AP Chemistry Syllabus

Unit 1 – Introduction and Review (Chapters 1-3)

- Read Ch 1 – 3
  - Do: # 1.13, 14, 18, 19, 24, 27, 35, 40, 41, 45, 49, 59, 61, 62, 67, 70, 72, 77, 80
  - Do: # 2.10a, 17, 19, 21, 22, 25, 38, 45, 49, 51, 55, 58, 65, 66, 67, 70, 82a-b, 90, 95, 98
  - Do: # 3.12, 13, 19, 21, 22, 33, 35, 45, 47, 50, 51, 53, 58, 63, 73, 78, 81, 86, 91, 93
- Lab: Determination of a Chemical Formula

Unit 2 – Reactions in Aqueous Solution (Chapter 4)

- Read: 4.1 – 4.4, **20.1** – **20.2**, 4.5 – 4.6
  - Do: #15, 24, 26, 28, 30, 37, 40, 50, 56, 59, 64, 70, 83, 85, 89, 95, 106, 114, 117, **20.20** (b, d, g), **20.22** (a, c, d, f)
- Lab: Determination of Iron by Titration with Permanganate
- Lab: Standardization of NaOH and Molar Mass Determination of an Unknown Acid

Unit 3 – Gases (Chapter 10)

- Read: 10.1, skim 10.2 (skip manometer problems, sample exercise 10.2)
- Read: 10.7, 10.3 – 10.6, 10.8 (skim "Diffusion and Mean-Free Path"), 10.9 (skim "van der Waals Equation")
  - Do: # 11, 19, 26, 27, 30, 37, 39, 42, 45, 48, 51, 54, 56, 64, 68, 70, 71, 75, 76, 79, 82, 83
  - Suggested problems:
- Lab: Analysis of an Aluminum Zinc Alloy
- Lab: Molar Mass of a Volatile Liquid

Unit 4 – Kinetics (Chapter 14)

- Read: ALL of chapter 14
  - Do: # 1, 2, 5, 14, 20, 24, 26, 30, 32, 36, 38, 40, 58, 65, 67, 71, 73, 86, 90, 100, 108
- Lab: Iodination of Acetone

Unit 5 – Equilibrium (Chapter 15)

- Read: ALL of chapter 15
  - Do: # 1, 5, 14, 16, 21, 24, 28, 34, 36, 40, 43, 48, 50, 52, 56, 59, 67, 71, 75, 83
- Lab: Determination of an Equilibrium Constant

Unit 6 – Acids, Bases and Buffers (Chapter 16 &17)

- Read: 16.1 – 16.10 (skim 16.11)
  - Do: # 15, 16, 18, 20, 24, 28, 37, 46, 50, 56, 58, 64, 74, 76, 78, 81, 85, 92, 102, 109, 115
- Read: 17.1 – 17.3
  - Do: # 7, 14, 16, 17, 22, 24, 25, 30, 32, 33, 36, 37, 40, 42, 46, 77
- Lab: pH Titration Curve
- Lab: Determination of the K_a of Weak Acids
- Lab: Preparing Buffers and Buffer Capacity

Unit 7 – Precipitation Equilibrium (Chapter 17)

- Read: 17.4 – 17.6 (skim 17.7)
  - Do: # 48, 50, 54, 57, 64, 67, 68,
- Lab: Determination of the Solubility Product

Unit 8 – Thermochemistry (Chapter 5)

- Read: 5.1 (skip eqn 5.2, gravitational P.E., sampler exercise 5.1)
- Read: 5.2 – 5.7
  - Do: # 25, 26, 37a, 42, 46, 51, 54, 56, 61, 62, 64, 65, 69, 70, 76, 100, 103, 107, 115, 118
- Lab: Heat Effects and Calorimetry

Unit 9 – Thermodynamics (Chapter 19)

- Read: 19.1 (skip "Seeking a Criterion for Spontaneity," skim "Reversible and Irreversible Processes")
- Read: 19.2 (skip eqn. 19.2 and sample exercise 19.2, skip "S for Phase Change")
- Read: 19.3 (skip "Boltzmann's Equation and Microstates")
- Read: 19.4 – 19.7
  - Do: # 3, 4, 10, 13, 23a, 24a, 32, 39, 50, 54, 56, 66, 78, 82, 89, 91, 101
- Lab: Entropy of a Reaction

Unit 10 – Electrochemistry (Chapter 20)

- Review: 20.1 – 20.3
- Read: 20.4 – 20.6
  - Do: # 6, 24, 26, 30, 34, 42, 49, 54, 56, 60, 66
- Lab: Electrochemical Cells

Unit 11 – Atomic Structure and the Periodic Table (Chapters 6 & 7)

- Read: 6.1 – 6.3 (skim "The Energy States of the Hydrogen Atom")
- Read: 6.4 (skip eqn. 6.8, sample exercise 6.5, and eqn. 6.9)
- Read: 6.5 – 6.9
  - Do: # 11, 13, 22a, b, d, 26, 50, 54, 60, 63, 66, 69, 70, 73, 78, 100
- Read: 7.2 – 7.5 (skim "Electron Affinity")
- Read: **8.4**, 7.6 – 7.8
  - Do: # 11, 16, 24, 26, 34a, 40, 42a, 46, 66a,b, 68, 84, 109, **8.36**, **8.37**
- Lab: The Halogens

Unit 12 – Bonding (Chapter 8 & 9)

- Read: 8.1 – 8.2 (skip eqn. 8.4, sample exercise 8.1)
- Read: 8.3 – 8.6 (skim "Resonance in benzene") and 8.7
  - Do: # 4, 11, 34, 39, 44, 49, 52, 61, 62, 81, 102
- Read: 9.1 – 9.3 (skim 9.4)
- Read: 9.5 – 9.6 (skim "Resonance Structure, Delocalization and pi Bonding")
  - Do: # 3, 7, 12, 18, 22, 26, 28, 36, 48, 54, 56, 96
- Lab: Molecular Models

Unit 13 – Solids, Liquids and Solutions (Chapters 11 & 13)

- Read: 11.1 – 11.2 (skim 11.3), 11.4 – 11.6
- Read: 11.7 (only 1st 4 paragraphs), 11.8
  - Do: # 13, 15, 16, 20, 21, 34, 37, 40, 47, 51, 52, 81
- Read: 13.1 – 13.5 (skim "Osmosis", skip eqn. 13.13, skip sample exercise 13.11)
- Skim: 13.6
  - Do: # 9, 16, 21, 24, 30, 32, 36, 42, 52, 58, 62, 66, 70
- Lab: Molar Mass Determination by Freezing Point Depression

Unit 14 – Nuclear Chemistry (Chapter 21)

- Read: 21.1 – 21.4, 21.7 – 21.8
  - Do: # 8, 12, 14, 18, 27, 34, 36

Unit 15 – Organic Chemistry and Review (Chapter 25)

- Read: 24.1 – 24.4
  - Do: # 12, 21, 23
- Lab: Organic Nomenclature
- Lab: Synthesis of Fragrant Esters
- Lab: Synthesis of Aspirin

Unit 16 – Coordination Compounds (Chapter 24)

- Read: 25
  - Do: # 14, 23