

# Math 23, Fall 2016

## Syllabus

### COURSE INFORMATION AND POLICIES

**Instructor:** Professors Dodson, Sun, and Szczepanski.

**Topics:** This course provides an introduction to differential and integral calculus in multiple dimensions, with an emphasis on dimensions 2 and 3. This includes the underlying geometry of vectors in space, the calculus of curves and surfaces in space, and higher dimensional analogues of the fundamental theorem of calculus (such as Green's theorem, Stokes' theorem, and the divergence theorem). Physical applications are also discussed. In particular, the course will cover almost all of the material in chapters 12 through 16 of the text for the course; see the schedule of lectures below for details.

**Prerequisites:** A grade of C- or higher in Math 22 or 32, or equivalent transfer or AP credit. If you do not meet this prerequisite, or are unsure whether your background is adequate, please discuss this with your instructor.

**Text:** *Calculus: Early Transcendentals*, eighth edition, by James Stewart. ISBN: 978-1-285-74155-0.

**Attendance:** Attendance in lecture and recitation is required. Three or more unexcused absences may result in a "Section 3" report.

**Exams:** There will be two 4 o'clock exams, the first on Thursday, October 6 and the second on Thursday, November 10. There will a comprehensive final exam at a date and time to be set by the registrar (please do not schedule any travel until the final exam schedule is announced). Make-up 4 o'clock exams will only be given for serious illness or another circumstance of comparable gravity (in the judgement of the instructor), and documentation may be required. Make-up finals are given according to university policy. In no case will a make-up exam be easier than the regularly-scheduled exam. If you are aware of a conflict with an exam, please inform your instructor as soon as possible. A special case of this policy is that Math 205 and Math 231 have 4 o'clock exams that conflict with Math 23. For students taking more than one of those courses, a policy on which exam to take at the regular time and which exam to make up will be announced.

**Homework and quizzes:** There will be regular written homework assignments, roughly on a weekly basis, posted on Coursite. These homeworks will be due in lecture on the date indicated. Your homework must be legible and intelligible and must show your work. Your homework must also be presented in an orderly way; for example, it must be stapled and should not have ragged, perforated edges. Students may discuss the homework with other students, but must write their solutions individually. Copying of hand-written, typed, or on-line solutions is not allowed under any circumstances and will be reported as plagiarism. (More information about academic integrity can be found at [www.lehigh.edu/~indost/conduct/aiforstudents.shtml](http://www.lehigh.edu/~indost/conduct/aiforstudents.shtml).)

Late homework will **not** be accepted. In part to compensate for this (and for illness, bad luck, etc.), the lowest two written homeworks will be dropped.

There will be regular quizzes, given either in recitation or lecture, with the exact schedule determined at the instructor's discretion. Quizzes may be unannounced. No make-up quizzes will be given, but the lowest two quizzes will be dropped. With a few exceptions, quizzes will be given in every recitation.

Finally, the syllabus lists practice problems for each section of the book that we will cover. These problems are intended to supplement the homework, and you are responsible for the material they cover. They are not handed in or graded, so it is up to you to take advantage of them. Note that doing the homework and the practice problems is the best way to learn the material and ultimately succeed in the course.

**Grading:** The homework and quizzes will collectively count for 20% of the final grade (with written homeworks worth 10% and quizzes worth 10%), each 4 o'clock for 20%, and the final for 40%. Students earning 90% of the total will receive at least an A-, 80% will be at least a B-, and so on.

**Calculators:** No calculators (or computers, cell phones, iPads, music players, or any other electronic devices) can be used on any exams or quizzes. You should keep this (and the fact that exams are closed book) in mind when doing the homework.

**Additional Help:** The math department runs the Math Help Center, located in Christmas-Saucon B001. Students can drop in for help whenever it is staffed; a schedule is generally posted outside. In addition, the university provides the Writing and Math Center (see [www.lehigh.edu/~incent/index.shtml](http://www.lehigh.edu/~incent/index.shtml)).

**Accommodations for Students with Disabilities:** If you have a disability for which you are or may be requesting accommodations, please contact both your instructor and the Office of Academic Support Services, University Center C212 (610-758-4152) as early as possible in the semester. You must have documentation from the Academic Support Services office before accommodations can be granted.

**The Principles of Our Equitable Community:** Lehigh University endorses The Principles of Our Equitable Community (<http://www4.lehigh.edu/diversity/principles>). We expect each member of this class to acknowledge and practice these Principles. Respect for each other and for differing viewpoints is a vital component of the learning environment inside and outside the classroom.

## SCHEDULE OF LECTURES

The following schedule is tentative and subject to revision as necessary. Again, the problems listed are practice problems.

Week 1 (Aug. 29)	<b>12.1:</b> 9, 12, 13, 16, 22, 45. <b>12.2:</b> 7, 8, 21, 22, 24, 37. <b>12.3:</b> 4, 7, 9, 11, 12, 16, 24, 25, 40, 43, 46, 49, 55, 61, 62, 64.
Week 2 (Sept. 5)	<b>12.4:</b> 2, 3, 9, 12, 18, 22, 27, 29, 33, 45b (assume 45a). <b>12.5:</b> 1, 3, 10, 14, 18, 21, 24, 32, 33, 37, 45, 51, 61, 65, 70 (assume 12.4, 45a). <b>12.6:</b> 1, 2, 3, 5, 21-28, 37.
Week 3 (Sept. 12)	<b>13.1:</b> 3, 6, 11, 17, 21-26. <b>13.2:</b> 7, 11, 12, 15, 16, 21, 25, 37, 41. <b>13.3:</b> 3, 5, 13a, 15, 17, 2, 31, 42, 43.
Week 4 (Sept. 19)	<b>13.4:</b> 3, 6, 11, 15, 22, 23, 25, 35, 37-39, 41. <b>14.1:</b> 9, 13, 18, 25, 26, 28, 31, 32, 39. <b>14.2:</b> 3, 4, 7, 8, 13, 18, 30.
Week 5 (Sept. 26)	<b>14.3:</b> 15, 18, 21, 24, 31, 37, 45, 50, 61, 82. <b>14.4:</b> 1, 4, 18, 19, 26, 33, 41, 45. <b>14.5:</b> 2, 3, 7, 10, 19, 23, 45, 49, 55.
Week 6 (Oct. 3)	Review for 1st exam, Oct. 6 <b>14.6:</b> 4, 8, 10, 13, 16, 23, 24, 27, 32, 41, 42. <b>14.7:</b> 1, 5, 8, 10, 17, 19, 32, 33, 42, 46, 50, 60.
Week 7 (Oct. 10)	Finish <b>14.7</b> <b>14.8:</b> 3, 4, 7, 10, 15, 16, 20, 45. <b>15.1:</b> 2, 16, 31. <b>15.2:</b> 3, 5, 7, 9, 10, 13, 15, 19, 27, 51, 52.
Week 8 (Oct. 17)	<b>Pacing break</b> Finish <b>15.2</b> <b>15.3:</b> 7, 8, 9, 12, 15, 16, 17, 18, 20.
Week 9 (Oct. 24)	<b>15.4:</b> 3, 5, 7, 10, 11, 15, 19, 23, 24. <b>15.5:</b> 2, 3, 5, 6, 6, 9. <b>15.6:</b> 3, 4, 8, 9, 13, 15, 18, 20, 22, 39, 41, 43, 45, 54.
Week 10 (Oct. 31)	Finish <b>15.6</b> <b>15.7:</b> 9, 10, 17, 18, 20, 22, 23, 27, 28, 30. <b>15.8:</b> 7, 8, 9, 10, 21, 22, 25, 27, 28, 30, 32, 35.

- Week 11 (Nov. 7) Review for 2nd exam, Nov 10  
**16.1:** 3, 11-14, 15-18, 24, 29-32.  
**16.2:** 3, 5, 8, 13, 19, 22, 34, 40, 42.
- Week 12 (Nov. 14) **16.3:** 3, 4, 7, 11, 13, 16, 31, 33.  
**16.4:** 1, 3, 7, 9, 10, 12, 17, 22, 23.  
**16.5:** 1, 4, 7, 12, 13, 16, 19, 31.
- Week 13 (Nov. 21) **Thanksgiving break**  
**16.6:** 39, 41, 42, 43, 44, 45 (surfaces as graphs only, [9]).
- Week 14 (Nov. 28) **16.7:** 9, 10, 11, 23, 24 (surfaces as graphs only, [4], [10]).  
**16.8:** 2, 3, 7, 9, 16.  
**16.9:** 5, 7, 8, 9, 11, 14.
- Week 15 (Dec. 5) Catch up and review for final exam