



HONORS CALCULUS SYLLABUS

Dear Student:

Welcome to an exciting year at Belen Jesuit Preparatory School. I look forward to the wonderful experience of exploring very important topics in this course. I can assure you that I will do everything in my power to make this year the most successful one yet for all. To achieve this ambitious goal I am committed to bringing you exciting lessons that are relevant to the world around us and will form an important foundation as you build your knowledge for future courses. I promise that you will be treated fairly, honestly, and respectfully. But to make this journey a truly winning year I will demand a lot from you. First of all, you must follow all the rules outlined in this Syllabus and in your Student Code of Conduct. In order to foster a high-quality learning environment, it is vital that you put your best possible effort in behavior and attendance. Secondly, you must do your work diligently and in a timely manner. Only by doing your share of the work, will you be able to master these challenging concepts. Thirdly, this syllabus is intended as an outline of this course. It may be changed or amended during the year to better fit the needs and requirements of the class. Finally, you must take an active role in the learning process. Ask questions, participate, study hard, and enjoy the life-long process of learning. Thank you for choosing this class and our school. God bless you.

COURSE: MAT 3710 – Honors Calculus

TEACHER: Miguel Couto
E-mail: mcouto@belenjesuit.org
Web: <http://www.myteacherpages.com/webpages/mcouto>
Phone: 786-621-4149
Fax: 305-227-2565

TEXTBOOK: Larson, R., Hostetler R. P., & Edwards, B. H. (2006). *Calculus of a single variable* (8th ed.). Boston, Massachusetts: Houghton Mifflin (ISBN 978-0-618-50304-9).

REQUIRED

MATERIALS: Students will be required to bring to class every day the following materials:

- Textbook
- Notebook (See Notebook Format and Grading)
- Pencils (Work in pen will not be graded.)
- Eraser
- Calculator (TI-83, TI-84)
- Ruler

**ADDITIONAL
RESOURCES:**

Students may find helpful these additional resources:

- Mendelson, E. (2008) *Schaum's outlines of beginning calculus* (3rd ed.). New York: McGraw Hill (ISBN 978-0-071-48754-2).
- Kelley, W. M. (2006) *The humongous book of calculus problems*. New York: Alpha Books (ISBN 978-1-592-57512-1).
- *GeoGebra* or *Geometer's Sketchpad* software (links provided in my web page).
- *GraphCalc*, *GrafEq*, *GrapheEasy*, *Graph*, *Graphing Calculator*, *Graphmatica*, *MathGV*, or any other graphing calculator software (links provided in my web page).

COURSE CONTENT:

The purpose of this course is to study algebraic and transcendental functions and the general theory and techniques of calculus.

Topics: The content will include, but not limited to, the following:

- Functions, Graphs, and Limits
Analysis of graphs, limits of functions (including one-sided limits), asymptotic and unbounded behavior, and continuity as a property of functions.
- Derivatives.
Concept of the derivative, derivative at a point, derivative as a function, second derivatives, applications of derivatives, and computation of derivatives.
- Integrals.
Interpretations and properties of definite integrals, applications of integrals, fundamental theorem of calculus, techniques and applications of antidifferentiation, and numerical approximations to definite integrals.

Expectations: After successfully completing this course, the student will:

- Apply the concepts of limits to functions.
- Determine the derivatives of algebraic, trigonometric, exponential, and logarithmic functions.
- Determine the derivatives of the inverse of a function.
- Determine the relation between differentiability and continuity.
- Demonstrate an understanding of the application of the derivative to problem situations.
- Identify increasing and decreasing functions, relative and absolute maximum and minimum points, concavity, and points of inflection.
- Determine antiderivatives of algebraic, trigonometric, exponential, and logarithmic functions.
- Apply antiderivatives to solve problems and use techniques of integration.
- Determine approximations of definite integrals using rectangles or trapezoids.
- Apply knowledge of integral calculus to find area between curves and the volume of a solid of revolution.

Sequence: Textbook chapters will be covered in approximately the following sequence:

Semester 1:

- Chapter 0P – Preparation for Calculus
- Chapter 01 – Limits and Their Properties
- Chapter 02 – Differentiation
- Chapter 03 – Applications of Differentiation

Semester 2:

- Chapter 04 – Integration
- Chapter 05 – Logarithmic, Exponential, and Other Transcendental Functions
- Chapter 06 – Differential Equations
- Chapter 07 – Applications of Integration (Lessons 7.1 to 7.4)
- Chapter 08 – Integration Techniques (Lessons 8.1 to 8.3)

COURSE GRADING:

Grades for the year will be calculated by averaging the final semester grades. Each final semester grade will be calculated by combining Semester Work (75%) and the Semester Exam (25%).

Semester

Work: During the semester, grades will be calculated as follows:

Tests and Projects:	40%
Quizzes:	20%
Homework:	20%
Notebook:	10%
Class Participation:	10%

Assessments: During this course you will complete different types of assessments as defined below:

Semester Exam: A comprehensive assessment covering all the topics discussed during the semester. Semester Exams may consist of multiple-choice questions, true/false, short answers, problems, and/or essays.

Tests: A summative assessment at the end of each chapter and unit. Tests may consist of multiple-choice questions, true/false, short answers, problems, and/or essays. Students will have one full class period to complete the assessment.

Projects: Individual and/or group assignments to explore or further elaborate on topics covered in class. Projects may include written and oral presentations. Students will be given 2-3 weeks to complete the projects.

Quizzes: Short assessments on topics discussed on previous days. Quizzes may be daily at the beginning of class, unannounced, or announced a day before. If a student takes more than 3 quizzes during a week, the lowest quiz grade will be dropped. The quiz grade entered on NetClassroom will be the average of the quizzes taken during the week. **No make-up quizzes.**

Notebook: A binder containing assignments, syllabus, notes, class work, and homework. Notebooks will be graded every two weeks, on the days Tests are given, or before each progress report. See Notebook Format and Grading.

Homework: Daily assignments to gain mastery of the topics discussed in class. Homework is due at the beginning of the class period on the day after it is assigned unless otherwise specified. It may be graded everyday or on random days. See Homework Guidelines.

Class Participation: Before each progress report a grade will be given for involvement in classroom discussions, compliance with classroom rules, and overall behavior.

Letter grades will be assigned according to Academic Regulations guidelines.

Make-up's: Students will have up to one week to makeup tests and projects missed because of illness or other excused absences. Work will be made-up only on Mondays after school. All homework will be due at the beginning of the class period. Thus, if a student is tardy to class, the homework will be considered late and not accepted for grading.

NOTEBOOK FORMAT AND GRADING:

The notebook should be a portfolio of the work done for this class. It should be a binder for this course only. Keep work for other courses in other notebooks.

Format: Your notebook must be a 3-ring binder that accepts 8½” x 11” sheets with 1 or 1½” rings. The binder must be clearly labeled on the outside with the following information:

- Your full name.
- School name.
- Course.
- Period.
- School year.

The first page of the notebook should be a copy of this syllabus.

Use number tab dividers (**1 to 8**) to separate each chapter in your notebook. The first page of each section should be the **Chapter Assignments**. This page should be followed by class notes, handouts, homework, quizzes, etc., **all in chronological order**. The last page of each chapter section should be the **Notebook Evaluation Form**.

Because the notebook should be a useful tool to study, adhere to the following rules:

- All work must be done **in pencil**.
- All work must show your full name.
- All work must be dated.
- All work must show your class and period.
- All work must be identified (titled).
- All work must be kept in chronological order.
- All work must be done on **8½” x 11” graph paper**.

IMPORTANT: Loose papers or work in the binder pockets will not be graded. Any work done on sheets from spiral notebooks will be disregarded. Notebooks in bad condition will be given a zero. It is your responsibility to keep the notebook in good condition. If your binder is in bad condition, replace it! Remember, the notebook is a portfolio of your work in this class.

Grading:	A 3-ring binder with 1 or 1½” rings is used.	5 points
	Tab dividers are used.	5 points
	Syllabus on first pages of the notebook.	5 points
	Chapter Sections:	
	Chapter Assignment there.	10 points
	Class notes are at least 90% there.	20 points
	Homework is at least 90% there.	20 points
	All items in chronological order.	15 points
	Notebook is organized, neat, and useful as an instrument of study.	20 points

		Total: 100 points
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Letter grades for the notebook will be assigned according to Academic Regulations guidelines.

HOMEWORK GUIDELINES:

Homework will consist of **daily** assignments to gain mastery of the topics discussed in class. A Chapter Assignments sheet will be given at the beginning of each chapter showing the dates and problems assigned for each day. Remember that this sheet must be the first page of each of the chapter section of your notebook. If you misplace the Chapter Assignments sheet you may download it from my web page at any time.

Format: All homework must be done following this format:

- All work must show your full name.
- All work must be dated.
- All work must show your class and period.
- All work must be identified (titled) showing the lesson (section) and exercises assigned.
- All work must be done in pencil.
- Be neat.
- Show all steps and work related to the problems. I will not accept only answers on problems that require work or several steps.
- Do not use pages ripped from a spiral notebook. This type of pages will not be accepted. You may use lined, graph, or blank paper, 8 ½ x 11, with three holes.
- All graphs, charts, tables, and figures must be drawn using a ruler, compass, etc. with appropriate identifying labels and scales. Free-hand sketches will not be accepted nor graded.
- When graded homework is returned to you, it must be kept in its corresponding chapter section, in chronological order, with the rest of the work in your notebook.

Homework not presented in the format described above will be given a grade of "0".

Due

Date/Time: Homework is due at the beginning of the class period on the day after it is assigned unless otherwise specified. Late or backdated homework will not be accepted except for exceptional cases of excused school absences of two or more days due to sickness or emergency.

Grading: Homework may be graded everyday or on random days. When graded, it will be given a grade on the following 10 point scale:

- 0 – Work not done.
- 1 – Some work done.
- 5 – More than 50% of the work done.
- 10 – More than 90% of the work done.

Homework grade will be entered on NetClassroom at the end of the week. It will consist of the average of the graded homework during the week. If more than 3 assignments are graded during the week, the lowest grade will be dropped.

CLASSROOM RULES:

To maintain a constructive and productive classroom environment, all students must adhere to these rules. Consequences for violation of these rules are as described in the Student Code of Conduct. I reserve the right to administer classroom detentions, and other forms of logical consequences for violation of these rules. For instance, classroom detentions will be one day (1 hr.) for first offenses during the first quarter; two days for first offenses during the second quarter; three days for first offenses during the third quarter; and four days for first offenses during the fourth quarter. Our classroom rules are:

1. Obey all school rules.

This means that you are responsible for following all school rules and guidelines given to you when you enrolled in the school. Please pay special attention to the rules regarding attendance, tardiness, uniforms, chewing gum, cell phones, and discipline.

2. Be in your seat and ready to work when the bell rings.

This means that you must be seated at your desk, with pencils sharpened, classroom material ready, quiet, and ready to begin when the bell rings. Please schedule teacher conferences before or after school. Tardiness will affect your grade and will result in disciplinary actions.

3. Bring all required materials to class every day.

This means that every day you must bring to class your textbook, notebook, assignments, pencils, eraser, and other required tools. Make sure you have ready any work or material that is due. Remember that all work must be done in pencil.

4. Be in the classroom for the duration of the period.

This means that you are required to stay and participate during the full class period. You are allowed to leave the classroom only for emergencies or if the main school office requests your presence. Please be sure to use the restroom and go to your locker between classes to minimize interruptions.

5. Be respectful and polite to all people.

This means that you must listen carefully when the teacher or another student is speaking, raise your hand to ask a question and to participate in class discussions, and behave properly at all times. Please speak only when the teacher acknowledges you. Do not raise your voice, hit, or bother others in the classroom.

6. Respect other people's property.

This means you are responsible for keeping the room clean and neat; picking up litter; getting permission before using another person's property; returning borrowed property promptly after you are finished using it; and not writing on desks or defacing any school property.

7. Do all assigned work in a timely manner.

This means that all work must be done by the date that it is due. If you know in advance that you will be absent on the date the work is due, it is your responsibility to turn it in before that date. Late or make-up work will only be accepted after documenting a justified absence. A justified absence is defined in the school rules.

8. Do not use any electronic communication device during the class.

This means that the use of cell phones, personal digital assistants, digital music players and recorders, electronic games, etc. is strictly prohibited during the duration of the class.

9. Work hard, explore, elaborate, and enjoy the class.

This means that you are expected to be an active participant in the learning process. Follow instructions; do all assigned work; ask questions when concepts are not clear; look at alternatives; and elaborate on topics beyond what we discuss in class.

Student's Name

Student's Signature

Date

Parent's Name

Parent's Signature

Date