AB Calculus 2

Spring 2018

Course Description:

AB Calculus 2 is the second of a two-semester Calculus sequence. The course is designed to cover the concepts and algebraic processes central to the topics of limit and integrals, and some applications of integrals. The approach emphasizes graphical and numerical as well as algebraic viewpoints.

Instructor:

- Matthew McCutcheon
- Office Number: A-157, The Math Team Office
- Telephone number: (W) 630-907-5484
- Email address: mmccutcheon@imsa.edu

Availability:

Often Modules 1, 3, 5, 8. Also afterschool from 4:15-4:45 PM.

Students should take advantage of these times for individual consultation – the instructor enjoys doing this! Making an appointment would be helpful and would guarantee time for the student, however, this is not necessary.

Review sessions are also available on I-days at 1:00pm in room A150.

Text / Materials:

Briggs, William, et. al., *Calculus, AP Edition*. Boston: Pearson Education, Inc., 2014.

There is also an online suite of materials – *MathLX for School* – that comes with the text, and we might utilize that as well.

Essential Content:

The student will

A. demonstrate a disposition and propensity to use mathematics, a variety of problem solving strategies, and creative thought to solve problems.

C. communicate clearly and accurately about mathematical relationships and results.

E. understand and employ the power, economy, clarity, and elegance of mathematical representations.

F. use and interpret appropriate mathematical models to represent real-world situations.

H. identify, understand, and apply the concepts of change and invariance under change.

L. use technology to gain insight and obtain different perspectives on problems, examine the parameters of citizenship, ethical behavior, and human rights in a democracy.

SSLs and Outcomes:

I.A Develop automaticity in skills, concepts, and processes that support and enable complex thought.

I.B Construct questions which further understanding, forge connections, and deepen meaning.

I.D Evaluate the soundness and relevance of information and reasoning.

III.B Recognize, pursue, and explain substantive connections within and among areas of knowledge.

IV.A Construct and support judgments based on evidence.

IV.B Write and speak with power, economy, and elegance.

V.B Make reasoned decisions which reflect ethical standards, and act in accordance with those decisions.

Sequence of Topics and Activities

- Review of fundamentals of derivatives
- Integrals as Antiderivatives
- Integrals as Area
- The Fundamental Theorem of Calculus
- Techniques of Integration
- Applications of Integration
- Introduction to Differential Equations

Instructional Design and Approach:

Students are expected to put forth sincere effort each day for this course. Their homework may be checked, but is not usually collected or graded. This policy exists, in part, because the material tends to be rather difficult for many people and the instructor does not want them to work 2 to 3 hours nightly when they are regularly stuck on a problem or two. They should collaborate with peers and then bring their questions to class, or to the instructor out of class if confusion persists.

While the homework does not contribute directly to any percentage of their grade, doing it will lead to a greater understanding of the material and thus higher test scores. Being diligent and thorough with the homework will also assist in developing dynamic class discussions, which is the student's responsibility as well as the instructor's. Finally, the consistency and sincerity of the effort being put into the homework will be considered when determining the final grade in borderline situations.

If a student is absent the day of a test, he or she will be expected to take the test the next day. Exceptions will be made for extended absence.

If a student is eligible for extended-time testing and wants to utilize this, he or she should contact the teacher in advance of a test to make arrangements. Students should expect to find a time to take tests in one sitting, when at all possible.

Students are encouraged to think independently and draw upon experiences from other classes as a natural part of the investigative process. Students are expected to delve deeply into content, forming rigorous and broad connections within and among concepts. Communication is the tie that binds collaboration and investigation. It allows students to work together and share ideas, allows the teacher to assess and to push students further, and it helps students to monitor their own understanding.

All policies in the *IMSA Student Handbook* will be followed.

Assessment Practices, Procedures, and Processes:

Quarterly grades will be averaged using the following weightings:

Tests	60%
Quizzes	20%
Other*	10%
Discretionary**	10%

The course sequence and assessment system are somewhat flexible. The above categorical percentages are the initial intent, but might change slightly.

The grading scale for each assessment will be determined by the instructor. A percentage system will likely not be used.

*Miscellaneous, Problem Sets, Group Work,…

**In most cases this grade will be consistent with the student's average work, but the instructor does reserve the option of using his professional judgement about slight adjustments to that average. If this occurs, he will address that in the comments.

Semester grades will be averaged using the following weightings:

3rd and 4th Quarterly Grades	80%
Semester Exam	20%