

Pre-Calculus BC Course Syllabus 2015-16

Note: Text references are to Demana, Waits, Foley, Kennedy - *Precalculus* unless otherwise mentioned. Supplemental topics are indicated with an asterisk.

Fall Semester

Functions and Graphs Chapter 1 14 days Sept. 10 – 29	Relations, library of functions, attributes, inverses and transformations, sketching, composition. Includes 2 days of limits (Ch 10 and supplement).
Exponents and Logs Chapter 3 15 days (Includes 3 lab days + 1 PSAT day ¹) Sept. 30 – Oct. 21	Laws of exponent and logs, solving equations with logs, base change, applications, law of cooling and logistic modeling. Population Lab, Temperature Lab, Log Jam
Polynomials Chapter 2.3-6 12 days Oct. 22 – Nov. 6	Power functions, rational functions, polynomials, synthetic division, remainder thm, factor thm, complex roots and fundamental thm. Pendulum lab
Trigonometry Chapter 4 and 5 16 days (Includes 1 lab day) Nov. 9 – Dec. 7	Radians, 6 functions, attributes, transformations, sinusoidal applications, inverse functions, angle sum formulae, law of sines, law of cosines, Heron's formula, identities, $\frac{1}{2}$ angle formula. Global Temperature Comparison Lab
Polar Graphs and Parametric Eqtns Chapter 6 12 days Dec. 8 - 23	Parametric equations, polar coordinates, polar graphs, supplement with conversion of polar equations to rectangular.
Conics Chapter 8 14 days Jan. 4 - 22	Conics from locus perspective*, eccentricity, general conic eqtn, rotated conics (computer lab*), also do conics in polar form.
Vectors and 2D Numbers Chapter 6 16 days Feb. 1 - 25 (Includes 1 AMC day ²)	Vectors in 2-D, vector addition, dot product, geometric numbers*, CIS notation, complex algebra and cmplx roots w/ Demoivre's thm., roots of unity. Also Fundamental Thm of Algebra.

¹ PSAT is Oct. 14th

² AMC is Feb. 2nd

Spring Semester

<p>Sequences, Series and Induction Chapter 9 14 days Feb. 26 - March 16 Includes Soc. Jus. Day</p>	<p>Inductive proofs, sequences and series, arithmetic and geometric, sigma notation, infinite series, binomial thm, review limits, transcendentals*, Euler's formula.</p>
<p>Calculus* 15 days (Includes 1 lab day) March 17 – April 6</p>	<p><i>Topics include:</i> average v. instantaneous rate of change, difference quotient, derivatives of polynomials and power functions, 2nd derivatives, extrema, concavity, distance/velocity/acceleration, derivatives of sine and cosine, e^x, $\ln(x)$; max/min, sketching, optimization. Car Acceleration Lab</p>
<p>3-D and Surfaces 11 days April 7 - 22</p>	<p>Coords, dist, mdpt, planes, lines, surfaces, 4-d</p>
<p>Review and SAT II Prep. 10 days May 2 - 13</p>	<p><i>We do review during this period because so many students are in and out with AP's³. We use problems from SAT II for pertinent topics as well as additional review materials.</i></p>
<p>Group Algebra* 15 days May 16 – June 7 Includes lab day.</p>	<p>Definition of groups, modular groups, symmetry groups, subgroups, order, isomorphism, matrices</p>
<p>Additional Review 3 days June 8 - 10</p>	<p>To prepare for the final</p>

³ Chem – May 2 AM; Comp. Sci - May 3 AM; Lit and Comp - May 4 AM; APUSH - May 6 AM; Bio - May 9 AM; Lang - May 11 AM; Stats – May 12 PM

- ~~Speed of sound~~
- ~~Car acceleration~~
- ~~Population~~
- ~~Temperature~~
- Social justice