

**Spring 2016**  
**Math 473 Advanced Analysis 3**  
**Lind 204, 11:00 - 11:50 MWF**

**Instructor:** Dr. Jim Bisgard

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**Office Hours:** MTWF 10:00 - 11:00, and by appointment.

**Web page:** [www.cwu.edu/~bisgardj/teaching.html](http://www.cwu.edu/~bisgardj/teaching.html)

**Required Text:** none, but notes on the material will be available at [www.cwu.edu/~bisgardj/teaching.html](http://www.cwu.edu/~bisgardj/teaching.html)

**Course Goals:** The goal of Math 473 is the same as that of 471 and 472: to approach calculus rigorously. Our focus will change to differential calculus for functions of several variables. In particular, I hope to hit the following topics:

1. Normed vector spaces and their topology (open, closed, compact)
2. Linear mappings, and the space  $\mathcal{B}(X, Y)$
3. The spectral theorem and singular value decomposition via analytic methods
4. The derivative of functions  $\mathbf{F} : \mathbb{R}^n \rightarrow \mathbb{R}^k$
5. The inverse function theorem
6. Lebesgue Integration (if time allows)

## 1 Grades/Exams/Homework

- Grades

Grades will be calculated using the following weighting system:

Homework: 50%;

Exams: 50% total, broken up as follows: 25% for the mid-term and 25% for the final.

Grades are then determined by the following scale:

	88 – 89.9 : B+	76 – 77.9 : C+	64 – 65.9 : D+	below 54 : F
92 – 100 : A	80 – 87.9 : B	68 – 75.9 : C	56 – 63.9 : D	
90 – 91.9 : A–	78 – 79.9 : B–	66 – 67.9 : C–	54 – 55.9 : D–	

- Homework

You'll get a homework assignment every Monday which will be due **at noon** on the Wednesday of the following week. (So, your first homework will be due April 6.) You may use/ask/talk to whatever/whoever you'd like, as long as you say what resources you used. However, you must write your solutions up in **your own words** to hand in. **DO NOT** wait until the day before homework is due to start working on it. There won't be a large number of problems, but you will need spend a fair bit of time thinking about the problems! There will be a homework due the last week of classes.

- Homework Revisions

Each homework problem will be graded out of 5 points. Graded homework will be returned on Monday, and revisions will be due on Wednesday. Revisions can earn you up to one

point per problem. Revisions must be on a new sheet of paper, and you must turn in your original graded work together with your revision. To help with your revisions, I will use two colors to grade: green comments refer to stylistic and/or minor problems, while red comments refer to more major problems, including logical errors (for example, using “all” when “some” is needed, or incorrectly negating a quantifier).

- Exams

There will be two exams: a mid-term and a final. These will be **in-class** exams. I will give you a list of possible questions the week before. The mid-term will be Friday, May 6 and the Final Exam will be Thursday, June 9.

- Expectation for Homework and Exams

Your homework and exams should be written up neatly and legibly, using complete sentences where appropriate. (For example, I don't expect you to write  $(a + b)^2 = a^2 + 2ab + b^2$  using complete sentences!) You are encouraged to type your solutions using L<sup>A</sup>T<sub>E</sub>X. If you want to submit your solutions electronically, you must typeset your solutions - I will not accept scans or pictures of handwritten work to grade! Part of writing proofs is to use correct and proper grammar, spelling, and punctuation. As a result, you will be graded on mechanics, as well as the correctness of your proofs! Comments on these aspects of your homework will be in green, and will be worth at most one point per problem.

## 2 Disability Support

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.