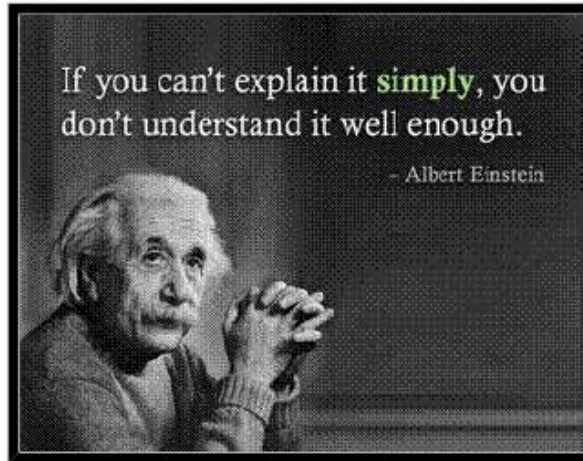


Physics 596 Course Introduction, Fall '23



Physics 596

Graduate Physics Orientation

Fall 2023

The whole of science is nothing more than a refinement of everyday thinking.

—Albert Einstein, *Physics and Reality*, 1936

Home

Course Info

Syllabus

Assignments

Resources

Course Instructors:

Lance Cooper: 227B Loomis, 333-2589 (departmental)
218 MRL (research)

Celia Elliott: 215 Loomis, 244-7725 (departmental)

Course Webpage: <https://courses.physics.illinois.edu/phys596/fa2023/index.html>

Our goals for you in Phys 596

Introduce you to research opportunities in Physics, etc.

Help you connect with a research advisor (about 70% of course)

Help you improve your abilities in scientific communication

Methods for making your scientific writing and presentations more persuasive

Teach you how to navigate the scientific literature

Researching existing literature is critical for planning future work, writing proposals, writing papers, etc.

Gain practice working in and leading a team

Collaboration is key in science

Provide details into how the “world of science” works

e.g., how publication process works, what happens at scientific conferences, how to find advisors, how to write and research scientific papers/presentations, etc.

Elements of Phys 596: Help Finding a Research Group

22 Faculty talks scheduled so far:

Astrophysics/Gravitation/Cosmology: Kirk Barrow, Jeff Filippini

Biological physics computation and experiment: Alek Aksimentiev, Yann Chemla, Ido Golding, Paul Selvin, Jun Song

Condensed matter experiment: Peter Abbamonte, Alexey Bezryadin, Kejie Fang, Vidya Madhavan, Fahad Mahmood, Pengjie Wang

Condensed matter computation/theory: Karin Dahmen, Taylor Hughes, Jong Yeon Lee, Nancy Makri, Lucas Wagner

High Energy Physics: Ben Hooberman, Jessie Shelton

Intermediate Energy/Nuclear Physics: Doug Beck, Chen-Yu Liu

Elements of Phys 596: Refine Research Skills

Writing/Presentation Skills

How to create and present journal club and research talks

How to write persuasive scientific papers

Scientific Scholarship

How to use on-line databases useful for research

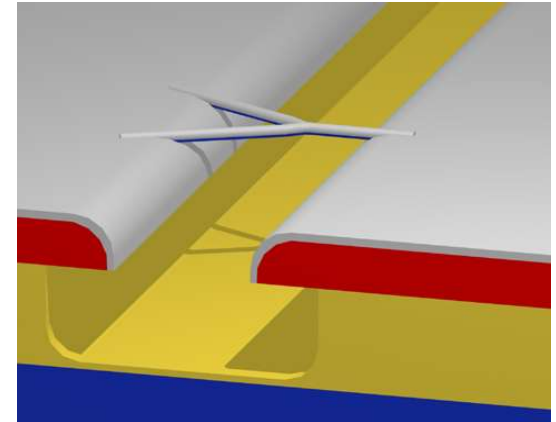
Learning how to do what scientists do

Learning to write referee reports

Learning how the publication process works

*Scientific Ethics

Discuss real life case studies



*Required by OVCR & NSF

Why is Persuasive Writing and Speaking Important in Science?

It's not just all about good data/calculations: you will be judged as much for the quality and accessibility of your logical presentation as for the quality of your results

It will be particularly important for you to communicate your results to non-experts

- prelims and dissertation defenses
- proposals
- colloquia
- public lectures

⇒ we'll emphasize this in this class

Elements of Phys 596: Practice Collaboration

<https://courses.physics.illinois.edu/phys596/fa2023/courseinfo.html>

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	Workman	Violet	violet2@illinois.edu
	Zhou	Tianshi	tianshi4@illinois.edu

Grading Policy

- Complete the [assignments](#)
- You'll critique each other's work. Your work won't be graded so much on content as on the fact that it has been completed conscientiously!
- Attendance is required

Don't worry about your grade in this class!!

⇒ You'll do well if you complete the assignments

⇒ The skills you develop will be far more important than the grade you get here!!

Our agenda

Physics 596 - Course Syllabus - Fall 2023

(Syllabus is subject to change!)

[Physics 596 Fall 2023 Channel on Media Space](#)

Lectures will be videotaped and posted on “Phys 596 Fall 2023” Channel on Media Space

<https://courses.physics.illinois.edu/phys596/fa2023/syllabus.htm>

Week	Date	Topics	Lectures	Assignments	Reading	Zoom/Video
1	Aug 25	<p>Introduction and course expectations</p> <p>Finding an advisor and tips for succeeding in grad school</p>	<p>slides</p> <p>slides</p>	<p>Major Group Assignment Create and present a group Journal Club PowerPoint talk + individual referee reports</p>		<p>Zoom Link</p> <p>Video Recording</p>
2	Sep 1	<p>Research in Theoretical Condensed Matter Physics and Grad School Advice - Prof. Taylor Hughes</p> <p>Creating/giving a journal club presentation</p> <p>How to read scientific papers</p>	<p>slides</p> <p>slides</p>			<p>Zoom Link</p> <p>Video Recording</p>
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Physics 596 Fall 2023 Media Space Channel

[Phys 596 Fall 2023 Media Space Channel](#)

media space
Illinois

Physics 596 Fall 2023

Physics 596 Fall 2023

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0 Media

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Our agenda

Physics 596 - Course Syllabus - Fall 2023

(Syllabus is subject to change!)

[Physics 596 Fall 2023 Channel on Media Space](#)

Zoom links to the lectures can be found here for students attending remotely

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Our agenda

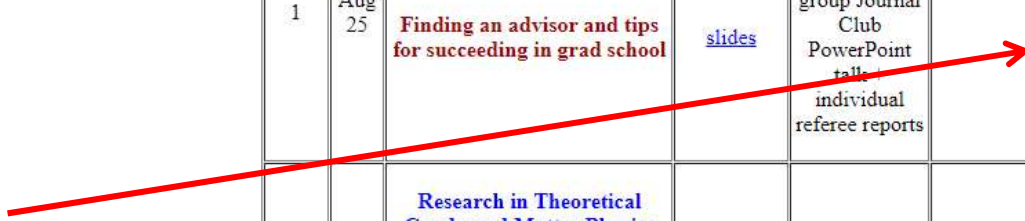
Physics 596 - Course Syllabus - Fall 2023

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Links to lecture videotapes on the Phys 596 Media Space channel can be accessed here



Our agenda


Physics 596 - Course Syllabus - Fall 2023

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<https://courses.physics.illinois.edu/phys596/fa2023/syllabus.htm>

Research lectures
by faculty looking
for students
(in blue)



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Our agenda

Physics 596 - Course Syllabus - Fall 2023

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<https://courses.physics.illinois.edu/phys596/fa2023/syllabus.htm>

Professional development activities and lectures (in brown)

Week	Date	Topics	Lectures	Assignments	Reading	Zoom/Video
1	Aug 25	<p>Introduction and course expectations</p> <p>Finding an advisor and tips for succeeding in grad school</p>	<p>slides</p> <p>slides</p>	<p>Major Group Assignment Create and present a group Journal Club PowerPoint talk + individual referee reports</p>		<p>Zoom Link</p> <p>Video Recording</p>
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Our agenda (cont.)

<https://courses.physics.illinois.edu/phys596/fa2023/syllabus.htm>

4	Sep 15	<p>Research in Theoretical and Computational Biological and Nanoscale Physics - Prof. Alek Aksimentiev</p> <p>Research in Theoretical and Computational Biological Physics - Prof. Jun Song</p> <p>Research in Experimental Condensed Matter Physics - Prof. Pengjie Wang</p>				<p>Zoom Link</p> <p>Video Recording</p>
5	Sep 22	<p>Research in Experimental Condensed Matter Physics - Prof. Peter Abbamonte</p> <p>Research in Observational Cosmology and Particle Astrophysics - Prof. Jeff Filippini</p> <p>Research in Experimental and Theoretical Biological Physics - Prof. Ido Golding</p>				<p>Zoom Link</p> <p>Video Recording</p>
6	Sep 29	<p>Research in Experimental Biological Physics - Prof. Paul Selvin</p> <p>Research Theoretical and Computational Quantum Dynamics of Condensed Phases - Prof. Nancy Makri</p> <p>Research in Experimental Condensed Matter Physics - Prof. Fahad Mahmood</p>				<p>Zoom Link</p> <p>Video Recording</p>

Our agenda (cont.)

Scientific ethics training required by OVCR Office

7	Oct 6	<p>Research in Experimental High Energy Physics - Prof. Ben Hooberman</p> <p>Research in Experimental Particle Physics and Quantum Sensing - Prof. Doug Beck</p> <p>How to write a scientific abstract</p>	slides	<p>mini-Assignment #2</p> <p>Write an abstract for selected paper</p>	Abstract Papers	<p>Zoom Link</p> <p>Video Recording</p>
8	Oct 13	<p>Ethics in research</p>	slides		Ethics Case Studies	<p>Zoom Link</p> <p>Video Recording</p>
9	Oct 20	<p>Research in Computational Condensed Matter Physics - Prof. Lucas Wagner</p> <p>Research in Theoretical High Energy Physics and Astrophysics - Prof. Jessie Shelton</p> <p>Research in Experimental Nuclear Physics - Prof. Chen-Yu Liu</p>				<p>Zoom Link</p> <p>Video Recording</p>
10	Oct 27	<p>Research in Quantum Photonics and Optomechanics - Prof. Kejie Fang</p> <p>Estimation in Research</p>	slides		<p>Fermi Problems</p> <p>In-Class Activity</p>	<p>Zoom Link</p> <p>Video Recording</p>

Our agenda (cont.)

Team journal
club
presentations



11	Nov 3	Research in Theoretical Condensed Matter Physics - Prof. Jong Yeon Lee Research in Computational and Theoretical Condensed Matter Physics - Prof. Karin Dahmen				Zoom Link Video Recording
12	Nov 10	Research in Experimental Biological Physics - Prof. Yann Chemla Tips for Effective Scientific Communication	slides			Zoom Link Video Recording
13	Nov 17	Journal club presentations:	Oral Presentation Evaluation Form			Zoom Link Video Recording
	Nov 24	Thanksgiving Break				
14	Dec 1	Journal club presentations:	Oral Presentation Evaluation Form			Zoom Link Video Recording