

Northern Virginia Community College
MTH 264-005A, Spring 2024
Calculus II, 4 credits
Dr. Bruce Wahl, Professor

Office and Some Ways to Contact Me:

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email: bwahl@nvcc.edu **(Please include your name, course and section in the email.)**

web page: blogs.nvcc.edu/bwahl/

Student Hours:

Office Only (AA 352): Mondays and Wednesdays: 3:00 PM to 4:00 PM; Tuesdays and Thursdays: 10:45 AM to 12:30 PM.

Simultaneously in office (AA 352) and on Zoom: Mondays and Wednesdays: 11:15 AM to 12:30 PM; Tuesdays and Thursdays: 2:15 PM to 3:15 PM. You are welcome to see me in person in my office or log on to the Zoom Student Hours. You will find the Zoom invitation in Canvas. I have a waiting room for that Zoom session, so I will watch for you there. Please be patient as there may be other students waiting ahead of you.

Lecture Time and Delivery: Mondays and Wednesdays, 12:45 to 2:45 PM in AA 355.

Non-Instructional Days: March 11-17

Course Description and Purpose:

MTH 264 is the second course in a three semester course in calculus. The general purpose of this second course is to prepare students for further study in calculus with analytic geometry as well as topics such as linear algebra and differential equations so that they meet the necessary competencies in integration, algebraic and transcendental functions, graphing, power series and their applications. This course is primarily for students in mathematics, engineering, sciences and other areas requiring strong mathematical backgrounds. MTH 264 continues the study of calculus of algebraic and transcendental functions including rectangular, polar, and parametric graphing, indefinite and definite integrals, methods of integration, and power series along with applications. Placement in MTH 264 is by completion of MTH 263 Calculus I with a grade of C or better. You may read the complete course content summary at

<https://www.nvcc.edu/depts/academic/coursecont/summaries/MTH264.pdf>

Course Objectives:

- Applications of Integration
 - Compute Volumes by cross-section
 - Compute Volumes by disk-washer
 - Compute Volumes by shells
 - Compute Work (spring, rope)
 - Compute Work (pumping liquids)
 - Compute Arc length
 - Compute Areas of surfaces of revolution
 - Compute Application (center of mass)
- Techniques of Integration
 - Integrate by parts
 - Calculate trigonometric integrals
 - Calculate integrals by trigonometric substitution
 - Define the indeterminate form and apply L'Hopital's Rule.
 - Calculate improper integrals
 - Integrate by partial fractions
 - Integrate using Tables and Software
 - Approximate integrals (Trapezoidal, Simpson) with error estimation.
- Infinite Sequences and Series
 - Write definition of and understand Sequences
 - Write definition of and understand Series (intro)

- Determine convergence by integral test
- Determine convergence by comparison test
- Determine convergence of alternating series
- Determine absolute convergence (ratio, root tests)
- Apply strategies for testing series
- Work with power series
- Represent functions as power series
- Find Taylor, Maclaurin series & polynomials
- Calculate Taylor and Maclaurin series
- Parametric Curves and Polar Coordinates
 - Represent curves by parametric equations
 - Perform calculus with parametric curves
 - Use and graph with polar system
 - Calculate areas and lengths in polar coordinates
 - Define the conic forms in polar form

Textbook: Stewart, J., Clegg, D., & Watson, S. (2021). *Calculus: Early transcendentals* (9th ed.). Cengage.

Note: Please read the following options before purchasing your textbook. WebAssign is optional in this class.

1. The NVCC Alexandria Bookstore sells your text with an option including WebAssign access. This book will be used at the Alexandria campus for MTH 265. Using the access code from the book, you will create a WebAssign account at www.webassign.com and you need the Class Key: **nvcc 7500 6480**
2. If you want only an online book, WebAssign gives you access to online homework and some resources **including the text**; for this you need the Class Key: **nvcc 7500 6480**
3. You may purchase a used book or rent a book (use ISBN 978-1-337-61392-7).
4. **EVERYONE HAS FREE ACCESS TO THE ONLINE BOOK FOR ABOUT 10 DAYS! USE IT!**

Calculator: A graphing calculator is strongly suggested. I recommend purchasing a TI-89 or TI-Nspire CAS (but see the note below).

Smartphone Scanner App: You may need to use a free smartphone scanner app (like Genius Scan—you should watch the 22 second video at <https://thegrizzlylabs.com/genius-scan/>) to scan some of your work this semester.

Syllabus:

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|------------------|--------------------|
| Chapter 4: §4 | Chapter 8: §§1-3 |
| Chapter 6: §§2-4 | Chapter 10: §§1-6 |
| Chapter 7: §§1-8 | Chapter 11: §§1-11 |

Grading Policy: There are 4 components that will determine your grade:

1. Attendance—5%
2. Homework—10%
3. Chapter Exams (3 given, about 1 hour each, lowest exam grade dropped)—50%
4. Final Exam (100 minutes, comprehensive)—35%

- In general, 90%-100% = A, 80%-89.9% = B, 70%-79.9% = C, 60%-69.9% = D, below 60% = F. I reserve the right to lower the curve but will not raise the curve. No audits are given in this class. The last day to drop with refund is February 1, 2024. The last day to withdraw to receive a "W" grade is March 23, 2024. If you choose to drop or withdraw from this class, you are responsible for doing all the necessary steps online before these dates.
Note: I will not approve withdrawals after March 23, 2024 without written documentation.
- **Attendance:** Attending this class is very important. You may miss two classes with no grade penalty. Each class missed after that will result in a 1% drop from the possible 5% attendance grade. My experience is that students who miss class often are putting their education at a low priority and that they are more likely to fail or withdraw from the course. On the other hand, regular attendance with active class participation usually results in a passing grade.

- **Homework:** Your homework for each section of the book that we cover is at the end of this syllabus. You should complete these problems after we have covered the material in class. You will turn in your written homework on exam days.
- **Chapter Exams:** One hour each, covering material from the textbook as listed below.
Exam #1 (§§6.2-7.6) is tentatively scheduled for Feb. 19, 2024. (Homework will be due at the exam.)
Exam #2 (§§7.7-8.3) is tentatively scheduled for Mar. 4, 2024. (Homework will be due at the exam.)
Exam #3 (§§11.1-11.11) is tentatively scheduled for Apr. 15, 2024. (Homework will be due at the exam.)
Note: Your homework from Chapter 10 material will be due at the final exam on May 1, 2024.

If you know you will not be able to complete the exam during class time on any of these days (for example, for required military duty), please see me well in advance; we may be able to make alternate plans. You may miss *one* exam and that will be your dropped score. You may miss a *second* exam with a valid excuse and take a makeup exam. All makeup exams will be given in the final week of class (April 23-29, 2024). It is your responsibility to schedule the make-up exam with me! The exam will cover the same material as the original but will be an oral exam scheduled in a classroom. More than two missed exams will result in scores of 0 for those exams.

- **Final Exam:** On Wednesday, May 1, 2024, the final exam will be given from 12 noon to 1:40 PM. The exam will be comprehensive—covering all material we covered in the fifteen weeks. **All students are expected to attend the final exam on Wednesday, May 1, 2024 from 12 noon to 1:40 PM.** Your homework from Chapter 10 material will be due at the final exam.
- **Exams are individual efforts. Any proof of cheating on an exam results in a score of 0 on that exam, and that score will not be dropped. Cheating includes both receiving and giving help. Cheating also includes invalid absences for exams.**

Notes:

1. You are responsible for your own attendance. If you miss a class, you are responsible for reviewing the recorded lecture as posted in CANVAS.
2. It is **recommended** that you have a graphing calculator for this class. I will allow you to use any calculator on most exams, so it is to your advantage to purchase one. You may not use cell phones or any other connected devices as calculators on exams. I have a TI-83, TI-86 and a TI-89 and have access to other models such as the TI-84, and TI-92. I **strongly** encourage you to invest in a TI-89 or TI-Nspire CAS. **Note:** I have had other students in the past buy the cheaper models and they were disappointed when they saw how easy the TI's were to use. Please consider this in your choice. It is up to you to have a calculator and to practice using it. For this class, another useful smartphone app is WolframAlpha. Look it up in your app store. It costs a few dollars, but it is worth it!
3. Doing homework is vitally important in any course you take! Especially in math, it is important to do homework every day. Homework includes reading the textbook and doing the problems in the chapter text, doing assigned problems, exploring the resources in WebAssign, attending help sessions and student hours, and participating in a study group. I expect a **minimum of 8 hours per week in homework**—the “2 for 1” rule—you put in at least two hours of study for every one hour of class per week. Note that this is a minimum time—you may need to put in significantly more time into this class to be as successful as you want to be! Please remember that I have 10 Student Hours a week in which I can help you in person or on Zoom. The Academic Success Center (ASC) also has tutoring. You can find their information at <https://blogs.nvcc.edu/asc/>.
4. Special Needs and Accommodations. Please address with me any special problems or needs at the beginning of the semester. If you are seeking accommodations based on a disability, you must provide a disability data sheet, which can be obtained from the counselor for special needs, (703) 845-6301.
5. Please see the “NOVA Policies” link on CANVAS for more information from the college on topics like Academic Integrity, Withdrawal Policies, and Wellness and Mental Health.

Written Homework

Stewart, J., Clegg, D., & Watson, S. (2021). *Calculus: Early transcendentals* (9th ed.). Cengage.

You must do *at least* the problems listed below for each section of the book. Please note that most of the odd problems have answers in the back of the book. **Try to avoid using the solutions as a quick way to solve a problem. Struggling with problems is often the best way to learn!** If you wish to do even-numbered problems, feel free to drop by my office to check the solutions with me.

Please note the order of the sections—this is the order in which we will cover the material and the material over which you will be tested.

§6.2 (1, 5, 9, 11, 15, 19, 23, 27, 41, 47, 57, 67, 69)

§6.3 (1, 3, 5, 9, 13, 15, 19, 21, 23, 25, 29, 31, 35, 37, 39, 45, 47, 53, 57)

§6.4 (1, 3, 7, 11, 13, 15, 17, 21, 23, 35)

§7.1 (3, 5, 7, 11, 15, 17, 19, 23, 27, 33, 43, 47, 65, 69)

§7.2 (3, 7, 11, 15, 19, 23, 27, 31, 35, 41, 47, 51, 69)

§7.3 (5, 9, 11, 17, 23, 27, 33, 39, 43)

§7.4 (7, 11, 15, 19, 23, 29, 35, 39, 41, 47, 51, 68)

§7.5 (1-89 every other odd number—1, 5, 9, 13, etc.)

§7.6 (1, 3, 5, 7, 11, 19, 27, 35, 39, 45)

Exam #1 (§§6.2-7.6) on February 19. Written homework due at the beginning of the exam.

§7.7 (7, 11, 17, 19, 21, 29, 30, 37)

§4.4 (9, 13, 15, 19, 21, 23, 25, 27, 29, 33, 37, 41, 47, 51, 55, 57, 59, 63)

§7.8 (1, 3, 7, 11, 17, 21, 29, 31, 39, 49, 57)

§8.1 (1, 3, 9, 13, 17, 21, 25, 27, 31, 41, 45)

§8.2 (1, 5, 9, 13, 17, 21, 25, 31)

§8.3 (21, 23, 25, 29, 31, 35, 37)

Exam #2 (§§7.7-8.3) on March 4. Written homework due at the beginning of the exam.

§11.1 (3, 7, 11, 13, 15, 17, 21, 23, 27, 29, 33, 35, 37, 41, 43, 45, 49, 59, 65, 71, 73, 79, 81)

§11.2 (3, 5, 7, 17, 19, 23, 27, 33, 37, 39, 43, 45, 53, 55, 59, 63, 71)

§11.3 (1, 3, 7, 9, 13, 17, 21, 23, 25, 41)

§11.4 (3, 7, 9, 11, 13, 15, 17, 21, 25, 29, 35, 41)

§11.5 (3, 5, 7, 9, 13, 17, 23, 25, 27, 31, 39, 45)

§11.6 (1, 3, 5, 7, 11, 15, 17, 19, 21, 25, 27, 31, 39, 41)

§11.7 (3, 7, 9, 11, 13, 15, 17, 19, 23, 25, 31, 33, 35, 47)

§11.8 (3, 7, 11, 15, 19, 23, 27, 31, 35, 37, 41)

§11.9 (3, 5, 9, 11, 13, 17, 19, 21, 27, 31)

§11.10 (5, 9, 11, 15, 17, 23, 25, 27, 35, 39, 41, 55, 61, 63, 73, 79, 83, 87)

§11.11 (3, 5, 7, 13, 17, 19, 23)

Exam #3 (§§11.1-11.11) on April 15. Written homework due at the beginning of the exam.

§10.1 (1, 3, 7, 11, 13, 15, 19, 21, 23, 25, 27, 39)

§10.2 (1, 3, 5, 7, 9, 11, 15, 17, 21, 33, 35, 37, 43, 47, 57, 67, 71)

§10.3 (1, 3, 5, 7, 11, 13, 15, 19, 21, 25, 33, 37, 39, 43, 47)

§10.4 (1, 5, 7, 9, 11, 17, 21, 23, 27, 31, 37, 45, 49, 53, 59)

§10.5 (5, 9, 15, 17, 21, 25, 27, 29, 33, 39, 45, 65)

§10.6 (1, 3, 5, 7, 9, 11, 13)

Final Exam (comprehensive) on May 1. Written homework due at the beginning of the final exam.

NOTE: ALL INFORMATION IN THIS SYLLABUS IS SUBJECT TO CHANGE!