



Peru State College  
**MATH 225 / CALCULUS WITH ANALYTIC GEOMETRY**  
Syllabus – Fall – 2011

**Instructor:** Dr. Daryl Long

**Office Hours:** MW: 7:15-7:45 am and 1:30-3:15 pm; TR: 7:15-9:15 am and 1:45-2:30 pm / Other times by Appointment

**Office Telephone:** 402-872-2214

**Email Address:** [dlong@peru.edu](mailto:dlong@peru.edu)

**Course Meets:** MTWR / 9:30 am-10:45 am / Hoyt 307

**Required Textbook:** Title: Thomas' Calculus Early Transcendentals  
Author: George B. Thomas, Jr.  
Publisher: Pearson Addison Wesley  
Edition: 11<sup>th</sup> edition

**Course Description & Objectives**

This course includes the study of analytic geometry, functions, limits, continuity, related rates, differentiation, maxima and minima, higher order derivatives, techniques of graphing, and basic integration theory with application. The objectives of this course are:

- A. To understand fundamentals of limits, differentiation and their application.
- B. To appreciate the value of calculus in our technical society

**Prerequisites:** Math 113 or equivalent.

Upon completion of this course you should be able to:

- 1. To understand the use of differential calculus in our technical society
- 2. To be able to take derivatives and understand their importance in science & math
- 3. To take limits of functions
- 4. To recognize the meaning of maximum and minimum of functions and to determine them.

At the beginning of the course, we will discuss how these objectives fit into the College's and School's mission and goals. The instructor reserves the right to modify any aspect of the course syllabus or content. Any modifications will be communicated to students in advance.

## **Instruction Method/Mode of Delivery:**

### **Expectations & Instructional Approach**

Classes will include:

- A. Lecture and discussion every day except hour quiz days.
- B. Short quizzes are 1/3 of course grade and hour quizzes are 2/3 of course grade
- C. Every Thursday there will be a short quiz or an hour quiz.

Attendance and participation are vital to the learning experience. Consequently, I expect you to be at each class having read the material and ready to participate in the day's discussions and exercises. Please be in class on time. In order to foster a climate conducive to learning, please join me in treating your classmates with respect. I encourage students to ask questions, seek my help when they need it, and help their classmates understand the material. Attendance is a privilege and a responsibility represented by not only the student's investment, but also by a significant investment by the State of Nebraska.

### **Assessment and Grading**

**Grading Policy:** A = 90-100%; B+ = 85-89%; B = 80-84%; C+ = 75-79%; C = 70-74%; D+ = 69-65%; D = 64-60%; F = 59% or lower

**Incomplete Coursework:** To designate a student's work in a course as incomplete at the end of a term, instructors record the incomplete grade (I). Students may receive this grade only when serious illness, hardship, death in the immediate family, or military service during the semester in which they are registered prevents them from completing course requirements. In addition, to receive an incomplete, a student must have completed a majority of the course's major requirements. Unless extenuating circumstances dictate otherwise, students must initiate requests for an incomplete by filling out an Incomplete Grade Completion Contract, which requires the student and faculty signature.

The Incomplete Grade Completion Contract cites the reason(s) for the incomplete and details the specific obligations the student must meet to change the incomplete to a letter grade. If students agree to complete required work prior to the normal deadline for making up an incomplete – the end of the subsequent semester – this date must appear in the contract. The division chair, the instructor, and the student receive signed copies of the incomplete Grade Completion Contract.

Even if the student does not attend Peru State College, all incomplete course work must be finished by the end of the subsequent semester. Unless Faculty Senate approves an extension, if the student does not fulfill contract obligations in the allotted time, the incomplete grade automatically becomes an F. Students who have filed an application for graduation are not eligible for a grade of Incomplete.

**Accommodation Statement:** The Rehabilitation Act of 1973 (public law 93-112) section 504, provides that “no otherwise qualified disabled individual in the United States...shall solely by reason...disabled, be excluded from the participation in, be denied the benefits of, or by subjected to discrimination under any program or activity receiving federal financial assistance.”

1. It is the student’s responsibility to notify the institution of any special circumstances that would affect his/her ability to complete equally in the college environment. Learning disabilities must be appropriately documented.
2. While students are encouraged to self-identify at the earliest possible time, students may not know or choose to self-identify, but can still receive services at any time once they self-disclose and document.
3. Students should contact the office of Student Support Services, Vice President for Student Affairs or the Director of Admissions for further advisement.

**Academic Dishonesty:** Academic integrity is a basic principle that requires the student to take credit only for ideas and efforts that are their own. Cheating is defined as the submission of materials in assignments, exams, or other academic work that is based on sources prohibited by the faculty member. Cheating shall include, but is not limited to, situations in which a student:

1. Refers during an academic evaluation to material sources not authorized by the faculty member.
2. Utilizes devices during an academic evaluation that are not authorized by the faculty member.
3. Provides assistance to another student or receives assistance from another student during an academic evaluation in a manner not authorized by the faculty member.
4. Presents as her/his own the ideas or words of another person without customary and proper acknowledgment of sources.
5. Knowingly permits his/her words to be submitted by another person without the faculty member’s permission.
6. Acts as a substitute or utilizes a substitute in any academic evaluation.
7. Fabricates data in support of laboratory or fieldwork.
8. Possesses, buys, sells, obtains, or uses a copy of any materials intended to be used as an instrument of academic evaluation in advance of its administration.
9. Alters grade records of her/his own or another student work in a course or a component of a course.

### **College’s Incomplete Coursework Policy**

To designate a student’s work in a course as incomplete at the end of a term, the instructor records the incomplete grade (I). Students may receive this grade only when serious illness, hardship, death in the immediate family, or military service during the semester in which they are registered prevents them from completing course

requirements. In addition, to receive an incomplete, a student must have completed substantially all of the course's major requirements.

Unless extenuating circumstances dictate otherwise, students must initiate requests for an incomplete by filling out an Incomplete Grade Completion Contract, which requires the signature of the student, instructor, and Dean. The Incomplete Grade Completion contract cites the reason(s) for the incomplete and details the specific obligations the student must meet to change the incomplete to a letter grade. The date by which the student agrees to complete required work must appear in the contract. The Dean, the instructor, and the student receive signed copies of the Incomplete Grade Completion Contract.

Even if the student does not attend Peru State College, all incomplete course work must be finished by the end of the subsequent semester. Unless the appropriate Dean approves an extension and if the student does not fulfill contract obligations in the allotted time, the incomplete grade automatically becomes an F.

### **College's Academic Integrity Policy**

The College expects all students to conduct themselves in a manner that supports an honest assessment of student learning outcomes and the assignment of grades that appropriately reflect student performance. It is ultimately the student's responsibility to understand and comply with instructions regarding the completion of assignments, exams, and other academic activities. At a minimum, students should assume that at each assessment opportunity they are expected to do their own original academic work and/or clearly acknowledge in an appropriate fashion the intellectual work of others, when such contributions are allowed. Students helping others to circumvent honest assessments of learning outcomes, or who fail to report instances of academic dishonesty, are also subject to the sanctions defined in this policy.

Instances of academic dishonesty may be discovered in a variety of ways. Faculty members who assign written work ordinarily check citations for accuracy, run data base and online checks, and/or may simply recognize familiar passages that are not cited. They may observe students in the act of cheating or may become aware of instances of cheating from the statements of others. All persons who observe or otherwise know about instances of cheating are expected to report such instances to the proper instructor or Dean.

In order to promote academic integrity, the College subscribes to an electronic service to review papers for the appropriate citations and originality. Key elements of submitted papers are stored electronically in a limited access database and thus become a permanent part of the material to which future submissions are compared. Submission of an application and continued enrollment signifies your permission for this use of your written work.

NSCS Board of Trustees Policy 4220 states that each College “. . . will establish a distance learning assessment policy that will include, at a minimum, a substantial culminating experience that is proctored.” Peru State College’s policy is that each course that is offered entirely online will feature a proctored final exam that substantially measures the extent the course’s stated learning objectives are achieved. Online course syllabi will clearly state that, regardless of grades earned previously, the proctored final exam must be passed in order to receive credit for the course. Courses which feature graded site-based activities (e.g., teaching demonstrations) and/or video-taped presentations that occur near the end of the term, and that are designed to substantially assess the achievement of learning objectives, can be considered in compliance with this policy. Project-based capstone and graduate courses utilizing real-time discussions held by web-cam, phone or in person with the faculty member as part of the assessment process can also be considered in compliance with this policy.

Should an occurrence of academic misconduct occur, the faculty member may assign a failing grade for the assignment or a failing grade for the course. Each incident of academic misconduct should be reported to the Dean and the Vice President for Academic Affairs (VPAA). The VPAA may suspend students for two semesters found to be responsible for multiple instances of academic dishonesty. The reason for the suspension will be noted on the student’s transcript.

A faculty member need present only basic evidence of academic dishonesty. There is no requirement for proof of intent. Students are responsible for understanding these tenets of academic honesty and integrity. Students may appeal penalties for academic dishonesty using the process established for grades appeals.

### **Title IX Compliance Notice**

Peru State College is an equal opportunity institution. PSC does not discriminate against any student, employee or applicant on the basis of race, color, national origin, sex, disability, religion, or age in employment and education opportunities, including but not limited to admission decisions. The College has designated an individual to coordinate the College’s nondiscrimination efforts to comply with regulations implementing Title VI, VII, IX, and Section 504. Inquiries regarding non-discrimination policies and practices may be directed to Eulanda Cade, Director of Human Resources, Title VI, VII, IX Compliance Coordinator, Peru State College, PO Box 10, Peru, NE 68421-0010, (402) 872-2230.

Students requesting reasonable accommodation and tutoring services should contact the Center for Achievement and Transition Services (CATS).

## **Units and Contents:**

1. Functions
  - 1.1 Functions and their graphs
  - 1.2 Identifying Functions; Mathematical Models
  - 1.3 Combining Functions; Shifting and Scaling Graphs
  - 1.4 Graphing with Calculators and Computers
  - 1.5 Exponential Functions
  - 1.6 Inverse Functions and logarithms
  
2. Limits and Continuity
  - 2.1 Rates of Change and Limits
  - 2.2 Calculating Limits Using the Limit Laws
  - 2.3 The Precise Definition of a Limit
  - 2.4 One-Sided Limits and Limits at Infinity
  - 2.5 Infinite Limits and Vertical Asymptotes
  - 2.6 Continuity
  - 2.7 Tangents and Derivatives
  
3. Differentiation
  - 3.1 The derivative as a Function
  - 3.2 Differentiation Rules for Polynomials, Exponentials, Products, and Quotients
  - 3.3 The Derivative as a Rate of Change
  - 3.4 Derivatives of Trigonometric Functions
  - 3.5 The Chain Rule and Parametric Equations
  - 3.6 Implicit Differentiation
  - 3.7 Derivatives of Inverse Functions and Logarithms
  - 3.8 Inverse Trigonometric Functions
  - 3.9 Related Rates
  - 3.10 Linearization and Differentials
  
4. Applications of Derivatives
  - 4.1 Extreme Values of Functions
  - 4.2 The Mean Value Theorem
  - 4.3 Monotonic Functions and the First Derivative Test
  - 4.4 Concavity and Curve Sketching
  - 4.5 Applied Optimization Problems
  - 4.6 Indeterminate Forms and L'Hopital's Rule
  - 4.7 Newton's Method
  - 4.8 Antiderivatives