 60 - 70
- 2.0: 55 - 60
- 1.5: 50 - 55
- 1.0: 45 - 50

**Late Homework or Research Paper Material:**
Any assignment turned in late will be marked down by 10% immediately with each day late resulting in an additional 5% mark down of the grade.

**Grading Policy**
- Homework 15%
- Midterms 20% each
- Term Paper 20%
- Class Presentation 15%
- Class Participation 10%

**Attendance Policy**
Attendance at lectures is expected. As noted above, all students must attend all research presentations.
Mutual respect and civility are expected in the classroom. At no time is it acceptable for a student or instructor to be mimicked, embarrassed, intimidated, or mistreated in any way. It is rude to talk, read newspapers, text, or browse the internet during lectures. Students engaging in such activities will be dismissed from the classroom. If you know you must arrive late or leave early from lecture, please inform your instructor ahead of time.

**Exam Policy**
There will be two mid-term examinations given in class. Bring a calculator. There will not be a final examination. Students must inform the instructor as soon as possible if they will miss one of the examinations. Typically, make-up examinations are not given.

**Academic Integrity**
Students should familiarize themselves with the MSU Policies, Regulations and Ordinances Regarding Academic Honesty and Integrity that are available from the Office of the Ombudsman (https://www.msu.edu/~ombud/academic-integrity/index.html). Any student found committing an act of academic misconduct will receive a penalty grade, and a letter will be sent to the student's academic dean describing the reason for the penalty. This letter becomes part of the student's academic record, where it will remain, unless the student successfully grieves the allegation.

**Diversity and Inclusion Policy**
Inclusion and diversity are core values of MSU and the College of Natural Science. As Spartans, we are dedicated to respecting people of all backgrounds, beliefs, identity status, and political beliefs. The
college is committed to creating a safe, supportive, and welcoming environment where all students, faculty, and staff can pursue academic and professional success. All members of the MSU community deserve each other’s respect, support, recognition, and protection. It is essential that we all work together to foster an inclusive community where Spartans of all backgrounds can study, work, and thrive.

**Americans with Disabilities Act Accommodations**

Michigan State University is committed to providing equal opportunity for participation in all programs, services, and activities. Requests for accommodations by persons with disabilities may be made by contacting the Resource Center for Persons with Disabilities by phone at 517-884-RCPD or through the web at rcpd.msu.edu. Once your eligibility for an accommodation has been determined, you will be issued a verified individual services accommodation (“VISA”) form. Please present this form at the start of the semester and/or at least two weeks prior to the accommodation date. Requests received after this date will be honored whenever possible.