

RICE  
ENGINEERING

# 2023 MSNE Graduate Handbook

[msne.rice.edu](https://msne.rice.edu)    email: [msne@rice.edu](mailto:msne@rice.edu)

# Materials Science and NanoEngineering

## 2023-2024

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### **INTRODUCTION:**

This guide to graduate study in the Department of Materials Science & NanoEngineering contains information about degree programs; financial support; academic regulations and procedures; how to get started in graduate school; and other miscellaneous information of interest to graduate students. It is intended to supplement the [General Announcements](#) and the [Code of Conduct](#) by providing a more detailed description of the graduate program in MSNE.

In case of error, omission, or conflict, policies of the *General Announcements* supersede those stated within this handbook. If the policies of the program change during a student's tenure at Rice University, the student can elect to continue studies under the complete set of policies in place at the time of matriculation or may choose to follow the updated policies in full. Students may not choose some regulations from one set of policies and some from another.

It is the student's responsibility to be familiar with the rules, procedures, and requirements of the MSNE Department, the Office of Graduate and Postdoctoral Studies, and Rice University. It is ultimately the responsibility of the student to know and follow all policies and timelines to allow for a timely graduation. A student failing to meet department or university requirements is subject to dismissal from the program.

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### **ADMINISTRATION:**

Students have access to MSNE Administrative staff for assistance. The primary contact person for graduate students is Kim Hardy, MSNE Graduate and Undergraduate Administrator. Please see the contact information provided below.

<b>Name</b>	<b>Title</b>	<b>Email</b>	<b>Location</b>	<b>ext</b>
Shanequea White	Senior Department Administrator	sw123@	E200G	2117
Gary Cisneros	Research Specialist	cisneros@	109 MEB	4895
Kim Hardy	Graduate & Undergraduate Administrator	kim.hardy@	E200I	3521
Jessica Lee	Academic Administrator	Jl199@	E200E	3698
Linda Lerma	Financial & Research Administrator	lindac@	E200F	3605
Thu Nguyen	Temporary Finance Assistant	tn51@		
Marcie Carlson	Research Administrator	mmc14@	215 MEB	2474

### **Shanequea White – Senior Department Administrator:**

Manages departmental funds supervises MSNE staff members.

Go to Shanequea for:

- Funding questions.
- Research guidelines.
- Department's physical facilities.
- University policies.
- Special circumstances.

### **Gary Cisneros – Research Specialist:**

Manages MSNE lab safety, lab supply and equipment orders and equipment maintenance. All new students should contact Gary Cisneros to arrange a safety tour of MSNE laboratories before entry.

Go to Gary for:

- Lab and equipment issues.
- Lab supply orders.
- Lab safety training.
- Lab safety issues.

### **Kim Hardy – Graduate & Undergraduate Administrator:**

Assists students with academic and administrative issues during their time in MSNE and coordinates student recruitment. The graduate administrator is your first stop to seek consultation on academic issues. The graduate administrator will keep discussions confidential but encourage action.

Go to Kim for:

- Questions about academic policies and procedures.
- Assistance with processing forms related to your academic progress.
- Questions about stipend.
- Requests for verification letters (student status, etc.).
- Questions about course schedules and classroom locations.

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### **Linda Lerma – Financial & Research Administrator:**

Provides financial support for faculty members and students.

Go to Linda for:

- Travel requests and reimbursements.
- Undergraduate payroll.
- Reimbursements via a check or cash for out of pocket expense

Thu Nguyen-Temporary Finance Assistant:

- Travel and general expense reimbursements, out of the pocket.

### **Marcie Carlson– Research Administrator**

Provides administrative support to the MSNE department chair, Dr. Ajayan, and Ajayan research group. Manages Ajayan group funding and assists Ajayan group with research proposals.

Go to Marcie for:

- Questions about Ajayan group funding.
- Ajayan group travel and personal expense reimbursements.
- Ajayan group payroll questions.
- Ajayan group credit card purchases.

### **Jessica Lee – Academic Administrator:**

Provides administrative support for faculty members and students, maintains the MSNE departmental reception area and coordinates MSNE seminars and other special events.

Go to Jessie for:

- Desk space assignments.
- Issuance of office/lab keys (\$10 deposit required for 1<sup>st</sup> two keys).
- Assistance with incoming/outgoing mail, the workroom, and its equipment (fax, copier, printer, and other office supplies).
- FedEx shipments.
- Problems with building access with your Rice ID card.
- Processing Academic Visitors paperwork, Visitor Portal.
- Room/Building maintenance issues.
- Room reservations.
- Questions about MSNE seminars and other departmental events.
- Tax exemption forms for general purchases and Texas lodging (Rice University does not pay for sales tax within the state of Texas).
- MSNE website maintenance.

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### **FACULTY:**

Faculty members have a myriad of responsibilities, including the advising and mentoring of undergraduate and graduate students and post-doctoral fellows, supervising research in their areas of interest and expertise, managing all aspects of their research labs, and instruction at the undergraduate and graduate level.

**2023-24 MSNE Graduate Committee:** Drs. Lou, Tang, and Pimpinelli.

**2023-24 MSNE Professional Master's Student (MMSNE) Advisors:** Dr. Tang

**Doctor of Philosophy (PhD) and Master of Science (MS) Student Advisors:** The primary faculty contact for PhD and MS students is the student's individual advisor. The research interests and expertise of each faculty member can be found on the MSNE website <https://msne.rice.edu/people/faculty>

Ajayan, Pulickel	Benjamin M. and Mary Greenwood Anderson Professor of Engineering and Department Chair
Barrera, Enrique	Professor of Materials Science and NanoEngineering
Han, Yimo	Assistant Professor of Materials Science and NanoEngineering
Lou, Jun	Professor and Associate Chair of Materials Science and NanoEngineering
Ramesh, Ramamoorthy	Vice President for Research Professor of Materials Science and NanoEngineering
Tang, Ming	Associate Professor of Materials Science and NanoEngineering and Graduate Chair
Yakobson, Boris I.	Karl F. Hasselmann Professor of Materials Science and NanoEngineering
Zhu, Hanyu	Assistant Professor of Materials Science and NanoEngineering
Pimpinelli, Alberto	Executive Director of the Rice Quantum Institute and Materials Science and NanoEngineering Faculty Fellow
Rahman, Muhammad	Assistant Research Professor of Materials Science and NanoEngineering
Vajtai, Robert	Associate Research Professor of Materials Science and NanoEngineering
Zednik, Ricardo	Professor in the Practice
John, Randy	Lecturer of Materials Science and NanoEngineering
Kabbani, Ahmad	Lecturer of Materials Science and NanoEngineering

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### **MSNE GRADUATE STUDENT ASSOCIATION:**

Chhatariya, Husain	President
Scotland, Phelecia	Treasure
Smith, Will	Secretary
Pieshkov, Tim	GSA Rep
Mehrotra, Nitisha	Social Chair

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### **STUDENT RESOURCES:**

**ESTHER:** Esther (Employee and Student Tools, Help, and Electronic Resources) is the web application for students, faculty and staff. Students will use ESTHER to register for classes and retrieve certain data such as grades and account information.

**Graduate Students Association (GSA):** is comprised of degree seeking graduate students at Rice University. The GSA's mission is to enrich the graduate student experience by advocating for the physical and psychological wellbeing of graduate students, promoting graduate career and professional development resources, and empowering graduate student-run social programming for the Rice community.

**Mentor Program:** The MSNE Mentor Program connects current MSNE students with incoming students to help the new students become established and find their way in their new environment. Valuable experiences that the established students have gained and lessons that they have learned during their time at Rice are passed along to students entering the program, making the transition to Rice more enjoyable and rewarding and paving the way to a successful future.

**Shared Equipment Authority:** supports and provides state-of-the-art research equipment capabilities for Rice University and the extended Rice community.

**Student Health Insurance:** All registered, degree-seeking students are required to maintain health insurance coverage while enrolled at Rice University. Therefore, all students are REQUIRED to either enroll in the Rice Student Health Insurance Plan, or request a waiver of the student Health Insurance plan. All Rice-sponsored F-1 and J-1 International Students are required to enroll Student Health Insurance Plan, please go to [Office of International Students and Scholars](#) for more information.

**Student Employment:** Students on F-1 or J-1 visas, you have the opportunity to engage in on-campus work or off campus practical training opportunities. However, the appropriate work authorization must be obtained *before* starting to work. Regardless of visa status, *if you work even one day without authorization, you must leave the U.S. or face deportation.*

**Title IX Information:** Rice encourages any student who has experienced an incident of sexual, relationship, or other interpersonal violence, harassment or gender discrimination to seek support. There are many options available both on and off campus for all graduate students, regardless of whether the perpetrator was a fellow student, a staff or faculty member, or someone not affiliated with the university.

Students should be aware when seeking support on campus that most employees are required by Title IX to disclose all incidents of non-consensual interpersonal behaviors to Title IX professionals on campus who can act to support that student and meet their needs. The therapists at the Rice Counseling Center and the doctors at Student Health Services are confidential, meaning that Rice will not be informed about the incident if a student discloses to one of these Rice staff members. Rice prioritizes student privacy and safety, and only shares disclosed information on a need-to-know basis. If you are in need of assistance or simply would like to talk to someone, please call the Rice Wellbeing and Counseling Center, which includes Title IX Support: **3311/(713) 348-3311**. Policies, including Sexual Misconduct Policy and Student Code of Conduct and more information regarding Title IX can be found at <https://safe.rice.edu/>.

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[General Announcements](#)

[Office of the Registrar](#)

[Graduate and Postdoctoral Studies](#)

[Office of International Students and Scholars](#)

[Office of Information Technology](#)

[Student Health Services](#)

[Wellbeing and Counseling Center](#)



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### **ACADEMIC POLICIES & PROCEDURES:**

The following regulations concerning graduate student in the Department of Materials Science & NanoEngineering are in addition to the regulations and deadlines described in the General Announcements. Students are responsible for meeting both the University and Department requirements and deadlines.

### **MSNE Degrees Offered:**

The department offers three graduate degrees:

**Doctor of Philosophy (PhD)**  
**Master of Science (MS-Thesis Master's)**  
**Professional Master's (MMSNE-Non-Thesis Master's)**

- The PhD degree requires completion of at least 90 semester (or credit) hours of advanced relevant study, of which at least 18 semester hours must be coursework and an approved thesis. As final evidence of preparation for this degree, the candidate must pass a public oral examination and submit the approved thesis to the Office of Graduate and Postdoctoral Studies. The residency requirement for the doctorate is four semesters of full-time study at the university. Successful candidates must pass a qualifying exam and write and orally defend their theses on original research. For more detailed information, please go to [PhD degree requirement](#).
- The MS degree requires at least 30 semester (or credit) hours of study, of which at least 18 semester hours must be coursework. The MS degree requires original work reported in a thesis and a public oral examination. Most students take three or four semesters to complete the requirements for a master's degree (some programs may require more time). Students receiving a master's degree must be enrolled in a graduate program at Rice University for a minimum of 2 semesters of full-time study. For more detailed information, please go to [MS degree requirement](#).
- The MMSNE degree requires at least 33 semester (or credit) hours of study. Minimum residency is one fall or spring semester of full-time or part time graduate study. There is no thesis requirement for the MMSNE degree. For more detailed information, please go to [MMSNE degree requirement](#).

### **Advisor Selection:**

MSNE 599 "Lab Rotations and Advisor Selection" course provides an opportunity to spend time in several research groups to help PhD and MS students selecting their advisors.

- a. Students must register for MSNE 599 in their first semester, submitting the [MSNE Rotation Form](#) at the beginning of the semester to the graduate administrator to set up the rotation schedule.
- b. By the end of November, students must complete the [MSNE Advisor Selection Form](#) and email it to the graduate administrator.
- c. The graduate administrator will notify the students at the beginning of January as to who will be their Advisors.

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NOTE: During the rotation, if you find an Advisor and would like to discontinue the rest of your rotation, please make sure the Advisor completes a [rotation waiver form](#) and emails it to the graduate administrator so you can end your rotation and join the advisor's group.

### Changing Advisors:

MSNE students are allowed to change their research Advisors, but must do so expediently since this may delay graduation. A student who is considering changing Advisor will need approval from the Department Chair. [Request to change Advisor form](#).

### Transfer of Graduate Program: go to [General Announcements-Academic Policies & Procedures](#).

If MSNE students would like to change their degree programs, these are the options available:

1. Change degree from PhD to MS – Students who wish to change degree programs from PhD to MS should speak with their Advisors to see if they have enough credits and research to switch to MS.
  - In cases where the advisor approves the amount of credits and research, students may submit the Change Degree Form from the PhD to MS degree program.
    - Students are required to complete the [Change Degree Form and MSNE Check List Form](#) detailing the credits that will be transferring to the MS program.
    - The admission committee will review student applications and required forms. Upon approval by the Department Chair and by the Office of The Dean of Engineering, the request will be sent to the Office of Graduate and Postdoctoral Studies for consideration and final approval.
    - Student will defend MS thesis.
    - Student will submit MS thesis and apply for graduation.
    - Tuition will not be charged retroactively for courses already completed.
  - In cases where a student does not have enough credits and/or research and requires additional time to meet the MS degree requirements, it is the decision of the Advisor as to whether to approve the change from the PhD to MS program. This change would require that the Advisor financially supports the student while fulfilling additional requirements through the thesis defense. (same process as above).
  - If the student's continuation in the PhD program becomes not viable, the advisor may offer the student the option to transfer to the MS program. If the student declines the option, the student may be dismissed without a degree awarded.
2. Transferring from PhD/MS to MMSNE program: Students who wish to change from PhD/MS to MMSNE program must
  - petition the MSNE department in writing.
  - Students are required to complete the [Change Degree Form and the MSNE MMSNE Check List Form](#) the credits that will be transferring to the MMSNE program, and submit the forms to the graduate administrator.
  - The admission committee will review student applications and required forms. Upon approval by the Department Chair and by the Office of The Dean of Engineering, the

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request will be sent to the Office of Graduate and Postdoctoral Studies for consideration and final approval.

- If the degree change is fully approved, students who received tuition waivers while enrolled in the PhD/MS program will be expected to repay the tuition before they can start the program or their professional degrees are awarded.
- Tuition repayment will be at the current tuition rate.

**Annual Performance Review:** All MS/PhD students in MSNE must complete an annual review in conjunction with their Advisors in May. The purpose of this review is to:

- Allow the student and advisor to establish clear expectations and objectives for the coming year, including what defines satisfactory progress.
- Each student will be responsible for scheduling a meeting with the student's Advisor to discuss the topics detailed above. Following this review conversation between student and Advisor, it is the student's responsibility to ensure that the annual review is submitted to the graduate administrator. If a student receives an Unsatisfactory grade, the Advisor should provide comments on what needs to be done for remediation. The student needs to submit an updated report by the end of the following fall semester. If the report is deemed unsatisfactory by the Advisor again, the student will be put on probation and dismissed the third time.

**Graduate Student Transfer Credit:** [go to General Announcements-Academic Policies & Procedures](#). If a student wishes to have graduate courses taken at another university or within a different program at Rice counted as credits toward a MSNE advanced degree, the student should petition the department in writing, listing not only the grades earned but also including detailed description of the courses and syllabi involved. Transfer of credits are subject to the following restrictions:

- Courses must be offered at the graduate level by a regionally accredited U.S. institution or an international institution officially recognized by that country's Ministry of Education or equivalent.
- The course must be recorded on an official transcript sent directly from the original institution to Rice or hand-delivered by the student in an official sealed envelope.
- Students seeking to transfer credits must submit a Graduate Request for Transfer Credit Form approved by MSNE to the Office of the Registrar.
- All coursework must have earned a grade of at least a B- or the equivalent. Students may not transfer courses taken pass/fail or on a similar basis at other institutions.
- Courses used toward a degree at another institution are not eligible for transfer.
- Courses identified as graduate level equivalents at Rice University must have been taken at the graduate level at the transfer credit institution.

For PhD degree, only 6 transferred credit hours will be accepted towards the degree requirement. The candidates need to obtain approval from the MSNE Graduate Committee and their Rice instructors of the courses they wish to waive. The syllabi and course descriptions of the substitute courses from the candidate's prior institutions must be provided to the instructors to determine the appropriateness of the waiver. The final decision will be made by a member of the MSNE Graduate Committee. The replacement form must be completed and emailed to the MSNE Graduate Administrator. Without the form in your file, the replacement course will not be counted towards your degree. PhD candidates must still complete a total of 90 semester hours of advanced study and four semesters of full-time residency at Rice University.

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For the MS degree, only 6 transferred credit hours will be accepted towards the degree requirement. The candidates need to obtain approval from the MSNE Graduate Committee and their Rice instructors for the courses they wish to waive. The syllabi and course descriptions of the substitute courses from the candidate's prior institutions must be provided to the instructors to determine the appropriateness of the waiver. The final decision will be made by a member of the MSNE Graduate Committee. The replacement form must be completed and emailed to the MSNE Graduate Administrator. Without the form in your file, the replacement course will not be counted towards your degree.

For the MMSNE degree, only 6 transferred credit hours will be accepted towards the degree requirement. The candidates need to obtain approval from the MSNE Graduate Committee and their Rice instructors of the courses they wish to waive. The syllabi and course descriptions of the substitute courses from the candidate's prior institutions must be provided to the instructors to determine the appropriateness of the waiver. The final decision will be made by a member of the MSNE Graduate Committee. The replacement form must be completed and emailed to the MSNE Graduate Administrator. Without the form in your file, the replacement course will not be counted towards your degree.

**Replacement Course(s):** If a student wishes to substitute other courses for required MSNE courses, the student must complete the Replacement Course Approval Form, and obtain signatures from the student's Advisor(s) and a MSNE Graduate Committee faculty member, then email the form to the graduate administrator to be placed in the student's academic file. *Without a fully signed [Replacement Course Approval Form](#), the course will not count towards the student's degree.*

### **Grades:**

For PhD and MS degrees, students must maintain a minimum overall Grade Point Average (GPA) of 3.0 and a minimum semester GPA of 3.0. If a student's semester GPA is below 3.0, the student will be placed on academic probation. If the student's semester GPA is below 3.0 for two consecutive semesters, the student's performance will be reviewed by the Graduate Committee in consultation with the Department Chair, and the student may be dismissed from the program.

For MMSNE degree, students must maintain a minimum overall GPA of 2.67 and a minimum semester GPA of 3.0. If a student's semester GPA is below 3.0, the student will be placed on academic probation. If the student's semester GPA is below 3.0 for two consecutive semesters, the student's performance will be reviewed by the Graduate Committee in consultation with the Department Chair, and the student may be dismissed from the program.

The record of a graduate student who receives a failing grade in a course will be reviewed, and the department will make specific recommendations regarding further study at the university.

- **Standard letter grade:** A graduate student is expected to earn letter grades of at least B- in all courses taken. If a student receives a grade below B- in a core course, the student has to retake the course. If a student receives a grade below B- for an elective course, it may be substituted with another course with the advisor's written approval, which should be sent to the graduate administrator for inclusion in the student's academic file. Courses that receive a grade below B- cannot be counted towards the degree requirement.

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- Satisfactory/Unsatisfactory Courses: Satisfactory/unsatisfactory courses are those that assign a grade of S or U rather than a letter grade. With S/U courses, instructors issue the S grade if the students have successfully completed the course or a U if they have not. An S grade will not count towards the student's GPA but will count towards total credits earned. A U grade will not count towards the total credit requirements for MSNE graduate degrees. **If students who receive a U grade in MSNE 800-Research & Thesis, please go to [General Announcements-Academic Policies & Procedures](#) for details and latest information on academic probation and dismissal.**

*For full details Rice University policies, please go to [General Announcements](#).*

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**Stipend for PhD/MS:** You must register at least 9 credit hours to receive stipend. The departmental funding is available to most incoming PhD and MS students during their first year of studies. The department will provide these students with a 9-month stipend at the current MSNE graduate student stipend rate. The stipend is paid bi-weekly.

Advisors become responsible for financially supporting students on the first day of their tenth month of study. Advisors are expected to pay 100% of the student's stipend unless that stipend is funded by an external fellowship, scholarship, training grant, or other source of external funding which covers all or a portion of the student's stipend. Continued financial support depends on acceptable academic progress.

Summer Support– Students should discuss their summer plans well in advance with their advisors. In order to be paid by Rice for the summer, students must register for at least 9 hours of MSNE 800. Students planning a summer internship off-campus, with their advisor's approval, must inform the graduate administrator by May 1 in order to complete the required financial arrangements.

***The department does not provide financial support to Professional Masters (MMSNE) students.***

**Termination of Financial Support** – [General Announcements' section on Academic and Judicial Discipline.](#)

**External Fellowships/Scholarships:** Students are encouraged to seek external fellowships and awards. The [Office of Proposal Development](#) offers an extensive array of proposal development services when developing and writing proposals for federal agencies and other entities to seek funding for the research projects. Assistance can also be obtained from the [Rice Graduate and Postdoctoral Studies](#). Students are encouraged to take advantage of the services and resources available to them. Students are required to notify MSNE graduate administrator of any external fellowships or scholarships they receive immediately upon receiving an award including awards received prior to matriculation.

**The National Science Foundation** and many other government agencies and foundations offer scholarships, fellowships and other funding opportunities for graduate students. Some of these opportunities are listed on the website of [the George R. Brown School of Engineering](#). Graduate students are strongly encouraged to seek out these opportunities. They should inform the MSNE graduate administrator when they decide to apply for non-university funding.

**Teaching Assistant:** All teaching assistants (TAs) must attend a TA workshop. After being assigned a MSNE course, they will need to meet with the instructor to discuss their TA responsibilities before the course begins. They will be expected to attend classes for the course they TA upon the request of the instructors.

**Student Vacation:** Students are eligible to receive 2 weeks/academic calendar (fall, spring and summer) of vacation annually with stipend. The vacation policies should be discussed directly with the student's Advisor. If you plan to take vacation longer than 2 weeks, please check with your Advisor whether the stipend support continues through the extended vacation time. If not, please complete the [vacation form](#) with your Advisor's signature and email the form to the graduate administrator before the vacation starts. Vacations, leave time, or other absences must be approved by the student's Advisor in advance and must be in compliance with University rules and guidelines from funding agencies.

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**Withdrawals:** go to [General Announcements-Academic Policies & Procedures](#)

Medical leaves and other types of interruptions of study should be handled according to the guidelines in the General Announcements.

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### **MSNE AREAS OF SPECIALIZATION:**

1. Advanced Manufacturing.
2. Atomic Scale Characterization.
3. Computational Materials Science.
4. Low-dimensional and nano-materials.
5. Electronic and Opto-Electronic Materials.
6. Energy Conversion and Storage.
7. Metals and 3D Printing.
8. Multifunctional Composites.
9. Nanomechanics.
10. Polymer Science.
11. Quantum Materials and Phenomena.
12. Biomaterials and Neuroengineering.



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### FIRST-YEAR STUDENT CHECKLIST:

- **Student ID** → Acquired from the RUPD police station and used for swipe access to many campus buildings. Bring a document that has your student ID number on it as well as a photo ID.
- **Lab safety training** → EHS general safety training + any additional specialized trainings needed for your specific research (EHS safety refresher course required every year). Normally offered during first-year graduate student orientation. <https://safety.rice.edu>
- **Lab access** → varies based on lab space, some have physical keys, others a keypad code and some require an ID card swipe (if you need ID access for a building or room, contact Elizabeth Tippe and include your student ID number (“S” followed by an 8-digit number))
- **Fund numbers** → These are the accounts to charge for research supplies, etc. This varies based on advisor and research project. You can obtain this information from your advisor. Linda Lerma also handles the accounting and manages these funds.
- **Stockroom account** → The chemistry department houses a stockroom on campus for common lab supplies. Located on the first floor of Space Science.
  - To set up a new account go to <https://chemistry.rice.edu/new-stockroom-account>. You will need to obtain a fund number before creating a stockroom account. Feel free to email [CHST@rice.edu](mailto:CHST@rice.edu) with any questions. Susan and Carlos are very helpful.
- **Airgas account** → This account is for ordering compressed gases. Follow the link below for instructions on how to create an account and how to make a gas order.
  - <https://chemistry.rice.edu/compressed-gas-orders>
- **Shared equipment access** → Managed by the Rice Shared Equipment Authority (SEA).
  - First, you will need to complete the forms for internal users at <https://research.rice.edu/sea/forms> (Internal User Information and Internal User Agreement forms). This will require your advisor’s signature and a fund number. For the Internal User Agreement form, you can save yourself from having to submit this form multiple times by listing “all SEA equipment” under the “Equipment to be used” line. This is simply your advisor giving you permission to get trained on the instruments you list on the form. Submit to [meri.c.dix@rice.edu](mailto:meri.c.dix@rice.edu).
  - Next, after confirmation from Meri, you can create an account on FOM (<https://fom.rice.edu/>). This system is used to request trainings, reserve equipment, monitor equipment status and logon to your session.
- **Rice Marketplace** → This platform is used for making purchase orders for lab equipment, materials, etc...
  - Training must be taken from Rebecca Riley ([rr37@rice.edu](mailto:rr37@rice.edu)) individually or in a group. Schedule a training session by emailing her. This must be done prior to getting an account set up.
  - Once training is complete, you can register your account here: <https://buy.rice.edu/>. In order to make purchases you need to be on Rice VPN.

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### **REQUIREMENTS FOR THE PhD DEGREE:**

**If you are accepted as an MSNE PhD student but you choose an advisor from another department, you will still need to meet all the MSNE PhD program requirements to obtain a MSNE PhD degree.**

Full-time students seeking a MSNE PhD degree are expected to complete all the requirements for the degree within five calendar years, following entrance into the program. Continuation in the program beyond this time limit will require special approval by your Advisor and the Department Chair.

The MSNE PhD program is full-time and requires students to register a minimum of 9 credit hours per semester.

**Residency:** The minimum residency requirement for the MSNE PhD degree is four semesters (fall & spring) of full-time study at the University.

**Course Requirements:** Candidates for the MSNE PhD degree are required to complete at least 90 semester (or credit) hours of advanced relevant study, of which at least 18 credit hours must be for coursework. Courses that are required for a BS degree in MSNE at Rice cannot be counted towards the credit hours to satisfy PhD degree requirements. For students with a MS or MMSNE degree from the MSNE department that have completed some or all of the required core courses listed below, those courses can be replaced by additional elective courses. For students with a BS or BA degree from the MSNE department that have completed MSNE 401, MSNE 402, MSNE 406 and MSNE 435, the required core courses can be replaced by additional elective courses.

#### **Coursework Courses:**

- Core courses<sup>1</sup>(required): MSNE 502, MSNE 503, MSNE 506 and MSNE 535.
- Elective courses<sup>2</sup>: MSNE 500+\* and 600+ level courses, or courses from other departments upon approval from the student's advisor.

#### **Non-Coursework Courses:**

Credits received for MSNE 500, MSNE 501, MSNE 589 or UNIV 594 and MSNE 800 will not be counted as coursework credits. They will count toward the degree total credit requirement (90 credit hours for PhD).

MSNE 500 “*Materials Science Seminar*”: PhD students must attend at least 10 of the 13 MSNE seminars per semester for the duration of their study. Students are required to earn an S (satisfactory) grade in MSNE 500 for every semester. There will be a sign-in sheet available at seminars and students will need to sign in to prove attendance. If students receive a U (unsatisfactory), the grade will not count towards the degree total credit requirements for MSNE graduate degrees. Students who receives two consecutive U grades in S/U courses (MSNE 500, 501 and 589) will be put on academic probation. A third U will result in suspension from the program.

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<sup>1</sup> Students may petition to replace a core course with a related non-MSNE course upon approval from their advisors or one member of the Departmental Graduate Committee. The replacement form must be completed and emailed to the Graduate Administrator. Without the form in your file, the replacement course will not be counted towards your degree.

<sup>2</sup> Students may complete courses that satisfy the Electives requirement from other departmental course offerings upon approval from their advisors or one member of the Departmental Graduate Committee.

MSNE 501 “*Graduate Student Seminar*”: PhD students must attend at least 9 of the 13 graduate student seminars per semester for the duration of their study. Students are required to earn an S (satisfactory) grade in MSNE 501 for every semester. There will be a sign-in sheet available at seminars and students will need to sign in to prove attendance. If students receive a U (unsatisfactory), the grade will not count towards the degree total credit requirements for MSNE graduate degrees. Students who receives two consecutive U grades in S/U courses (MSNE 500, 501 and 589) will be put on academic probation. A third U will result in suspension from the program.

MSNE 589 “*Ethics & Safety for Materials Engineers*” or UNIV 594: PhD students must register for one semester for the duration of their study. If students receive a U (unsatisfactory), the grade will not count towards the degree total credit requirements for MSNE graduate degrees, but the students need to retake MSNE 589 or UNIV 594. Students who receives two consecutive U grades in S/U courses (MSNE 500, 501 and 589 or UNIVE 594) will be put on academic probation. A third U will result in suspension from the program.

MSNE 800 “*Research & Thesis*”: Students who register for MSNE 800 are required to earn an S (satisfactory) grade. If students receive a U (unsatisfactory) grade, the grade will not count towards the degree total credit requirements for MSNE graduate degrees. **Students who receive a U grade in MSNE 800-Research & Thesis should refer to General Announcements-[Academic Policies & Procedures](#) for details and latest information on [academic probation and dismissal](#).**

*MSNE 500, 501, 589 or UNIV 594 and 800. These courses are taken for a Satisfactory/Unsatisfactory grades. For more information, see the Grades section of the MSNE Graduate Student Handbook on the Policies tab and the [General Announcement](#).*

**Teaching Assistant/Grader:** While TA and grader positions are required for PhD students as part of the degree program, there are also additional opportunities for students wanting to gain further teaching experience. The faculty would be happy to have students contribute to the course content and delivery. Graduate students can take an active role in courses such as planning lectures or teaching class sessions. The logistics will vary based on the specific course and the instructor. Please contact graduate administrator if you’d like to explore this option. Additionally, if there is a certain course you are interested in, you can directly contact the instructor to inquire about opportunities. PhD students are required to perform such duties for at least 3 semesters but no more than 4 semesters.

*\*MSNE 500, MSNE 501 AND MSNE 589 or UNIV 594 are not elective courses*

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### *YEAR 1-All First Year PhD Students*

**Requirements:** A first year student who does not have an Advisor must meet with the Graduate Chair prior to course registration, to seek advice on what courses to take. With input from the Graduate Chair, the student must complete the MSNE Check List Form and the MSNE Lab Rotation Form. **MSNE forms** can be found at <https://msne.rice.edu/academics/graduate-programs/resources-current-graduate-students>. The completed forms should be submitted to the graduate administrator.

A first year student who has an Advisor must meet the Advisor prior to course registration to seek advice on what courses to take. The student must complete the MSNE Checklist Form (see link above) and submit it to the graduate administrator.

**Recommendation:** Register for core courses MSNE 502, MSNE 503, MSNE 506, MSNE 535, plus elective courses. Active research should begin as soon as possible but not later than the end of the first academic year.

**Preliminary Candidacy Evaluation (PCE):** Entering PhD students will be subject to a preliminary evaluation of their candidacy for the PhD degree program. The evaluation will be conducted in March of the first year of enrollment via a review of the student's academic, research and writing performance up to the time of evaluation, which will be based on the transcript and a short research summary submitted by the student.

**Procedure:**

1. In April of the first year of enrollment, students are required to email the graduate administrator their completed PCE form, unofficial transcripts, and 2 pages of research summary, completed with input from Advisors. The research summary should be double spaced and use font size 12.
2. The student's advisor is responsible for suggesting two additional MSNE faculty members to serve on the student's PCE Committee.
3. The PCE Committee assessment will result in one of the following four possible outcomes:
  - Approval of preliminary candidacy.
  - Disapproval of preliminary candidacy, which will require that the PCE process is repeated at the end of the fall of second year.

Once a PCE is completed, the reviewed material will be made available to the students. *Students who don't pass PCE the second time will be put on academic probation. A third time will result in suspension from the MSNE program.*

**Note:** After the required coursework credit hours have been completed, students may register as full-time under MSNE 800-*Research and Thesis*.

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### *YEAR 2-Conduct Research & Take Courses Approved by Advisor*

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### *YEAR 3-Make Significant Progress in Research & Pass Oral Qualifying Examination*

**All MSNE PhD core courses (MSNE 502, 503, 506 and 535) must be completed before taking the Oral Qualifying Examination**

**Oral Qualifying Examination (OQE):** PhD students must pass the oral qualifying examination. The purpose of this examination is to determine whether the student is qualified to conduct independent research at the technical level required for a PhD thesis. The students' grasp of fundamental concepts in their field and related fields of interest will be examined.

The result of this examination will be the principal factor in the department's decision on the student's progress towards candidacy for the PhD degree. If the students should fail this examination, they may be given a second chance to take the examination upon the recommendation of the Oral Qualifying Examination Committee. If the student is not successful at the retake of the OQE, the student will not be approved to move forward in the PhD program.

#### **Oral Qualifying Exam Procedure:**

1. In April of the third year:
  - a. The students are responsible for scheduling a meeting to meet with their Advisors to review performance and discuss research plans with the select Oral Qualifying Examination Committee. This committee must include the Advisor, a MSNE Faculty member and a non-MSNE Faculty member within the university.
  - b. After the above meeting, the student must schedule their oral exam with the committee and complete [the Oral Qualifying Examination Schedule form](#) and email to the graduate administrator the OQE schedule form.
2. After selecting the Oral Qualifying Examination Committee and confirming a date for the oral exam, the students will submit a written research proposal to the committee on their proposed thesis topic. The committee and graduate administrator should receive the written proposal at least 1 week in advance of oral exam date. The research proposal is required to be a minimum of 25 pages in length, double spaced, using font size 12. The proposal should support the student's proposed thesis topic including motivation and background, literature review, key preliminary results, research plans and references.
3. On the day of the oral exam, the students will present their preliminary work and proposed thesis topic to the committee in an oral presentation. The committee will question the students on their motivation and background, knowledge of the literature review, current progress, and other related questions with regard to the proposed thesis topic. Following the oral presentation, questions may be asked by the committee on the contents of the four MSNE core courses (MSNE 502, MSNE 503, MSNE 506 and MSNE 535).

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### *YEAR 4-Petition for PhD Candidacy*

PhD students are required to submit the Petition for Approval of Candidacy for a Doctoral Degree Form <https://msne.rice.edu/graduate-program/resources/forms> and email to the graduate administrator in March of the eighth semester of their residency at Rice. Achieving candidacy for the PhD degree implies that a graduate student has:

- completed required coursework.
- maintained a 3.0 (B) overall GPA.
- passed the Oral Qualifying Exam and demonstrated the ability to carry out scholarly work in their subject area.

#### **Procedure:**

- In April of the fourth year, the students are responsible for scheduling a meeting with their Advisors to select a Thesis Committee, which should include the advisor, a MSNE Faculty member and a non-MSNE Faculty member within the University.
- [The Petition for Approval of Candidacy for a Doctoral Degree Form](#) and the [MSNE PhD Check List](#) forms should be completed and emailed to the graduate administrator with the names of committee members for the students' thesis defense.
- The students should schedule the final defense of their thesis to take place at a time agreeable to all members of the committee. The student should consult deadlines listed in the [Academic Calendars](#) to ensure that he/she meets the defense deadline for commencement.
- Candidates for the PhD degree must register for Research and Thesis (MSNE 800) during the year preceding the anticipated date of graduation.

Students who are unable to meet the time boundary must submit an extension of candidacy request to the Office of Graduate and Postdoctoral Studies or risk dismissal. A \$125 reinstatement fee will be imposed on students who have exceeded their time boundaries. Information on time boundaries can be found in the General Announcements.

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### *YEAR 5-Oral Examination in Defense of Thesis*

**Thesis Preparation:** Each candidate for the PhD degree must complete a thesis demonstrating ability in research of a fundamental nature, either analytical or experimental. It is expected that the research will be of sufficient importance and quality that it leads to publication. The PhD candidates must then participate in an oral examination in defense of their theses. Further instructions for thesis preparation can be obtained from the Office of Graduate and Postdoctoral Studies <https://graduate.rice.edu/current-students/defense>, and <https://graduate.rice.edu/current-students/candidacy-defense/thesis-submission>

- The student must select a Thesis Defense Committee. The committee must include the student's advisor, who will act as committee chair, a MSNE faculty member and non-MSNE faculty member from within the University. The committee members should be invited and confirmed early enough so that the candidate may discuss the nature of the thesis research with them and the contents of the thesis. The thesis must be made available to the members of the thesis committee at least two weeks before the thesis defense date. Although the defense will be concerned primarily with the candidate's thesis, questions may also cover other related subjects.
- The students should schedule the final defense of their theses to take place at a time agreeable to all members of the committee. The students should consult deadlines listed in the Academic Calendar <https://registrar.rice.edu/calendars/> to ensure that they meet the defense deadline for commencement.
- The thesis defense must be publicly announced at least 14 days before the scheduled defense. Announcements should be submitted to the Office of Graduate and Postdoctoral Studies by completing the online form at <http://events.rice.edu/rgs/>. The thesis defense cannot take place without a public announcement being sent out.
- The completed thesis must be submitted at least two weeks prior to the defense date to the thesis committee and graduate administrator.
- Should a student fail the thesis defense, the committee chair may schedule a second defense. Students who fail a second time will be dismissed from the University.
- Following the defense, students must submit a copy of their approval of candidacy form, signed by the thesis committee signifying successful defense of the thesis, to the Office of Graduate and Postdoctoral Studies within one week after the oral examination. Instructions to submit this form are located online at <http://graduate.rice.edu/thesis>. The original approval of candidacy form must be turned in when the thesis is submitted.
- Students registered for the previous semester that pass their thesis defense on or before the end of the first week of classes of any semester do not have to register for that or any subsequent semesters even though they may be continuing to make minor revisions to the final copy of their thesis.
- No later than six months following the students' successful thesis defense, they must submit the final version of the thesis to the Office of Graduate & Postdoctoral Studies <https://thesis.rice.edu>

**THESIS SUBMISSION:** Please go to <https://graduate.rice.edu/academics/candidacy-defense-thesis-submission/thesis-submission>

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### **REQUIREMENTS FOR THE MS DEGREE:**

**If you are accepted as an MSNE MS student but you choose an advisor from another department, you will still need to meet all the MSNE MS requirements to obtain a MSNE MS degree.**

Full-time students seeking the MSNE MS degree are expected to complete all the requirements for the degree within two calendar years, following entrance into the program. Continuation in the program beyond two calendar years will require special approval by the Department.

The MS program is full-time and requires students to register a minimum of 9 credit hours per semester.

#### **Course Requirement:**

Candidates for the MSNE MS degree are required to complete at least 30 credit hours of study, of which at least 18 credit hours must be for coursework. Courses that are required for the MSNE BS degree at Rice cannot be counted towards the credit hours to satisfy the MS degree requirements. For students with a BS or BA degree from the MSNE department that have completed MSNE 401, MSNE 402, MSNE 406 and MSNE 435, the required core courses can be replaced by additional courses.

#### **Coursework Courses:**

- Core courses (required): MSNE 502, MSNE 503, MSNE 506 and MSNE 535
- Elective courses: MSNE 500+ \* or 600+ level courses, or courses from other departments upon approval from the student's advisor.

#### **Non-Coursework Courses:**

Credit received for MSNE 500, MSNE 501, MSNE 589 and MSNE 800 will not be counted as coursework credits. They will count towards the degree total credit requirement (30 credit hours for MS).

MSNE 500 “*Materials Science Seminar*”: MS students must attend at least 6 of the 13 MSNE seminars per semester for the duration of their study. Students are required to earn an S (satisfactory) grade in MSNE 500 for every semester. There will be a sign-in sheet available at seminars and students will need to sign in to prove attendance. If students receive a U (unsatisfactory), the grade will not count towards the degree total credit requirements for MSNE graduate degrees. Students who receives two consecutive U grades in S/U courses (MSNE 500, 501 and 589) will be put on academic probation. A third U will result in suspension from the program.

MSNE 501 “*Graduate Student Seminar*”: MS students must attend at least 6 of the 13 seminars per semester for the duration of their study. The students are required to earn an S (satisfactory) grade in MSNE 501 for every semester. There will be a sign-in sheet available at seminars and the students will need to sign in to prove attendance. If students receive a U (unsatisfactory), the grade will not count towards the degree total credit requirements for MSNE graduate degrees. Students who receives two consecutive U grades in S/U courses (MSNE 500, 501, and 589) will be put on academic probation. A third U will result in suspension from the program.

MSNE 589 “*Ethics & Safety for Materials Engineers*”: MS students must register for one semester for the



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duration of their study. If students receive a U (unsatisfactory), the grade will not count towards the degree total credit requirements for MSNE graduate degrees, but the students need to retake MSNE 589. Students who receive a U grade in S/U courses (MSNE 500, 501 and 589) will be put on academic probation. A second U grade will result in suspension from the MSNE program.

MSNE 800 “*Research and Thesis*”: The students who register MSNE 800 are required to earn an S (satisfactory) grade. If students receive a U (unsatisfactory), the grade will not count towards the degree total credit requirements for MSNE graduate degrees. **Students who receive a U grade in MSNE 800-Research & Thesis, please go to [General Announcements-Academic Policies & Procedures](#) for details and latest information on [academic probation and dismissal](#).**

MSNE 500, 501, 589 and 800. These courses are taken for a Satisfactory/Unsatisfactory grades. For more information, see the Grades section of the MSNE Graduate Student Handbook on the Policies tab and the [General Announcements](#).

**Teaching Assistant/Grader:** While TA and grader positions are required for MS students as part of the degree program, there are also additional opportunities for students wanting to gain further teaching experience. The faculty would be happy to have students contribute to the course content and delivery. Graduate students can take an active role in courses such as planning lectures or teaching class sessions. The logistics will vary based on the specific course and the instructor. Please contact graduate administrator if you’d like to explore this option. Additionally, if there is a certain course you are interested in, you can directly contact the instructor to inquire about opportunities. MS students are required to perform such duties for at least 1 semester but not more than 2 semesters.

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### *YEAR 1-All First Year MS Students*

**Requirements:** A first year student who does not have an advisor must meet with the Graduate Chair prior to course registration to seek advice on what courses to take. With input from the Graduate Chair, the student should complete [the MSNE Check List Form and the MSNE Lab Rotation Form](#). The completed forms should be submitted to the graduate administrator.

First year students who have an advisor must meet with the Advisor prior to course registration to seek advice on what courses to take. They must complete the MSNE Checklist Form (see link above) and submit it to the graduate administrator.

**Recommendation:** Register for core courses MSNE 502, MSNE 503, MSNE 506, MSNE 535, plus elective courses. Active research should begin as soon as possible but no later than the end of the first semester.

**Preliminary Candidacy Evaluation (PCE):** Entering MS students will be subject to a preliminary evaluation of their candidacy for the MS degree program. The evaluation will be conducted in March of the first year of enrollment via a review of the student's academic, research and writing performance up to the time of evaluation, which will be based on the transcript and a short research summary submitted by the student.

**Procedure:**

- In April of the first year of enrollment, students are required to email the graduate administrator their completed PCE Form, Unofficial transcript, and 8 pages of research summary, completed with input from the Advisor. The research summary should be double spaced and use font size 12.
- The student's advisor is responsible for suggesting two additional MSNE faculty members to serve on the student's PCE Committee.
- The PCE Committee assessment will result in one of the following four possible outcomes:
  - Approval of preliminary candidacy.
  - Disapproval of preliminary candidacy, which will require that the PCE process be repeated in the fall semester of the second year.

Once a PCE is completed, the reviewed material will be made available to the students. *Students who don't pass the PCE the second time will result in suspension from the MSNE program.*

*Note:* After the required coursework credit hours have been completed, students may register as full-time under MSNE 800-Research and Thesis.

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### *YEAR 2-Conduct Research & Petition for MS Candidacy*

All MSNE MS core courses (MSNE 502, 503, 506 and 535) must be completed before petition for MS Candidacy

MS students are required to submit the Petition for Approval of Candidacy for a MS Degree Form (<https://msne.rice.edu/graduate-program/resources/forms>) and email to the graduate administrator in Oct of the third semester of their residency at Rice. Achieving candidacy for the MS degree implies that a graduate student has:

- completed required coursework.
- maintained a 3.0 (B) overall GPA.
- passed the Preliminary Candidacy Evaluation.
- demonstrated the ability for clear oral and written communication, and
- demonstrated the ability to carry out scholarly work in their subject area.

#### **Procedure:**

1. The students are responsible for scheduling a meeting with their Advisors to select a Thesis Committee, which should include the Advisor, a MSNE Faculty member and a non-MSNE Faculty member within the university.
2. The [Petition for Approval of Candidacy for a MS](#) and the [MSNE Check List](#) Forms should be completed and emailed to the graduate administrator with the names of committee members for the student's thesis defense.
3. Each thesis student must petition for candidacy, and can not take the final oral examination until the Dean of Graduate and Postdoctoral Studies approves their candidacy.
4. The students should schedule the final defense of their theses to take place at a time agreeable to all members of the committee. The student should consult deadlines listed in the [Academic Calendars](#) to ensure that he/she meets the defense deadline for commencement.
5. Candidates for the MS degree must register for Research and Thesis (MSNE 800) during the year preceding the anticipated date of graduation.

Students who are unable to meet the time boundary must submit [an extension of candidacy request](#) to the Office of Graduate and Postdoctoral Studies or risk dismissal. A \$125 reinstatement fee will be imposed on students who have exceeded their time boundaries. Information on time boundaries can be found in the [General Announcements](#).

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### *Oral Examination in Defense of Thesis*

**Thesis Preparation:** Each candidate for the MS degree must complete a thesis demonstrating ability in research of a fundamental nature, either analytical or experimental. It is expected that the research will be of sufficient importance and quality that it leads to publication. The MS candidate must then participate in an oral examination in defense of the student's thesis. Further instructions for thesis preparation can be obtained from the Office of Graduate and Postdoctoral Studies (<https://graduate.rice.edu/thesis>).

- The student must select a Thesis Defense Committee. The committee must include the student's advisor, who will act as committee chair, a MSNE Faculty member and non-MSNE Faculty member from within the University. The committee members should be invited and confirmed early enough so that the candidate may discuss the nature of the thesis research with them and the contents of the thesis. The thesis must be made available to the members of the thesis committee at least two weeks before the thesis defense date. Although the defense will be concerned primarily with the candidate's thesis, questions may also cover other related subjects.
- The students should schedule the final defense of their theses to take place at a time agreeable to all members of the committee. The student should consult deadlines listed in the [Academic Calendar](#) to ensure that they meet the defense deadline for commencement. In order to graduate, the final thesis must be submitted to the Office of Graduate and Postdoctoral Studies before noon on the deadline listed in the Academic Calendar or six months after the oral defense, whichever occurs first.
- The thesis defense must be publicly announced at least 7 days before the scheduled defense. Announcements should be submitted to the Office of Graduate and Postdoctoral Studies by completing the online form at <http://events.rice.edu/rgs/>. The thesis defense cannot take place without a public announcement being sent out.
- Following the defense, students must submit a copy of their approval of candidacy form, signed by the thesis committee signifying successful defense of the thesis, to the Office of Graduate and Postdoctoral Studies within one week after the oral examination. Instructions to submit this form are located online at <http://graduate.rice.edu/thesis>. The original approval of candidacy form must be turned in when the thesis is submitted.
- Students registered for the previous semester that pass their thesis defense on or before the end of the first week of classes of any semester do not have to register for that or any subsequent semesters even though they may be continuing to make minor revisions to the final copy of their thesis.
- No later than six months following the student's successful thesis defense, he/she must submit the final version of the thesis to the Office of Graduate & Postdoctoral Studies <https://thesis.rice.edu>.

**THESIS SUBMISSION:** Please go to <https://graduate.rice.edu/current-students/candidacy-defense/thesis-submission>

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### **REQUIREMENTS FOR THE PROFESSIONAL MASTER’S DEGREE (MMSNE):**

MSNE offers a non-thesis (Professional) master’s degree of materials science (MMSNE) in two focus areas:

*1) Materials Science*

*2) NanoEngineering*

Students must complete at least 33 semester hours of courses approved by the department (a one-semester course is usually three semester hours credit). Of these 33 credit hours, at least 27 must be taken at Rice. Requirements and specific courses to be taken depend on each student’s field of study. Students must have their individual degree plans and programs of study approved by the advisor of the MMSNE program.

<b>Materials Science Area</b>	
At least 3 core courses.	Required to register for MSNE 502 and MSNE 503 AND choose one of these courses: MSNE 505, MSNE 506, MSNE 517 and MSNE 535. For students with a BS or BA degree from the MSNE department, MSNE 502 and MSNE 503 can be replaced by other courses in the list.
A total of 9 credit hours technical electives <sup>1,2</sup>	MSNE 510, MSNE 511, MSNE 512, MSNE 513, MSNE 523, MSNE 533, MSNE 555, MSNE 569, MSNE 580, MSNE 613, MSNE 614, MSNE 615 and MSNE 650.
A total of 3 credit hours of Non-coursework	MSNE 500, MSNE 501, and MSNE 589
Research Project	MSNE 621, MSNE 622.
1 of these courses	ENGI 501, ENGI 510, ENGI 515, ENGI 528, ENGI 529, ENGI 530, ENGI 542, ENGI 610, ENGI 615, BIOE 513 and NSCI 511.
Credit hours of remaining coursework <sup>3</sup>	See the course catalog for a full list courses.

<b>NanoEngineering Area</b>	
At least 3 core courses.	Required to register for MSNE 506 and MSNE 535 AND choose one of these courses: MSNE 502, MSNE 503, MSNE 505, and MSNE 517. For students with a BS or BA degree from the MSNE department, MSNE 502 and MSNE 503 can be replaced by other courses in the list.
A total of 9 credit hours technical electives <sup>1,2</sup>	MSNE 510, MSNE 511, MSNE 512, MSNE 513 MSNE 523, MSNE 533, MSNE 555, MSNE 569, MSNE 580, MSNE 613, MSNE 614, MSNE 615 and MSNE 650.
A total of 3 credit hours of Non-coursework	MSNE 500, MSNE 501, and MSNE 589 <sup>2</sup>
Research Project	MSNE 621, MSNE 622.
1 of these courses	ENG 501, ENGI 510, ENGI 515, ENGI 528, ENGI 529, ENGI 530, ENGI 542, ENGI 610, ENGI 615, BIOE 513, and NSCI 511.
Credit hours of remaining coursework <sup>3</sup>	See the course catalog for a full list courses.

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<sup>1</sup> MSNE 502, MSNE 503, MSNE 505, MSNE 506, MSNE 517 and/or MSNE 535 that are not used towards satisfying the core requirements can be taken as Technical Electives.

<sup>2</sup> MMNSE students must register MSNE 589 (this course offers in the Spring). If students receive a U (unsatisfactory), the grade will not count towards the degree total credit requirements for MSNE graduate degrees, but the students need to retake MSNE 589.

<sup>3</sup> Student can repeat MSNE 621, 622

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### Typical Time Chart of PhD Degree Candidates

<b>Year 1</b>	<b>Fall</b> MSNE 502, MSNE 506, MSNE 503, MSNE 500, MSNE 501	<b>Spring</b> MSNE 535, MSNE 500, MSNE 501, MSNE 800, 2-Elective courses <b>Complete PCE and Annual Review by April</b>	<b>Summer</b> MSNE 800 (at least 9 credit hours)
<b>Year 2</b>	<b>Fall</b> MSNE 500, MSNE 501, MSNE 800, Elective course	<b>Spring</b> MSNE 500, MSNE 501, MSNE 589 MSNE 800 <b>Complete Annual Review by April</b>	<b>Summer</b> MSNE 800 (at least 9 credit hours)
<b>Year 3</b>	<b>Fall</b> MSNE 500, MSNE 501, MSNE 800	<b>Spring</b> MSNE 500, MSNE 501, MSNE 800 <b>Schedule OQE, and Annual Review by April</b>	<b>Summer</b> MSNE 800 (at least 9 credit hours)
<b>Year 4</b>	<b>Fall</b> MSNE 500, MSNE 501, MSNE 800	<b>Spring</b> MSNE 500, MSNE 501, MSNE 800 <b>Complete Petition for approval of candidacy, and Annual Review by April</b>	<b>Summer</b> MSNE 800 (at least 9 credit hours) <b>&amp; Write Thesis</b>
<b>Year 5 &amp; Beyond</b>	<b>Fall</b> MSNE 500, MSNE 501, MSNE 800 <b>Write Thesis</b>	<b>Spring</b> MSNE 500, MSNE 501, MSNE 800 <b>Write, Defense &amp; Submit Thesis</b>	<b>Summer</b> MSNE 800 (at least 9 credit hours) if beyond 5 year

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***Typical Time Chart of MS Degree Candidates:***

<b>Year 1</b>	<p><b>Fall</b> MSNE 500, MSNE 502, MSNE 503, MSNE 506</p>	<p><b>Spring</b> MSNE 500, MSNE 589, MSNE 535, MSNE 800 2 MSNE Elective courses <b>Complete PCE, and Annual Review by April</b></p>	<p><b>Summer</b> MSNE 800 (at least 9 credit hours)</p>
<b>Year 2</b>	<p><b>Fall</b> MSNE 500, MSNE 501, MSNE 800 Elective course <b>Complete Petition approval of candidacy by October Write Thesis</b></p>	<p><b>Spring</b> MSNE 500, MSNE 800 <b>Write &amp; Defense and Submit Thesis</b></p>	



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***Typical Time Chart of MMSNE Degree Candidates:***

<b>Year 1</b>	<b>Fall</b> 1 MSNE core course 1-ENGI course MSNE 621 MSNE 500	<b>Spring</b> 1 MSNE core course 1-MSNE technical elective MSNE 501, MSNE 589, MSNE 622
<b>Year 2</b>	<b>Fall</b> 1 MSNE core course 2 MSNE Technical Electives	<b>Spring</b> 1 MSNE 622 (repeat) or 1 course (500+ and above) depending upon each student's interest & discussions with the advisor