- **Course Number and Title:** MATH 1511G. Calculus and Analytic Geometry I
- **Catalog Description:** Limits and continuity, theory and computation of derivatives, applications of derivatives, extreme values, critical points, derivative tests, L'Hopital's Rule.
- **Credit Hours:** 4 Credits (4)
- **Prerequisite(s) / Corequisite(s)**

  Prerequisite(s): MATH 1250G, or adequate scoring on the Mathematics Placement Exam, or any ACT/SAT and GPA combination that is considered equivalent.

  Corequisite(s): None
- **Required:** Required for BSME and BSAE Degrees
- **Course Availability:** Fall and Spring Semesters + Summer
- **Instructor (Usual):** Various
- **Textbook:** Steward, J., Clegg, D., and Watson, S., *Calculus, Early Transcendentals,* 9th Ed., 2020, Cengage Learning (**ISBN-10:** 1337613924 or **ISBN-13:** 978-1337613927)
- **Course Learning Objectives:**

  <u>After completing this course, a student should be able to:</u>

  1) Understand the concepts of calculus, stressing techniques, applications, and problem solving, and emphasizing numerical aspects such as approximations and order of magnitude.
  2) Utilize the power of calculus as a tool for modeling situations arising in physics, science, engineering and other fields.
  3) Apply polynomial approximation, setting up integrals, as well as the use of appropriate technology.
- **Topics Covered:** Tangent and velocity problems, Limits, limit laws, squeeze theorem, Continuity, limits at infinity, Derivatives, Derivatives of polynomials, product and quotient rules, Derivatives of trig functions, Chain rule, implicit differentiation, Logarithms and inverse trig functions, rates of change, Related rates, linear approximation, Maximum/minimum values, mean value theorem, Graphs, L'Hopital's rule, Curve sketching, Optimization