

City University of New York (CUNY)

## CUNY Academic Works

---

Open Educational Resources

City College of New York

---

2023

### Physics 422 Spring 2023 Syllabus

Ronald Koder  
*CUNY City College*

[How does access to this work benefit you? Let us know!](#)

More information about this work at: [https://academicworks.cuny.edu/cc\\_oers/408](https://academicworks.cuny.edu/cc_oers/408)

Discover additional works at: <https://academicworks.cuny.edu>

---

This work is made publicly available by the City University of New York (CUNY).  
Contact: [AcademicWorks@cuny.edu](mailto:AcademicWorks@cuny.edu)



**Grading:**

- 50% Weekly homework
- 50% Quizzes, class participation

<b><u>Date</u></b>	<b><u>Topic</u></b>
1/26	Course intro.
	<i>Section I: Macromolecular Structure</i>
1/31	Intro to Molecular structure. Boltzman distribution. Conformational distributions of small molecules
2/2	No class, Friday schedule
2/7	Basic Definitions, Nucleic Acids, DNA/RNA structure and conformational equilibrium
2/9	DNA nanotechnology, Amino Acids
2/14	Amino Acid Properties, Peptide Bonds
2/16	protein structure, protein visualization
2/21	sequence homologies, structural homologies, protein families
	<i>Section II: Intermolecular Forces and Computational Biophysics</i>
2/23	Review of statistical thermodynamics
2/28	No class, Monday schedule
3/2	electrostatics, hydrogen bonds, pKa's
3/7	the hydrophobic effect, Lenard-Jones potentials
3/9	statistical thermodynamics and protein folding, rotamer libraries
3/14	Computational structure calculation
3/16	Binding
3/21	Transition state theory, catalysis
	<i>Section III: Biophysical Methods</i>
3/23	spectroscopy
3/28	ultracentrifugation, circular dichroism
3/30	magnetic resonance 1
4/4	magnetic resonance 2
<hr/>	
Spring Recess 4/5-4/13	
<hr/>	
4/18	magnetic resonance 3
4/20	crystallography
4/25	microscopy
4/27	calorimetry
5/2	single molecule methods
5/4	plasmonics
	<i>Section IV: Biological design</i>
5/9	Nucleic acid design

5/11 Protein design – Rosetta/ProCAD  
5/16 Machine learning

---

The AccessAbility Center/Student Disability Services ensures equal access and full participation to all of City College's programs, services, and activities by coordinating and implementing appropriate accommodations. If you are a student with a disability who requires accommodations and services, please visit the office in NAC 1/218, or contact AAC/SDS via email ([disabilityservices@ccny.cuny.edu](mailto:disabilityservices@ccny.cuny.edu)), or phone (212-650-5913 or TTY/TTD 212-650-8441).

Students who find themselves experiencing difficulties obtaining food every day or who lack a stable and safe place to live are urged to come to Benny's pantry for assistance (<https://www.ccny.cuny.edu/bennysfoodpantry>). Benny's pantry is located on the ground floor of the North Academic Center (NAC) and is open to anyone within the CUNY community (students, staff, faculty) in need of support. The pantry is open from 10am to 6pm and is self-serve. Additional emergency support for financial, health and housing needs are also available through Benny's. Please contact Dee Dee Mozeleski at [dmozeleski@ccny.CUNY.edu](mailto:dmozeleski@ccny.CUNY.edu) or Charles Ramirez @ [cramirez@ccny.CUNY.edu](mailto:cramirez@ccny.CUNY.edu) for additional details.