

AP CALCULUS BC COURSE SYLLABUS

Textbook: Calculus for AP, 2nd Edition by R. Larson & P. Battaglia

Marking Period 1

Unit 1: Limits and Continuity (Test 1.2 - 1.6)

Section	Title	NJSLS	Problems
1.2	Finding Limits Graphically and Numerically	F-IF.C	Pg: 72 - 75
1.3	Evaluating Limits Analytically	A.SSE.B	Pg: 84 - 87
1.4	Continuity & One-Sided Limits	F-IF.C	Pg. 96-99
1.5	Infinite Limits	F-IF.C	Pg. 105-107
1.6	Limits at Infinity	F-IF.C	Pg. 115-117

Unit 2: Differentiation (Test 2.1 - 2.7 & 7.7)

Section	Title	NJSLS	Problems
2.1	The Derivative & Tangent Line Problem	A.SSE.B	Pg. 132-134
2.2	Basic Differentiation Rules & Rates of Change	A.SSE A.APR	Pg. 144-145
2.3	Product & Quotient Rules and Higher Order Derivatives	A.SSE A.APR	Pg. 155-158
2.4	Chain Rule	A.SSE A.APR	Pg. 169-173
2.5	Implicit Differentiation	A.SSE F-IF	Pg. 180-182
2.6	Derivatives of Inverse Functions	F.BF.B F-IF	Pg. 187-189
2.7	Related Rates	F.BF F.LE	Pg. 195-198
7.7	Indeterminate Forms & L'Hopital's Rule	A.SSE	Pg. 513-516

Unit 3: Applications of Derivatives (Test 3.1 - 3.7)

Section	Title	NJSLS	Problems
3.1	Extrema on an Interval	A.REI	Pg. 217-219
3.2	Rolle's & Mean Value Theorem	A.REI	Pg. 224-226
3.3	Increasing & Decreasing Functions and the 1st Derivative Test	A.CED.A	Pg. 233-236
3.4	Concavity & the 2nd Derivative Test	A.CED.A	Pg. 242-244
3.5	Summary of Curve Sketching	A.REI.D	Pg. 253-256
3.6	Optimization	A.REI.C	Pg. 262-266
3.7	Linear Approximation & Differentials	A.SSE F-BF	Pg. 272-273

Marking Period 2

Unit 4: Integration (Test 4.1 - 4.3, Test 4.6-4.8, 7.2-7.5)

Section	Title	NJSLS	Problems
4.1	Antiderivatives & Indefinite Integration	A.SSE	Pg. 287-289
4.2	Area Under a Curve	G.MG.A3	Pg. 299-301
4.3	Riemann Sums & Definite Integrals	A.SSE.B G.MG.A3	Pg. 312-315
4.6	Integration by Substitution	A.CED.A	Pg. 343-346
4.7	Natural Logarithm Function: Integration	F.LE.A	Pg. 353-355
4.8	Inverse Trigonometric Function: Integration	F.TF.B.7	Pg. 361-363
7.2	Integration by Parts	A.REI.A A.REI.C	Pg. 469-472
7.3	Trigonometric Integrals	F.TF.C	Pg. 479-481
7.4	Trigonometric Substitution	F.TF.C	Pg. 488-490
7.5	Partial Fractions (Linear Only)	A.APR.D.6	Pg. 498-499

Unit 5: Applications of Integration (Test 6.1, 6.2, 6.4)

Section	Title	NJSLS	Problems
4.4	Fundamental Theorem of Calculus	A.SSE.B G.MG.A3	Pg. 326-328
6.1	Area of a Region Between Two Curves	A.SSE.B G.MG.A3	Pg. 416-419
6.2	Volume: Washer & Disc Method	G.GMD.A3	Pg. 427-430
6.4	Arc Length & Surfaces of Revolution	G.GPE.B.7	Pg. 446-449

Unit 6: Differential Equations (Test 5.1 - 5.4)

Section	Title	NJSLS	Problems
5.1	Slope Fields and Euler's Method	S.ID.C	Pg. 375-378
5.2	Growth & Decay	F.IF.C.8b	Pg. 384-386
5.3	Separation of Variables	A.APR.D	Pg. 393-396
5.4	Logistic Equation	A.APR.D	Pg. 402-403

Marking Period 3**Unit 7: Parametric Equations, Polar Coordinates, & Vectors (Test 9.2,9.4 & 9.6, Test 9.3,9.5,9.7,9.8)**

Section	Title	NJSLS	Problems
9.2	Plane Curves & Parametric Equations	A.REI.D	Pg: 652 - 654
9.4	Polar Coordinates & Polar Graphs	F.IF.C	Pg. 670 - 672
9.6	Vectors in the Plane	N.VM.B	Pg. 686 - 688
9.3	Parametric Equations & Calculus	A.SSE.B	Pg. 659 - 662
9.5	Area and Arc Length in Polar Coordinates	F.IF.C	Pg. 678 - 680
9.7	Vectored Value Functions	N.VM.A	Pg. 695 - 697
9.8	Velocity & Acceleration	N.VM.A.3	Pg. 702 - 703

Unit 8: Infinite Series (Test 8.1 - 8.6 & 8.7 - 8.10)

Section	Title	NJSLS	Problems
8.1	Sequences	F.IF.A.3	Pg. 542 - 544
8.2	Series and Convergence	A.SSE.B4 F.IF.A.3	Pg. 552 - 554
8.3	Integral Test and P-Series	A.REI.A	Pg. 559 - 561
8.4	Comparison of Series	A.REI.D	Pg. 566 - 568
8.5	Alternating Series	A.REI.D	Pg. 575 - 576
8.6	The Ratio & Root Tests	A.REI.D	Pg. 583 - 585
8.7	Taylor Polynomials & Approximations	A.APR.C	Pg. 594 - 596
8.8	Power Series	A.REI.A A.APR.C	Pg. 604 - 606
8.9	Representation of Functions by Power Series	A.REI.A A.APR.C	Pg. 612 - 613
8.10	Taylor & MacLaurin Series	A.REI.A A.APR.C	Pg. 623 - 625

Marking Period 4**Unit 9: AP Test Review (Test Mock AP Test)**

Section	Title	NJSLS	Problems
Supplement	Units 1 - 8		AP Central FRQ & MCQ

Unit 10: Additional Topics (Test 4.5 & 6.3)

Section	Title	NJSLS	Problems
4.5	The Net Change Theorem	A.SSE.B	Pg. 333 - 335
6.3	Shell Method	G.GMD.A3	Pg. 436 - 439

Unit 11: Project

Section	Title	NJSLS	Problems
Supplement	Marginal Analysis Project	A.CED.A	Activity Sheet

Course Description:

AP Calculus BC is representative of a college-level calculus course. Students cultivate their understanding of differential and integral calculus through engaging with real-world problems represented graphically, numerically, analytically, and verbally and using definitions and theorems to build arguments and justify conclusions as they explore concepts like change, limits, and the analysis of functions.

Course Expectations and Skills

- Students are required to have proficiency in all prerequisite topics for Calculus. Those who do not demonstrate proficiency will be required to seek additional help after school to close their achievement gap in order to be successful in this course.
- Students are to bring their Chrome Book charged and ready to use for the lesson.
- Students are encouraged to have a graphing calculator.
- Students are required to participate in both small and large group discussions and activities, as directed.

Resources

Text Book: Calculus for AP , 2nd Edition by R. Larson & P. Battaglia

Additional Resources:

- <https://apcentral.collegeboard.org/>
- <https://sso.cengage.com/cb/>
- WebAssign
- CalcChat.com
- CalcView.com
- Desmos.com

Grading Breakdown	
Major Summative (MAJ)	60%
Minor Formative (MIN)	30%
Homework (HW)	10%