

Instructor : Aaron Montgomery  
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Phone : 963-1906  
Text : *Elementary Differential Geometry* by Bär  
Web : [webwork.math.cwu.edu/~montgomery/159/298](http://webwork.math.cwu.edu/~montgomery/159/298)

### Enrichment Course

Sitting at the 298 level, this is an enrichment course. I am going to assume you are in the course because the subject interests you and not because it satisfies a major or minor requirement. Course grading will primarily be based on homework (as opposed to tests) and group work is encouraged. This means that there will be ample opportunity to be carried through the class by your fellow students. However, you should try to understand what you are doing by asking questions (of your peers and of me). It is likely that you will get a feel for what differential geometry is as a subject, but you will not be leaving the course with a deep understanding of the subject. Basically, I'll open the door for you, but we won't have time to spend much time on the other side of it.

### Course Prerequisites & Outcomes

I expect you to be comfortable with basic calculus (multivariable differentiation and single variable integration) as well as basic linear algebra (matrix representations of linear transformations). If necessary, I will provide supplemental material on multivariable integration and all eigens\*\*t

I'm sure I wrote something about Course Outcomes to appease the curriculum gods, but basically, I will introduce you to some basic concepts in Differential Geometry (such as the First and Second Fundamental Forms and Gaussian curvature) as well as some *Mathematica* programming to handle the more tedious calculations.

### Homework & Labs

We will meet in the Lab on Fridays. I'm hoping to have Lab Handouts which will introduce you to *Mathematica*. If you have some *Mathematica* experience and you know a more efficient method to do a calculation, let me know. Knowing how to do these calculations in *Mathematica* will make your home-

work less tedious and some homework problems will require *Mathematica*.

I will hand out homework problems throughout the quarter and homework problems will be due on Friday. I will announce which homework problems are due on which dates in class as we go through the quarter and I will do my best to keep the website up to date on which problems are due. I believe most homework problems can be done with pencil and paper, however, much of the tedious calculations can be done by a computer algebra system such as *Mathematica*. You *should* be able to do these homework problems both ways, however, unless specified in the problem, you can solve the problem in whatever mode you prefer.

Your final grade will be based on the percentage of points you earn on labs and homework problems.

$\geq 87\%$	B+	$\geq 93\%$	A	$\geq 90\%$	A-
$\geq 77\%$	C+	$\geq 83\%$	B	$\geq 80\%$	B-
$\geq 77\%$	C+	$\geq 73\%$	C	$\geq 70\%$	C-
$\geq 67\%$	D+	$\geq 63\%$	D	$\geq 60\%$	D-

### Accommodations

Central Washington University is committed to creating a learning environment that meets the needs of its diverse student body. If you anticipate or experience any barriers to learning, discuss your concerns with the instructor. Students with disabilities should contact Disability Services to discuss a range of options to removing barriers, including accommodations. Student Disability Services is located in Hogue 126. Call (509) 963-2214 or email [ds@cwu.edu](mailto:ds@cwu.edu) for more information.