Math 221 – Calculus & Analytic Geometry III
Fall 2014 Course Syllabus

James Jones, Professor of Mathematics
Mathematics & Sciences Division – Richland Community College

Meeting Information

Section 01 meets from 11:00 am to 12:10 pm on Monday, Wednesday, and Friday in room S137.
The WebAssign (https://www.webassign.com) class key for this course is: **richland 8597 9549**

Instructor Information

James Jones, Professor of Mathematics.   Phone: 875-7211, ext 490
Email: james@richland.edu   Office: C223
Web: https://people.richland.edu/james/

Office Hours

I spend most of my office hours in the classroom, room S137. This allows me to help students with their assignments, homework, projects, exams, and questions.

Monday:	9:00-9:30 am, 10:45-10:55 am, 12:50-1:15 pm, 2:45-2:55 pm, 4:15-4:30 pm
Wednesday:	9:00-9:30 am, 10:45-10:55 am, 12:50-1:15 pm, 2:45-2:55 pm, 4:15-4:30 pm
Friday:	9:00-9:30 am, 10:45-10:55 am, 12:50-1:15 pm, 2:45-2:55 pm

Text

There is a textbook and an electronic homework package required for this course. The electronic package also includes an electronic version of the textbook and you do not have to buy a printed textbook if you want to go completely electronic.

- *Essential Calculus: Early Transcendentals, 2nd edition*. James Stewart. Copyright 2013, Brooks/Cole Cengage Learning. ISBN-13 978-1-133-11228-0 (Required textbook, but printed version is optional)
- *Enhanced WebAssign Homework and eBook LOE Instant Access for Multi Term Math and Science, 1st Edition*. ISBN13: 978-1-285-18421-0 (Required – can also be purchased within WebAssign)

The two items above can be bundled together for cost savings.

- *ePack: Essential Calculus: Early Transcendentals, 2nd + Enhanced WebAssign Homework and eBook LOE Instant Access for Multi Term Math and Science*. ISBN-13: 978-1-285-94067-0 (Required)

Student Audience

Transfer students. Students pursuing degrees in engineering, mathematics, life sciences.

Prerequisite

Successful completion (C or better grade) of Math 122, Calculus and Analytic Geometry II.

Course Description

MATH 221 - Calculus and Analytic Geometry III
Hours: 4 lecture - 0 lab - 4 credit
MATH 221 is a standard multivariable calculus course intended for students going into areas of science, technology, engineering, or mathematics. Topics covered include three-dimensional space, vectors and their operations, vector-valued functions, arc length, and curvature; partial derivatives with applications, tangent planes, directional derivatives, gradients, and optimization problems; multiple integrals with applications in rectangular, polar, cylindrical, and spherical coordinates systems. The course concludes with vector calculus, line integrals, parametric surfaces, and their applications.
Applicable toward graduation where program structure permits.

- Certificate or degree: All certificates and all degrees.
- Group requirement: Mathematics
- Area of Concentration: Not applicable.

Illinois Articulation Initiative (IAI)

The Illinois Articulation Initiative is a statewide transfer agreement. Their website is at http://www.itransfer.org.

Math 221, Calculus & Analytic Geometry III, satisfies the Illinois Articulation Initiative Definition of a General Education Mathematics Course. It corresponds to M1900-3, College-level Calculus III. It also corresponds to the Baccalaureate Major's Recommendation course MTH 903: Calculus III.

When three courses are required to convey the necessary skills in calculus to mathematics majors, it is highly advised that students complete the entire sequence at a single institution. Course content may vary widely among institutions depending on the credits assigned to each course, and completing the sequence at a single institution is the best way to assure that neither credit nor content is lost in transfer.

General Course Objectives

A topical outline of the content covered in the course is given at the end of the syllabus. While learning calculus is certainly one of the goals of this course, it is not the only objective. Upon completion of this course, the student should be able to ...

- Demonstrate comprehension and understanding in the topics of the course through symbolic, numeric, graphic, and verbal methods.
- Demonstrate the proper use of mathematical notation.
- Use technology when appropriate and know the limitations of technology.
- Work collaboratively with others towards the completion of a common goal.
- Use deductive reasoning and critical thinking to solve problems.
- Apply common sense to mathematical problems.
- Effectively communicate the student's understanding of the subject.

Type of Instruction

Learning will occur via discussion, problem solving, student questions, student participation, group work, oral presentations, and/or lecture. Students are expected to read the material before coming to class and are strongly encouraged to come to class with a list of questions and to ask these questions.

Method of Evaluation

Evaluation could include any of the following: problem solving exams, objective exams, essays, research papers, oral presentations, group projects, individual projects, quizzes, classroom participation, and homework.

The final weighting of grades will be decided upon by the class, subject to the following guidelines:
- No more than 15% of your grade may come from WebAssign homework problems.
- No more than 20% of your grade may come from WebAssign chapter quizzes.
- No more than 15% of your grade may come from reading quizzes.
- No more than 20% of your grade may come from technology projects.
- No more than 15% of your grade may come from classroom engagement.
- At least 20% of your grade must come from either homework problems or reading quizzes.
- At least 40% of the grade must be from chapter exams.

WebAssign Homework Problems

WebAssign is a software package that is designed to be a homework and testing framework. It also provides access to an electronic version of the textbook.

There are a few homework (usually less than five) problems that will be assigned from each section. These should be completed online before the material on that section is covered in class.

Work your problems out on paper and turn the paper in for the instructor to look at. The work that you turn in should be legible, organized with each problem clearly identified. It should contain actual work, not just an answer. In some cases, the answer is simply yes/no, true/false, or picking one of four graphs. In

these cases, your work should be an explanation of why you chose the answer you picked. Failure to show adequate work will result in loss of points for the homework.

The amount of WebAssign homework is minimal and designed to give the instructor a gauge of how well you're doing and where additional explanation is needed. Do not feel that these are the only problems you should attempt to fully understand the material. The number selected is a compromise between what should be done for understanding and the recognition that you have lives outside of Calculus.

Homework is due before we cover the material in class. Otherwise it loses its benefit to the instructor to help decide what needs further explanation in class.

WebAssign Chapter Quizzes

In addition, the WebAssign software package has a personal study plan (PSP) available for this textbook. It consists of practice quizzes, videos, and other tutorials to help you learn the material. In the eyes of the instructor, it is more useful than working a few selected homework problems.

The system is designed with practice quizzes, tutorials, and videos for each section. These may be taken as often as you like and will not affect your grade.

There is also a chapter quiz with 10 to 16 problems for each section. Taking a chapter quiz will update your scores on the practice quiz scores so you can quickly see areas that need more effort. The chapter quiz does count towards your grade and WebAssign uses the last attempt, even if it is lower than previous scores. For that reason, you should only retake a chapter quiz when you want to improve your score.

You should include your work on paper and submit it to the instructor after you have mastered your WebAssign chapter quiz. Your work should be neatly organized and problems clearly identified.

> *You must score at least 75% on the WebAssign chapter quiz before taking the chapter exam to avoid a point reduction on the chapter exam.*

WebAssign allows you to practice and demonstrate the mechanics of calculus. By off-loading these kinds of questions into WebAssign, it allows the in-class exams to have fewer questions that emphasize the deeper, more conceptual understanding of Calculus. The basic skills addressed by WebAssign are necessary for the deeper understanding addressed by class activities and projects. Both parts are necessary for success in Calculus, but you should not make the mistake of overestimating your understanding of the deeper material based on mastery of the chapter quiz in WebAssign; it just not designed to assess the deeper level.

Quizzes must be completed and submitted in whole. There is no facility for submitting parts of it. Neither is the ability to retake the quiz and just answer the parts previously missed. For that reason, you are strongly encouraged to take notes beyond just the work that you need to turn in. In addition, taking good notes will greatly speed up the process if you have to repeat the quiz.

Each item in a quiz counts the same, not each question. A four part question counts four times a one part question. This is how WebAssign does it, I cannot change that; I've asked.

Reading Quizzes

You are expected to read through the material in a section before coming to class. You do not have to understand all of it, but there should be a basic level of familiarity before class because a large portion of class time will be spent working on conceptual understanding, not basic skills.

These quizzes are mainly designed to encourage reading of the material before the section is covered in class. The questions are picked so that a student with a medium level of understanding of the section should be able to answer them.

These are typically given at the beginning of class when we start a new section and cannot be made up if you are not present.

Group Activities

Much of the learning in the classroom is done using collaborative learning and group projects. The majority of the sections will have an activity sheet designed to help you learn and more deeply understand the

material than the traditional homework problems. At times, everyone will go to the board to work a problem in small groups so that I can see how you're doing.

These activities are instructional and not a direct part of your grade. The goal is to get everyone to know the material before it is over, not see how many know the material before it starts.

However, I will be observing the group dynamics during these activities to see who participates, who leads, who contributes, and who just lets the others do the work. This is related to the classroom participation portion of the grade.

Technology Projects

The appropriate use of technology is becoming more and more important. This class strives to reach a balance between conceptual understanding, memorization, hand calculations, and the use of technology.

Towards that end, there is a project for each chapter that will involve the use of technology. It may be as simple as taking some problems and learning how they can be done on the computer so you learn how to use the software. In other cases it involves taking more complicated problems using real-life data and ugly answers that don't work out nice when you do them by hand.

These projects are group projects and are due the day of the exam.

In many cases, material on the exam may relate to concepts learned on the technology projects. For this reason, each student should understand all of the problems on the technology projects. The temptation in group projects like this is to divide the project and assign each member a portion to complete. While this may seem like a good idea, it will hurt you when it comes to the exam as each student needs to know all of the material contained in the projects, not just 1/3 of the material.

Classroom Engagement

Some students do better at showing their level of understanding than performing on an exam. When asked a question during class, those students can provide an oral answer and explain the concepts, but put a piece of paper in front of them, call it an exam, and they leave it blank.

In the past, classroom participation has been an informal portion of the grade. Students who were borderline and just shy of the next higher grade might have their grades bumped up if they actively participated in class and demonstrated to the instructor that they understood the material more than their exam scores reflected. On the other hand, students who showed little involvement in the class or demonstrated little knowledge during class were not likely to get the boost. Participation was never a specific percent of the grade, it was something done in the background at the end of the semester.

In this course, we're allowing for other means than just testing to show that you comprehend the material, and classroom involvement could be one of those ways.

This goes much deeper than just answering questions as that tends to favor the extroverts, whether or not they are correct in their answering. It involves allowing others the chance to answer or struggle and then helping them. Here are some ways to demonstrate classroom engagement, there may be others:

- Demonstrate understanding by giving correct answers or sharing insights.
- Create a positive learning environment. Don't cause distractions for those who want to learn by talking, giggling, watching videos, or otherwise being disengaged.
- Attend regularly and be actively engaged in the class when present.
- Contribute to group activities instead of letting other people do all the work and you taking credit. Show leadership in the groups.
- Participate fully in class while allowing the rest of the class to also participate (don't monopolize)
- Help other students learn and understand material, in your own group and in other groups.
- Take on the role of coach or mentor to other students. Serve as a resource on topics.

By its nature, this section is subjective. There are not hard criteria (e.g., you must answer questions 4 times to get an "A") involved and there are times that you will do something that goes unnoticed by the instructor.

The instructor is looking for an overall pattern of continued and full classroom engagement.

Chapter Exams

The in-class exams in this course generally have limited numbers of basic skills questions on them. There is very little straight-forward "differentiate this" or "integrate this" type problems. That has been pushed off onto the WebAssign portion of your grade.

What you will find on the in-class exams are a few problems that get at how deeply you *understand* the concepts rather than a lot of problems that assess how well you have memorized how to work a particular type of question. The questions will often be similar to ones encountered in the group activities or on the technology projects, or they might be items you've never seen before but you should be able to figure out with the information you have seen.

You may not attempt the in-class exam without first showing mastery on the WebAssign chapter quiz. If you do not score at least 75% on the chapter quiz in WebAssign, then you are not ready to take the chapter exam.

You have one week to after the scheduled day of the exam to obtain 75% on the chapter quiz and then complete the exam in the testing center. Failure to obtain at least a 75% on the chapter quiz before taking the chapter exam will result in a reduction in your score on the exam.

Collaborative Exams

Much of the learning that takes place inside the classroom will be in a collaborative or group environment. Traditionally, exams have been individual tasks, so that the student can differentiate themselves from the group and showcase their abilities. A question that often arises, sometimes seriously and sometimes not, is "If we do our work in groups, why can't we take our tests in groups?" or "If you think group work is so important, why can't we take our tests in groups?"

To answer that, we need to look at the purpose of a test and the goal of allowing collaborative exams.
- An exam should provide the student an opportunity to demonstrate their competency in the material.
- Tests should be a learning tool, not just an assessment device.
- In collaborative work, the stronger students should help bring up the weaker students, but all members of the team need to contribute.

This semester, we're going to try collaborative exams and see how well they work out. Here are some of the issues with group tests.
- If students self-select groups, the A students get together and the C students get together so it's no better than having individual tests.
- If the teacher assigns stronger students to work with weaker students, then the weak students sponge off the better students. Any method of group assignment based on ability essentially identifies how a student is doing in the class. This could result in a violation of the Family Educational Rights and Privacy Act (FERPA), which prohibits public disclosure of grades in a personally identifiable manner.
- If you work collaboratively on the entire exam, then you have no way of assessing individual performance. Eventually, there has to be some measure of an individual student's capabilities for assigning grades.
- If you have an individual portion and a group portion and average them, the better students might actually end up doing worse than they would have individually. Some could argue that's a good thing because they didn't help bring the weaker student up when they knew better. Others feel it would discourage better students from working in groups and thus remove any benefit of group tests.

Basically, any valid assignment needs to be random. The question then becomes whether you should know who is in your group ahead of time. Probably yes, but there are some issues with that as well. If someone in your group hasn't met the 75% threshold on the chapter quiz, they don't get to take the test with the rest of the class, leaving their intended team short on members. It might encourage them to get together ahead of time and study and help each other obtain the 75%, but ultimately the 75% is the responsibility of the

individual student.

Here are guidelines to help minimize the concerns and issues while accomplishing the goals of testing.

- You do not have to work in a group, you may take the test as an individual. Students taking the exam individually do not get a second attempt at the exam.
- Group collaboration on exams is available only to those students who are taking the exam in class on the scheduled day. If you are taking your test in the testing center, this option is not available to you.
- Groups will be randomly assigned on test day among students who are taking the test in class and wish to participate in a group. Groups will have 2 or 3 students in them. You may not, after learning who your group is, decide you don't want to work in groups. No one will be forced to work in a group; if there is only one student in the class who wants to work in a group, that person will end up working alone.
- Each person will individually first take and turn in the exam. Then you will work collectively as a group and complete the exam. The group test will probably be the same questions as the individual test, but with different numbers.
- If you score less than 50% on the individual portion, that is your grade for the exam, you receive no point benefit from the group portion, although you still benefit from the collaboration and hearing the explanations from the group so you hopefully learn what you did wrong.
- The average of the scores for all individuals in the group who scored at least 50% will be computed. If the group score is higher than the individual average, the difference will be added to each score. If the group score is lower than the individual average, you keep your individual scores.
- All students who work in groups recognize that their individual scores may be discovered by the other students in their group and consent to this stipulation. The instructor will not disclose individual scores, but since this is a mathematical computation, it may be possible to solve for the missing scores.

Example: John, Tom, and Bob are in a group. On the individual portion, John scores 78, Tom scores 45, and Bob scores 62. On the group portion of the exam, they collectively score 75. John and Bob scored at least 50%, so the average of their individual scores is $(78+62)/2 = 70$. The group score of 75 is 5 points higher than the average of 70 of the individual scores, so John and Bob both get an additional 5 points on the test. The final scores on the exam are 83 for John, 45 for Tom, and 67 for Bob.

Option 1: Take exam in class at scheduled time, may choose to collaborate

The goal is for you to show mastery on the chapter quiz in WebAssign before you take the chapter exam in class. In an ideal situation, you would take the chapter quiz, obtain at least 75%, and then be ready to take the chapter exam. You can take the chapter quiz as many times as you like until you get that 75%.

This might sound like an extra layer of complexity, but if you cannot obtain least 75% on the chapter quiz, you're not ready to take the chapter exam as you won't do well on it.

> *If you have not obtained at least 75% on the WebAssign chapter quiz before the in-class exam, then you will not be able to take the chapter exam at the scheduled time with the rest of the class.*

Many students are procrastinators; they do not study until the night before the exam or start to work on assignments until they are due. This is a bad way to study as you need time to learn the material deeply and fully. In turn, the scores on the exams aren't what the student or the instructor feels the student is capable of obtaining.

The way this situation normally plays out is that the student is ill-prepared for the exam and faced with two choices: 1) take the exam and do poorly, or 2) feign illness [unless you're actually sick from staying up all night studying] and hope the instructor will give you an extension. The first case is undesirable and the second case doesn't usually lead to better scores because a student who is unprepared on test day is still unprepared when they take the test and then they fall behind in the new material being covered.

Option 2: Take exam in Testing Center with no reduction in score and no collaboration

The WebAssign chapter quizzes inside the personal study plan must be completed with a score of at least 75% before you will be able to take the in-class exam. If you have not obtained 75% on the chapter quiz

before the in-class exam, then you will not be able to take the in-class exam with the rest of the class and you will need to take it in the testing center on your own time.

You have a one-week extension to finish the chapter. The one week limit is so that other students in the class start won't suffer from not getting their tests back in a timely fashion. It is also to keep you from falling further behind in the class.

You still need to obtain at least 75% on the WebAssign chapter quiz *before* you take the chapter exam in the testing center. If you first master the chapter quiz and then complete the chapter exam within that one week period, there will be no reduction in your scores on the chapter quiz or chapter exam.

Note that the testing center is not open on Sundays, holidays, or days when there are no classes. You will need to bring a photo identification with you when you come to take the exam.

Option 3: Take exam in Testing Center with a reduction in score and no collaboration

If you fail to obtain 75% on the WebAssign chapter quiz before taking the chapter exam, then your score on the chapter exam will be adjusted according to the most recent score you obtained on the chapter quiz prior to taking the test.

For example, if you're only able to get 70% on the WebAssign chapter quiz, then you will get 70% of your score on the exam; if you scored 65% on the in-class exam, then you would end up with a chapter exam score of 70% of 65%, or 45.5%.

If more than a week passes without you completing the exam in the testing center, or if you take the exam without first attempting the chapter quiz in WebAssign, then you will get a 0 on the exam.

Absolutely no late work will be accepted after the final exam, so the last in-class exam must be taken as scheduled with the rest of the class.

Note that the testing center is not open on Sundays, holidays, or days when there are no classes. You will need to bring a photo identification with you when you come to take the exam.

Grading Policy

Letter grades will be assigned to final adjusted scores as follows:

A: 90-100%   B: 80 - 89%   C: 70-79%   D: 60-69%   F: below 60%

Missed quizzes may not be made up.

Consideration may be given to such qualities as attendance, class participation, attentiveness, attitude in class, and cooperation to produce the maximum learning situation for everyone.

The instructor will give you a grade sheet so that you can record your scores and keep track of your progress in the course. If you are concerned about your grades, see the instructor.

Assignments are due at the beginning of the class period on the date they are due. The instructor may allow you to turn them in later that day without counting them late, but do not count on his graciousness. Late assignments lose 20% of their value per class period. The instructor reserves the right to apply this rule to missed exams as well as regular assignments. No late work will be accepted after the final.

Attendance Policy

Regular attendance is essential for satisfactory completion of this course. Mathematics is a cumulative subject and each day builds on the previous day's material. If you have excessive absences, you cannot develop to your fullest potential in the course.

Students who, because of excessive absences, cannot complete the course successfully, are required to be administratively dropped from the class at midterm. If a student stops attending after midterm, it is the student's responsibility to withdraw to avoid an "F".   Do not stop attending and assume that you will be withdrawn from the class by the instructor.

Although dropping students for non-attendance at midterm is required, students whose attendance is occasional or sporadic may be dropped from the class at any point during the semester at the instructor's discretion. If you miss the first day of class or any two consecutive days after that without communicating with the instructor, you may be dropped. The safest way to make sure you're not dropped for non-attendance is to continue to attend classes.

The student is responsible for all assignments, changes in assignments, or other verbal information given in the class, whether in attendance or not.

If a student must miss class, the student should notify the instructor by email (preferred) or phone. When a test is going to be missed, the student should contact the instructor ahead of time if at all possible. Under certain circumstances, arrangements can be made to take the test before the scheduled time. If circumstances arise where arrangements cannot be made ahead of time, the instructor should be notified and a brief explanation of why given by either voice or email. This notification must occur before the next class period begins.

Homework

Attempting and completing homework is vital to your success in this course. Homework is the practice that strengthens your skills and prepares you to learn the material. Some students will need lots of practice and some students will only need to hone their skills.

The Enhanced WebAssign package that we are using allows you to try homework online, immediately see if you have the right answer, get help, and practice a similar problem if you want. Some students like the online version, other students don't work well behind a computer and prefer paper and pencil.

Regardless of how practice problems, it is imperative that you practice. That said, homework will not be part of the grade in this course. Instead, it will help you master the skills needed to learn the material and perform well on the exams.

As calculus students, you are some of the best and brightest mathematics students we have and you have some algebraic and trigonometric skills that most students are lacking. You should voluntarily do as much homework as you need to master the material. In this class, you will be given a list of suggested problems. If you find that you are understanding the concepts, this may be enough for you, but if you find that you still don't understand the material after working those problems, it may be necessary for you to work additional problems.

Technology

The use of technology in this course is consistent with the Technology Statement in the *Illinois Mathematics & Computer Science Articulation Guide* (IMACC, 2013, p. 4). Technology is used to enhance the learning of Calculus, but it is not the focus of the instruction. There will be instances when we will use the calculator or computer to aid in our understanding or remove some of the tediousness of the calculations (especially in the area of numerical approximations). There may be some projects, homework, or portions of a test that require you to use technology to complete.

Here are some of the technology tools that we may use.

WebAssign

WebAssign is an online homework and grading system. Stewart's Calculus text is available in WebAssign as an enhanced electronic version. The full text of the book is there as well as tutorials, videos, and explorations. WebAssign is available at https://www.webassign.net/

Calculator

This class is a mathematics class and a graphing calculator is required. A scientific calculator is not sufficient. The calculator should be capable of graphing functions, finding roots, maximums, and minimums from a graph, displaying tables of values, and finding the definite integral numerically. A Texas Instruments TI-84 or TI 83 is the recommended calculator. That said, a TI-92, TI-89, or TI Nspire CAS

calculator is recommended for this course if you plan on taking additional calculus or engineering courses.

Maxima

Maxima is an open-source computer algebra system. Maxima may be downloaded from the Internet and used for free. The main page for Maxima is http://maxima.sourceforge.net

WinPlot

WinPlot is a free graphing software package for Windows written by Rick Parris at Phillips Exeter Academy in NH. The software is useful for creating graphs and it is easy to copy/paste the graphs into other applications. You may download the software by right-clicking your mouse on the word "WinPlot" at the top of the page http://math.exeter.edu/rparris/winplot.html and choosing save.

DPGraph

DPGraph is a 3D graphing package, written by David Parker, that will be useful for visualizing the graphs of multi-variable functions. The software is not free, but Richland has a site license that allows students to download and use it without additional charge. You may download it from http://www.dpgraph.com/graphing-users.html (be sure to find the entry for Richland Community College)

CalcPlot3D

This is an online 3D graphing calculator Java applet written by Paul Seeburger at Monroe Community College in Rochester, NY. It allows you to visualize vectors, space curves, surfaces, normal lines, tangent planes, and contour plots. It is available online at http://web.monroecc.edu/calcNSF/

Additional Supplies

The student should bring a pencil, paper, and calculator to class each day. You may occasionally want a ruler or graph paper. There will be a paper punch and stapler in the classroom.

Additional Help

The student is encouraged to seek additional help when the material is not comprehended. Mathematics is a cumulative subject; therefore, getting behind is a very difficult situation for the student. There are several places where you can seek additional help in your classes.

You may use a recording device to record the lectures. Feel free to use a camera or cell phone to take pictures of the boards if you have trouble getting all of the information into your notes.

Instructor

I try to make myself as available to the students as I can. My office hours are listed at the beginning of this syllabus, but those are just the times I'm scheduled to be in my office. Grab me and ask me questions if you see me in the hallway. Ask questions before or after class. If I'm in my office and it's not my scheduled office hours, go ahead and stop in.

The instructor should be considered the authoritative source for material related to this class. If a tutor or other student says something that disagrees with the instructor, believe the instructor.

Study Groups

Probably the best thing you can do for outside help is to form a study group with other students in your class. Work with those students and hold them accountable. You will understand things much better if you explain it to someone else and study groups will also keep you focused, involved, and current in the course.

Academic Success Center

The Academic Success Center consolidates several student services into one area. It is located in the south wing of the first floor next to the Kitty Lindsay Learning Resources Center (library).

Testing

The testing center is located in room S116. You must provide a photo identification and know the name of your instructor to use this service.

Tutoring

The tutoring center provides tutoring on a walk-in or appointment basis in room S118. They also have computers with the mathematical software loaded on it.

Quality tutors for the upper level mathematics are difficult to find. Please consider forming a study group among your classmates.

Accommodations

There are accommodations available for students who need extended time on tests, note takers, readers, adaptive computer equipment, braille, enlarged print, accessible seating, sign language interpreters, books on tape, taped classroom lectures, writers, or tutoring. If you need one of these services, then you should see Learning Accommodation Services in room C148. If you request an accommodation, you will be required to provide documentation that you need that accommodation.

Online Learning

Despite the title, Online Learning provides help with much more than just your online courses. They provide technical support for students including answering questions about Canvas, myRichland, e-mail, cell phones, tablets, and laptops. They can also help troubleshoot your computer issues and make sure your computer is ready for course work.

They are located in room W143, but the best way to contact them is through the "Help" link in the upper-right corner of Canvas or at http://www.richland.edu/online/helpdesk.

Open Computer Labs

Students often wish to know where, besides the classroom, they can go to use the software. There are computers located in the Learning Resources Center and in the Academic Success Center that you may use.

Student Success

The Student Success area provides passport workshops that help you learn to study and prepare for tests.

College & Division Policies

Academic Dishonesty

Each student is expected to be honest in his/her class work or in the submission of information to the College. Richland regards dishonesty in classroom and laboratories, on assignments and examinations, and the submission of false and misleading information to the College as a serious offense.

A student who cheats, plagiarizes, or furnishes false, misleading information to the College is subject to disciplinary action up to and including failure of a class or suspension/expulsion from the College.

Non-Discrimination Policy

Richland Community College policy prohibits discrimination on the basis of race, color, religion, sex, marital or parental status, national origin or ancestry, age, mental or physical disability (except where it is a bonafide occupational qualification), sexual orientation, military status, status as a disabled or Vietnam-era veteran.

Electronic Communication Devices

The Mathematics and Sciences Division prohibits the use of cell phones, pagers, and other non-learning electronic communication equipment within the classroom. All equipment must be turned off to avoid disturbances to the learning environment. If a student uses these devices during an examination, quiz, or any graded activity, the instructor reserves the right to issue no credit for these assignments. The instructor needs to approve any exceptions to this policy.

Other College Services

There are some additional services that Richland provides to its students. While they may not directly pertain to this class, you may benefit from them.

Learning Feedback System

At the end of each semester, students are invited to provide feedback to their instructors about the course. This includes things that went well and opportunities for improvement. This online feedback is anonymous and the instructor won't see it until grades have been turned in.

The Learning Feedback System (LFS) is primarily intended to provide feedback to the instructor. However, if you have a issues or concerns, you should not wait until the end of the semester to talk to your instructor. Please come to me at any time. The feedback system is available at https://people.richland.edu/feedback.

myRichland

myRichland is the student information system portal and is located at https://my.richland.edu.

You may use it to find the course schedule, register for classes, check your grades, obtain unofficial transcripts, review financial aid, and other student services.

Library

The Learning Resources Center (LRC) has print and electronic resources available. They offer research assistance and information literacy sessions; they also have individual and group study areas.

Student Success Center

Located in the north wing of the building is the student success center, home to many of the student services. These include advising and registration, career services, counseling services, financial aid, veteran affairs, student records, and the transfer center.

Richland Cross-Disciplinary Outcomes

The course objectives listed in this document make reference to these items.
1. The degree-seeking student will be able to communicate effectively (read, write, speak and listen).
2. The degree-seeking student will think critically and creatively.
3. The degree-seeking student will manage technology and evaluate information in various research and applied contexts.
4. The degree-seeking student will act professionally and responsibly.

Topical Outline

The following topical outline is an estimate of how much time will be spent on each topic and is aligned with the chapters in the textbook.

Vectors and the Geometry of Space - 16 hours
- Three-Dimensional Coordinate Systems
- Vectors
- The Dot Product
- The Cross Product
- Equations of Lines and Planes
- Cylinders and Quadric Surfaces
- Vector Functions and Space Curves
- Arc Length and Curvature
- Motion in Space: Velocity and Acceleration

Partial Derivatives - 14 hours
- Functions of Several Variables
- Limits and Continuity
- Partial Derivatives
- Tangent Planes and Linear Approximations
- The Chain Rule
- Directional Derivatives and the Gradient Vector
- Maximum and Minimum Values

- Lagrange Multipliers

Multiple Integrals - 15 hours

- Double Integrals over Rectangles
- Double Integrals over General Regions
- Double Integrals in Polar Coordinates
- Applications of Double Integrals
- Triple Integrals
- Triple Integrals in Cylindrical Coordinates
- Triple Integrals in Spherical Coordinates
- Change of Variables in Multiple Integrals

Vector Calculus - 15 hours

- Vector Fields
- Line Integrals
- The Fundamental Theorem for Line Integrals
- Green's Theorem
- Curl and Divergence
- Parametric Surfaces and Their Areas
- Surface Integrals
- Stokes' Theorem
- The Divergence Theorem