Course Description

A. COVER PAGE

1. Course Title
PreCalculus

2. Transcript Title / Abbreviation
PreCalculus

3. Transcript Course Code / Number
PreCal

4. School
Bay Area School of Independent Study (BASIS)

5. District

6. City
Newark

7. School / District Web Site
www.basischarter.org

8. School Course List Contact

Name: Leslie Nilson

Title/Position: High School Counselor

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9. Subject Area

- ☐ History/Social Science
- ☐ English
- ☒ Mathematics
- ☐ Laboratory Science
- ☐ Language other than English
- ☐ Visual & Performing Arts
- ☐ College Prep Elective

10. Grade Level(s)
11th and 12th

11. Seeking "Honors" Distinction?

☐ Yes ☒ No

12. Unit Value

- ☐ 0.5 (half year or semester equivalent)
- ☒ 1.0 (one year equivalent)
- ☐ 2.0 (two year equivalent)
- ☐ Other: _____

13. Was this course previously approved by UC? ☐ Yes ☒ No

If yes, check all that apply:

- ☐ Course reinstated after removal within 3 years. Year removed from list? _____
  - Same course title? ☐ Yes ☐ No
  - If no, previous course title? _____
- ☐ Identical course approved at another school in same district. Which school ? _____
  - Same course title? ☐ Yes ☐ No
  - If no, course title at other school? _____
- ☐ Alternative course title for course with identical content at this school
  - Title of previously-approved identical course: _____
- ☐ Advanced Placement (AP) or International Baccalaureate (IB) course
- ☐ Approved UC College Prep (UCCP) Initiative course
- ☐ Approved P.A.S.S. course
- ☐ Approved ROP/C course. Name of ROP/C? _____
- ☐ Other. Explain: _____

14. Is this course modeled after an UC-approved course from another school outside your district? ☐ Yes ☒ No

If so, which school(s)?

15. Pre-Requisites

A grade of C or better in Algebra 2.

16. Co-Requisites

None

17. Brief Course Description

PreCalculus extends the student's knowledge and skills in trigonometry and precalculus that are necessary for success in a Calculus class. Course content includes probability, statistics, series and sequences, polynomial and rational functions, exponential and logarithmic functions, trigonometric functions, vectors, rectangular and polar coordinates, and matrices and determinants.

B. COURSE CONTENT

Please refer to instructions

18. Course Goals and/or Major Student Outcomes

Coursework will include a thorough understanding and application of the following topics:

Angles measures in degrees and radians

Polynomials:
- Use rational root theorem
- Use Descartes' rule of signs

Trigonometric Functions:
- Graph
- Show relation to Pythagorean Theorem
- Show relation to slope of line
- Identify inverse functions and their graphs
- Compute values of functions at standard points
- Use and identify addition formulas and prove them
- Use and identify half-angle and double-angle formulas

Graph:
- Polar and rectangular coordinates
- Conic sections
- Linear, quadratic, and trigonometric functions
- Vectors

Vectors:
- Use operations with scalar products, dot products, and norms of vectors
- Use unit directional vector, perpendicular components, and norms in the coordinate plane
- Use equations with vectors and their horizontal and vertical components

Mathematical Induction:
- Use DeMoivre's Theorem

Word Problems:
- Use Laws of Sines and Law of Cosines
- Use trigonometry

Calculus:
- Understand Limit and neighborhood
- Understand continuity, differentiation and integration
- Understand chain rule
- Find derivatives and integrals
- Use fundamental theorem of calculus

19 and 20. Course Outline and Objectives

PreCalculus is a core high school math course in which students focus on the following basic tasks:

-Measure angles in degrees and radians
- Describe Law of Sines and Cosines
-Solve trigonometric, logarithmic, and quadratic equations
-Prove DeMoivre's Theorem
-Graph linear, quadratic, and trigonometric functions
-Define and Utilize Fundamental theorem of Calculus

21. Texts & Supplemental Instructional Materials

PreCalculus: A Graphing Approach
Holt, Rinehart, and Winston co. 2004

Advanced Mathematical Concepts
Prentice Hall, co. 2004

PreCalculus: Graphical, Numerical, Algebraic, 6th Edition
Prentice Hall, co. 2004

PreCalculus Enhanced with Graphing Utilities
By Michael Sullivan
Prentice Hall, co. 2002

Advanced Mathematics 2nd Edition*
Saxon, co. 2001
*Lessons 60-127 only

22. Key Assignments

- Unit by Unit problem sets
- End of Chapter tests
- Finals required at mid-term and end of year

23. Instructional Methods and/or Strategies

Instruction may include the following:

- Lecture/Demonstration
- Discussion
- Text Reading and Practices
- Personal Tutoring
- CD Rom
- Internet Research

24. Assessment Methods and/or Tools

Assessment tools include the following, but are not limited to:

- Monthly review of student work by the Independent Study Teacher.
- Chapter and Unit tests and examinations.
- Student grades on text practices and standardized tests
- Written state examinations
- Oral communication with Independent Study Teacher.
- Final Examination.

C. HONORS COURSES ONLY

Please refer to instructions

25. Indicate how this honors course is different from the standard course.

D. OPTIONAL BACKGROUND INFORMATION

Please refer to instructions

26. Context for Course (optional)

27. History of Course Development (optional)