Practical Nuclear Magnetic Resonance Spectroscopy

1. Course information:
Course number: F419
2 credits Offered Spring semesters
Prerequisites: CHEM 321 or instructor permission
Location:
 Lectures will be in REIC 207
 Labs will be in REIC 136 for NMR time and REIC 132 will be available for some
reactions and sample preparation.
Meeting time:
 Lecture: Tuesday: 1:00 PM - 2:00 PM
 Lab: Scheduled by the students as needed. Should average 3 hours per week,
and not exceed 42 hours for the semester.
2. Instructor Information:
Dr. Carl Murphy, office: REIC 136; Phone: 474-5545;
e-mail: cjmurphy4@alaska.edu
Office Hours: Monday mornings or by appointment.
3. Textbook:
Required: Organic Structures from 2D NMR Spectra, L.D. Field, Wiley, 2015 first
edition ISBN: 1118868943 ($70.24 on amazon).
4. Course description:
 Students will be trained in the basic operation of multiple NMR instruments. The
class will begin with a few lectures on theory and operation of the NMR instruments.
Homework assignments will reinforce lecture material and provide practice in spectral
interpretation. Students will spend much of the class time getting hands-on experience
on the NMR. The second half of the class will be student-driven NMR-based research
projects. At the end of the class, students will present their projects to the rest of the
class.
5. Course Goals:
To provide students with a working background on Nuclear Magnetic Resonance,
train them to be independent users of the NMR, and allow them to explore aspects of
the NMR with a research project.
6. Student Learning Outcomes:
 Students should leave this course with a basic understanding of NMR. They
should also be able to safely operate the NMR instruments for standard NMR
experiments in any future research in which they are involved.

9. Course policies:
Attendance at all lectures and scheduled lab times is expected and required. For
the research projects, NMR usage will be scheduled based on need and availability of
the instruments. When students sign up for an NMR time slot they are expected to use
that time.
For all instrument use, students are expected to schedule time to come in on
their own to use the NMR for the lab activities or projects. The three lab activities are
each scheduled for two weeks to allow students ample time to get familiar with the
instrument and complete the expectations of the activity. Time for the labs and project
is expected to average 3 hours per week, but will be scheduled based on student and
instrument availability. Total lab time for the semester should not exceed 42 hours.
Late Work: All work is due by the end of the business day on the due date of the
assignment. Any work turned after that will be penalized 10% per weekday until it is
turned in. No matter how late, work may always be turned in and is worth up to one (1)
point.
10. Evaluation: x 8 homework assignments (20 points each): 160 points total x Final Project Presentation: 100 points x 3 Labs (60 points each): 180 Points total x Final exam: 100 points x Participation: 60 points (based on attendance and involvement with class
discussions) x Total Points: