**CHEM 3300, Inorganic Chemistry (CRN: 18000)**

**Lecture Syllabus – Spring 2019**

**Professor: Dr. Gary L. Guillet**

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Lecture Time: **Tuesday & Thursday: 8:00am-9:15am** in SC2504

Office Hours: Tuesday, Wednesday, Thursday 9:30am-11:30am

(Subject to Change)

**Required Text:** **1**. Miessler, G. L. and Tarr, D. A., *Inorganic Chemistry 5th Ed.* (older editions are acceptable)

**2.** *Introduction to Inorganic Chemistry*

*Freely* available at: https://en.wikibooks.org/wiki/Introduction\_to\_Inorganic\_Chemistry

**Helpful Texts** Vincent, *Molecular Sym. and Group Theory 2nd Ed.*

Wolfsberg, *Inorganic Chemistry, 1st Ed.*

**Grading** In-Class Assignments 12.5%

Exams (**x3**, Thur 2/14, Thur 3/14, Thur 5/2) 40.0% Final Exam (Thursday, 5/9) 10.0%

Problem Sets (**approx. 10**) 12.5%

CHEM3300L Laboratory 25.0%

**Holidays** Monday 1/21, Monday 3/18 – Friday March 3/22

**Course Objectives**

This course will cover major topics relevant to modern inorganic chemistry. A tentative list is provided below but in short, concepts will include bonding theory, chemical reactivity, and physical properties of inorganic compounds. It will rely heavily on analytical techniques and interpretation of data.

**Class Attendance**

Class attendance is expected since classroom discussion will deviate from the assigned text readings and include additional required material. Attendance is required at all exam times. Documented absences for exams will be handled on a case by case basis but most likely result in an alternate exam time being assigned. Missed exams without documentation will results in a grade of a 0. This policy also covers the final exam.

**Classroom Etiquette:** Students are expected to be on time for all lecture periods. The instructor reserves the right to remove students from the class that continually arrive late or disrupt. All electronic materials for the course must be acquired before the start of class. Use of cellphones and other electronic devices like laptops is prohibited in class unless there is a recommendation from Disability Services. Use of these devices in class is considered a class disruption (*see* GS Student Code of Conduct) and continued disruptions (more than 1 occurrence) will result in removal from the class and the assignment of a W or WF for the course. The course midterm date is Wednesday 3/11 and this is the last day to withdraw without receiving a grade of WF.

**Title IX Clause**

GS is dedicated to providing a safe and equitable learning environment for all students. Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the Title IX Office in Victor Hall Room 245 or by phone at Georgia Southern University Equal Opportunity & Title IX Office (912) 478-5136. This is important for the safety of the whole GS community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. The University Counseling Center provides 24/7 confidential support in Compass Point on the Armstrong campus. More information can be found at https://students.georgiasouthern.edu/counseling/services/.

**Disability Related Accommodations**

GS is committed to providing reasonable accommodations to students with documented disabilities as required under federal law. Disabilities may include ADD or AD/HD, autism spectrum disorder, brain injury, chronic medical conditions, communication disorders, hearing loss, learning disabilities, mobility impairment, psychological disorders, visual impairment or temporary injuries. The purpose of disability accommodation is to provide equal access to the academic material and equal access to demonstrate mastery of the material. If you have a disability and need accommodations, please contact the Student Accessibility Resource Center (SARC) at sarcsav@georgiasouthern.edu, by phone (912) 344-2572, or visit the office located on the second floor of Memorial College Center, room 208. You will need to meet with a SARC staff member who can help you gather documentation of your disability or refer you to an appropriate resource for assessment. Once documentation of the disability is approved, SARC staff will provide you with an accommodation letter detailing the approved accommodations which you should present to me so we can discuss and implement your accommodations. Disability accommodations work best starting at the beginning of the semester, but can be approved and started at any point in the semester. Accommodations start at the time the accommodation letter is presented to faculty within reasonable timelines; accommodations are not given retroactively. Accommodations are not part of your academic transcript. More information can be found at https://students.georgiasouthern.edu/sarc/steps-for-receiving-services/.

**HB-280, Campus Carry**

Review the USG information page on this new law, located at <http://www.usg.edu/hb280>.

**Academic Integrity Policy:**

It is the student’s responsibility to abide by GS’s Student Code of Conduct policy. Violations of this policy (including cheating and plagiarism) are taken very seriously.  Any violation of this policy will become part of the student’s permanent educational record.  More information on the Student Code of Conduct policy and procedures can be found at https://students.georgiasouthern.edu/conduct/files/2018-2019-Code-of-Student-Conduct-FINAL-1.pdf.  Failure to abide by this policy will result in, at a minimum, a grade of F for the assignment and up to failure of the course. It is the instructor’s discretion and you can fail the course for one infraction. All graded assignments are to be your *own* work though students are encouraged to work together on Problem Sets and In-Class Assignments. To be clear, impropriety in any way will not be tolerated in this course.

**Exams:** All examinations will be taken during class time except for the final exam. The final exam will be during finals week on the date listed and will be an ACS certified exam. Arrangements will be made for students for sickness, official university travel, etc. with documentation. Prior notification (when reasonable) and *documentation must be provided* or a grade of 0 for the exam will be given*.* All documentation *must* be the original document. Electronic documents via email or copies will not be accepted. A copy will be made and you will be able to keep the original.

Electronic devices, excluding calculators, are impermissible during examinations at all times. Failure to abide by this policy will result in a grade of 0 on the exam at a minimum and potentially results in failure of the course at the instructor’s discretion.

**Problem Sets:** Problem sets will be assigned at intervals of approximately 1-2 weeks. Problem sets will be due at the beginning of class on the due date. A late deduction of 15% per day will be applied for late work up to *a maximum of three days*, after that time assignments will not be accepted and a grade of 0 assigned. Solutions will be provided and/or discussed in class.

**Regrades:** Assignments must be submitted to the instructor within two days of the date of their return.

**Grading:** Grades in this course will follow the distribution and scale shown below. A minimum grade of a 60% in CHEM3300L is required to earn a passing grade in CHEM3300. A grade below a 60% in the CHEM3300L will result in a grade of F being assigned for CHEM3300 irrespective of the grade in the lecture portion of the course.

**Grade Scale: Grade Distribution**

90-100 A In-Class 10 %

80-90 B Problem Sets 12.5 %

70-80 C Exams 40 %

60-70 D Laboratory 25 %

Below 60 F Final Exam 12.5 %

**Exam Dates:** Exam #1: Thursday, February 14th

Exam #2: Thursday, March 14th

Exam #3: Thursday, May 2nd

**Final Exam: Thursday, 5/9; 7:30-9:30 a.m. in SC2504** (ACS Exam)

**Tentative Content Coverage for Chemistry 3200: Principles of Inorganic Chemistry**

**Chapter**

**Atomic Structure** 2 (M,T)

a) Schrödinger Equation and Solutions

b) Electron Configuration

c) Periodic Trends

**Molecular Structure** 3 (M,T)

a) Lewis Structure

b) VSEPR

**Molecular Symmetry/Group Theory** 4(M,T)

a) Symmetry Elements and Operations

b) Point Groups

c) Character Tables

d) Reducible and Irreducible Representations

**Molecular Orbitals** 5 (M, T)

a) Hybridization

b) Diatomics, Heterodiatomics

**Donor-Acceptor Chemistry** 6(M,T)

1. Acid-Base Reactions
2. Frontier Orbital Analysis (MO Predictions)
3. Hard/Soft Acid/Base theory

**Transition Metal Coordination Compounds** 9(M,T)

1. Coordination Number & Geometries
2. Isomers

**Electronic Spectra of Complexes** 10,11(M,T)

1. Crystal and Ligand field Theory
2. Ligand Types
3. d-Orbital Splitting
4. Jahn-Teller Distortion

**Solid State Structure** 7(M,T)

a) Crystal Structures

b) Defects

c) Band Structure

**Redox Reactions** 4(Wiki)

1. Cation Solubility
2. Pourbaix Diagrams
3. Lattimer Diagrams