Course: Multivariable Calculus

Room: SCIE 109
Time: MWF, 10:00 – 10:50
Web Page: https://moodle.wesleyan.edu
Course TAs: Chih-Kai Chang and Sam Werbalowsky

Instructor: Christopher Rasmussen

Office: SCIE 649
Email: crasmussen [at] wesleyan [dot] edu
Phone: ×2315
Office Hours: MF, 11:00 – 11:50 and by appointment

Course Description:
This course will develop the foundations of differential and integral calculus of several real variables, with emphasis on computational skills. The later portions of the course will investigate the calculus of vector-valued functions, which have many useful applications in physics, engineering, and other fields. This includes the powerful and beautiful theorems of Green and Stokes.

Exams:
The course will have two mid-term exams and a final exam, scheduled as follows:

Wednesday, March 2  Midterm Exam 1 (7:00 – 9:00 p.m.)
Wednesday, May 4   Midterm Exam 2 (7:00 – 9:00 p.m.)
Wednesday, May 11  Final Exam (9:00 – 12:00 p.m., SCIE 109)

Note that the mid-term exams will be held in the evening. If you have a schedule conflict, please contact me at least one week in advance so that we may make alternate arrangements.

Attendance:
Students are expected to attend every class. It is the student’s responsibility to keep informed of any announcements, syllabus adjustments, or policy changes made during scheduled classes. You are responsible for all announcements made in class.

Homework:
It is likely that most of your learning will take place as you complete the homework assignments. This is your chance to practice the methods and theory we cover in class. I encourage you to work in groups on the assignments – however, each student must turn in a written assignment that is their own work.
Homework will be assigned at every class meeting, and will be due twice a week on Tuesdays and Fridays. Homework must be submitted to the TA box in the Math Lounge (SCIE 601) on the 6th floor of the Exley Science Center by 5:00 p.m. on the due date. **Late homework will not be accepted for any reason.**

**Getting Help:**

This is a fast-paced course with a high workload. It is natural that you will need assistance from time to time. Please make the most of the following resources!

- **Recitations:** Weekly recitations will be scheduled in the evening. Although these sessions are optional, they are an excellent opportunity to ask the TA questions about the material.

- **Office Hours:** I will have office hours on Mondays and Fridays 11:00 – 11:50. I am also always happy to meet at other times if you cannot make my office hours – just send me an e-mail to set up an appointment. Office hours are a great place to ask detailed questions.

- **Math Workshop:** The Math Workshop is a free drop-in tutoring service available to the entire Wesleyan community. It is located in the Science Library in the main floor conference room. It is open most afternoons and evenings, staffed with undergraduate and graduate assistants who can help you with homework questions and the like.

**Grading:**

Your grades will be posted on Moodle, which can be accessed through your portfolio. The course grade will be computed as follows:

- Homework 20%
- Midterm Exam 1 25%
- Midterm Exam 2 25%
- Final Exam 30%

Your homework grade will be the average of the homework scores from the individual assignments. Your two lowest submitted homework scores will be dropped. However, late or missing homework assignments cannot be dropped and will receive a grade of zero. The only exception is when a homework is not submitted due to an unavoidable conflict (such as a serious illness or a family emergency). At the discretion of the instructor, these scores may also be dropped.

**Disability Support**

It is the policy of Wesleyan University to provide reasonable accommodations to students with documented disabilities. Please note that students are responsible for registering with Disabilities Services, and should make requests known to me in a timely manner. If you require accommodations in this class, please speak with me during the first two weeks of the semester, so that appropriate arrangements can be made. All discussions will be strictly confidential. For registration procedures, please visit [http://www.wesleyan.edu/deans/disability-students.html](http://www.wesleyan.edu/deans/disability-students.html).
Tentative Schedule

Over the thirteen week term, the course schedule will be roughly as follows:

Week 1. Three-Dimensional coordinate systems; Vectors and vector operations.

Week 2. Lines, curves and planes in space.

Week 3. Functions of several variables; partial derivatives in several variables.

Week 4. Tangent planes; linear approximation; the gradient field.

Week 5. Theory of double integration.

Week 6. Integrals over general regions; polar coordinates.

Midsemester Recess

Week 7. Triple integrals.

Week 8. Cylindrical and spherical coordinates.

Week 9. Vector fields; Line integrals.

Week 10. The Fundamental Theorem of line integrals; Path-independence of vector fields.

Week 11. Green’s Theorem and its applications; Divergence and Curl of vector fields.

Week 12. Flux integrals and Stokes’s Theorem.

Week 13. The Divergence Theorem; Generalization of Stokes’s Theorem.