Mathematics 2414 – Calculus II

Northwest College – Spring Branch Campus

Math 2414: Calculus II
CRN 12576 – Spring/2017
SPBR Room 213| 10:00 pm-12:00 pm | Monday and Wednesday
4 hour lecture course / 64 hours per semester/ 16 weeks
Textbook: Calculus, Tenth Edition, by Ron Larson & Bruce H. Edwards
ISBN-13: 9781285057095

Instructor: Nancy Pence

Instructor Contact Information: voice mail: 713-718-5679
e-mail: nancy.pence@hccs.edu
web page: http://learning.hccs.edu/faculty/nancy.pence

Office location and hours: AD6: MTWTh 7:30-8:00 am; 12:00-12:30 pm; TR 9:30 -10:00 am
Tutoring: (RC11 Library Tutoring Room) MW 12:30-2:00 pm

Course Description
Math 2414: Calculus II. Integral calculus including discussions of transcendental functions, applications of integration, integration techniques and improper integrals, infinite series, Taylor series, plane curves, and polar coordinates.

Prerequisites
MATH 2413 (passing with a":C" or better.)

Course Goal
This course provides a detailed study of the logarithmic, exponential, and other transcendental functions, integration techniques with applications, L'Hopital's rule, an introduction to infinite series and power series, as well as Taylor polynomials and approximations, plane curves, parametric equations, and polar coordinates.

Course Student Learning Outcomes (SLO):
1. Compute derivatives and antiderivatives of transcendental functions.
2. Use the concepts of definite integrals to solve problems involving area, volume, work, and other physical applications.
3. Use substitution, integration by parts, trigonometric substitution, partial fractions, and tables of anti-derivatives to evaluate definite and indefinite integrals.
4. Define an improper integral.
5. Apply the concepts of limits, convergence, and divergence to evaluate some classes of improper integrals.
6. Demonstrate the correct use of L'Hopital's rule and various techniques for solving improper integrals
7. Determine convergence or divergence of sequences and series.
8. Use Taylor and MacLaurin series to represent functions.
9. Use Taylor or MacLaurin series to integrate functions not integrable by conventional methods.
10. Use the concept of polar coordinates to find areas, lengths of curves, and representations of conic sections.

Course Objectives:
Upon completion of this course, a student should be able to:
1. Define and use transcendental functions including logarithmic and exponential functions.
2. Compute derivatives and antiderivatives involving transcendental functions.
3. Apply integration to various applications.
4. Show various integration techniques.
5. Show correct usage of L'Hopital's rule.
6. Describe and solve improper integrals.
7. Recognize and use infinite series.
8. Recognize and apply Taylor series to various problems.
9. Demonstrate knowledge of plane curves and polar coordinates.

CALENDAR

MONDAY	WEDNESDAY
Jan 16 **MLK Holiday**	18 natural logarithms **5.1** p325 #5-16, 19-34, 41-84, 89-94 **5.2** p334 #1-46, 49-56, 63-74
23 inverse functions / exponential functions **5.3** p343 #1-8, 23-46, 63-74 **5.4** p352 #1-22, 33-78	25 other bases / inverse trig functions **5.5** p362 #1-8, 15-24, 37-84 **5.6** p372 #1-32, 39-64, 77-80
30 inverse trig integration/hyperbolic functions **5.7** p380 #1-54, 61-66 **5.8** p390 #23-40, 43-94	1 Review
6 **Test 1 – Chapter 5**	8 integration review / integration by parts **8.1** p512 #1-46, 51-68 **8.2** p521 #1-30, 39-58
13 trig integrals / trig substitution **8.3** p530 #1-12, 19-32, 47-86 **8.4** p539 #1-46	15 partial fractions / tables **8.5** p549 #1-34 **8.6** p555 #1-46, 53-62
20 **Presidents' Day Holiday**	22 limits / improper integrals **8.7** p564 #5-60 **8.8** p575 #1-48
27 Review	1 **Test 2 – Chapter 8**
6 sequences / series **9.1** p592 #1-44, 61-64 **9.2** p601 #1-20, 23-54	8 integral test / comparison tests **9.3** p609 #1-38, 55-64, 71-82 **9.4** p616 #3-38
SPRING BREAK	
20 alternating series test / ratio test **9.5** p625 #5-22, 27-54, 71-80 **9.6** p633 #1-4, 13-32, 35-68	22 Taylor polynomials / power series **9.7** p644 #13-30, 41-52 **9.8** p654 #1-48
27 power series representations **9.9** p662 #1-26, 35-38 **9.10** p673 #1-12, 27-40, 67-70	29 Review
3 **Test 3 – Chapter 9**	5 area / volume-disk **7.1** p442 #1-6, 17-46 (area) **7.2** p453 #1-36
10 volume – shell **7.3** p462 #1-30	12 arc length / moments **7.4** p473 #1-26, 32 **7.6** p494 #13-26
17 (conics review) / parametric equations/ applications (**10.1** p692 #1-58) **10.2** p703 #1-56 **10.3** p711 #1-26, 29-50, 61-70	19 polar coordinates / polar equations **10.4** p722 #1-16, 23-52, 59-88 **10.5** p731 #1-46, 51-56, 63-66
24 **Review**	26 **Test 4 – Chapter 7 &10.2-5**
1 conics in polar **10.6** p739 #7-26	3 **Course Review** 
8 no class	10 **Final Exam (10:00-12:00)**

Instructional Methods

MATH 2414 is intended basically for students who are pursuing degrees in mathematical sciences and engineering and who are required by the nature of their respective curricula to enroll in some or all of the 3-semester calculus series. Students enrolled in other areas not requiring calculus may wish to take this course as an elective to broaden their mathematical background provided the necessary prerequisites have been met.

As an instructor, I want my students to be successful. I have high expectations of students in my classes, and I will hold you to the highest standards. I believe that the key to your success lies in two areas: *preparation* and *hard work*.

Preparation has several facets. First, it is essential that you bring to the course a solid foundation in the required background material. This means that you must begin the course with excellent skills and knowledge in the areas of algebra and trigonometry, and have successfully completed the material from the first Calculus course.

Second, proper preparation involves being prepared for class daily, primarily by having fully digested the material most recently presented. Frequently, proper preparation includes having questions ready regarding the previous material. I always welcome questions, and will be happy to address them in class or out of class, as appropriate.

Hard work means exactly what it says. No one will tell you that this course is easy, because it is not! Understanding mathematical concepts at this level can be very challenging for even the best student. It cannot be done by watching others work problems or copying others' solutions. You have heard the saying "Math is not a spectator sport." As trite as this sounds, it is true.

Hard work includes coming to class every day, reading and working problems every day, asking questions (outside of class when needed), until you are no longer confused. Do not think that because you can follow another person's reasoning, that you fully understand the concept, until you can do it yourself.

I say again: I want you to do well in this class! Success depends on all of us working together towards a common goal – your successful comprehension of the concepts, and your ability to apply them to further your success in future courses and in your chosen field.

Student Assignments

Homework
There are two categories of "homework" in this class:

Practice problems appear throughout the textbook. You may also wish to work problems on the online homework system, WebAssign. The purpose of working practice problems is to help you grasp concepts and see how the material fits together. It is important that you work enough of these problems to fully comprehend the material – for some this may be only a few problems; for others, this may be every problem in each section. You must be mature enough to know when "enough is enough." I have made some suggestions on the course outline calendar as to which problems might be beneficial. If you wish to use WebAssign (it is completely optional), you must register and pay for it online at www.webassign.net .
You may use the class key: **hccs 8381 8572**. Whether from the text or online, it is emphasized, these problems are only for practice, for your own edification, and not to be looked at or graded by the instructor.

Formal assigned homework problems will be posted on the Learning Web Page. These will be taken up and graded, and will form part of the final course assessment. Typically, there will be about two to four problems from each textbook section included on the homework assignment sheet. The purpose of homework is threefold: 1) to help you be certain you have been keeping up with the material; 2) to help me assess if the majority of the class is absorbing the material successfully; and 3) to provide you with a relatively easy grade to add to your average!

You can learn a lot from your classmates; so, I urge students to work together on homework assignments. However, I caution you that merely copying another student's work does not help you learn anything, and thus circumvents the primary goal of taking the course... do not yield to this temptation!

Homework assignments will be taken up almost every day, and **will not be accepted late**. ***Please do not ask for an exception to this rule.***

Unit Tests

In most cases in this class, a "unit" is a chapter in the textbook. You will be assessed on each unit individually by means of an examination. In most cases this will involve an in-class paper-and-pencil written test which you will have a limited time to complete. Very infrequently, I may give a "take-home" exam which is to be completed out of class. These will be due on a given date and will not be accepted late. I expect take-home tests to be done without assistance from other students, tutors, or anyone else.

I do not in any case give tests which are fully "multiple-choice" in format. I am frequently asked why I object to this format. The answer is simple – multiple choice tests do not tell me what I need to know – ***Does the student really understand the concept being tested?***

It is possible, as everyone knows, to "guess" the correct answer on a multiple choice test, even when one does not have a clue how to work the problem. But every bit as troubling to me is the fact that one can also truly understand the concept behind the problem, but still choose the wrong answer because of some simple careless or arithmetic error. Thus, the test does not truly tell me if the student knows the material.

I always expect students to show all work done to solve any problem. I always expect students to show their reasoning, and demonstrate their full understanding of each step involved. I always look at everything a student gives me. I have always had the policy of awarding partial credit to anything a student writes which is both *correct* and *pertinent* to the problem. In addition, I am fully committed to grading all assignments and tests as quickly as I possibly can and returning them to the students promptly so that they can be used as a learning tool.

Final Exam

Departmental policy requires that all mathematics teachers administer a Final Exam, to be counted as 25 – 40% of the course grade. My final exams are similar in format to the tests described above, with the exception that the material is comprehensive over the entire semester. The final exam is meant as an opportunity for you to show that you have been able to consolidate the material from the entire semester and confirm that you deserve to pass the course.

Assessments

Test 1 (Chapter 5)	15% of your final grade
Test 2 (Chapter 8)	15% of your final grade
Test 3 (Chapter 9)	15% of your final grade
Test 4 (Chapter 7,10)	15% of your final grade
Homework (cumulative)	15% of your final grade
Final Exam (cumulative)	25% of your final grade

MAKEUP POLICY: Homework will not be accepted late and cannot be made up. NO EXCEPTIONS.

In long semesters, makeups for missed tests will be given only if you (1) contact me as soon as you know you must miss the test, and (2) take the makeup before the graded tests are returned to the class. Do not miss a test on purpose, as makeups are always more difficult! Missed tests which are not made up will be replaced in the averaging by the LOWER of the Homework or the Final Exam grade.

Although I do not automatically drop your lowest test grade, at the end of the semester, your lowest grade can be treated as a "missed" test if it is advantageous.

CALCULATOR POLICY: Calculators with no calculus capabilities are permitted on tests. Cellphones and all other technology which connect to the internet are strictly prohibited on tests. Under NO circumstances will symbolic differentiation or integration utilities (**TI-89**, **TI-nspire**, etc.**)** be permitted on tests, nor should they be used for homework. The use of other graphing calculators may also be restricted on some tests. Calculator restrictions will be determined solely by the instructor, and may vary from test to test. In all cases, on tests and on homework, **all appropriate work must be shown or full credit will not be awarded.**

Calculators are powerful tools, but the aim of Math is to teach thinking skills. I am more interested in the thought process by which you arrive at solutions than the solutions themselves… REAL Math doesn't use calculators!

"Computers are useless – they can only give you answers." -- Pablo Picasso

HCC POLICY STATEMENTS:

Students with disabilities

Houston Community College is dedicated to providing an inclusive learning environment by removing barriers and opening access for qualified students with documented disabilities in compliance with the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act. Ability Services is the designated office responsible for approving and coordinating reasonable accommodations and services in order to assist students with disabilities in reaching their full academic potential. In order to receive reasonable accommodations or evacuation assistance in an emergency, the student must be registered with Ability Services.

If you have a documented disability (e.g. learning, hearing, vision, physical, mental health, or a chronic health condition), that may require accommodations, please contact the appropriate Ability Services Office below. Please note that classroom accommodations cannot be provided prior to your Instructor's receipt of an accommodation letter and accommodations are not retroactive. Accommodations can be requested at any time during the semester, however if an accommodation letter is provided to the Instructor after the first day of class, sufficient time (1 week) must be allotted for the Instructor to implement the accommodations.

Ability Services Contact Information

Central College	713-718-6164	
Coleman College	713-718-7376	
Northeast College	713-718-8322	
Northwest College	713-718-5422	713-718-5408
Southeast College	713-718-7144	
Southwest College	713-718-5910	
Adaptive Equipment/Assistive Technology	713-718-6629	713-718-5604
Interpreting and CART services	713-718-6333	

Title IX (Gender discrimination)

HCC is committed to provide a learning and working environment that is free from discrimination on the basis of sex which includes all forms of sexual misconduct. Title IX of the Education Amendments of 1972 requires that when a complaint is filed, a prompt and thorough investigation is initiated. Complaints may be filed with the HCC Title IX Coordinator available at 713 718-8271 or email at oie@hccs.edu.

Title IX of the Education Amendments of 1972 requires that institutions have policies and procedures that protect students' rights with regard to sex/gender discrimination. Information regarding these rights are on the HCC website under Students-Anti-discrimination. Students who are pregnant and require accommodations should contact any of the ADA Counselors for assistance. It is important that every student understands and conforms to respectful behavior while at HCC.

Sexual misconduct is not condoned and will be addressed promptly. Know your rights and how to avoid these difficult situations. Log in to www.edurisksolutions.org. Sign in using your HCC student email account, then go to the button at the top right that says Login and enter your student number.

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 students' 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 mean 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)

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.

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 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.

I urge you strongly NOT to just "disappear" from class. Although the instructor has the right to drop you, do not assume you will be dropped if you stop attending class. If you need to withdraw, be sure to make your withdrawal official. If you stop attending class and do not withdraw, you will receive the grade of FX, which may affect financial aid.

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, you may wish 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, 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.***
. ***The last day to withdraw in Spring 2017 is April 3, 2017.***

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
As your instructor and as a student in this class, it is our shared responsibility to develop and maintain a positive learning environment for everyone. Your instructor takes this responsibility very seriously and will inform members of the class if their behavior makes it difficult for him/her to carry out this task. As a fellow learner, you are asked to respect the learning needs of your classmates and assist your instructor achieve this critical goal.

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
As your Instructor, it is my responsibility to**:**

- Provide the grading scale and detailed grading formula explaining how student grades are to be derived
- Facilitate an effective learning environment through class activities, discussions, and lectures
- Inform students of policies such as attendance, withdrawal, tardiness and make up
- Provide the course outline and class calendar which will include a description of any special projects or assignments
- Arrange to meet with individual students before and after class as required

To be successful in this class, it is the student's responsibility to**:**

- Attend class and participate in class discussions and activities
- Read and comprehend the textbook
- Complete the required assignments and exams.
- Ask for help when there is a question or problem
- Keep copies of all paperwork, including this syllabus, handouts and all assignments

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, tablets, 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 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 may be available in **The Library Tutoring Room (RC11).** Additional help is also available 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.

EGLS$_3$ -- Evaluation for Greater Learning Student Survey System
At Houston Community College, professors believe that thoughtful student feedback is necessary to improve teaching and learning. During a designated time, you will be asked to answer a short online survey of research-based questions related to instruction. The anonymous results of the survey will be made available to your professors and division chairs for continual improvement of instruction. Look for the survey as part of the Houston Community College Student System online near the end of the term. Visit www.hccs.edu/EGLS3 for more information.

Administration contact information

College - Level Math Courses

Chair of Math	Dr. Jaime Hernandez	SW Campus	713-718-2477	Stafford, Scarcella, N108
- Secretary	Tiffany Pham	SW Campus	713-718-7770	Stafford, Scarcella, N108
Math Assoc. Chair	Clen Vance	CE Campus	713-718-6448	San Jacinto Building, Rm 369
Math Assoc. Chair	Ernest Lowery	NW Campus	713-718-5512	Katy Campus Building, Rm 112
Math Assoc. Chair	Mahmoud Basharat	NE Campus	713-718-2438	Codwell Hall Rm 105

Developmental Math Courses

Chair of Dev. Math	Susan Fife	SE Campus	713-718-7241	Felix Morales Building, Rm 124
- Secretary	Carmen Vasquez	SE Campus	713-718-7056	Felix Morales Building, Rm 124
Dev. Math Assoc. Chair	Marisol Montemayor	SE Campus	713-718-7153	Felix Morales Building, Rm 124
Dev. Math Assoc. Chair	Jack Hatton	NE Campus	713-718-2434	Northline Building, Room 321

For issues related to your class, please first contact your instructor.
If you need to contact departmental administration, then contact the appropriate Associate Chair.
If further administrative contact is necessary, then contact the appropriate Department Chair.