

BROWN SCHOOL OF ENGINEERING
MASTER'S STUDENT HANDBOOK



BROWN

ACADEMIC YEAR 2022-2023

Welcome to the Brown School of Engineering!

We are glad that you have chosen to conduct your graduate studies at the Brown School of Engineering. Brown University has a proud history in American engineering education. Engineering at Brown is the third oldest civilian program in the country and the first program founded in the Ivy League. The school today is distinguished by outstanding students and faculty, an integrated school structure free from traditional departmental boundaries, a distinctive interdisciplinary curriculum, liberal arts electives, and a strong research environment.

The School of Engineering reflects the rigor, collaborative spirit, and creativity of its faculty and the idealism and entrepreneurial ethos of its students. Teaching and research in the School of Engineering reflects the unique position Brown holds in higher education – an institution that provides the close mentoring relationships characteristic of a liberal arts college, the intellectual excitement of a research-intensive university, and an open curriculum that allows students to be the architects of their own education. Your acceptance into our highly selective programs indicates that we believe you have the capability and desire to contribute in your own way to the future.

Note: This handbook is a supplement to the [Graduate School Handbook](#). Its format is intended to be viewed digitally as it contains a large number of links to related university resources. The current digital version can be viewed at:

<https://www.brown.edu/academics/engineering/graduate-study/graduate-programs-guide>

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I. STATEMENT OF PURPOSE

This handbook is provided to Master's students of Brown University's School of Engineering and is intended to help students navigate the process toward obtaining their respective degree. It does not replace the school's graduate advising, but instead is intended as a reference guide to provide supplemental information.

II. INTRODUCTION

This handbook is intended to aid new students in their transition into graduate school as well as assist all students toward the successful completion of their degree while fulfilling associated requirements. It is each graduate student's personal responsibility to read and understand the information pertaining to graduate studies at Brown, which can be found in this handbook, in the [Graduate School Handbook](#), and in the [University Bulletin](#).

III. MISSION STATEMENTS

[The Missions of Brown University and the School of Engineering](#)

IV. GRADUATE REPRESENTATIVES AND CONTACTS	
Program	Graduate Representative
Director of Graduate Studies (DGS) for Engineering	Eric Chason
Director of Graduate Studies (DGS) for Biomedical Engineering (BME)	Eric Darling
Biomedical Engineering (Master's Program Director)	Marissa Gray
Chemical & Environmental Engineering (ChEE)	Andrew Peterson
Electrical and Computer Engineering (ECE)	Harvey Silverman
Materials Science (Materials)	Brian Sheldon
Mechanical Engineering and Applied Mechanics	David Henann
Program in Innovation Management and Entrepreneurship (PRIME)	Patrick McHugh

V. OFFICE OF ACADEMIC AND STUDENT AFFAIRS

Students who have questions or matters of concern about student advising should contact a member of the Office of Academic Programs and Student Affairs. B&H refers to Barus & Holley, one of the two School of Engineering buildings, the other being the Engineering Research Center (ERC).

Name	Title	Email	Office	Phone
Jennifer Casasanto	Associate Dean for Programs and Planning	jennifer_casasanto@brown.edu	B&H 318	863-1433
Carolyn Harris	Manager, Academic Programs and Student Affairs	carolyn_harris@brown.edu	B&H 314	863-6859
Kathleen DiOrio	Graduate Programs Coordinator	kathleen_diorio@brown.edu	B&H 312	863-1296
Ann Wang	Student Affairs Coordinator	ann_wang@brown.edu	B&H 312	863-6843
Melodie Vincenty	BME Program Administrator	melodie_vincenty@brown.edu	BMC 393	863-5442
Tina Garfinkel	Associate Director, PRIME	tina_garfinkel@brown.edu	Prince Mezzanine	Please Email

VI. UNIVERSITY POLICY INFORMATION

The following links provide information for important university-wide policies on:

- [Affirmative Action](#)
- [Discrimination and Workplace Harassment](#)
- [Gender Inequity and Sexual Assault](#)
- [Title IX and Gender Equity](#)
- [Relationship and Interpersonal Violence](#)

The University Bulletin also includes a [General Regulations](#) section containing information on academic requirements, course registration, grading, exams, and [Student Conduct and Community Standards](#).

VII. ETHICS AND PROFESSIONALISM

Both Brown and the School of Engineering have strict policies regarding ethics and professionalism. Unethical behavior or any type of academic dishonesty will not be tolerated. As a graduate student, you are responsible for knowing and abiding by the [Student Conduct and Community Standards](#).

All students are expected to have read in full and be familiar with Brown's [Academic Code](#) and [Code of Student Conduct](#). In addition, all students conducting research must complete the University's program on ethics and responsible research conduct, [BEARCORE](#), which details responsible conduct of research.

VIII. NEW STUDENT INFORMATION

A. Prospective Students

The University prepares graduate students for distinguished careers in research, teaching, and as experts in the public and private sectors. Master's students are trained to assess information and trends in their fields and to create original works. Brown students are distinguished by academic excellence, self-direction, and a collaborative style of learning. Faculty members pursue their own research and scholarship while remaining deeply committed to teaching both graduate and undergraduate students.

We encourage you to explore the opportunities at Brown University's School of Engineering, which offers seven areas of study for Master's programs. If you are interested in a program, please feel free to contact that program advisor. Pay close attention to application deadlines which vary by program.

For additional application information, please visit the [Graduate School application page](#).

B. New Graduate Student Orientation and Advising

At the beginning of each academic year, both the university and the School of Engineering hold two new graduate student orientation meetings. New students are required to attend both of these meetings. The first is held at the beginning of the academic year, and the other later in the Fall semester. The School of Engineering will host an in-person graduate student orientation the afternoon of Thursday, August 31, 2023. *Please save the date.* All new graduate students will receive further details in advance of the event. This *mandatory* meeting includes opportunities to meet the School of Engineering deans, graduate advisors, faculty, staff, and your fellow students.

In addition to the School of Engineering's orientation, students will be invited to attend the [All-Student Graduate School Orientation](#) for Fall 2023 on August 29 and August 30, 2023, as well as other events posted on the above link. We strongly encourage you to participate in all orientation events as these will give you the strong foundation that you need as you begin your graduate program at Brown.

All orientation events are scheduled in advance of the first day of classes, which is Wednesday, September 6, 2023. Once more, we encourage that you attend all orientation events where you will receive important information about campus community resources and how to best navigate Brown University.

Graduate Representative

Your Graduate Representative will assist you in setting up your first semester course schedule, help you become oriented to the program for which you are enrolled, and will aid you in your transition to graduate school. If you choose to pursue the Thesis Track, you are required to identify an advisor from your program of study by the end of the first term. Your Graduate Representative will guide you in this process.

C. Email and Internet Access

Accessing Accounts: Note that your Brown username (what you use to log into Banner and Canvas) and your Google login information are separate. For more information, see [About Your Brown Usernames](#).

Most on-campus and departmental communications are done using Gmail and by default, your brown.edu email must be used. To activate your electronic services, you will need your Brown identification number. You received this number once you committed to attending the university. [Visit here to access a list of apps available to Brown Google accounts](#). Follow the steps below to activate electronic services:

1. Locate your Brown ID number at <https://myaccount.brown.edu/>
2. Click on “Activate Here” under [Activate Your Brown Account](#)
3. Enter the requested data on this secure site and click on “Continue”

Contact [Office of Information Technology \(OIT\)](#) if you require assistance with this process.

Wireless Internet Access: Connect your devices by visiting <https://ithelp.brown.edu/kb/52-brown-wireless>. If you have a browserless device, such as a gaming system or Roku, see brown.edu/go/browserless

D. Acceptable Use and More Information for Computing on Campus

The computing resources at Brown University support the educational, instructional, research, and administrative activities of the university. As a user, it is important to engage in these resources in a responsible, ethical, and legal manner. In general, acceptable use means respecting the rights of other computer users and maintaining the integrity of the physical facilities and all pertinent license and contractual agreements. If an individual is found to be in violation of the [Acceptable Use Policy](#), the university will take disciplinary action, including the restriction and possible loss of network privileges. Please visit the full acceptable use policy on the OIT [web site](#).

Visit [Office of Information Technology \(OIT\) website](#) to learn more about computing life at Brown. Once you arrive on campus, you can stop by the OIT information table at the University Resource Fair. If you have questions prior to your arrival on campus, please visit the website above or contact a Help Desk Specialist at help@brown.edu or call 401-863-HELP (4357).

E. Graduate Student Space

Graduate students are encouraged to use the dedicated lounge at 42 Charlesfield Street. The entrance to the Graduate Student Council’s [Graduate Lounge](#) is accessed from Thayer Street, south of the Graduate Center dormitory and beneath the winding staircase. For academic space, there is a graduate computer lab in Giancarlo Lab 092 (basement level of Barus and Holley). This space has unassigned seating and you can log on to these computers as you would any computer within the Brown domain. These computers provide a suite of engineering software as

well as the internet and other office tools. To meet up with peers, you may utilize the community space in the Barus & Holley main lobby or Hazeltine Commons of the Engineering Research Center (ERC).

[Horace Mann 4th Floor](#), located at 47 George Street, is open and reservable for graduate students and graduate student organizations who are welcome to use the space for meetings or study. Enter Horace Mann through the main door and take the elevator or stairs to the 4th floor. The space occupies the east side of the top floor. Hours of availability: Monday through Friday, 8:30 am to 5 pm. To request use of the space, email graduate_school@brown.edu

IX. SAFETY TRAINING

Any engineering graduate student who plans to work in an engineering laboratory must attend an [Environmental Health and Safety](#) Training Seminar. The Engineering Safety Officer informs all graduate students by email of the dates and times that these three-hour seminars are held. Non-attendance to this required training may revoke a student's TA or RA appointment.

Depending upon the nature of the research that a student becomes involved with, other safety trainings may be necessary prior to our granting student access to a lab (i.e., hazardous waste, laser safety, biosafety, radiation safety, etc.). A basic [Laboratory Safety](#) training course as well as more specialized trainings are required, depending on the nature of your work and type of lab. Laboratory safety courses are available through Brown's Office of Environmental Health & Safety. Please visit the [EHS website](#) to view courses available and descriptions of who is required to attend.

X. STUDENT STATUS AND TUITION

A. Timelines for Master of Science Students

The Master of Science program duration default is enrollment for four (4) semesters.

- The course timeline for Thesis Track is 4 semesters or 2 years:
(3 courses + 2 courses (plus research) + 2 courses (plus research) + 1 reading/research course -- finalize thesis)
- The course timeline for Non-Thesis Track is 3 semesters or 1.5 years:
(3 courses + 3 courses + 2 courses)

Master's students are admitted into the four-semester trajectory and all have the option of requesting the Thesis Track or reverting to the Non-Thesis Track (the three-semester trajectory). While many take this option, it is not expected, and the majority of engineering Master's students do not remain in the Thesis Track or choose to complete a thesis.

Students must decide on Thesis Track/Non-Thesis Track by the end of their first semester. An option for completing the eight (8) course requirements earlier is possible for outstanding students, and only with permission of their advisor. This change to your EDOC (Expected Date

of Completion) must be reported in the fall of your first semester (see Page 5 of this Handbook for a list of Graduate Representatives who can assist you).

For students starting in Fall 2023 on the Non-Thesis Track, your EDOC is December 2024. For those completing the Thesis Track, your EDOC is May 2025. If you vary from the expected courses or number of courses per semester, this could affect your completion date and tuition costs. In addition, there may be visa implications for international students who deviate from the program structure. International students must be enrolled full-time. There are rare exceptions to this, such as during the very last semester of coursework when enrollment in only one course is permitted, or in the case of medical necessity.

B. Tuition

Deadline for paying fall tuition

The deadline for paying your fall semester tuition bill is August 1; the payment deadline for spring semester is January 1. [Billing and Payment Information](#) can be found on the Graduate School website and the [Bursar](#) website.

All students will be billed for the minimum of two courses. Once you have registered for a third course you will receive an updated bill for that third course. Account balances not paid by the deadline are assessed a 1.5% late fee. Students with Past Due balances will have a hold placed by the [Bursar Office](#) on their student records. Please note: The University Bursar hold will prevent students from receiving academic transcripts, receiving their diploma, bookstore charging privileges, and participating in pre-registration for upcoming terms.

Once the student account is paid and cleared, holds are released and privileges restored.

Current tuition deadlines and policies may be found on [Brown's Graduate School](#) site and also in the [Policies section](#) of the Bursar webpage.

XI. FINANCIAL ASSISTANCE

The majority of students enrolled in Master's programs engaged in non-degree study are self-supported or funded by employers. Students may also be eligible for [federal student loans](#) and other loans administered through the office of [Financial Aid](#).

Current Master's students are also eligible for [conference travel funding](#) through the Graduate School. Graduate students who present at academic conferences can apply for up to \$650 to cover conference registration and travel expenses. Plan to apply early as funds are limited.

XII. HOUSING

On-campus housing: At Brown, the Graduate Student Housing Application process opens each year in **March** with limited rentals available. This on-campus housing has a lease period of 12 months, with contracts beginning in summer. Costs range approximately \$950-\$1500 per month. Listings and further details can be found on the [Auxiliary Housing](#) website. Please contact [Ronni Edmonds](#), Auxiliary Housing Coordinator, with questions.

Off-campus housing: The majority of graduate students prefer to live off campus. Tips for your search: Start early as you are more likely to find economical choices that fill your needs the sooner you begin your search. Research various [neighborhoods](#) near Brown University, including Wayland Square, Wickenden Street, East Side, Fox Point, and the Hope Street areas. Utilities (heat, hot water, gas, electricity, wi-fi, and water/sewer fees) are typically not included in the monthly rent and should be budgeted in addition to monthly rental fees.

Apartment Resources:

www.brownuniversityoffcampus.com Search for privately-owned furnished and unfurnished rooms, apartments, houses, sublets, and shared accommodations

graduatestudy.risd.edu/providence/neighborhoods-and-housing RISD off-campus housing guide

Sign up for the [Graduate Student Bulletin Board](#) listserv to find roommates for shared apartments (Brown email required). Visit the [Graduate Student Council website](#) for more information on listservs and wikis. Also view Brown's [Guide to Living Off-Campus](#)

XIII. MASTER OF SCIENCE REQUIREMENTS

A. Sample Programs of Study

The following is a sample guide to courses recommended for Engineering Master's degree candidates. Each student should discuss courses with a Graduate Representative. Ultimately, the student is responsible for proposing a coherent set of courses that satisfy the School of Engineering's [ScM Requirements](#). For course descriptions, please visit Courses@Brown.

1. Sample ScM Course Plan for Biomedical Engineering (BME)

SEMESTER	COURSES
Semester I	BIOL 2050 Biology of the Eukaryotic Cell ENGN 1490 Biomaterials
Semester II	BIOL 2310 Developmental Biology ENGN 1210 Biomechanics
Semester III	BIOL 1070 Biotechnology and Global Health ENGN 2910S Cancer Nanotechnology
Semester IV	ENGN 2912R Implantable Devices ENGN 2980 Special Projects: Reading Research Design

2. Sample ScM Course Plan for Chemical Engineering (ChE)

Students typically take ENGN 2010 and ENGN 2020 as their two-course mathematics sequence, but may substitute other courses in consultation with their graduate advisor, however, at least one must be at the 2000-level. A three-course core in Chemical Engineering is taken which includes thermodynamics (ENGN 2730, CHEM 2010), kinetics (ENGN 2750), and transport (typically ENGN 2911P or ENGN 2810). The final two courses are electives or can be used for thesis preparation.

Non-Thesis Track

SEMESTER	COURSES
Semester I	ENGN 2010 Mathematical Methods in Engineering and Physics I (or PHYS 2020 Mathematical Methods of Engineers and Physicists) CHEM 2010 Advanced Thermodynamics ENGN 2750 Chemical Kinetics and Reactor Engineering (alternate years) or ENGN 2770 Atomistic Reaction Engineering (alternate years) or ENGN 2810 Fluid Mechanics I
Semester II	ENGN 2020 Mathematical Methods in Engineering and Physics II ENGN 2760 Heat and Mass Transfer
Semester III	ENGN 2750 Chemical Kinetics and Reactor Engineering (alternate years) or ENGN 2770 Atomistic Reaction Engineering (alternate years) or ENGN 2810 Fluid Mechanics I *ENGN 2000-level elective *ENGN 1000 or 2000-level elective

Thesis Track

SEMESTER	COURSES
Semester I	ENGN 2010 Mathematical Methods in Engineering and Physics I (or PHYS 2020 Mathematical Methods of Engineers and Physicists) CHEM 2010 Advanced Thermodynamics ENGN 2750 Chemical Kinetics and Reactor Engineering (alternate years) or ENGN 2770 Atomistic Reaction Engineering (alternate years) or ENGN 2810 Fluid Mechanics I
Semester II	ENGN 2020 Mathematical Methods in Engineering and Physics II ENGN 2760 Heat and Mass Transfer (2 courses total, plus research)
Semester III	ENGN 2750 Chemical Kinetics and Reactor Engineering (alternate years) or ENGN 2770 Atomistic Reaction Engineering (alternate years) or ENGN 2810 Fluid Mechanics I or ENGN 1000 or 2000-level elective or ENGN 2980 Special Projects: Reading Research Design (2 courses total, plus research)
Semester IV	ENGN 2980 Special Projects: Reading Research Design (finalize thesis)

(Graduate seminars offered by ChEE faculty change from year to year. Seminars are strongly recommended even though they are not listed here.)

3. Sample ScM Course Plan for Environmental Engineering (EnvE)

Students typically take ENGN 2010 and ENGN 2020 as their two-course mathematics sequence, but may substitute other courses in consultation with their graduate advisor, however, at least one must be at the 2000-level. A three-course core in environmental engineering is taken which includes thermodynamics (ENGN 2730, CHEM 2010), groundwater (ENGN 2342), and transport (typically ENGN 2911P), or other appropriate courses chosen in consultation with the advisor. The final two courses are electives or can be used for thesis preparation.

Non-Thesis Track

SEMESTER	COURSES
Semester I	ENGN 2010 Mathematical Methods in Engineering and Physics I (or PHYS 2020 Mathematical Methods of Engineers and Physicists) CHEM 2010 Advanced Thermodynamics ENGN 2342 Groundwater Flow and Transport
Semester II	ENGN 2020 Mathematical Methods in Engineering and Physics II ENGN 2911P Fate and Transport of Environmental Contaminants *ENGN 2000-level elective

Semester III	<p>ENGN 2342 Groundwater Flow and Transport *ENGN 2000-level elective *ENGN 1000 or 2000-level elective</p>
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Thesis Track

SEMESTER	COURSES
Semester I	<p>ENGN 2010 Mathematical Methods in Engineering and Physics I (or PHYS 2020 Mathematical Methods of Engineers and Physicists) CHEM 2010 Advanced Thermodynamics ENGN 2342 Groundwater Flow and Transport</p>
Semester II	<p>ENGN 2020 Mathematical Methods in Engineering and Physics II ENGN 2911P Fate and Transport of Environmental Contaminants (2 courses total, plus research)</p>
Semester III	<p>ENGN 2810 Fluid Mechanics I or ENGN 1120 Reaction Kinetics and Reactor Design or ENGN 2342 Groundwater Flow and Transport or ENGN 1000 or 2000-level elective or ENGN 2980 Special Projects: Reading Research Design (2 courses total, plus research)</p>
Semester IV	<p>ENGN 2980 Special Projects: Reading Research Design (finalize thesis)</p>

(Graduate seminars offered by ChEE faculty change from year to year. Seminars are strongly recommended even though they are not listed here.)

4. Sample ScM Course Plan for Electrical and Computer Engineering (ECE) Non-Thesis Track

Sample Course Plan for ECE Students with Multimedia/Signal Processing Interest

SEMESTER	COURSES
Semester I	<p>ENGN 2530 Digital Signal Processing ENGN 1610 Image Understanding APMA 1690 Computational Probability and Statistics</p>
Semester II	<p>ENGN 2020 Mathematical Methods in Engineering and Physics II ENGN 2520 Pattern Recognition and Machine Learning *ENGN 2560 Computer Vision</p>
Semester III	<p>Two approved ENGN 1000 or 2000 level courses</p>

5. Sample ScM Course Plan for ECE Students with Computer Engineering Interest

SEMESTER	COURSES
Semester I	ENGN 2911X Reconfigurable Computing for Machine/Deep Learning ENGN 1600 Design and Implementation of VLSI Systems APMA 1650 Statistical Inference I <i>*A first semester ScM student must take at least one 2000-level program requirement course in the first semester.</i>
Semester II	ENGN 2520 Pattern Recognition and Machine Learning ENGN 1640 Design of Computing Systems ENGN 2020 Mathematical Methods in Engineering and Physics II
Semester III	One approved 2000 level ECE course One approved ENGN 1000 or 2000 level courses

Sample ScM Non-Thesis Program Course Plan for ECE Students with Electrophysics/Circuits Interest

SEMESTER	COURSES
Semester I	ENGN 2620 Solid State Quantum and Optoelectronics ENGN 1590 Intro to Semiconductors and Semiconductor Electronics *An approved math course
Semester II	ENGN 1931A Photovoltaics Engineering ENGN 2610 Physics of Solid State Quantum Devices ENGN 2020 Mathematical Methods in Engineering and Physics II
Semester III	ENGN 2980 Special Projects: Reading Research Design ENGN 2912E Low Power VLSI System Design

Sample ScM Non-Thesis Program Course Plan for ECE Students with Computer Vision Interest

SEMESTER	COURSES
Semester I	ENGN 1610 Image Understanding ENGN 2912B Scientific Programming in C++ ENGN 2010 Mathematical Methods in Engineering and Physics I
Semester II	ENGN 2560 Computer Vision ENGN 2520 Pattern Recognition and Machine Learning ENGN 2020 Mathematical Methods in Engineering and Physics II
Semester III	Two approved ENGN 1000 or 2000 level courses

Sample ScM Non-Thesis Program Course Plan for ECE Students with Medical Imaging Interest

SEMESTER	COURSES
Semester I	ENGN 2500 Medical Image Analysis ENGN 1610 Image Understanding ENGN 1650 Embedded Microprocessor Design
Semester II	ENGN 2500 Medical Image Analysis ENGN 2980 Special Projects: Reading Research Design ENGN 2020 Mathematical Methods in Engineering and Physics II
Semester III	ENGN 2912B Scientific Programming in C++ One approved ENGN 1000 or 2000 level course

Note: A first semester ScM student must take at least one 2000-level program requirement course in the first semester.

6. Sample ScM Course Plan for Materials Sciences

Non-Thesis Track

SEMESTER	COURSES
Semester I	ENGN 2010 Mathematical Methods in Engineering and Physics I ENGN 2410 Thermodynamics of Materials or ENGN 1410 Physical Chemistry of Solids ENGN 2430 Deformation Behavior of Materials or ENGN 1440 Mechanical Properties of Materials
Semester II	ENGN 2020 Mathematical Methods in Engineering and Physics II ENGN 2420 Kinetic Processes and Mechanisms in Materials Science or 1420 Kinetics Processes in Materials Science and Engineering ENGN 2400 Electron Microscopy in Materials Science or ENGN 2930 Atomistic Modeling of Materials
Semester III	ENGN 2490A Crystal Structures and Crystallography *An elective (e.g., ENGN 2210 Continuum Mechanics or ENGN 2240 Linear Elasticity)

Thesis Track

SEMESTER	COURSES
Semester I	ENGN 2010 Mathematical Methods in Engineering and Physics I ENGN 2410 Thermodynamics of Materials (or ENGN 1410 Physical Chemistry of Solids) *An elective (e.g., ENGN 2430 Deformation Behavior of Materials or ENGN 2490A Crystal Structures and Crystallography) (3 courses total)
Semester II	ENGN 2020 Mathematical Methods in Engineering and Physics II ENGN 2420 Kinetic Processes and Mechanisms in Materials Science (or 1420 Kinetics Processes in Materials Science and Engineering) (2 courses total, plus research)
Semester III	*An elective (e.g., ENGN 2430 Deformation Behavior of Materials or ENGN 2490A Crystal Structures and Crystallography or ENGN 2210 Continuum Mechanics or ENGN 2240 Linear Elasticity) ENGN 2980 Special Projects: Reading Research Design (2 courses total, plus research)
Semester IV	ENGN 2980 Special Projects: Reading Research Design (finalize thesis)

(Classes in parentheses are the closest substitute if the preferred class is not offered that semester.)

7. Sample ScM Course Plans for Mechanical Engineering and Applied Mechanics

Fluids and Thermal Sciences (FTS) Non-Thesis Track

SEMESTER	COURSES
Semester I	ENGN 2010 Mathematical Methods in Engineering and Physics I ENGN 2210 Continuum Mechanics ENGN 2810 Fluid Mechanics I
Semester II	ENGN 2020 Mathematical Methods in Engineering and Physics II ENGN 2820 Fluid Mechanics II APMA 2580B Computational Fluid Dynamics
Semester III	*ENGN 1000 or 2000 level electives (two courses)

Fluids and Thermal Sciences (FTS) Thesis Track

SEMESTER	COURSES
Semester I	ENGN 2010 Mathematical Methods in Engineering and Physics I ENGN 2210 Continuum Mechanics ENGN 2810 Fluid Mechanics I (3 courses total)
Semester II	ENGN 2020 Mathematical Methods in Engineering and Physics II ENGN 2820 Fluid Mechanics II OR APMA 2580B Computational Fluid Dynamics (2 courses total, plus research)
Semester III	*AN ENGN 1000 or 2000 level elective ENGN 2980 Special Projects: Reading Research Design (2 courses total, plus research)
Semester VI	ENGN 2980 Special Projects: Reading Research Design (finalize thesis)

Mechanics of Solids Non-thesis track

SEMESTER	COURSES
Semester I	ENGN 2010 Mathematical Methods in Engineering and Physics I ENGN 1750 Advanced Mechanics of Solids *An elective
Semester II	ENGN 2020 Mathematical Methods in Engineering and Physics II ENGN 2220 Mechanics of Solids *An elective
Semester III	ENGN 2210 Continuum Mechanics *An elective

A more challenging Non-thesis track for Mechanics of Solids

SEMESTER	COURSES
Semester I	ENGN 2010 Mathematical Methods in Engineering and Physics I ENGN 2210 Continuum Mechanics *An elective
Semester II	ENGN 2020 Mathematical Methods in Engineering and Physics II ENGN 2220 Mechanics of Solids *An elective
Semester III	ENGN 2340 Computational Methods in Structural Mechanics *An elective

Thesis Track for Mechanics of Solids

SEMESTER	COURSES
Semester I	ENGN 2010 Mathematical Methods in Engineering and Physics I ENGN 2210 Continuum Mechanics *An elective
Semester II	ENGN 2020 Mathematical Methods in Engineering and Physics II ENGN 2220 Mechanics of Solids (2 courses total, plus research)
Semester III	ENGN 2340 Computational Methods in Structural Mechanics ENGN 2980 Special Projects: Reading Research Design (2 courses total, plus research)
Semester IV	ENGN 2980 Special Projects: Reading Research Design (finalize thesis)

**Subject to approval by Graduate Representative or Thesis Advisor.*

Notes:

- Not all courses are offered in each year — consult [Courses@Brown](#) for details.
- Each student should discuss his or her course selections with their Graduate Representative. Ultimately, it is the student's responsibility to propose a coherent set of courses that satisfies the ScM requirements.
- Other courses are acceptable with prior approval of the Graduate Representative.

B. Thesis, Non-Thesis, and Professional Tracks

Brown's School of Engineering offers several options for the Master of Science (ScM) degree, whether your goal is further academic pursuits or improving your employment potential. Options below may be chosen and programs tailored toward your individual needs.

Thesis research is encouraged but not required and must be arranged by the student with an individual faculty. Please note that there is no established financial support for Master's candidates and students must fund the additional thesis semester themselves.

For students in the Master of Science in Engineering program (Thesis Track), the approved course sequence is 3-2-2-1, meaning that the student takes three courses the first semester; two

plus research the second; two plus research the third; and one (and finalize thesis) the fourth. Any deviation from this schedule may result in additional tuition and visa implications.

C. Master of Science (Thesis Track)

Candidates must complete a coherent plan of study based in engineering or engineering science consisting of eight graduate or advanced level courses and an acceptable thesis, which is normally sponsored by a member of the engineering faculty.

The program must include ENGN 2010/2020* (Mathematical Methods in Engineering and Physics) or their equivalent (must be 2000-level) and two additional 2000-level engineering courses other than ENGN 2980 Special Projects: Reading, Research, Design. For a Thesis Track student, ENGN 2980 may be counted up to three times towards satisfying the degree requirements. It is typical that students sign up for two semesters of ENGN 2980 as part of their thesis preparations. Students should choose courses in consultation with their advisor to develop a coherent program.

*Either ENGN 2010 or ENGN 2020 can be replaced by an alternate mathematics course with approval of the appropriate Graduate Representative and the Director of Graduate Studies.

For detailed Master's thesis submission instructions, please visit:
<https://www.brown.edu/academics/gradschool/masters-thesis-guidelines>

D. Master of Science (Non-Thesis Track)

Candidates must complete a coherent plan of study based in engineering or engineering science consisting of eight graduate or advanced level courses. The program must include ENGN 2010/2020* (Mathematical Methods in Engineering and Physics) or their equivalent (must be 2000-level) and three additional 2000-level engineering courses other than ENGN 2980 Special Projects: Reading, Research, Design. The remaining courses may include one ENGN 2980 class and up to three 1000-level Engineering or other approved science classes. Students should choose courses in consultation with their advisor to develop a coherent program. *Either ENGN 2010 or ENGN 2020 can be replaced by an alternate mathematics course with approval of the appropriate Graduate Representative and the Director of Graduate Studies.

The proposed program of study must be approved by the Director of Graduate Studies in the School of Engineering.

E. Master of Science (Non-Thesis Professional Track)

Candidates must complete a coherent plan of study based in engineering or engineering science consisting of eight graduate or advanced level courses. The program must include ENGN 2010/2020 Mathematical Methods in Engineering and Physics or their equivalent (must be 2000-

level) and three additional 2000-level engineering courses other than ENGN 2980 Special Projects: Reading, Research, Design.

The remaining courses may include one ENGN 2980 class and up to three 1000-level Engineering or other approved science classes. Students should choose courses in consultation with their advisor to develop a coherent program. Either ENGN 2010 or ENGN 2020 can be replaced by an alternate mathematics course with approval of the appropriate Graduate Representative and the Director of Graduate Studies.

A paid or unpaid internship is a required component of the program. All internships must be pre-approved by the School of Engineering. Assistance in obtaining internships will be provided by the School and the [Brown CareerLAB](#). The proposed program of study must be approved by the Director of Graduate Studies in the School of Engineering.

F. 5th Year Master's Program

Engineering undergraduates with high academic standing may enter an integrated program leading to a Master of Science (Sc.M.) degree following receipt of their Bachelor of Science (Sc.B.) degree. Two relevant 1000- or 2000-level undergraduate courses may be transferred from the Brown undergraduate program, even if they were used to satisfy Sc.B. degree requirements. The 5th Year Master's program must be completed in one academic year.

Students must apply for the program through the Graduate School's online application system prior to completing their undergraduate studies. Applicants are not required to take the GRE. Admitted students may defer their admission for up to one year. General requirements for the Sc.M. degree can be found in the [Brown University Bulletin](#).

G. Professional Track Internship Information

Internships are traditionally utilized during the first summer of the Master's program. You should start early (January is generally recommended) to try and find a suitable internship. Please refer to the [CareerLAB's](#) recommendations for resume preparation, interviewing, and general procedures to follow when deciding on an internship. Consult job and internship listings posted in [Handshake](#) and [BrownConnect](#) for alumni hosted internships. You may also conduct your own research through faculty referrals and networking contacts to find suitable options. The School of Engineering also holds a Career & Internship Fair in Hazeltine Commons every November with nearly 40 local and national companies in attendance.

Once you have decided on an internship, you must download and complete the [Internship Approval Form](#) (found under Master of Science Non-Thesis Professional Track Option), then submit it to [Associate Dean Jennifer Casasanto](#) before the end of the semester, or earlier if you are intending to get [Curricular Practical Training](#) (CPT) approval from OISSS.

IMPORTANT: You must never begin work before your internship is approved.

H. Cross-Registration

There are agreements in place between Brown and the Harvard University Faculty of Arts & Sciences as well as Brown and Rhode Island School of Design that allow for cross-registration of graduate students in courses without paying tuition to the host institution. Cross-registration is available for ScM students. A request for cross-registration should be based on interest in specific courses that cannot be found at Brown University but are offered at the graduate level at the other institution. There is an academic performance threshold expected by the host institution and Brown. Each cross-registration request is reviewed with these two criteria in mind. For details on the process, please consult the relevant section of the [Graduate School Handbook](#).

XIV. ADVISING, THESIS, AND GRADUATION

A. Selection of an Advisor

Students on the Thesis Track must select a thesis advisor for their ScM program before the end of their first semester. The process begins with the student contacting a faculty member whom they would like to serve in this capacity. Present your potential research project, then ask the faculty if they would be interested in serving as your advisor. Please do not hesitate to reach out to our faculty; they expect to hear from you.

At the start of the first term, all students will receive a Master's Proposal form distributed during orientation. Students will be asked to list their course plan and option of Thesis, Non-Thesis, or Non-Thesis Professional Track. The form must be completed and submitted to [Kathleen DiOrio](#), Graduate Program Coordinator, within the first two weeks of the fall term. You should meet with your advisor at least once per semester for approval on all coursework.

International students must be enrolled full-time at all times throughout their academic program, with these few exceptions:

- Documented medical reasons (up to a maximum of one year)
- Documented academic reason (one semester only)
- During the last semester of coursework (enrollment in only one course is permitted)

B. Selection of a Research Project

The selection of a research project is an extremely important step in a student's degree program. The student will work on this project for a significant amount of time and will be associated with it for the rest of their career; therefore, the decision will take time and should not be taken lightly. Selection of a research project will result from discussions with your advisor and the student's personal areas of interest. The selection of a research project should take place during the second semester of enrollment.

C. Finalization of Degree

Brown offers degree conferral in May, October, and February. The thesis submission deadline for a May degree conferral is May 1, and there are no exceptions to this firm deadline. All students who plan to receive a degree in May must file an [Application to Graduate](#) in Banner Self-Service no later than the last business day in April of their commencement year. If your plans change after filing the application, you must inform the Registrar immediately.

Your completed graduation application first goes to the Registrar and then is sent to Engineering where it is reviewed for completion of requirements by the School of Engineering Student Affairs Office and the Director of Graduate Studies. There are specific requirements for students who are “thesis” or “non-thesis” status. This status is determined by the student (with advisor confirmation) by the second semester of the Master of Science degree program. Applications to graduate are reviewed in September for October graduates, in January for February graduates, and in April for May graduates. Note: The only commencement ceremony at Brown is held in May; October and February graduates are welcome to participate.

If your application to graduate is not submitted by the due date, the Graduate School will deny the application and you will be required to register for the following semester. For additional information, please visit <https://www.brown.edu/academics/gradschool/about/commencement>

D. Attending Commencement

For those planning to attend [Commencement](#), you [also must register to participate](#). When you register, please identify any awards and honors you received while a graduate student at Brown for possible inclusion in the Commencement program. Please do so regardless of whether you plan to attend the ceremony. The Graduate School provides graduating students [detailed information](#) on how to plan for and participate in Commencement.

XV. MISCELLANEOUS

A. Community: The Graduate Council

Graduate Student Council

The [Graduate Student Council](#) (GSC) helps to foster a sense of community among graduate students across departments, to facilitate collective action on graduate student issues, and to be a voice for the graduate community. Like the GSC Facebook page to keep current with [events](#). Resources [such as alternate source for conference funding](#) are available to support the academic and social lives of Brown graduate students.

B. Wellness Resources

When Brown students are psychologically healthy, they perform better academically, form and sustain more meaningful relationships, and have the ability to make the most out of their time while at Brown. We are committed to supporting the wellness of our students and have created a

space for relaxation within the walls of the Engineering Research Center (ERC). Our private single-occupant **Wellness Room** is located on the 2nd floor of the ERC, Room 203. Use of this space must be reserved in advance and can be reserved in 30-minute increments twice daily. This room is for wellness use only, including restful breaks to support mental health, for nursing mothers, and for private conversations with health care providers. Priority is given to nursing mothers, both in scheduling priority and unlimited usage. Check the [online schedule](#) for room availability and to make your reservation. You will receive a Google calendar confirmation once you have scheduled the space for yourself.

[Counseling and Psychological Services](#) (CAPS) provides crisis intervention, short-term individual therapy, group therapy, community outreach, and referral services. They offer consultation to students, faculty and staff who are concerned about the well-being of students. Walk-in appointments are free of charge and confidential. CAPS is located at 69 Brown Street in Page-Robinson Hall, 5th floor, Room 512. To make an appointment, please call (401) 863-3476 or visit CAPS, Room 512 of 69 Brown St.

Associate Dean Alicia LaPolla serves in the Graduate School as Associate Dean of Student Affairs and is well-versed in the challenges and issues unique to Master's students. Master's students may see her to discuss:

- Medical and personal leave
- Support for individual students
- Support practices and policies
- Liaison to the Offices of Campus Life and Student Services, Institutional Diversity, Student and Employee Accessibility Services, as well as to Counseling and Psychological Services

Appointments with Associate Dean LaPolla can be made by email: alicia_lapolla@brown.edu

Friends are often the first to notice that a student might be experiencing high levels of distress. Please access these [resources for a friend in distress](#) as needed. We hope you never feel that you are alone or that you need to solve difficult situations by yourself. [Many university services](#) stand ready to assist you in an emergency as well as in non-emergencies.

C. Student Life Resources

[Academic Support](#) (Office of the Dean of the College, University Hall): Provides academic support services that supplement the support provided by course instructors.

[Brown Center for Students of Color](#) (68 Brown Street): The Brown Center for Students of Color is a student-focused center designed to provide students of color with a base for social, academic, administrative, cultural, and organizational support.

[Brown Recreation](#): Information about on-campus fitness facilities, aquatics, and club sports.

[Health Education Services](#) (13 Brown Street): Make an appointment with the nutritionist, talk with a Health Educator about alcohol or sexual health, and get information about sexual assault.

[CareerLAB](#) (167 Angell Street): CareerLAB works in collaboration with academic departments to connect students with career resources; help students identify their skills, interests and values and to explore a wide range of career options; and to articulate their unique experiences to employers.

[Counseling and Psychological Services \(CAPS\)](#), 69 Brown Street, Page-Robinson Hall, 5th Floor, Room 512: Provides crisis intervention, short-term individual therapy, group therapy, community outreach, and referral services.

[Graduate Student Professional Development](#), Horace Mann, 47 George Street: Development opportunities include advanced teaching opportunities, Global Mobility grants and research travel funds, interdisciplinary scholarly opportunities at Centers and Institutes, communications workshops and public research talks, and a series on exploring careers in higher education administration.

[Health Services](#), 13 Brown Street: Your resource for emergency medical services, non-urgent medical care, and confidential sexual assault hotline. [Bwell Health Promotion](#) provides educational resources for nutrition, sexual health, sexual assault and dating violence, physical and emotional health, alcohol and drug use, and more.

[LGBTQ Center](#) (22 Benevolent Street): Provides a comprehensive range of education, information and advocacy services and works to create and maintain an open, safe, and inclusive environment for lesbian, gay, bisexual, transgender, queer and questioning students, faculty, and staff, their families and friends, and the campus community at large.

[Master's Programs Professional Development](#), 225 Dyer Street. Contact [Maj Kargbo](#), Assistant Director of Student Development.

[Office of the Chaplains and Religious Life](#) (69 Brown Street, Page-Robinson Building, 4th Floor, Room 410): Works to ensure that a diversity of beliefs has voice and vitality throughout the University community. OCRL sponsors many faith-based programs and coordinates a broad set of chaplains and affiliates that advise a breadth of spiritual traditions.

[Office of Institutional Equity & Diversity](#) (Horace Mann 3rd Floor): Provides leadership for the formulation and oversight of policies related to pluralism and equity and initiates programs and practices that promote diversity, inclusion, and fair treatment for all members of the Brown community.

[Office of International Student and Scholar Services](#) (OISSS, 69 Brown Street, Page-Robinson Hall, 3rd Floor): Facilitates the integration of international students and scholars into the Brown community. OISSS provides advising services on immigration and visa matters, work permission, orientation, cultural adjustment, and personal concerns.

[Division of Campus Life](#) (20 Benevolent Street): Provides a variety of services, support and outreach to undergraduate, graduate, and medical students designed to promote academic achievement and personal development.

[Office of Military-Affiliated Students](#) (Vartan Gregorian Quad A, 101 Thayer Street, Room 106): Brown is committed to building a community that actively supports veterans who are beginning, returning to, or advancing their pursuit of higher education. This office supports the experience of all student veterans, including those who served in the military for countries other than the United States.

[Ombuds Office](#), Hillel Building, 80 Brown Street, 3rd Floor: The Ombuds Office provides an independent, confidential, neutral and informal resource for faculty, staff, postdoctoral fellows and associates, graduate students and medical students who have concerns arising from or affecting their work and studies at Brown.

[Sarah Doyle Center for Women and Gender](#) (26 Benevolent Street): Seeks to provide a comfortable, yet challenging place for students, faculty, and staff to examine the multitude of issues around gender. The Center offers programs and services for all members of the Brown community and is a site for research into and exploration of gender issues that extend into and beyond the classroom.

[SHARE Advocates \(Sexual Harassment and Assault Resources and Education\)](#), Andrews House, 13 Brown Street: Confidential services include support for a survivor or friends of a survivor, help filing a complaint (if that is the student's choice), and help navigating resources at Brown and the community.

[Sheridan Center for Teaching and Learning](#), Sciences Library, 201 Thayer Street, 7th floor: Provides practical advice about teaching and professional development; promotes best practices and promising new practices in teaching; supports instructors as they launch and develop their professional careers.

[Student Accessibility Services \(SAS\)](#), 20 Benevolent Street: SAS coordinates and facilitates services for students (including graduate students and postdoctoral trainees), faculty, staff and visitors with physical, psychological, and learning disabilities. Click [here](#) for FAQs.

[Substance Abuse Support](#) (addiction and recovery): The University dedicates resources to support students in recovery from addiction and substance use disorders, and to assist all students negatively affected by their own or others' substance use. The Dean of the College office and the Division of Campus Life provide overlapping services to students with substance use disorders, to develop campus policies regarding alcohol and other drugs, and to educate all members of the campus community about alcohol and drugs and their effects. For more information about available services, please email our Dean for Recovery and Substance-Free Student Initiatives, [Lindsay Garcia](#), in the Office of the Dean of the College.

D. Attending School Seminars and Talks

A key component to being a successful graduate student is intellectual curiosity. As such, the department strongly encourages the attendance of all graduate students at all thesis defenses. Ongoing Engineering seminars are held throughout the year by visiting scholars and other professionals which we also encourage you to attend. You may view [Engineering's events calendar](#) to see current and upcoming school-wide activities.

E. Writing Resources

In graduate school, it is expected that students become proficient in technical writing, including but not limited to class reports and summaries, term projects, technical papers, thesis or dissertation proposals, and thesis or dissertations. [The Writing Center](#), located in the Sciences Library, 201 Thayer Street, 5th Floor, is an excellent resource accessible to all Master's students. View additional [library resources](#) for research on engineering-related topics.

Other Writing Resources:

Thyer, B. A. 1994. [Successful Publishing in Scholarly Journals](#). SAGE Publications.

Beer, D. and Mc. Murrey, D. 2013. [A Guide to Writing as an Engineer](#), Fourth edition: Wiley.

F. Engineering Contacts

SCHOOL OF ENGINEERING STAFF

A School of Engineering Faculty and Staff Directory may be found at <http://www.brown.edu/academics/engineering/people>

FACULTY

Visit the School of Engineering website for a listing of our current faculty and areas of expertise: <http://www.brown.edu/academics/engineering/people/faculty>

GRADUATE STUDENTS

A full graduate student directory, including PhD and Master's students, may be found at: <https://www.brown.edu/academics/engineering/graduate-student-directory>

BROWN UNIVERSITY PEOPLE SEARCH

<http://directory.brown.edu/search>