

## *Course Syllabus*

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### **Course Information**

*(course number, course title, term, any specific section title)*

ADVANCED PHYSICAL CHEMISTRY - CHEM-5314-001 – 2023F

TR 1:00pm-2:15pm SLC 2.304

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### **Professor Contact Information**

*(Professor's name, phone number, email, office location, office hours, other information)*

Dr. Steven O. Nielsen, 972-883-5323, [steven.nielsen@utdallas.edu](mailto:steven.nielsen@utdallas.edu), BE2.516 and BE3.304.

Office hours: 8:00-8:45am every day. Also, feel free to stop by whenever you have a question.

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### **Course Pre-requisites, Co-requisites, and/or Other Restrictions**

*(including required prior knowledge or skills)*

Prerequisites: undergraduate physical chemistry, or consent of instructor.

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### **Course Description**

A non-specialist physical chemistry course for graduate students. Selected topics in quantum mechanics, thermodynamics, statistical mechanics, and kinetics will be covered.

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### **Student Learning Objectives/Outcomes**

Objectives: This course is designed to provide students with fundamental understanding of chemical structures and processes at the microscopic level. Fundamental microscopic properties of matter and radiation are discussed. Topics include quantum chemistry, atomic and molecular structure and spectroscopy, and statistical thermodynamics.

*Outcomes:* To this end, students will be able to

1. Explain atomic/molecular structure and spectroscopy in terms of quantum mechanics;
  2. Deduce molecular structure from spectroscopic data; and
  3. Interpret macroscopic properties of matter in terms of a statistical mechanical analysis of atoms and molecules.
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### **Required Textbooks and Materials**

Physical Chemistry a molecular approach

Donald A. McQuarrie and John D. Simon. University Science Books, 1997.

<https://personal.utdallas.edu/~son051000/chem5314.html>

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## Assignments & Academic Calendar

*(Topics, Reading Assignments, Due Dates, Exam Dates)*

Aug. 22	24	
29	31	
Sept. 5	7	
12	14	
19	21*	
26	28	
Oct. 3	5	
10	12	
17	19	
24*	26	
31	Nov. 2	
7	9	
14	16	(Thanksgiving Break Nov. 20-24)
28	30*	
Dec. 5	7	

Final Exam\*: week of Dec. 11-15

The three tests and the final exam dates are indicated with an asterisk\*

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## Grading Policy

*(including percentages for assignments, grade scale, etc.)*

The course grade will be based on three in-class term tests (20% each), homework (20%), and a final exam (20%). The lowest in-class term test score can be replaced by your grade on the final exam.

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## Course & Instructor Policies

*(make-up exams, extra credit, late work, special assignments, class attendance, classroom citizenship, etc.)*

There will be no makeup exams given. If you have an acceptable, documented reason for missing a term test (e.g. documented illness), you will be allowed to replace the missed term test with your score on the final. Otherwise, you will receive a zero. The final exam must be taken, will be comprehensive and cannot be replaced by any other grade. Homework turned in after the answers are posted online will not receive any credit.

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## Comet Creed:

*This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:*

“As a Comet, I pledge honesty, integrity, and service in all that I do.”

## UT Dallas Syllabus Policies and Procedures:

The information contained in the following link constitutes the University’s policies and procedures segment of the course syllabus.

Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.