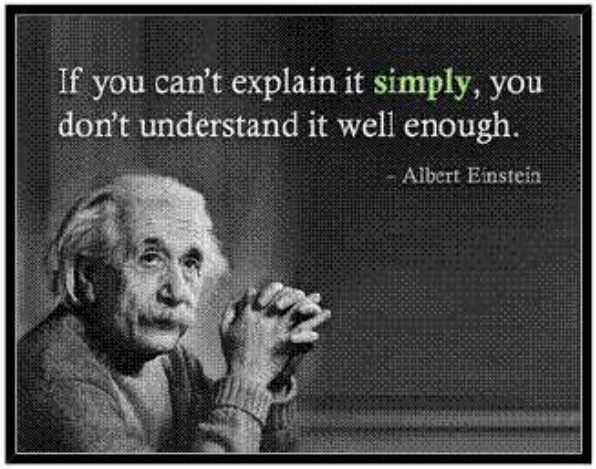
Physics 596 Course Introduction, Fall '21



Physics 596

Graduate Physics Orientation

Fall 2021

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/fa2021/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: Jeff Filippini, Helvi Witek, Nico Yunes

Biological physics: Alek Aksimentiev, Martin Gruebele, Paul Selvin

Condensed matter experiment:

Condensed matter computation/theory: Karin Dahmen, Taylor Hughes, Nancy Makri

Quantum Information/AMO:

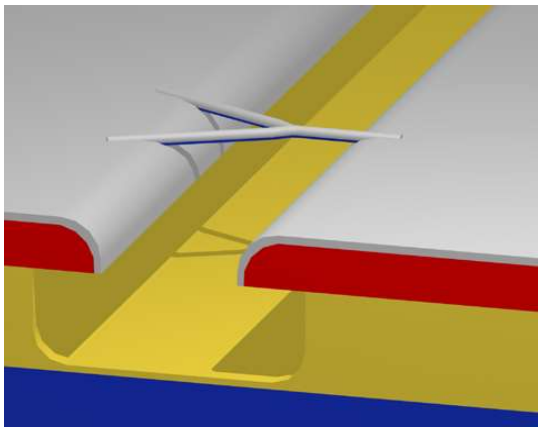
High Energy:

Intermediate energy/Nuclear Physics: Anne Sickles

Physics Education Research:

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

$\Rightarrow$ we'll emphasize this in this class

Elements of Phys 596

4. Experience with collaborations: working in teams

Team	Last Name	First Name	Illinois E-mail
1	Alenezi	Ahmed	alenezi6@illinois.edu
	Arredondo	Jose Nijaid	josena2@illinois.edu
	Balaji	Praveen	pbalaji4@illinois.edu
	Brookhouse	Cole	coleb2@illinois.edu
2	Chen	Jia Pern "Neville"	jpchen4@illinois.edu
	Conde Ocazionez	Carlos	carlosc7@illinois.edu
	Cruz Camacho	Nikolas	cnc6@illinois.edu
	Day	Hannah	hjday2@illinois.edu
	Dong	Haiyue	haiyued2@illinois.edu
3	Gatto Lamas	Amanda	amandag6@illinois.edu
	Gibbs	Sho	shog2@illinois.edu
	Gulian	Ellen	egulian@illinois.edu
	Hagen	Sarah	shagen2@illinois.edu
4	Hu	Xiye "Simon"	xiyehu2@illinois.edu
	Huang	Shangqing (Jason)	sh3@illinois.edu
	Irfan	Abdullah	irfan3@illinois.edu
	Liu	An-Jun (Andrew)	anjunjl2@illinois.edu
5	Born	Susan	susanb2@illinois.edu
	Loehr	Kieran	kloehr@illinois.edu
	Loveridge	Tegan	teganti2@illinois.edu
	Ma	Yuhao "Max"	yuhaom2@illinois.edu
	Maytin	Andrew	amaytin@illinois.edu
6	Merriman	Brett	brettm3@illinois.edu
	Nguyen	Nguyen	ntn2@illinois.edu
	Nussbaum	Benjamin	bn9@illinois.edu
	Ortiz	Kelsey	kcortiz2@illinois.edu
7	Pardoe	Frederick	fpardoe2@illinois.edu
	Patwardhan	Ameya	ameyaap2@illinois.edu
	Prabhu	Ashwith Varadaraj	aprabhu4@illinois.edu
	Purmessur	Cheeranjeev	cp45@illinois.edu
8	Ramsey	Liam	lramsey2@illinois.edu
	Rani	Sonia	soniar2@illinois.edu
	Razavimaleki	Vesal	vesalr2@illinois.edu
	Richards	Chloe	chloer3@illinois.edu
9	Rigal	Fernando	frigal2@illinois.edu
	Wilson	Tatum	tatumzw2@illinois.edu
	Wolanski	Evangeline	ew11@illinois.edu
	Yao	Nanxi	nanxiy2@illinois.edu

https://courses.physics.illinois.edu/phys596/fa2021/courseinfo.html

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!!

COVID-19 Policy

- Students attending class in person are required to wear a mask
- Please don’t come to class if you’re not feeling well! You can attend class remotely!

Our agenda

Lectures will be videotaped and posted on “Phys 596 Fall 2021” Channel on Media Space

https://courses.physics.illinois.edu/phys596/fa2021/syllabus.htm

Physics 596 - Course Syllabus - Fall 2021

(Syllabus is subject to change!)

Physics 596 Fall 2021 Channel on Media Space

Week	Date	Topics	Lectures	Assignments	Reading	Zoom/Video
1	Aug 27	Introduction and course expectations Finding an advisor and tips for succeeding in grad school	slides slides	Major Group Assignment Create and present a group Journal Club PowerPoint talk + individual referee reports		Zoom Link Video Recording
2	Sep 3	Research in Theoretical Condensed Matter - Prof. Taylor Hughes Creating/giving a journal club presentation How to read scientific papers	slides slides			Zoom Link Video Recording
3	Sep 10	Research in Experimental Biological Physics - Paul Selvin Research in Theoretical Astrophysics/Relativity/Cosmology - Prof. Nico Yunes How to use on-line scientific resources Using Scopus	slides slides	mini-Assignment #1 On-line resource activities	Resource Activities Prof. Casey Miller's (RIT) advice on using scientific resources	Zoom Link Video Recording

Physics 596 Fall 2021 Media Space Channel

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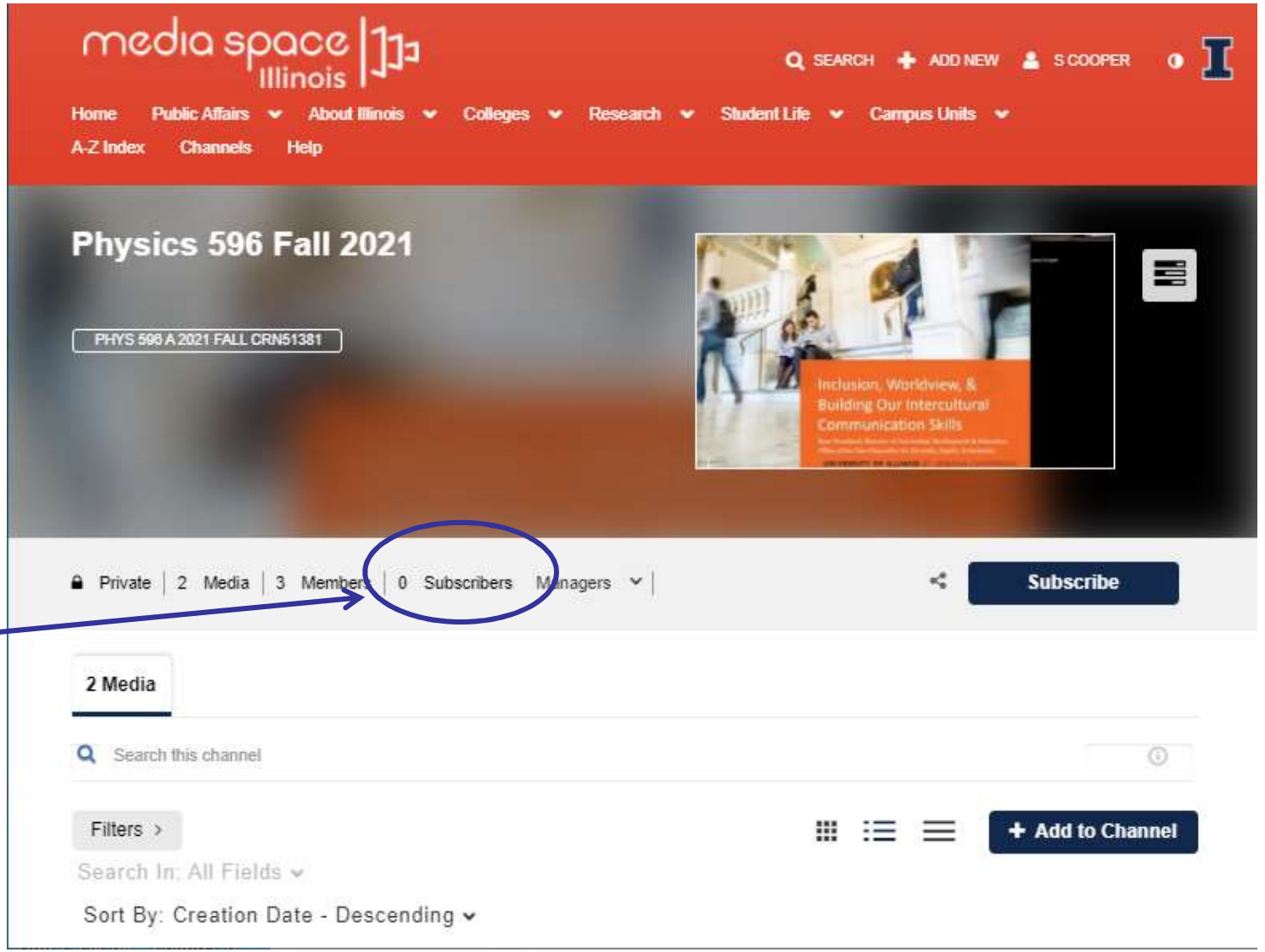
Bookmark and subscribe to get posting notifications



Our agenda

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

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Our agenda (cont.)

3	Sep 10	**Research in Experimental Biological Physics - Paul Selvin** **Research in Theoretical Astrophysics/Relativity/Cosmology - Prof. Nico Yunes** **How to use on-line scientific resources** **Using Scopus**	slides slides	mini-Assignment #1 On-line resource activities	Resource Activities Prof. Casey Miller's (RIT) advice on using scientific resources	Zoom Link Video Recording
4	Sep 17	**Research in Computational Biological Physics - Prof. Alek Aksimentiev** **Research in Experimental Medium Energy Physics - Prof. Anne Sickles** **Research in Theoretical Condensed Matter Physics - Prof. Karin Dahmen**				Zoom Link Video Recording
5	Sep 24	**Research in Computational Biological Physics - Prof. Nancy Makri** **Research in Experimental Astrophysics/Cosmology - Prof. Jeff Filippini** **Publication process; How to write a referee report**	slides			Zoom Link Video Recording

Our agenda (cont.)

Scientific ethics training required by OVCR Office

6	Oct 1	**Research in Experimental and Theoretical Biological Physics - Prof. Martin Gruebele** **Research in Theoretical Astrophysics, Gravitation, and Cosmology - Prof. Helvi Witek** **Research -**				Zoom Link Video Recording
7	Oct 8	**Research -** **Research -** **How to write a scientific abstract**	slides	mini-Assignment #2 Write an abstract for selected paper	Abstract Papers	Zoom Link Video Recording
8	Oct 15	**Ethics in research**	slides		Ethics Case Studies	Zoom Link Video Recording
9	Oct 22	**Research -** **Research -** **Research -**				Zoom Link Video Recording

Our agenda (cont.)

9	Oct 23	**Physics Education Research - Prof. Eric Kuo** **Research in Experimental High Energy Physics - Prof. Kevin Pitts** **Research in Theoretical and Experimental Acoustics - Prof. Richard Weaver**				Zoom Link Video Recording
10	Oct 30	**Research in Computational Biological Physics- Prof. Jun Song** **Research in Experimental Condensed Matter Physics - Prof. Fahad Mahmood** **Research in Experimental Condensed Matter Physics- Prof. Vidya Madhavan**				Zoom Link Video Recording
11	Nov 6	**Research in Theoretical Molecular and Condensed Matter Physics - Prof. Nancy Makri** **Template for a journal club presentation**				Zoom Link Video Recording

Our agenda (cont.)

Team journal club presentations

12	Nov 12	**Research -** **Research -** **Journal club presentations:**	Scientific Poster Example/Template Oral Presentation Evaluation Form			Zoom Link Video Recording
13	Nov 19	**Journal club presentations:**	Oral Presentation Evaluation Form			Zoom Link Video Recording
	Nov 26	**Thanksgiving Break**				
14	Dec 3	**Journal club presentations:**	Oral Presentation Evaluation Form			Zoom Link Video Recording