Math 252 **Calculus II** **Winter 2019**
CRN 10157 **Monday, Wednesday, Friday 3:15 - 5:15 pm** **Grandview 107**

Instructor: Becky Plassmann
office: Grandview 219, Bend Campus
office phone: (541) 383 - 7726 (also use for messages)
home phone: (541) 317 - 3965 (call 9 am - 9 pm only)
e-mail address: rplassmann@cocc.edu (notice: starts with r, then 2 s's, 2 n's)
I prefer that you use your COCC email when you write to me, and make sure you specify which class you are in. Make sure to fill in the subject line!
web: course information on BlackBoard, homework and grades on WebAssign.

Office hours: This is when I'm guaranteed to be in my office, ready to talk with you. You don't need an appointment, just show up!

Office (Grandview 219): Tuesday, Thursday 3:30 - 4:30, Wednesday 11:00 - 12:30.
Cascades Hall 117/118: Tuesday, Thursday 12:15 - 1:00.

Additional time is available by appointment -- or if you catch me in my office. You'll notice that I have provided both my office and home phone numbers. Please feel free to call me with questions; I'm a pretty good math coach over the telephone!

Class Communication: Check your college email and Blackboard regularly. During the term I will post updated grades to WebAssign; any announcements that need to be made outside of class time, and copies of handouts, will be posted to BlackBoard and/or your COCC email.

Library Tutoring Center: You are welcome to work in the tutoring center, in the basement of the library -- where there are always tutors to help you. See https://www.cocc.edu/departments/tutoring-and-testing/default.aspx for updated hours.

Required Text: Calculus; Early Transcendentals, **8th edition**, James Stewart (ISBN 9781305616691 or 9781285858265. One of these has physical copy of the textbook, the other gives you access to the ebook. Both of these ISBNs give you access to WebAssign, which is our online homework system. We'll be looking at chapters 5 - 8 in this class. You'll be using the rest of the book for Math 253 through 255. If you buy access to WebAssign online, make sure you buy "life of edition" access instead of "single-term." If you buy "single-term," you won't be able to use your access code in future classes! In any case, you'll have free temporary access for the first two weeks of class.

Cengage Unlimited: One option you have for getting your textbooks and online homework access for this class and others is to purchase Cengage Unlimited. The first two weeks are free, then it costs $120 for 4 months access, $180 for one year, or $240 for two years, giving you unlimited online access to Cengage textbooks and other resources. With your access, you can also rent printed textbooks for $8. Check the classes you're taking this term and for the rest of the year -- are the textbooks from Cengage? If so, you can probably save money by paying for this unlimited access. For more information, go to https://www.cengage.com/unlimited . You can also buy your access through the COCC bookstore, though I'm not sure they have the two year version.

Web Assign Class Key: cocc 4428 7475

Key Ideas about Web Assign:

- Use Firefox or Chrome as your browser. Internet Explorer and Safari sometimes have problems.
- Go to https://www.webassign.net/wa-auth/login or search for "webassign login."
- Click on the Enroll with a Class Key button in the upper right corner of the page, and sign into our class.
- Create a new account if you've never used Web Assign before, or use your old account information if you have used Web Assign in the past. Fill in your name and college email. It's best if you choose your user name to match your college user name. You don't need to enter your student number.
- Access to WebAssign and Cengage Unlimited is FREE for the first two weeks of class. After that, you'll have to pay.
- Get started on your homework:
    - Do your work on paper, then enter the answer into Web Assign. If you get lazy and do the work in your head, or just by scribbling on scratch paper, it's going to be harder to remember and learn. Also, if you ask me a question about the homework, I'm going to want to see your written work. Many people like to print out the homework first, then use the printout to record their work.
    - You'll get ten (10 -- wow!) tries for every problem. This is in case you have trouble figuring out how Web Assign wants you to write the answer to a question, and also to give you room to make mistakes, and learn from them.
    - When you have trouble with a question, use the PRACTICE ANOTHER VERSION, the WATCH IT, go to tutoring, or send me an email or give me a call. Try to really work on the problems by yourself first -- you learn more when you spend time wrestling, or even struggling, with new ideas.
    - Submit your answer at the end of every question so that you know if you got the correct answer. Don't worry about the "submit the assignment" button at the bottom of the homework -- every time you submit an individual question, the new score automatically gets recorded in my gradebook, so you do not need to submit the assignment.
    - If you don't finish your homework by the due date, you can request an automatic extention. You'll get an extra week to finish, and you'll lose 20%, but only on the problems that are late.
- There are lots of other resources that come with Web Assign. Check out the Personal Study Plan, which you can use to quiz yourself on any section in the book, and look at tutorials. The ebook also has links to tutorials and lecture videos. Many people also like to use online resources like khanacademy.org and purplemath.com for extra help.

Additional Materials: Graphing calculator, pencil, paper, ruler, a few colored pencils or pens, and some graph paper. An organized notebook (3-ring binder) will be a big help to you.

Calculators: You are required to have and to use a graphing calculator. I recommend the TI-83 or 84. Some of you probably already have TI-86's, 89's, 92's, or Casio graphing calculators, which are all fine. Usually only the TI-84 will be used in classroom demonstrations -- if you have any other calculator, you are responsible for knowing how to use it. During regular classes, you can use on online graphing app (such as Desmos, or a

calculator emulator), but during tests, you'll want to have (and know how to use) a stand alone graphing calculator.

Prerequisites: You should have successfully completed COCC's Math 251 or its equivalent with a grade of B- or better. If you decide to take this class even though you do not meet this prerequisite, be aware that you will have to work much harder to keep up with the class, and that you risk failing the class.

Course Content: In Math 252 we will learn about anti-derivatives and integrals -- what they are, why we care, and how to find them. We will practice graphing, both by hand and on the calculator. We will learn how to make predictions based on real-world data. We will also discuss the applications of all these topics in real world problems.

Learning Methods: Material will be provided with in class activities, projects, handouts, and in assigned computer work. Much of your practice will take place on the computer. You are responsible for all material covered in class, and in the computer assignments.

Classroom behavior: We are here to work and to learn. I will be here every day (unless I'm sick), prepared and excited to teach. I expect you to be at class on time, and to stay until the end, unless you have checked in with me beforehand. I expect us all to be respectful of the classroom environment and of everyone in the class. Specifically, we must all abide by the guidelines explained in the COCC Student Rights and Responsibilities Handbook. The most up-to-date version of this handbook can be found at:
https://www.cocc.edu/policies/general-procedures-manual/student/student-rights-and-responsibilities.aspx
Any violations of COCC's student rights and responsibilities policies will be reported to Office of Student Life.

Please do not use your cell phone, tablet, or computer during class for anything unrelated to the class. Using your cell phone as your calculator is ok, but have the ringer turned off, and do not text during class -- it's too distracting for you, for me, and for your fellow students. Studies show that every time you check your phone, it can take up to twenty minutes to return to being focused on what you were doing! Remember that smart phones were actually designed to distract your attention. Students who bring their cell phones to class can have final grades that average one whole letter grade below their classmates.

Questions? If you have any questions or concerns about the class please bring them to my attention as soon as possible. I can only address issues that I know about, so please take the time to talk to me when needed. You are welcome to speak with me outside class, email me, or leave an note at my office. Also, you are welcome to consult Kathy Smith (541-383-7418), the mathematics department chair, at any time.

Americans with Disabilities Statement: Students with documented disabilities who may need accommodations, who have any emergency medical information the instructor should know of, or who need special arrangements in the event of evacuation, should make an appointment with the instructor as early as possible, no later than the first week of the term. Students may also wish to contact the COCC Disability Services Office in the Barber Library, (541) 383-7583. https://www.cocc.edu/departments/disability-services/

COCC Non-Discrimination Policy: It is the policy of the Central Oregon Community College Board of Directors that there will be no discrimination or harassment on the basis of age, disability, sex, marital status, national origin, ethnicity, color, race, religion, sexual orientation, gender identity, genetic information, citizenship status, veteran status, or any other protected classes under Federal and State statutes in any educational programs, activities or employment. Persons having questions about equal opportunity and nondiscrimination should contact the Equal Employment Officer, c/o COCC's Human Resources office, 541.383.7216.

Title IX Statement:
Title IX protects people from discrimination based on sex in education programs and activities. This includes conduct such as: gender discrimination (includes males, females, transgender, gender identity, etc.), sexual harassment, sexual assault, stalking, intimate partner/relationship violence, bullying and cyberbullying, retaliation, the failure to provide equal opportunity in athletics, and discrimination based on pregnancy. Students having questions about Title IX should contact Alicia Moore, Dean of Student and Enrollment Services, 541-383-7244, amoore@cocc.edu.

Undocumented Students: If you are an undocumented student, or if you know someone who is undocumented, be sure to check out resources available to you at COCC, including financial aid: https://www.cocc.edu/departments/multicultural/latino/undocumented-student-resources/

Everyone is welcome -- we're glad you're here!

Evaluation

Homework: It is extremely important that you do the homework thoroughly and well. I will assign homework for you to try every day, and it will be due the class day after it is assigned. Written homework is due at my office at 5:15 at the latest, and WebAssign homework is due at 11:59 pm. So ... do your homework, check your homework, keep it to study from, and please ask me about anything you don't understand -- either during or outside of class. Late homework will be accepted only up to one week past the original due date, and will be penalized 20%. For all written homework, make sure to follow these guidelines:

- Write neatly and legibly; I will only grade problems I can read. Write your solutions so that anyone reading your paper can follow the flow of your solution. Organization is important, as is proper use of terminology and notation. If you use a spiral notebook, please cut off the ragged edges before turning in your papers.
- Copy the problem; for word problems, copy just the important information.
- Show your work. Justify all answers with supporting work. Objectives for this course include not only being able to do the mathematics correctly but being able to understand and effectively communicate your process.
- Check that your answer has the correct units and is rounded to the correct number of decimal places, if appropriate.
- any graph needs to be on graph paper:

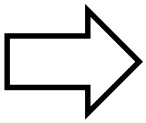
    - neat and exact, straight lines drawn with a ruler, scale numbers marked on both axes
- any sketch does not need graph paper, but should be:
    - neat and legible, show important aspects of the graph, have scale numbers marked on both axes.

Group Lab Projects: Almost every week, we'll do one lab project, which will be due one week later on the next lab day. Lab projects must be done as a group -- sometimes I will assign groups, sometimes I'll let you choose your own groups. If you turn in a group lab as an individual, you'll lose 10% on your grade. Late labs will be penalized 20%, and will only be accepted up to one week late.

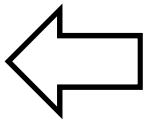
Absences do not extend due dates!

Quizzes: We will also take quizzes during class -- in calculus, there are several skills that we'll just have to memorize and practice. We will be doing quizzes during class to help you master these skills.

Tests: You will take tests in our normal classroom during our normal class times. Exams will be proctored. You will not be allowed to consult your notes or textbook during any exam, unless otherwise specified. You must show your work for full credit. There will be parts of some tests where you will not be allowed to use a calculator.



If you are going to miss an exam you MUST make prior arrangements for making up that exam. Failure to make prior arrangements WILL result in a zero for that test.



Evaluation: Your grade will be based on:

Homework, quizzes, labs:	30%
Group final project (more news later!):	10%
Chapter tests and a comprehensive final:	60%

Grading Scale (measured in percents):

100 ≥ **A** ≥ 93 > **A-** ≥ 90 > **B+** ≥ 87 > **B** ≥ 83 > **B-** ≥ 80 > **C+** ≥ 77 > **C** ≥ 73 > **D** ≥ 65 > **F**

Cheating or Plagarism on any assignment or test will result in a zero being recorded for that item, and may result in an F for your final course grade. Cheating or plagarism will also be reported to the Office of Student Life.

If you want to drop the class, you must turn in a drop slip at the Boyle Center in Bend. If you don't formally drop the class, but just stop coming, you will still be responsible for a grade. After the first week, I cannot drop you from the class. After the seventh week, you'll need my signature to drop the class -- I'll almost certainly sign your drop slip, but I'll ask you to tell me about what went wrong, and what you can do differently next time you take the class.

Ideas for Increasing Your Success in Math Class

- **Attend every class**. Missing one class can put you two classes behind. Not only will you be behind the material covered in the class you missed, but you will have difficulty following the new material being covered when you get back. Take complete notes in class -- by taking notes, you will have a permanent record of the material covered in class.

Attend class every day -- it's the FIRST thing you should do to succeed.

- **Put your phone away** during class and when you're studying, unless you're using it as part of your studying. When you allow distractions into your study time, you're sabotaging your own learning.

- **Form a study group**. Get the phone numbers or emails of other students in the class and make a habit of contacting each other to compare homework questions and answers. Research shows that students who study **together** learn more effectively.

- **Set aside enough time to study**. You should be studying about two hours for every hour you spend in class. That's about eight hours a week for this class. Set aside regular study times, and stick with them! Some studying every day is the easiest way to learn.

- **Start studying as soon after class as possible**. This will allow you to work while the information from class is still fresh and will allow you time to get help when you need to.
    - First go over your notes and fill in any details and questions you missed during class.
    - Read the corresponding section of the textbook, or look up online resources that cover the same material. Some students like to read the text twice – once before the class covering that material, then again after the material has been discussed in class. Rework examples from class or work through examples in the corresponding section of the text. Do enough practice so that you're really confident that you understand the ideas.
    - Then work the WebAssign homework problems -- this is where you'll get credit for your homework.

- **Do some of your studying on your non-class days**. This will help your brain understand that this information is important and something it needs to hold onto. Try to do some math studying – reviewing, homework, previewing future sections, organizing, at least 5 days a week.

- **Write out all homework as though your final grade depends on others being able to interpret and evaluate what you are capable of doing.** This is true, even for the MML homework. Practice makes permanent (not necessarily perfect), so your work should reflect what you want your brain to remember.

- **Do every assigned problem**. If you get stuck, you have several options:
    - Try a similar problem which has an answer provided – these are available in the textbook.
    - Use the help features in WebAssign.

- Ask a classmate or a member of your study group.
- Come see me or e-mail me.
- Go to the Library Tutoring Center or the Grandview Math Tutoring Lab and ask for help.
- Make sure you get help before the next class – you want to be ready to learn the new material.

- **Do extra problems if you need extra practice.** Set aside part of your study time to go back and review old homework, especially any problems that you struggled with the first time through. There are a lot of problems in the textbook (or e-book).

- **Look over the sections we will be covering BEFORE class**. In this way, you'll have a head start on understanding everything that's covered in class.

- **Remember that <u>everyone</u> can learn mathematics**. The most common mistakes leading to failure to learn are not giving yourself enough time to study and not asking enough questions -- come to office hours whenever you have questions!

- **Need more help?** Read the book <u>Mastering Mathematics: How to be a Great Math Student</u> by Richard Manning Smith. It's available in the bookstore, on reserve in the library, at the tutoring center, and in my office.

- **Remember that mathematics is much more than knowing any particular theorem or formula, or being able to solve any one kind of problem.**

  - Mathematics is about the <u>process of problem solving</u> -- of being able and willing to think about how to solve a problem when it's not clear where you should start.

  - Mathematics is about <u>extending the understanding you have</u> in order to propose and solve different, more interesting, or more difficult problems.

  - Mathematics is about <u>being able to explain what you've done</u> so that someone else can follow and understand your work.

Ideas that Might Sound Like Good Ideas, But That Usually Backfire

- **Skipping class(es) because you can get help elsewhere**. We have great tutoring resources on campus, but there is no substitute for being in class. You may be able to get help solving problems outside of class, but you often miss connecting and conceptual idea development that will be important in the long run.

- **Waiting until the next class to get help on something you don't understand**. If you wait until the next class to get questions answered, you miss the opportunity to practice the material, which usually makes it much harder to understand the new material presented in class. Start your homework soon enough so that you can get extra help before the next class when you get stuck.

- **"I found this great website (or app) that will give me all the answers**." Finding answers on a website (or app) may give you answers, but it won't necessarily help you understand and learn the material. If you don't learn the underlying concepts and processes, you probably won't do well on tests covering that material. Homework is designed to help you learn, practice, and uncover weak areas. If you "just get answers," you miss out on the usefulness of doing homework. Since homework counts for less than 30% of your final grade, sacrificing the benefits of working through homework, by an over-reliance on just getting answers, really isn't worth it. Make certain that any online (or even tutoring) resource you are using is helping your learning, and not just giving you a false sense of accomplishment.

Remember -- we are here to help you succeed!

Here Are Some Online Resources That Can Help

- MyMathLab has many built in features that can be helpful. Look under Chapter Contents for additional resources. For example, the e-text has links to videos and activities to help you learn.

- http://mathispower4u.yolasite.com/ - This site has a huge collection of instructional/example videos covering a wide array of mathematics topics.

- Need help with fraction review? Check out these links…
    - Adding Fractions: https://www.youtube.com/watch?v=d53wePmJZFY
    - Subtracting Fractions: https://www.youtube.com/watch?v=43LQU9whwWM
    - Multiplying Fractions: https://www.youtube.com/watch?v=tMGMm8bfelc
    - Dividing Fractions: https://www.youtube.com/watch?v=3ahgPUBdanE

- http://www.math-drills.com/ - Lots of worksheets with answer keys - especially good for work with integers, combining like terms, and solving simple equations.

- Many students like khanacademy and purplemath for online help and practice. If you have a website that you particularly like, let me know so that I can tell other students.

Course description: Math 252 introduces concepts of integral calculus for Science, Mathematics, and Engineering students. Topics include antidifferentiation, Fundamental Theorem of Calculus, integration techniques, numerical integration, improper integrals, and mathematical modeling with applications to geometry, physics, economics and population dynamics. Topic presentation includes group activities, writing assignments and projects to emphasize concepts. The instructor and student will communicate concepts verbally, analytically, numerically, and/or geometrically (the "Rule of Four").

Mth 252 has the competencies from Mth 251: Calculus I as prerequisites; the course is college-transferable. Mth 252 is a 4 credit hour (quarter system) course and is the second course in the Calculus sequence.

Course outcomes: Students who complete Math 252 will be able to:

- ✓ understand and use the Fundamental Theorem of Calculus to analyze problems including: determining the area under a curve, the area between curves, and average value of a function
- ✓ interpret the value of the definite integral in a variety of contents
- ✓ apply a variety of numerical methods and appropriate technology to approximate the value of a definite integral
- ✓ use the definite integral to solve applied problems such as: volumes of solids, arc-length, surface area of solids, fluid force, work, and center of mass
- ✓ use appropriate integration techniques to determine antiderivatives (indefinite integrals)
- ✓ determine and analyze the total change in a function given functional data from a graph, table of values, or formula
- ✓ write significant mathematics in at least one of the following formats:
  - determine the solution or lack of solution to a multiple-step problem and develop the solution in a formal laboratory report
  - analyze, discuss in a team, and develop the solution to an open-ended problem and present that solution in the form of a formal technical report

Performance Based Outcomes in Mathematics

Students who successfully complete any mathematics course at Central Oregon Community College will be able to:

1. *Work independently to explore mathematical applications and models, and to develop algebraic/symbolic, graphical, numerical, and narrative skills in solving mathematics problems.*
2. *Work as a member of a group/team on projects or activities that are designed to explore mathematical applications and models.*
3. *Use both written and oral skills to communicate about mathematical concepts, processes, complete mathematical solutions and their implications.*
4. *Use a variety of problem solving tools including symbolic/algebraic notation, graphs, tables, and narratives to identify, analyze, and solve mathematical problems.*
5. *Develop mathematical conjectures and use examples and counterexamples to examine the validity and reasonableness of those conjectures.*
6. *Create and analyze mathematical models of real world and theoretical situations, including the implications and limitations of those models.*
7. *Use appropriate technologies to analyze and solve mathematics problems, and verify the appropriateness and reasonableness of the solution(s).*

Tentative Schedule -- Math 252 -- Winter 2019

Week 1: Must come to class every day to remain registered. Instructor's signature is required to add any class. L'Hospital's Rule, Riemann Sums, Definition of the Definite Integral.

Week 2: Friday is the last day to receive 100% tuition refund. Tuition is due on Friday. Fundamental Theorem of Calculus, The Area-So-Far Function.

Week 3: **Monday is a holiday -- Martin Luther King Jr. Day.** No tuition refunds. Late registration fees begin. Indefinite versus Definite Integrals. Integration by Substitution.

Week 4: Area Between Curves. *Test 1 on Friday.*

Week 5: Volumes by Disk, Washer, and Slice.

Week 6: Midterm grades are emailed on Tuesday to students earning a D, F, or W. It is your responsibility to drop any class you need to. Volumes by Shells, Average Value.

Week 7: Friday is the last day to add a class, or to change to audit. Friday is the last day to drop a class and have no entry on your transcript. Integration by Parts. Integration by Tables.

Week 8: Instructor's signature is required to drop any class. *Test 2 on Friday.* Improper Integrals, Approximation Integrals -- Trapezoid and Simpson's Rules.

Week 9: Arclength, Surface Area, Work.

Week 10: Wednesday is the last day to drop any class; you must have your instructor's signature. Applications to Physics and Engineering, Hydrostatic Pressure and Force.

Finals Week: There are no classes during finals week, only the final exam.

Official Exam Time: Wednesday, March 20, 3:15 - 5:15 pm.

The final exam will cover all of the material from this course, and will take two hours. Changing the time of your final exam requires my permission, and the permission of the mathematics department chair. Such permission will only be granted in extraordinary circumstances.