

PHYSICAL CHEMISTRY II

CHEM 3620

Spring 2023

Instructor:	Matthew Rowley	Office Hours:	Daily 10:00 am – 11:00 am
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Please include the course number in the subject line of all correspondence.

Tentative Schedule

This class will meet on Mondays, Wednesdays, and Fridays from 12:00 pm to 12:50 pm in room 128 of the Science Center (SC).

For the best lecture experience, read the indicated textbook chapter *before* each lecture.

	Date	Topic	Chapter
Week 1	M, Jan. 9	The Origins of Quantum Mechanics	7A
	W, Jan. 11	Wavefunctions	7B
	F, Jan. 13	Operators and Observables	7C
Week 2	M, Jan. 16	Martin Luther King Day – No Class!	
	W, Jan. 18	Experiments and Interpretations in QM	**
	F, Jan. 20	Translational Motion	7D
Week 3	M, Jan. 23	Vibrational Motion	7E
	W, Jan. 25	Rotational Motion	7F
	F, Jan. 27	Hydrogenic Atoms	8A
Week 4	M, Jan. 30	Many Electron Atoms	8B
	W, Feb. 1	Atomic Spectra	8C
	F, Feb. 3	Valence-Bond Theory	9A

	Date	Topic	Chapter
Week 5	M, Feb. 6	MO Theory: the Hydrogen Molecule-Ion	9B
	W, Feb. 8	MO Theory: Homonuclear Diatomic Molecules	9C
	F, Feb. 10	MO Theory: Heteronuclear Diatomic Molecules	9D
Week 6	M, Feb. 13	MO Theory: Polyatomic Molecules	9E
	W, Feb. 15	Shape and Symmetry	10A
	F, Feb. 17	Group Theory	10B
Week 7	M, Feb. 20	President's Day – No Class!	
	W, Feb. 22	Applications of Symmetry	10C
	F, Feb. 24	General Features of Molecular Spectroscopy	11A
Week 8	M, Feb. 27	Spring Break – No Class!	
	W, Mar. 1	Spring Break – No Class!	
	F, Mar. 3	Spring Break – No Class!	
Week 9	M, Mar. 6	Rotational Spectroscopy	11B
	W, Mar. 8	Vibrational Spectroscopy of Diatomic Molecules	11C
	F, Mar. 10	Vibrational Spectroscopy of Polyatomic Molecules	11D
Week 10	M, Mar. 13	Electronic Spectra	11F
	W, Mar. 15	Decay of Excited States	11G
	F, Mar. 17	Lasers and Spectroscopy Special Topics	**
Week 11	M, Mar. 20	General Principles of NMR	12A
	W, Mar. 22	Features of NMR Spectra	12B
	F, Mar. 24	Pulse Technique in NMR	12C
Week 12	M, Mar. 27	Electron Paramagnetic Resonance	12D
	W, Mar. 29	The Boltzmann Distribution	13A
	F, Mar. 31	Molecular Partition Functions	13B

	Date	Topic	Chapter
Week 13	M, Apr. 3	Molecular Energies	13C
	W, Apr. 5	The Canonical Ensemble	13D
	F, Apr. 7	Internal Energy and Entropy	13E
Week 14	M, Apr. 10	Derived Functions	13F
	W, Apr. 12	Electric Properties of Molecules	14A
	F, Apr. 14	Interactions Between Molecules	14B
Week 15	M, Apr. 17	Liquids	14C
	W, Apr. 19	Macromolecules and Self-Assembly	14D-E
	F, Apr. 21	Catch-up/Review Day	
Finals Week	T, Apr. 25	Final Exam — 11:00 – 12:50 Bring a pencil and scantron	