Math 3415: Calculus III
Course Syllabus

This syllabus is current and accurate as of its posting date, but it will not be updated. For the most complete and up-to-date course information, contact the instructor.

Contact Information

Instructor: Dr. Dennis Hall

Office: MCS 220J

Office Hours: Office hours are online and by appointment.

E-mail: dennis.hall@angelo.edu

Course Information

Course Description: Calculus of multivariable functions including partial differentiation, multiple integrals, vector functions, line integrals, Green's Theorem, and Stokes' Theorem.

Textbook: *Calculus, Volume 3*, by OpenStax. A free digital version of this textbook is available online at https://openstax.org/details/books/calculus-volume-3.

Prerequisite Courses: Mathematics 2415 (Calculus II) or equivalent.

MyOpenMath: The free electronic resource MyOpenMath will be used in this course. To access MyOpenMath, click the various homework links in Blackboard. You DO NOT need to purchase access.

Course Content: The following chapters and content will be covered.

2. **Vectors in Space**: Vectors in the Plane, Vectors in Three Dimensions, The Dot Product, The Cross Product, Equations of Lines and Planes in Space, Quadric Surfaces, Cylindrical and Spherical Coordinates.
3. **Vector-Valued Functions:** Vector-Valued Functions and Space Curves, Calculus of Vector-Valued Functions, Arc Length and Curvature, Motion in Space
4. **Differentiation of Functions of Several Variables:** Functions of Several Variables, Limits and Continuity, Partial Derivatives, Tangent Planes and Linear Approximations, The Chain Rules, Directional Derivatives and the Gradient, Maxima/Minima Problems.

5. **Multiple Integration:** Double Integrals over Rectangular Regions, Double Integrals over General Regions, Double Integrals in Polar Coordinates, Triple Integrals, Triple Integrals in Cylindrical and Spherical Coordinates, Changes of Variables in Multiple Integrals.
6. **Vector Calculus:** Vector Fields, Line Integrals, Conservative Vector Fields, Green's Theorem, Divergence and Curl, Surface Integrals, Stokes' Theorem, and The Divergence Theorem.

Technology Requirements: This course will be using the free online homework system MyOpenMath. This homework system can be accessed through Blackboard. You will also need a webcam and computer capable of using Respondus LockDown Browser for exams. See the next page for more information about Respondus LockDown Browser.

Communication: Most email will receive a response within 24 hours during working hours Monday through Friday. Please include your course name (Calculus III, Finite Math, etc.) in your messages for the quickest reply. Office hours will be held using Webex or Blackboard Collaborate.

LockDown Browser & Respondus Monitor

<u>Respondus LockDown Browser Information:</u>

This course requires the use of LockDown Browser and a webcam for online exams. The webcam can be the type that's built into your computer or one that plugs in with a USB cable.

Watch this brief video to get a basic understanding of LockDown Browser and the webcam feature:

https://www.respondus.com/products/lockdown-browser/student-movie.shtml

Download and install LockDown Browser from this link:

https://download.respondus.com/lockdown/download.php?id=384131921

Respondus: Once Installed

- Start LockDown Browser
- Log into Blackboard Learn
- Navigate to the test

Note: You won't be able to access tests with a standard web browser. If this is tried, an error message will indicate that the test requires the use of LockDown Browser. Simply start LockDown Browser and navigate back to the exam to continue.

Respondus: Guidelines
When taking an online test, follow these guidelines:

- Ensure you are in a location where you will not be interrupted.
- Turn off all other devices (e.g. tablets, phones, second computers) and place them outside of your reach.
- Before starting the test, know how much time is available for it, and also that you've allotted sufficient time to complete it.
- Clear your desk or workspace of all external materials not permitted. This course allows the use of notes, but no electronics may be used. If you take notes electronically, they must be printed out.
- Remain at your computer for the duration of the test.
- Your face and desk must be visible for the duration of the exam. Do not point the camera away from yourself during the test.
- If the computer, Wi-Fi, or location is different than what was used previously with the "Webcam Check" and "System & Network Check" in LockDown Browser, run the checks again prior to the exam.
- To produce a good webcam video, do the following:
    - Avoid wearing baseball caps or hats with brims.
    - Ensure your computer or device is on a firm surface (a desk or table). Do NOT have the computer on your lap, a bed, or other surface where the device (or you) are likely to move.
    - If using a built-in webcam, avoid readjusting the tilt of the screen after the webcam setup is complete.
    - Take the exam in a well-lit room but avoid backlighting (such as sitting with your back to a window).
- Remember that LockDown Browser will prevent you from accessing other websites or applications; you will be unable to exit the test until all questions are completed and submitted.

Getting Help
Several resources are available if you encounter problems with LockDown Browser:

- The Windows and Mac versions of LockDown Browser have a "Help Center" button located on the toolbar. Use the "System & Network Check" to troubleshoot issues. If an exam requires you to use a webcam, also run the "Webcam Check" from this area.

- Angelo State University's IT Help Desk is available to help with Respondus:

  IT Service Center (Help Desk)
  325-942-2911
  1-866-942-2911
  itsupport@angelo.edu
  https://www.angelo.edu/administrative-support/information-technology/
  Mathematics-Computer Science Building, 111

- Respondus has a Knowledge Base available from support.respondus.com. Select the "Knowledge Base" link and then select "Respondus LockDown Browser" as the product. If your problem is with a webcam, select "Respondus Monitor" as your product.
- If you're still unable to resolve a technical issue with LockDown Browser, go to support.respondus.com and select "Submit a Ticket". Provide detailed information about your problem and what steps you took to resolve it.

Course Evaluation

Your grade for this course will be determined by your performance on exams and homework. Final grades will *be based on a standard 10-point grading scale.*

Assignments/Homework: 30%

Tests: 50% (Lowest test may be replaced by the final exam score)

Final Exam: 20%

Assignments (30%): The assignments category mainly consists of the online homework. Homework will be completed online in Blackboard using MyOpenMath. You will not turn in scratch work for homework, and are welcome to receive help on homework from any source: me, students, solutions manuals, online, etc. However, it is encouraged that you work the homework on your own first, since this will be the best way to practice for tests.

Tests (50%): There will be four tests during this summer semester. These tests will be given online in Blackboard using MyOpenMath and Respondus LockDown Browser with Webcam. You will be given a 48-hour test window and may take the test anytime during that window. Once you start the test, you will have 90 minutes to complete it. Your camera must be directed toward yourself the entire time while you are taking the test. After completing the test, you must (within 2 hours) submit scratch work that justifies the answers you entered into MyOpenMath. No credit will be given for any questions where justification is not provided.

Final Exam (20%): In addition to the tests above, there will be a comprehensive final examination. This exam is given similarly to tests.

Make up policy: If you must miss a test or exam for any reason, you should notify me beforehand whenever possible. If it is not possible to notify me ahead of time, then you must notify me within 24 hours. If you do not contact me in accordance with this policy, then you will receive a grade of zero.

Academic Honesty for Tests and Exams:

Tests and exams in this class should be completed entirely on your own without the help of formula sheets (except where allowed by the professor), notes, online resources, books, etc. No phones are allowed to be used during tests and exams.

Other Information

All students are required to follow the policies and procedures presented in these documents:

- Angelo State University Student Handbook[i]
- Angelo State University Catalog[ii]

Academic Integrity

Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU.

The College of Science and Engineering adheres to the university's Statement of Academic Integrity.[iii]

Accommodations for Students with Disabilities

ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA) and subsequent legislation.

Student Disability Services is located in the Office of Student Affairs, and is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability. It is the student's responsibility to initiate such a request by contacting an employee of the Office of Student Affairs, in the Houston Harte University Center, Room 112, or contacting the department via email at ADA@angelo.edu. For more information about the application process and requirements, visit the Student Disability Services website.[iv] The employee charged with the responsibility of reviewing and authorizing accommodation requests is:

Dr. Dallas Swafford

Director of Student Disability Services

Office of Student Affairs

325-942-2047

dallas.swafford@angelo.edu

Houston Harte University Center, Room 112

Incomplete Grade Policy

It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 Grading Procedures[v] for more information.

Student Absence for Observance of Religious Holy Days

A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. See ASU Operating Policy 10.19 Student Absence for Observance of Religious Holy Day[vi] for more information.

Title IX at Angelo State University

Angelo State University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from sex discrimination of any kind. In accordance with Title VII, Title IX, the Violence Against Women Act (VAWA), the Campus Sexual Violence Elimination Act (SaVE), and other federal and state laws, the University prohibits discrimination based on sex, which includes pregnancy, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination and unwelcome behavior of a sexual nature. The term includes sexual harassment, nonconsensual sexual contact, nonconsensual sexual intercourse, sexual assault, sexual exploitation, stalking, public indecency, interpersonal violence (domestic violence or dating violence), sexual violence, and any other misconduct based on sex.

You are encouraged to report any incidents involving sexual misconduct to the Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator, Michelle Miller, J.D. You may submit reports in the following manner:

Online: Incident Reporting Form[vii]

Face to Face: Mayer Administration Building, Room 210

Phone: 325-942-2022

Email: michelle.miller@angelo.edu

Note, as a faculty member at Angelo State, I am a mandatory reporter and must report incidents involving sexual misconduct to the Title IX Coordinator. Should you wish to speak to someone in confidence about an issue, you may contact the University Counseling Center (325-942-2371), the 24-Hour Crisis Helpline (325-486-6345), or the University Health Clinic (325-942-2171).

For more information about resources related to sexual misconduct, Title IX, or Angelo State's policy please visit the Title IX website.[viii]

Information About COVID-19

Please refer to ASU's COVID-19 (Coronavirus) Updates[ix] web page for current information about campus guidelines and safety standards as they relate to the COVID-19 pandemic.

Student Learning Outcomes

The student will demonstrate factual knowledge including the mathematical notation and terminology used in this course. Students will read, interpret, and use the vocabulary, symbolism, basic definitions used in numerical analysis including those related to topics learned in calculus and algebra and revisited in this course; limits,

continuity, numerical integration, numerical differentiation, ordinary differential equations, and polynomial interpolation.

The students will describe the fundamental principles including the laws and theorems arising from the concepts covered in this course. Students will identify and apply the properties and theorems that result directly from the definitions as well as statements discovered in calculus and extended in this course; for example, Rolle's Theorem, Mean Value Theorem, Intermediate Value Theorem, Taylor's Theorem, theorems on convergence and existence and their error terms.

The students will apply course material along with techniques and procedures covered in this course to solve problems. Students will use the facts, formulas, and techniques learned in this course to develop and use algorithms and theorems to find numerical solutions and bounds on their error to various types of problems including root finding, polynomial approximation, numerical differentiation, numerical integration.

The students will develop specific skills, competencies, and thought processes sufficient to support further study or work in this field or related fields. Students will gain the ability to use a software package such as MATLAB to solve numerical problems and acquire a level of proficiency in the fundamental concepts and applications necessary for further study in academic areas requiring numerical analysis as a prerequisite for graduate work or for work in occupational fields. These fields might include further study in mathematics, engineering, computer science, or the physical sciences.

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[i] https://www.angelo.edu/current-students/student-handbook/

[ii] https://www.angelo.edu/academics/catalog/

[iii] https://www.angelo.edu/live/files/27603-student-handbook-2020-21#page=96

[iv] https://www.angelo.edu/current-students/disability-services/

[v] https://www.angelo.edu/content/files/14197-op-1011-grading-procedures

[vi] https://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of

[vii] https://www.angelo.edu/incident-form

[viii] https://www.angelo.edu/title-ix

[ix] https://www.angelo.edu/covid-19/