

# Syllabus for Calculus III

Dr. Abdul Hassen

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**Class Meetings:** MTR 8:00am to 9:15am, James 2105

**Office Hour:** TR 9:30 – 10:30am, W 8:00 to 9:00am and 11:00 am – 12:00pm, and by appointment. Email is the best way to communicate with me. Please use your Rowan e-mail address for all communications.

**Prerequisite:** Calculus II

**Text:** Rogawski's Calculus, Early Transcendental, 4<sup>th</sup> Edition published by Freeman Co.

**Course Description:** The topics covered in this course include: vectors, vector functions, velocity, acceleration, partial differentiation, directional derivatives, multiple integration, and vector calculus. The student is expected to use a computer algebra system, such as Mathematica, in addition to a graphing calculator.

**Objectives:** Students will demonstrate the ability to: (i) graph and find areas in polar coordinates; (ii) calculate dot and cross products; (iii) identify and find equations for lines, planes and quadric surfaces, (iv) compute partial derivatives; (v) evaluate double and triple integrals and find area and volumes with them, and (vi) compute and apply line integrals, Green's Theorem, and Stokes Theorem.

**Technology:** In addition to the graphing calculators, students are required to use Mathematica and other computer software packages.

**Content:** We will cover the following sections from the textbook.

- CHAPTER 11: Parametric Equations and Polar Coordinates (*Sections 1 through 4*)
- CHAPTER 12: Vectors Geometry (*Sections 1 through 5*)
- CHAPTER 13: Calculus of Vector-Valued Functions (*Sections 1 through 5*)
- CHAPTER 14: Differentiation in Several Variables (*Sections 1 through 8*)
- CHAPTER 15: Multiple Integration (*Sections 1, 2, 3, 4*)
- CHAPTER 16: Line and Surface Integrals (*Sections 1, 2, 3*)
- CHAPTER 17: Fundamental Theorem of Vector Analysis (*Sections 1 and 2*)

**Grading Policy:** Students will be graded based on four tests (**80%**), four sets of homework problems (**10%**) and three Mathematica assignments (**10%**). The date for the tests will be announced at least one week in advance.

- **Test 1 (20%)** covers chapter 11 and 12
- **Test 2 (20%)** covers chapter 13
- **Test 3 (20%)** covers chapter 14
- **Test 4 (20% of total grades)** covers chapters 15, 16, and 17.

**Note:** Your overall grade will be computed as follows:

$$0.20*(T1+T2+T3+T4) + 0.025*(HW1+HW2+HW3+HW4) + 0.033*(Proj 1+Proj 2+Proj 3).$$

Numerical grades will be converted to letter grades by the following scale.

*A = 90 to 100, B= 80 to 89, C= 70 to 79, D= 60 to 69, F= 0 to 59*

**Homework:** The homework problems are divided in four sets. The exercises in Homework set 1 will cover sections for Test 1. Similar rules apply for the other Homework and all sets are available on Canvas or sent to you via e-mail. You are required to submit your homework via Canvas.

**Mathematica Projects:** These can be found on Canvas page of the course or will be e-mailed to you. Due dates will be announced at least two weeks in advance. You are required to submit your homework via Canvas.

**Attendance Policy:** Attendance is mandatory. An attendance sheet will be passed around at the beginning of each class period. Please write your signature next to your printed name on the list. If you are absent/tardy from a class, you must submit a note requesting that the absence/tardiness be excused by the next class meeting. If you miss a class, it is your responsibility to study the section(s) covered and do the homework. If you are absent the day of a regularly scheduled test, a grade of zero is automatically recorded as your test score. You will be permitted to make up this zero only when you can confirm that you were absent for reasons beyond your control.

### **Some Important Rowan University Policies:**

Please revise the Rowan University Academic Policies here  
<https://sites.rowan.edu/deanofstudents/forms/handbook.html>

**Attendance:** Attendance will be taken at every meeting. Students are expected to attend every online class and to be on time. If you are absent from any online class for any reason, it is your responsibility to find out what you missed, including any announcements. You may find out what you missed by watching the recording of the lectures available from Canvas.

You can get more information about Rowan's Attendance Policy here:  
<https://confluence.rowan.edu/display/POLICY/Attendance+Policy>

**Academic Honesty:** Cheating on a test or assignment seriously undermines the integrity of the academic system and will not be tolerated. Although a student is not cheating, he or she is expected to refrain from actions that could be suspicious. Using common sense on your part should avoid unnecessary embarrassment. Please

read Rowan University's Academic Integrity Policy at the link:  
<https://confluence.rowan.edu/display/POLICY/Academic+Integrity+Policy>

**Students with Disabilities and Special Needs:** Please speak with me as early in the semester as possible so that we can make appropriate accommodations for you. If necessary, you can also contact the Office of Special Services.

**Rowan University's Statement on Diversity (from DEI):** Rowan University promotes a diverse community that begins with students, faculty, staff and administration who respect each other and value each other's dignity. By identifying and removing barriers and fostering individual potential, Rowan will cultivate a community where all members can learn and grow. The Rowan University community is committed to a safe environment that encourages intellectual, academic, and social interaction and engagement across multiple intersections of identities. At Rowan University, creating and maintaining a caring community that embraces diversity in its broadest sense is among the highest priorities.

For more on this visit: <https://sites.rowan.edu/diversity-equity-inclusion/about/index.html>

### How to Get Mathematica

1. Create an account (*New users only*):
  - a. Go to [user.wolfram.com](https://user.wolfram.com) and click "Create Account"
  - b. Fill out form using a @rowan.edu email, and click "Create Wolfram ID"
  - c. Check your email and click the link to validate your Wolfram ID
2. Request access to the product:

Mathematica Desktop	Mathematica Online
	e. <a href="#">Fill out this form</a> to request access

For a personally owned machine:

- a. [Fill out this form](#) to request an Activation Key
- b. Click the "Product Summary page" link to access your license
- c. Click "Get Downloads" and select "Download" next to your platform
- d. Run the installer on your machine, and enter Activation Key at prompt

- f. Go to [Mathematica Online](#) and sign in to access Mathematica Online

### **Wolfram|Alpha Pro**

- g. [Fill out this form](#) to request access
- h. Go to [Wolfram|Alpha](#) and click "Sign in" to access Wolfram|Alpha Pro