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2023

### Syllabus for Computational Physics (PHYS 39907)

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*CUNY City College*

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## PHYSICS 39907 Fall 2023 (MR417S) TTh 11:00-12:15

Current version: <a href="#">syllabus.pdf</a> Professor: Mark Shattuck ( <a href="mailto:markdshattuck@gmail.com">markdshattuck@gmail.com</a> ) Office: Steinman Hall T1M-16 x8161, (MR419) Office Hours: Th 4:00-6:00 (MR419) (or by App.) Website: <a href="https://gibbs.ccnycunyu.edu/teaching/">https://gibbs.ccnycunyu.edu/teaching/</a>	Textbook: <a href="#">Numerical Recipes: The Art of Scientific Computing</a> , William H. Press, Saul A. Teukolsky, William T. Vetterling and Brian P. Flannery.  (Free online) <a href="http://numerical.recipes/book.html">http://numerical.recipes/book.html</a>
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8/29, 8/31	Introduction to Computing, LaTeX, overleaf	
9/5, 9/7	Algorithms and Programming, Introduction to Matlab	
9/12, 9/14	Data visualization	
9/19, 9/21	Finite difference and summation	
9/26, 9/28	Molecular Dynamics	
10/3, 10/5	Solving Linear Equations	
10/12	Minimization, Root finding, Optimization	
10/17, 10/19	Boundary value ordinary differential equations	
10/24, 10/26	Partial differential equations	
10/31, 11/2	Random processes	
11/7, 11/9	Random numbers, Probability and statistics	
11/14, 11/16	Monte Carlo	
11/21	Spectral Methods	
11/28, 11/30	Genetic/Annealing/Machine Learning	
12/5, 12/7	Finite Element	
<b>Final Project</b>		
<b>No Class</b>	<b>10/10, 11/23 (Thanksgiving)</b>	
<b>Special Class</b>	<b>TBA (Class online)</b>	

### General Information

**Attendance:** 5% of grade from class participation.

**Reading Assignment:** Reading assignments should be completed before class.

**Grades:** Grade will be based on class participation (5%), one in class exams (20%), weekly problem sets (50%), and final project (25%). The problem set can be legibly handwritten or typed, but **must be submitted electronically as a PDF on Blackboard.**

**Academic Integrity and Plagiarism:** The CCNY Policy on Academic Integrity will be strictly adhered to. The document entitled, "CUNY Policy on Academic Integrity" is available from the link at the bottom of the CCNY Home Page. Make sure you have read the details regarding plagiarism and cheating, and be clear about the rules that the college follows. Cases where academic integrity is compromised will be prosecuted to the fullest extent according to these rules.