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This course syllabus is intended as a set of guidelines for Plane Trigonometry. Both North Lake College and your instructor reserve the right to make modifications in content, schedule, and requirements as necessary to promote the best education possible within prevailing conditions affecting this course.

Instructor Information
Instructor's Name: Yan Avram
Email Address: yavram@dcccd.edu
Office Phone Number: 972-860-3926
Office Location: Central Campus A-371
Office Hours: Please see e-campus Faculty Info for details.

Course Information
Course title: Calculus I
Course number: MATH 2413
Section number: 77203
Credit hours: four
Class meeting time: MW, 11:00am to 2:50pm.

District Course description
This course is the study of limits and continuity; the Fundamental Theorem of Calculus; definition of the derivative of a function and techniques of differentiation; applications of the derivative to maximizing or minimizing a function; the chain rule, mean value theorem, and rate of change problems; curve sketching; definite and indefinite integration of algebraic, trigonometric, and transcendental functions, with an application to calculation of areas.

ACGM description:
Limits and continuity; the Fundamental Theorem of Calculus; definition of the derivative of a function and techniques of differentiation; applications of the derivative to maximizing or minimizing a function; the chain rule, mean value theorem, and rate of change problems; curve sketching; definite and indefinite integration of algebraic, trigonometric, and transcendental functions, with an application to calculation of areas.

Course prerequisites: MATH 1316 & Math 1348, MATH 2412, or equivalent.
Required Textbook and Materials [Click here]

The Online access code and e-text will be used for Calculus II and III here at North Lake college again. It is the same textbook. Access code is good for 12 months.


**Technical Support**
New Website for Technical Support for MyLabsPlus support website: https://support.pearson.com/getsupport/s/
Technical support for eCampus: 972-669-6402
Technical support for MyLabsPlus: 1-888-883-1299

**Calculators:**
You will be allowed to use calculators on all tests. Graphing calculators (such as the TI- 83 or TI-84 Plus) are recommended. Calculators such as the TI 89 & TI 92, which perform algebraic operations, are not allowed.

**Course Objectives**
*The objective* of the mathematics component of the core curriculum is to develop a quantitatively literate college graduate. Every college graduate should be able to apply basic mathematical tools in the solution of real-world problems.

**ACGM Learning Outcomes**

Upon successful completion of this course, students will:
1. Develop solutions for tangent and area problems using the concepts of limits, derivatives, and integrals
2. Draw graphs of algebraic and transcendental functions considering limits, continuity, and differentiability at a point.
3. Determine whether a function is continuous and/or differentiable at a point using limits.
4. Use differentiation rules to differentiate algebraic and transcendental functions.
5. Identify appropriate calculus concepts and techniques to provide mathematical models of real-world situations and determine solutions to applied problems.
6. Evaluate definite integrals using the Fundamental Theorem of Calculus.
7. Articulate the relationship between derivatives and integrals using the Fundamental Theorem of Calculus

**PROGRAM-LEVEL OUTCOMES**
As developed by the Texas Higher Education Coordinating Board

**Program-Level Outcome 1:** Communication Skills – to include effective development, interpretation and expression of ideas through written, oral and visual communication.
1. Written: Process and produce effective written communication adapted to audience, purpose, and time constraints.

2. Visual: Effectively interpret visual images or produce effective images.

Program-Level Outcome 2: Critical Thinking Skills - to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.

Program-Level Outcome 3: Empirical and Quantitative Skills – to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

Math 2413 is a Tier 1 course in the Quantitative Reasoning learning category. “Knowledge and skills that are important to your success in other college courses will be introduced and reinforced in Tier 1. The Quantitative Reasoning category promotes the application of mathematics to increase your ability to solve “real-world” problems. When you are quantitatively literate, you can use logic and critical thinking in new ways.” - Catalog of the Colleges of DCCCD.

Course Outline
Chapter 2: Limits & Continuity
Chapter 3: Derivatives
Chapter 4: Applications of Derivatives
Chapter 5: Integrals

Means of Assessment of Course Learning Outcomes
Course Learning Outcomes will be assessed using a variety of means.
1. A written exam or online exam will be given to assess each Learning Outcome.
2. Homework will be assigned and assessed either using the software component or by the instructor.
3. Students will complete learning activities that will address specific course learning outcomes.

Evaluation Procedures
The course learning outcomes will be assessed through Group Work (projects), Homework, Daily work (includes mastery tests, SLO activities, quizzes and other activities), Quizzes and Exams. The final grade will be based on the following:

HOMEWORK:
Each student is required to purchase the online component (called MyLabsPlus) that comes with a new book.

Homework is the most important learning tool in a course.
• It reinforces instruction.
• It provides an immediate and personal measure of your competence in the course.
• Always express the answers to stated problems (word problems) in a sentence which identifies what you have determined to be the answer. An important part of mathematical literacy is good communication skills.
• More details about what is expected on homework assignments and tests can be found in the appendix.

Time Requirements:
• You can expect to spend a minimum of 12-16 hours per week on this class.
If you cannot donate this amount of time to math homework, your success will be diminished.

See Appendix: Guidelines for Homework Assignments and All Tests

**TESTS:**

There are three types of tests: mastery tests, written unit tests, and final exam.

All tests and quizzes are to be completed without receiving help of any kind. This includes, but is not limited to, working with other people, using notes and/or textbook, looking for answers online, etc. Failure to follow this rule will result in one or more of the consequences listed under Academic Dishonesty.

**Mastery Tests:**

- All mastery tests will be taken at home using MyLabsPlus. **These tests serve as your practice exams for this course.**
- The mastery test will help determine your readiness to take the written unit test.
- All mastery tests must be treated like a written test (no notes, no book, no help of any kind).
- You will have limited attempts to take each mastery test.
- The highest grade on each mastery test will be used to determine your average. **The mastery test average will be a portion of your final course grade.** See Grading Scale below for details.

**Mastery Tests Criteria:**

- If your score is at least 70%, you will be able to take the written unit test.
- If your score below 70%, you should work specific problems from the Study Plan AND re-take the mastery test at least once after reviewing your previous mastery test attempt.

**Written Unit Tests:**

- You are ready for the written unit test after you have completed the following for all sections and chapters in that unit:
  a. Read eText ~ including watched any videos and completed all interactive activities (if any)
  b. Completed homework (score of 70 - 100% on each assignment)
  c. Completed the Mastery Test and earned 70% or higher
  d. Completed any chapter activities/projects

**Take an exam at a North Lake College Testing Center.**

If your instructor requires you to complete an exam in the Testing Center you must have a Government- or school-issued photo identification. This requirement is strictly enforced. NLC Student IDs can be acquired from the Student Resource Center in L240.

In addition you must have the following information when you request your test.

- Instructor’s Last Name
- Subject and course number (MATH 2413)
- Exam number

You should also bring the following supplies.

- Pencil & Eraser
- A Test Request Form must be completed before entering the Testing center.
• Only battery operated 4 function, non programmable scientific or TI83/TI84 calculators are allowed.
• Money for coin-return lockers (quarter). Please do not share lockers.
Important: Government- or school-issued photo identification is required & enforced.

Taking Proctored Exams in the North Lake College Testing Center

• You may not bring personal items into the Test Center. This includes bags, cell phones and pagers. To do so constitutes Academic Dishonesty. Coin-reimbursable (quarter) lockers are available for student use.

• Please show courteous and cooperative behavior while using the services provided by the Testing Center.

• **Do not bring children to the testing center.** You must make arrangements for the care of your children prior to your exam date. The police department will be notified of any unattended children.

• **Do not take any testing materials with you when you leave the Testing Center.** This includes the test, answers, charts, scratch paper, etc. To do so constitutes Academic Dishonesty. These items will be attached to your test.

**Academic Dishonesty**
The Dallas County Community District has established procedures and guidelines to protect the security and integrity of all exams. All incidents of academic dishonesty are documented and reported to the instructor, the Director of Testing and the Dean of Student Enrollment.

Questions? Please visit the Testing Center (A425) or call 972-273-3160. See the Section “Math Center” later in this document for details.

**Grading Scale**
Your course grade will be determined by the final grade average based on the following:
A = 90 – 100; B = 80 – 89; C = 70 – 79; D = 60 – 69; F = 0 – 59.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>MyLabsPLus assignments (HW, quiz)</td>
<td>20%</td>
</tr>
<tr>
<td>SLO quizzes/in-class activities</td>
<td>6%</td>
</tr>
<tr>
<td>3 Unit tests</td>
<td>54%, each at 18%.</td>
</tr>
<tr>
<td>Final exam</td>
<td>20%</td>
</tr>
</tbody>
</table>

**End of Course Grade Options**

**Student receives an A, B, or C average.**
Receiving an A, B or C grade is considered successful completion of the College Algebra course.

**Student receives a W.**
Students who decide that they will be unable to complete the course and withdraw on or before the drop date will receive a W. Students repeating the course in a subsequent semester will have to pay tuition again and may have to purchase a new set of materials to obtain the required software license (MyLabsPlus code is good for one year if used with the same text).

**Student receives a D or an F.**
Students who do not drop the course must be given a completion grade. Those that do not qualify for one of the options listed above will be given the Course Grade they have earned as determined by the course average process listed in the previous section.

**Discipline/ Course/**

**Department/Policies Sending Emails**
Be sure to put "MATH 2413-section, Last Name" in the subject line for all emails you send. There are several courses that your instructor teaches in addition to this course. I may not always remember your name and/or course section you are enrolled. By doing the aforementioned subject line heading, you will be saving yourself and the instructor a lot of time. Also, please include your first and last name in the message of the email.

**Attendance**
Attendance is an important part of your success. Attendance will be marked each class. There will be some in-class activities or quizzes at the beginning or at the end of the class with or without notice. So, please be on time and complete each class period. There is NO make-up quizzes for missing the class. Additional time after classes, doing assigned homework and taking exams is also expected.

**Cell Phone Use**
The use of cell phones or other similar devices is prohibited during testing. You are expected to turn OFF and put away all such devices BEFORE entering the testing center. Any student caught with a cell phone in their possession while taking an exam will be given a zero (0) for that exam. Other disciplinary action may also occur.

**Service Learning and Mu Alpha Theta**
Service Learning (SL) is a nationally recognized program in which students learn and develop through thoughtfully organized service experiences that meet real community needs. Any student that chooses to participate in Service Learning and completes their assignment will be given 10 extra credit point on the lowest Written Unit Tests in this course. Please see the eCampus for more details about how to participate and the requirements for completion.

**Mu Alpha Theta Math Honor Society**
Mu Alpha Theta is the United States mathematics honor society for high school and two-year college students.

- If a student was not a Mu Alpha Theta member in high school, s/he must have taken at least one mathematics course at or above the College Algebra/Pre-calculus level to be eligible for membership.
- On the 4-point grading scale, members must have at least a 3.0 math grade point average in courses at or above the College Algebra/Pre-calculus level.
- If a two-year college student was a member of Mu Alpha Theta in high school, his/her high school membership transfers and s/he may become a member at the two-year college without paying the membership fee again.

**Math Center**
The Math Center in C211 provides generalized instructional services for students enrolled in North Lake MATH and DMAT courses. Students must sign in each visit. These include:
• Tutoring in all math courses taught at North Lake College;
• Computers that may be used by students enrolled in courses that have an Internet component such as homework systems (MyLabsPlus, ConnectMath). This lab is restricted to students working on MATH or DMAT courses;
• Graphing calculators and textbooks that are available for use in center;
• Graph Stamps so students can make their own graph paper; and
• A quiet area to study.

**Fall/Spring Semester Hours:** Mon-Thurs 8:00am – 8:00pm; Fri-Sat 10:00am – 2:00pm; CLOSED on Sunday

**Fall/Spring Semester Hours:** Mon-Thurs 9:00am – 7:00pm; Friday through Sunday CLOSED

**INSTITUTIONAL POLICIES**

The following link has updated info on the North Lake College institutional policies that include, but are not limited to Student Success, Academic Dishonesty, Financial Aid, Campus Emergency Procedures, and Concealed Carry (Weapon) policies. Institutional Policies relating to this course can be accessed from the following link, or type in www.northlakecollege.edu/syllabipolicies

**Drop Policy**

If you are unable to complete this course, you must officially withdraw by **10/03/2019.** Withdrawing is a formal procedure which you must initiate; your instructor cannot do it for you. All Dallas County Community Colleges charge a higher tuition rate to students registering the third time for a course. This rule applies to the majority of credit and Continuing Education / Workforce Training courses. Developmental Studies and some other courses are not charged a higher tuition rate. Third attempts include courses taken at any DCCCD college since the fall 2002 semester. For further information, go online to: Course Drop Policy for third attempt or more for a course.

**STOP BEFORE YOU DROP - Do NOT drop until you speak with your instructor.**

For students who enrolled in college level courses for the first time in the fall of 2007, Texas Education Code 51.907 limits the number of courses a student may drop. You may drop no more than 6 courses during your entire undergraduate career unless the drop qualifies as an exception. Your campus counseling/advising center will give you more information on the allowable exceptions. Remember that once you have accumulated 6 non-exempt drops, you cannot drop any other courses with a “W”. Therefore, please exercise caution when dropping courses in any Texas public institution of higher learning, including all seven of the Dallas County Community Colleges. For more information, you may access: Info on Limitations for Dropping Courses at DCCCD

**Counseling Service (A311)**

Counseling services for personal issues are provided to all students currently enrolled at North Lake College. These services are provided by licensed professionals who are bound by confidentiality (within ethical parameters) at no charge. With the assistance of a counselor, students are able to identify,
understand, resolve issues and develop appropriate skills. To make an appointment call 972-273-3333 or visit A311.

**APPENDIX Course Calendar**

**MATH 2413 – Calculus I: Fall 2019 (First 8-weeks)**

<table>
<thead>
<tr>
<th>Important Dates</th>
<th>Important Dates for the semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>08/26/19 (Monday)</td>
<td>Classes Begin</td>
</tr>
<tr>
<td>08/31/2019</td>
<td>Census date (Certification Date)</td>
</tr>
<tr>
<td>09/02/19 (Monday)</td>
<td>Labor day. College closes.</td>
</tr>
<tr>
<td>10/03/19</td>
<td>Last Day to Withdraw with grade of W</td>
</tr>
<tr>
<td>10/16/19 (Wednesday)</td>
<td>Last day to take Final Exam in class.</td>
</tr>
</tbody>
</table>

Chapter 1 and 2 – Limits and Continuity
Chapter 3 – Differentiation
Chapter 4 – Applications of Derivatives
Chapter 5 – Exponential and Logarithmic Functions

<table>
<thead>
<tr>
<th>week</th>
<th>Chapter-Sections</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.3 Trigonometric Functions</td>
<td>Review basic trigonometric functions</td>
</tr>
</tbody>
</table>
| 1    | 2.1 Rates of Change and Limits | • Relate slope of secant lines to slope of the tangent line of a curve at a point  
|      |                            | • Explore the limit of the slopes of secant lines as the points on the curve approach each other |
| 1    | 2.2 Calculating Limits Using the Limit Laws | • Identify the Limit Laws  
|      |                            | • Use the limit laws to find the limit of functions at a point |
| 1    | 2.3 The Precise Definition of a Limit | • Define the epsilon and delta values in finding a limit of a function  
|      |                            | • Find the delta value given the epsilon and limit values of a function |
| 2    | 2.4 One-Sided Limits and Limits at Infinity | • Use the definition of one-sided limits to find right-hand limits  
|      |                            | • Use the definition of one-sided limits to find left-hand limits  
|      |                            | • Use Theorem 7 to find limits involving (sin x)/x as x approaches zero. |
| 2    | 2.5 Continuity             | • Use the definition to show that a function is continuous at a point.  
|      |                            | • Use the definition to show that a function is discontinuous at a point.  
|      |                            | • Use limits to extend the continuity of a function by filling in a hole in the graph. |
| 2    | 2.6 Infinite Limits and Asymptotes of Graphs | • Use limits of functions as x approaches infinity to find horizontal and oblique asymptotes.  
<p>|      |                            | • Use limits of functions as the function values approach infinity to find vertical asymptotes. |
| 2    | <strong>TEST 1: Chapter 1.3 and Chapter 2</strong> | |
| 3    | 3.1 The Derivative of a    | • Use the definition of the derivative to find the slope of a curve at a point. |</p>
<table>
<thead>
<tr>
<th>Week</th>
<th>Chapter-Sections</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Function</td>
<td>• Find the equation of the tangent line to a curve at a point.</td>
</tr>
</tbody>
</table>
| 3    | 3.2 The Derivative as a Function | • Use the definition of the derivative to find the derivative as a function  
• Use the derivative function to find the slope of a function at various points |
| 3    | 3.3 Differentiation Rules | • Use the differentiation rules to find derivative functions. |
| 3    | 3.4 The Derivative as a Rate of Change | • Find instantaneous rate of change of a function.  
• Use the derivative to find the velocity of a position function.  
• Use the derivative to find the acceleration of a position function.  
• Use the derivative to find the jerk of a position function. |
| 3    | 3.5 Derivatives of Trigonometric Functions | • Find the derivative of the sine and cosine function using the definition of the derivative.  
• Use the derivative of the sine and cosine and the quotient rule to find the derivatives of tangent and cotangent.  
• Use the derivative of the sine and cosine and the quotient rule to find the derivatives of cosecant and secant. |
| 4    | 3.6 The Chain Rule and Parametric Equations | • Use the chain rule to find the derivative of a composite function. |
| 4    | 3.7 Implicit Differentiation | • Use implicit differentiation to find the slope of a curve where y is implicitly a function of x.  
• Use implicit differentiation to find higher order derivatives. |
| 4    | 3.8 Derivatives of Inverse Functions and Logarithms | • Use the derivative of a logarithmic function to find the tangent line to a curve.  
• Use the chain rule to find the derivative of a logarithmic composite function.  
• Use logarithmic differentiation to differentiate a function. |
| 4    | 3.9 Inverse Trigonometric Functions | • Find the derivative of the inverse trigonometric functions using implicit differentiation.  
• Apply the chain rule to inverse trigonometric composite functions. |
| 4    | 3.10 Related Rates | • Use related rates to solve applications involving rate problems. |
|      | 3.11 Linearization and Differentials (skipped). |   |
| 5    | Test 2: Chapter 3 |   |
| 5    | 4.1 Extreme Values of Functions | • Find the critical points of a function  
• Use derivatives to find local max and min values  
• Identify the absolute maximum and minimum values of a function on a finite closed interval. |
<p>| 5    | 4.2 The Mean Value Theorem | • Use the Mean Value Theorem to solve application problems |
| 5    | 4.3 Monotonic Functions and the First Derivative Test | • Use the First Derivative Test to divide the domain of a continuous function into piece-wise monotonic functions |</p>
<table>
<thead>
<tr>
<th>week</th>
<th>Chapter-Sections</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4.4 Concavity and Curve Sketching</td>
<td>• Use the First Derivative Test to identify local max and min values of a function.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use the Second Derivative Test to identify the concavity of a function at a critical point.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use Concavity and critical points to sketch the graph of a function.</td>
</tr>
<tr>
<td>6</td>
<td>4.5 Indeterminate Forms and L’Hopital’s Rule</td>
<td>• Identify the indeterminate forms of L’Hopital’s Rule.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use L’Hopital’s Rule to find the limit of a function.</td>
</tr>
<tr>
<td>6</td>
<td>4.6 Applied Optimization</td>
<td>• Write equations for optimization problems.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use the 1st and 2nd Derivative Tests to identify the critical points for the function.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Find the critical point and end points for the function.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Test the critical points and end point in the function to find the absolute max or min value.</td>
</tr>
<tr>
<td>6</td>
<td>4.8 Antiderivatives</td>
<td>• Define a general antiderivative of a function.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use the derivative of a function to find its general antiderivative.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Identify the components of an antiderivative in symbolic form.</td>
</tr>
<tr>
<td>7</td>
<td>Test 3: Chapter 4</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>5.1 Area and Estimating with Finite Sums</td>
<td>• Use rectangles to approximate the area under a graph.</td>
</tr>
<tr>
<td>7</td>
<td>5.2 Sigma Notation and Limits of Finite Sums</td>
<td>• Use sigma notation to express the finite sum of rectangles.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Find the Riemann sum for a function on an interval ([a,b]).</td>
</tr>
<tr>
<td>7</td>
<td>5.3 The Definite Integral</td>
<td>• Use the rules for definite integrals to evaluate various definite integrals.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Find the area under a curve using a definite integral.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use the integral of a function to find the average value on ([a,b]).</td>
</tr>
<tr>
<td>8</td>
<td>5.4 The Fundamental Theorem of Calculus</td>
<td>• Explain the difference between a derivative and an integral.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Find the area between the graph of a function and the x-axis.</td>
</tr>
<tr>
<td>8</td>
<td>5.5 Indefinite Integrals and the Substitution Rule</td>
<td>• Define an indefinite integral.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use substitution to find the antiderivative of a function.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use trigonometry identities to find antiderivative of a trig function.</td>
</tr>
<tr>
<td>8</td>
<td>5.6 Substitution and Area Between Curves</td>
<td>• Find the area between two curves.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use substitution to find the area between two curves.</td>
</tr>
<tr>
<td>8</td>
<td>Final Exam</td>
<td></td>
</tr>
</tbody>
</table>