

Masters & PhD Orientation

Fall 2024

Division of Systems Engineering

Agenda

Welcome

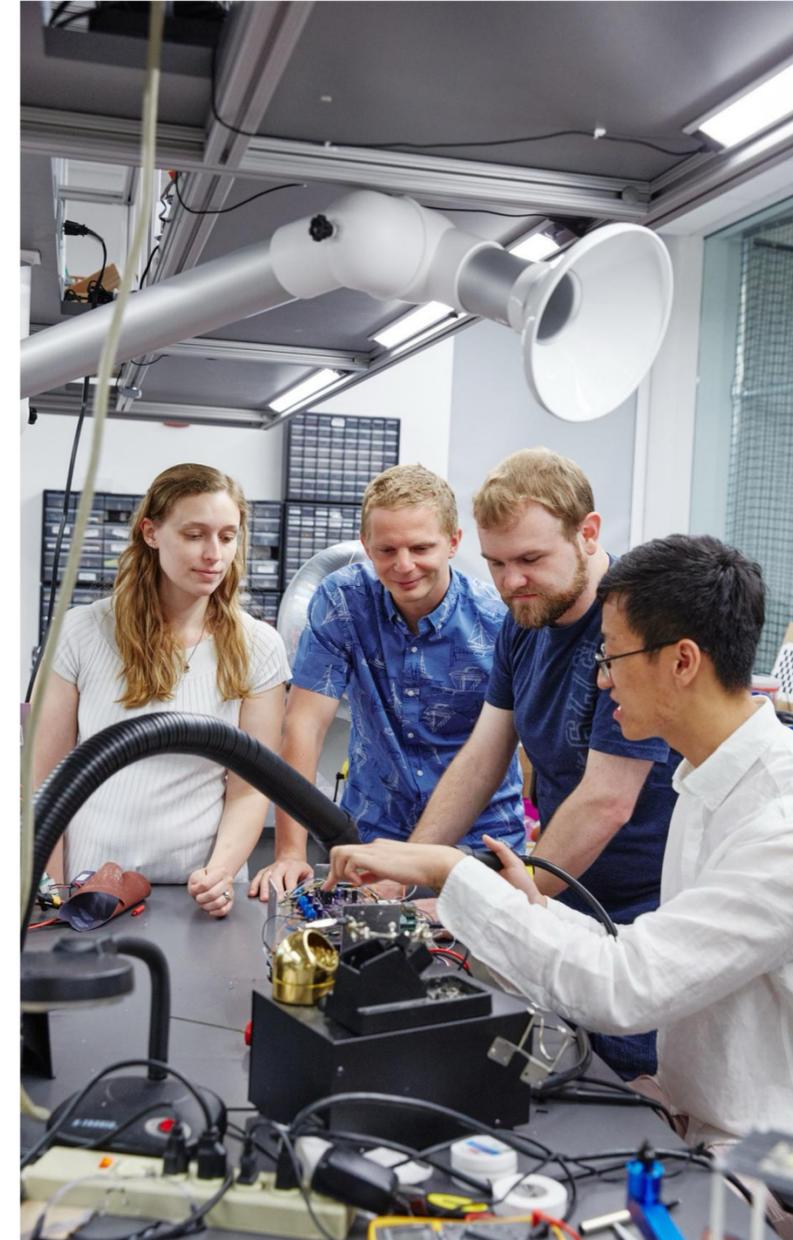
- Professor Christos Cassandras, Division Head
- Professor Hua Wang, Associate Division Head

Program Overview

- Professor Hua Wang, Associate Division Head

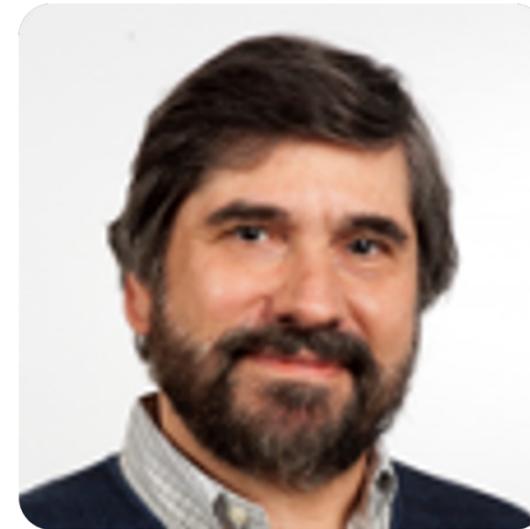
Resources

- Division Team



Meet the SE Team

- **Professor Cassandra**, Division Head
- **Professor Wang**, Associate Division Head
- **Elizabeth Flagg**, Division Director
- **Bulgamaa Batdelger**, Graduate Programs Manager
- **Lea Sabra**, Communications Manager



Christos Cassandra

Division Head



Hua Wang

Associate Division Head



Elizabeth Flagg

Division Director



Bulgamaa Batdelger

Graduate Programs
Manager



Lea Sabra

Communications
Manager

RESOURCES

Fall 2024

Division Team

Guidance & Resources

Guidance

- [Academic Conduct Code](#)
- [Semester Dates \(9/16 ADD, 10/8 DROP w/o W\)](#)
- [College of Engineering Graduate Bulletin](#)
- [SE Masters Handbook](#)
- [SE PhD Handbook](#)

Division/ENG Resources

- 1st Year PhD Desks, 730
Commonwealth Ave, Rm 303
- MSE/SE Conference Room, 15 Saint
Mary's Street Rm 121
- [Division Wellness Room](#), 15 Saint Mary's
Street Rm 119
- [Card Access: Zaius](#)

The screenshot displays the Systems Engineering website interface. At the top, a navigation bar includes 'SYSTEMS ENGINEERING' (highlighted in red) and links for 'Degrees', 'Research', 'News', 'People', 'Open Positions', and 'Resources'. Below the navigation bar, the page content is organized into sections. The first section, 'Guidance', contains a paragraph about the SE PhD Handbook and a link to 'Download SE PhD Handbook'. Below this are three expandable links: '+ PhD Degree Requirements', '+ PhD Program Learning Outcomes', and '+ Policies and Deadlines'. A large image banner follows, featuring a student working at a computer in a lab with red robotic arms, overlaid with the text 'Resources | Students'. Below the banner is another navigation bar identical to the one at the top. The bottom section of the page lists three expandable links: '+ Masters Resources', '+ PhD Resources', and '+ Finance & Operations'.

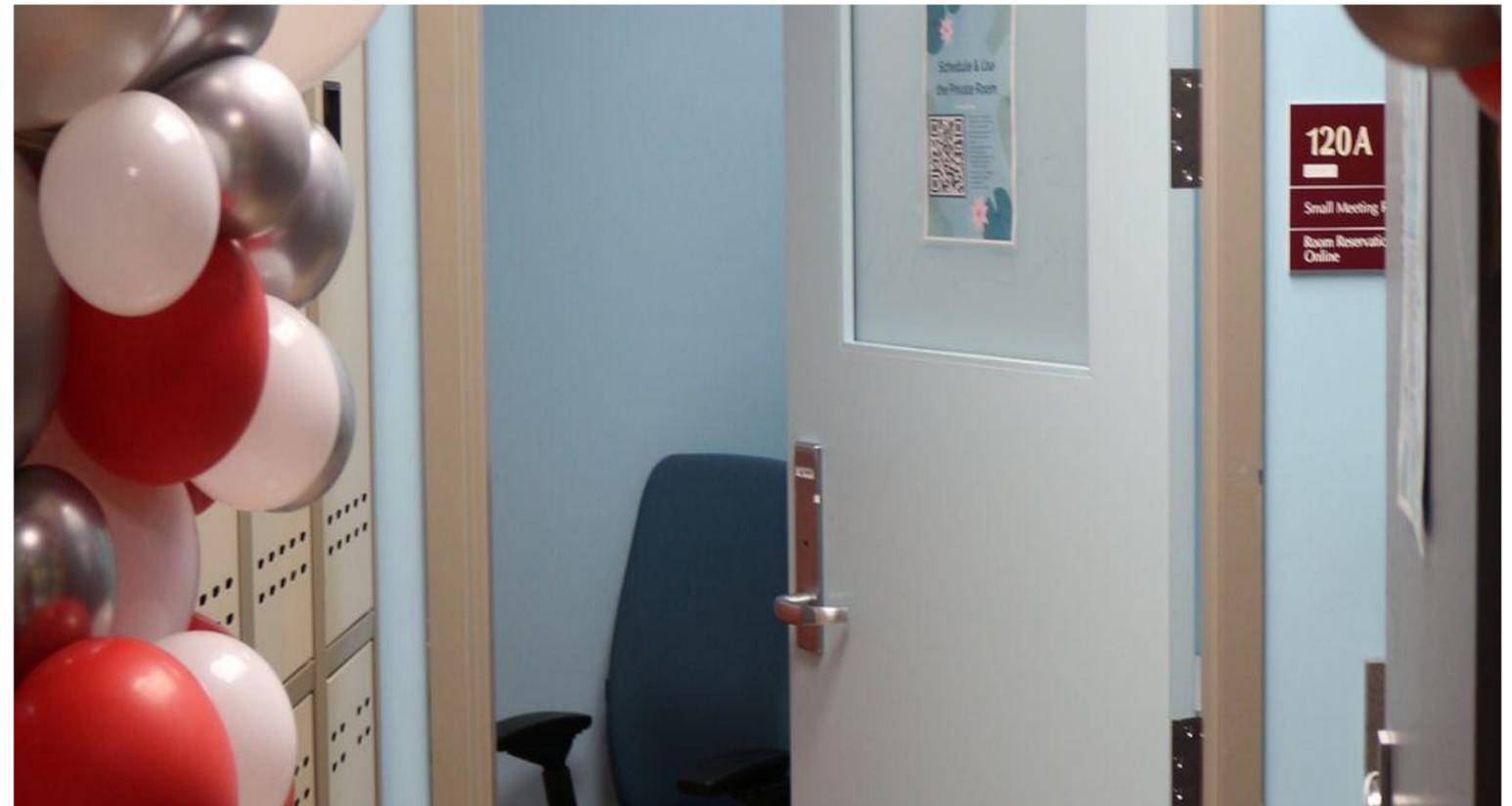
Guidance & Resources

University Resources

- [Newbury Center \(First-Gen\)](#)
- [BU Out List](#) (for LGBTQIA+ faculty, staff, students and BU community)
- [Howard Thurman Center for Common Ground](#)
- [Student Health Services](#)
- [Educational Resource Center](#)

Wellness Room

- Open for telehealth, 2-person meetings, lactation use, etc.
- On Zaius, Request Division Graduate Student Code.



Guidance & Resources

Terrier Card

	Photo Upload Deadline	Terrier Card Ready for Pick Up	Students can pick up card
Tier 1	Friday, August 2 nd	Starting Monday, August 12 th	In GPO
Tier 2	Friday, August 16 th	Starting Wednesday, September 4 th	In GPO
Tier 3	N/A Any upload after August 16 th	After Saturday, September 12 th	Terrier Card Office



Community & Inclusion
Newbury Center

FIRST-GEN GRAD & PROFESSIONAL ORIENTATION

VIRTUAL

Wed, Sep 11,
7:00 PM - 8:00 PM
via ZOOM

IN-PERSON

MONDAY, SEP 9,
5:30 PM - 7:00 PM at
SCHOOL OF THEOLOGY B24
("COMMUNITY ROOM")
755 COMMONWEALTH AVE

BUMC

TUESDAY, SEP 10, 5:00 - 6:30 PM
AT HIEBERT LOUNGE - INS 1407,
72 EAST CONCORD STREET



FIRSTS



CARD ACCESS Zaius

Zaius Room Access System

version 0.04.0 - logged in as crizk

- Welcome
- Apply for access**
- F.A.Q./Help
- Lost card/Issue code
- My information
- My Requests / Status
- Preferences
- Room access coordinators
- User agreement
- Logoff
- Management
- Inbox
- Rooms & Clearances
- Users

Apply for access

You can use this form to apply for room access to ENG rooms/labs at 44 and 48 Cummington St., 22 Babbitt St./8 St. Mary's St., 15 St. Mary's St. (except Fraunhofer rooms), and

Decide by building code and room number the rooms you need (building codes are in the [FAQ](#)), scroll below to find that building and room number (please read the information at the top of the page) and click "Submit this Request". If you have any problems, try the [FAQ](#). You will also find in the [FAQ](#) and in the list below contact info, if you need further assistance.

Unlike previous systems, you can use a single form to apply for access to any number of rooms (up to 8 at once). Access will also be approved in a piecemeal fashion -- as each system

After you have submitted your request, you can view your current status at any time, which will show all of your requests & access, and their status. See [My Requests / Status](#).

If you do not find the room you need, you are having other problems, or wish to give us feedback on this system, contact by e-mail only, icandino@bu.edu, Ivonne Candino, the C

Important: Do not apply for access to items that you do not need. Frivolous use of this system may be in violation of the University Policy on Computing Ethics. If you have any

Select access needed: Each request will include the appropriate front doors, stairwells and/or elevators: (you can limit the choices by using the keyword/group search features to the right)

15 St. Marys St. Division Staff Only (Flagg, Ritzkowski)

15 St. Marys St. Staff - please check here. You will be given access to: 730 Entrances, stairwells, and 15 St. Marys St. Entrances, EMB118, EMB120, EMB121, EMB121A, EMB122 (24 hrs., 7 days). You will need to be a staff member. If approved, your access would expire on February 28, 2023. Authorized signers for this clearance: [Elizabeth Flagg](#), [Christine Ritzkowski](#). Department room access coordinator: [Elizabeth Flagg](#).

15 St. Mary's St. Faculty Only (Ritzkowski, Tejada, Flagg)

If you are not faculty, do not request this code. You must request the appropriate rooms. 15 St. Marys St. Faculty - please check here. You will be given access to: 730 Entrances, stairwells, 215a, and 15 St. Marys St. Entrances. If approved, your access would expire on August 25, 2021. Authorized signers for this clearance: [Elizabeth Flagg](#), [Christine Ritzkowski](#), [John Tejada](#), [Solern Webberstein](#). Department room access coordinator: [Christine Ritzkowski](#).

Division Graduate Student Code - Division Grad Students Only (Flagg, Ritzkowski)

Systems Division Grad Students- please check here. You will be given access to: 15 St. Mary's St. Entrances, EMB120, EMB 121A, 730 Comm. Ave. Entrances, (24 hrs., 7 Days) (5/21/18 no longer EMB121). If approved, your access would expire on February 28, 2023. Authorized signers for this clearance: [Elizabeth Flagg](#), [Christine Ritzkowski](#). Department room access coordinator: [Elizabeth Flagg](#).

You must state clearly your reason for access - use course or room numbers, names of professors, lab and/or building names, if appropriate. If you use this space for a room not listed above:

To submit different comments with different requests, just submit this form multiple times.

Group Affiliations

- MSE GSA (MSE Graduate Student Association)
- SAGE (Student Association of Graduate Engineers)
- GWISE (Graduate Women in Science and Engineering)
- oSTEM (Out in STEM)
- NSBE (National Society of Black Engineers)
- SHPE (Society of Hispanic Professional Engineers)

SE T-Shirt

- PICK YOURS UP
- 15 Saint Mary's Street, Rm 117
While supplies last.



Graduate Programs

Fall 2024

Professor Hua Wang

College of Engineering
Division of Systems Engineering



SE Points of Contact

Academic Issues

- Academic Advisor
- Graduate Programs Manager
- Division Director
- Associate Division Head

Non-Academic Issues

- Graduate Programs Manager
- Division Director

Research Areas

- ✓ Automation, Robotics & Control

- ✓ Communications & Networking

- ✓ Computational Biology

- ✓ Informational Sciences

- ✓ Production, Services & Energy
Systems

Research Funding

\$102M

FY24 Research Awards
NSF, NIH, DOD, DOE,
Non-Profit & Industry

\$8.8M

BU RASTIC
New robotics lab focusing on
graduate education at the master's
degree level.

Interdisciplinary Faculty

COLLEGE OF ENGINEERING

Biomedical Engineering

Mechanical Engineering

Electrical Engineering

Materials Science & Engineering

QUESTROM SCHOOL OF BUSINESS

Operations & Technology Management

SCHOOL OF MEDICINE

Division of Computational Biomedicine

COLLEGE OF ARTS AND SCIENCE

Computer Science

Earth & Environment

Mathematics & Statistics

CISE

The BU Center for Information and Systems Engineering (CISE) collaborates on research pursued by SE faculty and students. CISE is a catalyst for interdisciplinary research involving members of SE and other departments and programs across campus.

- 31 professors associated with both SE and CISE
- 6 SE Professors received CISE seed grants.
- 14 students were jointly sponsored to attend the Grace Hopper Celebration.
- 25 events were organized by CISE for the joint community.
- CISE earned \$16 million in annual research expenditures in 2022-2023.



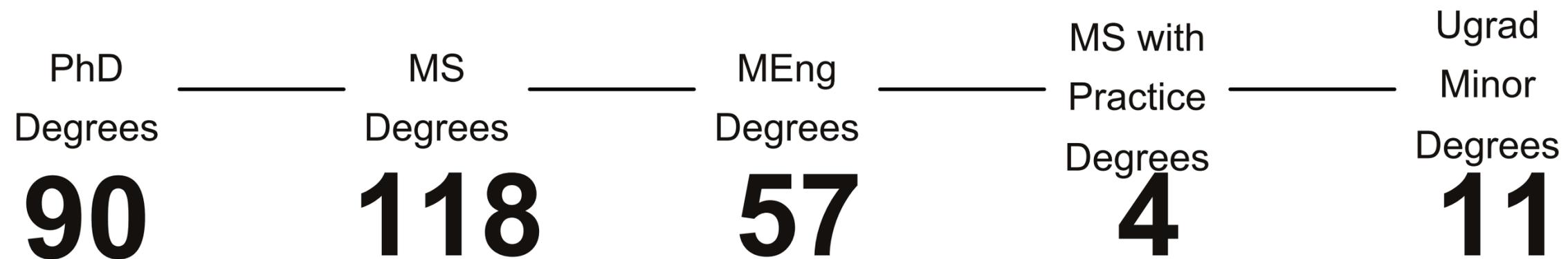
Graduate Programs

PHD

Post-bachelors, Post-masters

MASTERS

Master of Science, Master of Engineering, with Practice



MS REQUIREMENTS

32 CR

- 500-level or higher
- At least two 700-level or higher courses
- Cumulative GPA of 3.00 required to graduate

Non-Thesis

- 3 Core Courses
- 2 Concentration Courses
- 4-8 Elective credits
- 4-8 Practicum credits

Thesis

- 3 Core Courses
- 2 Concentration Courses
- 4-8 Elective credits
- 4-8 Thesis credits

MEng REQUIREMENTS

32 CR

- 500-level or higher
- At least two advanced technical electives at 500-level or higher
- Cumulative GPA of 3.00 required to graduate
- 2 Core Courses
- 2 Concentration Courses
- 2-3 Elective Courses
- 1-2 Practicum Courses

Masters Core Options



MS 1 course from each area



MEng 1 course from each of 2 areas



- SE 501 Dynamic Systems Theory OR SE 710 Dynamic Programming and Stochastic Control
- SE 524 Optimization Theory and Methods
- SE 714 Advanced Stochastic Modeling and Simulation OR EC 505 Stochastic Processes OR Probability with Statistical Applications

Masters Concentration Areas

Two courses from one Concentration area:

- Computational and Systems Biology
- Control Systems
- Energy and Environmental Systems
- Network Systems
- Operations Research
- Production and Service Systems

Masters with Practice Option

1

Masters Students may add the designation “with Engineering Practice” to their degree by completing an approved internship in their field of study.

2

Application Form and Specific requirements are online and available from the Graduate Programs Office.

3

International students must have completed two semesters in full-time status to be eligible and must complete the Curricular Practical Training (CPT) steps.

Masters Specializations

Masters Students may pursue an appropriate Specialization, which will be added to your degree title on your transcript.

- Data Analytics
- Cybersecurity
- Robotics

Application Form and Specific requirements are online and available from the Graduate Programs Office.



Transition to PhD Requirements

Thank you to the masters students for joining us today!
Please reach out if you have questions.

College of Engineering
Division of Systems Engineering



PhD Program Requirements

Candidacy

Qualifying Exam
+
Math Requirement

Post Candidacy

Teaching Practice
+
Advanced Responsible Conduct
of Research Requirement
+
Prospectus Defense

Post Prospectus

Annual Progress Report
+
Final Oral Defense

Credits

Post-Bachelors

Post-Masters

64 credits

all at 500 level or higher

32 credits

all at 500 level or higher

Requirements

- Complete MS requirements
- Apply to receive MS following Prospectus Defense

- Course selection with Qualifying Exam in mind
- Required to take a minimum of 16 credits of research/dissertation coursework.

GPA

Cumulative GPA of 3.00 required to graduate

Fall Course Selection



The norm is: EK500, SE524, SE501



For those with definite interests in signal processing/communications, EC505 may be taken instead of EK500



For MS/MEng, take EK500 and either SE501 and/or SE524



Exceptions are possible (discuss with your advisor).

PhD Research Rotations

- **Two rotations required**, each lasting a half semester.
- **One rotation per semester required:**
 - Fall rotation (F: arrange by the end of September)
 - Spring rotation (S1: first half, arrange by the end of November) OR
 - Spring rotation (S2: second half, arrange by the end of January)
- **Each rotation is a 2-credit course**
 - SE 900 Research (Pass/Fail)

PhD Research Rotations

- Consult faculty members for registration and expectations.
- Content may include, but is not limited to:
 - Read papers and present to the research group
 - Attend group meetings and have one-on-one meetings with the faculty member
 - Perform a simulation in Matlab
 - Participate in research projects

PhD Qualifying Exam: May 2025

Exam Covers: three of the five topical sections:

- Dynamic Systems Theory (SE/EC/ME 501)
- Continuous Stochastic Processes (EC505) or Discrete Stochastic Processes (EK500 and SE/ME 714)
- Optimization (SE674/EC 524)
- Dynamic Programming and Stochastic Control (SE/EC/ME 710)
- Nonlinear Systems and Control (SE/ME 762)

Be sure to discuss your options with your advisor.

PhD Qualifying Exam: May 2024

- Closed book
- Written section:
 - Scheduled on a Tuesday at the end of May
 - 9:00 am–1:00 pm
- Oral section
 - Scheduled on the Thursday, following written section
 - Research presentation (20 min): related to research rotations
 - Q & A (open-ended)

PhD Math Requirement

Post-Bachelors

B+ or better in one of the following courses:

- Dynamic Systems Theory (SE/EC/ME501)
- Optimization Theory and Methods (SE/EC524)
- Stochastic Processes (EC505)
- Probability with Statistical Applications (EK500)
- Dynamic Programming and Stochastic Control (SE/EC/ME710)
- Advanced Stochastic Modeling and Simulation (SE/ME714)

Post-Masters

Complete the Post-Bachelors requirement or

- Submit evidence of successful completion B+ or better of equivalent coursework as determined by the SE Graduate Committee.

SE PhD Teaching Practice

- All PhD students must complete two semesters of Teaching Practice (TP)
- Most will complete TP in the second and third academic year

BU Advanced Conduct of Research (RCR) Requirement

The RCR program educates students in core norms, principles, regulations, and rules governing the ethical practice of research.

- College of Engineering doctoral candidates must complete the RCR requirement prior to scheduling the PhD Prospectus Defense.
- Students will complete the RCR-specific CITI training and the RCR Course. The RCR course is a 1 credit, non-tuition bearing course (ENG EK 800) open to all PhD students and postdoctoral scholars. This 10-week course will meet once weekly for 50-minute sessions.

SE PhD Student Funding

DEAN'S FELLOW

DISTINGUISHED SYSTEMS FELLOW

DOCTORAL RESEARCH FELLOW (RA)

CLARE BOOTH LUCE

OTHER EXTERNAL FELLOWSHIPS

**\$3K 1st Yr
BONUS**

**BASIC
SHIP**

**MOST
FEES**

*Waive Sports Pass

**STIPEND
INCREASES**

**TRAVEL
AWARDS**

**5 YEARS
FUNDING**

SE PhD TRAVEL AWARD

PhD Candidates

- Advisors nominate students.
- Must have authored or co-authored a paper accepted for presentation and on a conference or meeting agenda.
- Reimbursement of actual expenses up to \$1,500.

Welcome to BU SE!

Fall 2024

Division Team

College of Engineering
Division of Systems Engineering

