

MATH FLUENCY (PHYSICS 199) SPRING 2020	PROFESSOR RAGHUVVEER PARTHASARATHY
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SYLLABUS

Welcome to our Math Fluency Course!

LOGISTICAL INFORMATION

CLASS TIMES	Monday 3:00 – 3:50 pm, on-line
ON-LINE	We'll run the class using Zoom videoconferencing software for our class sessions, as well as office hours or individual meetings. The Zoom URL for all class sessions is: https://uoregon.zoom.us/j/481371645 We will also use Canvas for course materials (https://canvas.uoregon.edu/).
INSTRUCTOR	Professor Raghuveer Parthasarathy (Par-tha-sa-ra-thē) Office: 362 Willamette Hall, Email: raghu@uoregon.edu
OFFICE HOURS	Prof. Parthasarathy: Wed. 1:00-1:50 and Thurs. 1:00-1:50pm (via Zoom) <i>Office hour times may change</i> , both by request (if particular times are not good for many students) and because of scheduling conflicts that may arise.
EMAIL	Email: You can certainly ask questions by email! I will usually respond within 24 hours. Please write clearly and grammatically, and don't start off with "Hey!" You can address me as "Prof. Parthasarathy."

COURSE DESCRIPTION

TOPICS AND AIMS

In Physics 251-253 you encountered the basics of physics. In Physics 351-353 (as well as other upper level courses) you'll dive into more advanced topics – “real” physics! Over the rest of your studies, you'll explore how the universe works, from atoms to cells to stars! Students tend to like Physics 351-353 a lot¹. However, many students struggle, especially due to a lack of comfort with math. We want every student to succeed – we like students, and we think physics is a wonderful subject. We also believe that every student *can* succeed. Therefore, I'm teaching this course! Its focus is on mathematical fluency – that is, being able to rapidly and correctly apply mathematical concepts. Being fluent in math frees you to absorb new physics. We'll spend time practicing math, as well as developing intuition and learning useful strategies.

¹ When I taught Physics 352 in 2019, for example, the average course evaluation score for “What was the quality of this course” was 4.4 out of 5.0. Of course, this isn't just an evaluation of the subject matter, but the subject matter plays a large role in students' excitement, whoever teaches it.

Topics

- Differential Calculus, especially chain and product rules.
- Limits (and quickly seeing them)
- Integration, including substitution and conversion to dimensionless forms
- Series, especially geometric series.
- Translating words into math.
- Taylor series and small angle approximations
- Properties of logarithms and exponentials

TEXTBOOK*None***ASSIGNMENTS AND ASSESSMENTS**

HOMEWORK	Homework will consist of practice exercises and some questions asking you to assess or explain what you've done. These will be graded only on completeness (i.e. complete or not complete).
GRADING	This 1-credit course is pass / not pass. We'll provide a framework, advice, and help – the rest is up to you, and the real assessment is in Physics 351 and beyond! The grading is therefore simply to ensure that you keep up. For a Passing grade, <ul style="list-style-type: none">• <i>Homework Assignments:</i> At least 80% must be completed (I had intended to have an on-line attendance requirement, but UO is instituting a campus-wide policy that this cannot be done, because some students may have poor internet access. Therefore attendance isn't required, but is strongly recommended!)
ABSENCES	Students with a serious and well-documented reason for missing an assignment or a class should contact Prof. Parthasarathy.
ACADEMIC INTEGRITY	All students will be expected to adhere to the University's guidelines on academic integrity as outlined in the Student Conduct Code: https://policies.uoregon.edu/vol-3-administration-student-affairs/ch-1-conduct/student-conduct-code . As detailed in the policy, academic misconduct means the violation of university policy involving academic integrity. This includes cheating ("any act of deception by which a student misrepresents or misleadingly demonstrates that the student has mastered information on an academic exercise that the student has not mastered"), and plagiarism ("using the ideas or writings of another as one's own.") The instructor has a zero tolerance policy for academic dishonesty. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures.

**CAMPUS
RESOURCES TO
SUPPORT
LEARNING**

These services are presumably on-line in Spring 2020 – I haven't checked.

Tutoring and Academic Engagement Center (<https://engage.uoregon.edu/services/>)
Drop-in math and writing support in addition to tutoring, study skills support, and Class Encore. Located in the 4th Floor Knight Library (541) 346-3226, engage@uoregon.edu.

Counseling Center Call anytime to speak with a therapist who can provide support and connect you with resources. Located on the 2nd Floor of the Health Center, (541)346-3227

Accessible Education Center The University of Oregon is working to create inclusive learning environments. The instructor believes strongly in creating inclusive learning environments. If there are aspects of the instruction or design of this course that result in barriers to your participation, please notify us as soon as possible. You are also encouraged to contact the Accessible Education Center. If you are not a student with a documented disability, but you would like for us to know about class issues that will impact your ability to learn, we encourage you to come visit during office hours so that we can strategize how you can get the most out of this course. Located on the 1st Floor of Oregon Hall (541) 346-1155, uoac@uoregon.edu

Center for Multicultural Academic Excellence (CMAE) mission is to promote student retention and persistence for historically underrepresented and underserved populations. We develop and implement programs and services that support retention, academic excellence, and success at the UO and beyond. We reaffirm our commitment to all students, including undocumented and tuition equity students. Located on the 1st Floor of Oregon Hall (541) 346-3479, cmae@uoregon.edu