



MA 16600 Analytic Geometry & Calculus II

Course Title: Analytic Geometry & Calculus II

Instructor Email:

Course Number: MA 16600

Instructor Name:

Course Description:

Brief Summary of MA16600 Learning Objectives

Techniques of Integration: Students learn and use all the standard integration methods, including integration by parts, trigonometric substitution, integration of trigonometric functions, and integration of rational functions using partial fractions. They learn how to use tables and computer algebra systems to find the antiderivatives of more complicated functions. They learn the importance of approximate integration, and know how to use the Midpoint Rule, the Trapezoidal Rule and Simpson's Rule to approximate integrals. Students understand and can evaluate improper integrals by definition, or decide if convergent or divergent using the Comparison Theorem.

Applications of Integral: Students should be able to divide a quantity into small pieces, estimate with Riemann sums, and recognize the limit as an integral. General methods are developed for finding geometrical quantities, such as areas of regions and surfaces, volumes of solids, arc length of curves, as well as quantities used in Physics and Engineering, such as work, hydrostatics pressure and force, and moments and centers of mass. They also learn about basic differential equations, and solve separable differential equations.

Infinite Series: Students learn evaluate limits of sequences, and can decide if a sequence is convergent or divergent. They learn the definition of convergence, the basic properties and several important examples of infinite series. They can decide if a geometric or telescopic series is convergent or divergent, and find the sum of the series if convergent. They use the Divergence Test, the Integral Test, the Comparison and the Limit Comparison Tests to decide if a given series is convergent or divergent. They learn about alternating series and about absolute convergence, and know how to use the Ratio and Root tests. They understand power series, their basic behavior and their applications. They can use different methods to represent functions as power series.

Parametric Equations, Polar Coordinates, and Complex Numbers: Students learn about parametric curves and use calculus to find tangent lines, areas, and arc lengths for parametric curves. They understand the polar coordinate system, and can graph polar curves. They use calculus to find tangent lines, areas, and arc lengths for polar curves. Students learn the definition and basic operations with complex numbers. They can solve equations that have complex roots. They can represent complex numbers in polar form and perform multiplications, divisions, evaluate powers and take roots using the polar form. They learn Euler's Formula in connection to power series and they revisit the Fundamental Theorem of Algebra.

Course Prerequisites:

Precalculus

Course Access:

All assignments and agendas will be posted to Canvas. You are expected to check Canvas daily, even if you are absent. Links to important websites and documents will also be available on Canvas. Your assignments should be submitted to Canvas, and comments will be left on assignments explaining any lost points. All grades are posted in Power School.

Course Goals:

- Highlight the link of mathematics to the real world.
- Develop a wide base of mathematical knowledge, including basic skills and concepts, a functional view of mathematics (including graphical, algebraic, numerical, and contextual viewpoints), properties and applications of some of the basic families of functions, geometric visualization, problem solving, predicting, critical thinking, and generalizing
- Incorporate the use of general academic skills such as communicating mathematics concepts, understanding and using technology, and working collaboratively.

Indiana College Core Area 3 Quantitative Reasoning Competencies:

- 3.1. Interpret information that has been presented in mathematical form*.
- 3.2. Represent information/data in mathematical form* as appropriate
*mathematical form = functions, equations, graphs, diagrams, tables, words, and geometric figures.
- 3.3. Demonstrate skill in carrying out mathematical (e.g. algebraic, geometric, logical, statistical) procedures flexibly, accurately, and efficiently to solve problems.
- 3.4. Analyze mathematical arguments, determining whether stated conclusions can be inferred.
- 3.5. Communicate which assumptions have been made in the solution process.
- 3.6. Analyze mathematical results in order to determine the reasonableness of the solution.
- 3.7. Cite the limitations of the process where applicable. Communication
- 3.8. Clearly explain the representation, solution, and interpretation of the math problem.

Learning Resources & Texts:

Required Textbook: Larson,.Ron. *Calculus for AP* 2e. Cengage Learning.

Other Resources: CalcChat and CalcView are free apps/websites that connect to our textbook. CalcChat provides typed solutions to each odd exercise in the textbook, while CalcView provides videos working through select exercises from the textbook. We will also access Khan Academy at times.

Laptop: Please bring your school-issued Chromebook to class daily.

Assignments and Grading Scale:

Your grade is based on written assignments, quizzes, tests, and a final exam. Assignments will count for 20% of your grade. Quizzes and tests will count for 80% of your grade. The final exam is worth 25% of the overall class grade.

Assignments are your opportunity to practice and prepare yourself for the assessments. Simply copying answers or finding answers online without understanding the exercises will not prepare you and will

only hurt your grade in the end. Assignments will be graded in a variety of ways, sometimes for accuracy and sometimes for completion.

Late assignments will be accepted up to one week late for 50% credit. Anything over one week late will remain a zero.

F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A	A+
0-59	60-62	63-66	67-69	70-72	73-76	77-79	80-82	83-86	87-89	90-92	93-96	97+

Course Evaluation:

At the end of the school year, you will be provided a link through Canvas where you will be able to evaluate the course and instructor. This data is sent directly to the Collegiate Connection office. All data collected is anonymous and will be shared with the instructor and their department at the end of the year.

Academic Misconduct / Plagiarism / AI:

Academic Misconduct, including plagiarism (using other people's ideas/words and not giving them credit thus implying the work is your own original work) or using your own work from a previous course without the express permission of the instructor, is taken very seriously at any learning institution. It is taken very seriously in this class. Please be aware of what behaviors constitute academic misconduct ([See Bulletin, Code of Students Rights, Responsibilities and Conduct Part II. A.](#)) If caught cheating or plagiarizing, a student may receive no credit on the assignment and may result in an F for the course. Any instances of academic dishonesty will be reported to the Office of Student Conduct and Care and your Department Chair and may result in expulsion from the University. Additional potential consequences can be found under: potential consequences ([See Bulletin, Code of Students Rights, Responsibilities and Conduct, Part III. A.](#): i.e., failure of the assignment, failure of the course and/or dismissal from the university) of such behavior.

The use of AI tools, including ChatGPT, is permitted in this course for students who wish to use them as a study aid (e.g., checking answers or seeking explanations of problems). The use of AI tools to cheat is not acceptable and will be treated as academic misconduct, as outlined above.

Student Support Services:

Purdue University Fort Wayne is committed to your academic and personal success. For help with technology, visit the [IT Services Student Technology Support](#) page.

Several opportunities for additional math help are available to you. Some of those include visiting my classroom during study hall, sending me an email, utilizing CalcChat and CalcView, or attending the math home room in the cafeteria on Wednesdays. If you wish to come to my room for study hall, please request a pass from me.

Course Schedule:

All assignments, assessments, projects, and agendas will be posted on Canvas for your convenience. A year-long agenda page is linked to our course home page and is updated weekly. Daily agendas are linked to each day on the course calendar.

Generally, we will follow the order of the textbook and take a test over each chapter with quizzes throughout. Some additional content will be supplemented to ensure we are touching on each of the Precalculus standards outlined by the state and the Advanced Placement program.

The AP exam, which each student enrolled in the class is required to take, will take place in mid-May. This exam is not part of your class grade, but we will spend time prior to the exam studying. The study materials for the AP exam will also be used as your final exam review.

Additional Information and Policies:

Rulers, protractors, and textbooks are available to be checked out if needed.

TI-84 Plus or TI-84 Plus CE calculators are recommended and are available to use in class. A free online version is linked to our Canvas home page if you do not have a graphing calculator available at home. If you are using a different brand calculator, the steps I teach may be different than what you need for your calculator. It is your responsibility to know how to use your calculator if you choose to purchase a different brand.

has a school-wide tardy policy. This should be the same for every class.

- Tardies 1-3: Warnings
- Tardies 4-6: Detention and Call Home
- Tardies 7+: Referral

Be in your seat when the bell rings with cell phones put away.

- Cell phones should be placed in the pockets at the front of the room and should remain there until the end of the class period.
- You should not be using your phone as a calculator.

Be respectful of the people and materials in this classroom.