Kolbe Academy
Home School

HIGH SCHOOL
CALCULUS
Saxon Calculus, 2nd Edition

TABLE OF CONTENTS

Kolbe Academy
Home School

♦ SYLLABUS ♦

Calculus
High School

COURSE TITLE: Calculus

COURSE DESCRIPTION:

This book is designed for prospective mathematics majors as well as for students whose primary interests are in engineering, physics, business, or the life sciences. Students following the Kolbe Core Calculus I track will have a firm foundation in Calculus I concepts and a brief introduction to Calculus II concepts. Kolbe Core students may proceed for an additional full year of Calculus II and complete the book. Students following the Kolbe Honors Calculus I and II track will have a firm foundation in Calculus I and II concepts. The Honors course prepares a student for taking the AP Calculus AB Exam as well as preparing them fairly well for the AP Calculus BC Exam. The Kolbe Core Calculus I, Kolbe Core Calculus II, and the Kolbe Honors Calculus I and II courses each receive 10 math credits towards any diploma.

The book contains a sufficient review of PreCalculus concepts, however, students should not attempt this Calculus course without completing one of the following: Algebra II/Trigonometry, PreCalculus, Saxon Advanced Mathematics, or other equivalent PreCalculus course. Students who excelled in mathematics throughout high school or who are highly motivated, should be encouraged to pursue the Honors track.

SCOPE AND SEQUENCE:

1. PreCalculus review
2. Limits and their properties (Calculus I)
3. Introduction to Differentiation (Calculus I)
4. Techniques of Differentiation (Calculus I)
5. Applications of differentiation (Calculus I)
6. Introduction to Integration (Calculus I)
7. Applications of Integration (Calculus II)
8. Techniques of Integration (Calculus II)
9. Analytical geometry (Calculus II)
10. Series and Sequences (Calculus II)

DIPLOMA REQUIREMENTS:

Summa Cum Laude diploma candidates are required to follow the Kolbe Honors course (H) track or Kolbe Core course (K) track outlined in this Calculus course plan. ***Magna Cum Laude*** and ***Standard*** diploma candidates may choose to pursue the (H) or (K) designation, but are not required to do so, and instead the parent has the option of altering the course plan as desired. ***Summa*** students must complete 4 years of mathematics during their high school course of study including the equivalent of Algebra I, Geometry, Algebra II, and Pre-Calculus (or higher). ***Magna*** students must complete 3 years of mathematics during their high school course of study including Algebra I, Geometry, and Algebra II (or higher). For a Magna student planning to use Saxon for their high school course of study, this means completing at least through the Kolbe Advanced Math I course plan which covers a little over half of the *Saxon Advanced Math* book. ***Standard*** diploma students must complete 2 years of mathematics including Algebra I. Please see the next page for specific course titles, quarterly reporting requirements and transcript designations for Calculus.

REQUIRED SAMPLE WORK:

Designation*		**K**	**H**	**K**
Course Title**	**Calculus I**	**Calculus I**	**Calculus I and II**	**Calculus II**
Quarter 1	1. Any written sample work	1. Completed Saxon Test 5	1. Completed Saxon Test 9	1. Completed Saxon Test 22
Quarter 2	1. Any written sample work	1. Completed Saxon Test 9	1. Completed Saxon Test 18	1. Completed Saxon Test 26
Quarter 3	1. Any written sample work	1. Completed Saxon Test 13	1. Completed Saxon Test 27	1. Completed Saxon Test 31
Quarter 4	1. Any written sample work	1. Completed Saxon Test 18	1. Completed Saxon Test 37	1. Completed Saxon Test 37

***Designation refers to designation type on transcript. K designates a Kolbe Academy Core course. H designates a Kolbe Academy Honors course.**

Please be sure to note that you are using the SECOND EDITION of Saxon Calculus when you turn in your Course of Study form and quarterly reports. The first edition has fewer lessons and tests, so there are different sample requirements for that edition.

If the student wishes to have the course distinguished on the transcript with a (K) as a Kolbe Academy Core course or with an (H) as a Kolbe Academy Honors course, please be sure to send the correct exams and components each quarter for verification as specified above. **If no designation on the transcript is desired, parents may alter the lesson plan and any written sample work is acceptable to receive credit for the course each quarter.** If you have any questions regarding what is required for the (K) or (H) designations or diploma type status, please contact the academic advisory department at 707-255-6499 ext. 5 or by email at advisors@kolbe.org.

COURSE TEXT: *Saxon Calculus* (2nd Edition)

Please be sure to note that you are using the SECOND EDITION of the Saxon Calculus when you turn in your Course of Study form and quarterly reports. Please call Kolbe Academy for the 1st edition course plans if you are using the 1st edition.

Kolbe Academy
Home School

♦ COURSE PLAN ♦

Calculus
High School

COURSE PLAN METHODOLOGY: Saxon advises that students complete all of the problems in the Saxon Calculus program. Saxon uses a spiral methodology, meaning that many problems in the lessons review concepts learned in past lessons. This is especially helpful for students who tend to forget concepts soon after they are learned. Some students may be able to skip some of these review problems that occur in the lesson if they have mastered the technique.

The following is a four quarter outline for Honors Calculus (H). Note that the Honors Calculus I and II goes at a pace that is similar at the University Level. Students should be prepared for a rigorous course of study. Students who prefer a high school paced course of study of Calculus should turn to page 6 for Core Calculus I (K).

♦♦♦ FIRST QUARTER ♦♦♦

WEEK	TRACK	COURSE TITLE	LESSONS	TEST
1	**Honors (H)**	Calculus I and II	Lessons 1-7 (Review of PreCalc)	Omit Test 1
2	**Honors (H)**	Calculus I and II	Lessons 8-13 (Review of PreCalc)	Test 2

Kolbe Academy
Home School

♦ COURSE PLAN ♦

Calculus
High School

COURSE PLAN METHODOLOGY: Saxon advises that students complete all of the problems in the Saxon Calculus program. Saxon uses a spiral methodology, meaning that many problems in the lessons review concepts learned in past lessons. This is especially helpful for students who tend to forget concepts soon after they are learned. Some students may be able to skip some of these review problems that occur in the lesson if they have mastered the technique.

The following is the Year 1 four quarter outline for Core Calculus I (K). Turn to page 4 for Honors Calculus (H). Eleventh Grade students who complete the following course plan may continue with Year 2 Calculus II in their 12th grade year. Turn to page 8 for Year 2 Calculus II.

♦♦♦ FIRST QUARTER ♦♦♦

WEEK	TRACK	COURSE TITLE	LESSONS	TEST
1	**Core (K)**	Calculus I	Lessons 1-4 (PreCalculus Review)	
2	**Core (K)**	Calculus I	Lessons 5-8 (PreCalculus Review)	Test 1

Kolbe Academy
Home School

♦ COURSE PLAN ♦

Calculus
High School

COURSE PLAN METHODOLOGY: Saxon advises that students complete all of the problems in the Saxon Calculus program. Saxon uses a spiral methodology, meaning that many problems in the lessons review concepts learned in past lessons. This is especially helpful for students who tend to forget concepts soon after they are learned. Some students may be able to skip some of these review problems that occur in the lesson if they have mastered the technique.

The following is the Year 2 four quarter outline for Core Calculus II (K). Turn to page 6 for Year 1 Calculus I. Turn to page 4 for Honors Calculus I and II (H). The following course should only be completed by a student who has completed Kolbe's Year 1 Core Calculus I (K) course.

♦♦♦ FIRST QUARTER ♦♦♦

WEEK	TRACK	COURSE TITLE	LESSONS	TEST
1	**Core (K)**	Calculus II	Lessons 73-75	
2	**Core (K)**	Calculus II	Lessons 76-78	