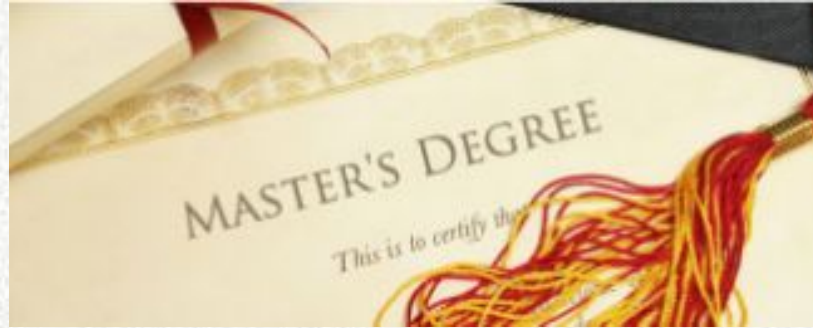


BROWN
Department of Physics

ScM Program Overview

Department of Physics
Brown University
Fall, 2022

Why a master's degree in Physics?



- Learning analytical and problem-solving methods in all subjects of physics
- Exposure to the forefront of physics
- Acquiring skills in independent research
- Preparing for professional careers in physics, science, R&D, education, industry, government...

Target Skills



Curriculum designed to impart skills and competencies required for advancing to PhD study in physics (or related areas) or joining a technical field requiring advanced training in physics

- *Ability to design experiments and/or formulate theoretical concepts based on data*
- *Competency with modeling, both mathematical and computational*
- *Proficiency in communicating physics, both orally and in writing*

Length of ScM Program

- ***Full-time Status***

- Minimum, 2 courses per semester
- Maximum, 4 courses per semester

- ***Duration of Master's Program***

- Default: 4 semesters (2-2-2-2)
- Any variation of sequence needs to be discussed with and approved by Prof Jay Tang, Director of the Master's Program (DMP), **and then** approved by the School of Professional Studies (SPS)



- ***Transition to the PhD program at Brown?***

- Quick answer: No
- An application to the PhD program is required. All internal and external applications are considered equally. The PhD program is very competitive.

Course Requirements



8 credits in graduate level courses

- 4 credits from the 6 core courses:

2010 – Experiments

2040 – Classical II

2030 – Classical I

2140 – Stat Mech

2050 – Quantum I

2060 – Quantum II

- 4 more credits from 2000-level courses

- Up to 2 courses can be from other departments with **PRIOR** approval of DMP (Prof. Tang)

- Up to 2 courses can be research (PHYS 2980/2981)*

- » If a 2nd course is taken in research a Master's thesis is expected

- One advanced undergraduate course, such as Phys1720, may be counted towards ScM requirement with approval by DMP and SPS.

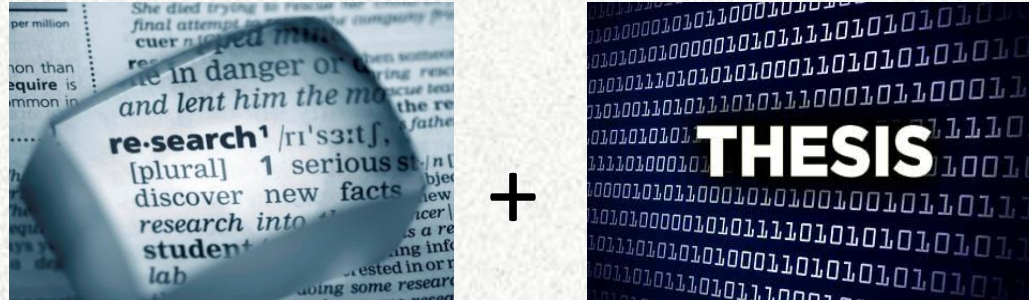
*Research course is registered with faculty members of individual code numbers.

Academic Standing



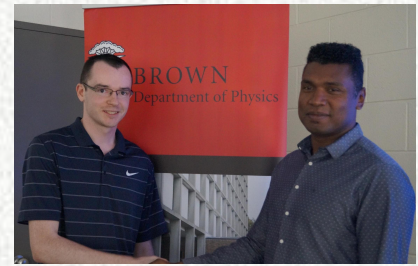
- *Good standing*: passing grades on all courses taken (ABC or S)
- *Warning*: one NC grade
- *Advised to leave ScM program*: 2 NC grades (Director's discretion)
- *Termination*: 3 NC grades

Research and Master's Thesis

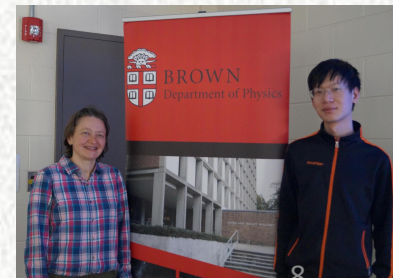
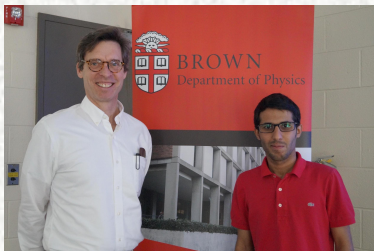


- **Up to 2 credits, spread over 2 semesters**
 - register for PHYS2980 and then PHYS2981
- **3 step process:**
 1. Find a faculty advisor in order to start research (explore-meeting-connect)
 2. Rigorous research effort while taking Phys2980/2981
 - possible to start research during winter or summer break
 3. Write an ScM thesis while taking 2981 (last semester)

ScM Research Presentations



- When: early in May
- Who:
 - Strongly encouraged for every ScM student submitting a thesis.
 - Optional for any ScM students who want to present their research from the academic year.
- Format:
 - Each student will present for 10 minutes followed by a 2 min Q&A - this is a format commonly used at APS conferences; Thus, it provides professional training.



Physics ScM Student Handbook

- Information about degree requirements,
- academic standing, thesis research, advising, and more!
- [https://www.brown.edu/academics/physics/sites/physics/files/ScM%20Handbook %20August_2022.pdf](https://www.brown.edu/academics/physics/sites/physics/files/ScM%20Handbook%20August_2022.pdf)

Academic Support



**Just
Ask!**



- Director of Master's Program: Prof. Jay Tang
- ScM Advisors: Profs Volovich (Chair), Landsberg, Ling, Lowe, Plumb, Pober & Stein
- Department Chair: Prof. Meenakshi Narain
- Teaching faculty (29 Physics, 8 Engineering/Chemistry)
- Fellow Graduate Students
- Departmental Staff:
 - TBD, ScM Program Coordinator,
 - Mr. Bilderback, Student coordinator (cover)
 - Mr. Wilkie, Department Manager

Roles of ScM Coordinator (Staff)

- Office Open to Students (Barus & Holley 4th floor)
- Manage program logistics
 - Coordinates open house, orientation, advising meetings, commencement & other departmental events
- Handles administrative aspects of program
 - Processes student records and updates
 - Prepares letters of support for OISSS, I-20 extensions, etc. for international students
- Assists & supports students outside of academics and connects students to resources as needed

Roles of Director of Master's Program (DMP)

- Admit & Recruit ScM students
- Interpret and Explain Program Requirements
- Seek departmental approval for program policies and updates
- Manage program logistics
 - In charge of open house, orientation, commencement & other program events
 - Consult and approve course and program deviations
 - Advising (coordinating with ScM advisors)
- Handles administrative aspects of program
 - Monitor student records and updates
 - Provide letters of support on behalf of ScM program

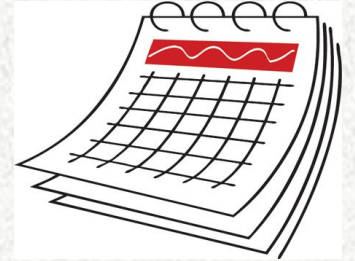
Roles of ScM Advisors

- Familiar with Program Requirements
- Advising students individually and/or in small groups
 - Explain scope and difficulty levels of graduate physics courses
 - Introduce areas of physics research
 - Advise and facilitate involvement of students to research
- Ensuring students success and professional growth
 - Monitor advisees' records and updates
 - Alert DMP and/or Staff of issues that need attention

Roles of ScM Students

- Familiarize with Program Requirements
- Intense effort on physics course study
- Proactive involvement in research and professional development
- Understanding who is responsible for what aspects of the program in order to effectively and efficiently seek help
- Seek help from various sources available
- Help each other by sharing experience, knowledge & ideas
- Stay connected with faculty, fellow students and the department for years to come

Academic Calendar 2022-23



- Registration 4 pm, Fri, Sept 2 – 11:59 pm, Tues, Sep 6
- Wed, Sept. 7 Classes begin
- Tues, Sept. 20 (5 pm EDT) Last day to add/drop/change a course without fee/override
- Tues, Oct. 4 (5 pm EDT) Last day to add/drop/change a course (with a fee), or to change grade options
- Mon, Nov. 7 (noon) – Tues, Nov 15 (5pm) Pre-registration period for spring semester (Faculty Advising)
- Tues, Dec. 13 – Wed, Dec 21 Final Exam Period
 - <https://www.brown.edu/about/administration/registrar/academic-calendar>

ScM Student Workspace

- ScM students have access to desk space in Barus & Holley, 1st floor, Room 120
- Use Code 1815 for the digital lock
- First come, first serve (24 desks)
- Interact and collaborate with your classmates and cohort
- Do not leave personal belongings in desk space



Other Resources

There are many, many other resources available to you – they are here for you – use them!!

Some Examples:

- **Department** – DMP, Chair, Faculty, Staff
- **SPS** (School of Professional Studies) – program management, coordination with university register, and connection to university resources
- **Career Lab** – advising services and extensive programming related to careers
- **SAS** (Student Accessibility Services) - coordinates and facilitates services for students with physical, psychological, and learning disabilities
- **CAPS** (Counseling and Psychological Services) - free, confidential counseling offered at the Counseling and Psychological Services office in J. Walter Wilson

GRADUATE STUDENT RESOURCES
WHERE TO START?

Academics

QUESTIONS ABOUT . . .

Your academic progress and/or misadventures?
Contact your Department/Division or Program, Director of Graduate Study, Advisors or Chair

Your academic concerns, advocacy help or fellowships?
Talk with a Graduate School dean. See the website for contact details.

Your academic funding?
See the Graduate School website, speak with a dean or contact the Office of Financial Aid.

Diversity and inclusion, campus climate, mentoring or avenues for recourse?
Contact the Associate Dean of Diversity Initiatives or the Vice President of Academic Development, Diversity and Inclusion.

Your professional development?
See the professional development webpage and contact the Associate Dean of Student Development.

ADDITIONAL RESOURCES:

- CareerLAB
- Sheridan Center for Teaching and Learning
- Graduate School Associate Dean of Student Support
- Versatile PhD

Health & Wellness

QUESTIONS ABOUT . . .

Making an appointment or seeking confidential advice on mental and physical health or wellness?
Health Services
Appointments: 401-863-3953
Advice: 401-863-1330 (24/7)

Counseling and Psychological Services (CAPS)
Appointments Mon-Sat and 24/7 crisis phone: 401-863-3476
Saturday hours for graduate students

Seeking confidential counsel or support?
Office of the Chaplains and Religious Life
Multifaith team offers care both to those spiritually-identified and those who are not religious.
401-863-2344

Seeking confidential help for sexual violence or abuse?
SHARE Advocates (Sexual Harassment & Assault Resources & Education)
share@brown.edu

OTHER RESOURCES:

- Sexual Assault Response line 401-863-6000
- Graduate School Deputy Title IX Coordinator 401-863-1892

Health or wellness resources or a consultation?
BWell Health Promotion
Phone: 401-863-2794

Fitness and recreation?
Athletics and Physical Education
Phone: 401-863-5100

Student Experience

QUESTIONS ABOUT . . .

A personal, medical or family matter?
Talk with Deans in the Office of Student Support Services
Student Support Services: 401-863-3145 or OS@brown.edu

Make an appointment with the Graduate School Associate Dean of Student Support to discuss concerns and academic implications
Marta_Suarez@brown.edu

For evening or weekend emergencies: Call Public Safety (401-863-3322) and ask to speak to the Administrator on Call

Issues arising from life at Brown?
Have an off-the-record conversation with the Ombuds Office
401-863-6145
ombuds@brown.edu

Disability services or support for medical conditions or temporary injuries?
Speak with Student and Employee Accessibility Services (SEAS)
401-863-9588
SEAS@brown.edu

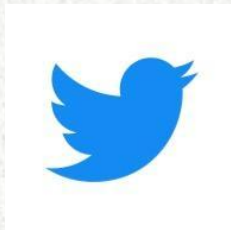
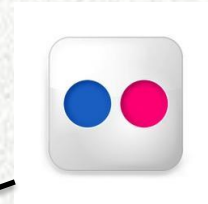
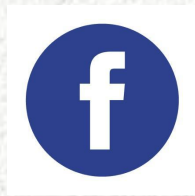
ADDITIONAL RESOURCES:

- Office of International Student and Scholar Services (OISSS)
- International Student and Visitor Experience
- Office of Institutional Diversity & Inclusion
- Brown Center for Students of Color
- LGBTQ+ Center
- Sarah Doyle Women's Center and Commissioning Programs
- First-Generation College and Low-Income Student Center

For detailed resources and contact information:
brown.edu/go/gradresources

Communication

The department and university websites are full of useful information, be sure to use them as a resource. Emails from the department and our social media will keep you informed!

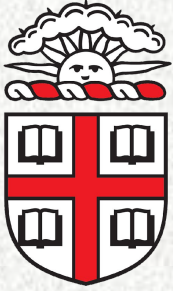


*** Important - Students are expected to check and respond emails daily, in order not to miss any essential and time-sensitive information.**

****Important - be sure to let the ScM coordinator know any accomplishments or information that should be in your file.**

THANK YOU!

- Questions?



BROWN
Department of Physics

ScM Course Selections

Department of Physics
Brown University
2022-2023

Course Requirements



8 credits in graduate level courses

- 4 credits from the 6 core courses:

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*Research course is registered with faculty members of individual code numbers.

Why am I taking only 2 courses?

- Graduate physics courses are challenging; they demand heavy amount of self-study & homework.
- We want ScM students to take time getting familiar with university and departmental learning environment (lots of resources beyond classes).
- We want students to get involved in research, crucial for getting into PhD programs and beyond.

Which 2 courses should I register for?

- Most 1st year ScM student should register for
 - Phys2030, Classical Theoretical Physics I
 - Phys2050, Quantum Mechanics I
- Experimental leaning students can also take
 - Phys2010, Techniques in Experimental Physics
- A small number of students might find Phys2030 and Phys2050 too difficult, they maybe advised to take
 - Phys1720 Mathematical Physics*

* This must be approved by the DMP and deemed crucial for the students' success in most graduate level physics courses

Semester I, Fall 2022

2010	Techniques in Experimental Physics	Wed 3-5:30 PM	Sara Muller
2020	Mathematical Methods for Eng/Phys	TuTh 10:30-11:50 AM	J. Michael Kosterlitz
2030	Classical Theoretical Physics I	TuTh 9:00–10:20 AM	Antal Jevicki
2050	Quantum Mechanics I	MW 8:30-9:50 AM	Vesna Mitrovic
2070	Advanced Quantum Mechanics	MWF 11:00-11:50 AM	Stephon Alexander
2320	Quantum Theory of Fields II	TuTh 1:00-2:30 PM	Anastasia Volovich
2410	Solid State Physics I	MWF 1:00-1:50 PM	Jia (Leo) Li
2470	Advanced Statistical Mechanics	TuTh 10:30-11:50 AM	J. Brad Marston
2630	Biological Physics	TuTh 2:30-3:50 PM	Jay Tang
1720*	Methods of Mathematical Physics	TuTh 1-2:20 PM	Gabriel Herczeg

* Undergraduate course, **requires** permission from **DMP**

Semester II, Spring 2023

2010	Techniques in Experimental Physics	Sara Muller
2040	Classical Theoretical Physics II	Marcus Spradlin
2060	Quantum Mechanics II	Antal Jevicki
2100	General Relativity and Cosmology	Anastasia Volovich
2140	Statistical Mechanics	Michael Kosterlitz
2170	Introduction to Nuclear and High Energy Physics	Gregory Landsberg
2280	Astrophysics and Cosmology	Jonathan Pober
2300	Quantum Theory of Fields I	Stephon Alexander
2340	Group Theory	David Lowe
2600	Computational Physics	J. Brad Marston

Questions?

- Questions on course selection?
- Questions on how to meet your advisors?
- Questions on anything else?