

# Physics 471J

Order of Magnitude Physics( OOMP) module  
Fall 2020

Instructor: David Newman

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Office Hours:

Monday 4:00-5:00pm by Zoom

Wednesday 2:30-3:30pm by Zoom

[Semester schedule \(calendar\)](#)

[Homework](#)

[Link to Auroral Forecast at the GI](#)

[Videos of Class](#)

This syllabus is located at: [http://ffden-2.phys.uaf.edu/471J\\_fall\\_2020.html](http://ffden-2.phys.uaf.edu/471J_fall_2020.html)

## Course Syllabus

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**Course Content:** OOMP deal with getting quick approximate answers. We will develop the mathematical (and hopefully intuitive) tools to study these all systems.

This course will cover the following topics among others:

Basics of making estimates

What's important and what's not

Developing a physical feeling and trusting your gut

Big estimations

**Prerequisites:** A gut feeling, Algebra, trigonometry and calculus will be used.

**Materials Needed:**

Interesting [Order-of-Magnitude Physics: Understanding the W](#)  
Text:

scientific calculator with trigonometric, exponential, and logarithmic functions is all that you need.

**Lectures:** 1:00pm MWF in 204 Reich. *The lectures supplement but do not substitute for the reading.* Lectures will cover the major topics, emphasizing and discussing the important points. They are not sessions to regurgitate material already written in the text. Your personal participation is important.

**Homework:** There will be approximately one homework assignment per week. The assignment will be given out on Wednesdays and will be due in on the following Friday in class. You are encouraged to work with others on the homework, but make sure the paper you turn in is not simply copied from someone else. These assignments help me assess your understanding of the material, and will count toward your final grade.

**Late problem sets will not be accepted.**

**Project:** Project will be a small group OOM analysis of some big future project (Space elevator or Dyson sphere scale).

Deadlines:

Wed the 10th - groups chosen (3 or 4 people ≈ 3 groups)

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