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Institutional Policies

Student Learning Outcomes

Texas Higher Education Coordinating Board (THECB) Student Learning Outcomes

Cedar Valley Student Learning Outcomes

Texas Core Objectives

Instructor Information

Instructor Information will be available on the first day of class.

Name: TBA
DCCCD Email: TBA
Office Phone: TBA
Office Location: TBA
Office Hours: TBA
Division Office and Phone: STEM Division, M217, 972-860-5211

Course Information

Course Title: Calculus 3
Course Number: MATH 2 4 1 5
Section Number: TBA
Semester/Year: Spring 20 20
Credit Hours: 4
Class Meeting Time/Location: This course can be completed entirely online; no campus visits are required.
Certification Date: Monday, February 3, 2020
Last Day to Withdraw: Thursday, April 16, 2020

Course Prerequisites
MATH 2 4 1 4 or equivalent
Course Description
This course is a study of advanced topics in calculus, including vectors and vector-valued functions, partial differentiation, Lagrange multipliers, multiple integrals, and Jacobians; application of the line integral including Green's Theorem, the Divergence Theorem, and Stokes' Theorem.

Required Course Materials

MyMathLab Access Code
All work for the course is completed in MyMathLab (MML). The MyMathLab Access Code will provide access to MyMathLab, which includes an electronic copy of the text, video instruction, and many other helpful features.
ISBN: 9780134856926

Temporary Access to MyMathLab
MyMathLab provides a Temporary Access Code. This code gives students temporary access to MyMathLab for a two-week period. Once the code expires, students will be locked out of their MyMathLab account until a regular Student Access Code is purchased. It is highly recommended that students purchase the regular Student Access Code BEFORE the two weeks expire to prevent interruptions in their MyMathLab account. Pearson developed the Temporary Access Code to help students receiving financial aid. The availability of this service will depend on its ethical use by instructors and students, and may be discontinued at the discretion of Pearson at any time. Students completing the entire course using the Temporary Access Code will receive a grade of F regardless of course performance. A regular MyMathLab Student Access Code must be purchased in order for students to receive a grade based on course performance.

Note: A student of this institution is not under any obligation to purchase a textbook from a university-affiliated bookstore. The same textbook may also be available from an independent retailer, including an online retailer.

Technology Requirements
Students must have an active e-mail account and regular access to a computer, other than a Chromebook, with a reliable internet connection. Students with a Chromebook will need to make arrangements to take Quizzes and Exams on campus in the Math Resource Center or Collaborative Learning Center during their hours of operation, or use another computer with a reliable internet connection.
Students should perform the Browser Check on the MML Home Screen upon logging in and download any needed items. Failure to download the necessary items may result in errors viewing problems as well as the eText.

Optional Course Materials

Calculator
Graphing calculators (TI-83/84) are recommended in MATH 2 4 1 5.

Textbook
An eText is included with the MyMathLab Access Code. Students also have the option of purchasing a loose leaf copy of the text through the Menu in MyMathLab. Students wishing to purchase a hard copy of the text should refer to the following information:
Author: Briggs, Cochran, Gillett.
Title: Calculus Early Transcendentals 3rd Ed
Edition: 3rd Ed.
Publication Year: 2018
Publisher: Pearson
ISBN: 9780134763644

Course Outline
There are 40 Homework assignments in the course. Each homework assignment corresponds with a section of the text.

Chapter 13–Applications of Integration
13.1 Vectors in the Plane
13.2 Vectors in Three Dimensions
13.3 Dot Products
13.4 Cross Products
13.5 Lines and Planes in Space
13.6 Cylinders and Quadric Surfaces

Chapter 14–Logarithmic, Exponential and Hyperbolic Functions
14.1 Vector-Values Functions
14.2 Calculus of Vector-Valued Functions
14.3 Motion in Space
14.4 Length of Curves
14.5 Curvature of Normal Vectors
Chapter 15–Integration Techniques
15.1 Graphs and Level Curves
15.2 Limits and Continuity
15.3 Partial Derivatives
15.4 The Chain Rule
15.5 Directional Derivatives and the Gradient
15.6 Tangent Planes and Linear Approximation
15.7 Maximum and Minimum Problems
15.8 Lagrange Multipliers

Chapter 16–Differential Equations
16.1 Double Integrals over Rectangular Regions
16.2 Double Integrals over General Regions
16.3 Double Integrals in Polar Coordinates
16.4 Triple Integrals
16.5 Triple Integrals in Cylindrical and Spherical Coordinates
16.6 Integrals for Mass Calculation
16.7 Change of Variables in Multiple Integrals

Chapter 17–Sequences and Infinite Series
17.1 Vector Fields
17.2 Line Integrals
17.3 Conservative Vector Fields
17.4 Green’s Theorem
17.5 Divergence and Curl
17.6 Surface Integrals
17.7 Stokes’ Theorem
17.8 Divergence Theorem

Graded Work
The tables below provide a summary of the graded work in this course and an explanation of how your final course grade will be calculated. The student enrolled in the course must be the person completing course work.

Students should expect to spend a minimum of 8 hours each week working in the course.
Summary of Graded Work

<table>
<thead>
<tr>
<th>Course Requirement</th>
<th>Percentage of Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>30%</td>
</tr>
<tr>
<td>Chapter Quizzes</td>
<td>20%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>25%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25%</td>
</tr>
</tbody>
</table>

**TOTAL: 100%**
Throughout the course, your current grade can be found in your MML Gradebook.

Final Grade

<table>
<thead>
<tr>
<th>Percentages</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100%</td>
<td>A</td>
</tr>
<tr>
<td>80-89.9%</td>
<td>B</td>
</tr>
<tr>
<td>70-79.9%</td>
<td>C</td>
</tr>
<tr>
<td>60-69.9%</td>
<td>D</td>
</tr>
<tr>
<td>0-59.9%</td>
<td>F</td>
</tr>
</tbody>
</table>

Description of Graded Work

**Homework Assignments**
There are 33 homework assignments in this course. Students must correctly complete at least half of the problems in a homework section to move on to the next assignment.

Homework has both a Due Date and a Final Submission Date. Students may work on homework after the Due Date. Homework completed after the Due Date is subject to a 5% per day per question late penalty. The late penalty for homework does not affect a student's ability to move on to the next assignment. After the Final Submission Date, Homework will no longer be available. Homework not completed by the Final Submission Date will receive a score of zero.

Due Dates and Final Submission Dates for homework can be found in the Course Calendar.

**Quizzes**
There are five quizzes in this course, each covering a Chapter of work. Students must correctly complete at least half of the problems in each section of work in a Chapter in order to take the Quiz over the Chapter.
Students are allowed two attempts on quizzes. In order to access the second attempt, students must complete the “What did I miss on Chapter # Quiz” assignment with a score of at least 70%. If a student uses both attempts on a quiz, the higher attempt is used in grade calculations. The second attempt is optional, and the “What did I miss on Chapter # Quiz” assignment will not be used in grade calculations.

Quizzes have both a Due Date and a Final Submission Date. Students may work on Quizzes after the Due Date. Quizzes completed after the Due Date are subject to a 5% per day per question late penalty. After the Final Submission Date, quizzes will no longer be available. Quizzes not completed by the Final Submission Date will receive a score of zero.

Due Dates and Final Submission Dates for quizzes can be found in the Course Calendar.

Midterm and Final Exam
There are two Exams in this course. The Midterm Exam covers Chapters 13-15. Students must have completed all work in Chapters 13-15, including quizzes, in order to take the Midterm. The Final Exam covers Chapters 16-17. Students must have completed all work in Chapters 16-17, including quizzes, in order to take the Final. Students are allowed only one attempt on the Midterm and Final Exam.

Practice Problems for both the Midterm and Final are available in MML and are optional. Performance on the Practice Problems will not be used in grade calculations.

The Midterm and Final Exams must be taken by the due date. Any Exam not taken by its due date will receive a score of zero. Students will not be allowed to take Exams late.

Chapter Quizzes and Exams use the Pearson Lockdown Browser. Students will be prompted to download the Pearson Lockdown Browser before taking a Quiz or Exam if it is not already installed.

Chapter Quizzes and Exams may be taken on campus in the Math Resource Center or Collaborative Learning Center during their hours of operation if you do not have access to a computer with the necessary Technology Requirements.

All Chapter Quizzes and Exams should be completed without outside assistance – this includes apps, websites, or other people. Students committing/guilty of academic dishonesty – having others complete course work or using apps, online sites, or help from others – will receive a failing grade in the course.

The instructor reserves the right to require on-site testing at any time during the course.
Pearson Lockdown Browser Information
Please download the Pearson Lockdown Browser (LDB) prior to beginning a Quiz or Exam.

For technical issues, contact Pearson Customer Support.

Course Calendar
All students are expected to adhere to course deadlines and due dates; extensions will not be granted.

<table>
<thead>
<tr>
<th>Week</th>
<th>Description of Graded Work</th>
<th>Due Date</th>
<th>Final Submission Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>13.1 Vectors in the Plane&lt;br&gt;13.2 Vectors in Three Dimensions&lt;br&gt;13.3 Dot Products</td>
<td>Jan. 26th</td>
<td>Mar. 22nd</td>
</tr>
<tr>
<td>Week 2</td>
<td>13.4 Cross Products&lt;br&gt;13.5 Lines and Planes in Space&lt;br&gt;13.6 Cylinders and Quadric Surfaces&lt;br&gt;Chapter 13 Quiz</td>
<td>Feb. 2nd</td>
<td>Mar. 22nd</td>
</tr>
<tr>
<td>Week 3</td>
<td>14.1 Vector-Values Functions&lt;br&gt;14.2 Calculus of Vector-Valued Functions&lt;br&gt;14.3 Motion in Space</td>
<td>Feb. 9th</td>
<td>Mar. 22nd</td>
</tr>
<tr>
<td>Week 4</td>
<td>14.4 Length of Curves&lt;br&gt;14.5 Curvature of Normal Vectors&lt;br&gt;Chapter 14 Quiz</td>
<td>Feb. 16th</td>
<td>Mar. 22nd</td>
</tr>
<tr>
<td>Week 5</td>
<td>15.1 Graphs and Level Curves&lt;br&gt;15.2 Limits and Continuity&lt;br&gt;15.3 Partial Derivatives</td>
<td>Feb. 23rd</td>
<td>Mar. 22nd</td>
</tr>
<tr>
<td>Week 6</td>
<td>15.4 The Chain Rule&lt;br&gt;15.5 Directional Derivatives and the Gradient&lt;br&gt;15.6 Tangent Planes and Linear Approximation</td>
<td>Mar. 1st</td>
<td>Mar. 22nd</td>
</tr>
<tr>
<td>Week 7</td>
<td>15.7 Maximum and Minimum Problems&lt;br&gt;15.8 Lagrange Multipliers&lt;br&gt;Chapter 15 Quiz</td>
<td>Mar. 8th</td>
<td>Mar. 22nd</td>
</tr>
<tr>
<td>Week 8</td>
<td>Practice Problems for the Midterm (optional)&lt;br&gt;MIDTERM EXAM (Covers chapters 13-15, 27 Questions, 5 hour time limit, one attempt only)</td>
<td>Mar. 22nd</td>
<td>Mar. 22nd</td>
</tr>
<tr>
<td>Week</td>
<td>Description of Graded Work</td>
<td>Due Date</td>
<td>Final Submission Date</td>
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<td>------------</td>
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<tr>
<td>Week 9</td>
<td>16.1 Double Integrals over Rectangular Regions</td>
<td>Mar. 29th</td>
<td>May 12th</td>
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<td></td>
<td>16.2 Double Integrals over General Regions</td>
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<td></td>
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<tr>
<td></td>
<td>16.3 Double Integrals in Polar Coordinates</td>
<td></td>
<td></td>
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<tr>
<td>Week 10</td>
<td>16.4 Triple Integrals</td>
<td>Apr. 5th</td>
<td>May 12th</td>
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<tr>
<td></td>
<td>16.5 Triple Integrals in Cylindrical and Spherical Coordinates</td>
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<td></td>
<td>16.6 Integrals for Mass Calculation</td>
<td></td>
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<tr>
<td>Week 11</td>
<td>16.7 Change of Variables in Multiple Integrals</td>
<td>Apr. 12th</td>
<td>May 12th</td>
</tr>
<tr>
<td></td>
<td>Chapter 16 Quiz</td>
<td></td>
<td></td>
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<tr>
<td>Week 12</td>
<td>17.1 Vector Fields</td>
<td>Apr. 19th</td>
<td>May 12th</td>
</tr>
<tr>
<td></td>
<td>17.2 Line Integrals</td>
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<td></td>
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<tr>
<td></td>
<td>17.3 Conservative Vector Fields</td>
<td></td>
<td></td>
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<tr>
<td>Week 13</td>
<td>17.4 Green’s Theorem</td>
<td>Apr. 26th</td>
<td>May 12th</td>
</tr>
<tr>
<td></td>
<td>17.5 Divergence and Curl</td>
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<tr>
<td></td>
<td>17.6 Surface Integrals</td>
<td></td>
<td></td>
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<tr>
<td>Week 14</td>
<td>17.7 Stokes’ Theorem</td>
<td>May 3rd</td>
<td>May 12th</td>
</tr>
<tr>
<td></td>
<td>17.8 Divergence Theorem</td>
<td></td>
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<tr>
<td></td>
<td>Chapter 17 Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 15</td>
<td>Review for Final Exam</td>
<td>May 10th</td>
<td>May 12th</td>
</tr>
<tr>
<td>Week 16</td>
<td>FINAL EXAM (Covers chapters 16-17, 30 Questions, 5-hour time limit, One attempt only)</td>
<td>May 12th</td>
<td>May 12th</td>
</tr>
</tbody>
</table>

Note: Working ahead is encouraged.

**Attendance and Your Final Grade**

This course can be completed entirely online; no campus visits are required.

Your grade in the course can be found in your MyMathLab Gradebook.

**Late Work Policy**

All students are expected to adhere to course deadlines and due dates.

Homework and Quizzes have both a Due Date, and a Final Submission Date. Students may work on both Homework and Quizzes after the Due Date. Homework and Quizzes
are subject to a 5% per day per question late penalty. After the Final Submission Date, Homework and Quizzes will no longer be available. Homework and Quizzes not completed by their Final Submission Date will receive a score of zero.

**Certification Policy**

Students must attend and participate in their on-campus or online course(s) in order to receive federal financial aid. Instructors are required by law to validate attendance in order for students to receive financial aid.

To be certified as attending an online mathematics courses, students must correctly complete at least 50% of the first homework assignment in MyMathLab prior to the Certification Date.

Failure to show proof of attendance in the course prior to the Certification Date can affect Financial Aid.

**Withdrawal Policy**

Please consult your instructor before withdrawing from this course, visit the [Dropping or Withdrawing From Classes](#) webpage.

**Instructor Policies**

If a student experiences a situation during the course which prevents the student from working or negatively affects the student's performance, it is the responsibility of the student to contact the instructor immediately for guidance. Notifying the instructor of such a situation at the end of the semester is not sufficient and will not result in an extension.

**Institutional Policies**

Institutional Policies relating to this course can be accessed using the link below. These policies include information about tutoring, Disabilities Services, class drop and repeat options, Title IX, and more.

[Cedar Valley Institutional Policies](#)
Student Learning Outcomes

Texas Higher Education Coordinating Board (THECB) Student Learning Outcomes

1. Perform calculus operations on vector-valued functions, including derivatives, integrals, curvature, displacement, velocity, acceleration, and torsion.
2. Perform calculus operations on functions of several variables, including partial derivatives, directional derivatives, and multiple integrals.
3. Find extrema and tangent planes.
4. Solve problems using the Fundamental Theorem of Line Integrals, Green’s Theorem, the Divergence Theorem, and Stokes’ Theorem.
5. Apply the computational and conceptual principles of calculus to the solutions of real-world problems.

Cedar Valley Student Learning Outcomes

1. Sketch the graph of curves in two and three dimensions; in addition, sketch surfaces in three dimensions in the rectangular, cylindrical, and spherical coordinate systems.
2. Solve problems of arc length, curvature, projectile motion, and planetary motion using the properties of multi-dimensional vector-functions.
3. Solve multivariable calculus-related problems of contour mapping, rates of change, function estimation, extrema, and optimization.
4. Solve multiple integration application problems; specifically, find the volume and mass of a general solid, the inertia and centroid of a lamina and a solid, and the average value and area of a surface.
5. Use the calculus of vector fields to solve line and surface integral problems, stressing their respective relation to energy and flux problems in physics.
Texas Core Objectives

The College defines essential knowledge and skills that students need to develop during their college experience. These general education competencies parallel the Texas Core Objectives for Student Learning. In this course, the activities you engage in will give you the opportunity to practice two or more of the following core competencies:

1. **Critical Thinking Skills** - to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
2. **Communication Skills** - to include effective development, interpretation, and expression of ideas through written, oral, and visual communication
3. **Empirical and Quantitative Skills** - to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
4. **Teamwork** - to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal
5. **Personal Responsibility** - to include the ability to connect choices, actions, and consequences to ethical decision-making
6. **Social Responsibility** - to include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities

MATH 2415 develops Critical Thinking, Communication, and Empirical and Quantitative Skills by requiring students to collect, analyze, and define characteristics of velocity functions from their graphs.