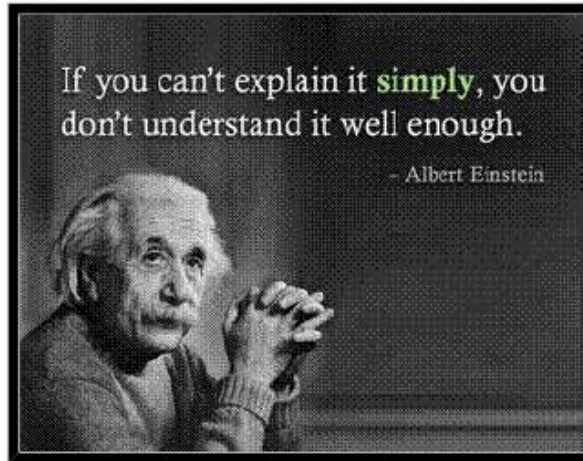


Physics 596 Course Introduction, Fall '22



Physics 596

Graduate Physics Orientation

Fall 2022

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/fa2022/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

1. Help finding a research group

- Faculty research presentations throughout the semester

Scheduled so far:

Astrophysics/Gravitation/Cosmology: Charles Gammie, Nico Yunes

Biological physics computation and experiment: Alek Aksimentiev, Yann Chemla, Ido Golding, Sangjin Kim, Zan Luthey-Schulten, Paul Selvin

Condensed matter experiment: Peter Abbamonte, Fahad Mahmood, Yingjie Zhang

Condensed matter computation/theory: Taylor Hughes, Nancy Makri, Philip Phillips, Antonia Statt, Lucas Wagner

Intermediate Energy/Nuclear Physics: Anne Sickles

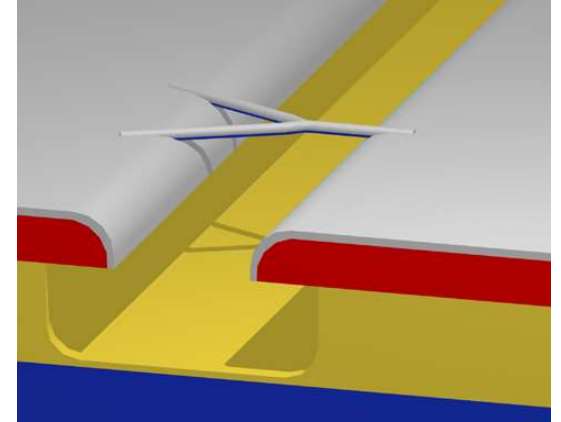
Elements of Phys 596

2. Skills essential to researchers

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

4. Experience with collaborations: working in teams

<https://courses.physics.illinois.edu/phys596/fa2022/courseinfo.html>

Team	Last Name	First Name	Illinois E-mail
1	Aakash		aakash6@illinois.edu
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10	Rodriguez Beck	Kort Gerardo	kgr6@illinois.edu
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	Zhang	Hao	haoz17@illinois.edu
Zine	Katherine	Jack	kzine2@illinois.edu
			jack10@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!!

Current Campus COVID-19 Policy

- Masks are ***optional*** for students attending class in person
- We'd like you to attend class in person, if possible, but please don't come to class if you're not feeling well! You can attend class remotely!

Our agenda

Physics 596 - Course Syllabus - Fall 2022

(Syllabus is subject to change!)

[Physics 596 Fall 2022 Channel on Media Space](#)

Lectures will be videotaped and posted on "Phys 596 Fall 2022" Channel on Media Space

<https://courses.physics.illinois.edu/phys596/fa2022/syllabus.htm>

Week	Date	Topics	Lectures	Assignments	Reading	Zoom/Video
1	Aug 26	<p>Introduction and course expectations</p> <p>Finding an advisor and tips for succeeding in grad school</p> <p>Panel discussion with Physics grad students in the Graduate Peer Mentoring (GPM) program</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 2	<p>Research in Theoretical Condensed Matter Physics - 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 2022 Media Space Channel

[Phys 596 Fall 2022 Media Space Channel](#)

The screenshot shows the Media Space Illinois website interface. At the top, there is a red navigation bar with the logo 'media space | Illinois' and a search bar. Below the navigation bar, there is a menu with items: Home, Public Affairs, About Illinois, Colleges, Research, Student Life, Campus Units, and Channels. The main content area is dark grey and features the title 'Physics 596 Fall 2022' with a 'Read more' link and a button labeled 'PHYS 596 A 2022 Fall CRN51381'. Below the main content, there is a light grey bar with channel statistics: 'Private | 0 Media | 3 Members | 1 Subscribers | Managers'. The '1 Subscribers' text is circled in blue, and a blue arrow points from the green text 'Bookmark and subscribe to get posting notifications' to this circled text. To the right of the statistics is a teal 'Subscribe' button. Below the statistics bar, there is a search bar labeled 'Search this channel' and a 'Filters' button. At the bottom, there are icons for grid, list, and menu views, and a teal '+ Add to Channel' button. The search bar shows 'Search In: All Fields' and 'Sort By: Creation Date - Descending'.

Bookmark and
subscribe to get
posting
notifications

Our agenda

Physics 596 - Course Syllabus - Fall 2022

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

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

Our agenda

<https://courses.physics.illinois.edu/phys596/fa2022/syllabus.htm>

Research lectures
by faculty looking
for students
(in blue)

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Our agenda

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Professional development activities and lectures (in brown)

Week	Date	Topics	Lectures	Assignments	Reading	Zoom/Video
1	Aug 26	<p>Introduction and course expectations</p> <p>Finding an advisor and tips for succeeding in grad school</p> <p>Panel discussion with Physics grad students in the Graduate Peer Mentoring (GPM) program</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.)

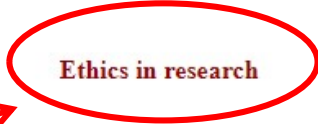
<https://courses.physics.illinois.edu/phys596/fa2022/syllabus.htm>

4	Sep 16	<p>Research in Computational Biological Physics - Prof. Alek Aksimentiev</p> <p>Research in Experimental Condensed Matter Physics - Prof. Fahad Mahmood</p> <p>Research in Computational Materials Science - Prof. Antonia Statt</p>				<p>Zoom Link</p> <p>Video Recording</p>
5	Sep 23	<p>Research in Computational Biological Physics - Prof. Zan Luthey-Schulten</p> <p>Research in Theoretical Astrophysics - Prof. Charles Gammie</p> <p>Publication process; How to write a referee report</p>	slides			<p>Zoom Link</p> <p>Video Recording</p>
6	Sep 30	<p>Research in Theoretical Astrophysics/Relativity/Cosmology - Prof. Nico Yunes</p> <p>Research in Experimental Heavy Ion Physics - Prof. Anne Sickles</p> <p>Research in Experimental and Computational Biological Physics - Prof. Sangjin Kim</p>				<p>Zoom Link</p> <p>Video Recording</p>

Our agenda (cont.)

7	Oct 7	<p>Research in Experimental Biological Physics - Prof. Ido Golding</p> <p>Research in Theoretical Condensed Matter Physics - Prof. Philip Phillips</p> <p>How to write a scientific abstract</p>	slides	<p>mini-Assignment #2 Write an abstract for selected paper</p>	Abstract Papers	<p>Zoom Link</p> <p>Video Recording</p>
8	Oct 14	<p>Ethics in research</p>	slides		Ethics Case Studies	<p>Zoom Link</p> <p>Video Recording</p>
9	Oct 21	<p>Research in Computational Biological Physics - Prof. Nancy Makri</p> <p>Research Opportunities with the Digi-MAT Program - Prof. Lucas Wagner</p> <p>Tips for Effective Scientific Communication</p>	slides			<p>Zoom Link</p> <p>Video Recording</p>
10	Oct 28	<p>Estimation in Research</p>	slides		<p>Fermi Problems</p> <p>In-Class Activity</p>	<p>Zoom Link</p> <p>Video Recording</p>

Scientific ethics training required by OVCR Office



Our agenda (cont.)

Team journal club presentations



11	Nov 4	Research in Experimental Materials Science - Prof. Yingjie Zhang Research in Experimental Biological Physics - Prof. Yann Chemla Research Talk -				Zoom Link Video Recording
12	Nov 11	Journal club presentations:	Scientific Poster Example/Template Oral Presentation Evaluation Form			Zoom Link Video Recording
13	Nov 18	Journal club presentations:	Oral Presentation Evaluation Form			Zoom Link Video Recording
	Nov 25	Thanksgiving Break				
14	Dec 2	Journal club presentations:	Oral Presentation Evaluation Form			Zoom Link Video Recording