



Mathematics Northwest

HCCS Campus Math 2415:

Calculus III

CRN 73457 – Fall/2015

Location| Room 215 Meeting times 6-8PM | Meeting days Mon and Wed

4 hour lecture course / 64 hours per semester/ 16 weeks Textbook:

Calculus, Tenth Edition, by Ron Larson & Bruce H. Edwards ISBN-13:

978-1-285-05916-7

Instructor: Dr. Travis A. Moebes, PhD, EMBA, Math Certified Instructor

– State of Texas

Instructor Contact Information: travis.moebes1@hccs.edu/ (713) 718-5845

Office location and hours: HCCS Spring Branch MathLab5:30 – 6:00 PM M/W

Course Description

Math 2415: Calculus III. A survey of advanced topics in calculus including vectors and vector-valued functions, partial differentiation, Lagrange multipliers, multiple integrals, Jacobians, divergence and Stokes' theorems.

Prerequisites

Math 2414: Pass with a "C" or better

Course Goal

This course provides a detailed study of vector-valued functions with space geometry. Functions of several variables and Lagrange multipliers. Multiple integration with applications, as well as integration in polar, spherical, and cylindrical coordinates. Change of variables and Jacobians. And finally, vector analysis that includes Green's theorem, Divergence theorem, and Stokes' theorem.

Course Student Learning Outcomes (SLO):

1. Understand vector functions, operations with them (including differentiation and integration), and their application to motion in space
2. Understand real functions of several variables, operations with them (including differentiation and integration), optimization of multivariable functions, and their application to physical problems
3. Compute multiple integrals in Cartesian, polar, cylindrical, and spherical coordinates, and apply multiple integrals to physical problems;
4. Solve problems using the Fundamental Theorem of Line Integrals, Green's Theorem, the Divergence Theorem, and Stokes' Theorem.

Learning outcomes

Students will:

- 1.1 apply calculus to vectors and vector-valued functions
- 2.1 describe and use partial differentiation
- 2.2 apply Lagrange multipliers to solve problems.
- 3.1 solve multiple integrals.
- 3.2 find the Jacobian using determinant notation.
- 4.1 apply Green's theorem to evaluate line integrals around a bounded area.
- 4.2 apply the Divergence theorem and Stokes' theorem to specific problems.

CALENDAR

Unit I - Vectors and the Geometry of Space

11.3, (10 Hours)

11.6,

Sections: 11.1, 11.2,
11.4, 11.5,

11.7

Test1

Unit II - Vector-Valued Functions

(12 Hours)

Test2

Sections: 12.1, 12.2, 12.3
12.4, 12.5

Unit III - Functions of Several Variables
13.3,
(12 Hours)

Sections: 13.1, 13.2,
13.4, 13.5, 13.6,
13.7, 13.8, 13.9,
13.10

Test3

Unit IV - Multiple Integration
14.3,
(16 Hours)

Sections: 14.1, 14.2,
14.4, 14.5, 14.6
14.7, 14.8

This unit includes the basic concepts of multiple integration. The instructor should emphasize iterated integrals and area in the plane, double integrals and volume, change of variables: Polar Coordinates, center of mass and moments of inertia, surface area, triple integrals and applications, and triple integrals in cylindrical and spherical coordinates. This unit concludes with a discussion of Jacobians.

Test4
/SP

Comprehensive Final Exam (Required)

Instructional Methods

Lecture method with students doing some homework handed in on paper showing work. Inquiry Based Learning will be used on test4/Special Project.

Student Assignments

The standing homework assignment is to do every other odd problem on the sections covered. The Homework grade is determined by the grade on WEBASSIGN. WEBASSIGN is required. It is permissible to get homework help from various sources.

Assessments

Break down of grade calculation by points or percentage.

Homework – 10%

Tests and SP – 65%

Comprehensive Required Final Exam – 25%

All make up exams/tests are given during the Final Exam Time.

A make-up exam will reflect all exams/tests missed by the student.

HCC Policy Statement: Academic Honesty

A student who is academically dishonest is, by definition, not showing that the coursework has been learned, and that student is claiming an advantage not available to other students. The instructor is responsible for measuring each student's individual achievements and also for ensuring that all students compete on a level playing field. Thus, in our system, the instructor has teaching, grading, and enforcement roles. You are expected to be familiar with the University's Policy on Academic Honesty, found in the catalog. What that means is: If you are charged with an offense, pleading ignorance of the rules will not help you. Students are responsible for conducting themselves with honor and integrity in fulfilling course requirements. Penalties and/or disciplinary proceedings may be initiated by College System officials against a student accused of scholastic dishonesty. "Scholastic dishonesty": includes, but is not limited to, cheating on a test, plagiarism, and collusion.

Cheating on a test includes:

- Copying from another student's test paper;
- Using materials not authorized by the person giving the test;
- Collaborating with another student during a test without authorization;
- Knowingly using, buying, selling, stealing, transporting, or soliciting in whole or part the contents of a test not yet administered;
- Bribing another person to obtain a test that is to be administered.

Plagiarism means the appropriation of another's work and the unacknowledged incorporation of that work in one's own written work offered for credit.

Collusion means the unauthorized collaboration with another person in preparing written work offered for credit. Possible punishments for academic dishonesty may include a grade of 0 or F in the particular assignment, failure in the course, and/or recommendation for probation or dismissal from the College System. (See the Student Handbook)

HCC Policy Statements

Class Attendance - It is important that you come to class! Attending class regularly is the best way to succeed in this class. Research has shown that the single most important factor in student success is attendance. Simply put, going to class greatly increases your ability to succeed. You are expected to be on time at the beginning of each class period. For complete information regarding Houston Community College's policies on attendance, please refer to the Student Handbook. You are responsible for materials covered during your absences. Class attendance is checked daily. Although it is your responsibility to drop a course for nonattendance, the instructor has the authority to drop you for excessive absences. **Four absences may result in the student being dropped.**

If you are not attending class, you are not learning the information. As the information that is discussed in class is important for your career, **students may be dropped from a course after accumulating absences in excess of six (6) hours of instruction.** The six hours of class time would include any total classes missed or for excessive tardiness or leaving class early.

You may decide NOT to come to class for whatever reason. As an adult making the decision not to attend, you do not have to notify the instructor prior to missing a class. However, if this happens too many times, you may suddenly find that you have "lost" the class.

Poor attendance records tend to correlate with poor grades. If you miss any class, including the first week, you are responsible for all material missed. It is a good idea to find a friend or a buddy in class who would be willing to share class notes or discussion or be able to hand in your work if you unavoidably miss a class

HCC Course Withdrawal Policy

If you feel that you cannot complete this course, you will need to withdraw from the course prior to the final date of withdrawal. Before, you withdraw from your course; please take the time to meet with the instructor to discuss why you feel it is necessary to do so. The instructor may be able to provide you with suggestions that would enable you to complete the course. Your success is very important. Beginning in fall 2007, the Texas Legislature passed a law limiting first time entering freshmen to no more than **SIX** total course withdrawals **throughout** their educational career in obtaining a certificate and/or degree.

To help students avoid having to drop/withdraw from any class, HCC has instituted an Early Alert process by which your professor *may* "alert" you and HCC counselors that you might fail a class because of excessive absences and/or poor academic performance. It is your responsibility to visit with your professor or a counselor to learn about what, if any, HCC interventions might be available to assist you – online tutoring, child care, financial aid, job placement, etc. – to stay in class and improve your academic performance.

If you plan on withdrawing from your class, you **MUST** contact a HCC counselor or your professor prior to withdrawing (dropping) the class for approval and this must be done **PRIOR** to the withdrawal deadline to receive a “W” on your transcript. **Final withdrawal deadlines vary each semester and/or depending on class length, please visit the online registration calendars, HCC schedule of classes and catalog, any HCC Registration Office, or any HCC counselor to determine class withdrawal deadlines. **Remember to allow a 24-hour response time when communicating via email and/or telephone with a professor and/or counselor. Do not submit a request to discuss withdrawal options less than a day before the deadline.** If you do not withdraw before the deadline, you will receive the grade that you are making in the class as your final grade. **The last day to withdraw is November 2, 2015**

Repeat Course Fee

The State of Texas encourages students to complete college without having to repeat failed classes. To increase student success, students who repeat the same course more than twice, are required to pay extra tuition. The purpose of this extra tuition fee is to encourage students to pass their courses and to graduate. Effective fall 2006, HCC will charge a higher tuition rate to students registering the third or subsequent time for a course. If you are considering course withdrawal because you are not earning passing grades, confer with your instructor/counselor as early as possible about your study habits, reading and writing homework, test taking skills, attendance, course participation, and opportunities for tutoring or other assistance that might be available.

Classroom Behavior

Place your classroom behavior policy here.

Grading policy: A, 90 - 100; B, 80 - 89; C, 70 - 79; D, 60 - 69; F, below 60.

Use of Camera and/or Recording Devices

As a student active in the learning community of this course, it is your responsibility to be respectful of the learning atmosphere in your classroom. To show respect of your fellow students and instructor, you will turn off your phone and other electronic devices, and will not use these devices in the classroom unless you receive permission from the instructor.

Use of recording devices, including camera phones and tape recorders, is prohibited in classrooms, laboratories, faculty offices, and other locations where instruction, tutoring, or testing occurs. Students with disabilities who need to use a recording device as a reasonable accommodation should contact the Office for Students with Disabilities for information regarding reasonable accommodations

Instructor Requirements

A student should make every effort to do their own work and treat everyone with respect. Getting help on homework is encouraged if a student cannot work a problem.

Grading Scale

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

Personal Communication Device Policy:

All personal communication devices (any device with communication capabilities including but not limited to cell phones, blackberries, pagers, cameras, palmtop computers, lap tops, PDA's, radios, headsets, portable fax machines, recorders, organizers, databanks, and electronic dictionaries or translators) must be muted or turned off during class. Such activity during class time is deemed to be disruptive to the academic process. Personal communication devices are to not be on the student desk during examinations. Usage of such devices during exams is expressly prohibited during examinations and will be considered cheating (see academic honesty section above).

Student Course Reinstatement Policy:

Students have a responsibility to arrange payment for their classes when they register, either through cash, credit card, financial aid, or the installment plan. Faculty members have a responsibility to check their class rolls regularly, especially during the early weeks of a term, and reconcile the official class roll to ensure that no one is attending class whose name does not appear on it. Students who are dropped from their courses for nonpayment of tuition and fees who request reinstatement after the official date of record (OE Date) can be reinstated by making payment in full and paying an additional \$75 per course reinstatement fee. A student requesting reinstatement should present the registrar with a completed **Enrollment Authorization Form** with the signature of the instructor, department chair, or dean who should verify that the student has been attending class regularly. Students who are reinstated are responsible for all course policies and procedures, including attendance requirements.

Resources:

Free tutoring is available in **your campus tutoring location near the testing center**. Additional help is also available through **the Spring Branch Math Lab Contacts** and through Student Support Services. Students can get free assistance, 24 hours a day, 7 days a week, in Math, English and other subjects, at www.hccs.askonline.net. Typically, posted questions are answered by an HCC tutor or faculty within 24 hours (usually under 6 hours). There are also several online math resources that you can find with an internet search. You may also find information on the Learning Web site accessible through your specific HCCS campus website.

Summary:

Math 2414 - Calculus III Fall 2015

Student Syllabus CRN: **73457** Instructor: **Dr. Moebes** Office Hrs: MW 5:30 – 6:00 PM Near Class Room/
Math Lab. Phone 713-392-6364 : Email: travis.moebes1@hccs.edu Course Duration: **08/24/15 – 12/23/15** Learning
Webpage: <http://learning.hccs.edu>

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Course Information

Required Textbook

Calculus, by Larson, Hostetler, and Edwards, Tenth Edition. Cengage Learning, 2013.

WebAssign Class Key: [hccs 9838 4586](#)

Note: For this course, you must have access to the WebAssign Software.