

The final exam will be comprehensive. The following are nevertheless very important highlights that are the minimum knowledge expected from this course. Note that this does not mean other auxiliary topics could not be included. You are responsible for all the material covered with the exception of 16.8.

1. (15.1,15.2) You must know how to deal with double integrals, switch order of integration and how to use integrals to find the average value of a function, volumes, areas, center of mass or moment of inertia.
2. (15.3-15.5) What does it mean to change to polar coordinates and the correct expression for the differential. Learn to set up triple integrals in different orders. Know how to use triple integrals to compute volumes and center of mass.
3. (15.6,15.7) Cylindrical and spherical coordinates, what are they and how to use them (e.g. order of integration, differential, etc)?
4. (16.1-16.4) Know how to parametrize a curve in space, know what a line integral means and how to evaluate it. Know how use it to compute work, arc length, and mass of wires. Know how to recognize a conservative field and how to use its potential function for calculations. Know what is Green's theorem and how to use it to speed up calculations.
5. I suggest you try to understand the following problems to review the above topics:
From pages 1122-1124: 7,24,28,40,43,48,50 From pages 1207-1209: 2,8,30,37,42,50.
6. (16.5-16.7) NEW MATERIAL Know how to find the surface area of a solid and how to do surface integrals such as mass, flux, averages. Know how to parametrize a surface and how to use it in computing integrals. Know what is the curl and how to compute it. Know what is Stoke's theorem and how to use it.
7. I suggest you try the following problems from pages 1207-1209: 12,20,24,40,47,53.