



INSTRUCTIONAL PACKAGE

MAT 130
Elementary Calculus

Effective Term
Fall 2022/Spring 2023/Summer 2023

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Part I: Course Information

Effective Term: Fall 2022/Spring 2023/Summer 2023

COURSE PREFIX: MAT 130

COURSE TITLE: Elementary Calculus

CONTACT HOURS: 3.0

CREDIT HOURS: 3.0

RATIONALE FOR THE COURSE:

This course is designed to introduce the fundamental concepts of calculus to the non-science major. The focus is on the usefulness of calculus in solving problems in many fields of interest. The fundamental skills learned will prepare the student for specialized classes in their field that utilize calculus.

COURSE DESCRIPTION:

This course includes the following topics: differentiation and integration of polynomials, rational, logarithmic, and exponential functions; and interpretation and application of these processes. (Prerequisite: College Algebra) This course is transferable to public senior institutions as part of the South Carolina Commission on Higher Education Statewide Articulation Agreement.

PREREQUISITES/CO-REQUISITES:

ACT Math 26 or New ACCUPLACER Adv Algebra 270 or SAT Mathematics 630 or New SAT Mathematics 650 or Credit level [MAT 110](#) Minimum Grade of C or Credit level [MAT 110](#) Minimum Grade of TC or Credit level [MAT 176](#) Minimum Grade of C or Credit level [MAT 176](#) Minimum Grade of TC) or (Multiple Measures Math 1)

***Online/Hybrid** courses require students to complete the [Dli Orientation Video](#) prior to enrolling in an online course.

REQUIRED MATERIALS:

1. Please visit the Bookstore online site for most current textbook information. Use the direct link below to find textbooks.
[BOOKSTORE](#).

Enter the semester, course prefix, number and section when prompted and you will be linked to the correct textbook.

2. Scientific/Graphing Calculator: Recommended models - Texas Instruments TI-83, or TI-83 Plus

TECHNICAL REQUIREMENTS:

Access to Desire2Learn (D2L), HGTC's student portal for course materials. myHGTC and college email access.

STUDENT IDENTIFICATION VERIFICATION

Students enrolled in online courses will be required to participate in a minimum of one (1) proctored assignment and/or one (1) virtual event to support student identification verification. Please refer to your Instructor Information Sheet for information regarding this requirement.

CLASSROOM ETIQUETTE:

As a matter of courtesy to other students and your professor, please turn off cell phones and other communication/entertainment devices before class begins. If you are monitoring for an emergency, please notify your professor prior to class and switch cell phone ringers to vibrate.

NETIQUETTE: is the term commonly used to refer to conventions adopted by Internet users on the web, mailing lists, public forums, and in live chat focused on online communications etiquette. For more information regarding Netiquette expectations for distance learning courses, please visit [Online Netiquette](#).

Part II: Student Learning Outcomes**COURSE LEARNING OUTCOMES and ASSESSMENTS*:**

The student should be able to:

1. Find and evaluate limits graphically, numerically, and analytically.
2. Verify the continuity or discontinuity of a function.
3. Find the derivatives of functions using the definition and the following rules for differentiation: Constant, Simple Power, Constant Multiple, Sum, Difference, Product, Quotient, and Chain.
4. Find higher order derivatives
5. Find derivatives using implicit differentiation.
6. Find relative and absolute extrema of a function, and using the First Derivative Test.
7. Determine the concavity of a function, finding the points of inflection, and using the Second Derivative Test.
8. Solve related rates problems and optimization problems by algebra and calculus techniques.
9. Find derivatives of exponential and logarithmic functions.
10. Understand indefinite integration, and find anti-derivatives by applying the following rules for integration: Constant, Constant Multiple, Sum, Difference, Simple Power, and General Power.
11. Integrate by substitution or change in variables.
12. Integrate exponential and logarithmic functions.
13. Evaluate definite integrals using the rules for integration listed above and by the substitution method.
14. Understand and apply the Fundamental Theorem of Calculus.

UNIT I

1. Understand the concept of the limit of a function and be able to evaluate the limit of a function.
2. Define continuity and be familiar with the properties of continuous functions.

Text Reference: Ch. 1 (Only Sections 1.5, 1.6)

UNIT II

1. Know the definition of the derivative of a function and find the derivative of a function using the definition.
2. Know and apply the rules for differentiation.
3. Calculate rates of change using derivatives.
4. Know and apply the product and quotient rules.
5. Know and apply the chain rule.
6. Find higher order derivatives.
7. Understand and perform implicit differentiation.
8. Solve related rates problems.

Text Reference: Ch. 2

UNIT III

1. Understand and apply increasing/decreasing tests.
2. Understand and apply the first derivative test.
3. Understand and apply the second derivative test.
4. Solve optimization problems.
5. Solve business and economics applications.
6. Understand and find asymptotes.
7. Analyze and sketch the graph of a function.

Text Reference: Ch. 3

UNIT IV

1. Understand exponential functions and use the properties of exponents.
2. Differentiate exponential functions.
3. Understand logarithmic functions, use the properties of logarithms, and solve exponential equations.
4. Differentiate and integrate logarithmic functions.

Text reference: Ch. 4

UNIT V

1. Recognize integral notation and evaluate integrals.
2. Apply the power rule for integrals.
3. Evaluate integrals related to the exponential and logarithmic functions.
4. Understand the Fundamental Theorem of Calculus.
5. Understand and evaluate definite integrals.

Text reference: Ch. 5

****Students – please refer to the Instructor’s Course Information sheet for specific information on assessments and due dates.***

Part III: Grading and Assessment

EVALUATION OF REQUIRED COURSE MEASURES/ARTIFACTS*

****Students, for the specific number and type of evaluations, please refer to the Instructor's Course Information Sheet.***

GRADING SYSTEM:

- A 90-100%
- B 80-89%
- C 70-79%
- D 60-69%
- F Below 60%

Grades earned in courses impact academic progression and financial aid status. Before withdrawing from a course, be sure to talk with your instructor and financial aid counselor about the implications of that course of action. Ds, Fs, Ws, WFs and Is also negatively impact academic progression and financial aid status.

The Add/Drop Period is the first 5 days of the semester for **full term** classes. Add/Drop periods are shorter for accelerated format courses. Please refer to the academic calendar for deadlines for add/drop ([ACADEMIC CALENDAR](#)). You must attend at least one meeting of all of your classes during that period. If you do not, you will be dropped from the course(s) and your Financial Aid will be reduced accordingly.

Part IV: Attendance

Horry-Georgetown Technical College maintains a general attendance policy requiring students to be present for a minimum of 80 percent (80%) of their classes in order to receive credit for any course. Due to the varied nature of courses taught at the college, some faculty may require up to 90 percent (90%) attendance. Pursuant to 34 Code of Federal Regulations 228.22 - Return to Title IV Funds, once a student has missed over 20% of the course or has missed two (2) consecutive weeks, the faculty is obligated to withdraw the student and a student may not be permitted to reenroll. **Instructors define absentee limits for their class at the beginning of each term; please refer to the Instructor Course Information Sheet.**

For online and hybrid courses, check your Instructor's Course Information Sheet for any required on-site meeting times. Please note, instructors may require tests to be taken at approved testing sites, and if you use a testing center other than those provided by HGTC, the center may charge a fee for its services.

Part V: Student Resources



THE STUDENT SUCCESS AND TUTORING CENTER (SSTC):

The SSTC offers to all students the following **free** resources:

1. **Academic tutors** for most subject areas, **Writing Center support**, and **college success skills**.
2. Online **tutoring** and academic support resources.
3. Professional and interpersonal communication **coaching** in the EPIC Labs.

Visit the [Student Success & Tutoring Center](#) website for more information. To schedule tutoring, contact the SSTC at ssc@hgtc.edu or self-schedule in the Penji iOS/Android app or at www.penjiapp.com. Email ssc@hgtc.edu or call SSTC Conway, 349-7872; SSTC Grand Strand, 477-2113; and SSTC Georgetown, 520-1455, or go to the [Online Resource Center](#) to access on-demand resources.



STUDENT INFORMATION CENTER: TECH Central

TECH Central offers to all students the following **free** resources:

1. **Getting around HGTC:** General information and guidance for enrollment, financial aid, registration, and payment plan support!
2. Use the [Online Resource Center \(ORC\)](#) including Office 365 support, password resets, and username information.
3. **In-person workshops, online tutorials and more services** are available in Desire2Learn, Student Portal, Degree Works, and Office 365.
4. **Chat with our staff on TECH Talk**, our live chat service. TECH Talk can be accessed on the student portal and on TECH Central's website, or by texting questions to (843) 375-8552.

Visit the [Tech Central](#) website for more information. Live Chat and Center locations are posted on the website. Or please call (843) 349 – TECH (8324), Option #1.

STUDENT TESTING:

Testing in an **online/hybrid** course may be accomplished in a variety of ways:

- Test administered within D2L
- Test administered in writing on paper
- Test administered through Publisher Platforms

Further more tests may have time limits and/or require a proctor.

Proctoring can be accomplished either face-to-face at an approved site or online through our online

proctoring service. To find out more about proctoring services, please visit the [Online Testing](#) section of the HGTC's Testing Center webpage.

The **Instructor Information Sheet** will have more details on test requirements for your course.

DISABILITY SERVICES:

HGTC is committed to providing an accessible environment for students with disabilities. Inquiries may be directed to HGTC's [Accessibility and Disability Service webpage](#). The Accessibility and Disability staff will review documentation of the student's disability and, in a confidential setting with the student, develop an educational accommodation plan.

Note: It is the student's responsibility to self-identify as needing accommodations and to provide acceptable documentation. After a student has self-identified and submitted documentation of a disability, accommodations may be determined, accepted, and provided.

STATEMENT OF EQUAL OPPORTUNITY/NON-DISCRIMINATION STATEMENT:

Horry-Georgetown Technical College prohibits discrimination and harassment, including sexual harassment and abuse, on the basis of race, color, sex, national or ethnic origin, age, religion, disability, marital or family status, veteran status, political ideas, sexual orientation, gender identity, or pregnancy, childbirth, or related medical conditions, including, but not limited to, lactation in educational programs and/or activities.

TITLE IX REQUIREMENTS:

All students (as well as other persons) at Horry-Georgetown Technical College are protected by Title IX—regardless of their sex, sexual orientation, gender identity, part- or full-time status, disability, race, or national origin—in all aspects of educational programs and activities. Any student, or other member of the college community, who believes that he/she is or has been a victim of sexual harassment or sexual violence may file a report with the college's Chief Student Services Officer, campus law enforcement, or with the college's Title IX Coordinator, or designee.

*Faculty and Staff are required to report incidents to the Title IX Coordinators when involving students. The only HGTC employees exempt from mandatory reporting are licensed mental health professionals (only as part of their job description such as counseling services).

INQUIRIES REGARDING THE NON-DISCRIMINATION/TITLE IX POLICIES:

Student and prospective student inquiries concerning Section 504, Title II, and Title IX and their application to the College or any student decision may be directed to the Vice President for Student Affairs.

Dr. Melissa Batten, VP Student Affairs

Title IX Coordinator

Building 1100, Room 107A, Conway Campus

PO Box 261966, Conway, SC 29528-6066

843-349-5228

Melissa.Batten@hgtc.edu

Employee and applicant inquiries concerning Section 504, Title II, and Title IX and their application to the College may be directed to the Vice President for Human Resources.

Jacquelyne Snyder, VP Human Resources

EEO and Title IX Coordinator

Building 200, Room 212A, Conway Campus

PO Box 261966, Conway, SC 29528-6066

843-349-5212

Jacquelyne.Snyder@hgtc.edu