Calculus III Lecture Syllabus

NORTH LAKE COLLEGE
5001 N. MacArthur Blvd.
Irving, Texas 75038-3899
DALLAS COUNTY COMMUNITY COLLEGE DISTRICT

Instructor Information
Instructor’s Name:  Huy (Tim) Ngo
Email Address:  hngo@dcccd.edu
Office Phone Number:  927-273-3068
Office Location:  C303E
Office Hours:  M-W: 09:25AM-10: 55AM
    T-Th: 04:40PM-05:40PM
    Notes: Other times available by appointment.
Division Office and Phone: Location:  P330
Telephone:  972-273-3500

Course Information
Course title: Calculus III
Course number: MATH 2415
Section number: 78711
Semester/Year: 2nd 8 Weeks, Fall 2019.
Certification Date: 10/28/2019
Last Day to Withdraw: 11/27/2019
Credit hours: three (3)
Class meeting time: T-Th 05:45PM-08:35PM in P336;
Attendance at this scheduled time is highly recommended.

Course Prerequisites
MATH 2414 or equivalent

Course Description
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. The curriculum covers Chapters 12, 13, 14, 15 and part of 16. See course
calendar for projected schedule of material.
Student Learning Outcomes

Course Learning Outcomes
Upon successful completion of this course, students will:

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.

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.

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

**Required Course Materials**

1. **Required Textbook:**
   MyLabsPlus Access Code w/eBook for Calculus
   
   **Author:** Pearson  
   **ISBN:** 9781323656617  
   **Publisher:** Pearson Learning Solutions  
   
   The MyLabsPlus is accessed with the **MyMathLab – Plus access code**.  
   Student ID number and email address listed in eConnect will be uploaded into the MyLabsPlus software to provide the student access to the course materials. If you have questions or concerns contact the math division office at: 7mascioff@dccc.edu  
   www.northlake.mylabsplus.com  
   User: ID  
   Password: ID  
   Example:  
   User: 1234567  
   Password: 1234567

2. **Calculator**  
   You will be allowed to use calculators on all tests. The graphing calculator TI-83 or TI-84 family is required. **Calculators such as the TI 89 & TI 92, which perform algebraic operations, are not allowed.** You may check out a TI-84 calculator for the test #1 and #2 which are taken at room L240 North Lake Testing Center.

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.

**Graded Work**

**Course Grade**

Your course grade will be calculated on a percentage weight system. Each category counts as a percentage of your total, final grade in the course.

- Homework online MLP: 20%
- 10 Pop Quizzes: (At L240) 20% (NO Makeup quizzes will be given).
- Three Written Tests Average 60% (20% each Test)
Test #3 count as Final Exam, taken in classroom Start 05:45PM- END 08:30PM SHARP, Tuesday, December 10, 2019 (NO late Final Exam will be allowed).
No Final Exam will be issued after 07:01PM.

- Paper (Textbook) Homework: 0% but highly recommended, since at least 70% of Test questions from the “Paper (Textbook) homework”

**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

**Exams**

Exam #1 and #2 will be given in the campus Testing Center, Room L240.

Test #3 count as Final Exam, taken in classroom Start 05:45PM- END 08:30PM SHARP, Tuesday, December 10, 2019 (NO late Final Exam will be allowed).
No Final Exam will be issued after 07:01PM.

TI-83/84 or similar calculators and all scientific calculators are permitted on all exams. Calculators with computer algebra systems (CAS) such as the TI-93 or TI N-spire are not permitted on any exam.

**Practice exams are provided as a study aid.** All practice exams and solutions will be provided during the lecture or available at Math Lab.

If you unable to take the exam by the given deadline, you will be given a zero. The AVERAGE of 3 exams will be used to replace the lowest (ONLY ONE) of your first three exam scores, including a zero due to an exam not taken. If you are absent for an exam, you should contact your instructor as soon as possible to discuss your situation. Only extenuating circumstances where reasons for missing these exams are well documented, unpreventable, and were of urgent concern are considered. These conditions are subject to your instructor’s judgment.

Example: Test 1 = 50 points, Test 2 = 60 points, Test 3 = 100 points.
Then average of 3 exams = (50 + 60 + 100)/3 = 70 points will be replaced Test 1 = 70 points.

The Due Dates for Exam 1, Exam 2, or Exam 3 (Count as Final Exam) are stated below. If you do not take each exam by its respective due date below, you will receive a zero (0) grade for that exam.
Exam 1 should be completed by Wednesday, November 6, 2019;  
(Available: Friday, Oct. 1, 2019)
Exam 2 should be completed by MONDAY, November 25, 2019;  
(Available: Wednesday, November 20, 2019)
Exam 3 count as Final Exam will be taken in the classroom:
Start 05:45PM- END 08:30PM SHARP, Tuesday, December 10, 2019  
(NO late Final Exam will be allowed). No Final Exam will be issued after 07:01PM.
Very sorry, but if you’re missed the Final Exam then your Final Exam Grade will be zero.

Grade Alternatives
Incomplete: Only given in EXTREME CIRCUMSTANCES and usually for medical reasons.  
You must be passing and have at most one test and the final exam remaining.

Discipline/ Course/ Department/Policies
CLASSROOM POLICY: Make sure that your cell phones are turned off and put away when the class starts. No cell phones of any type may be in view at any time during the class.

ABSENCES/TARDIES: Absences are generally detrimental to one’s performance in a course. You are expected to attend regularly in order that you may increase your chances for a successful semester in algebra. If you must miss a class, it is your responsibility to make up any missed work. Tardiness is strongly discouraged as it is disruptive to the class and thus the students who are on time. It is better to come late than not at all, however, as long as it is not a habit with one particular individual. If you anticipate a particular problem, please discuss it with me during office hours.

HOMEWORK: Homework is the most important learning tool in a course. The classroom environment is more favorable for learning when the student has studied the material in the text, has tried to work the problems, and uses the classroom to get supplementary information and assistance that is not available in the text. Each homework assignment is anticipated to require approximately 2 hours in addition to 1 hour of content review for a total of 3 hours per class hour.

TESTING Center Room L240 and hours:
Mon - Thurs. 8:30 a.m. - 8 p.m. 
Friday 8:30 a.m. - 3:30 p.m. 
Saturday 8:30 a.m. - 3:30 p.m. 
Closed Sunday
(time subject to change. You are responsible to verify it)

Last test will be given one hour before closing

MATH LEARNING CENTER HOURS: Located in the Library
(time subject to change. You are responsible to verify it)
Mon - Thurs. 8:00 a.m. - 9:00 p.m. 
Friday 9:00 a.m. - 2:00 p.m. 
Saturday 9:00 a.m. - 2:00 p.m. 
Closed Sunday
Institutional Policies

The link below has updated info on the items listed below:
http://www.northlakecollege.edu/syllabipolicies

Penalty for Academic Dishonesty

Academic dishonesty may result in the following sanctions, including, but not limited to:

1. A grade of zero or a lowered grade on the assignment or course.
2. A reprimand.
3. Suspension from the college.

Course Calendar and Objectives

Oct. 22, 2019  Classes Begin
10/28/2019  Certification Date
11/27/2019  Last Day to Withdraw

Test #3 count as Final Exam, taken in classroom Start 05:45PM END 08:30PM SHARP,
Tuesday, December 10, 2019 (NO late Final Exam will be allowed).
No Final Exam will be issued after 07:01PM

Very sorry, but if you’re missed the Final Exam then your Final Exam Grade will be zero.

Tentative Course Calendar (Some sections may omit) (14 Edition)

Chapter 12 – Vectors

<table>
<thead>
<tr>
<th>Week</th>
<th>Sect</th>
<th>Title</th>
<th>Objective</th>
<th>Homework</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.1</td>
<td>3-Dimensional Coordinate Sys.</td>
<td>Use the Distance formula to solve application formulas in 3D.</td>
<td>6, 10, 13, 20, 21, 23, 26, 30, 33, 42, 43, 44, 53, 55, 56, 57, 58, 61, 62.</td>
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<tr>
<td></td>
<td></td>
<td>Interpret 3D equations</td>
<td></td>
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</tr>
<tr>
<td>12.2</td>
<td>Vectors</td>
<td>Write vectors in component form</td>
<td>Find the length of vectors</td>
<td>10, 13, 20, 22, 26, 28, 30, 36, 40, 42, 43, 45, 46.</td>
</tr>
<tr>
<td></td>
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<td>Find the direction of a vector</td>
<td>Add and subtract vectors</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Perform scalar multiplication</td>
<td>Find the directional vector for a vector</td>
<td></td>
</tr>
<tr>
<td>12.3</td>
<td>The Dot Product</td>
<td>Calculate the dot product of two vectors</td>
<td>Find the angle between two vectors</td>
<td>3, 4, 6, 8, 11, 12, 13, 14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Determine if two vectors are orthogonal</td>
<td>Solve Application problems using the dot product</td>
<td></td>
</tr>
<tr>
<td>12.4</td>
<td>The Cross Product</td>
<td>Calculate the cross product of two vectors</td>
<td>3, 8, 16, 17,</td>
<td></td>
</tr>
<tr>
<td>Week</td>
<td>Sect</td>
<td>Title</td>
<td>Objective</td>
<td>Homework</td>
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</tbody>
</table>
|      |      |       | • Use the cross product to solve application problems  
• Find a normal vector to a plane | 23, 36, 43, 46 |
| 12.5 | Lines and Planes in Space | • Find the equation of a line in space  
• Find the parametric equation of a line in space  
• Calculate the distance from a point to a line  
• Find the equation of a plane in space  
• Find the line of intersection of two planes | 1, 8, 10, 13, 20, 21, 22, 23, 28, 36, 42, 58 |

**Chapter 13 – Vector Functions**

<table>
<thead>
<tr>
<th>Week</th>
<th>Sect</th>
<th>Title</th>
<th>Objective</th>
<th>Homework</th>
</tr>
</thead>
</table>
|     |      |       | • Define a vector function  
• Calculate the limit of a vector function  
• Define continuity of a vector function  
• Find the derivative of a vector function  
• Define velocity, direction, speed and acceleration  
• Use the chain rule for vector functions  
• Evaluate definite integrals | 1-4, 9-21 Odd |
| 13.2 | Projectile Motion | • Use the Ideal Projectile Motion Formula to solve application problems | 1-19 Odd |
| 13.3 | Arc Length and the Unit Tangent Vector T | • Calculate the arc length of a curve in space  
• Find the unit tangent vector T  
• Define the Unit Tangent Vector T | 1-15 Odd |
| 13.4 | Curvature and the Unit Normal Vector N | • Define curvature  
• Calculate the curvature of a curve  
• Calculate the Principal Normal Vector | 1, 3, 9, 11, 15 |

*Exam 1 should be completed by Wednesday, November 6, 2019; (Available: Friday, Oct. 1, 2019)*

**Chapter 14 – Partial Derivatives**

<table>
<thead>
<tr>
<th>Week</th>
<th>Sect</th>
<th>Title</th>
<th>Objective</th>
<th>Homework</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1</td>
<td>Functions of Several Variables</td>
<td></td>
<td></td>
<td>1-11 Odd</td>
</tr>
<tr>
<td>14.2</td>
<td>Limits and Continuity in Higher Dimensions</td>
<td></td>
<td></td>
<td>1-33 Odd</td>
</tr>
<tr>
<td>14.3</td>
<td>Partial Derivatives</td>
<td></td>
<td></td>
<td>1-29 Odd, 41 to 51, 57, 58</td>
</tr>
<tr>
<td>14.4</td>
<td>The Chain Rule</td>
<td></td>
<td></td>
<td>1-37 Odd Omitted 13-24</td>
</tr>
<tr>
<td>Week</td>
<td>Sect</td>
<td>Title</td>
<td>Objective</td>
<td>Homework</td>
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<tr>
<td>14.5</td>
<td></td>
<td>Directional Derivatives and Gradient Vectors</td>
<td></td>
<td>1-28 Odd</td>
</tr>
<tr>
<td>14.6</td>
<td></td>
<td>Tangent Planes and Differentials</td>
<td></td>
<td>1-18 Odd</td>
</tr>
<tr>
<td>14.7</td>
<td></td>
<td>Extreme Values and Saddle Points</td>
<td></td>
<td>1-41 Odd</td>
</tr>
<tr>
<td>14.8</td>
<td></td>
<td>Lagrange Multipliers</td>
<td></td>
<td>1-21 Odd</td>
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<tr>
<td></td>
<td></td>
<td>Exam 2 should be completed by MONDAY, November 25, 2019; (Available: Wednesday, November 20, 2019)</td>
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</table>

Chapter 15 – Multiple Integrals

<table>
<thead>
<tr>
<th>Week</th>
<th>Sect</th>
<th>Title</th>
<th>Objective</th>
<th>Homework</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.1</td>
<td></td>
<td>Double Integrals</td>
<td></td>
<td>1-28 Odd</td>
</tr>
<tr>
<td>15.3</td>
<td></td>
<td>Area by Double Integration</td>
<td></td>
<td>1-21 Odd, 31, 37</td>
</tr>
<tr>
<td>15.5</td>
<td></td>
<td>Triple Integrals in Rectangular Coordinate.</td>
<td></td>
<td>7-19 Odd, 23, 27</td>
</tr>
<tr>
<td>15.6</td>
<td></td>
<td>Moments and Centers of Mass</td>
<td></td>
<td>9-17 Odd</td>
</tr>
<tr>
<td>15.8</td>
<td></td>
<td>Substitutions in Multiple Integrals</td>
<td></td>
<td>1, 5 and 7.</td>
</tr>
</tbody>
</table>

Chapter 16 – Integration in Vector Fields

<table>
<thead>
<tr>
<th>Week</th>
<th>Sect</th>
<th>Title</th>
<th>Objective</th>
<th>Homework</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.1</td>
<td></td>
<td>Line Integrals</td>
<td></td>
<td>1-8, 9-21 odd</td>
</tr>
<tr>
<td>16.2</td>
<td></td>
<td>Vector Fields and Line Integrals: Work, Circulation, and Flux</td>
<td></td>
<td>1-17 Odd, 19, 21</td>
</tr>
<tr>
<td>16.3</td>
<td></td>
<td>Path Independence, Potential Functions, and Conservative Fields</td>
<td></td>
<td>1-21 Odd</td>
</tr>
<tr>
<td>16.4</td>
<td></td>
<td>Green’s Theorem</td>
<td></td>
<td>1-11 Odd, 21, 23</td>
</tr>
</tbody>
</table>
Exam 3 count as Final Exam will be taken in the classroom:  
Start 05:45PM - END 08:30PM  
SHARP, Tuesday, December 10, 2019  
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</table>

**Communication (Email, Phone, Etc.)**
The main form of communication between you and your instructor will be email. If you send an email to your instructor, your instructor will reply within 36 hours except in the case of a holiday or emergency or weekend. You should likewise check your email every 36 hours since urgent announcements will be sent via email.

Be sure to put "MATH 2415-section, Last Name" in the subject line for all emails you send. By doing this 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. If your instructor has an additional contact telephone number (e.g. an office phone), he/she will provide you with that information as well. Please see "Instructor Information" folder for details on other alternative forms of communication your instructor may allow/use.

**NOTE: THE INSTRUCTOR RESERVES THE RIGHT TO MAKE CHANGES TO THE SYLLABUS AS NECESSARY**