



# AP Biology

## One Year Program

**Semester 1:** Summer/Fall to January – Lecture (Online) + HW Assignments

**Semester 2:** February to May – Review (Online) + 13 AP Biology Exams

**3 Hours Exam (90 Minutes: 60 Multiple choice, 90 Minutes: 6 Free Responses)**

### TABEL OF CONTENTS

Unit 1: Chemistry of Life & Macromolecules 8-11%

Unit 2: Cell Structure and Function and Membrane 10-13%

Unit 3: Cellular Energetics, Enzymes, Cellular Respiration & Photosynthesis 12-16%

Unit 4: Cell Communication and Cell Cycle & Signal Transduction 10-15%

Unit 5: Heredity, Genetics & Chromosomal Inheritance 8-11%

Unit 6: Gene Expression and Regulation, Biotechnology 12-16%

Unit 7: Natural Selection & Mechanism of evolution 13-20%

Unit 8: Ecology 10-15%

Unit 9: Laboratory Analysis focuses on 6 Keys Skills over 13 Labs.

Skill 1: Interpreting and Evaluating Experimental data

Skill 2: Interpreting and Analyzing Experimental Results with Graphing

Skill 3: Scientific Investigations and making Claims

Skill 4: Conceptual Analysis

Skill 5: Analyze Model or Visual Representation

Skill 6: Analyze Data

Lab 1: Artificial Selection

Lab 2: Hardy Weinberg Equilibrium Modeling

Lab 3: DNA Sequences & Evolution

Lab 4: Diffusion & Osmosis

Lab 5: Photosynthesis

Lab 6: Cellular Respiration

Lab 7: Cell Division: Mitosis & Meiosis

Lab 8: Biotechnology: Bacterial Transformation

Lab 9: Biotechnology: Restriction Enzyme Analysis

Lab 10: Energy Dynamics

Lab 11: Transpiration

Lab 12: Fruit Fly Behavior

Lab 13: Enzyme Activity



### Daniel Lee

He has been teaching AP Biology, AP Chemistry, AP Physics, and all levels of math since 1998. Daniel is a top honor graduate from UCLA in Biochemistry with 4 years of laboratory and clinical research experience.

## AP BIOLOGY Unit 1 – Unit 9 Summary:

**UNIT 1** Chemistry of Life  
~5-7 Class Periods | 8-11% AP Exam Weighting

SVI 2	1.1 Structure of Water and Hydrogen Bonding
ENE 2	1.2 Elements of Life
SVI 2	1.3 Introduction to Biological Macromolecules
SVI 1	1.4 Properties of Biological Macromolecules
SVI 6	1.5 Structure and Function of Biological Macromolecules
IST 2	1.6 Nucleic Acids

**UNIT 5** Heredity  
~9-11 Class Periods | 8-11% AP Exam Weighting

IST 1	5.1 Meiosis
IST 3	5.2 Meiosis and Genetic Diversity
EVO IST 6 5	5.3 Mendelian Genetics
IST 5	5.4 Non-Mendelian Genetics
SVI 1	5.5 Environmental Effects on Phenotype
SVI 6	5.6 Chromosomal Inheritance

**UNIT 2** Cell Structure and Function  
~11-13 Class Periods | 10-13% AP Exam Weighting

SVI 1	2.1 Cell Structure: Subcellular Components
SVI 6	2.2 Cell Structure and Function
ENE 5 2	2.3 Cell Size
ENE 2	2.4 Plasma Membranes
ENE 3	2.5 Membrane Permeability
ENE 3	2.6 Membrane Transport
ENE 6	2.7 Facilitated Diffusion
ENE 4	2.8 Tonicity and Osmoregulation
ENE 1	2.9 Mechanisms of Transport
ENE 6	2.10 Cell Compartmentalization
EVO 6	2.11 Origins of Cell Compartmentalization

**UNIT 6** Gene Expression and Regulation  
~18-21 Class Periods | 12-16% AP Exam Weighting

IST 1	6.1 DNA and RNA Structure
IST 2	6.2 Replication
IST 2	6.3 Transcription and RNA Processing
IST 6 2	6.4 Translation
IST 6	6.5 Regulation of Gene Expression
IST 6	6.6 Gene Expression and Cell Specialization
IST 2 3	6.7 Mutations
IST 6	6.8 Biotechnology

**UNIT 3** Cellular Energetics  
~14-17 Class Periods | 12-16% AP Exam Weighting

ENE 1	3.1 Enzyme Structure
ENE 3	3.2 Enzyme Catalysis
ENE 6	3.3 Environmental Impacts on Enzyme Function
ENE 6	3.4 Cellular Energy
ENE 6	3.5 Photosynthesis
ENE 4	3.6 Cellular Respiration
SVI 6	3.7 Fitness

**UNIT 7** Natural Selection  
~20-23 Class Periods | 13-20% AP Exam Weighting

EVO 2	7.1 Introduction to Natural Selection
EVO 1	7.2 Natural Selection
EVO 4	7.3 Artificial Selection
EVO 3	7.4 Population Genetics
EVO 5 1	7.5 Hardy-Weinberg Equilibrium
EVO 4	7.6 Evidence of Evolution
EVO 6	7.7 Common Ancestry
EVO 3	7.8 Continuing Evolution
EVO 2	7.9 Phylogeny
EVO 6 2	7.10 Speciation
EVO 3	7.11 Extinction
SVI 6	7.12 Variations in Populations
SVI 3	7.13 Origin of Life on Earth

**UNIT 4** Cell Communication and Cell Cycle  
~9-11 Class Periods | 10-15% AP Exam Weighting

IST 1	4.1 Cell Communication
IST 1	4.2 Introduction to Signal Transduction
IST 6	4.3 Signal Transduction
IST 6	4.4 Changes in Signal Transduction Pathways
ENE 6	4.5 Feedback
IST 4 5	4.6 Cell Cycle
IST 6	4.7 Regulation of Cell Cycle

**UNIT 8** Ecology  
~18-21 Class Periods | 10-15% AP Exam Weighting

ENE IST 3	8.1 Responses to the Environment
ENE 6	8.2 Energy Flow Through Ecosystems
SVI 4	8.3 Population Ecology
SVI 5	8.4 Effect of Density of Populations
ENE 5	8.5 Community Ecology
SVI 6	8.6 Biodiversity
EVO SVI 5	8.7 Disruptions to Ecosystems



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# AP & SAT II Scores Results

## AP BIOLOGY

Jonathan H.	5
Renee C.	5
Wenbo D.	5
K.Z	5
Jolynn Z.	5
Michelle L.	5
Visshwam D.	5
Alan W.	4
Chang C.	4
Jeremy L.	4
Jesse D.	4
Major Y.	4
Sarah L.	4
Sherlene S.	4
Vera W.	4

## AP CHEMISTRY

Anthony H.	5
Rachel Jiang	5
Sean Chang	5
Derek W.	5
Evelyn L.	5
Jasen C.	5
Justin J.	5
Kevin H.	5
Priscilla C.	5
Sharon T.	5
Ian L.	4
Lilliana R.	4
Tiffany H.	4
William W.	4

## SAT II PHYSICS

Anthony M.	800
Stephan C.	800
Johnny Y.	790

## AP PHYSICS

Laura T.	5
Sean R.	5
Sean C.	5
Chang C.	4
Jessica G.	4
Marco C.	4
Sean C.	4
Steven W.	4
Marco C.	4
Sean C.	4

## SAT II BIOLOGY

Darren H.	800
Jolynn Z.	800
Eileen Z.	800
Patrick L.	800
Renee C.	800
Richard G.	790
Amanda R.	780
Kevin Z.	770
K.Z	770
Chan C.	750
Megan S.	700

## SAT II CHEMISTRY

Helen S.	800
Jasen C.	800
Justin J.	800
Richard G.	800
S. M.	800
Sean C.	800
Ian L.	790
Nathan L.	790
Kristopher C.	770
William W.	710



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